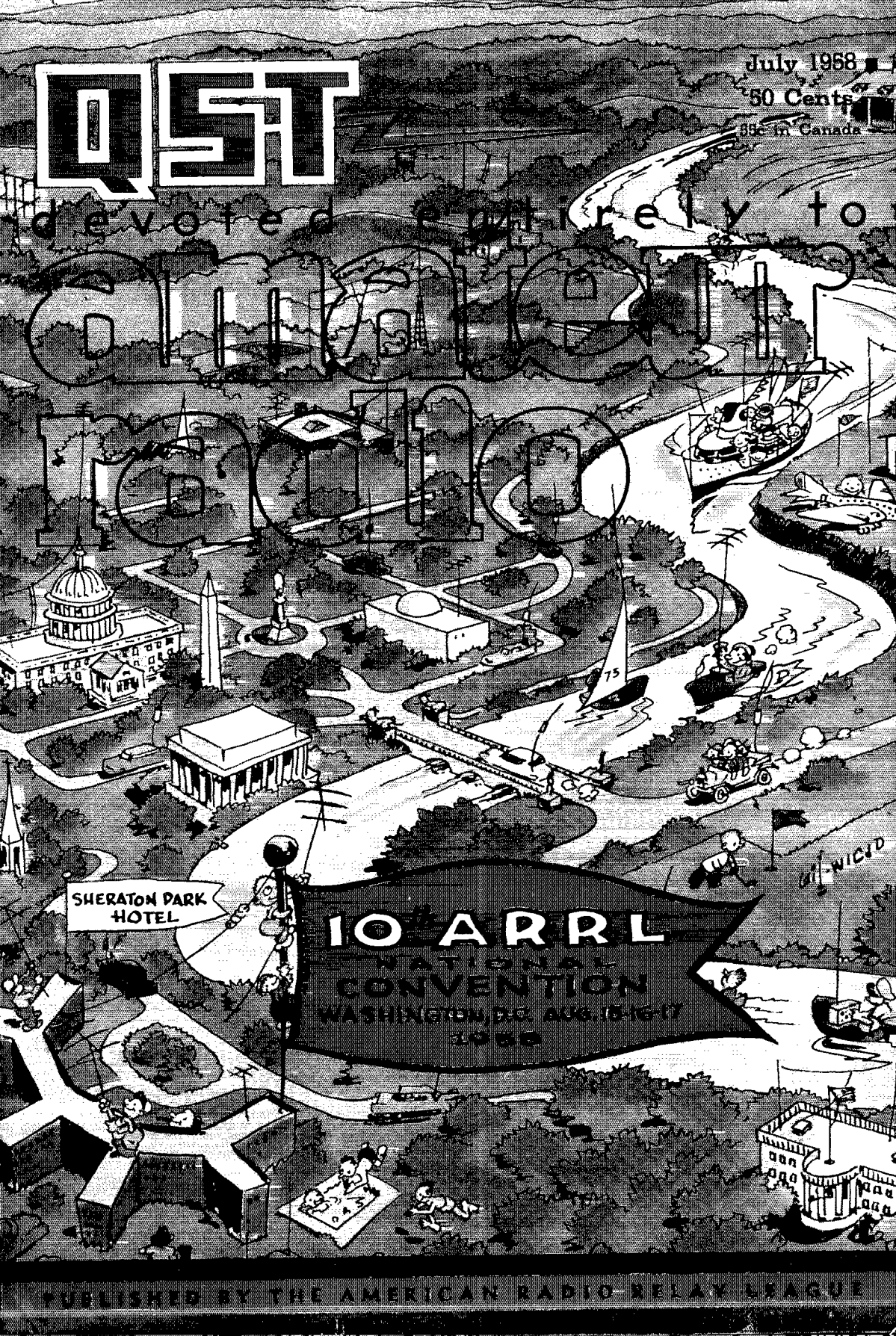
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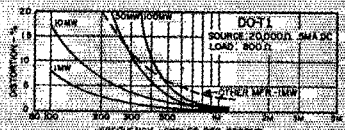
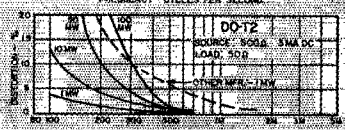
REVOLUTIONARY TRANSISTOR TRANSFORMERS, HERMETIC TO MIL-T-27

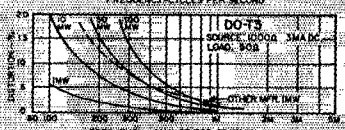
Conventional miniaturized transistor transformers have inherently poor electrical characteristics, perform with inefficient reliability and are woefully inadequate for many applications. The radical design of the new UTC DO-T and DI-T transistor transformers provides unprecedented power handling capacity and reliability coupled with extremely small size.

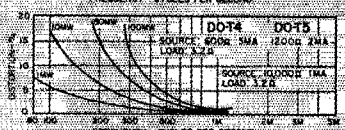
TYPICAL DO-T PERFORMANCE CURVES

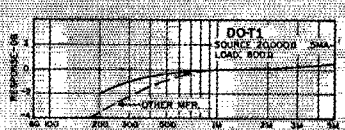
Power curves based on setting output power at 1 KC, then maintaining same input level over frequency range.

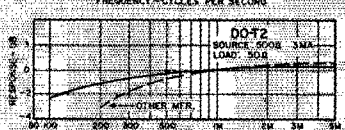


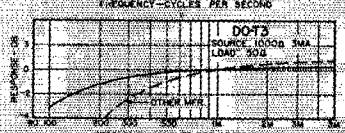


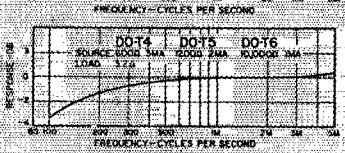








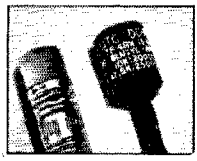




DO-T units have been designed for transistor application only . . . not for vacuum tube service. Patents Pending

SPECIAL UNITS AVAILABLE TO YOUR SPECIFICATIONS.

DO-T



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Low Distortion . . . reduced 80%.

High Efficiency . . . up to 30% better.

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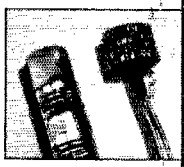

5/16 Dia. x 1/4, 1/20 Oz.

To fully appreciate DO-T transistor transformers, the curves indicate their performance compared to that similar size units now on the market. DI-T transformers are still smaller in size. Power rating and oth characteristics are identical to DO-T, but low frequency response (3 db down point) is 30% higher in frequenc Units can be used for different impedances than those shown, keeping in mind that impedance ratio is constar Lower source impedance will improve response and level ratings . . . higher source will reduce them. Units m be used reversed, input to secondary.

DO-T No.	MIL Type	Application	Pri. Imp.	D.C. Ma.‡ in Pri.	Sec. Imp.	Pri. Res.	Level Mw.	DI-T No.
DO-T1	TF4RX13YY	Interstage	20,000 30,000	.5 .5	800 1200	850	50	
DO-T2	TF4RX17YY	Output	500 600	3 3	50 60	60	100	DI-T2
DO-T3	TF4RX13YY	Output	1000 1200	3 3	50 60	115	100	DI-T3
DO-T4	TF4RX17YY	Output	600	3	3.2	60	100	
DO-T5	TF4RX13YY	Output	1200	2	3.2	115	100	
DO-T6	TF4RX13YY	Output	10,000	1	3.2	1000	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 (DI-T8 is 2.5 Hy @ 2 Ma.)				630		DI-T8
DO-T9	TF4RX13YY	Output or driver	10,000 12,500	1 1	500 CT 600 CT	800	100	DI-T9
DO-T10	TF4RX13YY	Driver	10,000 12,500	1 1	1200 CT 1500 CT	800	100	DI-T10
DO-T11	TF4RX13YY	Driver	10,000 12,000	1 1	2000 CT 2500 CT	800	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	500	DI-T19
DO-T20	TF4RX17YY	Output or matching to line	500 CT	5.5	600	31	500	DI-T20
DO-T21	TF4RX17YY	Output to line	900 CT	4	600	53	500	
DO-T22	TF4RX13YY	Output to line	1500 CT	3	600	86	500	DI-T22
DO-T23	TF4RX13YY	Interstage	20,000 CT 30,000 CT	.5 .5	800 CT 1200 CT	850	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	100	
DO-T26	TF4RX20YY	Reactor 6 Hy. @ 2 Ma. DC, 1.5 Hy. @ 5 Ma. DC				2100		
DO-T27	TF4RX20YY	Reactor 1.25 Hy. @ 2 Ma. DC, .5 Hy. @ 11 Ma. DC				100		
DO-TSH	Drawn Hipermalloy shield and cover for DO-T's, provides 25 to 30 db shielding.							

‡DCMA shown is for single ended useage (under 5% distortion—100MW—1KC) . . . for push pull, DCMA can be any balanced value taken by .5W transistors (under 5% distortion—500MW—1KC)

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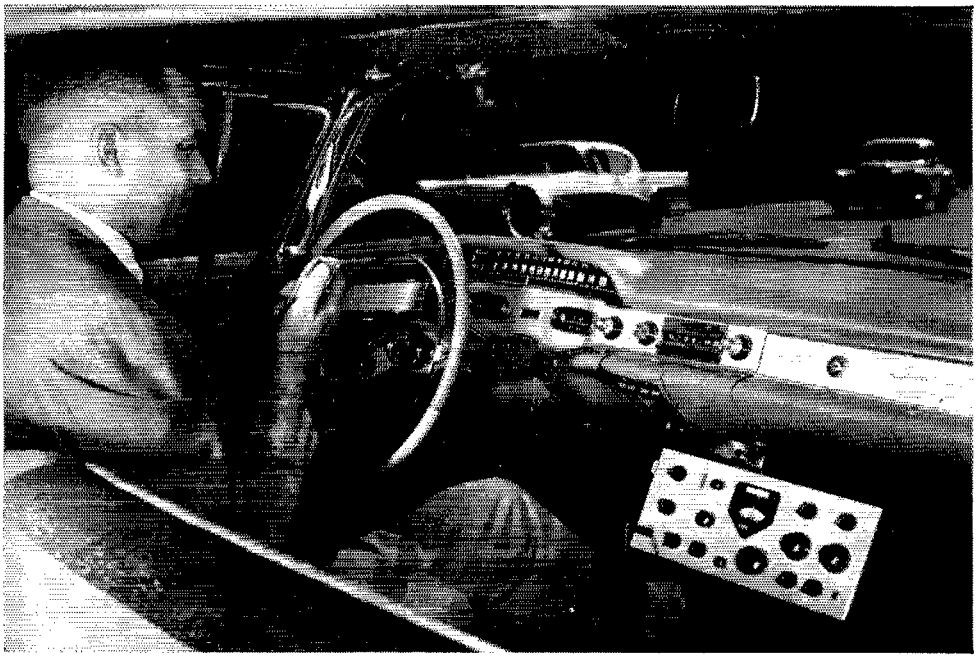

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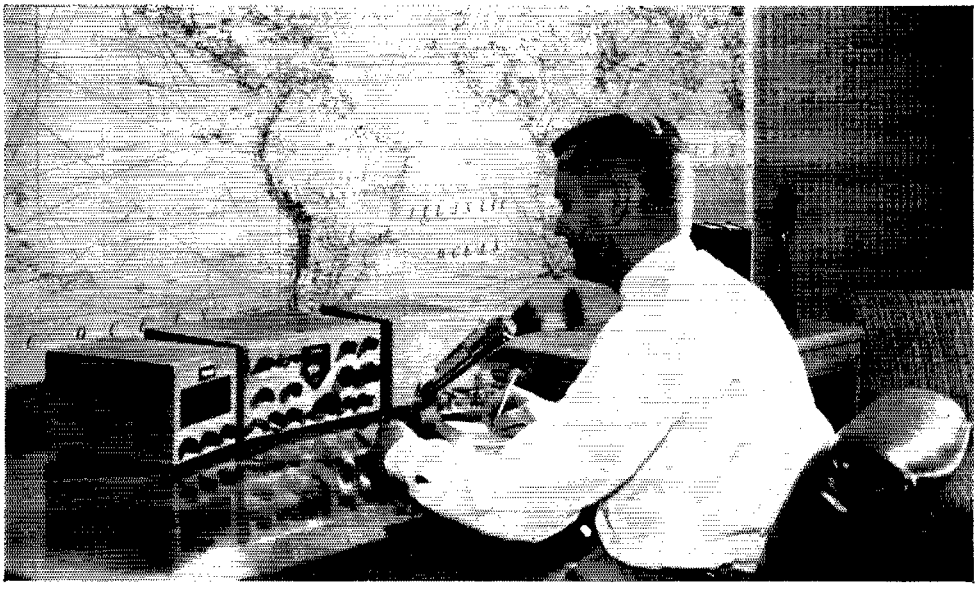

OR 'CASTLE'
WITH A **KWM-1**

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JULY 1958

VOLUME XLII • NUMBER 7

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

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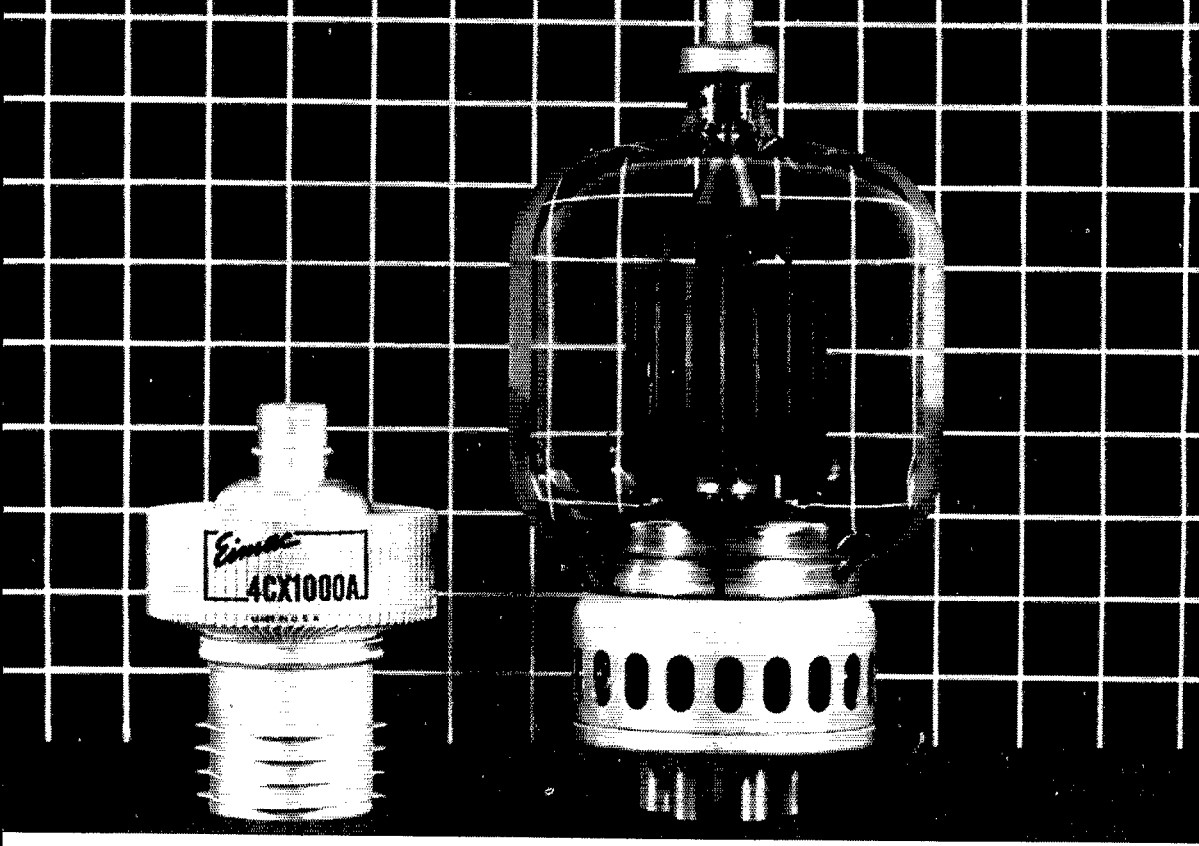

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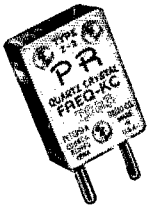

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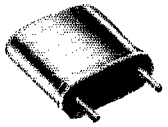

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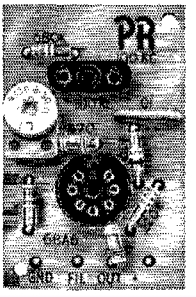

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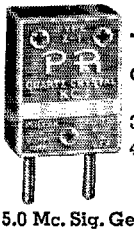

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Alberta	VE6VM	Gordon W. Hollingshead	108 Hudson Rd.	Calgary, Alta.
British Columbia	VE7JT	Peter M. McIntyre	981 West 26th Ave.	Vancouver, B. C.
Yukon	———	———	———	———
Manitoba	VE4IF	James A. Elliott	190 Oakdean Blvd.	St. James, Winnipeg 12
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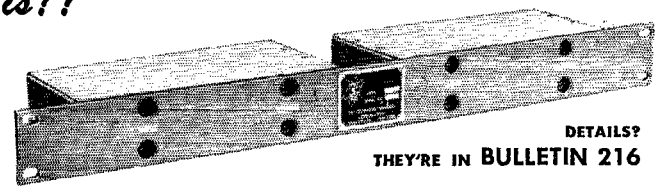
*Official appointed to act temporarily in the absence of a regular official.

Vacation Time is here!

Since we're closed from the 3rd to the 21st of July, why get into a technical hassle about a large and complicated piece of equipment. We'd rather talk about "Gimmicks".

Our **PVC** *that is!!*

Here's a gimmick that just lies there, so we call it a **PASSIVE COMPRESSOR** *(no tubes, hi)*



DETAILS?
THEY'RE IN BULLETIN 216

Here's how it works — just attach it to the output of a receiver and hit it with a 10 mw signal and out comes .62 volts — or, hit it with a 100 mw signal and out comes 1.07 volts... now comes a 1000 mw signal and out comes 0.9 volts. Neat, eh?

In other words you're receiving a weak signal and all of a sudden the 'bird' down the line opens up with his "two tons" — but does it bother you? No! The **PVC** *sits on him while you go on comfortably copying the weak one.*

The **PVC PASSIVE COMPRESSOR** *has a 65db dynamic range.*

Gimmick? What do you think?

The **TECHNICAL MATERIEL CORP.**
MAMARONECK, NEW YORK

THE AMERICAN RADIO RELAY LEAGUE, INC.,

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

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

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

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

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

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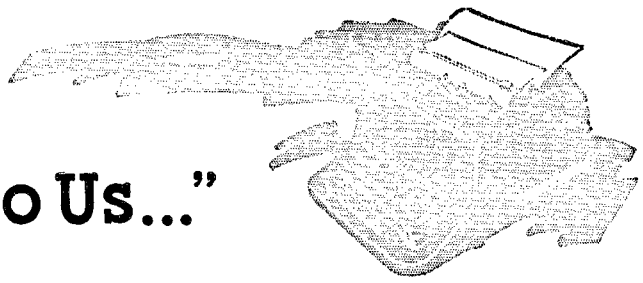
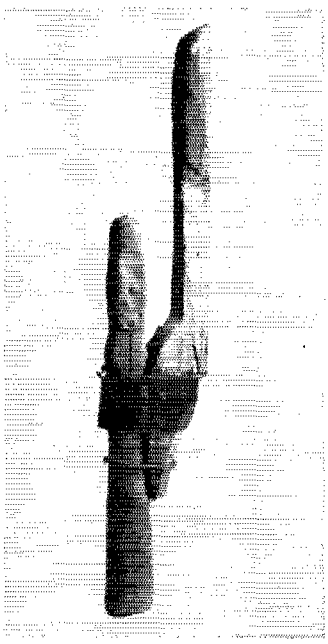


"It Seems to Us..."

THE WOUFF HONG

In an institution as old as amateur radio, traditions and symbols of the art appear and become a part of it. Our traditions are many, among them our long record of self-policing, our dedication to public service in emergencies, our amazing versatility in experimentation, our instant response to the call of our country in time of war. But of the symbols, only one — aside from the ARRL diamond — has become a part and parcel of the framework of amateur radio, the symbol of its finest traditions, its long and glorious history.

That symbol is the Wouff Hong.



Every ham should know its origin. It seems to us that it is time to retell the story of this famous and beloved part of the very fabric of amateur radio. Even though we told the whole story in exactly these words only three years ago, we find — in club meetings, at conventions, and in correspondence — that whenever the Wouff Hong is mentioned there is the inevitable question, "Say, just what does that mean and where did it come from?"

It started back in 1917, in the very earliest days of ARRL and *QST*, when an anonymous amateur, writing under the title "The Old Man," created a wonderful series of humorous stories in the magazine. In a pithy, irascible style he assailed all that struck him as criticizable about ham radio operation of the period in his famous "Rotten Radio" series beloved to this day by all who read them. He pitilessly exposed the poor operating practices of the day, yet did it in a way which drew chuckles even from those recognizing themselves as the special targets of his ire.

In one of those stories, "Rotten QRM," he launched forth with examples of some of the poor sending cluttering up the band in a particular QSO to which he was listening. The gibberish included the words "wouff hong" which, apparently, was being used by someone on somebody else.

It turned out to be one of those priceless pieces of spontaneous word invention. Instantly, it caught on with the gang. Although T.O.M. himself admitted at the time he didn't know exactly what a wouff hong was, it quickly became something with which both to attack bad operating practices and to discipline their perpetrators. Within three months, the editor of *QST* found it necessary to write an editorial on the growing demand from the gang for wouff hongs. How rapidly this situation might have developed had not World War I intervened is a matter of speculation. But the tradition had been established, the Wouff Hong created in the minds of thousands of amateurs as some mythical instrument of torture to be used in enforcing good operating practice in amateur radio.

When *QST* resumed after the war, one of its first contributors was T.O.M. In an early 1919 issue he contributed an article "Rotten Starting" to work off steam on the slowness with which our government was getting around to let us operate again. At the conclusion of this article appeared the following: "In the meantime . . . I am sending you a specimen of a real live wouff hong which came to light out here when we started to get our junk out of cold storage. Keep it in the Editorial sanctum where you can lay hands on it quickly in an emergency. We will be allowed to transmit soon and then you will need it."

The object was duly received at Hq. The Editor, fully mindful of the historic significance

of the occasion, took the instrument to one of the first Board meetings in New York, May 3, 1919, subsequently duly reporting in *QST* that "each face noticeably blanched when the awful Wouff Hong was . . . laid on the table." By an action still a part of the League's official records, that Board voted that the Wouff Hong be framed and hung in the office of the Secretary of the League. There it remains to this day.

We know the significance of the Wouff Hong. We don't know the significance of its weird shape. Not even the beloved T.O.M. (revealed, after his death, as none other than our first president, Hiram Percy Maxim) ever explained that. Nor was the precise manner of its use ever prescribed, although it perhaps may be guessed with a little imagination. But as the years passed, it continued to grow in the affections of amateurs the country over, old-timer and youngster alike. It became the inspiration of the Royal Order of the Wouff Hong, the amateur secret society of ARRL conventions. Today, it is thoroughly entrenched in the lore of amateur radio as its most sacred symbol.

The Wouff Hong! — see it when you next visit ARRL Hq.

(*See page 70*)

A.R.R.L. CONVENTIONS

ALASKAN TERRITORY

Anchorage, Alaska—July 18–20

The ARRL Alaskan Territory Convention, July 18–20, will be sponsored by the Anchorage Amateur Radio Club. Before July 1, registrations for adults will be $9; children under 12, $4.50; thereafter, $10 for adults, and $5 for children. This includes the activities for the three-day affair, except the Sunday morning YL and OM separate breakfasts, which are "Dutch." Activities will include the regular club meeting and the program on Friday, and picnic, transmitter hunt, YL contest and activities, contests of all types for hams, and smorgasbord on Saturday. Sunday, there will be a breakfast, mobile-judging and other contests, and the banquet. Send your registrations to: Pat Croff, KL7CCP, 2510 Northrup Street, Anchorage, Alaska.

WEST GULF DIVISION

Oklahoma City, Oklahoma—July 25–27

Oklahoma City proudly extends its invitation to all amateurs to attend the 28th Annual West Gulf Division Convention. All activities will be in the air-conditioned Biltmore Hotel, starting Friday night, July 25, with a pre-convention party, and continuing through Saturday and Sunday. League officials, top-flight technical speakers, Air Force and Army MARS, and NCR representatives add to the attractive program. Hidden-transmitter hunts on the 3.8-, 29-, and 50-Mc. bands will test your skill.

Ticket cost of $9.50 includes admission to all sessions, Saturday banquet, Saturday night dance, ROWH initiation, and Sunday banquet. Advance registration closes July 7. Pre-convention party ticket, at $2.50, includes dinner and dance. Write ACARC Convention Committee, Box 5-W, Oklahoma City 12, Okla., for tickets. Requests for hotel reservations, at special reduced rates, will be forwarded to the Biltmore Hotel.

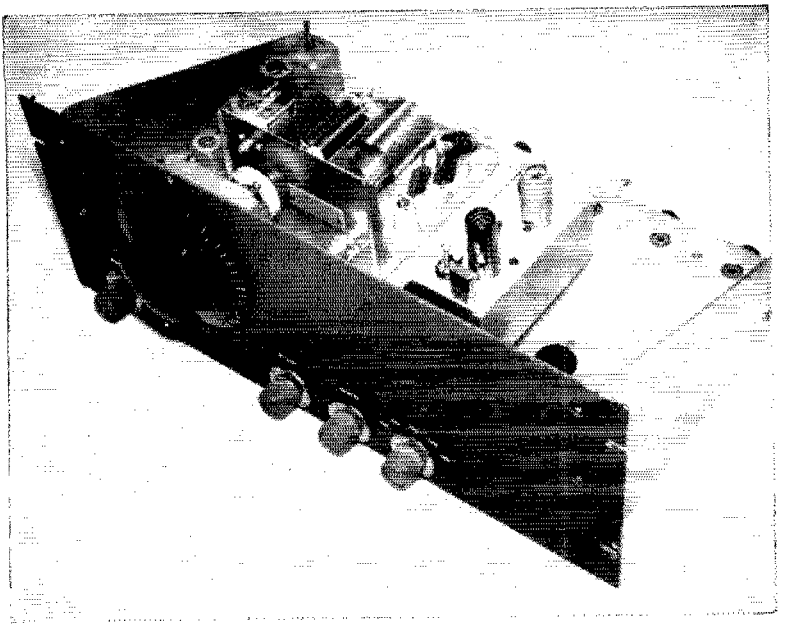
Sponsored by the Aeronautical Center Amateur Radio Club, Inc., this is the first divisional convention to be held in Oklahoma since 1946 . . . and it promises to be one that will amply make up for the lost time!

COMING A.R.R.L. CONVENTIONS

July 18–20 — Alaska Territory Convention, Anchorage
July 26–27 — West Gulf Division, Oklahoma City, Oklahoma
August 15–17 — ARRL National Convention, Washington, D. C.
September 20–21 — Dakota Division, Sioux Falls, S. D.
September 28 — New England Division, Providence, R. I.
October 4–5 — Midwest Division, Des Moines, Iowa
October 10–12 — Southwestern Division, San Diego, Calif.
October 11 — Hudson Division, Albany, N. Y.
October 18 — Ontario Province, Hamilton, Ontario

Strays

FLASH! Boyd Phelps, WØBP, is now holder of the first Worked All States award to be achieved exclusively by radioprinter operation. Getting the RTTY WAS No. 1 is more than making those 48 states; it also involves getting 100% QSLs with each one reporting "your RTTY signals worked!" His 48th state was Delaware (W3TCQ) worked April 21. His WAS confirmations were checked and certification issued May 2, 1958. "Beep" holds a number of other "firsts" and we'll try to give you more on his station and accomplishments another month. Not one to rest long on given laurels Beep remarks that he has worked 13 countries and "only need 87 more" for DXCC-RTTY!



An 80-meter tuner with a 40-meter crystal-controlled converter in place. The shield box has been removed from the oscillator section.

The tuner described here covers only one range, 3500 to 4000 kc., and gives output on 2.215 Mc. Working into a receiver or i.f. at 2.2 Mc., it can be used to cover the 80-meter band; in conjunction with crystal-controlled converters it will cover other bands with a good tuning rate and excellent stability. Read on and see what a good case W6STA presents for the gadget.

An 80-Meter Tuner

Basic Tuning Element for a Receiving Station

BY WILLIAM S. BARNARD,* W6STA

"Who in the world would want to build a tuner?" I can hear the question from here to VQ8. Don't be surprised, however, if the answer is "You." Despite the number of excellent commercially-built receivers on the market, a simple tuner still has its place.

For the fellow using an inexpensive or war-surplus general-coverage receiver with limited band spread, this tuner stretches each amateur band out to almost twelve feet! The selectivity, of course, is only as good as that of the receiver following the tuner. Any time later, if selectivity improvement is desired, an excellent 2215-kc. filter unit, available from Hycon Eastern, can be used to provide outstanding performance. An amplifier using this filter has been described in *QST*.[1]

For the s.s.b. gang and others troubled with drift, especially at the higher frequencies, this tuner will give crystal-like stability. This is accomplished by putting the high-frequency oscillator, using the familiar Clapp circuit, in the broadcast band. It will hold zero beat with a broadcast station for hours.

Another advantage of a home-brew tuner is that the frequency range is determined by the builder. This basic unit covers 3500 to 4000 kc. For the Novice using 80 c.w., or the OT working only 75 and 80, this is all the range required. Why pay for frequency coverage never used? If it is desired to add other bands, a crystal-controlled converter is simply plugged into the tuner, and the resultant stability, selectivity and tuning rate equal the performance of the tuner alone. Inexpensive converters of this type have appeared in the *Handbook* and *QST*.[2, 3] With a flexible arrangement like this a Novice, for

*3959 Madison Road, Pasadena 3, Calif.

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

[2] Deane, "Simple Crystal-Controlled Converters," *QST*, December, 1954.

[3] Campbell and Goodman, "Converters for 7, 14, 21 and 28 Mc.," *QST*, February, 1956.

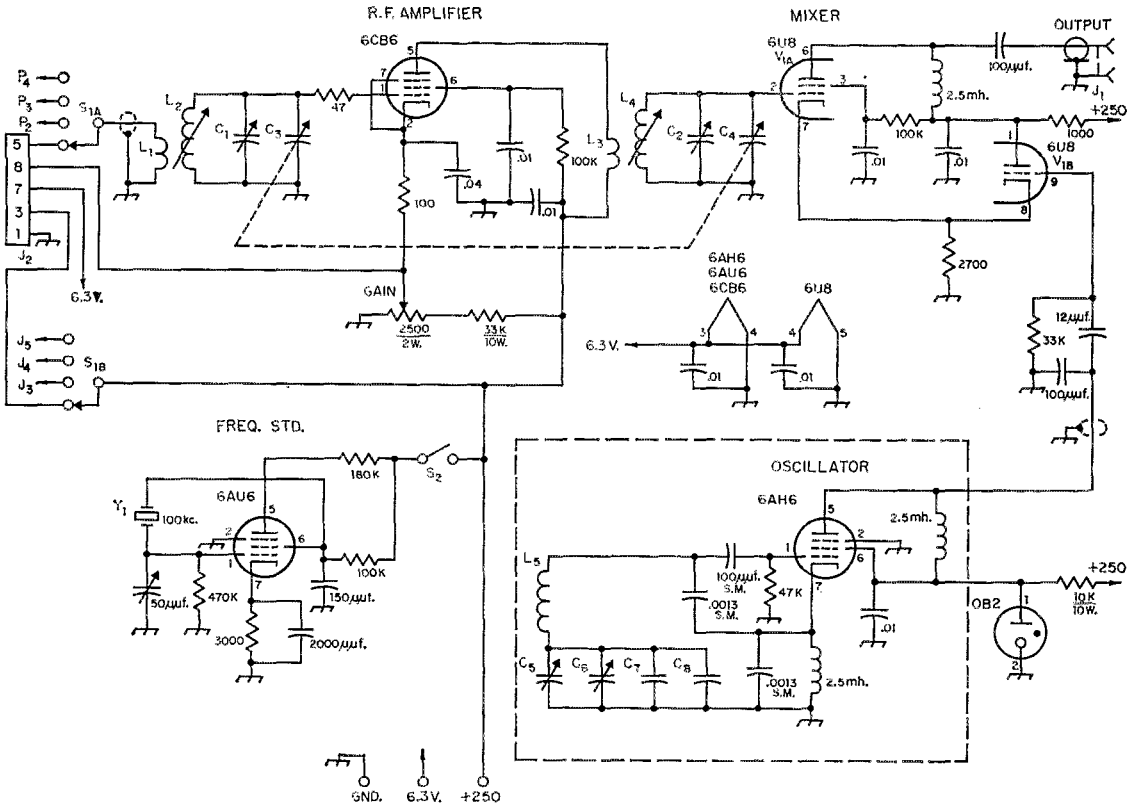


Fig. 1—Circuit diagram of the 80-meter tuner. Unless otherwise indicated, capacitances are in μf., resistances are in ohms, resistors are ½ watt.

C_1, C_2, C_6—100-μμf. midget (Hammarlund APC-100).
C_3, C_4—50-μμf. variable (Hammarlund MC-50-M).
C_5—325-μμf. variable (Hammarlund MC-325-M).
C_7—75 μμf., NPO ceramic.
C_8—25 μμf., NPO ceramic.

Capacitors in decimal values are 400-volt tubular. Fixed capacitors marked "SM" are silver mica types; others marked in μμf. and not otherwise specified are CRL Type MD disks.

L_1, L_3—11 turns No. 22 enam., close-wound over ground end of associated coil.
L_2, L_4—34 turns No. 22 enam., close-wound on slug-tuned ½-inch diam. form (Millen 69046).
L_5—53 turns No. 24, 32 t.p.i., 1½-inch diam. (B & W JEL-160 modified).
S_1—Two-pole 5-position rotary switch (CRL PA-2003).
S_2—S.p.s.t. rotary (CRL 1460).
Y_1—100-kc. crystal (Bliley KV-3).

example, could operate the tuner on 80 meters until he acquired the 17,500-kc. crystal and handful of parts needed to build the 15-meter converter. In this manner an all-band tuner can be assembled as time and finances permit.

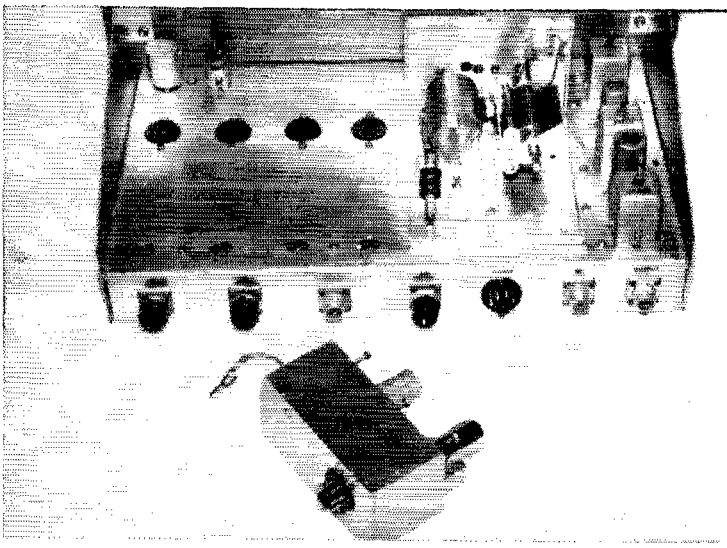
The Circuit

The schematic diagram is shown in Fig. 1. To simplify the circuit, only the 40-meter converter socket, J_2, is shown. J_3, J_4, J_5 and J_6 are wired in parallel with the exception of Pins 3 and 5. Pin 3 on each socket goes to S_{1B} and puts B+ on the converter in use. Pin 5 on each converter socket connects to S_{1A} via a short length of RG-59/U and picks up the converter output.

The r.f. stage uses a 6AK5 or 6CB6. The r.f. and mixer coils, L_1 through L_4, are wound on ½-inch diameter slug-tuned forms. The coils shown were stripped from a surplus ASB5 receiver, but equivalent forms such as the Millen 69046 should work as well. The mixer is the pentode section of a 6U8, with the triode portion serving as a cathode follower from the oscillator. This circuit eliminates pulling and variation in mixer output with changes in the injection voltage. The cathode follower is coupled to the oscillator through a shielded wire and a capacitance voltage divider. The 2215-kc. output appears at J_1. Originally an output tuned circuit at 2215 kc. was used, but the 2.5-mh. choke has been found to work as well.

Construction

The high-frequency oscillator circuitry is enclosed in a 4 × 5 × 6-inch box. The tube socket is mounted on the front panel of the box, placing the tube outside. The oscillator grid coil is made from a B & W JEL 160 with the link and plug base removed. The coil is mounted on short ceramic posts near the center of the box. The



A rear view of the tuner with the converter unplugged. Note the 100-kc. oscillator at the left. The shield can at the right foreground originally housed an output circuit that is no longer used. The antenna lead hanging from the converter plugs into an antenna jack on the chassis.

tuning capacitor, C_5, is mounted on an aluminum bracket with the normal shaft facing the rear. This was done so that the low-frequency end of the tuning range occurs with the National NPW-0 dial at zero. The dial indication plus the low-frequency end of the band in use will then give the approximate frequency being monitored.

The sequence of assembly is not important, but it's fun to test the units as you go. I suggest that the 100-kc. oscillator be wired first. This will later serve as an alignment generator and will greatly simplify this often-feared operation. Next, the dial drive and the oscillator box, with C_6 and the 6AH6 socket in place, are mounted. Then wire the oscillator section and mount and wire the OB2 regulator. Connect heater and B+ voltages. The regulator should light, and if everything is right the oscillator should be heard in a broadcast set or frequency meter.

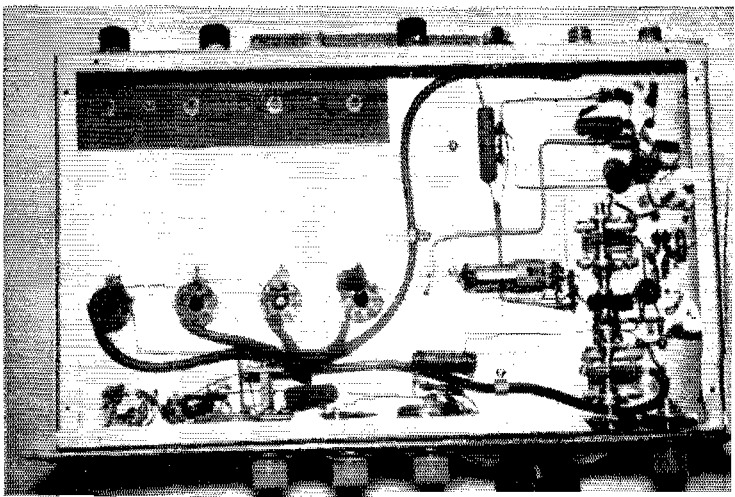
The range of tuning may now be set. With C_5 open, C_6 is adjusted to bring the oscillator to 1785 kc. With C_5 closed, the oscillator should be near 1285 kc. If not, break a turn loose on L_5 and adjust it until the range 1285 kc. to 1785 kc. is covered. If 1285 kc. occurs near 10 on the dial and 1785 near 490, a few kc. on each end of the dial can be covered for the rare DX that sometimes drifts out. If your monitoring receiver won't tune to 1785 kc., listen to the second harmonic on 3570 kc.

The r.f. and mixer stages are wired next. To preserve panel symmetry, the trimmer capacitor control was offset by the use of two small gears (Boston Gear Works type G-146). The shaft could, of course, come straight through if desired.

To align these stages, couple the output of the tuner from J_1 to a receiver tuned to 2215 kc. Turn on the 100-kc. oscillator. A signal from the 100-kc. oscillator should be heard near 10 and 490 on the dial as well as at four places in between. With the dial at 490 and C_3C_4 nearly open, peak C_1 and C_2 for maximum signal. With the dial at 10 and C_3C_4 nearly closed, adjust the slugs in L_2 and L_4 for maximum signal. This should be all that is required, as small tracking errors can be compensated for with the trimmer C_3C_4. In most operation they can be set for a 200-kc. range and then forgotten.

It has been found that best weak-signal operation is obtained by running the r.f. stage without a.v.c. voltage, and so none is provided. The i.f. amplifier used will usually have a.v.c. if automatic control is desired. If the kilowatt in the next block comes on, the gain can be pulled down by a judicious setting of the gain control.

As with any receiver, results to be obtained with this tuner depend to a great extent on the antenna. With a good wire in the air this unit has been used on 20- and 15-meter s.s.b. with the 1.5- to 3.0-Mc. Command receiver and the BC-348 with excellent results. No "birdies" appear in the tuning range, and the tuner has been completely free of any instability.



This bottom view of the tuner shows the r.f. and mixer tuning (right). The coaxial line leading to the switch pipes the various inputs to the tuner. Masonite (upper left) was used to insulate the antenna jacks for the converters.

A Receiver for the 50-Mc. Man

High Performance, With Simplicity, Through the Use of a High-Frequency Crystal-Lattice Filter

BY R. W. BRANDT,* W9LIJ

SINCE THE Technician Class license was made usable on 50 Mc. the population of that band has increased many fold. Not a few of the new 6-meter men are interested in that band only. For them, the purchase of a good communications receiver that works on lower frequencies, to be used merely as an i.f. system for a 6-meter converter, is a needless and considerable expense. Even the fellow who works on 6 in conjunction with other frequencies may find a receiver such as the one to be described a convenient way of monitoring the band without disturbing the lower-frequency receiving setup.

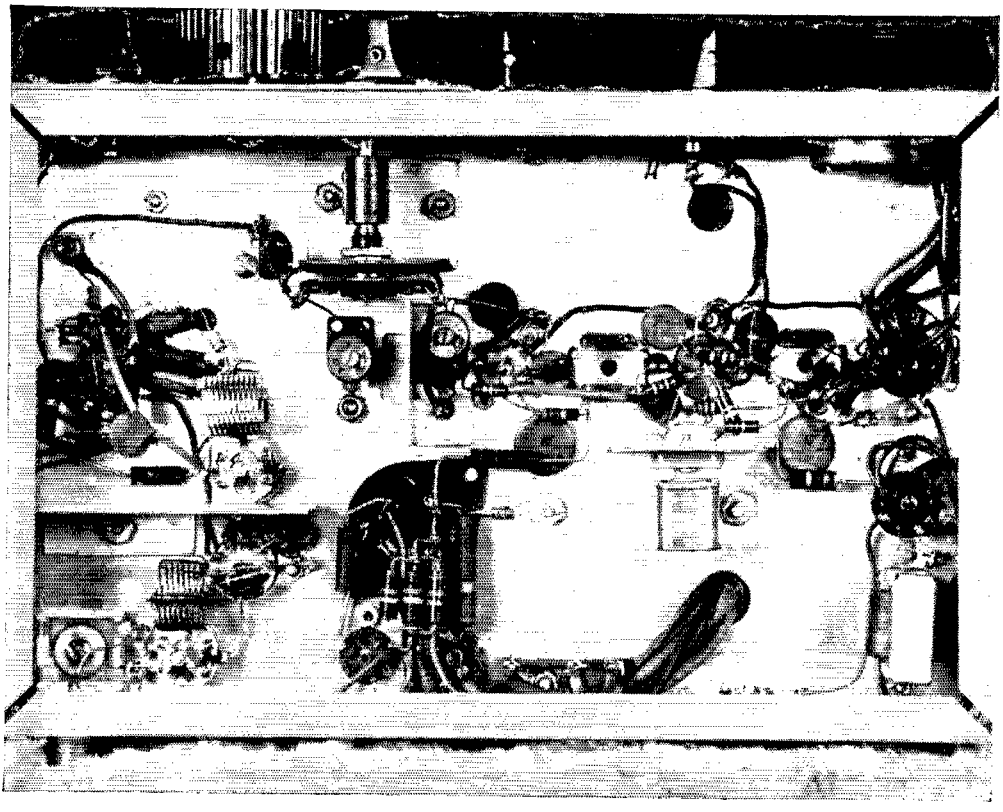
Complete receivers that would do the 6-meter job effectively have been rather complex articles in the past. They had to employ double conversion, in order to provide both the selectivity and image rejection that are required for effective reception at 50 Mc. and higher. The simplicity of the receiver shown here is made possible through the use of a crystal-lattice filter recently announced by the Blackhawk Engineering Company, Janesville, Wis. The filter operates at a center frequency of 9 Mc. and has a 4-kc. passband.

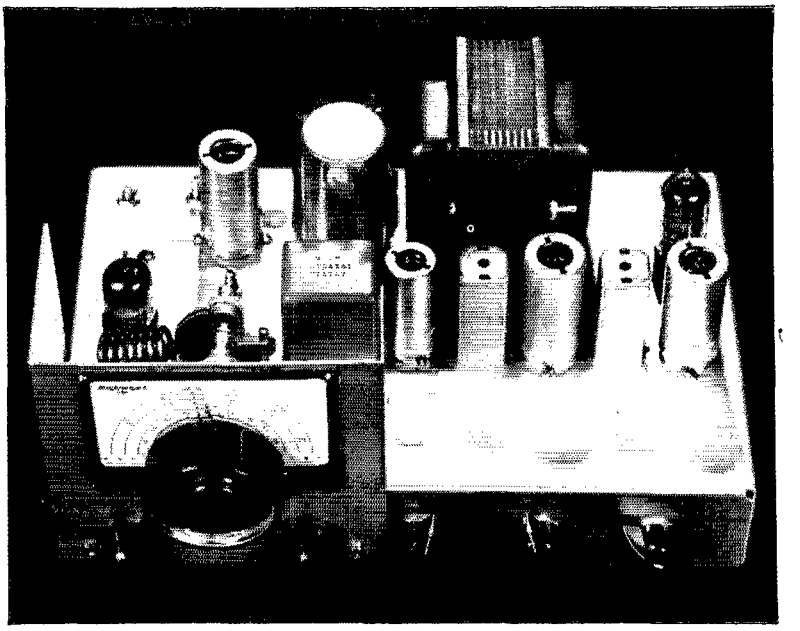
* 1912 Woodruff Blvd., Janesville, Wisconsin.

Single Conversion Problems and Possibilities

An outstanding advantage in the crystal-lattice filter for use with a high-frequency i.f. system is that the selectivity is obtained as far forward in the receiver as possible; in other words right after the mixer, where the over-all

Bottom view of the 50-Mc. receiver. R.f. and mixer components are at the left. Note that crystal filter switching (just left of the middle of the photograph) is isolated from the rest of the receiver. I.f. amplifier and audio circuits are at the upper right. Small crystal is for the beat oscillator.





High-performance 50-Mc. receiver described by W9LIJ. Simplicity results from use of a packaged crystal-lattice filter in the i.f. system

gain is still fairly low. This is a considerable factor in the immunity of the receiver to overloading and cross-modulation troubles so often encountered in double- and triple-conversion receiving setups for v.h.f. use. It is also helpful in reducing the harmful effects of ignition or other impulse noise. Such noise that is outside the 4-kc. passband of the filter cannot overload the i.f. stages. Once overloading or cross-modulation has taken place, selectivity in later stages of the receiver cannot eliminate or reduce it.

To make full use of the potential of the single-conversion receiver with a crystal-lattice filter, certain factors must be taken into account. The gain distribution of the receiver must be such that the front end noise figure is good, but the gain here must not be excessive. The r.f. amplifier must be of fairly low-noise design, so that the noise from the antenna will mask the noise generated in the receiver itself. The i.f. amplifier gain must also be adequate, though not excessive.

When a band width as narrow as 4 kc. is used in a receiver having a tunable oscillator, mechanical and electrical stability in that oscillator are mandatory. The rank of importance given to "mechanical" is neither alphabetical nor accidental. The many articles that have appeared in *QST* in recent years, treating the general subject of v.f.o. stability, provided the writer with useful ideas and the necessary courage to tackle the problem of building a tunable oscillator for a 50-Mc. receiver. The end result was a tuning system having noticeably better stability than some of the signals it is called upon to handle. Some of the more energetic oscillators used in v.h.f. transmitters produce enough crystal heating to show a small but rapid drift at the beginning of each transmission.

Oscillator Details

Stability and smooth tuning begin with the oscillator tuning capacitor. This is one component that should not be scrounged from the junk box. The one selected has two bearings and must be freed up sufficiently so that very little friction remains. Excessive drag will produce an aggravating whiplash effect between the dial and the tuning capacitor, making the tuning process a succession of approximations, when appreciable selectivity is used.

Have faith: this can be licked. The tuning capacitor was lubricated with graphite, and then run in by chucking its shaft in an electric drill and running it until a smooth free "feel" was obtained. The mounting feet of the capacitor frame are helpful in grounding the rotor, but are about as firm a foundation as roller skates. An L bracket from the shaft bushing to the chassis should be used to drain off the remaining torque at the front bearing to the chassis. Alignment of the dial mechanism and the capacitor shaft should be as good as possible, so that the flexible coupling that is part of the dial assembly has little to do. Swallow your pride and elongate a mounting hole or two, if necessary, to accomplish this. The wrap-around panel for mounting the dial provides sufficient rigidity to permit handling the receiver without detuning.

The oscillator uses the familiar high-C circuit in the triode portion of a 6CG8. This triode has very high transconductance, permitting rather large swamping capacitors to be used. The oscillator coil is of high-Q design, and is supported between the front left stator lug and a small ceramic feed-through bushing, which connects to the oscillator plate terminal beneath the chassis. Frequency modulation of the oscillator, pro-

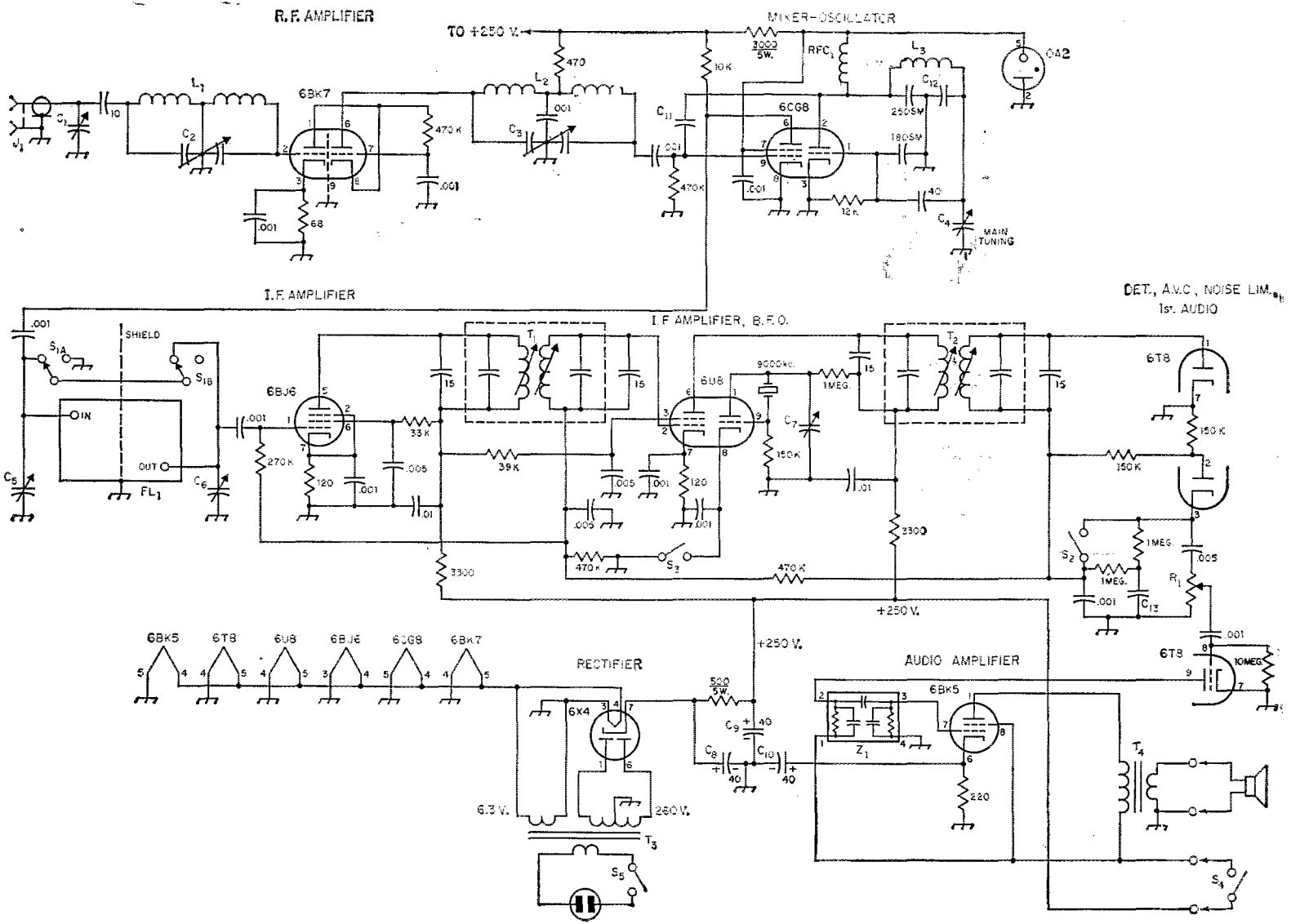

R.F. AMPLIFIER
MIXER-OSCILLATOR
TO +250 V.
6BK7
6CG8
6Q8
I.F. AMPLIFIER
I.F. AMPLIFIER, B.F.O.
DET., A.V.C., NOISE LIM., 1st AUDIO
6BJ6
6T8
SHIELD
IN
OUT
FL1
RECTIFIER
6X4
+250 V.
AUDIO AMPLIFIER
6BK5
6T8
6U8
6BJ6
6CG8
6BK7
6.3 V.
260 V.
MAIN TUNING

Fig. 1—Wiring diagram and parts information for the 50-Mc. receiver. Resistors ½ watt unless specified. Capacitors below 0.001 are in $\mu\mu$f.; ceramic unless specified. Those marked with polarity are electrolytic. SM indicates silver-mica.

C_1—10–130-$\mu\mu$f. mica trimmer (Elmenco 302).

C_2, C_3—8-$\mu\mu$f.-per-section butterfly variable (Johnson 160–208).

C_4—15-$\mu\mu$f. variable, dual-bearing type (Bud MC-1850).

C_5, C_6—3–12-$\mu\mu$f. ceramic trimmer.

C_7—7–35-$\mu\mu$f. ceramic trimmer.

C_8, C_9, C_{10}—3-section electrolytic, 40-μfd.-per-section, 450, 450 and 25 volts, respectively (Cornell Dubilier UPT-4445C4).

C_{11}, C_{12}—2-$\mu\mu$f. ceramic.

C_{13}—0.1 μf. 200-volt paper.

J_1—Coaxial chassis fitting.

L_1—9 turns No. 20 tinned, ⅝-inch diam., 5/16 inch long, tapped at 4 turns from antenna end (B & W No. 3007).

L_2—10 turns like L_1, but center tapped.

L_3—7 turns No. 8 bare copper, ½-inch diam., 1¼ inches long.

R_1—1-meg. potentiometer, audio taper.

RFC_1—7-μh. solenoid choke (Ohmite Z-50).

S_1—2-pole, 2-position shorting switch (Centralab 1462).

S_2, S_3, S_4, S_5—1-pole, 2-position shorting switch (Centralab 1460).

T_1, T_2—10.7-Mc. interstage transformer (Miller 1463).

T_3—Power transformer, 520 volts c.t., 90 ma.; 6.3 v., 4.7 amp. (Merit P-3148).

T_4—Pentode output transformer (Merit A-3026).

FL_1—Crystal filter, 9-Mc. center frequency, 4-kc. band width (Blackhawk Eng. Co., Box 146, Janesville, Wis.).

Z_1—Printed-circuit audio interstage coupler (Erie 1406-01).

«

duced by the springiness of the coil, was eliminated by forming a stripe of coil dope along the coil in a manner similar to the mounting strip in commercially made coils. This treatment should not be done until the desired tuning range is obtained, so the constructor will have an opportunity to observe the effect.

The 180- and 250-$\mu\mu$f. swamping capacitors should be mounted with no more than about ⅛-inch leads from Pins 1 and 2 to ground, the latter being a grounding lug under the rear mounting screw of the tuning capacitor. The 40-$\mu\mu$f. capacitor mounts parallel to them, feeding through a quarter-inch hole to the rear lug of the tuning capacitor. These three mica capacitors are "glued" to the chassis with coil dope, to forestall vibration troubles. The small 2-$\mu\mu$f. ceramic capacitor, C_{12}, can be seen in the bottom view, providing lateral support for the 40-$\mu\mu$f. one where its lead passes through the chassis hole.

The R.F. Amplifier

The r.f. amplifier circuit is a modification of the double-tuned cascode arrangement described in *G.E. Ham News* for September, 1955. The neutralizing coil was omitted and an interstage shield was provided. Both the antenna and mixer grid coils act in double-tuned fashion. Rejection at the intermediate frequency is 60 db., and images (at 32 to 36 Mc.) are down about 45 db. Single-tuned circuits tried in place of L_1 and L_2 resulted in inadequate rejection at both the i.f. and image frequencies.

The stage was first assembled without the shield. Careful orientation of the coils permitted operation without oscillation, but regeneration must have been present, for the band width was narrowed. Addition of the shield gave a margin of safety and permitted normal alignment of the 6BK7 stage. Tuning may be staggered for uniform response across the band, or peaked to favor one megacycle or more of the band.

Mixer and I.F. Amplifier

Special attention is required at the i.f. input to insure proper selection of band width by the switch, S_1. The filter input and output are at a high impedance level, so shielding is provided between them. Otherwise, in the narrow-band position some of the signal might leak around the filter, rather than going through it.

In the bottom view, upper left, the mixer plate lead can be seen passing around the feed-through bushing to the band-width switch. This circuitous route avoids coupling to the mixer input. The lead is dressed flat against the chassis. The small capacitor, C_{11}, used for injection coupling, can be seen connected to the feed-through bushing. Its other end ties to the mixer resistor and the coupling capacitor from the r.f. plate circuit.

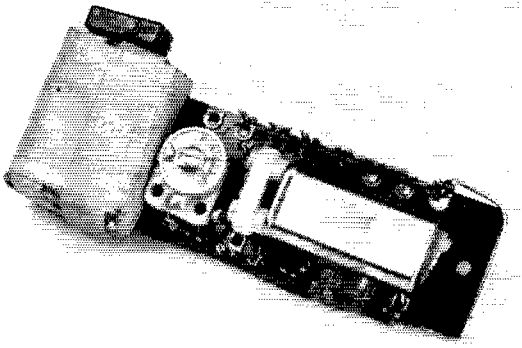
In the wide-band position, when the filter is disabled, the input and output are connected together via the transfer bus between the two switch sections. In the narrow position both input and output are disconnected from the bus, and it is grounded. This is readily accomplished with the switch called for in the parts list. This is another part where the temptation to make substitutions should be resisted.

With the physical arrangement shown, the mounting bracket for the band-width switch is part of the shielding. There is also a baffle plate shown straddling the filter. The ceramic trimmers, C_5 and C_6, adjust the circuit capacitances to the value specified for proper filter performance. They are adjusted for maximum antenna noise, once the receiver has been roughly aligned. Their adjustment is not critical in the wide-band position. Eventually the i.f. transformer slugs may be peaked at the filter frequency.

The interstage transformers for the i.f. amplifier were originally designed for use at 10.7 Mc. They are padded down to 9 Mc. with 15 μf. across both windings. The over-all band width in the broad position is about 50 kc. This is useful for local net operation, and for casual monitoring of the band. Some i.f. transformers may have sufficient tuning range to hit 9 Mc. without additional capacitance across their windings. The tuning slugs are fully in at this point, however, resulting in excessive coupling and unsatisfactory band-width characteristics.

The beat oscillator in the receiver serves two purposes. First is the obvious one of permitting c.w. reception and aiding in spotting weak sig-

(Continued on page 136)



50-Kc. Transistor-Multivibrator Frequency Standard

BY ROBERT E. BERGE,* W9KRU

THE RECEIVER calibrator described in this article is capable of producing signals at 50-kc. intervals up to 30 Mc. with at least S7 strength at the latter frequency. Most of the circuit components may be found in the average ham's stock of parts. The transistors specified, chosen because of their 30-volt d.c. rating, are readily available at a reasonable price. The power supply may be two standard 6-volt dry batteries in series or, since the current drain is only approximately 3 ma., a 45-volt battery may be split into four sections, each good for several months' operation. The crystal is a standard NT plate designed for 32-$\mu\mu$f. operation at room temperature. A crystal having 50,000 ohms or less resistance is satisfactory.

A convenient method of mounting parts is shown in the photograph. The $\frac{1}{8}$-inch bakelite mounting board is $1\frac{1}{4}$ inches wide by $4\frac{1}{4}$ inches long and has seven solder terminals spaced along each edge. The parts layout is very similar to the circuit diagram except that the crystal is mounted so it lies flat above the other components. When the calibrator is complete the mounting board may be attached inside the receiver cabinet.

For initial testing a milliammeter, bypassed with a 25-μf. capacitor, should be connected in series with the battery. The battery should be disconnected immediately and the wiring rechecked if the current is more than 6 to 8 ma. The tank, L_1C_1, should be tuned for minimum current, which also should be the point of maximum r.f. output. The unit shown in the photograph uses a homemade universal-wound coil, which is probably not practical for the ordinary constructor. However, any combination of L_1 and C_1 that will tune to 50 kc. may be used; suggested values of standard components are given in the caption for Fig. 1. The circuit tuning may be adjusted by trying different combinations of parallel capacitors to give some range of adjustment around the approximate resonance value of 680 $\mu\mu$f.

When the unit is operating properly the current should be approximately 3 ma. with the crystal in the circuit and approximately 6 ma. with the crystal removed. The frequency may be zeroed with WWV at 5 Mc. by adjusting C_2.

The oscillator will operate at 100 kc. by changing C_1 to .0015 μf. and L_1 to 6 mh., and using any standard 100-kc. crystal (E, MT or NT plate).

*316 W. Fifth St., Sandwich, Ill.

An experimental 50-kc. oscillator built on a small terminal strip. Battery, at left, is hearing-aid type, taped to assembly. The crystal is mounted horizontally over most of the other components, including the transistors.

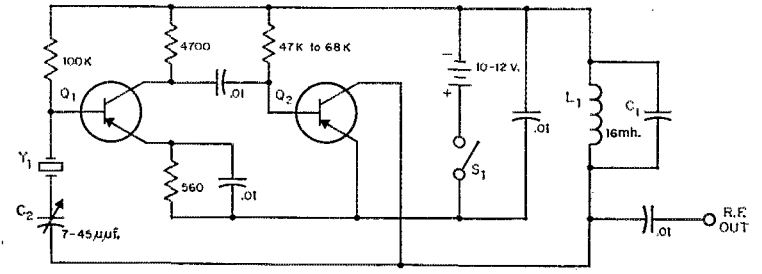


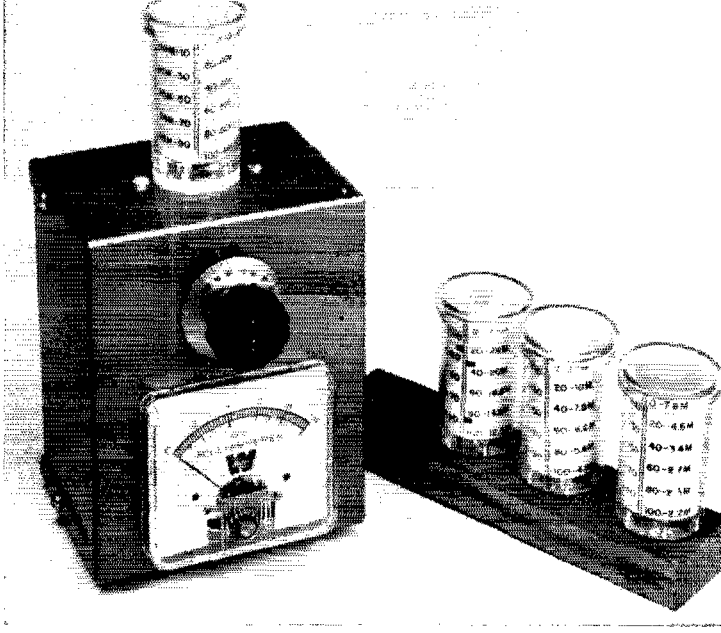
Fig. 1—Circuit of the 50-kc. calibrator. Capacitances are in μf. except where otherwise indicated; resistors are ½ watt; fixed capacitors are ceramic.

C_1—Mica, to tune with L_1 to 50 kc.; app. 680 $\mu\mu$f. with 16 mh. coil.
C_2—7-45-$\mu\mu$f. ceramic variable.
L_1—16-mh. r.f. choke or similar (Meissner 19-1995 suitable).
Q_1, Q_2—Texas Instrument type 301.
S_1—S.p.s.t. (microswitch used in unit shown in photograph).
Y_1—50-kc. crystal (Knights type H-17T).

Building a Simple Wavemeter

A Novice Band Checker

BY LEWIS G. McCOY,* W1ICP



The "Band Checker" is an absorption-type wavemeter with plug-in coils. Coils are mounted inside polystyrene forms, with calibration charts slipped between the coils and forms.

ONE instrument that the Novice or Technician should have in his station before he ever goes on the air is an absorption-type wavemeter. Before he transmits, the beginning amateur must learn how to tune up his transmitter. He must also be sure it is on the correct band; the wavemeter described in this article will give him that information and a little more.

What It Is

An absorption wavemeter consists of a coil-and-variable-capacitor circuit that can be tuned over a wide frequency range. When the wavemeter is brought near a circuit that has r.f. present, and the wavemeter is tuned to approximately the same frequency as the r.f., the unit "absorbs" some of the r.f. An indicator included in the wavemeter circuit furnishes the user with a visual indication that the wavemeter is properly tuned. If the wavemeter is calibrated one can quickly determine the approximate frequency of the r.f. The reason the term "approximate" is used is that the wavemeter is not selective enough to provide precise frequency measurements. However, it is accurate enough to show to what band a transmitter is tuned.

This is only one of the many things you can do with a wavemeter. There are other uses which make it a very worthwhile instrument in the ham shack. A common problem that Novices must deal with is harmonic radiation, particularly the second harmonic of 3.7 Mc. By coupling the wavemeter to the antenna feedline you can determine if any 7.4-Mc. energy is going to the antenna. Any indication of second harmonic, no matter how slight, is a tip-off that you should do something about it — and quick!

Another use of the wavemeter is as a field-strength meter for tuning up or adjusting a beam antenna. This is done by setting up a half-wave antenna several wavelengths from the beam and coupling this pickup antenna with a two- or three-turn link to the coil in the wavemeter. With the transmitter turned on, the wavemeter is tuned to the transmitter frequency, as shown by maximum indication. The beam can then be adjusted for maximum forward gain or, if the user prefers, maximum front-to-back ratio.

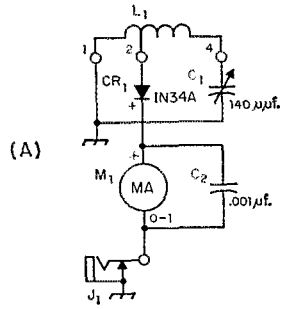
Because the wavemeter indicates the presence of r.f., it can also be used as an output indicator. For this purpose the wavemeter is loosely coupled to the antenna feedline and the transmitter is tuned for maximum output, as indicated by the wavemeter. If the indicator should go off scale reduce the wavemeter coupling to the feedline.

Speaking of transmitters, the wavemeter makes an excellent indicator to use when neutralizing an r.f. amplifier. Details on neutralization and an explanation of how to use the wavemeter for such a purpose are given in detail in the transmitting chapter of *The Radio Amateur's Handbook*.

In the wavemeter described in this article, a jack has been provided where headphones can be plugged in. This permits listening to the

* Technical Assistant, *QST*.

We won't try to do a snow job here and attempt to pass off the absorption-type wavemeter as a "new" device. Actually, it is one of the oldest, and most useful, station adjuncts in amateur radio. There's no reason for not having one in your station; you can't argue successfully that this gadget is too difficult or expensive or time-consuming to build.



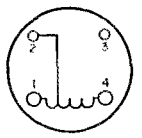


Fig. 1—(A) Circuit diagram of the Band Checker.
C_1—140-$\mu\mu$f. variable capacitor (Hammarlund APC-140-B).
C_2—0.001-μf. disk ceramic capacitor.
CR_1—1N34A germanium diode.
J_1—Closed-circuit phone jack.
L_1—2–8 Mc.—60 turns No. 24, 1-inch diam., 32 turns per inch. Tap 14 turns from ground end (B & W Miniductor 3016).
5–17 Mc.—16 turns No. 24, 1-inch diam., 32 turns per inch. Tap 4 turns from ground end (B & W Miniductor 3016).
12–47 Mc.—5 turns No. 20, 1-inch diam., 16 turns per inch. Tap 1½ turns from ground end (B & W Miniductor 3015).
47–200 Mc.—See text.
M_1—0-1 milliammeter
(B) Base connections of the four-prong coil forms. This is a bottom view of the amphenol 24-4P coil form connections and the coil socket. Pin 3 is not used.

modulation on a signal, and thus the wavemeter can be used for simple modulation-quality checks of an a.m. transmitter.

The Circuit

It only takes a glance at Fig. 1 to see how simple the circuit is. It consists of a plug-in inductor, and a 140-$\mu\mu$f. variable capacitor which is used to tune the circuit. Four plug-in coils provide a frequency range of approximately 20 to 200 Mc. If you happen to be a Technician or v.h.f. operator not interested in low-frequency work you may want to make only the higher-frequency coils. However, a Novice or General class ham whose operation is primarily below 30 Mc. should have a complete set of coils, in order to check for v.h.f. harmonics and parasitics.

The indicator portion of the circuit consists of a 1N34A crystal diode, a 0–1 milliammeter, a 0.001-μf. by-pass capacitor and a closed-circuit headphone jack. R.f. from the circuit being checked is rectified by the 1N34A diode and read on the meter.

Construction Details

We chose to build the unit shown here in a 3 × 4 × 5-inch aluminum box. For the benefit of the beginner, *any* chassis or metal box of adequate size is suitable for housing the wavemeter. There are only a few points in wiring where one should be careful and these will be treated in detail.

Study the photographs and the circuit diagram to familiarize yourself with the constructional details. Note that C_1 is mounted with the stator section immediately adjacent to the coil socket. This makes it possible to use short lead lengths between L_1 and C_1. The highest frequency that a coil-capacitor combination can reach depends on the inductance of the coil, the minimum capacitance of the capacitor, and any stray capacitance and inductance in the circuit, hence the strays should be held to a minimum.

The 1N34A can be damaged by high temperature; hold the leads in metal pliers when soldering them.

The ground connection is kept short by installing a solder lug under one of the nuts holding the socket and making connections from Pin 1 of the socket and the rotor of C_1 to the lug. Short leads are important only if the wavemeter is to be used above 40 Mc. Below this frequency the wiring isn't as critical.

Making the Coils

As you can see from the photographs the coils are mounted inside the clear polystrene forms. The calibration chart for the coil is also carried within the form. The diameter of the coil stock used to make the coils is slightly less than the inside diameter of the coil forms.

Construction of the coils is as follows: The B & W 3016 coil stock runs 32 turns per inch and is three inches long, or 96 turns. There is enough coil stock in one length to make the two low-frequency coils. To make these coils, first measure off ¾ inch from one end of the stock and cut the wire at this point. Unwind about two or three turns to give you enough space to cut the coil supports in two parts. You can use your side cutters or a hacksaw blade for this purpose. Put the shorter length coil aside for later use. Now unwind two turns from one end of the larger coil (to provide a lead for the socket connection) and enough turns from the other end of the coil to leave a total of 60 turns. Next, count off 14 turns from one end and push the wire of the 14th turn in toward the axis of the coil. This will give you access to the wire at this point. Solder the tap lead on, making it about two inches long. Before feeding the leads down through the coil socket pins take a file or small drill and remove the nickel plating on the ends of the pins. This will make it easier to solder to the ends of the pins.

Slip the coil inside the form, with the end closest to the tap lead going in first. The lead from the bottom of the coil goes to Pin 1 and the tap lead into Pin 2. The lead from the top of the coil goes to Pin 4. Dress the leads inside the coil, being sure they don't short to each other or to the coil. You can now solder the coil-form pins. *Be sure to hold the pin being soldered with a pair of metal pliers.* This will conduct the heat from the

iron away from the point where the pin enters the polystyrene form, thereby preventing the pin from coming loose in the form.

Clip off the excess leads, clean any resin from the pins, and the coil is complete. The same procedure should be followed when making all but the v.h.f. coil. Make the leads on the coils long enough so that, when inserted in the form, the top of the coil is even with the top of the form. This is done to enable the user to get tight coupling to the external circuit, if such coupling is needed.

Construction of the v.h.f. coil is slightly different. Cut a four-inch length of No. 14 wire and bend it into a U shape, using a ½-inch diameter drill shank or dowel rod as a form. The tap wire is also made from No. 14 and is 2⅛ inches long. It is soldered to the U-shaped coil 1¾ inches from the Pin 1 end. Mount the coil in the form, permitting the leads to project just far enough out through the coil pins to allow soldering.

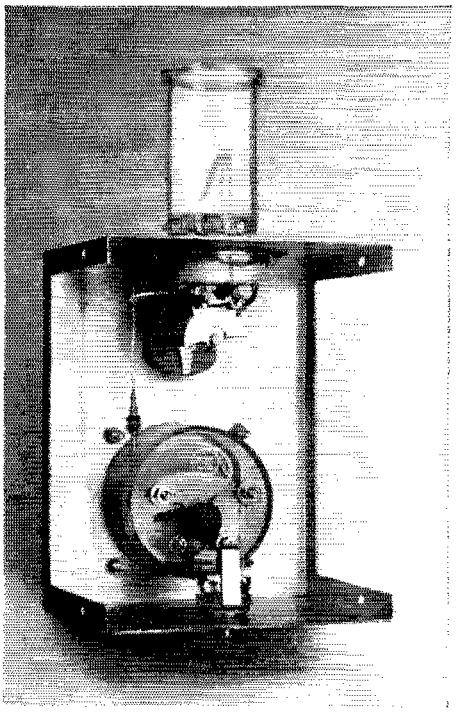
Calibrating the Wavemeter

If you have access to a grid-dip meter, calibrating the wavemeter is an easy job. The tuning dial on the wavemeter can be any type that is calibrated from 0 to 100 through 180 degrees. Calibration closer than units of 10 is not necessary for the system described here. Set C_1 at maximum capacity (plates fully meshed) and mount the tuning dial so that it reads 100 at this setting of C_1.

Plug the 2- to 8-Mc. coil into the wavemeter and tune the grid-dip meter to approximately 2 Mc. Somewhere near this point you'll find that the wavemeter will "peak." Make a notation of the grid-dip frequency corresponding to a wavemeter dial setting of 100. Next, set C_1 at 90 and retune the grid-dip meter for a maximum M_2 indication. Write this information down. Proceed in this manner until the coil range is calibrated. Use the same procedure with the other three coils. You'll need to note the settings and frequencies in order to make the calibration charts for each coil.

You can also use your receiver to calibrate the wavemeter. Remove the regular antenna from the receiver and in its place connect to the antenna post a short length of wire, six inches to one foot long. The other end of the wire is connected to the stator terminal of C_1 in the wavemeter. Using this short antenna, tune in a signal near 3.5 Mc. and leave the receiver a.v.c. turned off when you do. Plug the 2- to 8-Mc. coil into the wavemeter and tune C_1 through its range. You'll find a spot in the tuning range where the signal will disappear, or noticeably diminish in strength. The dial setting at this point should be noted. Now tune in a signal near 4.0 Mc. and repeat the operation, making a note of the dial setting.

This procedure is followed throughout the range of C_1. Good check points for checking receiver calibration are the signals of WWV, the U. S. Bureau of Standards station at Washington, D. C. WWV transmits 24 hours a day on 2.5, 5, 10, 15, 20 and 25 Mc.



This view shows the highest-frequency coil in place. The variable capacitor is mounted close to the coil socket to reduce the length of the connecting leads. The jack at the bottom provides a headphone outlet for modulation monitoring.

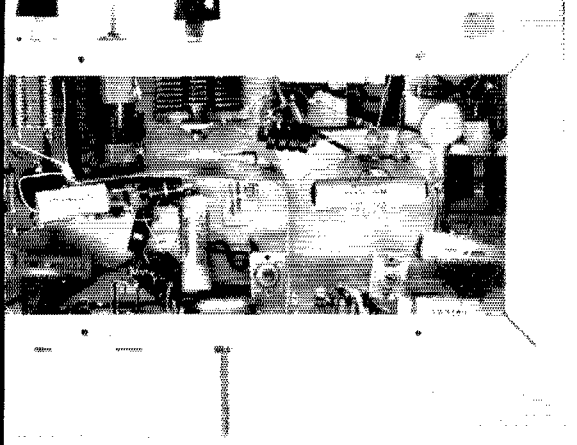
The calibration charts that fit inside the coil forms measure 1½ by 1¾ inches. Use dark ink or pencil so the numbers will show up clearly. Making a chart consists of numbering the chart form from 0 to 100, by tens, and noting the frequency opposite each unit. Take a red pencil and mark the charts where each amateur band falls. This will save you time when checking with the wavemeter.

A flexible plastic refrigerator box was purchased from the dime store and cut into disk covers for each of the coils. These serve the dual purpose of preventing the coil from coming in contact with a "hot" circuit and of keeping dust and dirt out of the coil form.

We cannot overemphasize the importance of a Novice having means for checking the tuning of his transmitter. Every amateur should be sure of his transmitter tuning, and the simple device described here will provide the means.

ARE YOU LICENSED ?

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



A sheet-copper shield partition separates the 455-kc. oscillator and balanced modulator section from the remainder of the unit. The audio connector and modulator balance control are on the rear (top, in this view) wall of the chassis.

Choosing Capacitors

Selecting Types for an S.S.B. Exciter

BY DAVID T. GEISER,* WIZEO/2

CAPACITORS ARE used in an electrical circuit for one or more of three reasons: they may allow the transfer of d.c. voltage while attenuating a.c. voltage (filtering); they may pass alternating current while blocking direct current (coupling); and they may store energy electrically for later use (tuning or other storage application). Taking a typical amateur-designed single-sideband exciter as an example, this article discusses the exciter's use of capacitors and points out some considerations and short cuts often overlooked.

The Exciter

This exciter description is furnished only to give an over-all view of the unit, for few amateur builders make an exact copy of any design. The circuit is given in Fig. 1.

A variable-frequency 450- to 455-kc. oscillator and buffer (V_1) is cathode-coupled to a grounded-grid balanced modulator (V_2). One grid is fed audio from a 500-ohm tap of an outboard audio amplifier. The two sidebands present in the plate circuit feed a Collins 455-kc. mechanical filter, the upper or lower sideband being selected by tuning the v.f.o. respectively below or above the filter pass band. As the wanted sideband is attenuated more than 20 db. with the old-style filter used here, a 455-kc. amplifier (V_3) is desirable. (The *un*wanted sideband is attenuated more than 80 db., or 100,000,000 times.)

An outboard 3340- to 3550-kc. v.f.o. feeds the cathodes of a balanced modulator (V_4), one grid being fed the 455-kc. single-sideband output of V_3. Tuned transformer T_2 selects the 3800- to 4000-kc. output desired, which in turn is amplified by V_5 and presented to the antenna or amplifier as a 2½-watt peak signal.

No exceptional performance is claimed for the exciter, though under crowded 75-meter band conditions distances greater than 800 miles have been worked using it alone.

Capacitors at Audio Frequencies

The audio frequencies most commonly encountered in an amateur radio telephone transmitter are 60 c.p.s. for the filament or heater circuits, 120 c.p.s. ripple on the high-voltage supply, and various strengths of audio signals between 200 and perhaps 10,000 c.p.s. (Most sideband transmitters strongly reduce audio signal strength level outside of the 300- to 3500-c.p.s range.)

Cathode by-pass capacitors C_{17} and C_{19} were included only to reduce capacitive hum pick-up from the a.c.-operated heaters. If operation of the V_3 and V_5 amplifiers were *perfectly* linear, hum pick-up by their cathodes would have no effect because the tuned output circuits would not pass any measurable amount of 60 c.p.s. But no amplifier is perfectly linear, so any hum will at least slightly modulate the amplified signal. Capacitors C_{17} and C_{19} are insurance against hum pick-up. Their use in minimizing demodulation effects is described in the "Capacitors at High Frequency" section later in this article.

Modulation of the oscillator or "linear" amplifiers may also occur from 120-cycle ripple in the high-voltage source. The conventional "well-filtered" supply in use at first with this exciter had only ½ per cent ripple, but it did cause some modulation. Adding 80 μf. (C_{22}) in parallel with the existing filter reduced the hum modulation below measurable level. More capacitance is available in a single unit if needed, 200 μf. at 250 volts or 125 μf. at 450 volts being common in electrolytic capacitors.

The same considerations also apply to screen

This is an article about capacitors — the whys and wherefores of making a selection among the many types and styles for a specific circuit application. The fact that the circuit discussed is that of a filter-type single-sideband exciter is incidental — it just so happens that this kind of equipment offers a variety of interesting capacitor situations: audio, i.f., r.f., d.c. blocking and filtering. (Nevertheless, it's a simple and practical s.s.b. unit.)

* 202 Genesee, New Hartford, N. Y.

voltages. While dropping resistors and large capacitors could have been used, regulator V_6 was chosen to establish the screen voltage of V_5 and plate and screen voltages of V_3 independently of the aging or other variations in these two pentodes.

The only other capacitor having an effect at audio frequencies is C_7. This capacitor paralleling the 470-ohm audio terminating resistor desirably reduces the modulation level above 3000 c.p.s., depending somewhat on the output impedance of the external audio amplifier.

Capacitors at 455 Kc.

The most unusual part of the design is the use of resonant capacitors for coupling and bypassing at 455 kc. The 0.05- and 0.1-μf. Sprague resonant capacitors are particularly well-suited to designs using the Collins 455-kc. mechanical filters, showing a very low impedance across and bordering the filter pass band. The grounded-plate Hartley oscillator and buffer stages use them (C_5 and C_6) to hold the plates at ground potential and to filter the B line leaving the shielded area. This filtering is very necessary because the level of the unwanted signal inside this area is 80 db. higher than outside. C_7 holds the grid (Pin 7) of V_2 at 455-kc. ground while that grid is being modulated with audio.

Similarly, C_{16} and C_{24} bypass the cathode and screen of V_3. One common gaseous voltage regulator problem is solved by C_{24}, which provides good bypass action without adding enough capacitance to make V_6 become a relaxation oscillator.

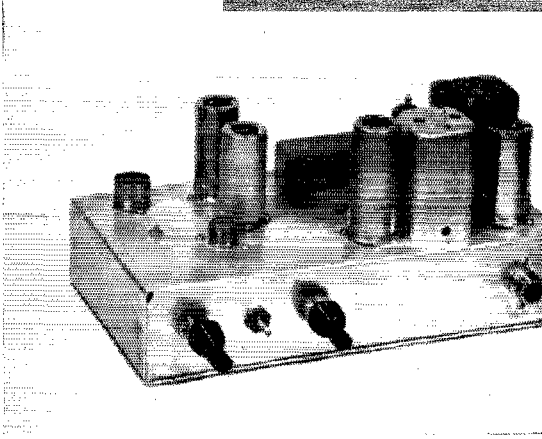
One precaution is and always should be observed when using resonant capacitors: be sure that the capacitor is biased or pulsed with a few volts during use. Charging of the capacitor is necessary for reliable operation and more than 10 volts is recommended, although two volts has been satisfactory in this design.

Fixed tuning capacitors such as C_2, C_3, C_{10}, and C_{11} should have two qualities: stability and low loss. These are both met by use of silver mica capacitors. Parenthetically, C_{10} and C_{11} were needed in this circuit only because the particular transformer used (T_1) did not tune to the filter pass band.

Variable tuning capacitors have two additional criteria: convenience and cost. Cost enters because good variable capacitors cost much more than good fixed capacitors. Convenience is more a question of how permanent the adjustment is to be. An APC style capacitor (C_1) is used to vary the v.f.o. frequency and uses about ¼ the range of the capacitor to cover the pass band. A double-bearing capacitor would have been better, but the real limit on stability here is the oscillator coil.

The filter trimming capacitors, C_8 and C_9, would be much larger with the newer Collins filters, but compression mica types would still be suitable as very little adjustment is needed.

The balancing capacitor C_{23} posed a problem, as common differential capacitors detuned C_8 and very little capacitance — less than 1 $\mu\mu$f. — was needed to the plate (Pin 6) of V_2. The final solution was to bring a grounded but insulated wire near the plate lead.



The filter-type exciter discussed in this article fits easily on a 5 × 9 × 1½-inch chassis, in spite of an extra socket or so vacated after the final circuit was developed. The 455-kc. v.f.o. (for side-band switching) and balanced modulator are at the left; the 455-kc. amplifier and mixer amplifier are at the far right.
The 6CL6 output amplifier (3.8–4.0 Mc.) is at the front center.
Controls along the edge are, left to right, 455-kc. v.f.o. tuning, slug adjustment for L_2, output amplifier matching capacitor (C_{20}) and coax input socket for the external v.f.o. signal.

Grid-leak capacitor C_4 holds the oscillator negative self-bias constant over the cycle. Mica capacitors are recommended, although ceramic may be used.

Capacitors at High Frequency

By-pass capacitors C_{15} and C_{18} do not have to be good bypasses at audio frequencies, although the stage is amplifying a modulated wave. Regulator V_6 will stifle any tendency for screen demodulation, while C_{19} will not permit the no-signal to full-signal current shift in V_5 to change the cathode bias at an audio rate. Thus C_{15} and C_{18} need to be good bypasses only at the output frequency. Ceramics are good choices for both fundamental amplification and harmonic suppression. Cathode demodulation in V_3 is likewise minimized by C_{17}.

Coupling capacitor C_{12} supplies a few volts of 3.5-Mc. r.f. to the cathodes of balanced modulator V_4. A ceramic capacitor is quite adequate.

Coupling capacitor C_{21} is in series with the exciter load and for this reason should have low series reactance compared with either 50 or 75 ohms. As only about 3 watts is transferred (about 20 peak volts) a 300-volt mica capacitor is adequate.

Capacitors C_{13} and C_{14} are balancing rather than strictly tuning capacitors. While there is a large frequency spread percentagewise between the 3.5-Mc. v.f.o. input and 4-Mc. output, it is well to have reasonably matched capacitors. If fixed capacitors are used, they should be of silver mica construction because of their availability in close tolerances.

The output matching (a better designation

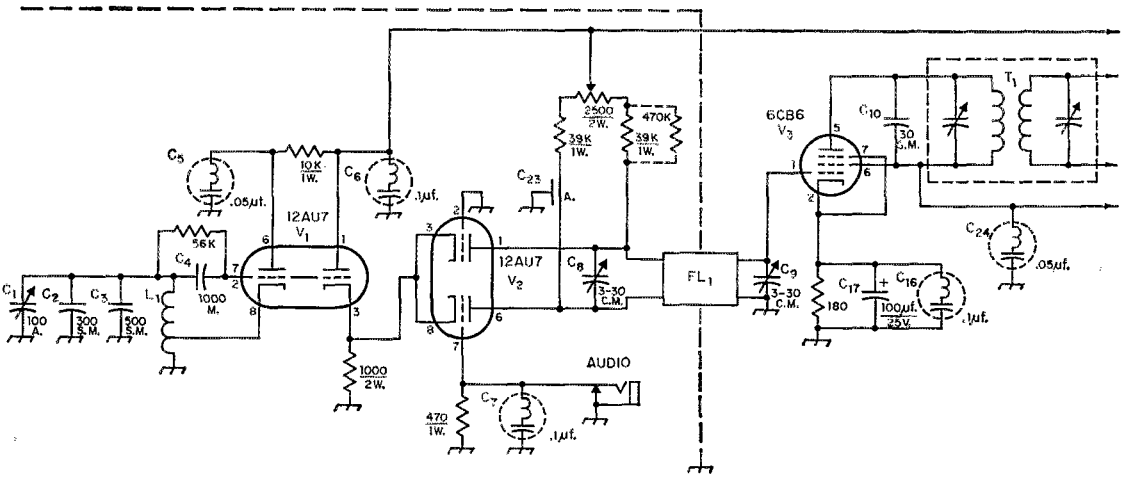


Fig. 1—The s.s.b. exciter circuit discussed in the text. Unless otherwise indicated, capacitances are in μμf., resistances are in ohms, resistors are ½ watt.

than "tuning") capacitor C_{2n} is a conventional variable-air type having the proper capacitance range for matching 50 or 75 ohms to the plate load of the 6CL6. The convenience and high voltage rating of inexpensive air capacitors were the deciding factors.

Summing Up

This list of examples shows many of the characteristics of capacitors that determine the selection of different types in different applications. There is no one *best* capacitor — each has it use.

Manufacturers of electronic equipment do not and should not always follow these examples. There is more than one way to obtain any electrical result, and the manufacturer as well as the amateur is always seeking the better way.

The brief check list below ends the discussion of capacitor application — some items are *certainly* important and all *may* be:

1) Capacitance .....
2) Tolerance .....
3) Stability .....
4) Temperature .....
5) Series Resistance .....
6) Series Inductance .....
7) Variable? .....
   What limits? .....
8) D.C. Leakage .....
9) D.C. Voltage .....
10) Peak Voltage .....
11) Applied Frequencies ....., ..., ..., ...
12) A.C. Currents ....., ..., ..., ...
13) Size....., Weight .....
14) Vibration and Shock .....
15) Desired Life .....
16) Other conditions, such as mechanical strength, mounting, moisture conditions, corona, external fields, effects on external circuit, actions at harmonics, etc.

This information is particularly useful to the capacitor manufacturer, for then he can make intelligent recommendation of a satisfactory capacitor type.

Ratings, Life and Other Characteristics

Pitfalls the manufacturer tries to avoid are those of (1) excess electrical voltages or currents that shorten life, (2) thermal, mechanical, or chemical conditions that may cause unacceptable changes, and (3) misunderstanding by the user of the actual electrical characteristics of the capacitor.

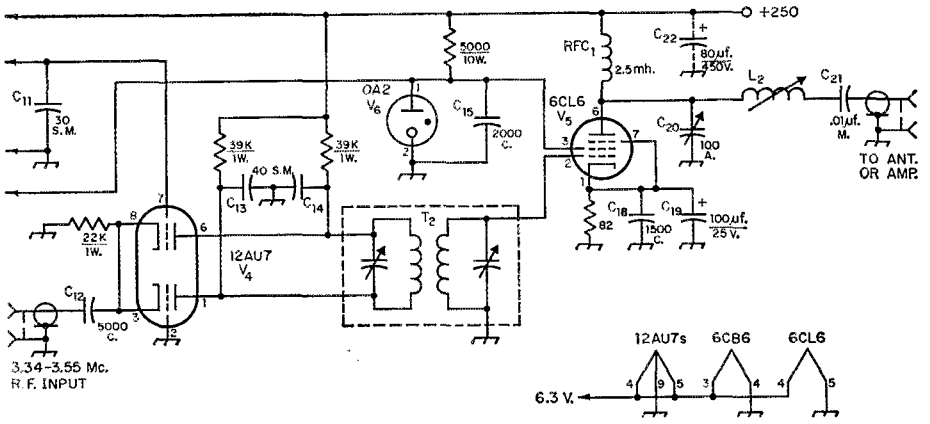
Every electrical or electronic part has planned life, whether one hundred, one thousand, ten thousand, or more operating hours at rated electrical conditions. Reducing operating voltage of capacitors will lengthen their life, a reduction to ½ rated voltage giving about 30 times longer life if no other adverse conditions are present. The expression

$$\text{Actual life} = \text{Rated life} \left(\frac{\text{Rated Voltage}}{\text{Actual Voltage}} \right)^5$$

is often used as a life prediction. The actual voltage used for prediction should be the *peak* voltage, not d.c. or r.m.s.

Capacitors also have maximum current ratings. In spite of their remarkable efficiencies, capacitors of all varieties have some resistance and will transform electrical energy to heat in the form of I^2R loss. This effect is particularly important in power-supply filters and in radio-frequency circuits of transmitters; in these applications, currents may be higher than the circuit designer may anticipate. The basic problem seems to be the effect of the heat on the dielectric and, conversely, how to cool it. Because of this cooling problem, it is often better to use many *thin* capacitors in a power-supply filter than to demand all the microfarads in one package.

At radio frequencies, frequency as well as current becomes important. At low frequencies, current through the reactance determines the



C_1, C_{20}—Air variable.
C_2, C_3, C_{10}, C_{11}, C_{13}, C_{14}—Silver mica.
C_4, C_{21}—Mica.
C_5, C_6, C_7, C_{16}, C_{24}—455-kc. resonant bypass (Sprague type 72P).
C_8, C_9—Compression-mica trimmer.
C_{12}, C_{15}, C_{18}—Ceramic.
C_{17}, C_{19}, C_{22}—Electrolytic.
C_{23}—Air fixed (See text.)

FL_1—Mechanical filter, 455 kc. (Collins F455A-3).
L_1—Broadcast-band superhet oscillator coil (Meissner 14-1033).
L_2—App. 30 μh. (730 ohms reactance) for 72-ohm load; app. 25 μh. (610 ohms reactance) for 52-ohm load.
T_1—455-kc. interstage transformer (Meissner 16-6659 used with C_{10} and C_{11} added).
T_2—4.5-Mc. TV sound i.f. transformer (such as Miller 1466).

maximum voltage and must therefore be limited. Usually a maximum current is reached as frequency is increased, with still higher frequencies requiring lower currents because of greater resistive losses.

Temperature is generally *very* important. Where end of life is caused by some progressive chemical reaction, the rule that the speed of the reaction doubles with every 18°F. temperature rise applies. Some dielectrics become much better conductors at high temperatures, and then greater losses cause still higher temperatures and destruction. Other dielectrics change state; for example, common electrolytic capacitors freeze and wax melts, causing severe capacitance change. Almost all materials expand and contract with temperature change, and only the best construction will assure capacitance return near an exact value after a temperature cycle. Silver mica is good in this respect. Ceramic capacitors may be obtained with very nearly zero change ("zero coefficient") over wide ranges, and many of the accurate and low-loss uses of mica capacitors are being taken over by ceramic types.

Ceramic accuracy is usually tailored to the customer's needs, the commonest and cheapest capacitors having only a "guaranteed minimum value." More accurate and stable capacitors result from different ceramics, even negative-coefficient ceramics being available to compensate for temperature effects of other components on capacitance or frequency.

The discussion of resonant capacitors mentioned another general factor: the *minimum* peak voltage value. The smallest capacitors (particularly in "paper" types) use "inserted tab" construction, a piece (or tab) of accurately-placed aluminum foil being rolled into the capacitor as a connection. This friction contact is not highly reliable at very low peak voltages, requiring a minimum peak voltage of one or more volts to break through the apparent insulation caused by aluminum oxides or light pressure. Extending the winding foils and making solder connections to them costs more and occupies more space but makes a more reliable very-low-voltage unit.

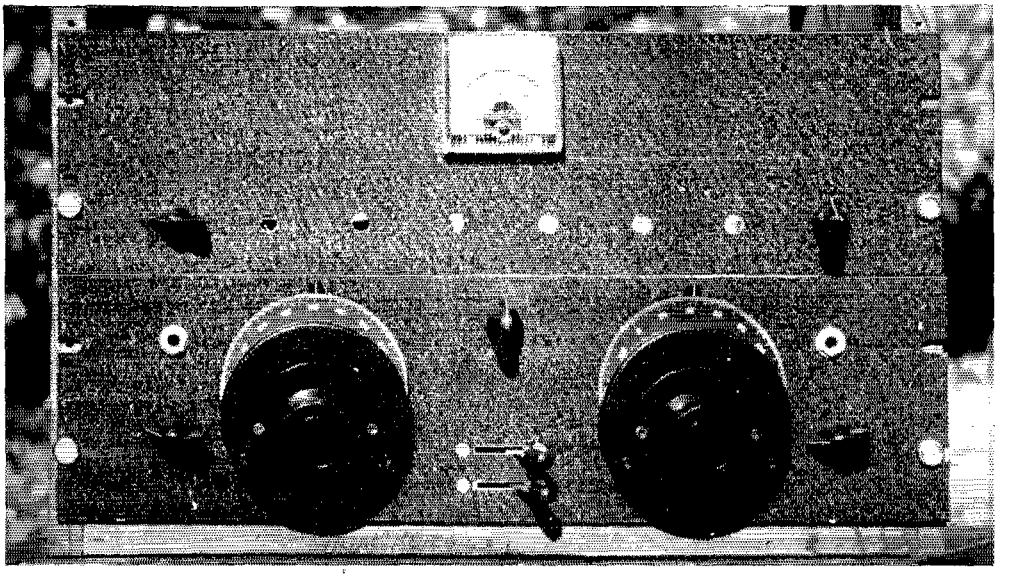
Even the old work horse, the "oil" capacitor, now has a new look because the oil must be sealed in the capacitor to prevent moisture and chemical contamination. The simple castor and mineral oils of old days have largely been replaced by low-leakage oils, d.c. oils, a.c. oils, and oils with additives to keep the high electrical stresses in a capacitor from destroying their insulating capabilities.

All the care of capacitor manufacture is useless in the face of mistreatment, however innocently applied. Capacitors store energy, amazing amounts, in a very available form. This energy can be used for electronic work: but, like so many other forms of power when improperly applied, may cause damage or dissipate. Manufacturers' sales information and books [1] are available outlining capacitor choices and operating conditions, but in the last analysis the user is responsible for suitability as only he determines actual operating conditions and economic factors.

[1] M. Brotherton, *Capacitors — Their Use in Electronic Circuits*, D. Van Nostrand Co., Inc., New York, N. Y., 1946. This book is good for either introduction or review. Other good books and articles exist.

Strays

W3KET sends in an interesting newspaper clipping which explains radio propagation as resulting from a "side layer in the heavenly body."



Front view of rack containing audio frequency meter and v.f.o. chassis. The extra holes in the top panel are for other receiver accessories to be added later. On the bottom panel, the two lever switches select the desired v.f.o. to control receiver or transmitter. The two General Radio dials control the v.f.o. frequencies and the two bar knobs are for band spread. The jacks are merely to fill up extra holes.

Flexible Transmitter-Receiver Frequency Control

Optional Single or Independent Tuning

BY GEORGE W. JONES,* W1PLJ

Although single frequency control of transmitter and receiver is an ideal arrangement for certain types of operation, there are often situations in which it is a distinct disadvantage. The author of this article shows how you can have your cake and eat it, too.

IN THESE days of crowded bands almost all operating is done with the transmitter and receiver on exactly the same frequency or close to it. Yet in almost every station the transmitter and receiver have separate frequency controls requiring "zeroing" of the transmitter frequency to the receiver frequency. Also, until recently, a great deal of attention has been paid to frequency stability in the transmitter but not as much to frequency stability in the receiver. Methods of using the same v.f.o. for both transmitting and receiving have appeared in *QST*[1,2] but these have the disadvantage that they do not provide for the situation where it is necessary to operate the transmitter and receiver on different frequencies. For example, after calling CQ in a c.w. contest, it is desirable to be able to tune a few kilocycles on each side of the transmitter frequency for stations not on the same frequency. But if a signal is picked up a few kilocycles away, it is imperative to come back on the same frequency as the original CQ. Another situation in

* 12 Traill St., Cambridge 38, Mass.

[1] Moser, "Autosync Frequency Control," *QST*, June, 1957.

[2] LaRue, "A Contest Man's Receiver-Tracking V.F.O. for 7 Mc.," *QST*, May, 1956.

which the transmitting and receiving frequencies must be different is when a DX phone station calls CQ in the c.w. portion of the band.

When the author set out to build a crystal-filter s.s.b. exciter several years ago the idea of using the same v.f.o. to control the transmitter and receiver frequencies seemed obvious. Both transmitter and receiver were superheterodynes and if the same oscillator and i.f. frequencies were used for both, the two frequencies would be synchronized. It did not seem desirable, however, to make it impossible to send and receive on different frequencies. It was felt that the most flexible system would be two identical v.f.o.s and two switches, one to select the v.f.o. for the receiver and the other to select the v.f.o. for the transmitter. If both switches were set to the same oscillator, synchronized operation would be obtained; if they were set to the two different oscillators, the transmitter and receiver would be independent.

A block diagram of the complete system is shown in Fig. 1. Crystal-controlled converters are used to convert the incoming signals on all bands, except 80 meters, to the 80-meter band, and to convert the 80-meter transmitter oscillator signal to the higher frequency bands. The same crystal oscillator is used for both converters. The 10-meter band is divided into four sections to permit greater v.f.o. band spread. This scheme does not provide for crossband operation unless the crystal switch is changed between sending and receiving. If this is considered a disadvantage, a second crystal oscillator, to be used only for crossband operation, may be provided for the receiver.

Receiver Section

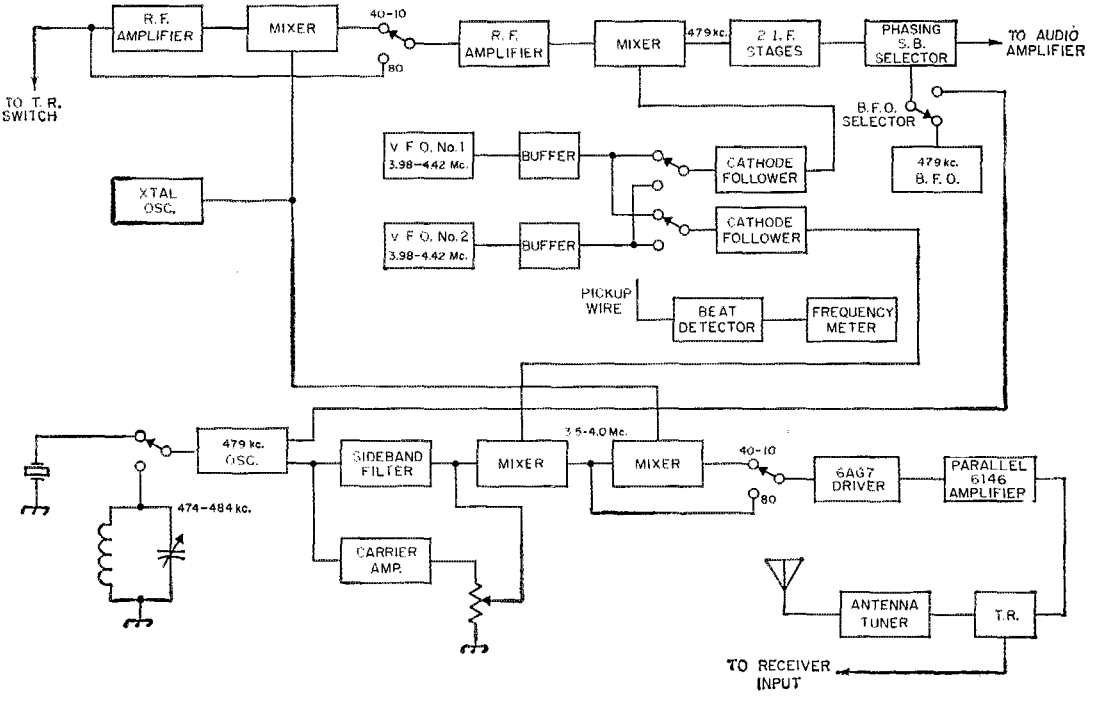
In the receiver section, an r.f. stage following the converter amplifies the 80-meter signal and a mixer converts it to the intermediate frequency of 479 kc. The i.f. stages are conventional and feed into a phasing type "signal slicer." The b.f.o. signal for the signal slicer is supplied either from a tunable b.f.o. on the receiver chassis or from the transmitter 479-kc. oscillator. For c.w. operation the tunable b.f.o. is used so that an audible beat note is obtained when the received signal is on exactly the same frequency as the transmitted signal. For single-side-band operation the transmitter 479-kc. oscillator is used so that both suppressed-carrier frequencies will be exactly the same.

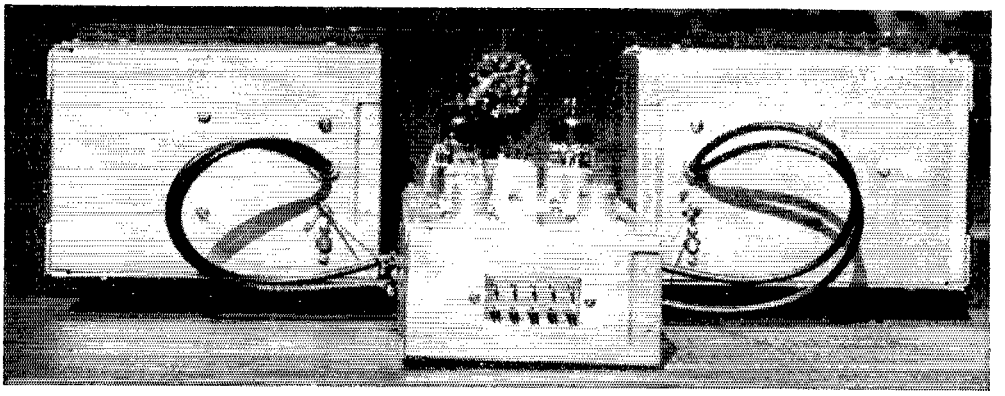
Transmitter Section

In the transmitter section, the 479-kc. oscillator has provision for either crystal-controlled or tunable operation. For single side band the crystal is used to insure operation on the right frequency of the filter characteristic. The tunable operation is used on c.w. so that the transmitter frequency can be shifted a small amount, if necessary, without affecting the received signal. The crystal filter and carrier amplifier are conventional.

The dual v.f.o. unit is the heart of the system.

Fig. 1—Block diagram of the transmitter-receiver unit at W1PLJ which permits the receiver and transmitter frequencies to be either synchronized or independent.





The tu. ed circuit for each v.f.o. is built into a 4 × 4 × 6-inch box and both oscillator tubes and all buffer amplifiers are on the center 2 × 4 × 12-inch chassis. Both boxes and the chassis are made from "SeeZak" expandable chassis pieces. The Elco 10-prong connector is for power supply and possible control circuits. Two of the coax connectors are for feeding transmitter and receiver mixers, the other two are left over from a previous version in which the oscillator tubes were included in the tuned-circuit boxes.

Two Vackar oscillators are used,[3] each followed by a pentode isolating stage. These feed two switches which route the desired oscillator to transmitter or receiver via a cathode follower. These switches also apply plate voltage to the oscillator(s) in use. Another switch applies plate voltage to both oscillators including the unused one when desired.

Sometimes it is necessary to operate the transmitter and receiver a known frequency difference apart. For example, a DX station on phone may announce that he is listening only at 10 kc.

[3] Woods, "The Vackar V.F.O. Circuit," *QST*, Nov., 1955.

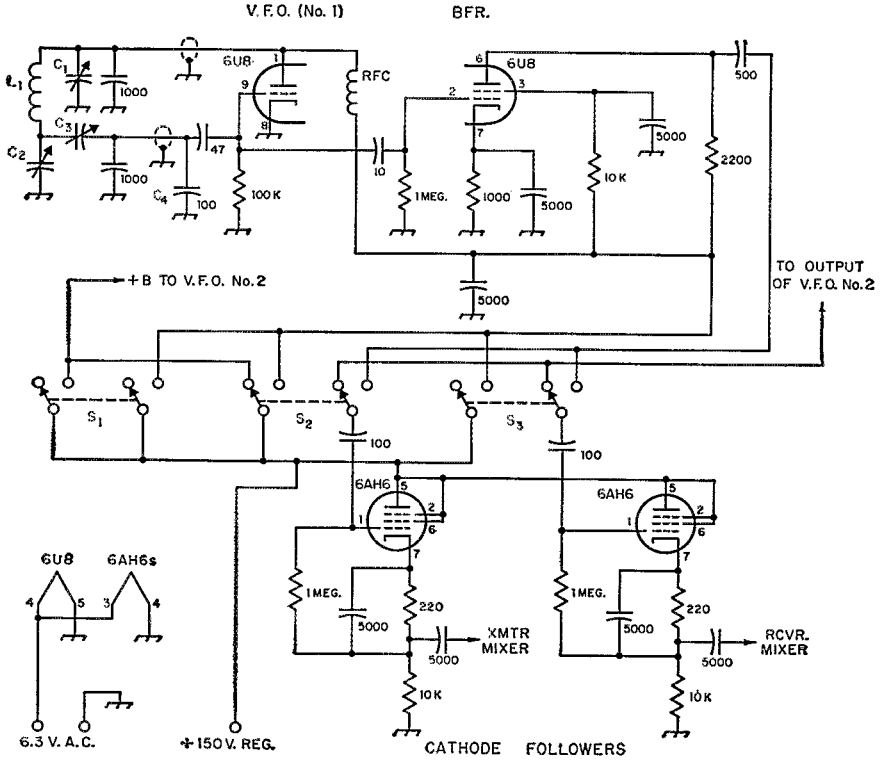


Fig. 2—Circuit diagram of the v.f.o. chassis which includes two identical v.f.o.s (circuit of only one shown) and isolating stages. Unless otherwise designated, capacitances are in $\mu\mu$f. Resistors are ½ watt and values are in ohms (K=1000).

away from his frequency to avoid a pile-up on his frequency. It is then necessary to use the separate v.f.o.s. But unless the calibration can be trusted, there is a problem setting them 10 kc. apart. This problem is taken care of in the present system by including a detector on the v.f.o. chassis that produces a beat which is the difference between the oscillator frequencies. This beat is then fed to an audio-frequency meter which indicates the frequency difference on a meter. Thus it is possible to set the transmitter any number of kilocycles away from the receiver frequency without calibration charts or without even listening to the beat note. When calling CQ, it is possible to set the other oscillator to exactly the same frequency so that if an answer is not heard on the transmitter frequency, the other oscillator is ready to be tuned around the transmitter frequency.

Circuit Details

The circuit diagram of one v.f.o. (the two are identical) and the switching system is shown in Fig. 2. The tuned circuit for each Vackar oscillator is located in a separate 4 × 4 × 6-inch box and the tubes for both oscillators are on a small chassis between them. The v.f.o. dials are General Radio type 907-LA. This dial has a 10:1 drive ratio and is fairly easy to mount. The main dial mounts directly on the shaft of the capacitor, thereby avoiding the problem of lining up the capacitor shaft with the dial. Each v.f.o. uses the triode section of a 6U8. Following each v.f.o. is a buffer amplifier using the pentode section of the 6U8. The isolating stage is necessary so that the transmitter-receiver switching will not affect the frequency of the oscillator. It was found by experiment that a pentode gave better isolation than either a cathode follower or straight triode amplifier, although the cathode follower was better than a straight triode. The two 6U8 isolating stages feed into switches S_2 and S_3 which select the v.f.o. that will be fed to the receiver and the one which will drive the transmitter. S_2 and S_3 also apply B+ to the oscillators in use. S_1 applies B+ to both oscillators in case it is desired to set one oscillator to a desired frequency while the other one is feeding both transmitter and receiver. The switches S_2 and S_3 are followed by cathode followers so that the output will be at low impedance since there are several feet of coax between the v.f.o chassis and the transmitter and 2 or 3 feet to the receiver.

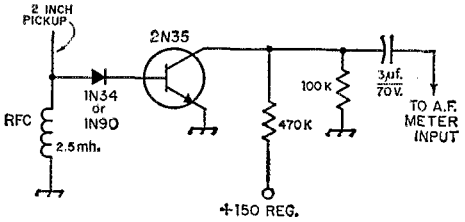


Fig. 3—Circuit of the beat detector and amplifier. Resistors are ½ watt. The transistor may be any N-P-N type.

The beat detector, shown in Fig. 3, consists of a 1N34 diode direct-coupled to a transistor amplifier using a 2N35. A few inches of wire attached to the 1N34 diode provide enough pickup from both oscillators to give a usable beat note so that no direct coupling to the oscillators is needed. The 2N35 is an N-P-N transistor and collector voltage for it is obtained from the oscillator power supply. If a P-N-P transistor is used it will be slightly more difficult to obtain collector voltage from the oscillator power supply, since the P-N-P transistor requires a negative collector voltage.

Frequency Meter

The frequency meter is a slightly modified version of the one described by Raytheon in their transistor handbook.[4] The circuit is shown in Fig. 4. Transistors Q_1 and Q_2 amplify and clip the signal from the beat detector, producing a square wave at the collector of Q_2. A separate

(*Continued on page 138*)

[4] Bayne, "Miniature Audio-Frequency Meter," *Transistor Applications*, Vol. I, Raytheon Manufacturing Company.

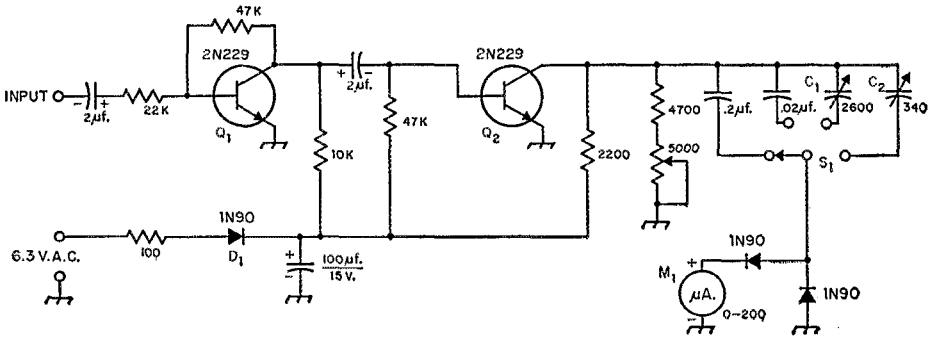


Fig. 4—Circuit of the transistorized audio-frequency meter used to indicate the frequency difference between the two v.f.o.s. Unless otherwise indicated, capacitances are in μμf. C_1 is a 1150–2600μμf. compression-type mica trimmer (Elmenco 313). C_2 is a similar type with a capacitance range of 65 to 340 μμf. (Elmenco 303). Capacitors marked with polarity are electrolytic. Fixed resistors are ½ watt. Any type transistor may be used for Q_1 and Q_2 but polarities of capacitors and the 1N90 power rectifier D_1 will have to be reversed for P-N-P type transistors.

• Recent Equipment—

The Johnson Thunderbolt

ONE might expect any piece of gear called a "Thunderbolt" to pack quite a wallop, and the new E. F. Johnson amplifier does just that. Rated at a kilowatt input on c.w. (Class C), 750 watts a.m. linear (Class AB_2) and 2 kw. p.e.p. input as an s.s.b. linear (AB_2), it will handle all the law allows on c.w. and s.s.b. If the advertising statement about the frequency range throws you, as it did us ("Continuous coverage 3.5 through 30 Mc., bandswitched"), don't worry; all it means is that the input circuit is switched and the output tank is a continuous-coverage pi network using a roller coil ganged to a tuning capacitor. One position of the input band switch is marked RES; in this position the grid circuit is merely a 350-ohm resistor, and this is used when the exciter has a few extra watts of drive. The output loading capacitor is a variable plus some fixed capacitors that can be switched in parallel as desired.

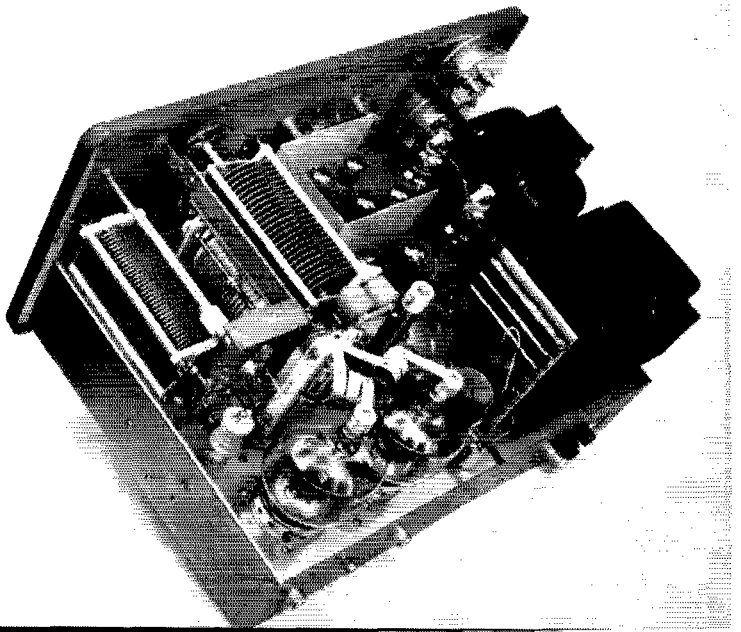
The Thunderbolt is a self-contained package 21 inches long, 11½ inches high and 16½ inches deep. This includes the power supply, as you will realize immediately when you lift the 120-pound unit to the operating position. The pair of 4-400As used in the amplifier run at slightly over 2000 volts on the plate (depending upon your line voltage, of course), and the less-than-10-per cent regulation of this supply is a joy to behold. The rectifiers are 866-As. The screens are fed from a regulated 510-volt supply (string of VR tubes, 5U4 rectifier, dropping resistor); the voltage stays at 510 during linear operation but drops to around 460 or so with Class C and the heavier screen current. Protective and operating bias is furnished by another power supply (6BY5GA rectifier), running around −150 volts idling and in Class C; during Class AB_2 operation the bias is shifted to −75 volts stabilized by a VR tube.

The Thunderbolt has two panel meters; one can be switched to read grid current, screen current and plate kilovolts, all of which wins our hearty approval. Metering the screen current is mighty useful, and we hope the owners of Thunderbolts learn to use it properly. The other meter reads plate current, but an auxiliary scale on this meter also indicates "watts input" based on a plate voltage of 2000. This we strenuously object to, on the grounds that the last do-it-yourself task left these days for the operator to perform is the calculation of his power input, and now in the Thunderbolt that pleasure is taken away! Only way to retain it, as the instruction book points out, is to determine from the plate voltmeter that the plate voltage is something other than 2000, in which case the plate input is determined by multiplying the indicated plate voltage by the indicated plate current.

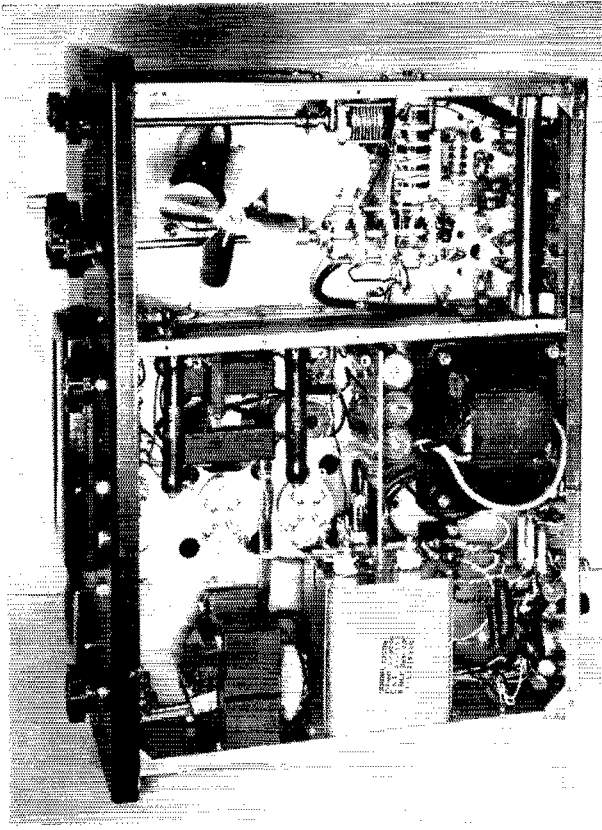
Other electrical features include provision for operation from 115 or 230 volts (the latter is highly desirable), filtering of all control and supply leads leaving the package, and neutralization of the amplifier by the usual bridge circuit.

Physical

The dimensions and weight of the Thunderbolt have already been mentioned, and it should also be pointed out that the cabinet is well-ventilated for cooling and furnished with spring fingers to maintain good shielding. Cooling is aided and abetted by *two* small fans, one above the chassis and one below. To minimize the possibility of electrical shock, a spring-actuated shorting



A pair of 4-400As are responsible for the full-powered punch of the Thunderbolt amplifier. The pi-wound r.f. choke to the left of the near 4-400A is a protective choke across the amplifier output. The plate r.f. choke is the solenoid between the far 4-400A and the plate tuning capacitor. The plate tuning capacitor and the rotary inductor (plate inductor) are ganged.



Normally a plate covers the grid section (upper) except for a screened hole at the fan. All power and control leads leaving the chassis are well-filtered.

switch discharges the high-voltage filter capacitor; heavy bleeders discharge the other supplies.

The 32-page instruction book is excellent in all but one respect. The Thunderbolt is shipped with the heavy power transformer packed separately, and the purchaser installs the transformer, at the same time connecting the primary for 115- or 230-volt operation. Some of the instructions pertaining to the installation of the transformer require considerable digging into the instruction book, because cuts are incorrectly referred to and a key component (TS_1) isn't identified in any of the photographs; it must be found by deduction and elimination. But this minor comment is the only criticism we can level at the otherwise-excellent book. It gives all of the necessary information about the installation and operation of the Thunderbolt, and it spells out in good detail how the amplifier is to be used with the Pacemaker, Ranger or Viking II, Navigator, Hallicrafters HT-32 and the Central Electronics 20A. The power output of these various exciters ranges from a few watts to a hundred or so, and the book gives detailed instructions for the construction of suitable "swamping networks" to insure best operation. Anyone who has trouble with the installation of a T-bolt, after he once has the power transformer hooked up correctly, hasn't read the instruction book and should take up stamp collecting direct, instead of by amateur radio.

— *B. G.*

The Amplex KW-62 Amplifier

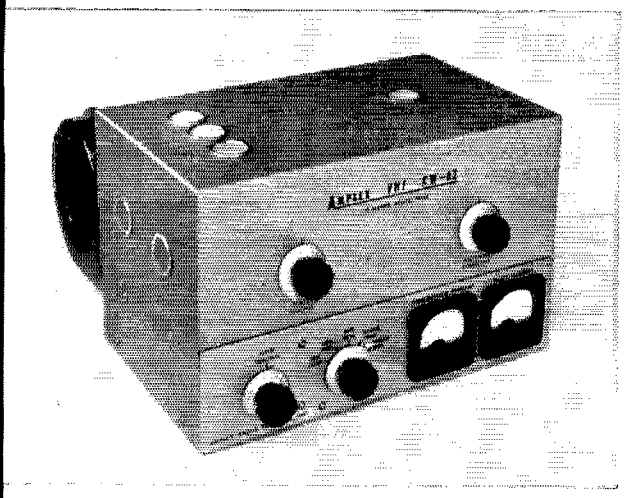
This kilowatt amplifier for 50 and 144 Mc. is another of those ideal subjects for a *QST* equipment write-up — a commercial product chock full of ideas that are of interest to any enterprising ham. Whether or not he intends to buy or build anything like the subject of this presentation, the v.h.f. enthusiast should find mechanical or circuit tricks in the KW-62 that are worth filing away for future reference.

In the radial-beam power tetrode (4X150A, 4X250B, 4CX300A and the like) v.h.f. men have found the answer to the problem of high efficiency operation at 144 Mc. and higher. These tubes and the accessories necessary to operate them properly are not cheap, and their mechanical design necessitates radical departure from past amplifier design practice, if their full potential for high efficiency in the v.h.f. range is to be achieved. But the results are worth both the expense and the effort, if one is interested in putting all the power into the antenna that the 1-kw. input limit will permit.

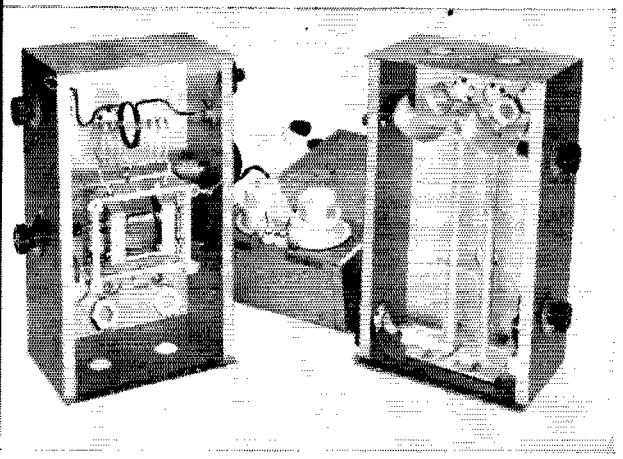
The KW-62 by Amplex[1] is designed to handle one kilowatt input on c.w. or f.m. on either 50 or 144 Mc. Maximum rating for amplitude-modulated voice is 600 watts input. Its grid circuit is a novel 2-band device, requiring only retuning for changing bands. Removable plate circuit assemblies provide excellent performance on either band. A powerful blower unit is included, and the mechanical arrangement is such as to provide effective cooling of the tubes and associated circuits. Metering is important in attaining proper adjustment of an amplifier using these tubes. The Amplex KW-62 provides means for observing the operation of the grid, screen and plate circuits.

The front-view photograph shows the complete assembly with one of the removable tank circuits in place. Plate tuning and antenna loading capacitors are included in the plate tank assemblies. Below are the grid tuning capacitor, meter switch

[1] Amplex Radio Products, Inc., 2072 Portlock, Milford 6, Michigan.

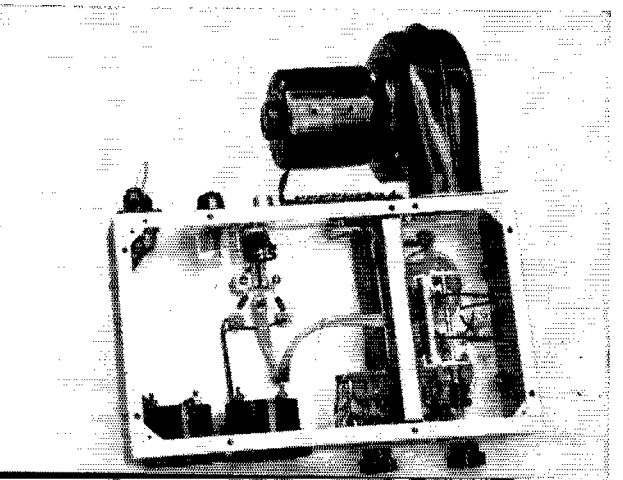


The Amplex KW-62 Amplifier takes a full kilowatt input on c.w. or 600 watts on a.m. phone. It may also be operated as a linear for a.m. or s.s.b.



Removable tank circuit assemblies provide for operation on 50 and 144 Mc. Tubes are 4X250Bs.

Bottom view of the KW-62 amplifier. Special features of the 2-band grid circuit are discussed in the text.



and the two meters. Provision is made for measuring the screen or grid currents of the two tubes separately, and a "total grid current" position reads both grid currents combined. Plate current will be balanced to each tube, assuming good tubes and balanced grid drive, so only a single plate meter is provided. This is the right-side meter, and it reads plate current at all times. Only the grid-screen meter is switched.

The base unit and the two removable tank assemblies are shown in another photograph. Removable screen inserts snap into ventilating holes in the tank housing. Lifting these provides access to the set screws on the heavy aluminum fittings that make contact to the plate caps on the 4X250Bs. Tuning the plate line in the 144-Mc. amplifier assembly, right, is done by rotating curved capacitor plates that move adjacent to the metal sleeve on the cooling-fin portions of the tubes. This "split-stator" capacitor is not grounded, and it cannot come in contact with ground at any point, in case you were worrying about the possibility of high-voltage shorts. It also clears the tubes themselves at a safe distance throughout its travel. The output coupling loop is visible at the bottom of the picture of the 2-meter assembly. Its position with respect to the plate line can be adjusted through a hole in the top of the case if need be.

The 50-Mc. tank circuit is seen at the left. A neat trick employed here is the mounting of the tuning capacitor on TV-type high-voltage bypasses at each of the four corners. Balanced bypassing is thus achieved, and the rotor is effectively grounded for r.f. without the d.c. voltage appearing across it. The method of making connection to the plate caps of the 4X250Bs is similar to that used in the 144-Mc. unit. Note that tuning capacitors are provided in series with the output coupling in both assemblies.

A close look at the top of the base unit will show that the amplifier is neutralized. The method involves conventional cross-over wires, brought up to "look" at the cooling sleeves on the tube plates. A trick used here is worth remembering, in case you ever need to neutralize tubes of this type. A small U-shaped shield plate around the neutralizing wires shields the wires from the screens of the tubes. The screen of a 4X250B is brought out to a ring that makes contact to the built-in socket by-pass capacitor. Even though bypassed in this way, the screen may be hot enough with r.f. to make complete neutralization impossible. The low shield plate shown clears this trouble completely.

Another point of interest is the two-band grid circuit, visible in the bottom view. At 144 Mc. the circuit consists of a tuned ¾-wave line with the last half wave-length (center) made of two coaxial lines. These are terminated with a tuned circuit using a differential-type capacitor. This circuit works as a conventional tank on 50, with the coaxial section acting as a half-wave repeater on 144 Mc. The differential trimmer at the end of the line allows the circuit to be balanced as to drive on either band. This is more important than

most users of tetrodes realize. When provision is made for monitoring the screen currents separately, one of the reasons for this becomes readily apparent. Unbalanced drive can very easily cause excessive screen dissipation on one side of a push-pull amplifier, and you might not be aware of it when you measure only the total screen current.

The rear wall of the base unit carries the balancing control for the grid circuit, the series-tuning capacitor for the input coupling loop, the coaxial input fitting, a barrier strip for connection of the filament, screen, bias and plate voltages, and "in and out" high-voltage connectors. A patch cord with two male high-voltage connectors runs from one of these to the terminal on the removable plate-circuit assemblies. The antenna connection is also made to the top unit. The blower can be wired to come on with the plate supplies, or it can be operated whenever the heaters are energized. Either way is usable, according to tube manufacturer's data.

The KW-62 takes a maximum of 2000 volts on c.w. or f.m., and 1500 volts on amplitude-modulated phone. A regulated screen supply is recommended, as is regulation of the bias source. When fixed bias is used the driver can be keyed for c.w. operation, and the amplifier can be used as a linear, for either a.m. or s.s.b. service. Efficiency in any application runs far above that expected of v.h.f. amplifiers using larger tubes, and is comparable to that achieved on our lower amateur bands. If the user wishes, plate voltages as low as 500 may be employed with good efficiency, making it a simple matter to reduce power for communication that does not require pushing the rig to the limit. — *E. P. T.*

The National VFO-62

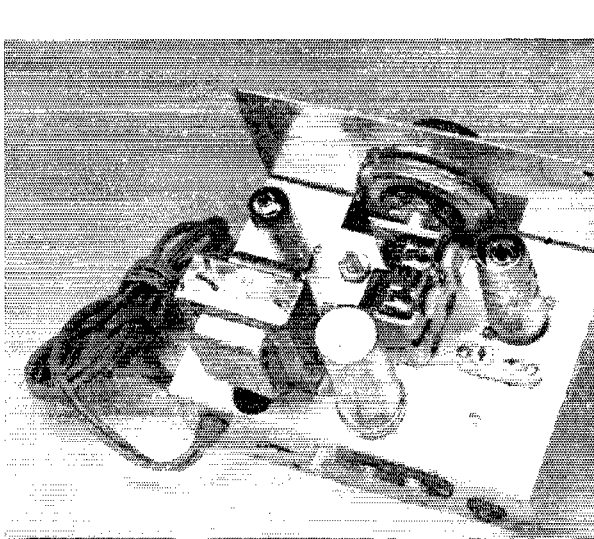
THOUGH most operation on lower frequencies has been done with variable-frequency control of one sort or another for many years, the v.h.f. man has traditionally relied almost entirely on crystal control. There are good reasons for this. It is by no means easy to build a good v.f.o. for the amateur frequencies above 30 Mc., and the wide-open spaces generally found in the v.h.f. bands have not made variable control the practical necessity that it is on narrower and more crowded bands.

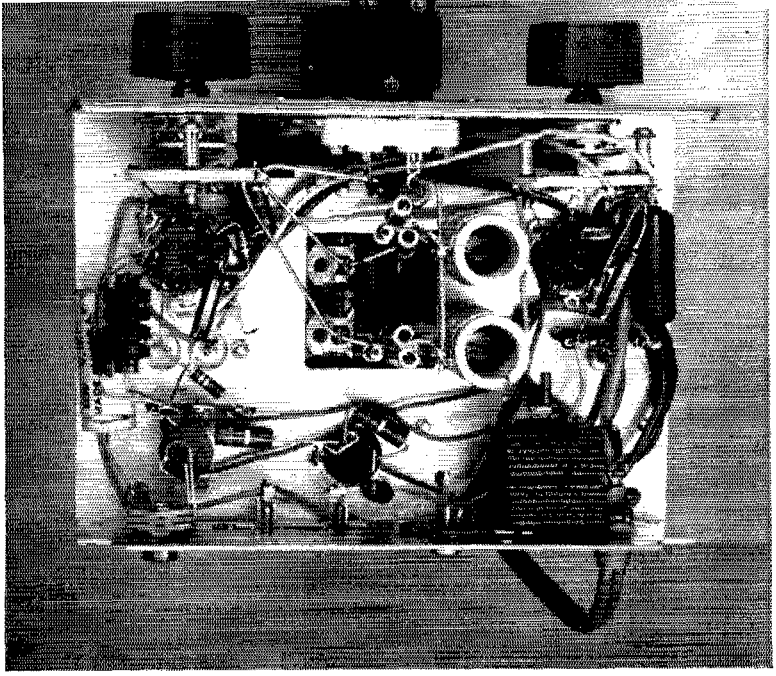
The trend to v.f.o. control is showing on 50 and 144 Mc., however, and this will undoubtedly be accelerated by the appearance of several commercial v.f.o. units for the v.h.f. enthusiast. One of these is the National VFO-62. A compact 4¼ × 5 × 6½-inch package, it contains its own regulated power supply, and has provision for crystal as well as variable oscillator control. With the insertion of a 1000-kc. crystal in a socket provided, the v.f.o. can be calibrated without the use of external standards, once the accuracy of the calibration oscillator and its crystal have been established.

A 6BH8 triode-pentode tube serves as oscillator and cathode follower, the frequency of operation being in the 8-to-9-Mc. range. The triode portion, the variable oscillator, has separate tuned circuits for 8.0 to 8.33 Mc. and 8.33 to 9 Mc., for 144 and 50 Mc., respectively. A third position on the band switch connects a front-panel crystal socket from the triode grid to ground, enabling the oscillator to be used with crystal control. Crystals should be in the same frequency range as the v.f.o.

The VFO-62 may be connected to the crystal

Left: The National VFO-62 is housed in a gray plastic case. Band switch, left, also provides a position for crystal control, switching in the crystal plugged into the front panel. Function switch, right, has operate, standby, calibrate and off positions. Right: Interior view of the National VFO-62. Socket for the calibration crystal is at the right. Separate tuning capacitors, trimmers and coils are used for each range, allowing individual calibration adjustment without upsetting the other range. Terminal strip on rear wall is for connection of a remote-control relay or switch.





Bottom view of the National v.h.f. v.f.o. shows grooved ceramic coil forms. Selenium-rectifier power supply is used. Headphone jack, left is for listening to beats between calibration crystal and v.f.o., for calibration without use of external standard or receiver.

socket of nearly every type of crystal-controlled v.h.f. transmitter. In the case of exciters such as the 5763–5763–6146 job shown in all recent *Handbooks*, the crystal oscillator becomes a frequency multiplier. Crystal oscillators of the overtone variety, normally working in the 24-to-27-Mc. range such as the Robert Dollar circuit used in the 12AT7 circuits in the *Handbook*, can be used similarly by connecting the low side of the crystal socket to ground.

The pentode section of the 6BH8 normally operates as a cathode follower, but when a 1000-kc. crystal is in place and the function switch is in the "calibrate" position this stage becomes a calibration oscillator and mixer. A headphone jack in its plate circuit enables the user to hear beats between the calibration oscillator and the variable oscillator, when the latter is tuned to any harmonic of 1000 kc.

The function switch has four positions, labeled OPR, STBY, CAL and OFF. On the back of the unit are terminals for connection of a shorting relay in parallel with the standby switch to permit remote operation. Otherwise, the function switch must be used to turn the oscillator off, if the operator is working a station within heterodyning range of his own frequency. Completely separate tuned circuits are used for the two bands, so the calibration of one can be changed without upsetting the other. — *E. P. T.*

• *Technical Correspondence*

UNCUBICAL QUAD

7th Med Disp
APO 403
New York, N. Y.

Technical Editor, *QST*:

I would like to relate a sad story with a happy ending.

After looking at specifications and hearing reports about the cubical quad antenna, I decided to build one myself.

With no little difficulty I obtained the necessary pipes, bamboo poles and wire on the local market and succeeded in raising a reasonable facsimile of a cubical quad on my roof.

Lesson number one came the first day that the wind velocity exceeded 30 m.p.h. I found that a one-inch pipe will not support a cubical quad in a windstorm. With tears in my eyes, I disassembled what was left of my antenna and was ready to chalk the whole thing up to experience. However, one element of the monster remained intact, so I decided to try it alone.

As an ending to my story, I can report that the first evening's trial resulted in contacts with MP4, HZ1, 9G1, two W2s and a W3, all with 140 watts p.e.p. s.s.b. on 20 meters.

If any other amateur plumbers have had the same experience with cubical quads, I would be glad to allow them to cry on my shoulder. If anyone else is looking for a fairly compact antenna system to operate 10–15–20 meters with a minimum outlay of cash and not much engineering ability I can recommend this system as one which should do at least as well as separate dipoles or a vertical.

— *Capt. Richard Ellingson, KØHXN/DL4NG*

Beam Talk for the Layman

Plain Talk About a Fancy Subject

BY LLOYD JONES,* W6DOB

THE FIRST and most important point to emphasize is the fact that beam antennas are *not* hard to understand, build or tune up. In this article you will find some simple procedures to follow in tuning up a beam using the gamma match. There are standard formulas or charts from which the physical lengths may be chosen, to be found in the several antenna handbooks.

Emphasis should be placed on another important point, that of determining whether you are going to use 52- or 75-ohm coaxial feed line. When this has been decided, put the line away and forget it until the beam is all tuned up. For economy in amateur use and low loss per 100 feet we like the RG-8/U 52-ohm cable. Our reason for suggesting that you put the coax away until the beam is tuned up is to impress upon you that the transmission line can *not* reduce, or make worse, your s.w.r. (standing-wave ratio). The s.w.r. is determined entirely by the feed point impedance of the beam. If the feed point impedance is 52 ohms, then a piece of RG-8/U ten feet long or 1000 feet long will have the same low s.w.r.

Optimum results with minimum effort will be had where the lengths of the parasitic elements (reflector and director) are calculated by formula or taken from charts or published figures, carefully measured with a steel tape, fastened in position and never changed. Change the length of the driven element only if it is necessary to bring it to the desired resonance. The gamma rod you attach to the driven element can change the resonance of the driven element provided the gamma feed is not properly tuned up. Therefore tune up the gamma feed first, then check to see if the beam is resonant at the desired frequency.

Almost every article you have ever read regarding beams has stated that antenna tuners, the length of the transmission line, etc., will not change your standing-wave ratio down in the shack, and this is correct. Make the feed point of your beam (or any other antenna) match the impedance of the transmission line. Read that last sentence over again. It is one of the most important facts to remember.

For the greatest accuracy, the measurements should be made with the beam up in the air in its final position. If you cannot do this, fair results can be had with the beam near the ground (or roof) by standing on a stepladder to do the testing. When the beam is raised to its regular height, the frequency may be up to 0.2 percent higher than when the beam is down near the ground. You can measure the error, then bring the beam down and make the correction by changing the length of the driven element, not the reflector or the director.

We personally feel that the gamma match is the most desirable method of feeding any type of parasitic beam. First of all, it is simple to construct and tune, whether the capacitor is variable or the coaxial type recently described in *QST*.[1] The omega match is merely the lazy man's way to change the electrical length of the gamma rod and calls for an extra capacitor, which is more expensive and also is not convenient if space in a weatherproof box is at a premium.

Tuning a Beam

Now for tuning the beam. You must use an r.f. bridge (Antennascope, Millen r.f. bridge, etc.) to determine that the feed-point impedance of the beam is exactly the same as the transmission line impedance. You will also need a signal generator (grid-dip meter) to supply energy for the r.f. bridge as well as to determine resonance of the beam.

Let us assume that we are going to check a beam with gamma match for the first time, to be used with a 52-ohm line. If you have calculated the element lengths, or have taken them from a chart in an antenna handbook, you should start with the gamma bar (or bars in the case of

* 534 Miramonte Drive, Santa Barbara, Calif.

When W6DOB sent us this article he mentioned that he wanted to write a beam antenna article for the non-engineer ham. We think he succeeded admirably, but he included just enough controversial material (so labeled, for the unitiated) to keep anyone interested.

[1] Reynolds, "Simple Gamma-Match Construction," *QST*, July, 1957.

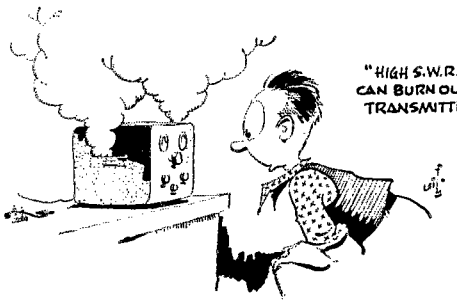
tri-band beams[2]) connected at a point 48 inches out from the center of the driven element for 20 meters, 36 inches for 15 meters and 24 inches for 10 meters. The actual value of capacitance will be about 120 $\mu\mu$f. on 20 meters, 65 $\mu\mu$f. on 15 meters and 35 $\mu\mu$f. on 10 meters to tune out the reactance when 52-ohm line is used. We now set an r.f. bridge to 52 ohms and connect it to the feed point, with very short clip leads or with a length of 52-ohm line. Feed some r.f. from a grid-dip meter through the bridge and vary the frequency to find the lowest reading on the bridge. Turn the impedance dial of the r.f. bridge for the lowest reading, and then adjust the gamma capacitor for the lowest reading. Repeat this procedure until you have the lowest possible reading on the r.f. bridge. The final value of minimum reading should be very nearly zero. In the process of changing the variable arm of the r.f. bridge to obtain the lowest possible reading, note what that reading is. If the bridge is reading down around 40 ohms, we know that the gamma rod must be lengthened by a couple of inches. If the bridge is reading up around 60 ohms, we know that the gamma rod must be shortened a couple of inches. You should make the foregoing check and adjustments until the feed impedance is as close to 52 ohms as possible. You can now add or subtract various lengths of 52-ohm cable and the s.w.r. will be constant and very low.

For those who own the type of bridge with a fixed resistor soldered in the bridge, it will be necessary to guess whether the feed impedance is too high or too low. To do this, make the gamma rod length a couple of inches longer or shorter, and then take another set of readings to see whether the lowest r.f. bridge reading is better or worse than before and correct the gamma rod length accordingly.

Now that the antenna presents a proper match for the line, check the resonant frequency of the antenna by noting the frequency at which this proper match is obtained. Don't do this by merely reading the frequency of the grid-dip meter (if the g.d.o. is your r.f. source) but be sure to check it against a well-calibrated receiver or other standard. Never trust a g.d.o. frequency reading on close measurements because the little instruments can "pull" badly. If the resonant frequency turns out to be too far from what you want, change only the length of the driven element and repeat the above procedure.

Standing waves and standing-wave ratios may be confusing to some. Standing waves occur when we have a difference between the coax cable impedance and the feed-point impedance of the beam (e.g., RG-8/U and a 75-ohm beam). This mismatch causes some of the energy that is sent up the coax cable to be reflected down the coax cable toward the transmitter.[3] This reflected energy is out of phase to some degree with the energy that is traveling in the forward direction. Depending upon the phase at any given point, the voltage of the reflected energy will add to or subtract from the transmitted energy, and the higher the mismatch, the higher the standing waves will be.

At this point you may wonder whether s.w.r. is worth worrying about. There is no simple answer.[3] Not long ago one writer said to forget s.w.r.; that it was primarily a matter of high voltage or high currents building up at any given point between the transmitter and the antenna, that the actual loss was not great enough to worry about. We admit that the loss of power may not be too important, but do not overlook the fact that it is these high currents or high voltages that burn out the output capacitors in some of the popular 120-watt manufactured transmitters, or cause the roller tank coils of other popular transmitters to overheat. When



you can adjust the match at the antenna, do not settle for a s.w.r. higher than about 1.05 at resonance. Most beams will be broad enough not to exceed about 2.0 at the band edges. I shudder when my transmitter has to work into a load with an s.w.r. of 2.0 ever since I had to replace not only a roller coil but a plate-tuning capacitor that arced over and welded the plates together. Strive for perfection.

Wide-spaced beams require shorter directors and longer reflectors than narrow-spaced beams. In any case the director is usually resonant outside the high-frequency end of the band, while the reflector is usually resonant outside the low-frequency end of the band. A common figure for the reflector is somewhere between 5 to 8 per cent longer than the driven element, and for the director somewhere between 5 to 8 per cent shorter than the driven element. Such things as maximum forward gain or maximum front-to-back ratio are the result of exacting field-strength measurements versus element lengths and spacings. And one important point to remember about the current types of three element beams, whether they be manufactured beams, homemade beams, regular or tri-bander beams, is that the spread in gains will be less than one db. of the average 8-db. forward gain. The maximum front-to-back ratio and the actual radiated beam pattern will vary considerably from one beam to the next due to element lengths, element spacing, height above ground, etc. Most beam experimenters agree that for amateur use it is not

[2] McCoy, "A Matching System for a Three-Band Antenna," *QST*, Nov., 1957.
[3] Goodman, "Losses in Feed Lines," *QST*, Dec., 1956.

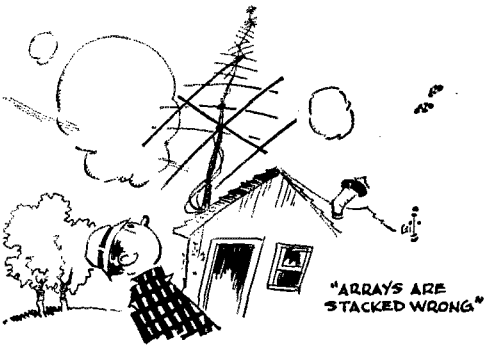
worth the days of work and special equipment to get maximum forward gain or maximum front-to-back ratio because there is only about 1 db. at most between the two adjustments.

Multiband Beams

We have mentioned tri-band beams earlier, but let's bring out a few pertinent points. In a beam of this type, the parallel-tuned traps are resonated at various frequencies to serve as insulators at those frequencies. In a tri-band beam, the elements extending from the boom to the first set of traps are the same length as in a standard 10-meter beam. The traps at the ends act as insulators and isolate anything else that may be hanging on beyond. At 15 meters these particular traps serve as center loading coils, and the antenna is brought to tune at 15 meters by additional element length beyond these traps. At the ends of these element extensions another set of traps isolates anything beyond. On 20 meters both sets of traps serve as loading coils, and the elements are extended sufficiently to resonate the over-all elements in the 20-meter band. The presence of the traps and their action as loading coils accounts for the shorter over-all element length of the tri-band beam in contrast to a full-sized 14-Mc. beam.

A common remark heard these days is that the tri-bander is as efficient as a standard type beam. Unless you are prepared to make tests with elaborate testing facilities, only one practical observation can be drawn; that is, the published gain for any standard or tri-band beam is approximately 8 db. I do not consider the tri-bander less efficient. You could never convince me that stacked full-size 10-, 15- and 20-meter beams, with their three separate coax lines, are more efficient than a single tri-bander with one lead-in and no coax switch to worry about.[4]

Something for you to think about: I suspect that the modern Xmas tree arrays are stacked wrong. In a beam we want a low angle of radiation. Consider what happens when we have a 15-meter beam over a 20-meter beam and a 10-meter beam over a 15-meter beam. Remember what we said about a director being shorter than the driven element? Why not expect the 10- and 15-meter beam elements to act as directors above the 20-meter beam elements and direct a lot of



the energy skyward instead of at a low horizontal angle? On 15 meters the 20-meter elements are acting as reflectors and the 10-meter elements are acting as directors! The same thing again on 10 meters; the 15- and 20-meter elements are acting as reflectors. Now where does the signal really go? I do not know, but I'll venture to say that it does not do all that we thought it did. Then you say, "reverse stack them," with the 10-meter beam nearest the ground and the 20-meter beam on top. It is my guess that this would produce a lower beam angle when you delve into what causes an antenna not to have a perfectly horizontal beam.[5]

Mobile

All this brings to mind mobile antennas for 75 and 40 meters. Some say large-diameter, super high-*Q* coils are the only efficient ones. If you want to make your whip lean back nearly horizontal when you are driving 50 m.p.h., this is one easy way to do so. My own experience has been that the long, small diameter, yet fairly high-*Q* type of loading coil will outperform the large-diameter coils. The answer may be that the long slender-diameter coil does a lot of radiating, whereas the large-diameter coil does not. How about the fishing fleets with their years of experience of having the whole antenna one long coil wrapped upon a long bamboo pole about 30 feet long? They are still using this type

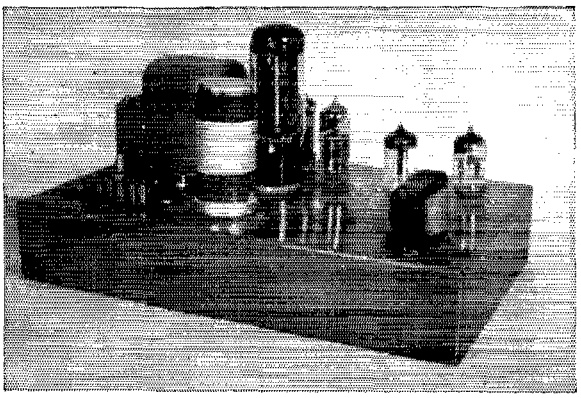
This article has been written expressly for the Novice, or the new ham who does not understand the fancy tables, graphs and mathematical formulas presented in most technical articles. I hope that we have said what has been said many times before in words and sentences that you might more easily understand.

[4] You can argue this one all night. A single gain figure is not the only criterion; others include gain band width s.w.r. band width, front-to-back ratio band width, and distribution of minor lobes. The spacing of the trapped tri-bander is of necessity a compromise. — *Ed.*

[5] Inverse stacking along these lines has been used at Stanford University in some of the scatter-sounding experiments. — *Ed.*

Strays

W2YFB QSO'd ZE6JB and mentioned that he had a brother living somewhere in Southern Rhodesia. Just three days later, while working an HB9, W2YFB heard ZE6JB calling him. It turned out that W2YFB's brother was in ZE6JB's shack. This was the first direct news that W2YFB had had from his brother since 1932. It was quite a reunion!



A Filterless Terminal Unit for FSK

THE AMATEUR and the commercial company have different problems to overcome in their receiving and transmitting equipment, even though they may be using the same mode of transmission. The commercial company can spend large sums of money for expensive filters and the equipment needed to adjust them. It also has no problem with frequency instability, for most all commercial equipment (receiving and transmitting) is crystal controlled.

On the other hand, most hams who roll their own are interested in low-cost, simple-to-construct-and-adjust equipment. Since the average amateur station is not fully crystal controlled, or does not have extremely stable equipment, the operator is incessantly bothered by frequency drift.

The teletype terminal unit to be described is no more difficult to construct or adjust than a simple audio amplifier or modulator. It contains no *LC* filters and, for this reason, it will keep the printer printing even though the audio tones may drift within the range 500 to 7000 cycles.

BY BARRY M. KAUFMAN,* K6PYB

Inexpensive Circuitry With Wide Drift Tolerance

Here is a teletype converter that is simple to build and will work either with conventional f.s.k. or a.f.s.k. Using a counter-type frequency detector, it responds to the frequency difference in f.s.k. signals and its operation is substantially independent of the actual audio-frequency tones.

Above: Any convenient layout can be used for the filterless terminal unit for teletype reception, since there are no critical points in the placement of parts. In K6PYB's unit all external connections are brought in through the multiconductor plug receptacle on top of the chassis at the left.

Referring to Fig. 1, the audio output of the receiver is fed to a step-up transformer, T_1, the primary of which should be suitable for the output impedance of the receiver while the secondary should have as high an impedance as possible. In my case, I used an 8- to 20,000-ohm transformer, which gave a voltage step-up of 50. This is more voltage gain than could be obtained from the average single-triode amplifier.

The secondary of T_1 feeds the first stage of a two-stage limiting amplifier which is biased for symmetrical clipping at low signal levels. A relatively good square wave is obtained at the plate of the second limiter when the voltage at the secondary of T_1 is 1.5 volts or more. This means that if the peaks of a fading signal give a one-watt receiver output the signal could fade as much as 40 db. and still produce a constant-amplitude square wave from the limiters.

Counter Circuit

The heart of this terminal unit is the pulse-counting detector, which is used to convert the constant-amplitude square-wave audio tones into a d.c. voltage which is proportional to the incoming audio frequency. This detector is well known for its excellent linearity over very wide frequency deviations, and is used in many commercial f.m. modulation monitors and in audio-frequency meters.

For those who are not familiar with the detector, a brief description of its operation is necessary. Referring to Fig. 2A, when the incoming square wave goes in the negative direc-

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tion D_2 will conduct, charging C in such a direction that point "X" is negative with respect to point "Y." At this time, the voltage at the junction of the diodes, "Y," will still be essentially zero because D_2 is practically a short circuit when conducting. When the square wave goes in the positive direction, D_2 will stop conducting and the charge on C will appear across R through diode D_1. For linear operation (average d.c. output proportional to input frequency) the RC time constant is chosen to be short, compared with the period of the highest frequency that will be used (Figs. 2B and 2C). The charge across C is rapidly dissipated through R, causing a spike of d.c. which has a width and shape that is virtually independent of the audio frequency, within the linear range of the system. Under these conditions the average d.c. across R is a function of the audio frequency only, as can be seen from Figs. 2D and 2E.

The RC network that follows the pulse-counting detector in Fig. 1 is a low-pass filter used for getting rid of the spikes of audio frequency, which are not wanted since the desired output from the detector is simply an average d.c. voltage that varies between two levels at the keying rate of the incoming teletype signal.

Keying Circuit

The 0.5-μf. capacitor between the low-pass filter and the input circuit of the next stage is for the purpose of eliminating the steady d.c. from the pulse-counting detector. As long as the audio tones are in a linear portion of the detector's curve, the difference in d.c. voltage between mark and space will be the same (for the same frequency difference) irrespective of the actual audio tones. The mark-space difference voltage

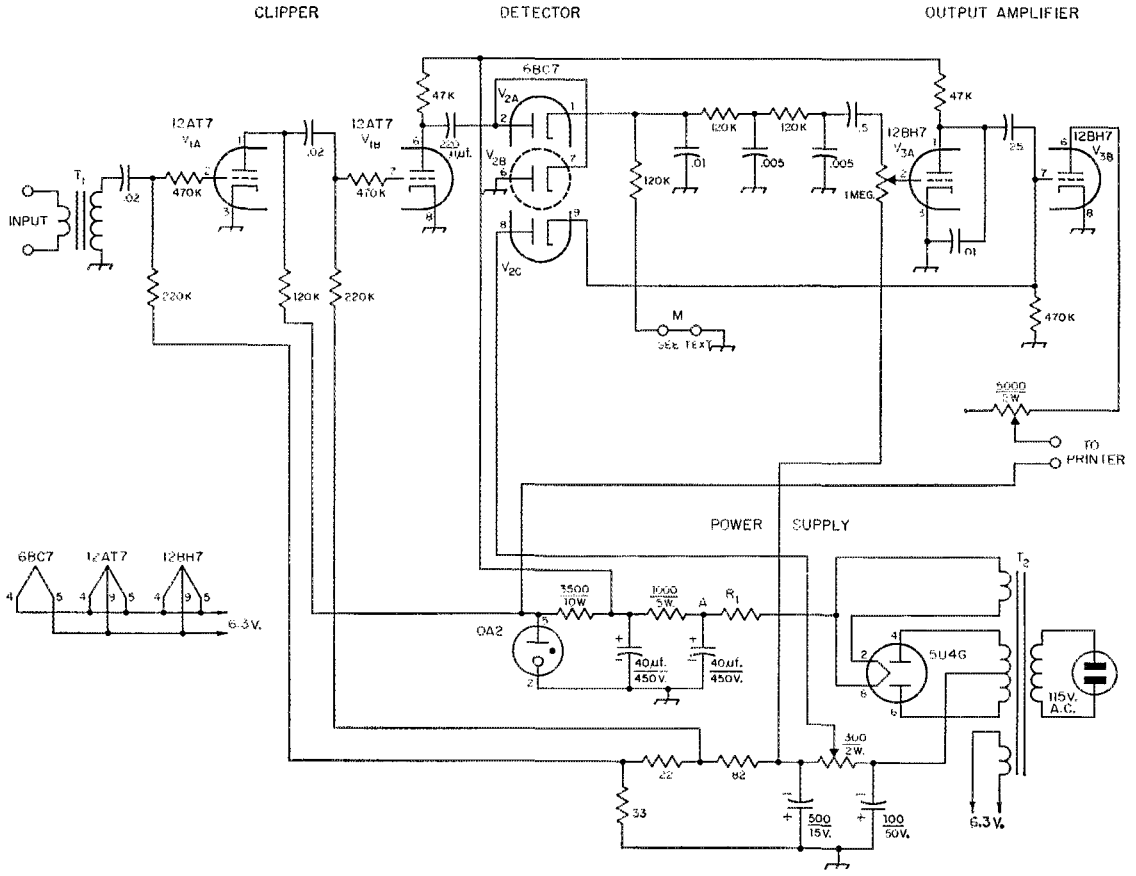


Fig. 1 — Circuit of the filterless terminal unit and power supply. Unless otherwise indicated, capacitances are in μf., resistances are in ohms, resistors are ½ watt. Capacitors with polarities indicated are electrolytic; others may be paper or ceramic as convenient.

R_1 — To drop voltage to 250 to 275 volts d.c. at point "A"; resistance required, if any, depends on output voltage of power transformer used.

T_1 — Audio transformer, approx. 50:1 ratio, secondary to primary (10,000:4 ohm output transformer suitable).

T_2 — Power transformer, to deliver at least 250 to 275 volts d.c. at approx. 40 ma.; 6.3-volt 2-amp. and 5-volt 3-amp. filament windings.

will depend only on the transmitted frequency shift. It is this difference that is wanted and not the steady d.c. The 0.5-μf. capacitor and the 1-megohm potentiometer at the grid of the 12BH7 stage have a long enough time constant to pass fairly flat-topped squared keying pulses.

The 1-megohm potentiometer is used to adjust the unit for different amounts of shift. If you want to copy a narrow shift, you just turn up the pot until the signal will run the printer.

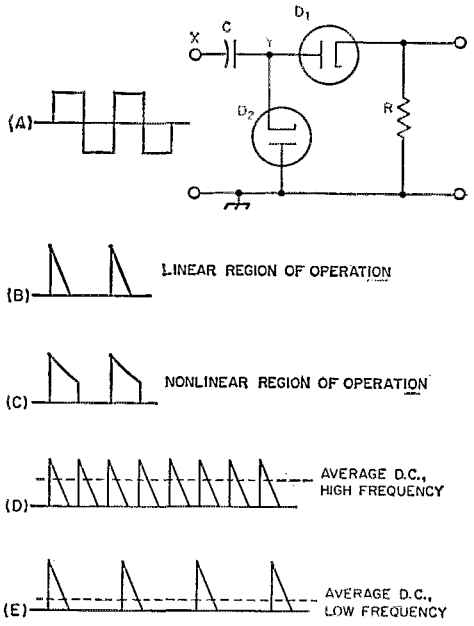


Fig. 2 — The basic frequency-counter circuit and method of operation.

The first half, V_{3A}, of the 12BH7 is a conventional amplifier using fixed bias. The keying pulses are coupled to the second half, V_{3B}, of the 12BH7 through the 0.25-μf. capacitor. This capacitor, in combination with the grid-to-cathode diode effect of the second half of the 12BH7, forms a d.c. restorer which automatically sets "mark" as zero bias. The third diode (V_{2C}) of the 6BC7, the one connected between the 300-ohm pot and the grid of the keyer tube, is simply a clipper that rejuvenates the keying pulses that were slightly distorted by the low-pass filter and the coupling capacitors.

The plate of the keyer tube feeds the printer through a 5000-ohm variable resistor that adjusts the current flowing through the selector magnets.

The power supply is completely conventional, except for the fact that fixed bias is developed for all tubes in the unit. R_1 is chosen so there will be 250 to 275 volts at point "A" while the terminal unit is operating. This allows freedom in the selection of a power transformer.

Adjustment

The adjustment of the unit is simple. Hook up the printer in series with a milliammeter. With the 1-megohm pot turned down all the way, adjust the 5000-ohm resistor for 30 ma., then short-circuit the clipper diode (V_{2C}) that goes to the grid of the second half of the 12BH7, and adjust the 300-ohm pot for zero reading on the milliammeter. The terminal unit is now completely adjusted and ready for use.

The unit is set up to print on space-high signals. A reversing switch could be put in to reverse both diodes of the pulse counting detector for mark-high reception, but it is just as easy to turn the receiver b.f.o. to the other side of zero beat.

If a 0-100 or 0-50 microammeter with a variable shunt across it is connected at "M," Fig. 1, the unit can be used simultaneously as an audio-frequency meter. The meter can be calibrated from WWV, or some other accurate source. This method of measurement should prove accurate enough for general use between 500 and 4000 cycles. The lower limit is set by the diode's contact bias, while the upper limit is set by the linearity of the pulse counter.

Summary

Summing up, the features of this terminal unit are:

1) It is very simple to construct and adjust.

2) No expensive or hard-to-get filters are incorporated in the design.

3) It is very tolerant of large frequency drifts in transmitting and receiving equipment. For this reason, it can be used on nets where a lot of hams are not right on the net frequency.

4) It can be used simultaneously as a terminal unit and as an audio-frequency meter.

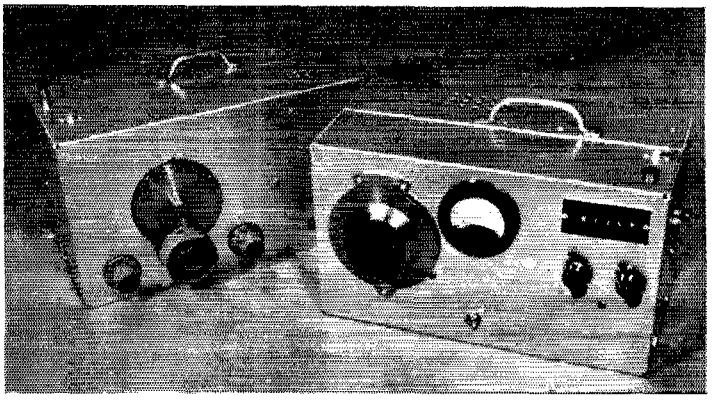
5) It can copy any shift from around 200 cycles to over 5000 cycles.

6) Since this is an audio unit, all its features hold for the reception of v.h.f. audio shift, as well as the r.f. shift used at lower frequencies.

7) There is no need for an oscilloscope to aid in tuning in a signal, since tuning is completely noncritical.

Along with the sweet must come the bitter and along with the good features of this terminal unit must come its bad point. It cannot compete with filter-type terminal units so far as digging down into noise, heterodynes, and general mud for the desired signal is concerned. The pulse-counting detector is a wide-band device, and wide band width means susceptibility to noise and heterodyne interference. A simple device such as this must have a wide band width for tolerating large frequency drifts.

However, all is not lost. First of all the device, as is, will give good copy on medium to strong signals that are relatively free of strong heterodynes. For those who like to dig down into the mud, I suggest that a band-pass filter be used between the receiver and the terminal unit. Alternatively, the selectivity of a receiver having a steep-sided band-pass i.f., such as a mechanical filter, could be used.



A 25-watt portable v.f.o. transmitter and companion receiver. A National type AM dial may be used for the v.f.o. instead of the surplus dial shown. The knobs at the right are for the final-tank and coupling capacitors. The toggle below cuts the v.f.o. off while receiving. The receiver at the right is a revision of the two-tube "Novice Special" regenerative receiver described in an earlier issue of QST. The carrying handles of both units are offset toward the power-supply ends to balance the load. (Photos by W1VRK)

Power 25 Watts—Fun Unlimited

A Simple Portable Rig for 80 and 40

BY ERNEST A. COONS,* W1JLN/W1FOE

EVERYONE IS not a traveling salesman as I happen to be. But many hams would like to have a rig such as the one shown in the photographs for portable operation. Mine is built for c.w. only, but the addition of modulation should be no problem. This little rig was built so that I could operate on the road from motels or wherever I happened to stay overnight. After 15 years on the road, movies and hotel lobbies lose their interest, and who wants to watch the one-eyed monsters every night?

I had often thought about a small rig to take with me on the road. I had tried mobile, and while it has its virtues, sitting out in a car in the winter is not one of them. After reading about the Novice Special receiver,[1] I figured that it would be easy to make it up as a portable. I built the receiver more or less in breadboard style to see how much W1TS was exaggerating and was surprised to see what a terrific wallop the little thing puts out. It is a shame that so many Novices are using poor receivers when they could be using something like this. This little receiver really pulls them in. I use only about 15 feet of wire, usually stretched out on the floor, for an antenna. If I don't want to listen to hams, there are the foreign broadcasts and commercial services, ships and planes to be heard.

* 25 Atlantic Terrace, Lynn, Mass.

[1] Mix, "The Novice Special," *QST*, June, 1956.

Portables are not only a lot of fun, but their practical value in times of emergency has been demonstrated time and again. Hams who, like the author, travel will find the little v.f.o. rig described here an ideal means of keeping in touch with their favorite hobby.

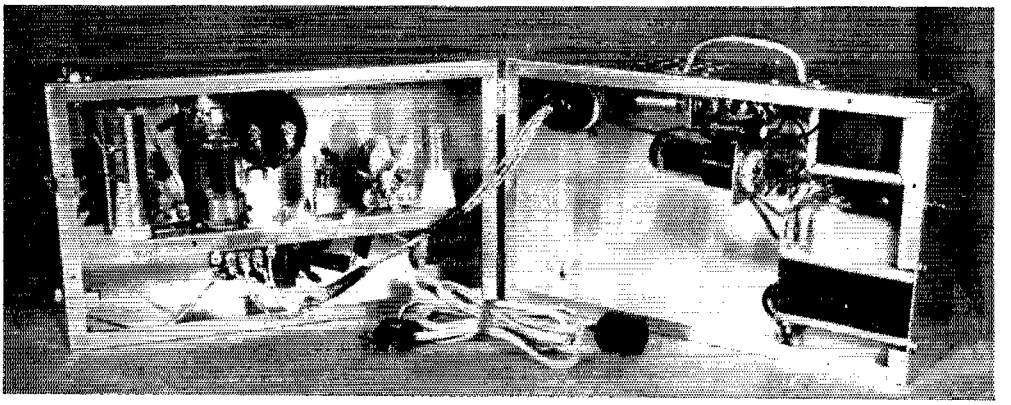
Transmitter Considerations

That article settled the receiver end of the problem. As for the transmitter, I had seen nothing that filled the bill for me. I built a transmitter-receiver using the regenerative receiver and a crystal-controlled transmitter running from one power supply and used that for a while. But crystal control with low power is rough unless you carry dozens of rocks with you. I carried seven of them, but there always seemed to be a kilowatt on every frequency that I had a crystal for. Something else had to be built. How could I get a small rig that would put a good note on the air and still have v.f.o.?

I was primarily interested in the 40- and 80-meter bands and that is also where the receiver shines. So the transmitter was designed for those two bands. If I wanted any kind of a note at all on 80, it meant that the oscillator would have to be on 160. The very popular Clapp was ruled out at the start because the size of a tank coil of good Q would be prohibitive. I would need a separate case just for the coil! But how about some of the other circuits? The Hartley was tried and abandoned along with a few others; no luck. Back to the *Handbook* to look them over again. The answer must be there somewhere. It was. A high-C Colpitts worked the first time, and the note is every bit as good as some rigs that have been built from commercial kits.

Transmitter Circuit

The complete transmitter circuit is shown in



The enclosure for the 25-watt portable is made up of two chassis hinged together. One chassis houses the power supply while the transmitter is mounted in the other. The a.c. cord plugs in at the rear. The coils are cemented to cone insulators.

Fig. 1. The oscillator uses a 6AH6 just as recommended in the *Handbook*. The grid is on 160, doubling to 80 in the plate circuit. The amplifier, a 2E26, operates straight through on 80 or doubles to 40 meters. The amplifier tank is a conventional parallel-tuned arrangement. The antenna is tapped directly on the tank coil through the 100-$\mu\mu$f. variable coupling capacitor. I have used this coupling system for a long time without a single complaint on harmonics. How-

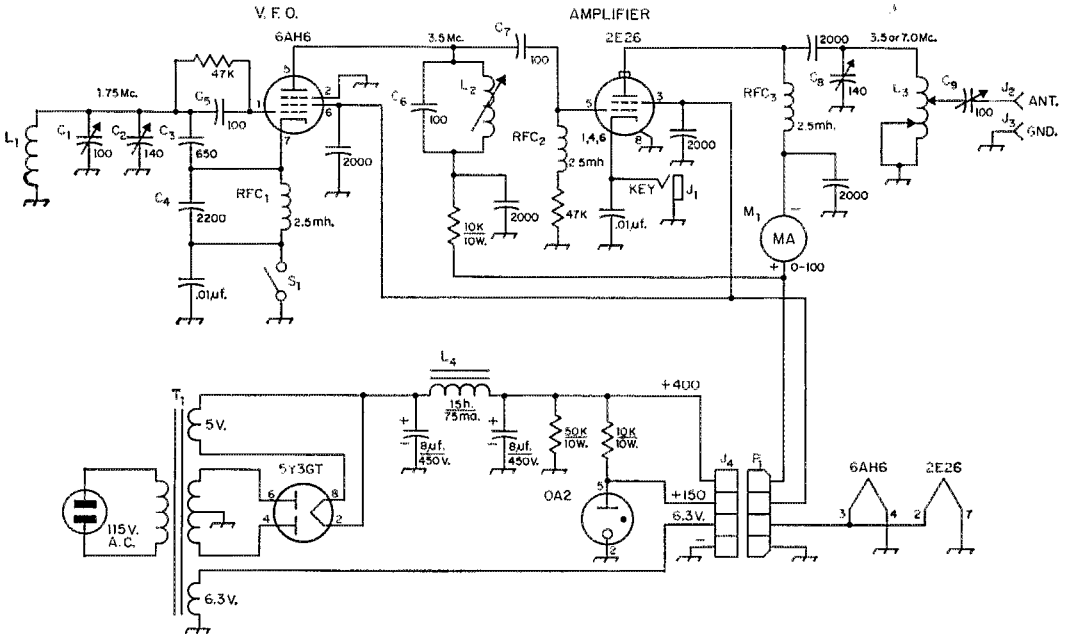


Fig. 1—Circuit of the 25-watt portable. Unless otherwise designated, all capacitances are in $\mu\mu$f., all 0.01-μf. and 2000-$\mu\mu$f. capacitors are disk ceramic, capacitors marked with polarity are electrolytic, resistors are ½ watt.

C_1—100-$\mu\mu$f. midget variable (Hammarlund MC-100-M or similar).
C_2—140-$\mu\mu$f. air trimmer (Hammarlund APC-140-C or similar).
C_3, C_4, C_5, C_6—Silver mica.
C_7—Mica.
C_8—140-$\mu\mu$f. midget variable (Millen 19140 or similar).
C_9—100-$\mu\mu$f. midget variable (Bud CE-2004 or similar).
J_1—Open-circuit jack.
J_2, J_3—Pin jack.
J_4—4-prong tube socket.
L_1—39 turns No. 24, ¾ inch diam., 1¼ inches long (B & W 3012 or Air Dux 632).
L_2—38 turns No. 26 enam., ½ inch diam., iron-slug form, approx. 20 μh. (National XR-50 form).
L_3—47 turns No. 20, 1 inch diam., 3 inches long (B & W 3015 or Air Dux 816).
L_4—15-hy. 75-ma. filter choke (Stancor C-1002).
M_1—0–100-ma. d.c. milliammeter (2½ inch).
P_1—4-prong plug to fit J_4.
S_1—S.p.s.t. toggle.
T_1—Power transformer: 700 volts c.t., 90 ma.; 6.3 volts 3.5 amp.; 5 volts, 3 amp. (Triad R-11A).
RFC_1, RFC_2, RFC_3—2.5 mh. rf. choke (National R-50).

ever, it would not be difficult at all to convert the output circuit to a pi network,[2] or to conventional link output coupling to an antenna tuner. The main thing is that here is a two-tube rig that has no buffer stage and yet still has a signal to be proud of.

Construction

Cabinets of suitable size are sometimes hard to find, but chassis are always available — and cheap. So I decided to use two 7 × 12 × 3-inch chassis. I put the transmitter in one and tucked the power supply well into a corner of the other so that there would be plenty of storage space left for the antenna wire, a.c. line cord and key. The pictures show quite clearly how this was done.

An aluminum shelf 2½ inches wide was made with the long edges folded down about a half inch. Most of the assembly was done before installing the shelf in the front chassis. The shelf is spaced about 4 inches from the top of the chassis.

The layout shown should be followed somewhat closely to avoid interaction between circuits, for there is no shielding around the v.f.o. The oscillator tank coil is small (for 160 meters) and, if placed in the spot shown, coupling to other circuits will be negligible.

Looking at the rear view of the transmitter, from right to left, are the oscillator tank coil L_1, and the bandspread capacitor C_1 next to it. Under the coil is the band-setting capacitor C_2 mounted on an end wall of the chassis. Next to the band-spread capacitor on the shelf is the 6AH6 oscillator tube, then the slug screw of the oscillator plate coil L_2, and the 2E26 with the grid choke RFC_2 behind it. At the left are the plate tank capacitor C_8, the plate tank coil L_3, and in back of it the coupling capacitor C_9. The few fixed capacitors and resistors are below the shelf along with the oscillator plate coil. If I were to build this rig again, I would place the coupling capacitor under the amplifier tank capacitor, leaving more room for the tank coil.

In the rear chassis can be seen the power supply with the 0A2 voltage regulator tube for the screens of the two tubes. Since the power transformer has the same depth as the chassis, a small piece had to be cut from the lip of the chassis to get the transformer in place. But the transformer is flush with the chassis edge and does not prevent closing the two chassis together. The filter choke is above the transformer and the rectifier and VR tube are mounted on small brackets. The bleeder resistor and voltage-dropping resistor for the VR tube are mounted on a terminal-lug strip fastened under the top edge of the chassis. An octal socket with plug and cable carry the power over to the transmitter section. Should it be desired to use the supply for something else, nothing need be disturbed.

I put the key jack on one end; some may prefer to put it on the front panel. Two jacks are placed on the top for the antenna and ground connections.

The two chassis are hinged together and home-made fasteners were made of pieces of aluminum ½ inch by 1½ inches, with a U opening on the end which slides under a wing nut on the other chassis. Simple, but it works.

Where silver-mica capacitors are called for they should be used to minimize drift. Do not try to save on this small cost. B & W or Air Dux coil stock can be used for the inductors, and there is nothing in the transmitter that should be hard to obtain. I happened to have everything in my spare-parts stock except the chassis.

Adjustment

No tricky adjustments are involved. When tuning up the v.f.o., remove the 2E26 from its socket until everything in the oscillator is working and tuned to cover the band. The bandset capacitor has a shaft with a screwdriver slot and should be adjusted from the outside with the chassis closed together. A shaft lock should be provided so that the setting will not change after the correct point has been found. The output circuit of the oscillator can be tuned either by setting it to frequency with the aid of a grid-dip meter, or by inserting a 10-ma. meter between the amplifier grid leak and ground and tuning for maximum grid current. It will be found that the maximum-output point is not too broad. If the circuit is peaked at about 3600 kc., drive will be adequate over the range of 3500 to 3700 kc. If a hole is drilled in the chassis, above the slug of the XR-50 form, a long-bladed screwdriver can be inserted for adjusting the slug.

Tuning the final consists simply of adjusting the antenna tap and the coupling capacitor for the desired loading of the amplifier, keeping the tank tuned to resonance with C_8. The antenna may consist of a random length of wire. I have had good results with a 30-foot piece of wire strung up across the room and back, keeping the sections as far apart as room permitted: push pins were used to hold the wire in place. For 40 meters, approximately half of the turns on L_3 should be shorted out, shorting from the ground end.

For those who wish to modulate the rig, an adequate audio section could be built into the power-supply chassis with room to spare. Several of the modulators found in the *Mobile Manual* should be capable of doing the job nicely.

The receiver is built along lines similar to those of the transmitter. A separate power supply is provided, and there is plenty of room for the line cord, a separate receiving antenna and even the headphones. The tubes are on a shelf with the r.f. chokes and other small components underneath. The tuning capacitor is mounted on the shelf with the coil socket fastened against the chassis end wall nearby. The band-set capacitor and regeneration controls are below.

In the write-up of the Louisiana hurricane[3] one point mentioned was the need for small rigs that could be carried into disaster areas without

(Continued on page 140)

[2] See note at end of article.

[3] Bock, "The Disaster," *CQ*, Sept., 1957.

Hints on 144-Mc. Converter Design and Adjustment

Effective Reception with Simplicity and Low Cost

BY ALLEN R. BURSON,* W8WXV

VERY STRONG local signals giving more than their share of trouble with blocking and cross-modulation effects led to experiments with converter front ends for 144 Mc. that would cut down these troubles and still give satisfactory weak-signal performance. One result was the employment of a single 417A (either grounded-grid or grounded-cathode) ahead of a 6AM4 mixer. This was more than satisfactory, giving a noise figure close to 3 db., but the 417A posed problems.

Many 417As are by no means as good as their owners think they are. The extra dividend that this tube is capable of giving is obtainable only if the tube is in strictly first-class condition. Rejected tubes, so often available to amateurs, may not be appreciably better than low-cost mass-production u.h.f. triodes. After running into some trouble with bad 417As I started experimenting with other tubes, as I didn't want to have incurable converter trouble at some time when the band was hot. At least one top-working spare tube for the first r.f. stage is a must for a serious v.h.f. enthusiast.

Mixer Tests

As a preliminary step some work was done with mixers. (There is no point in giving the r.f. amplifier more to do than necessary.) Using any of the several u.h.f. triodes it was found that the best mixer noise figure obtainable was about 12 db. at 144 Mc. A simple way to check mixer performance was found to be the insertion of a switch in the B-plus lead to the r.f. amplifier. Injection from the oscillator, and coupling between the r.f. amplifier and the mixer, should then be adjusted to give the greatest noise *change* when the plate voltage is broken (or put back on). Keep the oscillator injection as low as possible and still obtain this maximum noise change.

This can be carried on a step farther, by converting the r.f. amplifier stage into a noise generator. This is done by grounding the grid of the r.f. amplifier tube. When the B-plus is applied the tube will then generate enough noise to more than override the mixer noise, if the mixer is working properly. In the lineup shown, the noise change when plate voltage is applied to the r.f. stage will be about 6 db. The advantage of doing the job this way is that the noise output from the r.f. stage (now the noise generator) is constant, regardless of the tuning except that done in the mixer itself.

R.F. Amplifier Considerations

R.f. amplifier tubes were checked next. With the 6AJ4 and 6AM4 tubes I had on hand (possibly new production might have been different) I had trouble with instability. The best noise figure obtainable was 6 to 9 db. In looking over the various low-cost TV tubes, the 6BN4 appeared to be a good prospect. Tried in the mixer it gave the same 12-db. noise figure. As an r.f. amplifier it came close to the best I had done with a 417A, under 4 db. The basic circuit is shown in Fig. 1. It uses a neutralized triode r.f. amplifier, another 6BN4 as a mixer, and a H66A i.f. output-coupling tube, or cathode follower.

A later model used only 6BN4s throughout, including two of them as crystal oscillator (38.333-Mc. crystal) and tripler to 118 Mc. This converter has an i.f. of 26 to 30 Mc., to allow full band coverage with the 75A-3.

Adjusting the neutralizing coil in such a stage is usually a stumbling block for the v.h.f. con-

* 460 Bowman St., Mansfield, Ohio.

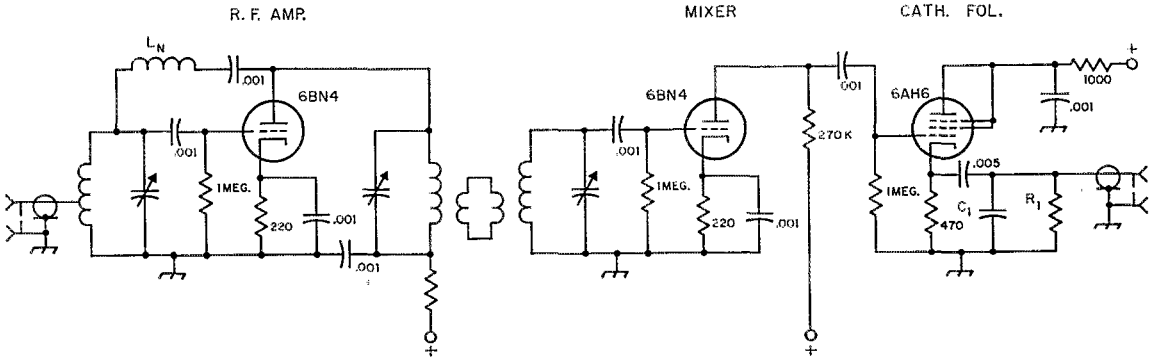


Fig. 1—Basic circuit of the 144-Mc. converter discussed by W8WXV. Values of R_1 and C_1 depend on the intermediate frequency used and the sensitivity of the receiver to which the converter is connected.

verter builder. A noise generator is not needed here. Remove the plate voltage from the r.f. stage, and adjust the inductance of the neutralizing coil for minimum feedthrough on a strong signal. This method dates from the adjustment of neutrodyne broadcast receivers in the '20s, but it has been little used of late, probably because a minimum is not readily checked by listening methods. A visual indication can be obtained as follows: connect a vacuum-tube voltmeter at the mixer grid; then, with the transmitter running and its signal tuned in, adjust the inductance of L_N for minimum indication. To prevent feed-back troubles, the coil is mounted above the chassis, on small feed-through insulators.

Many converter designs neglect the possibility of damaging r.f. amplifier tubes due to excessive grid-current flow when the transmitter is operating. The blocking capacitor and grid leak shown in Fig. 1 take care of this.

Is the Noise Generator Infallible?

When a noise generator is used the best point for connecting the r.f. input seems to be nearly halfway up the coil. However, it is the writer's contention that the best way to make input circuit adjustments is with a very weak signal coming in on the antenna with which the converter is to be used. It is recognized that there must be overcoupling to the input circuit, but just what this mismatch is could be anyone's guess. When you are receiving, the receiver input circuit is the load on the antenna line. If this load has been adjusted for optimum noise figure with a noise generator, it may be badly mismatched for the antenna. This could cause high standing-wave ratio and consequently excessive losses in the line. It could also cause a bad mismatch at the antenna, if the s.w.r. is high and the line was a critically "wrong" length. Thus we could have a good noise figure, but poor reception.[1]

This possibility can be avoided by making signal-to-noise ratio tests with the antenna on. This is not easy, especially if the receiver with which the converter is used is highly selective. The signal must be constant in level (no weak DX or signal off the side of the beam is likely to be) and it must be tuned on-the-nose at all times. A very weak signal generated down the street is useful for this purpose, but be sure that it is being picked up by the antenna, not by the converter circuitry, or through power leads.

Tuning of the input circuit, the position of the tap, and even the antenna line length, can then be varied for best signal-to-noise ratio. Don't adjust for maximum signal strength. Be sure that maximum rise in signal over noise is the end result of the tinkering process.

The noise generator is a very useful device. It can give you a quick check on tubes, and it is probably close to optimum for adjustment purposes, but careful signal-to-noise ratio tests under actual receiving conditions are the only certain evidence of optimum receiver performance.

Controlling I.F. Output Level

Particularly if the receiver is to be used for work on other bands, it is nice to be able to set the converter output level so that the receiver S meter works normally in both classes of service. This is often taken care of with an i.f. amplifier stage, but the gain such a stage affords is not needed with most modern receivers. A cathode follower is a simple and effective means of coupling between the mixer and the receiver input circuit, but conventional gain-control methods are not applicable to cathode followers.

The i.f. output circuit shown here does not provide a variable gain control, but the value of either the load resistor, R_1, or the by-pass capacitor, C_1, can be adjusted to suit the receiver in question. The values used at W8WXV will require modification for other intermediate frequencies, and possibly for other receivers. We tune only the first megacycle of the band with the converter shown in the diagram, using an intermediate frequency of 1.5 to 2.5 Mc. on a 75A-3. Mixer output is relatively high with this low i.f., and the value for R_1 turned out to be only 0.2 ohm. At this i.f. a bypass of 0.002 μf. keeps the 144-Mc. energy in the mixer output from being passed on to the receiver, but does not drop the i.f. level seriously. With a higher i.f., the bypass would have to be a lower value, and the resistor probably higher.

With a given value of bypass, the load resistor should be adjusted so that the noise from the converter just overrides the receiver noise. A basic point of v.h.f. receiver performance, often not fully understood, should be restated here. The signal-to-noise ratio of a receiving setup that is working properly will be determined entirely by the first stage in the converter. There is, therefore, nothing lost in cutting down the gain of the over-all setup by loading down the mixer output in the manner described above, provided the communications receiver still tracks properly. The only difference these load resistor changes make is in the reading of the S meter on noise. This should be set so that noise with the antenna connected just begins to show on the meter — if you are lucky enough to live in a spot having little or no man-made noise.

With an i.f. of 26 to 30 Mc. the above method of controlling the overall gain was not satisfactory. Using normal bias and by-passing and loading to reduce the gain upset the input circuit of the 75A-3, so that it would not track properly. The gain of the converter was then adjusted by varying the bias resistor of the cathode follower. A value of 7500 ohms gave about the right output level with the converter using all 6BN4s.

[1] An interesting point is raised here. Whether or not the author's statement is true would seem to depend on two factors, neither of which can be readily determined in most amateur receiving setups for the v.h.f. bands. First is the degree of mismatch introduced in adjusting for optimum noise figure with a noise generator. If the mismatch is considerable, his idea is undoubtedly correct. And if the mismatch between antenna and line was appreciable in the first place, it is anyone's guess as to the degree of mismatch under actual receiving conditions. A cross check under actual receiving conditions is a worthy effort, in any case. — *Ed.*

CONDUCTED BY EDWARD P. TILTON,* W1HDQ

ONE of the most frequently requested v.h.f. items in the mail of the ARRL Technical Information Service these days is a design for a v.f.o. for use at 50 Mc. and higher. Seems everyone wants to be able to move around. Having jumped from one surplus-crystal pile up to another to no avail, many v.h.f. men now feel that the only solution to the QRM problem on 6 and 2 is v.f.o. control.

We have our own ideas about the desirability of conversion to variable-frequency control on the v.h.f. bands, even if it were possible to maintain entirely satisfactory signal quality in the process. One pleasant feature of v.h.f. communication, for some of us at least, has been that the world above 50 Mc. is the last refuge of the amateur who likes to talk with one person at a time. With everyone equipped to climb on anyone's frequency at will, this relaxed atmosphere will be lost forever.

But what we're concerned with at the moment is the technical, rather than the esthetic side of the picture. What are the requirements for a *good* v.f.o., and how can they be met? Presumably, if v.f.o. control could be made to produce a signal quality equivalent to that of the better crystal-controlled stations, there would be no technical objection to its use, provided that the owner takes adequate precautions to stay inside the band. True stability is not easily achieved in v.h.f. work, however. V.f.o. techniques that produce satisfactory signals on the lower amateur bands may result in something quite different at 50 Mc. and higher; particularly higher.

There are several reasons for this. First is the high order of frequency multiplication used in v.h.f. transmitters. Usually the v.f.o. works into the crystal-oscillator stage of the exciter at 8 to 9 Mc. This means that the frequency is multiplied 6 times for 50 Mc. and 18 times for 144. If there is instability in the controlling oscillator, drift, mechanical fluctuations and frequency modulation effects are going to be 6 or 18 times more noticeable. If the oscillator note is anything but pure crystal in tone, it is going to be far too much of a buzz saw to be welcome in the crowded portions of the v.h.f. bands. If it chirps when the transmitter is keyed, it will youp right out of the receiver passband at 144 Mc.

It is no great problem to make a v.f.o. that doesn't drift badly, even when you check it at its 18th harmonic. If the operator is interested mainly in voice work, he may be satisfied with his signal in that case. It may sound passable unless the beat oscillator is used in receiving.

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

1	WØZJB	11	W2IDZ	21	K6EDX	31	KØGQG
2	WØBJV	12	W1LLL	22	W5SFW	32	W7FFE
3	WØCJS	13	WØDZM	23	WØORE	33	WØPFP
4	W5AJG	14	WØHVW	24	W9ALU	34	W6BJI
5	W9ZHL	15	WØWKB	25	W8CMS	35	W2MEU
6	W9OCA	16	WØSMJ	26	WØMVG	36	W1CLS
7	W6OB	17	WØOGW	27	WØCNM	37	W6PUZ
8	WØINI	18	W7ERA	28	W1VNH	38	W7ILL
9	W1HDQ	19	W3OJU	29	WØOLY	39	WØDDX
10	W5MJD	20	W6TMI	30	W7HEA		

W1FOS	47	W4FNR	42	W7FIV	41	KØJJA	47
W1CGY	46	W4AKX	42	W7CAM	40	WØIBL	46
W1LSN	46	W4RFR	42	W7MKW	40	WØJOL	46
W1AEP	46	K4DNG	41	W7YJE	38	WØUSQ	45
W1SUZ	46	W4OXC	41	W7UFB	35	WØFKY	45
W1RFU	45	W4ZBQ	41	W7QDJ	34	WØQVZ	45
W1ELP	44	K4GYZ	41			WØOFZ	44
W1KHL	44			W8WPD	47	WØYJF	44
W1LGE	42	W5VY	48	W8NOH	47	WØURQ	44
W1FZ	42	W5LFQ	47	W8OJN	46	WØBTG	43
W1FVZ	41	W5GNQ	46	W8SQU	46	KØGKR	43
W1IKO	40	W5FSC	45	W8HXT	46	WØJHS	43
W1CLH	40	W5ONS	45	W8NQD	45	WØIPJ	43
		W5JLY	45	W8UZ	45	K4DXS	43
W2RGV	47	W5ML	44	W8RFW	45	WØWNU	42
K2JNS	46	W5EXZ	43	W8LPD	44	KØCLJ	41
W2AMJ	46	W5VV	43	WHJR	44	WØPKD	41
W2BYM	46	W5FXN	43	K8ACC	43	KØAKJ	40
W2FHJ	46	W5JME	42	W8ESZ	42		
K2CBA	45	W5CVW	41	K8CIC	42	VE3AET	47
W2SHV	45	W5FAL	41	W8EVH	42	VE7CN	44
K2AXQ	43	W5HEZ	41	W8YLS	41	VE1EF	38
K2ITQ	43	W5BXA	41	W8INQ	40	VE3AIB	37
K2ITP	43	K5ABW	40			KL7AUV	36
K2LTW	41			W9BRN	48	EI2W	35
W2ORA	40	W6WNN	48	W9ZHB	48	VE3BX	33
		W6UXN	48	W9QUV	48	VE3BHQ	32
W3TIF	47	W6BAZ	47	W9VZP	47	VE1QY	32
W3KKN	45	K6JCA	47	W9RQM	47	VE1PQ	31
W3KMV	45	W6JKN	46	W9QKM	47	VE2AOM	31
W3RUE	42	W6ANN	45	W9JFP	47	VE3DER	31
W3NKM	41	W6NDP	45	W9DSP	46	SM7ZN	29
W3MQU	41	W6ABN	45	W9AAG	46	CO2ZX	27
W3MXW	41	K6GTC	44	W9UIA	45	XE1GE	27
W3OTC	41	K6RNQ	43	W9UNS	45	VE1WL	28
W3FPH	40	W6UCG	43	W9MHP	43	PZ1AE	26
W3LFC	40	K6HYY	43	W9SWH	43	VE4HS	26
		W6NIT	42	W9MHP	43	ZS3G	25
W4EQM	47	W6IWS	41	W9KLR	43	SM6ANR	24
W4UCH	47	W6CAN	40	K9EID	43	SM6BTT	23
W4UMF	47	K6ERG	40	W9JCI	42	VE1ZR	23
W4FBH	46	W6BWG	40	W9MFH	42	VE3OJ	22
K4DJO	46			W9SWH	42	CO6WW	21
W4EQR	46	W7BQX	47	W9EPT	41	LA9T	20
W4AZC	45	W7DYD	47	W9IMG	41	KH6UK	17
W4LNG	45	W7INX	47			VQ2PL	16
W4CPZ	45	W7ACD	46	WØQIN	47	JA1AUH	16
W4FLW	45	W7FDJ	46	WØNFM	47	LU9MA	16
W4MS	44	W7JPA	44	W6TKX	47	JA8BU	14
K4HOB	44	W7JRG	44	WØKYF	47	ZE2JV	12
W4QN	44	W7BOC	42	WØZTW	47	JA1AAT	12

But to be effective in weak-signal c.w. work, the signal must be free of chirp when the transmitter is keyed, and the note should have something approximating crystal quality. Few v.f.o. signals heard on 144 Mc. come even close to satisfying these requirements. Their rough notes can be spotted instantly. More often than not they show appreciable frequency deviation when the transmitter is modulated. On c.w. they remind one of the TNT oscillators of the late '20s. Such signals are *legal* on 144 Mc., for only at 54 Mc. and lower need the transmitter frequency be stabilized, according to FCC regulations. But do we want to encourage such things?

Frequency multiplication is not the only source of trouble. R.f. feedback from the final amplifier to the v.f.o. may cause rough or chirping notes. This may show up badly on 144 Mc., when the same setup sounds passable on 50 Mc., so it is not just the extra 3-times frequency multiplication that is to blame. Transmitter power may be a factor, too. A v.f.o. that sounds fine with a Communicator may be a horror when it drives a kilowatt rig.

Maybe a good yet simple v.f.o. can be made for 144-Mc. service. The best we've heard so far are the surplus Command-transmitter jobs. The oscillator tube these sets use was designed especially for oscillator service. It may hold the key to better v.f.o. quality through its freedom from microphonic effects. But the most promising approach is the heterodyne system.

Here we start with a good v.f.o. at some fairly low frequency. This could very well be a v.f.o. used on lower amateur bands. Then we beat a stable crystal oscillator against it, choosing frequency combinations that give beat products at desired higher frequencies. Going from 7 to 48 or 50 Mc. is a typical example. The resultant stability is the same at 48 to 54 Mc. as at 7 Mc. At 144 Mc. it deteriorates only by a factor of 3.

The catch is that the heterodyne process produces frequencies other than the desired ones. Getting the right frequency and only the right one out of a heterodyne-type v.f.o. requires some care in design and adjustment, and some knowledge of what we are about, but the result should be worth the effort. If we are to have general use of variable-frequency control on the v.h.f. bands, some sense of responsibility on the part of both the designer and the operator is called for, whatever control system is used. The v.f.o., whatever else it may be, is not a cheap or simple substitute for crystal control.

Here and There

There's a lot of high-power operation on 50 Mc. these days, but K2MSU, Matawan, N. J., has gone in the other direction. Experimenting with transistors above their supposed alpha cutoff frequencies, he has made a 50-Mc. transmitter using two 2N47 transistors in its r.f. section. The modulator is two CK722s. Input to the final is .09 watt, and the output has been measured at 36 milliwatts. Contacts are made over distances of 15 to 30 miles, with reports of S4 to S9-plus. Best DX is Doylestown, 48 miles.

During the F_2 DX season we got reports of reception of all sorts of commercial signals and harmonics in the 50-Mc. band. Here's one heard during a recent aurora. W8BJH, Muskegon, Mich., heard "V V V de ZFD 51" at 1800 EST May 13. Frequency 51.25 Mc. The signal had the usual auroral type flutter. Anyone know where this came from?

Prior to the current solar activity peak, only a handful of 50-Mc. contacts had been made with Alaska. Things were never like they have been since the fall of 1957. Take KL7AUV, for example. Jack made a total of 665 contacts, not including local work, from Nov. 5 to March 1, when he left for a visit to Oklahoma City. He has 36 states confirmed, and has worked several KH6s, one VE3, and over 30 JAs.

An expedition to Prince Edward Island July 5 through 12 is of interest to 50-Mc. enthusiasts. W1UXK and W1QMS will be working from P.E.I. on the lower bands, but they have a 50-watt 6-meter rig and a pair of 5-element beams for 50 Mc. They will monitor the band carefully and get on 6 if any signals are heard. For country purposes, they will be just another VE1, but P.E.I. is required for the WAVE award, and is much sought after on that account.

Here's a hint for owners of late-model HRO receivers. The 50-Mc. coils available for these receivers provide probably the best tuning rate of anything you're likely to find that covers a 4-megacycle tuning range. Performance of the HRO is good enough in the 50-Mc. range so that it makes a good tunable i.f., if you revise current converter designs for 50-Mc. output. This suggestion is from HRO-60 owner W4SWC, who took exception to your conductor's statement in the converter article in February *QST* that no single-dial receiver other than the NC-300 and some surplus jobs had a tuning range suitable for covering an entire v.h.f. band without crystal switching.

The Mt. Airy V.H.F. Club (Philadelphia area) will hold their third annual Pack Rats Picnic Aug. 10, at Fort Washington State Park, Flourtown, Pa. The Pack Rats now operate nets on three v.h.f. bands, at 50.2, 144.2 and 220.05 Mc.

The Mobile Sixers Radio Club offers a certificate award for working members of their group. Awards are in two classes. For the Class I award (stations within 35 miles of City Hall, Philadelphia) contact must be made on 50 Mc. with 15 members of the Mobile Sixers, while they are operating mobile, or 30 members, either mobile or fixed. Class II, for stations outside the 35-mile radius, requires contact with 5 members while they are mobile, or 15 members either mobile or fixed. Claims should be sent to the club secretary, W3JBA, 717 Haines Lane, Springfield, Pa.

Working all continents on 50 Mc., never done prior to late 1957, has now been achieved by at least 10 different 6-meter operators. In the order following, WAC certificate awards for 50-Mc. work have been issued to W6BAZ W6BJI W9DSP K6GDI WØQIN W9HGE WØSMJ WØOGW and W6FZA. Of these, W6BJI WØSMJ and WØOGW also hold 50-Mc. WAS awards.

Like to work some real 144-Mc. DX? CT3AE, Madeira Islands, is willing to give it the college try, and he has about as favorable a location for long-haul tropospheric propagation as you're likely to find. He will be tuning 144 to 146 Mc. daily, 1900 to 2000 GMT, during June and July. We're writing him to suggest some later listening, too; judging by the KH6UK-W6NLZ successes, 2100 to 2300 GMT might be more promising. We don't know enough about the weather in the two areas to have any idea whether favorable conditions might be expected at the same times of day, but in lieu of any better information this seems a fair guess. One thing we do know: CT3AE has one of the attributes needed for v.h.f. DX work — the interest. He has done a fine job on 50 Mc., providing a new country and "first Africa" contacts for many of the 6-meter gang.

Aquarids and Lyrids Skeds Pay Off

The May Aquarids shower proved to be a good one for the 144-Mc. ping jockeys. W1AZK, Chichester, N. J., worked W4HHK, Collierville, Tenn., May 5, for the first 144-Mc. QSO between their states. All information was exchanged between 0704 and 0724 EST, and a 30-second burst at the end made the result doubly sure. Don also worked W4HJQ, Glendale, Ky., earlier the same morning. W1AZK had skeds with these two, and with stations in South Carolina, Alabama and Minnesota during the Lyrids shower, April 19–23, without making any satisfactory contacts.

W4LTU, now in business in Falls Church, Va., got in his first m.s. work from this location on May 5, working W5JWL, Gurdon, Ark., at 0626 EST. This QSO was near completion on short underdense bursts, until a long and loud one held on for nearly two minutes. Walt also heard W4HHK, during the sked with W1AZK mentioned above.

W9KLR, Rensselaer, Ind., pushed his record states total up another notch by working W1OUN, Falmouth, Maine, May 4. He reports that W1OUN was coming in with many bursts per minute, some of them S6 to 8 in strength, which made state No. 38 an easy catch. Bill now has all the states in 7 areas worked, and he needs only Delaware in the East. Volunteers in Delaware and W6 and 7 please get in touch with W9KLR!

W6DNG, Compton, Cal., used the Lyrids to gain No. 9, making 144-Mc. contact with W7JRG, Billings, Mont., April 21, 2330 to 0108 PST.

Lyrids skeds with WØYSJ, Fargo, N. D., brought W4HHK his first new one in a long time. Contact was completed during a 0630-0700 sked April 22. Only slight signs of signal were received from W1ZAK during the Lyrids.

Perseids Plans

The Perseids shower, Aug. 10–14, with the July Aquarids (26–31) for a warmup, will probably see the most concentrated period of meteor-scatter activity yet. Here are some Perseids plans.

W6LIT (Box 523, Loma Linda, Cal.) is set for an expedition that should keep him busy with schedules. Don will leave Loma Linda the night of Aug. 7, planning to be in Cokeville, Wyoming, by the evening of the 9th. He will have a 4X250B rig running 450 watts input on c.w., a 13-element Gonset Yagi, and a 417A converter and 75A-2 combination. The party will also have another 75A-2 along which will be used to monitor 7002 kc. continuously for sked arrangements. A 70-watt 6146 rig will be in operation on 7 Mc.

Operation will be continued in Wyoming until the morning of the 12th, when W6LIT/7 will move to Montpelier, Idaho, working there through the morning of the 14th. Frequency will be 144.171 Mc. Experience gained in last year's Perseids, when W6LIT/5 operated from Silver City, N. Mex., should pay off for many of the gang this year. Skeds should be made as soon as possible. Get in line now!

W4RMU (Box 6, Oceanway, Fla.) is taking up the 144-Mc meteor business where W4LTU left off. Allen has 1 kw. on 144.09 Mc. and is open for meteor-scatter skeds. His array is currently only a 4-over-4, but we have hopes that it will grow before the Perseids shower. With a couple of years' experience in 50-Mc. ionospheric-scatter work, W4RMU should have what it takes to provide Florida contacts on 144 Mc., for those of us who missed W4LTU.

The popularity of meteor-scatter work having grown tremendously in the past couple of years, and the Perseids being consistently the best of all meteor showers, the period beginning about Aug. 10 will find the 144-Mc. band hot with scheduled work. We have done a great deal of editorializing on this subject in the past, but some points bear repeating at this time, as we set our sights for the major opportunity of 1958.

A QSO cannot contain less than positive two-way identification, the exchange of some sort of information (signal reports are the simplest and most logical) and a conclusion. Use automatic means, if you must. Use the tape recorder, certainly, if you have one. But however you do it, be sure that you have made a true QSO, and that you know you have made it — before you start sending out confirming QSLs. If you're not sure you made it before you check on the tape recordings, you didn't. Let's be sure that all our m.s. work is done in such fashion that we will have no qualms about our contacts eventually becoming a part of some man's claim for the first 144-Mc. WAS. It *could* happen to you!

OES Notes

W1FMK, Brattleboro, Vt. — Installation of 60-foot tower improved 50-Mc. coverage over hilly terrain to south.

W1UHE, No. Tiverton, R. I. — Spring inversion season bringing stronger 220-Mc. signals from N. Y., N. J., and E. Pa. Now have high-powered 220-Mc. final in the works.

W2LWI, Wappingers Falls, N. Y. — Worked VE2FF on 144 Mc. twice in April, via tropospheric propagation.

W3GKP, Spenserville, Md. — Recording of earth voltage variations continued, with largest potentials recorded April 2–5, 14–19 and 28–30. Peaks ran from 0.4 volt positive to 0.5 volt negative. Even these small voltages seem to correlate well with 144-Mc. aurora as observed at this station, except that earth potentials seem to take a few days to settle down after an aurora has passed. Nightly meteor skeds with W4RMU continue.

W3KLA, Baltimore, Md. — Conditions to northeast good on 50 Mc. much of the time, but few stations in W1 and W2 make contacts with Baltimore area, seemingly because they do not look for weak signals from that direction.

(*Continued on page 140*)

2-METER STANDINGS

States	*Areas*	*U. S. Miles*
W1REZ	28	8 1080
W1AZK	23	7 1205
W1KCS	22	7 1150
W1RFU	22	7 1120
W1AJR	21	7 1130
W1FZJ	21	6 1120
W1OAX	21	6 800
W1HDQ	20	6 1020
W1MMN	19	6 800
W1IZY	18	6 750
W1UIZ	17	5 680
W1AFQ	17	6 920
W1ZJQ	17	6 800
W1PHR	16	6 780
W1BCN	16	5 650
W1KHL	16	5 540
W2NLY	34	8 1390
W2CXY	34	8 1200
W2ORI	34	8 1200
W2AZL	28	8 1050
K2GQI	25	7 950
K2IEJ	24	7 1060
W2BLV	23	7 1020
K2HOD	23	7 950
W2DWJ	23	6 720
W2OPQ	22	7 1050
W2SMX	22	6 905
W2AMJ	21	6 960
W2KIR	21	7 880
K2CFH	21	8 910
K2IXJ	21	6 925
W2CBB	21	6 800
W2LWI	20	6 700
W2AOC	20	6 770
W2PAU	20	6 880
W2RXG	20	6 700
W2UTH	19	7 880
W2AZP	19	7 650
W2RGV	19	6 720
W2LRI	18	7 620
K2RLG	17	6 910
W2SHT	16	6 650
W2PCQ	16	5 650
W3RUE	30	8 950
W3BGT	28	8 740
W3TDF	27	8 880
W3GKP	27	7 1020
W3SGA	26	6 550
W3IBH	23	7 650
W3EPH	21	8 —
W3KCA	21	7 —
W3LNA	20	7 720
W3LZD	20	7 —
W3KWL	19	7 740
W3NKM	19	8 660
W3BNC	18	7 750
W4HJQ	35	8 1140
W4HHK	35	9 1280
W4AO	29	8 1100
W4LTU	27	8 1160
W4UMF	27	8 1110
W4MKJ	24	8 725
W4JCJ	23	6 660
W4EQM	21	8 900
W4DWU	20	6 675
W4OLK	19	6 720
W4TLV	18	7 1000
W4JFV	18	7 850
W4IKZ	18	6 720
W4VLA	17	7 825
W4WNH	17	7 750
K4EUS	17	6 660
W4AIB	16	7 720
W4CLY	15	5 720
W2BHS/4	14	7 650
W4ZBU	14	5 800
W4TCR	14	5 720
W4SOP	13	5 680
W4CPZ	12	5 650
W4MDA	11	5 860
W4KCQ	10	4 860
W4LNG	9	4 800
W4GIS	9	2 335
W5RCI	33	9 1215
W5DFU	25	9 1300
W5AJG	22	8 1280
W5JWL	18	6 1150
W5LPG	16	6 1000
W5VKH	15	5 720
W5MMW	14	5 700
W5ML	14	4 700
W5FSC	12	5 1390
W5ABN	12	5 780
W5PZ	12	5 1255
W5QNL	10	5 1400
W5CVW	10	5 1180
W5SWV	10	3 600
W5KTD	10	4 760
W5NDE	8	3 520
W5FEK	8	2 580
W5VY	7	3 1200
W6NLZ	9	3 2540
W6DNG	9	3 1030
W6WSQ	8	4 1380
W6AJF	5	2 640
W6RRZ	4	2 360
W6PJA	4	3 1390
W6ZL	2	2 1400
W6BAZ	3	2 400
W6MMU	3	2 388
W6ORS	3	2 365
W6LSB	2	2 360
W7VMP	11	5 1280
W7LEE	6	3 1020
W7JRG	4	3 1040
W7LHL	4	2 1050
W7JIP	4	2 900
W7JU	4	2 353
W7YZU	3	2 240
W8KAY	36	8 1020
W8WXV	35	8 1200
W8LOF	31	8 1060
W8RMH	31	8 1000
W8SVI	30	8 1080
W8NFG	30	8 100
W8PT	29	8 985
W8WRN	28	8 680
W8SRW	27	7 850
W8JWV	25	8 940
W8ILC	25	8 800
W8LPD	25	8 750
W8DX	25	8 720
W8EHW	25	8 860
W8BAX	23	8 675
W8LCY	20	7 610
W8NOH	19	7 660
W8CZV	17	7 970
W8RWW	17	7 630
W9KLR	38	8 1160
W9WOK	32	9 1050
W9GAB	29	8 1075
W9AAG	27	8 900
W9REM	27	8 850
W9ZIH	27	8 830
W9UCH	27	8 750
W9FVJ	26	8 850
W9EQU	26	8 820
W9ZHL	25	8 760
W9EHX	24	7 725
W9BPV	23	7 1000
W9UED	22	7 960
W9KPS	22	7 690
W9PBP	20	8 820
W9MUD	19	7 640
W9LF	19	6 —
K9AQP	18	8 725
W9ALU	18	7 800
W9JGA	18	6 720
W9MBI	16	7 660
W9DDG	16	6 700
W9IIY	16	7 560
W9LEE	15	6 720
W9DSP	15	6 760
WØIHD	27	7 890
WØGUD	25	7 1065
KØDOK	22	8 920
WØBFB	21	8 1060
WØTGC	21	8 —
WØSMJ	20	7 1000
WØINI	20	6 830
WØRUF	19	7 700
WØUOP	18	6 —
WØONQ	16	6 1000
WØRYG	17	6 925
WØZJB	15	5 1200
WØUSG	14	6 750
WØIFS	14	5 —
WØOAC	14	5 725
WØRYG	14	5 600
WØMVG	13	5 700
WØTJF	13	4 —
WØIC	4	2 950
VE3DIR	26	8 925
VE3AIB	26	7 910
VE3BQN	17	7 790
VE3DER	16	7 820
VE3AQG	16	7 800
VE3BPB	13	6 715
VE2AOK	12	5 550
VE1QY	11	4 900
VE7FJ	2	1 365
KH6UK	1	2 2540

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

Who:

In last November's column we surveyed the possibility of a Novice DXCC membership, something *ne plus ultra* among potential neophyte operating achievements. While the first such application has yet to show at W1WPO's DXCC desk, another milestone for our long DX trail rolls out of this month's mailsack, a claimed first of substantial magnitude. The correspondent, Missourian KNØLTB, has this to say:

> Dear Jeeves:
> I *made* it at last. On the 14th of April I worked VP8CR, Antarctica, for my 100th country. All have been QSOd since the 1st of January with no help of any kind from anyone. I'm real happy — hit the 105-mark yesterday with VR2DG! 73,
>
> — *Tony*

Such weapons as a 20-crystal heterodyne bank, a spunky pair of 2E26s and a well-pruned 21-Mc rotary served KNØLTB well during his 14-week campaign. But, as is to be expected when one bags a fast batch of DX, Tony needs a flock of QSLs. Will the necessary convincers finally arrive?

You'll recall that Texan KN5ALA registered the first Novice all-continents-worked claim in late 1955 (p. 56, January '56 *QST*) only to be headed at the WAC finish line by KN6JQJ and WNØZQV (p. 58, March '56 *QST*). Competitors of KNØLTB also are reported nearing the coveted 100-worked mark; the battle is joined! In any event, may the most worthy WN/KN DX digger emerge victorious in this joust for No. 1 Novice Century Club affiliation. Fifteen-meter prop conditions being what they are, this could well be the year.

—•••—

Life lately has become a complex series of Days, Weeks, Months and Years. From National Pickle and Potato Chip Week one can leap to the astral sweep of the International Geophysical Year. On the local scale we've seen periods set aside for almost everything from soup to nuts, some packaged complete with beauty queens, political orations and parades. Hours, Minutes and even Seconds may be tagged next in this continuing promotional commotion.

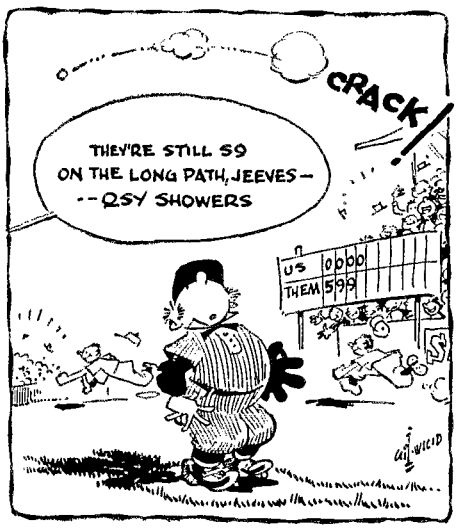
Perhaps our DX world can take a cue from the kick. We might designate a QRP-on-Forty Week, a Finish-Your-DXCC Month and an Anti-DX-Hog Year. More seriously, in line with W1BDI's pithy comments re QSL matters on page 96, May *QST*, we might well proclaim an *International QSL Week*, a period during which all amateurs undertake to catch up on neglected confirmation obligations. And a chain angle could be incorporated; for every QSL an amateur receives during International QSL Week he must send forth *two*.

We'll even give the ball a shove: The second week of August is hereby informally dubbed International QSL Week. Roll up your sleeves, dig out your logs, whip out your mills and pens, seize stock and stamps, and start salivating. Ordinary post cards will do. The following month, September, naturally becomes QSL Managers and Bureaus Month. Bless 'em all!

What:

Timely to remind you that in the following band-by-band synopses of recent DX activity frequencies (in number of kilocycles above the lower band-limit) appear within parentheses, times without. *E.g.*, (9) = 14,009 kc. if the paragraph treats 20-meter work. Times are GMT using the nearest whole-hour figure such as 7 for 0720, 0 for 2349. . . . Summer's propagation stagnation grips our northern regions but the undaunted are scoring well. First stop on this month's Bandwagon trek is

20 c.w., where deepest DX waters run. Our guides, W1s BFK CTW, W2s HBV HMJ (251 bagged), OKM, W3LOS 56/31, W6s KG ZZ, W7s DJU/GYR IXH NRB VCB YAQ, W8s IBX (114/92), YGR, W9UBI; K1CBR, K2QXG, K4s IGD (70/46), JOS PHY RJM, K5HYB, K6s AHV CTV (116/40), SHJ SXA, K9GVD, KØs DQI (124/102), ESH; VEs 1PQ 7CQ (70/24), DL4YE, I1ER, KC6UZ and KL7CDF point out such scenery as **BV1US**, **CN2s** AQ (80) 3, AY, **CN8s** CL DJ (82), **CP3CD** (8) 0, **CRs** 4AH 6CK 7AG 7CI 7IZ (22), 9AH (10) 4, **CTs** 2AB 2AI 2BO (22) 1, 3AB, **DL8s** AX CM, **DMs** 2ADB 3KPN, **DUs** 1RTI 1DR 6IV (30) 13, 7SV 9JO, **EAs** 6AU 6AZ 5, 8BF (30), **ELs** 2L 5B, **ET2US**, **FAs** 3QY 3WW 8CR 8NL (79), **FB8BD**, **FE8s** AE AH, **FF8s** AC BZ (78), CF (12) 22, **FG7s** XC XE (100) 5, **FK8AT**, **FO8AC**, **FM7WT** (106), **FY7YF**, **GB3BP** (just England), **GC2FZC** (56) 6, **HA5s** AM (44) 1, DH, **HCIs** JW (11), LE, **HE9LAC** (20) 20, **HH2s** CL KVU LD OT (2), **HI8SKE** (W2SKE), **HKs** 3KG (30), **ØAI** (93) 1, **HLs** 2AJ 9KY, **HR2FG** (4), **HS1C**, **IS1s** CXF (20) 21, ZEI ZUI, **IT1s** AGA (25, PA TAI, JAs in all call areas save JA9 and JAØ, **JT1AA** (20) 15, **JZØHA** (62) 13, K6IVL/**KG6**, **KAs** 2NY (67) 7HH 7TB, **KB6BJ**, **KC4s** USK USV (20) 13, **KC6s** AN JC KR SJ, **KG1s** AD CK DQ (81), DT of Fletcher's Floater, **KM6s** BK EVK, **KP6s** AK AL, **KR6s** AK AO JF MJ USA, **KV4AA**



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

UR2BU supplies many a first-Estonia phone contact on 14, 21 and 28 Mc., holding his own with the code customers as well. *(Photo via W1PNR)*

(2, 80) 8, 22-0, **KW6CQ**, KX6BP, far-south **LUs** 1ZE 2ZS 6ZI 7ZI, **LZs** 1KNB 1KPC 2KLR (63) 22, 2KNB, **OA4s** ED FT (1), **OQ5s** 1E PE, **OX3UD** (88) 5, **OY7ML**, PJ3CB (95), **PZ1**AR (8) 1, RAEM of Moscow, **ST2**AR, **SV0WR** (38) 16, TF5TP, **TI2PZ**, antarctic UA1KAE 6/7, **UA9s** CM (80) 0, DM DN (71) 3, DO (24) 13, KCK KYB OI (18) 13, **UA0s** CI IJ (9) 1, KAR of Dickson Isle, KFG KJV LH mm OM RK, **UC2s** AA AF AU BL (44) 8, CB (12) 3, **UD6s** AI AM, **UF6s** AE FF, **UG6**AB, **UI8**KAE, **UJ8s** AF AG KAA, **UL7**KBK, **UN1s** AG KAB KBK, **UO5s** AD KAA PW, UPOL6/7, UP2s in number, **UQ2s** AB AE/mm BI KAB, **UR2s** AJ AK AM (31) 4, AN BU (18) 15, DX KAA, **VK9XK**, **VK0s** CJ DA KT RO RR, **VPs** 2SI 5BL (76), 5FH 6PJ 6RG 7NG 8CW 9Y 0Y (25) 11, **VQs** 2RG 3CF 3JTW 4KPB 8AJC (20 t7) 15, **VRs** 1C 2DA 6TC (60) 6, **VSs** 1BB 2FK (31) 17, 6DR 6DZ (22) 16, 6EC, **VS9s** AD AP, **VU2**AJ (65) 2, **XW8**AI, **XZ2**TH (13) 16, **YOs** 2KAM (85) 7, 3KAB 3KBC 3RF (17) 16, 3ZA (23) 4, **YVs** 3BH (97) 4AU (90), 5AB 5DE 5FH 5GO (84), one **ZA2**J (30) 21-22, **ZB2**A, **ZC4**s BL FL FM RF, **ZC5s** AB AL (now QRT), **ZDs** 6NJ 7SA (90) 21, 8JP, **ZEs** IJT IJV 2JJ 5JU 7JY, **ZK1s** AK (35) 9-10, AU, **ZL5**AD, **ZM6**AS, **ZP5**AW (22), **3V8**AD, **4S7s** DT WP, **4X4**JL (94), **5As** 2TY (6) 4, 5TE 5TH (78) 4-5, 5TK, **9G1**CR (85) 7-8, **9K2s** AN and AQ.

20 phone beckons to hungry 28- and 21-Mc. A3 DXers at this time of year. Reporters Ws 3MDI 4 6OBH 7VCB 8YIN*, Ks 2QXG* 4DKH 6SHJ, DL4YE and KL7CDF (asterisks labeling users of s.s.b.) turn the spot on **BV1US**, **CNs** 2BK 7, 8MM, EI6W*, **FA3ZH** 6, **FB8BS**, **FG7XE*** (309) 14, **FM7WT** (309) 14, **GC3AAE***, **HHs** 1HB 2Z, **HKs** 1IH 0AI* (295) 22, **HL9s** KR* (130) 13-18, KT (130) 9, **HR1**MM, **KA2USA**, **KC4s** USB USH USW, **KC6UZ***, **KGs** 1AD* 1DK (292) 9, 1EE 4AA 6FAE, **KR6s** DI* SS, **KW6**CO, **KX6s** BP* BY*, **OA1K**, **OX3**DL, **PJ2**AA (294) 0-1, **TG9**AD, **TI2HP***, **UR2**BU, **VEs** 3MR/**VP1***, 8NS, **VK3AEE*** (121 worked on side band), **VPs** 2VB/mm* in the Atlantic, 4TI 9DN, VQ5AU, **VSs** 1HS* (310) 13, 2DQ (190) 14-15, **VU2RK**, W4KC **KS4** 3, **XZ2TH**, YN1AP* (306) 6, **ZC3AC**, **ZK1BS*** (305) 6, **4X4DK*** and **5A1TX***.

15 phone activity keeps pace with doings on 20. Our informants — Ws 6ZZ (191), 7IXH 7VCB 8YGR, Ks 1CBR 2UYG 4RXQ 6CTV 9GSG 9ISP and KL7CDF — put the finger on **CEs** 2HX 3DY, **CNs** 2WX 8AA 8FM, **CP1AM**, **CR4AU**, **CXs** 1FM 2FD, **DU7SV**, **ELs** 2D 0EV/mm, **FQ8HG**, **HCs** 1FM 2OA 4LD, **HI8FR**, **HPs** 1AL LM, IT1CDS, JA1AEW, KA2BE, **KB6**BD, **KC6**CG, **KG1EE**, **KM6BI**, **KP6AL**, **KR6ES**, **KX6BT**, OE2HW, **OQ5s** BW RT, TF2WDC, **VKs** 5NT of Australia's rare Northern Territory, **9A**D of Norfolk Island, **0KT** of Macquarie, **VPs** 2DC 4LR 5RS 8DK 9DL, Ws 2DUM 4S7 on shipboard, 0OWY/**KW6**, **XEs** 1RE 1YT 2Y, **YN1s** CJ (365), JW (232) 4, **ZB1**DC, **ZK1BS**, **ZLs** 1BY 3CD 4KE, **4X4s** FV GB JS, **5As** 4TZ 5TO and **9G1AA**.

15 c.w. displays an attractive summer fare: **CEs** 1AD 2AT, **CNs** 2AE 8HM, **CXs** 1RY 2FD 6CB 9AM, **DU7SV**, **EL1K**, **FE8AH** (90) 4, **FK8AS**, **FM7WT**, **G6UC**/m, **GCs** 2AAO (90) 15, 3HFE 8DO, **GD3s** FXN UB (25), **HA5s** BW DH (38), **HH2KVU**, **HR1JZ**, IT1s AGA TAI 11, **JAs** 3FT 3TT 6PA 7AD 8GA, **JTs** AA (90), YL (30), **KGs** 1FR 4AS, **KM6EVK**, KP6AK **VR4**, **LJ2F** (just Norway), **LZ1s** KNB (60) 16, KSA WD, **M1H**, **OAs** 4FM 5AGI 7I, **QSs** 1KAA 8CP 9CS, **ST2AR** (60) 20, **SV0WR** (60), **TI2LA** (39) 19, **UAs** 1BE 1KBB 2KAW 3BF 3HI 3KAZ 4NB 9CR 9KDL 9OI 0IJ, **UB5s** FG SB UW (110) 15, **UC2AX** (36) 20, **UD6AL**, **UF6FB**, **UQ2AN**, **UR2BU**, **VPs** 6LT 6UN 7NG (35), VQ4KPB, **VR2DG** (66), **VSs** 1HQ 9AC 9AO, **VU2JA**, Ws 4LCW/mm near the Azores, 0OWY/**KS6** (60) 5, **XEs** 1PJ 1YF (40), 0JTV/m, **YOs** 3MS 6KBA (55), **YVs** 3BT 5BJ 5DE, **XQ8AG** (75) of Chile, **ZB1s** DS GUH, **ZC4BL**, **ZD3G** (24), **ZE7JY** and **5A5TH** are recommended by W1CTW (142 hooked), W2JBL, W6s CG ZZ, **W7s** GYR IXH QNI VCB YAQ, W8IBX; **K2s** UYG VAB, **K4s** LAY OTG PHY RXQ, **K5s** DKL ESW, K6SXA, K9s GSG GVD; VE7CQ, DL4YE, H1ER, KG1CK, KL7s CDF and PI.

15 Novice notes grow numerous as our younger newcomers put tomes and notebooks aside in favor of long-haul lessons. KN1s CNZ (30 worked), DFC DSX DXA, WN2GIX, KN3BTS, KN4s OZC TSL, KN7BKF, KN8HZN, KN0s JPJ and KZB attentively listened to lectures by **CE3AG**, CX9AM, **DM3s** KKG KQM, **EL1K**, **ET2US**, **FAs** 8CR 9JB, **HAs** 3MA 5BW, **HK3TH**, **KGs** 1CK 1EE 4AS, **KZ5SSN** with five watts, **KP6AL**, KN9EZP **WL7**, **LJ2F**, LU1DOS, **LZ1KNB**, **MP4BBE**, OA4AK, OX3DL, **PYs** 2BFA 2KT 4AO, **SPs** 1KAA 7HX 9NH, **UAs** 6KTB **0IJ**, **UB5KAB**, **UQ2s** AB AS, **UR2KAA**, VE8MX, **VKs** 3TX 5DS 7KA, **VPs** 6AG 8CR, VQ4FK, **VR2DG**, **WL7s** CEE CPW, **WP4s** AHN AKG AKI ALC ALL AMA ANE, YV5HL, **ZLs** 1AKW 1ASO 2TD 2VN 4BO, **ZS6AOI**, **4X4JS** and the usual DJ DL EA EI F G GI GM GW I1 LA OE OK OH ON4 OZ **PA0** SM and YU crowd.

10 phone is fairly frisky for the dog-days period. Solid 28-Mc. openings of decent duration are scarce right now but Ws 1SPS 3MDI 4 5KLB 6ZZ 7VCB 8IBX; Ks 1CBR 5GOE 5HYB 8CFU 9ISP 0BVN; DL4YE and KL7CDF are delighted with **CNs** 2AB 2AQ 8HG 8IB 8IN, **CP6FG**, **CRs** 6AU 6BX 7EV, **CTs** 2AB 3AF, CX8AZ, DL8CX, **EAs** 8AX 9EI, **FF8AP**, **FK8AU**, **FM7WT**, **GCs** 6FQ 8DO, **HCs** 1AGI 1HL 1VA 2AGI, **HH2RS**, **HK0AI**, **HP3FL**, IT1CDS, **KA2s** TP YP, **KB6s** BH BJ (formerly W3PZW, KB6), **KC4USB** (s.s.b.), **KM6s** BI BK, **KR6s** SO SS, **KX6AF**, LU0AZA (K4USM aboard the Nixon plane, s.s.b.), LX1HM, **OAs** 3AGI 4AQ 4GJ 6AGI, **OE6DK**, **OQ5s** AO IH, **SVs** 1AE 0WS, **TGs** 7JD 9AA/m 9MB, **TI2s** LA OE, **VPs** 1SD 2LB 5AO 5BP 5CB 9IVM, **VQs** 2DC 2RD 4FK, **VSs** 6DJ 9AP, **VU2PS**, **XE0DTI**, **ZB1CR**, **ZC4IP**, **ZD1EO**, **ZEs** 1JX 6JL, a dozen ZLs, **ZPs** 4USM (see LU0AZA), 5CF, **ZSs** 3DP 7C 8O, **4X4s** AB FQ FV GB IV, **5As** 1TG 4TM 4TT and 5TO.

10 c.w., a hollow shell of its wintry self, helped Ws 5KLB 6CG 8IBX 8KX, Ks 1CBR 2VLN 5ESW 5GOE 5HYB 8CFU 9ISP 0BVN, DL4YE and KL7CDF to the likes of **CE3AX**, **CN8s** BP DJ, **EL1X**, **GC8DO**, **HA5DQ**, **JAs** 1AJU 3AB 5DF, KA5MC, **KP6AL**, K6TSQ **KG6**, LZ1WD, **OD5AV**, **OQ5IG**, **PJs** 2AF 3AC 9B) 16, **PZ1s** AO AQ, **UAs** 4KCE (30), **9KCE**, **UB5s** FG UW, **ZB2I** and **ZD7SA**.

40 c.w. atmospherics peak this month and local thunderstorms hound the brethren hereabouts. Nevertheless we find Ws 2HMJ 3GYP 7DJU/7GYR 7UVC 7VCB 8IBX 9NN 9YYG; Ks 2VQM 5HYB and 6SXA gamely grabbing FA8RJ, **JAs** 1ACU 1AEA 1BRK 1BSW 1DY 7GW 8AA 8AE 0HX, **KA2LB**, **KB6BJ**, **KP6AL** (19) 5-6, **KZ5BB**, OE3RK, OK1KIQ, **UP2AW**, **VP2GL** (40), **XE3K**, **YOs** 2BG 3FN and 3RF . . . . In the **Novice** category WN2SLC raised G3JZK, a rare direction for WN, KNs, on 7 Mc.; KN1DFC caught **WH6CAL** and **WV4BW**; WN6YKS nailed **WH6s** CMP CNK and COK; and KN7BKF managed **WH6CJG** . . . . Forty **phone** is favored at VS2DW when the light is right: **VK6s** CL BE BO, **VU2s** BY RM, **ZD2DCP**, **ZSs** 2LA 2MX 2ANX 4X 5V 5RM 6AQA 6FB and 9G1s are reasons why . . . . **One-sixty** and **eighty** hibernate noisily although K6SXA broke through for **KP6AM** and a few ZLs on the latter range. And now for some reconnaissance on the QSL front. . .

Where:

South America — VP8CZ (G3LWS, ex-ZC4FB) paints the VP8 picture as of April 1st: In the Falklands there are VP8s AB AC AH AI AQ AS BJ BN CV CW CX DC DD DE DF; So. Georgia accommodates VP8s AR AY BC CA CB; So. Orkneys, lonely VP8DA; Grahamland disports VP8s CC CD CF CG CH CI CK CN CO and CR. In lieu of other addresses QSLs may be shipped via Director of Post and Telegraphs, General Post Office, Port Stanley, Falkland Islands, South Atlantic. Ted confirms earlier word from W9WHM that Stan Ward, VP8BU, died in a Port Stanley swimming tragedy early in May. Erstwhile VP8s BI and BK no longer are active, their tickets having been canceled under nonreciprocity regulations. Key to base locations: Base A, Port Lockroy; B, Deception Island; D, Hope Bay; E, Stonington Island; F, Argentine Island; G, Admiralty Bay; H, Signy Island; J, Loubet Coast; O, Danco Coast; P, Livingston Island; W, Graham Coast; and Y, Horseshoe Island . . . . OA7I, nervously awaiting his final three DXCC-qualifying confirmations, writes, "Here in lofty Juliaca I acknowledge every card received via bureau, or direct if IRC is sent." . . . . G5RV welcomes QSL inquiries for his operation under the calls

G5RV/HC/HK/OA, PJ5AA, PJ5CA and VP4-5-6-7RV over the past three years. Louis ships all cards via bureaus except where IRCs are supplied for direct replies. His *Call Book* address will suffice.

Oceania — KC6UZ advises that KC6s AA AK AL KG and RK no longer are in the Carolines. "Their failure to leave forwarding addresses has resulted in an avalanche of 2nd- and 3rd-request QSLs from stations worked. Incidentally, ship and airmail from this area can go astray; one amateur recently sent out forty cards which never reached destinations. And surface mail can lie in the post office for two or three months before a ship calls. Some cards from foreign countries take almost a year to reach the Trust Territory, U. S. DX-hunters will find it advantageous to send addressed airmail stamped envelopes with all QSLs." . . . . . "I am handling QSLs or ZC3AC," informs VS1FJ, "and anyone having difficulty obtaining deserved cards from this Christmas station will find me glad to assist." You may have worked Frank as G3IDC, G3IDC/ZB2/5A2/VS9/4S7/VS1/VS2/VS6/VK2-4-5/VQ4/YI2, ZL1IDC, ZL2IDC, VS9GT and MP4BAB . . . . . From ZL2KL: "After I left Western Samoa in October, 1956, another ham arrived there and took out the same call, ZM6AS. I was quite surprised at the reallocation of a call that had so recently been vacated and this has caused confusion in QSL matters. For the record, only contacts with ZM6AS prior to the 13th of October, 1956, were made by me; those after that date by the current ZM6AS. I QSLd 100 per cent, mostly through the bureaus, so the gang should have had my QSLs long ago."

Asia — YL OD5CH (W6QYL), due to wind up Lebanon activity this month, will answer all cards beginning next month. Martha mentions OD5s CG and CI as brand new easy-Asia candidates . . . . . It's *great* to get out. But flinging a stinging sig Statesward from a DX point can have its drawbacks, too, as KR6AK assures KØESH: "I'm buried in QSLs! For fast reply I must have a self-addressed stamped envelope with each card." . . . . . Horrors — W3GYP forwards a Philadelphia *Inquirer* editorial which quotes Burma business sources as stating that four out of every five pieces of incoming overseas mail are never delivered. "Any Burmese who wants to communicate urgently with the outside world gives his letters personally to the staffs of foreign aircraft." This confirms a recent parallel observation by XZ2OM . . . . . The HL9KT gang tells WGDXC that overdue QSL stock showed up at last. Stand by, bureaus! . . . . . "With regard to VS1BB/VS9 Maldives QSLs, all contacts are being confirmed. Cards received have been answered within 48 hours; the remainder will be despatched via bureaus in batches of one hundred or so." Barry also stresses that airmail from Singapore to the States is a five-IRC proposition . . . . . The real VS9AF tells W8IQS he has been inactive for four years, recent reported QSOs notwithstanding.

Africa — NCDXC understands that remote VQ8AJC has a mail boat due this month . . . . . Lee Grant, prolific distributor of multicountry QSOs, declares he's up to snuff on VS9AG, VS9AG/ZD3 and ZD3G QSL matters, now completing liquidation of a 40-card ST2NG backlog. Holidaying in England, ex-ZD3G anticipates a new assignment that will include Libya, Bahrein, British Somaliland and Iraq hamming possibilities . . . . . ZS5NZ/ZS7 confirms his contacts direct upon receiving QSLs, home QTH okay.

Europe — LX1DC now handles the Luxembourg bureau, *Call Book* address adequate. "From now on cards will go out faster across the Atlantic — boxes will be cleaned out every month. I receive many QSLs for unlicensed LX calls, especially from the U. S. A." LX1DC describes the bulk of current Luxembourg activity as follows: LX1s DP and RK prefer 14 Mc., LX1s DE and SI like 21 Mc. exclusively, LX1s DC and HM alternate between 21 and 28 Mc., and LX1AI uses several bands. LX1s AI and HM sport beams based on G4ZU's designs. . . . . W3LOS affirms our earlier hint that many HAs use P. O. Box 185, Budapest 4, Hungary, as an incoming bureau address . . . . . W6NJU, doing W6/K6-W7/K7 QSL honors for CT2BO, calls for the usual s.a.s.e. courtesy . . . . . Bleary-eyed from tedious log-entry interpolations, SM5KV pleads for strict adherence to GMT on all QSLs bound for Svalbard's SM8AQT, I.A.P. It's the *only* time to use on DX QSLs, gang . . . . . F9SC/FC tells W1DWH not to hold his breath for an "FC8CE" QSL.

Hereabouts — "We feel that the 'dollar per QSL' is a bit out of bounds. Therefore we do not accept any payment whatsoever for DXpeditionary postage defrayal." This *touché* from Caribbean gadabout TI2HP via W1LLE. And KL7PI is behooved to observe: "This business of commercializing DXpeditions could well go beyond reason." . . . . . W4UVP offers to assist a deserving rare-DX station with QSL chores. Bill's qualifications for such duties are eminent; he's a roving auditor for the State of Tennessee . . . . . From VE8OW, now back at VE3BOH: "From the last mail I received it appears that quite a few of the gang have not yet received my N.W.T. QSLs, most of which went via bureaus. I do have a backlog of about 200 to clear, however. After a reasonable lapse of time I'll be glad to send another card. After fighting the aurora up north for so long I look forward to some DXing from Ontario once more!" . . . . . VE4DB points up a problem faced by Canadian DXers: the increasing insistence on U. S.-stamped self-addressed envelopes . . . . . "I QSL direct in answer to all cards received," avers KG1CK, "all others via bureaus at my convenience when the bands are dead." This is fairly standard clerical procedure among DX hounds and attests to the desirability of occasional crummy conditions — hi! . . . . . OX3DL is flustered by a glut of incoming QSLs intended for ex-OX3BD . . . . . Of thousands of QSLs received for KC4AF endeavors OVARA finds a mere 35 per cent bearing GMT, the remainder carrying P.M.-A.M. or 24-hour local time. Apparently most amateurs just don't *care* about their QSL-returns percentages . . . . . Regarding his Caribbean s.s.b. jaunt, W4RQR advises: "I've been handling the QSLs for all those trips myself, thus avoiding the usual multioperator-station confusion. Haven't had time for exact bookkeeping, though, being busy making out over 500 cards since returning from FM7WT and FG7XE." . . . . . W1s CTW DWH WDD WPO ZDP, W2s OKM QHH, W3LOS, W4IMP, W6s KG OKK UOU W7s DJU GYR QNI, W8IBX, W9LNQ; K2s QHL QXG VAB, K4s JOS RXQ, K5AUZ, K6s BWX CTV SXA, K8CFU, K9GVD, KØs DQI ESH; G5RV, KL7CDF; Hamfesters Radio Club, International Short Wave League, Japan DX Radio Club, Malaya Radio Transmitting Society, Motor City Radio Club, Newark News Radio Club, Northern California DX Club, Ohio Valley Amateur Radio Association, Southern California DX Club, West Gulf DX Club and Willamette Valley DX Club suggest the specific addresses that follow.

CN8EM, P. O. Box 294, Agadir, Morocco
CN8FA, APO 113, New York, N. Y.
CN8FS, C. H. Naylor, jr (via USAF CN8 bureau)
CN8IN, J. F. Aylward, RM3, NavComFac, Box 60, Navy 214, FPO, New York, N. Y.
CN8IV, 735th ACWRON, Box 174, APO 117, New York, N. Y.
CN8JC, APO 118, New York, N. Y.
CP1AN, c/o U. S. Embassy, La Paz, Bolivia
CT2BO (U. S. Sixes and Sevens via W6NJU)
ET3PRS, P. O. Box 621, Addis Ababa, Ethiopia
FF8CI, P. O. Box 8723, Dakar Yoff Airport, Senegal, F.W.A.
ex-FL8AB (to F8UD)
ex-G3AYL-ZL1AKL, G. R. Pearce, c/o Illinois Condenser Co., 1616 N. Throop St., Chicago 22, Ill.
HA5DH, P. O. Box 185, Budapest 4, Hungary
HC1MD, Project Vanguard, c/o U. S. Embassy, Quito, Ecuador
HC2AGI, 1317 N. 6th St., Nevada, Iowa
HI2AM, A/1c T. Williamson, 6314th Comm. Sqdn., Box 119, APO 970, San Francisco, Calif.
HL3KAA, Box 39, Pyongyang, North Korea
HND9A, Dora Refinery, Box 278, Baghdad, Iraq
HP1LM, Box 1439, Panama City, R.P.
IT1CDS, Mazarelo 7, Catania, Sicily, Italy
ex-KA2-3-0GY, E. Worrell, jr., W3MD1/4, 500 Maple St., Weldon, N. C.
KA2LN (via KA2KS)
KB6BJ, R. A. Young (W3PZW), c/o CAA, Canton Island
KG1AD, 931st AC &W Sqdn., Box 134, APO 23, New York, N. Y.
KG1CK, c/o MARS Stn., APO 23, New York, N. Y.
KH6AZM/KW6, P. O. Box 116, Wake Island
KL7COL, J. Davilla, FEC, Box 487, Fairbanks, Alaska
KL7FBK, R. Wilson, Box 14, Galena, Alaska
KM6BK, H. Pickerill, Box 16, Navy 3080, FPO, San Francisco, Calif.
KX6CI, APO 436, San Francisco, Calif.

FK8AT's sixty-watter and Windom wire perform well enough on 20 c.w. but Georges now readies more sock and a two-element spinner for DX action in the Loyalties. *(Photo via A. Fallert)*

In early March ZS5NZ borrowed the Ranger of ZS5AV, journeyed to ZS7C's Geodgegun QTH with friend ZS5V (right) and ran off 34 rare Swaziland QSOs on 14, 21 and 28 Mc. as ZS5NZ/ZS7. Dipoles did the radiating while the ZS7C 220-volt plant provided power.
(Photo via W1ICP)

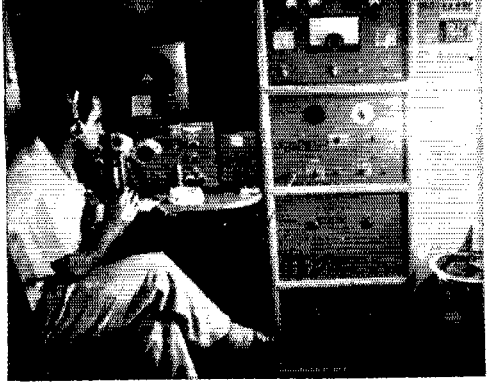
LJ2F, School of Navigation, Bergen, Norway
OD5CH (to W6QYL)
OK3KGI, Vili, Box 76, Komarno, Czechoslovakia
OK3WW, M. Furko, Nar Povstania 20, Trnava, Czechoslovakia
OQ5RT, Box 7482, Leopoldville, Belgian Congo
ex-PJ5CB (to G3EIX)
PY5EK, Box 71, Uniao da Vitoria, Parana, Brazil
SVØWB, USCG *Courier*, FPO, New York, N. Y.
TI1ER, Box 365, San Jose, C. R.
UP2NX, Box 224, Kaunas, Lithuanian S. S. R.
ex-VE8OW (to VE3BOH)
VK9BB, B. Bonser (VS1BB), RRS, RAF, West Island, Cocos-Keeling Gp.
VK9VG, H. Vinning, P &T, Lae, T.N.G.
VK9XM, J. W. Davey, Christmas Island, Indian Ocean
VKØDA (via VK3RJ)
VKØKT (to VK3KT or via VK2EG)
VKØRO (via VK3RJ)
VP8DK, Base F, Grahamland via Port Stanley, Falklands
VQ2RD, Box 77, Livingstone, No. Rhodesia
VR2DG (via VE7HR)
VS1HS, H. Goodwill, 11 Maida Vale, c/o RAF, Seletar, Singapore 28
VS1JK, G. Weston, 28 Blanford Dr., Serangoon Gdn. Est., Singapore
ex-VS6DA (to ZC4DA)
VS6DK, D. Lau, 60 Castle Peak Rd., Kowloon, Hong Kong
VS6EC, RAF Stn., Hong Kong
VS9AO, Saltpans RAF, BFPO 69, Aden
W2YVX, KL7, J. Orefice (via KL7CQL)
W4KC/KS4, c/o CAA, Swan Island via Tampa, Fla.
W8URO/KP4, R. Burt, NavCommSta, Navy 116, Box H, FPO, New York, N. Y.
WØBOT KL7, Bill Ochs (via KL7CQL)
XE1PJ (via LMRE only)
YN1CJ, C. Jones, c/o U. S. Embassy, Managua, Nicaragua
YV5HT, Box 4416, Caracas, Venezuela
ZC4DA, S. Green, P. O. Box 412, Nicosia, Cyprus
ex-ZC5AL, A. O'Donnell, 207 Buccaneer Bay Rd., Caringbah, N. S. W., Australia
ex-ZD3G-VS9AG-ST2NG-ET2NG, L. Grant, 13 Tedder Ave., Wayfields nr. Chatham, Kent, England
ZD7SA (via CN8GU — address in March *QST*)
ZP5MN, c/o U. S. Embassy, Asuncion, Paraguay
3A2CH (to DL4YE)
4X4JS, Box 3202, Tel-Aviv, Israel
5A4TZ, APO 231, New York, N. Y.
5A5TO, Box 638, Tripoli, Libya
9G1CR, P. O. Box 529, Accra, Ghana
9K2AQ (via G3FJU)

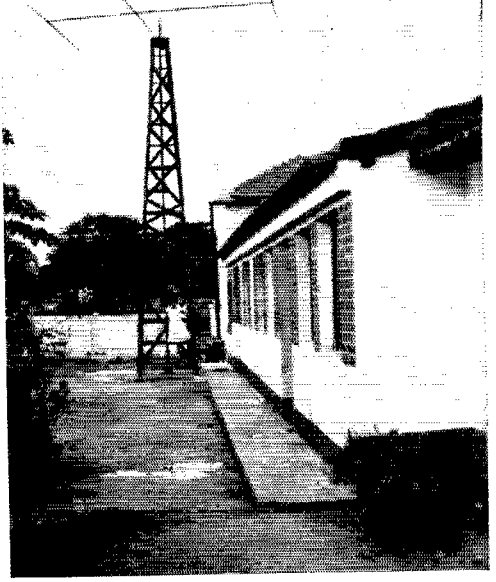
Whence:

Oceania — Ws 1IKE 3FGB, VK3CX and the grapevine have VK2AIR and or VK2AYY girding for early operations on Lord Howe Island where the palm seed industry supports a population of 160 or so. Our DXpeditionary boom should make a tangible contribution to the island's economics . . . . . The Chatham Islands, a wool and fishery outpost whose 1951 population was 471, also draw considerable DX attention these days. ZL3SK is reported unavailable but ZL3VB and/or ZL3VK 3.5-Mc. possibilities are in the wind . . . . . W6AM clicked with KP6AL on seven bands during this year's ARRL DX Test phone periods, 1.9 through 28 Mc. W2HMJ overheard KP6AL credit W1ARA with his No. 1 New England contact on 40 c.w. . . . . W4CYY was surprised to find VK6AB, active on 20 code, to be an ex-Yank turned Australian . . . . . W1ZDP reports ex-ZC5AL already anticipating 1959 ARRL DX Contest activity from new VK2 diggings . . . . . K2QXG ran across Bikini KX6s BY and CI, both activated in May. KC6UZ informs, "The epidemic of new KX6s is due to authorities relaxing amateur restrictions at the Eniwetok Proving Grounds. Some confusion reigned temporarily because of someone's interpretation that FCC rules and regs applied, but all soon learned that they were in a 'foreign' country." KC6UZ runs an information service, with separate a.m. and s.s.b. transmitters, to keep KC6-KX6 pink tickets at a minimum. KX6BQ occasionally is active as KX6BQ/KC6 . . . . . Further from KC6UZ anent Carolines developments: "KC6KR, frequently heard on 20 c.w., is the only Micronesian ever to join the ranks of amateur radio; he's a Palauan and one of the few actives in the Western Carolines. KC6s CG and SP, Coast Guard loran stations, also are in the Western group but their operation is spasmodic due to personnel rotation. In the Eastern Carolines KC6s SJ (20 c.w.) and UZ (20 a.m. and s.s.b.) are active. KC6KU hasn't been heard on 40 phone for some time, but KC6AN (formerly KX6NC) should be back on 20 c.w. after a tour of island-hopping." . . . . . Club Oceaniagrams courtesy NCDXC: Contest king KH6IJ hit an average of 114 QSOs per hour during the more frenetic portions of this year's ARRL DXtravaganza. . . . CR9AK is shipping a 6-volt gas generator to ensure CR1ØAA activity. VR2AP's CR1-ØAC effort in early May was foiled by receiver difficulties. . . . VE6VK, W9ABA and G8KS raise the total of WAV-KCA winners to 71.

Africa — K9EFU, instigator of April's prologue, finds Fort Sao Joao Baptista de Ajuda entered on the *National Geographic* map of Northern Africa dated December, 1954. Page 772 of the magazine states: "Sharp-eyed readers may note on the Gulf of Guinea a name infrequently seen on maps. It is the Forte de Sao Joao Baptista de Ajuda, a tiny Portuguese enclave within the city of Ouidah in the French colony of Dahomey. Portugal stoutly maintains sovereign rights over this 336-year-old fort." Well, what'll it be, fellows — CT1 or CR3? . . . . . ZS5NZ tells W1ICP of an amusing ZS5NZ/ZS7 episode: "Our first contact was W5OCN/mm in the Gulf of Aden. He rather shook us when he said he was not too interested in our QSL!" . . . . . Ex-VS9AG-ST2NG-ET2NG wishfully remarks, "Out of the 107 countries I worked as ZD3G I hope I'll eventually be able to scrape together 100 confirmations for another DXCC." Lew already has a membership under ST2NG colors. "ZD3E closed in May, leaving Gambia quite rare. Perhaps we can persuade my relief man to go on the air with my BC-779 and ZD3E's transmitter." . . . . . W1AZW caught ZD2CKH in April just before the latter shut down for a four-month U. K. holiday . . . . . From 9G1BQ via W1ZDP: "Ninety per cent of my operations are with Statesiders but I believe Idaho, Montana, Nevada, Utah and Washington to be nonexistent so far as WAS is concerned. I never *hear* them, let alone work them. Main activity here is 20 meters, s.s.b., a.m. and c.w." . . . . . The Praia Centenary Award is a fresh certification available to DXers who confirm QSOs made with three Praia CR4s between 0000 GMT, May 14th, and 2400, June 13, 1958. If you feel qualified, check with CR4AO for the fine print . . . . . W6KG understands that FB8BD departs Madagascar for France this month . . . . . Ten-meter phone enthusiast ZE1JX tells W5KLB of long-path 28-Mc. contacts with our west coast, Canada and Ecuador this season. W5KLB is interested in the subject and desires to hear from other amateurs experiencing long-path success on ten. Bob finds 28 Mc. occasionally open to VK ZL areas as late as 0900 GMT . . . . . W8YIN detects ZS9 DXcursionary propensities on the part of ZS2HX, while OVARA sleuths report 6A9AW still interested in Ifni . . . . . NCDXC news from the Dark Continent: KØLPN (ex-W6RRG) scheduled a KWM-1 jaunt through some 20 African countries in late spring, hoping to instill the s.s.b. bug far and wide. . . . ZS3AG expects to remain active at Tsumeb 1GY station into February of next year with his DX-100, HRO-60 and 3-element beam on 28, 21 and 14 Mc.

Asia — In Lebanon, where things have been poppin', OD5CH (W6QYL) reports resident YL OD5CD very available on 20 phone. Capt. Kurt Carlsen, W2ZXM, mm, puts in about four times a year for a bit of OD5BG sport. Martha looks forward to meeting the DX gang at the 1958 ARRL National Convention in Washington, D. C., next month . . . . . VS1BB, VS9's April-May Maldives splash on 10, 15 and 20 meters utilized a DX-35 procured with the help of W6UOU, VS6s AZ and BE, plus VS1HX's HRO-MX receiver . . . . . XW8AI tells W1DWH he's after New Englanders on 20 c.w. to fill WAS needs . . . . . VS1FJ recently scored a second DXCC success, his first won as G3IDC in '53. As VS9GT/MP4BAB circa 1948 Frank worked 135 countries but still needs two cards for triple-





CR6AU's sunny Vila Luso backyard, our QTH of the Month, accommodates a potent three-element rotary for 10, 15 and 20 meters. Carlos runs 250 watts to an 813, receives with an HRO-60, and combines DX pursuits with a neat knack for RCC amenities.

DXCC. Not bad for a confirmed 25-watt man! . . . . . A visit to ARRL Hq. by Mr. Yagi recently reminded W1ZDP of the terrific signal fired Statesward by J2GX in the 1930s . . . . . "By regulations HL9KR must remain on 14,130 kc. although he tunes widely for U. S. and overseas s.s.b.," informs W8YIN. "He begins operation at 0900 GMT and is heard as late as 1800 here." Neighboring HL2AM is kept available by K8HIB near the same frequency . . . . . Japanotes via K6DV and K8CFU: The youngest First Class JA licensee appears to be JA1ZF at 17. . . . Revisions in license classification are pending, these to retain Japan's curious practice of restricting c.w. operation to higher-class permittees. In a move to alleviate 7-Mc. bedlam, Second Class JAs soon may be allowed 28-Mc. phone . . . . . Other Asian items via JDXRC, SCDXC and WGDXC: One 9C2AM is being bandied about as a good 14-Mc. c.w. Sultanate of Oman omen. . . . SM8BYG/MP4T's Trucial Oman activation in early May is understood to have been a shipboard deal. *Too* bad. . . . OD5BZ takes a dim view of Yemen DXpeditionary possibilities right now but is mulling over Jordan chances. . . . JA1JG was feted in Tokyo after an arduous year of Antarctic operation. . . . HL9KS leaves the Far East in favor of (brr-r-r) Greenland.

Europe — "Have a letter from the Ministere d'Etat of Monaco authorizing me to operate there," writes DL4YE (W9QVY). "The date is indefinite, probably the latter part of July or early in August, and the call will be 3A2CH. My DX-100, SP-600X and dipoles will accompany me and I'll be active for a full week if possible. I also have a letter on file with PX1 licensing authorities." Bob has collected over 170 countries during his short DL4YE tenure . . . . . LX1DC reached the 160-mark on phone thanks to VR2AS and ZD3BFC . . . . . PAØLOU takes over the VERON traffic-manager duties of PAØLR and also serves as DX editor of the society's organ. Regarding PACC and other VERON-sponsored certifications, address PAØLOU c/o Central Bureau, VERON Awards Dept., P. O. Box 6011, The Hague, Netherlands . . . . . DL4MN, winner of WAS and WAC credentials after seven short months on the Continent, regularly schedules his OM, W4KM. Neighbor DL4-ADJ keeps tabs on dad W8ODF in similar fashion . . . . . "In the past two years I have had 3500 QSOs on phone with U. S. amateurs on 20 meters," writes G3AYL. Ray is moving to Chicago, of all places . . . . . SM1BVQ offers a rare credit for WASM quests on 14,050-kc. c.w. daily from 2300 GMT to about 0100. Bjorn also tries 21 Mc. now and then and intends 14-Mc. phone activity soon. Over a thousand W/Ks already glut the SM1BVQ archives . . . . . From OY7ML: "My 80- and 40-meter tests this season did not give much results. I worked a considerably number of W/K/VE/VOs on 7 Mc. but only a few OMs on 80. I'm hoping my new ground-plane will bring replies from KX6, KP6, ZK1 and other Pacific stations on 28, 21 and 14 Mc., rarities always difficult to work from Europe." . . . . . HV1CN recently matriculated in a 90-day English course and W1TYQ feels this will expedite Vatican QSO output noticeably . . . . . W1DWH votes emphatic thanks from all North Americans to HB9GJ for benevolent H-22 performances as HB1GJ . . . . . WGDXC has VE3MR readying for early s.s.b. work in Andorra.

South America — OA7I (PAØXE) wonders if his Juliaca QTH, 12,500 feet a.s.l., puts him in the running for the Highest Hamshack title. "I am quite willing and eager to conduct 80- and 160-meter tests with those interested. New regulations recently came into force here; from now on it will only be possible for nationals to get licenses. Foreigners who already hold licenses will be permitted to retain them, fortunately. A code test now is included in the license exam (after a test period of six months on phone) so you may see an increase in c.w. activity in OA-land." . . . . . OA4FT urges you to mark your calendars for this year's RCP Panamerican Contest to be held (phone) on the 11th-12th and (c.w.) 18th-19th of October, details coming later. Top U. S. scorers in the 1957 affair were W4HKJ and K2-CJN on the vocal, W3VKD and W1CTW on c.w. OA4s P and FT copped local honors on A3 and A1, respectively . . . . . CE5DT (W7NSO) is up north on a six-month furlough from Chilean missionary duties. Wes thoroughly enjoyed visiting W2DTL, a regular contact from Concepcion . . . . . CEØAG (K6BAZ) managed some 700 QSOs during his brief early-spring Easter Island sojourn . . . . . LABRE (Brazil) issued WAA certification No. 270 to W7RT . . . . . WØs LUX AGO and WGF now are licensed as HC8s LUX AGO and WGF. The former advises, "We expect to operate on San Cristobal Island of the Galapagos group for a period of two weeks between September 15th and November 30th. We intend to use s.s.b. primarily, c.w. also, on the 10-, 15- and 20-meter bands with a triband beam." They'll be *busy* ones!

Hereabouts — Special call VE7BCC is assigned to the Mount Fairweather Centennial Expedition which concludes Canada-Alaska border operations this month. Ham communications figure extensively in this mountaineering project, advises ARRL SEC VE7KX. VE7BCC/KL7, operated by VE7s AEW and ALE, serves as base radio at Moine Bay . . . . . VE3BOH, terminating his VE8OW activation at Eureka, N. W. T., weighs in his log at 5000 contacts with 137 countries and all United States. On 40 meters alone John bagged 58 countries. Regarding this Farthest North business, ex-VE8OW gives his opinion: "As of April the farthest-north settlement was the Alert weather station on the northerly tip of Ellesmere — VE8s ML NS and, until recently, VE8AT. VE8UZ (frequently found on 75-meter phone) comes next, then VE8s MA and WN at Eureka. KG1DT, Fletcher's Ice Island, is sometimes north and south of Eureka." . . . . . W4RQR added May stops at Martinique (FM7WT) and Guadeloupe (FG7XE) to his Caribbean s.s.b. Dxpeditionary string, accumulating some 500 contacts in each place. W4s DCQ NZG and UYM kept Bob company. W4RQR had intended to include the Azores in his itinerary but obstacles were insurmountable . . . . . W8URO/KP4 pens, "I held a Novice call back in '55 and remember the thrill of my first KP4. I try to give the same kick to other KN/WNs and spend part of each day near Novice frequencies." Roger's dad is about to receive his own Novice label. . . . . Eight states on 27 Mc. will complete a neat six-band WAS sweep for KP4KD . . . . . K2JGG plans a 3- to 5-day FP8 visitation this month, suffix unspecified. W5TEH and W5EHK are talking up a possible Swan Islands swoop . . . . . W4CYY's peepers almost pop when he visits the DXceptional installation of neighbor W4BPD . . . . . W8YIN applauds W4RQR, VE3MR and TI2HP for outstanding performances in the line of 1958 DXpeditionary duty, s.s.b. style . . . . . At 13 years, 8 months, KØDQI wonders if he's our youngest DXCC member. We recall that W2UFT turned the trick back in the '40s

YL News and Views

CONDUCTED BY ELEANOR WILSON,* W1QON

NITA STUART, WØZTH, of Cedar Rapids, Iowa, recently introduced a class of fourth-grade school children to amateur radio. The little episode is related with the thought that the example may move other YLs to a bit of similar "missionary" work for ham radio.

While looking through a notebook belonging to one of her three children, Nita noticed mention of ham radio. Her nine-year-old-daughter's class at the Harrison School in Cedar Rapids had been reading about radio and studying Morse code. An offer to demonstrate ham radio in operation was quickly accepted by the class teacher, and arrangements were made for the two fourth-grade classes to visit the Stuart home.

For almost two hours one morning some twenty-seven youngsters enjoyed the "live" demonstration, and in the afternoon another class had a similar experience. Several of Nita's contacts were by schedule, so that the youngsters might hear a representative sampling of operators from various states. Wide-eyed they exchanged questions and answers with a fire chief in Ohio, a retired naval commander in Arkansas, a TV station engineer operating mobile in Denver, a member of the Perry Como show in New York, a personal friend of the Stuarts in British Honduras, and with Wendy Stuart's own father, WØREP, who was away on business in Columbus, Ohio. Understandably, a few of the children suffered from mike fright at first, but they soon warmed up to the experience. Nita concluded the demonstration with general remarks about the hobby and advice on how to go about becoming an amateur.

Perhaps some day one or more of the children who observed the proceedings will get licenses of their own. Meanwhile, there are a number of young people who have at least been exposed to a constructive, exciting hobby, thanks to the efforts of WØZTH.

Since the demonstration Nita and her family have moved to Wheaton, Illinois. Nita has been an amateur for five years. In 1955 she and her husband received ARRL public service awards for their work following a tornado in Mulvane, Kansas.

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

WØZTH holds an attentive audience, including class teacher Miss Myrna See, during a demonstration contact.

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"How did you become a ham?" is a question that one of our sightless YLs, Louise Wright, W1GWF, of Waterville, Maine, tells us that she is often asked. If she had to give a one-word answer, it would be "kindness" — through the kindness of hams who helped her to become a ham and who see to it that she is able to be on the air. Louise tells her own story:

W1GWF

"From the time I was a small child, radio has always played an important part in my life. I have always been interested in how radios are made and how they work.

"About the time I entered high school, I began to listen to short-wave with mounting interest. The few articles I could find to read stimulated my curiosity. After graduation I had a program of my own on the local station in Waterville for a while. When this ended, I mentioned my interest in amateur radio to an editor of a magazine. My friend inserted a notice in her magazine to the effect that I would like to correspond with amateurs.

"That did it. The notice was read by the wife of a ham in Connecticut, who gave my name to a friend in a nearby town. The friend wrote to me and suggested a list of books that would help me to become a ham.

"A chain of action started which is still going on. Help and

assistance came pouring in from hams all over New England. I started learning code and picked up theory mainly from library books. At last, I took the novice exam and less than a year later, I passed the general class exam.

"I have been a ham for some two years now. Certainly I have had troubles and obstacles to surmount, but there has always been a kind ham to straighten me out and set me going again. I am deeply grateful to each and every one who has helped me in any way.

"At present I am not on phone, but I hope to be soon. Meanwhile, I am pounding brass and enjoying every minute of it."

National Convention YL Program

August 15, 16, and 17 are the dates for the big ham convention of the year, the Tenth National Convention of the ARRL. Scene of the event will be the Sheraton-Park Hotel in Washington, D. C.

Chairman of the YL Program, John DeBardeleben, W3CN, and his committee of Washington Area YLRC members, have been working for months to make the program for YLs and XYLs as interesting and attractive as possible.

Additional details are still developing, but the following information has been received from the committee up to this time (May 20). Licensed YLs are being considered as hams first, but the schedule allows them to join in most of the special events for unlicensed ladies too, without conflicting with the ham portions of the program. We are concerned here mainly with specific YL and XYL functions. Licensed YLs are referred to general convention plans given elsewhere in the magazine for all ham sessions and activities which they won't want to miss.

On Friday there will be a choice of three sightseeing tours — to the Pentagon and a Nike site, to the Naval Research Laboratory, or a boat trip to historic Mt. Vernon.

On Saturday there will be a Luncheon and Fashion Show at noon for all ladies at the nearby Shoreham Hotel. A YLRL Forum for YLs follows, with a SWOOP initiation and a sightseeing tour for XYLs.

Sunday afternoon there will be a tour of the Washington Cathedral and Monastery. The main banquet will be in the evening.

Parents who bring small children with them are invited to place them in the nursery during portions of the program. A Hospitality Room will be open at all times to all ladies for bridge parties, teas, get-togethers, etc. Free coffee and doughnuts will be served in the Ragchewers Corner at the exhibition hall.

Registration for the Ladies Program will be $5.00 before August 1, and $7.50 after that date. Checks should be made payable to the Federation of Radio Amateur Clubs, Inc. and mailed to P. O. Box 3726, Washington 7, D. C. Acknowledgements will be made.

Grandmothers' Certificate

Mary Meyer, W9RUJ, announces a new certificate to be issued to any amateur who contacts ten or more YLs who are grandmothers or great grandmothers. Send a list of the stations worked, with frequencies and dates, to W9RUJ at 16520 Patricia Lane, Brookfield, Wisconsin. It is not necessary to send QSLs. W9RUJ hopes that all YLs who are grandmothers will register with her (no dues involved).

Loaded Clothesline Net

All YLs are invited to join the Loaded Clothesline Net which meets Mondays at 0930 MST on 7235 kc. YLs checking in three times out of five are eligible for membership — dues $1.50. (Special congratulations for those who report clotheslines loaded by net time.) Officers for 1958 are Pres. K5GYZ; V. P. KØMNI, Secy-Treas. W5YSJ; Pub. Chmn. WØTYB. Twenty-four YLs met informally each week for a year before organizing on April 7.

AWTAR Notes

Chairman of amateur operations for the Twelfth Annual All-Woman Transcontinental Air Race, July 4 thru 8, Carolyn Currens, W3GTC, announces that the two frequencies which will be used primarily in operations assisting the women pilots will be 7210 kc. and 3953 kc. The following amateurs will serve as stop-over city chairmen: Pat Muelheim, W6GGX, San Diego; George Martin, K5ODH, Midland, Texas; Erv Williams, W5KOK, El Paso; Judith Ward, K5CEN, Abilene; Betty Vredenberg, K5IMD, Tyler. At this writing amateur chairmen for the remaining stop-over cities of Yuma, Tucson, Jackson, Montgomery, and Macon have not been announced.

It's safe to assume that this is WØTYB standing beside the car. YLRL members may also recognize Betty Rogers as the present Secretary of the organization. Licensed in 1954, Betty is active on several bands, phone and c.w. She and her OM WØGQY do considerable mobile operating and participate in CD and RACES in Denver.

KEEPING UP WITH THE GIRLS

CLUBS:

YLRL — Vice President W4BLR reports a minor change in the rules for the YL Century Certificate. It is no longer

(*Continued on page 152*)

KH6COL is Hawaii's youngest YL ham. Sixteen-year-old Patsy Yukie Kawaoka of Kauai became a novice last September and received her general class license in March this year. A sophomore at Kauai High School, Patsy recently won first prize in the school's science fair, for a project in the field of genetics. She operates mainly on 40 meters, using a Ranger and an HQ-150. KH6IJ, physics teacher at Patsy's school, sent us her photo.

Portable Rules Changes
FCC Exam Schedules
ARRL Filing on MM Proposal
Board Meeting Minutes

PORTABLE RULES CHANGES

FCC has adopted the changes proposed in Docket 12160 concerning notices required by portable and mobile stations (*QST* for November, 1957, page 69). The principal effect of the new rules is the elimination of the *monthly* notices previously required of portable and mobile stations. Under the new setup, effective June 24, notices are required: (1) at the start of such operation (in excess of 48 hours without return to the home address), (2) any time there is a change in any of the information furnished, and (3) in any case, once a year if operation continues that long. The same information which was required under the old law is still required — name, call, home QTH, portable location or locations or mobile itinerary, and the dates of the beginning and end of each period of operation away from home — plus the address at which or through which the licensee can be reached and the registry or license number of the vessel, vehicle or aircraft from which mobile operation is to occur.

MINOR RACES RULES CHANGE

At the request of FCDA, FCC has added the word "exercise" to the section of its rules (12.254) dealing with identification of messages during an authorized RACES drill. The word "drill" or "test" may still be used. The change was made to allow refiling of RACES messages on regular government circuits, for which the prescribed identifier for this sort of operation is "exercise."

1958 EXAM SCHEDULE

THE Federal Communications Commission will give Extra and General Class amateur examinations during the second half of 1958 on the following schedule. Remember this list when you need to know when and where examinations will occur. Where exact dates or places are not shown below, information may be obtained, as the date approaches, from the Engineer-in-Charge of the district. *Even stated dates are tentative and should be verified from the Engineer as the date approaches.* No examinations are given on legal holidays. All examinations begin promptly at 9 A.M. except as noted.

Albuquerque, N. M.: October 4, 8 A.M.
Amarillo, Texas: Sometime in September.
Anchorage, Alaska, 53 Federal Bldg.: By appointment.
Atlanta, Georgia, 718 Atlanta National Building, 50 Whitehall St. S. W.: Tuesday and Friday at 8:30 A.M.
Baltimore, Md., 400 McCawley Bldg., 400 E. Lombard St.: Monday and Friday, between 8:30 A.M. and 10 A.M. and by appointment.
Beaumont, Texas, 301 P. O. Bldg.: By appointment.
Birmingham, Ala.: September 3, December 3.
Boise, Idaho: Sometime in October.
Boston, Mass., 1600 Customhouse: Wednesday through Friday 9:00 A.M. to 10 A.M.
Buffalo, N. Y., 328 P. O. Bldg.: First and third Fridays.
Butte, Mont.: Sometime in September.
Charleston, W. Va.: Sometime in September and December.
Chicago, Ill., 826 U. S. Courthouse: Friday.
Cincinnati, Ohio: Sometime in August and November.
Cleveland, Ohio: Sometime in September and December.
Columbus, Ohio: Sometime in July and October.
Corpus Christi, Texas: September 4, December 4.
Dallas, Texas, 401 States General Life Ins. Bldg.; Tuesday.
Davenport, Iowa: Sometime in July and October.
Denver, Colo., 521 New Customhouse: 1st and 2nd Thursdays, 8 A.M.
Des Moines, Iowa: Sometime in July and October.
Detroit, Mich., 1029 Federal Bldg.: Wednesday and Friday.
Fort Wayne, Ind.: Sometime in August and November.
Fresno, Calif.: Sometime in September and December.
Grand Rapids, Mich.: Sometime in July and October.
Hartford, Conn.: September 10.
Hilo, T. H.: October 7.
Honolulu, T. H., 502 Federal Bldg.: Monday through Friday.
Houston, Texas, 324 U. S. Appraisers Bldg.: Tuesday and Friday.
Indianapolis, Ind.: Sometime in August and November.
Jackson, Miss.: December 3.
Jacksonville, Fla.: October 25.
Jamestown, N. D.: October 8.
Juneau, Alaska, 6 Shattuck Bldg.: By appointment.
Kansas City, Mo., 3100 Federal Office Bldg.: Thursday and Friday, 8:30 A.M. to 1 P.M.
Knoxville, Tenn.: September 17, December 17.
Lihue, T. H.: October 15.
Little Rock, Ark.: August 6, November 5, 1:00 P.M.
Los Angeles, Calif., 1431 Federal Bldg.: Wednesday, 9 A.M. and 1 P.M.
Louisville, Kentucky: Sometime in August and November.
Memphis, Tenn.: July 10, October 2.
Miami, Fla., 312 Federal Bldg.: Thursday.
Milwaukee, Wisconsin: Sometime in July and October.
Mobile, Ala., 419 U. S. Courthouse and Customhouse: Wednesday, by appointment.
Nashville, Tenn.: August 7, November 6.
New Orleans, La., 608 Federal Office Building, 600 South St.: Monday through Wednesday, code tests Monday only at 8:30 A.M. and 1 P.M.
New York, N. Y., 748 Federal Bldg., 641 Washington St.: Tuesday through Friday.
Norfolk, Va., 402 Federal Bldg.; Monday through Friday except Friday only when code test required.
Oklahoma City, Okla.: July 25, October 15.
Omaha, Nebr.: Sometime in July and October.
Philadelphia, Pa., 1005 New U. S. Customhouse: Monday through Wednesday, 8:30 A.M. to 10 A.M.
Phoenix, Ariz.: Sometime in July and October.
Pittsburgh, Pa.: Sometime in August and November.
Portland, Maine: October 14.

Portland, Ore., 507 U. S. Courthouse: Friday, 8:30 A.M.
Roanoke, Va.: October 4.
St. Louis, Mo.: Sometime in August and November.
St. Paul, Minn., 208 Federal Courts Bldg.: Friday, 8:45 A.M.
Salt Lake City, Utah: September 12, December 12, 1 P.M.
San Antonio, Texas: August 7–8, November 6–7.
San Diego, Calif., 15-C U. S. Customhouse: Wednesday, by appointment.
San Francisco, Calif., 323-A Customhouse: Friday.
San Juan, P. R., 323 Federal Bldg.: Friday.
Savannah, Ga., 214 P. O. Bldg.: By appointment.
Schenectady, N. Y.: September 10–11, December 3–4, 9 A.M. and 1 P.M.
Seattle, Wash., 802 Federal Office Bldg.: Friday.
Sioux Falls, S. D.: September 9, December 9, 10 A.M.
Spokane, Wash.: Sometime in September.
Syracuse, N. Y.: Sometime in July and October.
Tampa, Fla., 410 P. O. Bldg.: By appointment.
Tulsa, Okla.: August 20, November 19.
Tucson, Ariz.: Sometime in October.
Wailuku, T. H.: October 10.
Washington, D. C., 718 Jackson Place, N.W.: Tuesday and Friday, 8:30 A.M. to 5 P.M. Code test 9:30 A.M. and 1 P.M.
Wichita, Kansas: Sometime in September.
Williamsport, Pa.: Sometime in September and December.
Wilmington, N. C.: December 6.
Winston-Salem, N. C.: August 2, November 1.

NOTE: Only General Class and Amateur Extra Class license examinations are given at FCC offices and examining points listed above. All examinations for Novice, Technician and Conditional Class licenses are conducted by volunteer supervisors.

ARRL FILING ON MARITIME MOBILE PROPOSAL

The Board of Directors at its annual meeting discussed the proposal for expansion of maritime mobile privileges made by FCC in Docket 12307 (April *QST*, page 60), after earlier requesting, successfully, an extension of time for filing; it voted to file in opposition to the proposal, and to offer an alternative proposal. The text follows:

FEDERAL COMMUNICATIONS COMMISSION

In the matter of a proposed amendment to section 12.91 of the rules and regulations to make available additional frequency bands for amateur operation outside the limits of the United States	Docket 12307

Comments of the American Radio Relay League, Inc.

These comments are filed pursuant to paragraph 7 of the Notice of proposed rule-making dated February 3, 1958, as amended by the Commission's order released May 8, 1958, extending the time for filing comments.

The Commission's proposal to expand amateur maritime-mobile operating privileges was carefully examined at the annual meeting of the Board of Directors of the League on May 9, 1958. The Board was particularly concerned over the matter because a world conference to revise the Atlantic City regulations and frequency allocation table is now scheduled for next year, with many countries currently in the midst of conference preparatory work. The Commission's proposal was, therefore, the subject of an unusually lengthy discussion.

As a result, it was the unanimous decision of the Board to oppose at this time, expansion of amateur maritime-mobile privileges beyond areas substantially within the jurisdiction of the United States, on the basis that on the eve of an international conference it is undesirable for the United States to take an action on behalf of its amateur service which may be viewed as having international implications, even if only in Region 11. The League is otherwise sympathetic with the needs and desires of amateurs whose interest lies in maritime-mobile operation but it is unwilling to risk — however small that risk may be — the possibility of the development of attitudes at the conference unfavorable to amateur radio because of the now-proposed U. S. action set forth in Docket 12307.

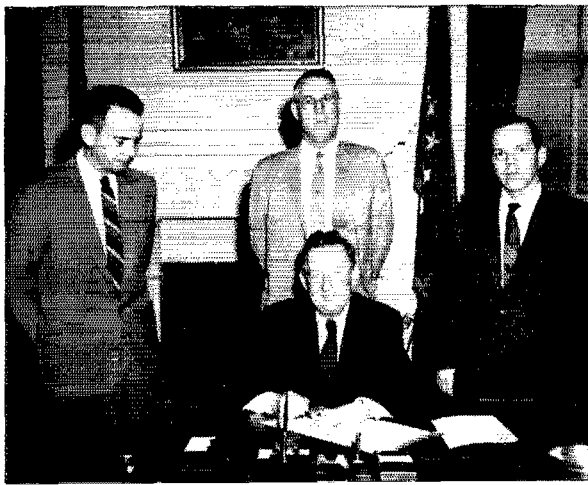
In this connection, however, the League offers an alternative proposal which will add frequency bands to those available to amateurs engaged in maritime-mobile operation, but without extending those privileges to waters adjacent to other countries. It is the League's proposal that all authorized amateur bands and modes of emission be made available to amateur operators on vessels plying between U. S. ports. Specifically, this proposal is to make such authorization for amateur operation on vessels operating "under enrollment" between ports on the Atlantic Coast, between ports on the Gulf Coast, between ports on the Atlantic and Gulf Coasts, between ports on the Pacific Coast, and between ports on the Pacific Coast and ports in the Territory of Hawaii. (The limitation "under enrollment" restricts such vessels from entering foreign ports.) In the opinion of the League such a proposal would satisfactorily meet the objections expressed in the latter part of paragraph 5 of the Notice of proposed rule-making for Docket 12307. That is, the League believes that the specific limitations imposed by the terms of operating "under enrollment" do, for all practical purposes, indicate satisfactory limits within which such operations would be permitted, would be more than sufficiently specific to enable effective administration, and would involve no undue burden on amateurs operating under the limitation.

The League urges the Commission's serious consideration of such a proposal.

AMERICAN RADIO RELAY LEAGUE, INC.

RE-EXAMINATION PROPOSAL

Two years ago, the League asked the FCC to return to its former rules requiring personal appearance of all candidates for amateur licenses who live within 125 miles of a point where examinations are given at least four times a year. The FCC has now denied that petition, but come up with a much more limited proposal of its own, which extends to Novices and Technicans the provision (already applying to Conditionals) that the Commission may require re-examination. Interested amateurs may file comments in quadriplicate before July 31, 1958. The text follows:



As it has consistently the past several years, Ohio has proclaimed the week ending with Field Day as "National Amateur Radio Week in Ohio." Such things don't just happen: shown above with Governor C. William O'Neill are Columbus Amateur Radio Association members W8FYW, W8VHO and W8BCK, all active in obtaining this year's action.

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

In the Matter of Amendment of Section 12.45(a) of Part 12 of the Commission's Rules to permit the Commission to re-examine licensees holding a Technician or Novice Class of operator license.	Docket No. 12444

NOTICE OF PROPOSED RULE MAKING

1. Notice is hereby given of proposed rule making in the above-entitled matter.

2. The Commission has on this date denied a petition submitted by the American Radio Relay League requesting amendment of Section 12.44 of Part 12 of the Commission's Rules so as to require that all applicants for amateur operator licenses of any class, including Novice and Technician Classes, whose actual residences and proposed amateur station locations are within 125 miles, airline distance, of the nearest location at which examinations are conducted on a regularly scheduled basis by an authorized Commission employee or representative, take their examinations under Commission supervision.[1]

3. However, since it is the Commission's belief that all applicants who obtain their licenses by mail order examinations should be treated equally with respect to re-examination under Commission supervision, it is proposed to amend Section 12.45(a) of Part 12 of the Commission's Rules as set forth in the attached Appendix.

4. The proposed amendment would permit the Commission to require that anyone holding an operator's license of the Novice, Technician, or Conditional Class appear for an examination under the supervision of Commission personnel or representatives. The present provisions of Section 12.45(a) state only that Conditional Class licensees are subject to re-examination. By adoption of the proposed amendment, it would appear that the major objective of the petitioner, referred to in paragraph 2 hereof, to provide for closer supervision over mail-order licensees would be partially accomplished and, also, it would provide for equality of treatment, with respect to re-examination, of all classes of amateur operator licensees who obtain licenses by mail.

5. The authority for the amendment proposed herein is contained in Sections 4(i) and 303(l) of the Communications Act of 1934, as amended.

6. Any interested person who is of the opinion that the proposed amendments should not be adopted or should not be adopted in the form set forth herein, and any person desiring to support this proposal, may file with the Commission on or before July 31, 1958, a written statement or brief setting forth his comments. Replies to such comments may be filed within ten days from the last date for filing original comments. No additional comments may be filed unless (1) specifically requested by the Commission, or (2) good cause for the filing of such additional comments is established. The Commission will consider all such comments prior to taking final action in this matter, and if comments are submitted warranting oral argument, notice of the time and place of such oral argument will be given.

7. In accordance with the provisions of Section 1.54 of the Commission's Rules and Regulations, an original and 3 copies of all statements, briefs, or comments filed shall be furnished the Commission.

FEDERAL COMMUNICATIONS COMMISSION
MARY JANE MORRIS
Secretary

Released: May 23, 1958

APPENDIX

IT IS PROPOSED TO AMEND PART 12 OF THE COMMISSION'S RULES AS FOLLOWS. AMEND SECTION 12.15 TO READ AS FOLLOWS:

§12.45 *Additional Examination for holders of Novice, Technician or Conditional Class operator licenses.* (a) The Commission may require a licensee holding a Novice, Technician, or Conditional Class of operator license to appear for a Commission-supervised license examination at a location designated by the Commission. If the licensee fails to appear for this examination when directed to do so, or fails to pass such examination, the Novice, Technician, or Conditional Class operator license previously issued shall be subject to cancellation, and, upon cancellation, a new license will not be issued for the same class operator license as that cancelled.

(b) Whenever the holder of a Novice, Technician, or Conditional Class amateur operator license is required by the Commission to restrict the operation of his amateur station, in accordance with the provisions of §§12.152, 12.153 or 12.154, the necessity for such restriction shall be considered sufficient grounds to require the holder of the Novice, Technician, or Conditional Class license to appear for a Commission-supervised examination.

[1] Examination of applicants for General and Extra Class operator licenses must be conducted under Commission supervision regardless of the geographical location of the applicant's residences or proposed station locations.

MINUTES OF 1958 ANNUAL MEETING OF THE BOARD OF DIRECTORS

THE AMERICAN RADIO RELAY LEAGUE, INC.

MAY 9, 1958

1) Pursuant to due notice, the Board of Directors of The American Radio Relay League, Inc., met in annual session at the Bond Hotel, Hartford, Connecticut on May 9, 1958. The meeting was called to order at 9:31 A.M. EDST, with President Goodwin L. Dosland in the Chair, and the following directors present:

P. Lanier Anderson, Jr., Roanoke Division
James P. Born, Jr., Southeastern Division
John H. Brabb, Great Lakes Division
Victor Canfield, Delta Division
Milton E. Chaffee, New England Division
George V. Cooke, Jr., Hudson Division
Gilbert L. Crossley, Atlantic Division
R. W. Denniston, Midwest Division
John G. Doyle, Central Division
Harry M. Engwicht, Pacific Division
Alfred M. Gowan, Dakota Division
Walter R. Joos, Southwestern Division
Claude M. Maer, Jr., Rocky Mountain Division
Grady A. Payne, West Gulf Division
Alex Reid, Canadian Division
R. Rex Roberts, Northwestern Division

Also in attendance, as members of the Board without vote, were Wayland M. Groves, First Vice-President; F. E. Handy, Vice-President; A. L. Budlong, General Manager. Also in attendance, at the invitation of the Board as a non-participating observer, was Southwestern Division Vice-Director Virgil Talbott. There were also present Treasurer David H. Houghton, Technical Director George Grammer, Assistant General Manager John Huntoon, Assistant Secretary Perry F. Williams, General Counsel Paul M. Segal and Robert Marmet of his office.

2) On motion of Mr. Engwicht, unanimously VOTED that the Minutes of the 1957 annual meeting of the Board of Directors are approved in the form in which they were issued by the Secretary.

3) On motion of Mr. Engwicht, unanimously VOTED that the Annual Reports of the Officers to the Board of Directors are accepted and the same placed on file.

4) Mr. Roberts, as Chairman, read the report of the Finance Committee and, on his motion, the same was

OFFICERS' REPORTS AVAILABLE TO MEMBERS

Each year the officers of the League make comprehensive written reports to the directors. The Board has made these reports available to interested members, in a volume which also includes reports of the directors. The cost price is 75 cents per copy, postpaid. Address the General Manager at West Hartford, Conn.

unanimously ACCEPTED and placed on file. Mr. Doyle, as Chairman, read the report of the Planning Committee and, on his motion, the same was unanimously ACCEPTED and placed on file. Mr. Brabb, as Chairman, reported that the Membership & Publications Committee had no matters referred to it and had no report. Mr. Canfield, as Chairman, reported for the Housing Committee, and moved that the Committee be continued and report to the Board not later than April 15, 1959; RULED, by the Chair, that the motion is out of order inasmuch as provision for action of this nature is provided later in the agenda. Whereupon, on motion of Mr. Canfield, unanimously VOTED to accept the report of the Housing Committee and place it on file. Mr. Cooke, as Chairman, reported for the Merit & Awards Committee and, on his motion, the same was unanimously ACCEPTED and placed on file.

5) On motion of Mr. Roberts, unanimously VOTED that the Annual Reports of the Directors to the Board of Directors are ACCEPTED and the same placed on file.

6) At this point, supplementary oral reports were rendered by the Officers of the League, during the course of which the Board was in recess from 10:47 A.M. to 11:01 A.M.

7) Moved, by Mr. Crossley, that the Board instruct the General Manager in the name of the League to make a filing with the FCC requesting the amendment of amateur rules so as to provide that only A-1 emission be permitted in the band segment 144.0 to 144.1 Mc. Moved, by Mr. Maer, that the motion be amended to change the figures to read 144.0 to 144.5 Mc.; but there was no second, so the motion was lost. Moved, by Mr. Roberts, to amend the motion by striking text and substituting therefor the following: that the Board instruct the General Manager in the name of the League to make a filing with FCC requesting the amendment of amateur rules so as to provide that only A-1 emission be permitted in the band segments 144.0 to 144.2 Mc. and 50.0 to 50.05 Mc. After discussion, moved by Mr. Denniston, to amend the amendment by changing the figures 144.0 to 144.2 Mc. to read 144.0 to 144.1 Mc. The yeas and nays being ordered, the question was decided in the affirmative: whole number of votes cast, 14; necessary for adoption, 8; yeas, 11; nays, 3. Those voting in favor were Messrs. Anderson, Born, Canfield, Chaffee, Crossley, Denniston, Doyle, Engwicht, Gowan, Joos, and Maer; those voting opposed were Messrs. Brabb, Cooke, and Roberts; Messrs. Payne and Reid abstained. So, the amendment to the amendment was adopted. Moved, by Mr. Crossley, that Mr. Roberts' motion to amend, as amended, be further amended to change the figures 50.0 to 50.05 to read 50.0 to 50.1 Mc. The yeas and nays being ordered, the question was decided in the affirmative: whole number of votes cast, 14; necessary for adoption, 8; yeas, 11; nays, 3. The division of the Board was the same as on Mr. Denniston's motion to amend, above. Whereupon, the question being on Mr. Roberts' motion to amend, as amended, and the yeas and nays being ordered, the question was decided in the affirmative: whole number of votes cast, 14; necessary for adoption, 8; yeas, 11; nays, 3. Those voting in the affirmative were Messrs. Anderson, Born, Canfield, Chaffee, Crossley, Denniston, Engwicht, Gowan, Joos, Maer, and Roberts; those voting opposed were Messrs. Brabb, Cooke, and Doyle; Messrs. Payne and Reid abstained. Moved, by Mr. Brabb, that Mr. Crossley's motion, as amended, be further amended by striking the text and substituting therefor the following: That the Board instruct the General Manager to file a petition with the FCC in the name of the League to exclude A-3 operation in the lower 100 kc. of the 144–148-Mc. band and the 50–54-Mc. band, since other types of emission than A-1 are permitted therein; but the motion to amend was rejected. Whereupon, the question being on Mr. Crossley's original motion, as amended, and the yeas and nays being ordered, the question was decided in the affirmative: whole number of votes cast, 14; necessary for adoption, 8; yeas, 11; nays, 3. Those voting in the affirmative were Messrs. Anderson, Born, Canfield, Chaffee, Crossley, Denniston, Engwicht, Gowan, Joos, Maer, and Roberts; those voting opposed were Messrs. Brabb, Cooke, and Doyle. Messrs. Payne and Reid abstained. During the course of the above actions the Board recessed for luncheon at 12:15 P.M., reconvening at 1:40 P.M., with all directors and other persons hereinbefore mentioned in attendance.

8) Moved, by Mr. Crossley, that the Board instruct the General Manager in the name of the League to make representation to the FCC relative to the new amateurs licenses issued. Request weekly lists be sent to the League for use in the Official Observers service of self-policing of the amateur bands; but, after discussion, unanimous consent being given, Mr. Crossley withdrew his motion.

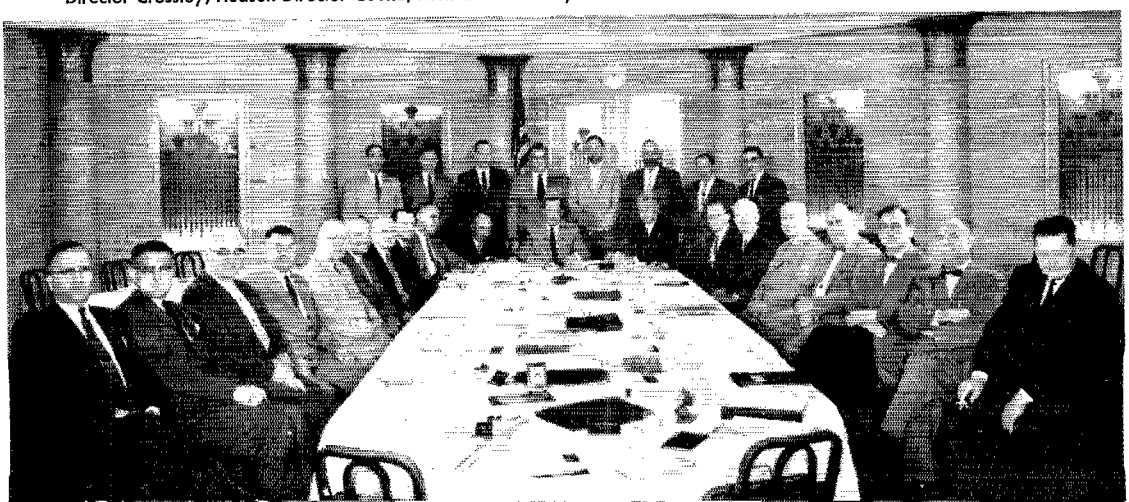
9) Moved, by Mr. Crossley, that the Board instruct the General Manager in the name of the League to continue to make representation to the FCC requesting the issue of new license cards upon license renewal; but there was no second, so the motion was lost.

10) On motion of Mr. Crossley, unanimously VOTED that the Board go on record favoring the attendance of all members of the Board at the 10th annual National Convention of the ARRL to be held at Washington, D. C., August 15, 16, and 17, 1958.

11) Moved, by Mr. Crossley, that the Membership & Publications Committee investigate the feasibility of furnishing binders for yearly volumes of *QST* with the membership fee. Moved, by Mr. Brabb, to amend the motion to provide that the matter be referred to the Finance Committee. On motion of Mr. Maer, unanimously VOTED that the matter be laid on the table.

12) Moved, by Mr. Crossley, that the Board instruct the General Manager in the name of the League to make a filing with the FCC for revision of Part 12, Sec. 12.61. This filing to make acceptable under the "ownership and/or control" clause the case of radio transmitting equipment

The ARRL Board of Directors and League officials during the meeting in Hartford on May 9. Seated, l. to r.: Dakota Director Gowan; West Gulf Director Payne; Delta Director Canfield; Southwestern Director Joos; Pacific Director Engwicht; First Vice-President Groves; Northwestern Director Roberts; Midwest Director Denniston; Vice-President and Communications Manager Handy; General Counsel Segal; President Dosland; General Manager Budlong; Assistant General Manager Huntoon; Treasurer Houghton; Canadian Director Reid; New England Director Chaffee; Rocky Mountain Director Maer; Great Lakes Director Brabb; Central Director Doyle. Standing, l. to r.: Southwestern Vice-Director Talbott; Technical Director Grammer; Counsel Robert Marmet; Southeastern Director Born; Roanoke Director Anderson; Atlantic Director Crossley; Hudson Director Cooke; Assistant Secretary Williams.



actually owned by a political division, or private non-profit organization, but turned over to an amateur or amateur radio club for use. This equipment may actually be located on public or private premises and accessible only at specific times or on request of the amateur; but, after discussion, unanimous consent being given, Mr. Crossley withdrew his motion.

13) Moved, by Mr. Crossley, that the Board, with its officers in the meeting of "The Committee as a Whole" give consideration to present contest rules, discuss them, and, if there are recommendations, request the recommendations to the Board or to the proper League official or officials; but there was no second, so the motion was lost.

14) Moved, by Mr. Crossley, that the Board instruct the General Manager in the name of the League to file approval of the FCC Docket No. 12307, which has been proposed by the Maritime Mobile Amateur Radio Club as it pertains to the amateur band of frequency 7 Mc. through 148 Mc.; but, after extended discussion, during which it was brought out that this matter was scheduled for later consideration on the agenda, on motion of Mr. Canfield, unanimously VOTED that the matter be laid on the table.

15) Moved, by Mr. Crossley, that the Board instruct the General Manager in the name of the League to file approval of the FCC Docket No. 12307, which has been proposed by the Maritime Mobile Amateur Radio Club as it pertains to the band 3500 kc. through 4000 kc.; but, after discussion, during which it was brought out that this matter was not proposed by the Commission in its docket, and unanimous consent being given, Mr. Crossley withdrew his motion.

16) On motion of Mr. Crossley, VOTED, 10 votes in favor to 6 opposed, that the Board refer to the Planning Committee the matter of possible revision of the Articles, so that the Vice-Director may take over the duties of the Director for a Board meeting in case the Director is ill or incapacitated. That the Planning Committee report its findings at the next Board meeting and may write a recommended change, if one is recommended. Passage of this motion shall constitute notice of consideration at the next Board meeting.

17) On motion of Mr. Doyle, VOTED that the Board of Directors instruct the Communications Department to investigate the feasibility of carrying a monthly MARS report in *QST*, and report its findings to the Board members within 90 days.

18) On motion of Mr. Brabb, unanimously VOTED that the Coast Guard be requested to examine the technical feasibility of amateur operation at power levels not to exceed 25 watts in band segments 1875–1900 and 1900–1925 kc., in all areas of the continental United States other than designated coastal areas; and that conditioned on such feasibility of operation, those band segments be restored under such power and area limitations.

19) Moved, by Mr. Brabb, that a petition be filed with the FCC to permit Technical-Class operators radio phone privileges in the 146 to 148 Mc.; but there was no second, so the motion was lost.

20) Moved, by Mr. Brabb, that the FCC be petitioned for a change of rules regarding station identification so that identification is necessary only on the type of emission used. After discussion, on motion of Mr. Maer, unanimously VOTED to amend the motion to provide that the General Manager is directed to investigate its feasibility and report to the Board as soon as convenient. Whereupon, the question being on the original motion as amended, the same was unanimously ADOPTED.

21) Moved, by Mr. Brabb, that the General Manager is requested to investigate again the possibility of obtaining the band 29.7–30.0 Mc. for the amateur service at a propitious time; but there was no second, so the motion was lost.

22) Moved, by Mr. Brabb, that the Headquarters staff investigate and report the feasibility of publishing original material in the *Handbook* rather than reprints of *QST* articles; but there was no second, so the motion was lost.

23) On motion of Mr. Brabb, unanimously VOTED that the Headquarters staff continue its policy of furnishing material for class instruction and that it is encouraged to augment the same by the use of additional visual aids with the view that such aids run progressively from Novice to the Extra Class licenses.

24) On motion of Mr. Cooke, unanimously VOTED that the Board now hear from the Communications Manager on his study as to the feasibility of revising boundaries of the eastern New York and western New York sections, as ordered at the previous meeting of the Board; whereupon, Mr. Handy gave his report.

25) On motion of Mr. Cooke, unanimously VOTED that net activities for which facilities for registration with ARRL are provided may not be affiliated as clubs; provided however that where the group name clearly indicates the identity of a local club, society, or association having club activities and meetings, our customary policies and rules for club affiliation are applicable.

26) On motion of Mr. Cooke, the following Resolution was unanimously ADOPTED:

RESOLVED, that it is the sense of the Board of Directors insofar as contest participation by radio amateurs is concerned that it continue to be encouraged for the pleasure, experience, and the healthy cooperative spirit it created by such activity within the overall amateur structure and that the decisions of the Contest Committee, vested in the headquarters in controlling contest requirements, be hereby supported.

27) Moved, by Mr. Cooke, that the General Manager in the name of The American Radio Relay League, Inc., be requested to petition the FCC to revise regulations to effect in-person examinations for the Technician grade of license rather than the present mail form of examination. On motion of Mr. Maer, unanimously VOTED to amend the motion to provide that this matter is referred to the General Manager for investigation and report. Whereupon, the question being on the original motion as amended, the same was unanimously ADOPTED. After discussion, on motion of Mr. Crossley, unanimously VOTED that the Board reconsider the matter. After further discussion, the question again being on Mr. Cooke's motion as amended, the same was unanimously REJECTED. During the course of the above, the Board was in recess from 3:25 P.M. to 3:35 P.M.

28) Moved, by Mr. Cooke, to amend By-Law 12, the third sentence, in reference to the filing date of directors' annual reports by deleting in line 7 the word "twenty" and inserting the word "thirty." But, after discussion, unanimous consent being given, Mr. Cooke withdrew his motion.

29) Moved, by Mr. Roberts, that the Secretary shall make a study of the feasibility of requesting suspension of the requirement of conelrad monitoring in amateur mobile operation, and make a report of findings in a Directors' Letter when the study is completed. On motion of Mr. Maer, unanimously VOTED that the motion be amended by striking the word "mobile" from the text. Whereupon, the question being on the original motion as amended, the same was unanimously ADOPTED.

30) On motion of Mr. Roberts, VOTED, 8 votes in favor to 7 opposed, that the General Manager shall file an amended application with the Federal Communications Commission covering our application of 1956 for extension of the 14-Mc. phone band from 14.3 to 14.35 Mc., to delete the request that the additional 50 kc. be opened to Advanced and Amateur Extra Class only.

31) Moved, by Mr. Roberts, that the General Manager shall, within 60 days, file application with the Federal Communications Commission for the following changes in the sub-allocation of types of emission:

80-meter band:
A-3 and n.f.m. — 3750–4000 from 3800–4000
A-1 Novice — 3650–3700 from 3700–3750
40-meter band:
A-3 and n.f.m. — 7150–7300 from 7200–7300
A-1 Novice — 7100–7150

BOARD THANKS VOLUNTEER A.R.R.L. OFFICIALS

In reviewing the work of the League for the past year the ARRL Board of Directors again found that much of our progress is due to the volunteer efforts of elected and appointed officials in the administrative and field organization of our association. By unanimous action the Board has again expressed its sincere thanks to the Vice-Directors, director assistants, SCMs, SECs and QSL Managers — an action which we know all amateurs will heartily endorse.

Rhode Island says "Yes" and L. B. Lussier (Motor Vehicle Registrar), W1VXC, W1GNC W1IGR and W1PLL watch Governor Roberts sign the license plate bill.

20-meter band:
(see former motion)
15-meter band:
A-3 and n.f.m. — 21,200-21,450 from 21,250-21,450
Novice A-1 — 21,100-21,150 from 21,100-21,200
But there was no second, so the motion was lost.

32) Moved, by Mr. Engwicht, that the General Manager review the matter of an overall incentive amateur license plan and submit definite proposals to the 1959 Board meeting; but, after discussion, the motion was REJECTED.

33) On motion of Mr. Born, affiliation was unanimously GRANTED to the following clubs:

New Smyrna Beach Amateur Radio Club
New Smyrna Beach, Fla.
Cherokee Amateur Radio Club.....Dalton, Georgia
Lancaster Amateur Radio Club.....Lancaster, S. C.
The Cheraw Radio Amateur's League.....Cheraw, S. C.
Magic Valley Radio Amateurs.....Buhl, Idaho
Saint Clair Amateur Radio Club Inc.....Belleville, Illinois
Chelmsford Amateur Radio Association.Chelmsford, Mass.
Glastonbury High Radio Club.....Glastonbury, Conn.
La Salle Academy High School Radio Association
Providence 16, R. I.
Dumas Amateur Radio Club.....Dumas, Texas

34) Moved, by Mr. Joos, that the Board instruct the General Manager in the name of the League to make formal filing with the FCC to restrict Novice-licensed operators to A-1 (c.w.) emission only. After discussion, the yeas and nays being ordered, the question was decided in the negative: whole number of votes cast, 15; necessary for adoption, 8; yeas, 2; nays, 13. Those voting in the affirmative were Messrs. Anderson and Joos; all the other directors voted opposed, except Mr. Reid, who abstained. So, the motion was REJECTED.

35) On motion of Mr. Payne, unanimously VOTED that the Board approve the holding of a 1959 ARRL National Convention at Galveston, Texas, under the sponsorship of the Galveston County Amateur Radio Club.

36) At this point, unanimous consent being given, the General Counsel discussed Article 7 of the Articles of Association. Moved, by Mr. Maer, that the Board's previous actions as recorded in paragraphs 39 and 68 of the Minutes of the 1957 annual meeting of the Board are hereby rescinded. After discussion, the yeas and nays being ordered, the Secretary announced the results as a tie: whole number of votes cast, 16; necessary for adoption, 9; yeas, 8; nays, 8. Those voting in the affirmative were Messrs. Anderson, Canfield, Chaffee, Cooke, Maer, Payne, Reid, and Roberts; those voting opposed were Messrs. Born, Brabb, Crossley, Denniston, Doyle, Engwicht, Gowan, and Joos. Whereupon, the Chair casting his vote in the affirmative, the motion to rescind was ADOPTED.

37) At this point, the Board examined the FCC proposal in Docket 12307, relating to maritime-mobile privileges. After discussion, on motion of Mr. Canfield, unanimously VOTED that the General Manager is directed to file comment in the name of The American Radio Relay League opposing the Commission's proposals in Docket 12307 and, as a counter-proposal, suggesting amendment of the amateur rules to provide that all authorized amateur bands and modes of emission be made available to FCC-licensed amateur operators on vessels operating "under enrollment" between ports of the U. S. on the Atlantic Coast, between ports on the Gulf Coast, between ports on the Atlantic and Gulf Coasts, between ports on the Pacific Coast, and between ports on the Pacific Coast and ports in the Territory of Hawaii.

38) At this point, the Board examined the FCC proposal in Docket 12404, to change the 21,000-Mc. band assignment to read 22,000-23,000 Mc. On motion of Mr. Roberts, unanimously VOTED that the General Manager is directed to file comment in the name of the American Radio Relay League in support of this proposal.

39) On motion of Mr. Born, unanimously VOTED that the General Manager is hereby authorized to reimburse the division directors for actual expenses incurred by them during the year 1958, in the proper administration of ARRL affairs in their respective divisions, up to amounts as follows:

Canadian Division Director	$1000
Atlantic Division Director	2000
Central Division Director	1800
Dakota Division Director	800
Delta Division Director	750
Great Lakes Division Director	800
Hudson Division Director	900
Midwest Division Director	900
New England Division Director	500
Northwestern Division Director	1000
Pacific Division Director	1800
Roanoke Division Director	500
Rocky Mountain Division Director	1000
Southeastern Division Director	1500
Southwestern Division Director	1200
West Gulf Division Director	1500

40) On motion of Mr. Gowan, unanimously VOTED that the General Manager is hereby authorized to pay expenses for the operation of ARRL committees during the year 1958, but not to exceed amounts as follows:

Planning Committee	$1000
Finance Committee	1000
Membership & Publications Committee	500
Merit & Awards Committee	200
Housing Committee	3000

41) On motion of Mr. Reid, unanimously VOTED that, to continue the Board's policy of reimbursing Section Communications Managers and QSL Managers of the League for certain travel in furthering ARRL organizational activities, the General Manager is hereby authorized to pay during the year 1958 a total amount not to exceed $6000, under terms prescribed by the Communications Manager following the general pattern established by the Board.

42) On motion of Mr. Born, unanimously VOTED that, to continue the Board's policy of reimbursing Section Emergency Coordinators for certain travel in furthering ARRL organizational activities, the General Manager is hereby authorized to pay during the year 1958 a total amount not to exceed $5000, under terms prescribed by the Communications Manager following the general pattern established by the Board.

43) The Board recessed for dinner at 5:59 P.M., reconvening at 8:03 P.M., with all directors and other persons hereinbefore mentioned in attendance.

44) On motion of Mr. Engwicht, unanimously VOTED that the General Manager is hereby authorized to pay, during the period between January 1, 1959 and the 1959 meeting of the Board, expenses against usual authorizations for administrative and committee operations in no greater amounts than 1958 authorized amounts.

45) On motion of Mr. Denniston, the following Resolutions were unanimously ADOPTED:

BE IT RESOLVED, that the Board of Directors of the American Radio Relay League, assembled at Hartford, Connecticut, on May 9, 1958, expressed to Vice-President Percy C. Noble its regret at his inability to attend the meeting, and extends to him its deepest sympathy on the recent loss of his mother.

BE IT RESOLVED, that the Board of Directors of the American Radio Relay League, meeting at Hartford, Connecticut, on May 9, 1958, on behalf of amateurs in the United States, its possessions, and Canada, does hereby convey to the delegates, observers, and guests assembled for the IARU Region 1 Conference at Bad Godesberg, Germany, its warm best wishes for a profitable and enjoyable Congress.

BE IT RESOLVED, that the Board of Directors of

(*Continued on page 146*)

QuistQuiz

Rudy Erickson, W7JJP, of Portage, Wash., tells about the surplus hunter. Seems this ham found a strip made up of 23 .001-μf. capacitors connected in parallel. (G'wan, it happens all the time!) After a little thought he realized that by a few slight modifications he could make up a test strip that would give him any capacitance from .001 to .023 μf. in steps of .001 μf. Connections would be made with clip leads to get the various capacitances. Question: To satisfy the above, what is the minimum number of original connections he would have to disconnect?

—•••—

Last month's question was easy if you knew your transmission lines, a toughy if you didn't. The short-circuited half wave length of line gives an effective short circuit between points A and C, and the open-circuited quarter wavelength gives an effective short between B and C. Consequently there is an effective short circuit, or zero impedance, between A and B.

25 Years Ago this month

July 1933

. . . The lead article twenty-five years ago described OA4U, which was 11,000 feet above sea level at a magnetic observatory.

. . . W8ALK described a micrometer frequency meter. (W8ALK is now W4DRB, of Lampkin Lab fame.)

. . . W3ACD described a 56-Mc. superregenerative receiver.

. . . Grammer discussed twisted-pair feeders for the transmitting antenna.

. . . There was dope on tape recorders for c.w., and three pages of hints and kinks for the experimenter.

. . . If you needed info on how to figure audio transformer impedance ratios, there was an article by a Daniel E. Noble. Dr. Noble was at that time at Connecticut State College as a professor of electrical engineering, but is now vice-president of Motorola, Inc.

. . . The report of the annual meeting of the Board of Directors of the League occupied 2¼ pages in *QST* twenty-five years ago, with the Minutes themselves taking up only a bare fraction over two columns. Look at page 58 in this issue to see what changes a quarter century hath wrought.

. . . Other technical articles included dope on the economical use of a milliammeter, and the description of a flea-power portable phone station with crystal control.

. . . And just twenty-five years ago we announced the A-1 Operator Club, a "society" for top-notch operators. Incidentally, one of the charter members was W1CJD, a fellow who still contributes to *QST* occasionally.

Strays

According to K2DQD, a collapsible whip antenna which is just the ticket for the handitalky rig described in March *QST* is available from Lafayette Radio, for less than a dollar.

Silent Keys

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

W1EBR, Alden C. Eldridge, Buzzards Bay, Mass.
W2ARE, Joseph V. Mucha, Bayshore, N. Y.
W2MPC, Albert H. Hartman, New York, N. Y.
W2VOU, Charles Kandell, Jackson Heights, N. Y.
W3OK, Edwin D. Hartman, Bethlehem, Pa.
W3ULQ, Kenneth M. Taylor, Seaford, Del.
W4RFF, George N. Mathers, Lakeland, Fla.
W4SKE, Dick L. Phillips, Lyndon, Ky.
W4YEV, Grady W. Bartlett, Kingsport, Tenn.
W5BI, Paul A. Schreiber, New Orleans, La.
K5GCX, Hardwick B. Shook, Oklahoma City, Okla.
W5MRV, Bruce Patterson, Houston, Texas
W6FSH, Harry W. Dishon, San Diego, Calif.
K6HMW, George Tamplin, Glendora, Calif.
W6JAY, Earle A. Curtis, Redlands, Calif.
W7DNP, John H. Fitzgibbon, Milwaukie, Ore.
W7GTT, John N. Larson, Sierra Vista, Ariz.
W8OBW, Harry L. Newell, New Philadelphia, Ohio
W8TDO, H. Ty Kirby, Detroit, Mich.
W9AQS, Gilbert E. Gustafson, River Forest, Ill.
VE3EBU, Robert R. Whyte, Hamilton, Ont.
CT1JS, Joaquim Rocha Saraiva, Porto, Portugal

Strays

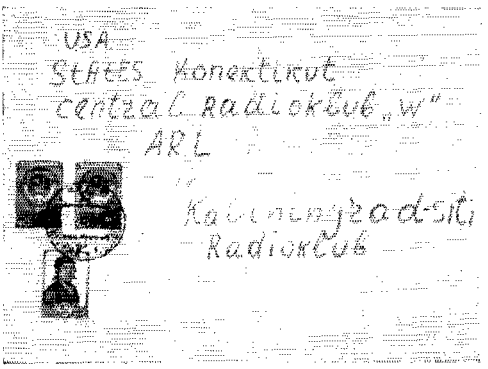
One of the real oldtimers, who prior to WW I had been the operator at 9RW and in 1920 was an operator at 9ZL, has now returned to the air with the call W8ZL.

—•••—

Page 10, June — make it read KN1BIO and KN3BIO.

—•••—

W4UOT, PAM in Tennessee, lives on Ham St.



Don't ask us how the Post Office did it, but one of the hundreds of foreign logs resulting from the 1958 DX Competition reached us in this envelope. We were pleased to receive this entry from the Soviet Union; note the perfect phonetic spelling of Connecticut despite the "language barrier." Some misaddressed or incompletely addressed mail undoubtedly is lost, however. Contest enthusiasts: send logs for all ARRL activities to the Communications Department, American Radio Relay League, 38 La Salle Road, West Hartford 7, Connecticut. Don't risk having your entry wind up at the dead-letter office.

Hints and Kinks For the Experimenter

R. F. AND AUDIO RATINGS FOR THE SURPLUS 701A

Many surplus-market shoppers have been unable to resist picking up one or more of the bargain-priced type 701A transmitting tubes even though typical operating characteristics for the tube are generally unavailable. Those who have shelved their bargains for lack of operating data may be interested in learning how the tubes are used here at W8NJH.

Locating a socket for the tube may prove to be somewhat of a problem. Fortunately, sockets can be easily and inexpensively made by drilling five holes (one of these is for the stem at the bottom center of the envelope) in a flat sheet of fiber or bakelite. Clamps to hold the tube in place may be made by drilling some brass nuts to fit over the tube prongs. Drill and tap the nuts to accommodate small machine screws that can be tightened up against the tube prongs to lock the clamps. Leads terminated with soldering lugs may be anchored under the heads of the locking screws.

Fig. 1 is a diagram presented for the benefit of those unfamiliar with 701A base connections and for anyone making sockets for the tube. When wiring to the tube, make certain that terminal "HK" is returned to ground because this is the cathode prong as well as one side of the heater.

Military specifications (JAN) for pulse operation of the 701A recommend application of 8 volts to the filament. Some amateurs use as little as 5 volts, but extended operation has shown 7.5 volts to be the most practical value to use. Filament current drain is approximately 7 amperes per tube. Because one side of the filament is common to the cathode terminal, it is necessary to ground one side of the filament transformer secondary winding rather than operate with the customary grounded center tap.

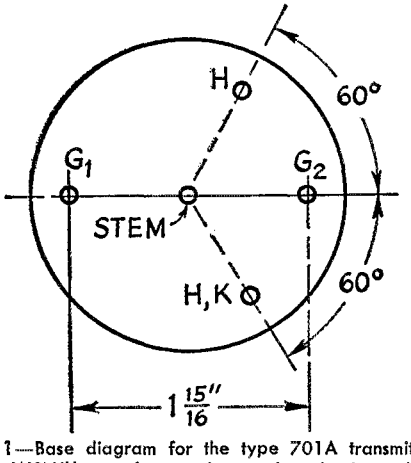


Fig. 1—Base diagram for the type 701A transmitting tube. W8NJH uses this popular surplus tube in a plate-modulated tetrode r.f. amplifier, and as a high-μ triode in a zero-bias high-power modulator.

A pair of 701As operated in Class-C plate-modulated r.f. service will handle a kilowatt input at 3.5 and 7 Mc. The top limit appears to be about 900 watts at 14 Mc. and the maximum input should be held to approximately 800 watts at 28 Mc. Good safe limits for a pair operated Class-C — plate modulated — at 14-Mc. and above are as follows:

Plate volts	*Plate milliamperes (2 tubes)*
3000	300
2000	400
1500	500

Approximately 400 volts is used on the screens for all three sets of operating conditions. The tubes show only a slight trace of color when operated as outlined above, and are easy to neutralize by conventional methods.

The 701A may also be used as a high-μ triode in zero-bias modulator circuits. Best results are obtained by inserting a 15,000-ohm 1-watt resistor in between the control-grid and screen-grid terminals of each tube and connecting the screens directly to the driver transformer.

The optimum plate-to-plate resistance for 701As operating zero bias with 2250 volts on the plates is in the 10,000- to 12,000-ohm region. Zero-signal d.c. plate current is 50 milliamperes and voice peaks will kick the current up to 500 milliamperes. A pair of the tubes will fully modulate a kilowatt final when driven by the audio available from a unit such as the Viking Ranger

— *Stu Rockafellow, W8NJH*

SIMPLE 12-VOLT MOBILE CONVERTER FOR 75 AND 40 METERS

After purchasing a new automobile having a 12-volt electrical system, I was faced with the problem of how best to receive 75 and 40 meters for a minimum expenditure. It was necessary that any ham gear added be quite small, and desirable that it use parts from the junk box.

Inspection of the car broadcast receiver revealed that it contained transistors and 12-volt tubes, the latter being the type designed to operate with the plate and screen voltages supplied directly from a 12-volt storage battery. Since there was no vibrator power supply — or no other convenient source of high voltage for a converter — I decided to try the simple 12-volt circuit shown in Fig. 2. Performance of the con-

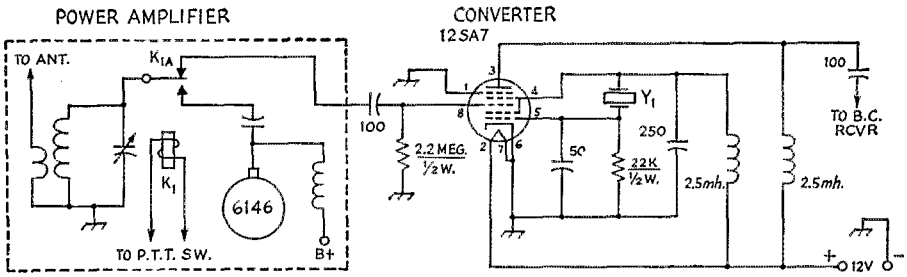


Fig. 2—Circuit diagram of W7NPV's simple mobile converter. The dashed lines enclose r.f. amplifier (transmitter) components. Resistances are in ohms. Capacitances are in $\mu\mu$f. K_1 is the push-to-talk relay, and Y_1 is a 3000-kc. crystal.

verter compares favorably with some of the more advanced or complicated units.

A type 12SA7 pentagrid converter tube is used in the circuit, but a miniature 12BE6 will work as well. One of the new 12-volt tubes — 12AD6 or equivalent — might be the best choice if the junk box doesn't contain one of the older types.

The tuned input circuit for the converter is the plate tank for the r.f. final in the transmitter. This circuit is switched back and forth between converter and transmitter by contacts K_{1A} of the push-to-talk relay, K_1.

Crystal frequency is 3000 kc. which places the 75-meter phone band between 800 and 1000 on the broadcast receiver dial. When operating on 40 meters, the second harmonic of the crystal is used and the broadcast dial is tuned from 1200 to 1300 kc. If crystal activity appears to be sluggish, the 250-$\mu\mu$f. capacitor may be replaced with one of higher value to strengthen oscillation.

Placement and wiring of components is not especially critical, but the converter is built into the transmitter and is near the final amplifier and the push-to-talk relay. Short lengths of hookup wire are used for leads terminated at contacts K_{1A} and, of course, it's advisable to use coaxial between the converter and the broadcast receiver.

— *Vernon Phillips, W7NPV*

SCREEN-GRID PROTECTION WITH A SURPLUS RELAY

While overload relays operating in the region of 100 to 500 ma. are readily available, it may be difficult to locate one suited for use in the screen-grid circuit of an r.f. amplifier which employs a tube such as the 4X250B. The requirements in this case call for a relay that will disconnect screen voltage at a screen current of 50 ma. or somewhat less.

Use of an inexpensive surplus relay of the dual-winding type provides a simple solution to the problem. Fig. 3 is the diagram of a relay-type protective circuit that was whipped up and placed in operation in less than one evening. Although no new principle is involved, the system does provide dependable protection for those expensive pentode and tetrode tubes which ruin so easily because of excessive screen dissipation.

The s.p.d.t. surplus relay has a pair of 200-ohm windings on a common core. One of these windings is connected in series with the screen-grid lead, the normally-closed contacts of the relay and the line from the screen supply. This path between supply and screen grid remains closed until a predetermined value of screen current activates the relay and opens the normally-closed contacts. When the relay is tripped by overload current, voltage is transferred to the second winding which now receives voltage through the normally-open contacts and R_1. The second coil will hold the screen circuit "open" until the relay is re-triggered by the opening of reset switch S_1.

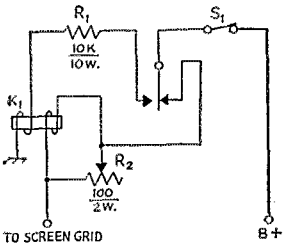


Fig. 3—Diagram of W1FYN's screen-grid protective circuit.

K1—Surplus relay; see text.
R1, R2—See text.
S1—S.p.s.t. toggle switch.

R_2 is a sensitivity control for the relay and, in the original circuit, is adjusted so that the relay kicks over at screen current in excess of 35 ma. Of course, any abnormal operating condition that usually causes excessive screen current will operate the relay.

Reverse the leads to one of the windings if the relay chatters or fails to hold when activated by screen current. If the relay has a spare set of contacts, these may be used to control a "screen-on — screen-off" pilot lamp.

— *I. S. Simpson, W1FYN*

MOBILE HINT: PRUNING LOADING COILS

A number of laborious mount-the-coil and dismount-the-coil operations associated with pruning a set of mobile antenna loading coils may be eliminated by using the following procedure.

After the first coil has been resonated with the aid of a grid-dip meter, carefully observe the setting of the meter and then remove the coil from the antenna. Next, connect the coil in parallel with a 50-$\mu\mu$f. variable capacitor and, by tuning the latter, adjust the circuit to resonance at the exact frequency measured when the coil was mounted in the whip. The value of capacitance so arrived at is not of major importance, but it is equivalent to that effectively imposed across the coil by the antenna. Therefore, this external or test capacitance may be used to simulate antenna capacitance when other loading coils are being trimmed for resonance. In other words, coil adjustments may be made *on the bench* without involving repeated mounting tasks. The following precautions should be observed when using the system.

Couple the meter through a single-turn loop to the base of the antenna when grid-dipping a mounted coil. Couple the meter as loosely as possible when measuring an unmounted coil shunted with the test capacitor. Do not depend on meter dial calibration in either case because the oscillator frequency will probably pull some during measurements. G.d.o. frequency may be accurately checked by listening to the signal with a receiver of established calibration.

Hand-capacitance effects should be minimized while bench-testing an *LC* circuit by using a reasonably long insulated control shaft or tuning tool. A plastic housing over the capacitor will prevent accidental detuning after initial adjustment. Short leads between capacitor and coil are desirable and, of course, the *LC* circuit should rest on an insulated surface — not a metal work bench — while being adjusted.

— *Art Fenster, W2EXH*

PLASTIC STORAGE BINS

THE small plastic boxes such as the ones in which General Cement Company packages small hardware and parts sometimes become a problem when scattered around the workbench. These can be cemented together side by side in units of six and then they become handy permanent storage units. Use a plastic solvent such as ethylene dichloride for cementing. If the boxes are narrower at the bottom than at the top a thin plastic skin can be cemented along the bottom edge.

Ethylene dichloride is an excellent solvent for cementing all types of plastic, even where acetone will not work. — *Don Maxwell, W8FQS*

STUB TUNING AID

The experience of hanging on to the top of a 45-foot pole while tuning the stub for a cubical quad antenna (*QST*, January, 1955), and having the clips on the shorting bar "jump track" during adjustments, inspired me to spend a few productive minutes constructing the tuning aid illustrated in Fig. 4.

Construction of the tool and the manner in which it is used become clear after a glance at the sketch. The slotted block may be placed either below or above the shorting bar, depending on whether the bar is raised or lowered. By keeping the tool in alignment with the stub, it is possible to move the shorting bar evenly along stub elements without danger of either clip jumping loose. — *Robert T. Riser, W5BYK*

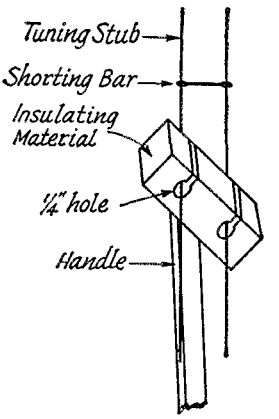


Fig. 4—Drawing of the stub tuning aid. The slots in the insulated block must be large enough to slip over the stub bars or wires. The wooden handle should be approximately six inches long.

PLUG-IN COIL HINT

THE Millen type 74001 shielded coil form, or any other make of form mounted on an octal base, may be used with a *two-band* tapped inductance by filing a second keyway in the octal socket in which the coil is mounted.

Fig. 5A shows how the socket should be wired for the two-band coil. Notice the second keyway that points to Terminal No. 2, and the jumper between Terminals 1 and 4.

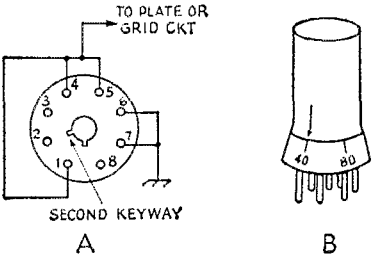


Fig. 5—Sketches showing socket wiring for the two-band plug-in coil (A), and the frequency marking on the shield (B).

By way of explanation we shall assume that the coil is to be used at 3.5 and 7 Mc. The main or total winding should then be terminated at Pins 4 and 6 of the plug, and the 7-Mc. tap should go to Pin 8 where it will float free when the form is plugged into the socket in normal fashion. Now, when the form is plugged in with the guide in the new keyway, the jumper between Pins 1 and 4 will short out the top section of the coil, leaving the 7-Mc. portion connected to the rest of the circuit.

The shield for the form may be marked to indicate frequency as illustrated in Fig. 5B.

— *Otto Woolley, WØSGG*

The 10th National ARRL Convention

Washington, D. C.—August 15, 16 and 17

HAMS of 15 radio clubs in the Washington, D. C., area — banded together as the Foundation of Radio Amateur Clubs, Inc. — are hard at work in preparation for the 10th ARRL National Convention to be held in the Capital City on August 15–17, 1958. Headquarters will be at the Sheraton-Park Hotel.

Interspersed through the three-day program will be individual sessions dealing with v.h.f., mobile, RACES, TVI, military, Novices, YLRL, single sideband, antennas, contests, RTTY, public relations, DX, and others. The latest in amateur equipment will be shown by manufacturers and distributors in the hotel's large exhibit area. For the ham who wants to combine convention attendance with a weekend holiday or vacation in Washington, the committee has set up a number of tours detailed hereinafter. Special events for the ladies have been covered in the YL columns of *QST*. Advance registration is $5 up to August 1; thereafter it is $7.50. Meal functions and tours are separate and optional, and from the list later in this announcement you can tailor a schedule to meet your individual preferences and commitments; or by paying the slightly higher price, you can register for such events at the convention.

Notable among the special functions are the Friday evening get-together with a buffet dinner and a dance; a military tribute to amateurs as part of the luncheon on Saturday; a floor show with professional entertainment late Saturday evening; the Wouff Hong ceremony at midnight Saturday; and the Hiram Percy Maxim memorial banquet on Sunday evening, climax of the affair. The condensed general program looks like this:

FRIDAY MORNING — Registration; Exhibits; Ragchewers Coffee Shop.
FRIDAY AFTERNOON — Military Session; Novice Session; Tour — Naval Research Laboratory; Tour — Pentagon and Nike Installation; Tour — Voice of America.
FRIDAY EVENING — Get-together Party and Buffet Dinner Dance; Quarter Century Wireless Association Meeting.
SATURDAY MORNING — VHF Session; Mobile Session; RACES Session; TVI Session; FCC Exams.
SATURDAY AFTERNOON — Military Luncheon—Tribute to Amateur Radio; YLRL Session; Single Side Band Session; Antenna Session; Contest Session; Code Contest; RTTY Session.
SATURDAY EVENING — RTTY Dinner; Single Side Band Dinner; Floor Show; Wouff Hong Initiation.
SUNDAY MORNING — DX Session; Communication Session; Mobile Contest; FCC Session; Public Relations Session.
SUNDAY AFTERNOON — ARRL Luncheon; ARRL Open Forum; DX Luncheon.
SUNDAY EVENING — Hiram Percy Maxim Memorial Banquet.

REGISTRATION
HOSPITALITY DESK
EXHIBITS
RAGCHEWERS COFFEE SHOP
REMAIN OPEN ENTIRE CONVENTION

For the ham (and his family) who really wants a good look at Washington, the convention sponsors have arranged these tours (at reduced rates compared with usual charges):

FRIDAY, AUGUST 15

10 A.M. to 12 Noon	— Tour of Bureau of Engraving and Printing, Washington Monument	$1.25
2 P.M. to 5:30	— Tour of Naval Research Laboratory	1.00
2 P.M. to 5:30	— Tour of Pentagon and Nike Installation	1.00
2 P.M. to 4:30	— Tour of Voice of America	1.00
2 P.M. to 5:00	— Tour of Capitol and Smithsonian Institution	1.75
2 P.M. to 5:00	— Tour of Arlington Cemetery, Tomb of the Unknown Soldier, Lee Mansion, Iwo Jima Memorial	1.75

SATURDAY, AUGUST 16

9:30 A.M. to 11:30	— Tour of White House	1.00
3 P.M. to 5:00	— Tour of Mellon Art Gallery and Museums	1.25
3 P.M. to 5:00	— Tour of City of Washington	2.00
7 P.M. to 9:30	— Transportation to and from Hogates Restaurant	1.00

SUNDAY, AUGUST 17

9 A.M. to 2:30 P.M.	— Mount Vernon Boat Trip	*1.75
3:30 P.M. to 5:30	— Tour of City of Washington	2.00
3:30 P.M. to 6:00	— Tour of Washington Cathedral and Monastery	2.50

* Free to all ladies registered for either the ladies' or amateurs' programs; $1.75 a person for OMs and children.

Much of the registration data has been given in earlier issues of *QST*, but for those who came in late, we repeat it here. Closing dates for pre-registration for all events is August 1. Write to the Foundation of Radio Amateur Clubs, Inc., P. O. Box 3726, Washington 7, D. C. giving your name, call, address, and a list of the events for which you want tickets, and enclose your check for the total, payable to the Foundation.

REGISTRATION DATA

	Advance Registration	*At Convention*
Amateur Registration	$5.00	$7.50
Ladies Program	5.00	7.50
FRIDAY, AUGUST 15		
Buffet Dinner Dance	6.50	7.00
QCWA Party	2.00	2.50
SATURDAY, AUGUST 16		
Ladies Luncheon Fashion Show SWOOP	3.75	4.00
Military Luncheon — Tribute to Amateur Radio	3.75	4.00
Single Side Band Dinner	6.50	7.00
RTTY Dinner	6.50	7.00
Floor Show	Free	
Wouff Hong Initiation	1.00	1.00
SUNDAY, AUGUST 17		
ARRL Luncheon	3.75	4.00
DX Luncheon	3.75	4.00
Hiram Percy Maxim Memorial Banquet	6.50	7.00

Hotel Sheraton Park rates are: Singles $7.50 to $14.00. Doubles $11.00 to $16.00. Parlor suites $17.50 to $22.50. Cots will be supplied free of charge to children under 12 years of age. Make reservation requests to:

Convention Housing Bureau
1616 — K Street, N. W.
Washington, D. C.

A communications system during the convention will be set up under the direction of W3UCR, SCM of Maryland-Delaware-D. C. Nets on 146 and 220 Mc. will link the registration desk, exhibit hall, ragchewers' coffee shop, hospitality desk, nursery and activity centers. "Talk-in" service will be provided for mobiles by K3CSH on 3820, 3835, 7250, 14225 and 29640 kc. and on 50.4 and 145.32 Mc.

Observations Wanted on "Ghost Satellite"

ONE SURPRISING thing that was observed in reception of signals from the U.S.S.R. satellites launched last fall was the existence of "ghost" signals -- signals heard when the satellite was just halfway round the world from the receiving point. There is considerable scientific interest in such propagation and observations by amateurs would be useful, as indicated by the following excerpt from a letter from Prof. O. G. Villard, jr., W6QYT, of Stanford University:

"I wonder if there would be any possibility of enlisting amateur help in exploring further the "ghost satellite" or antipodal reception effect? Since Sputnik III's transmitter may be solar powered, and since the satellite itself may stay up for three months or so, there may be time to get a notice into *QST* specifically asking for the fellows to be on the lookout for this phenomenon.

"To pick it up is simple enough. One listens for the signal at plus or minus 53 minutes from the time it makes a close pass. The satellite will then be approximately halfway around the world with respect to the observer. The signal, as observed at Stanford at least, reappears at those times for a period of three or four minutes and then vanishes until the satellite is once again roughly within line of sight. The antipodal effect is heard best in the evening hours, and is observable on about 50 per cent of the days, on the average.

"It is very difficult to explain this transmission, which was first observed by H. W. Wells and reported in *Proc. I.R.E.* for March, 1958 (p. 610). What we need is more information on its characteristics and properties in order to piece together an explanation. Here ham reports can be invaluable. They could provide answers to such questions as:

1) At what locations can the effect be observed? Are there preferred positions on the earth's surface?

2) On a given day, if it is heard at one location what is the probability of hearing it at another?

3) What is the direction of arrival of the signal at each location? At Stanford it was first heard predominantly from the southeast; this direction now seems to be working around towards southwest. (Direction is determined by means of a three-element rotary beam.) The only data really required are (1) whether signal was heard or not, and if so, roughly how strong it was, (2) at what times the operator listened and (3) the direction from which the signal was coming, if this can be determined or estimated.

"Negative reports will be fully as important as positive ones. Correct signal identification is vital; here the "L" signal now being emitted is very useful."

Reports on the antipodal signals may be sent either to Prof. Villard at the Radio Propagation Laboratory, Stanford University, Stanford, Calif., or to ARRL Headquarters for forwarding. The satellite's position may be determined from predictions being broadcast daily by CAP (see *QST* for April, 1958, page 59).

Strays

We have just received the Spring 1958 edition of the *Kansas City Area Amateur Call Book*, giving names, QTHs, and telephone numbers of all amateurs in the Kansas City area. Prepared by the Heart of America Radio Club, Inc., it is a fine job indeed.

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W6VX found some hot dope in a May, 1909, copy of *Electrician and Mechanic*. There was a report on some tests with wireless telephone carried on by the Italian navy, a land station talking to a torpedo destroyer some 300 miles away. "The naval officers at each not only heard distinctly every word spoken but could even recognize the voice of the speaker." The report goes on to say that the system is based on a special microphone through which passes a continual jet of water.

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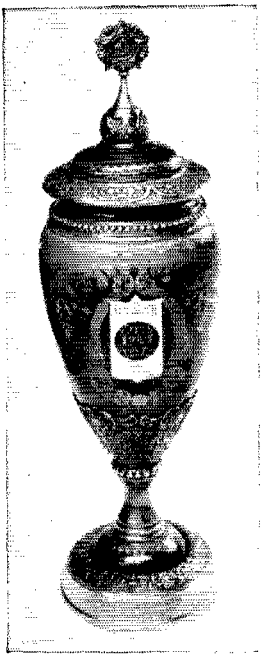
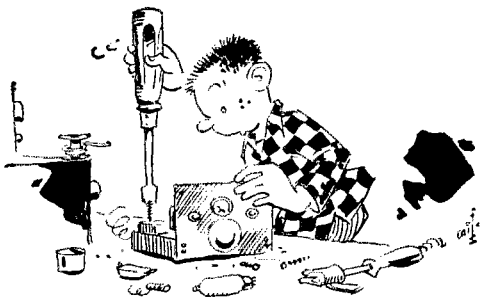
The men at the Massachusetts Institute of Technology lay claim to being members of the oldest amateur radio club in the U. S. The MIT society was first formed on April 30, 1909.



This full-color trophy, 17" high, was presented to American amateurs by the Central Radio Club of the U.S.S.R. A token of appreciation for W/K participation in the May 4–5, 1957, DX contest, it is now on display at ARRL Headquarters.



How to Top the CD Party!

BY G. W. HIPPISLEY, JR.,* K2KIR

It's just barely possible that many of you readers won't know what a CD Party is. The quarterly CD parties are only slightly less frantic than the annual SS. They run for 20 hours each January, April, July and October, and most of the contest hotshots keep their SS skills whetted by taking part regularly. The CD Parties are open only to workers who hold some one of the ARRL appointments in its field organization.

AT 1000 EST, Saturday, January 11, the receiver and v.f.o. at K2KIR were turned on. Copies of Operating Aid Number Six, one for each band, were rigged in a novel and ingenious booklet form, taped to the desk. Fifteen pencils, three pens, and two erasers stood by for duty. Log books were readied and the bug was adjusted. Parents had been warned; pains had been taken to see that all traffic was cleared by Friday evening. The reason: The quarterly CD Party. I was out for blood. And blood I got — my own, that is.

For years I had schemed on how to capture the Western New York leadership, just to see my call underlined in the CD bulletin, but always it was W2FEB, Keith, who thwarted my attempts. However, I merely bided my time and waited for conditions conducive to my plans. After much deliberation, I had decided that this was the time to beat W2FEB. And with that idea in mind, I had entered the January Party. However, as I pulled switches Sunday evening after 18 hours of contacts, I was somewhat disgusted with my score, although it represented a 300% increase over my previous attempts. Nonetheless, I had a good idea of who had won the section leadership: W2FEB.

Now, Keith and I are buddies and all that but there are four times a year when I just cannot tolerate him. This was no exception, for when I QNIed NYS net the next night, I found he had topped my score, 140,000 to 108,000, per usual. Well, right then and there I began to analyze what I had done wrong.

First, I had v.f.o. troubles. On the higher bands it was necessary to revert to one crystal near the low end, which killed my chances on ten and fifteen Sunday afternoon. On the lower frequencies, moreover, the v.f.o. worked fine at times, miserably at other times. This meant that I was at the mercy of my v.f.o. as to what bands I was going to work and when. After a considerable time, these problems were rectified to the best of anyone's ability, short of shelling out actual cash for a new v.f.o.

Secondly, I had antenna problems. Now, you may ask how anyone with a three-wire center-fed dipole for 80 meters can have antenna problems, especially when it is up 40 feet, but what good is this antenna or any antenna if the s.w.r. is so great that you are getting back more reflected power than you're putting out?[1] Anyhow, I vowed that in the three month interim between parties, I would see to it that I had the antenna coupled so well that my *maximum* s.w.r. would be 1:1! (I worked on the theory that if I can have more reflected power than I'm putting out, then I can reverse the direction of this power and add to my output very handily. The exact details of this procedure are still secret, but I'm hoping that my friend and colleague, Larson E. Rapp, WIOU, will write a treatise on them in the near future for an appropriate issue of *QST*.) (I never heard of this guy. — *L. E. R.*) Thus, I had excellent antenna matching on 80 and 40 meters.

But what about 20, 15, and 10? One doesn't work just two bands and expect to win the section leadership that way, unless he is the only active appointee in the section. Judging from the s.w.r. indicator, how I ever managed to make contacts on 20, 15 and 10 in January is a mystery. An s.w.r. of 12 and above is pretty bad. (I use only two coils in the coupler; an 80 meter one for 80, 40, and 20, and a 10 meter one for 15 and 10. Saves confusion at 0300, you know.) So, it was decided that the best thing would be a beam of sorts. Rotating it had no terrors for me, since I had managed to confiscate our old TV rotor. But the beam itself! Beams, or beam materials, cost money. It appeared that I had reached a stalemate here, but the day was saved by K2TVT, who, having given in to the TV owners of the area, had retired his one-element 15 meter beam and had gone to 10 meters. He very nicely offered to loan me the beam (after a wee bit of prodding on my part, I must admit), and with a few hunks of wood and metal, we had it right outside the window of my shack, loading beautifully.

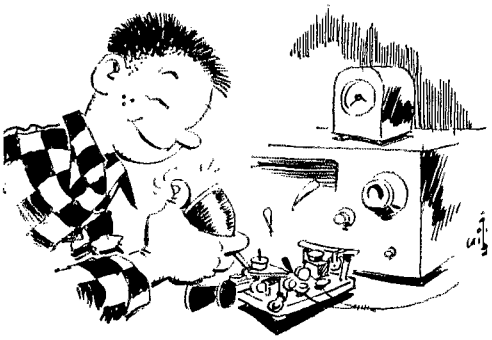
Up to now, I had almost held my own against W2FEB in equipment, except for a couple of items: receiver and transmitter. Well, with me

* 58 Throop Ave., Auburn, N.Y.

[1] How's That?—*Ed.*

expecting to be off to college the coming fall, obviously no money could be appropriated to increase either of these items sufficiently enough to even approach Keith's 450 watt transmitter or high-priced receiver. So, my DX-40 and S-76 would have to do. Besides, I was used to both of these pieces of equipment, which would not be the case if I were suddenly confronted the day before the contest with a KWS-1, for instance.

Well, everything had been taken care of very adequately excepting the human element: me. (Pul-lease don't laugh.) The human element also referred to my setup, so great care was taken to see that I profited by January's mistakes. Rig placement was almost excellent, except that I had to stand up to change coils in the antenna coupler. I let that go. Operating Aid Number Six was excellently placed last time on the operating table, so that would remain as is. The log book could not be any bigger or it would cover the other papers on the desk, so I would have to sacrifice time wasted by turning pages of the log every twenty contacts to the space consideration. The mike, traffic files, call book, Scotch Tape holder, ash tray, and ink bottle were all expendable, though; they were moved to another part of the room. The v.f.o. zeroing foot switch was working fine, and there would be no need for complete break-in, since it is much harder to zero beat stations with the whole transmitter following the v.f.o. down the band. (There is a "tune" position on the transmitter, but I'm afraid I'd wear it out.) The bug would be readjusted of course, and so would the straight key



(just in case). Also, a section list, by call areas, was typed out and taped to the desk so that I could keep track of what sections I lacked during the last few hours of the contest. All this shack arranging occurred Friday night, and then I slept on it, trying to discover anything that might have been inadvertently left out.

Saturday, April 12, dawned exactly as predicted by our 1958 calendars (all 37 of them), and Saturday morning at 1000 EST, the receiver and v.f.o. were turned on for a long warm-up.

If I may digress a moment at this point, I should like to point out that there are two philosophies concerning CD party operation. One, by far the most common, states that you should start at 1800 Saturday evening on 80 meters, and when you have dropped below a reasonable QSO/hour rate, you should switch to 40 or 20, preferably 40. The other says that you should stay off 80 meters completely in the early hours.

Be that as it may, however, I decided on the former course, since I am normally tuned up on 80 meters in the early evening, and this procedure would save time. So all during that evening I switched from 80 to 40 to 20, back and forth. It was during this period that I realized that W2FEB must be a proponent of the other school of thought, as I had failed to contact him.

A few hours of sleep put me in great shape for the 0100 to 0400 stint on 80 and 40 Sunday morning. Here is where I picked up ground on Keith in the January party, since he usually sleeps this part out. Then to bed again, up for breakfast and the late morning contacts and 40 and 20. At 1400 I switched up to 10 meters, garnered a couple of new sections and a multitude of contacts, and promised everyone I'd see them on 15 at 1500. On 15 I picked up two more sections, bringing my total to 59 sections on 386 contacts. After a short late-afternoon break, I set in for the final hours of my 20 hour limit. Naturally the going was a little slower, but I picked up my last W6 section on 20, and two more midwestern sections on 40. Eighty was good for additional contacts only. The last hour was slow, but I was racking up points far above any of my previous endeavors. Wish I could have contacted Keith earlier to find out how far ahead or behind me he was. Oh well, it was too late to change anything now. And with those thoughts, I finished up.

I was almost sure I had bested Keith, but even if I hadn't, I must have surely given him a run for his money. Let's see, 492 contacts × 5 points/contact equals 2460, plus 35 for code proficiency, equals 2495. Maybe that CP would mean the difference between winning and losing, since, by checking his former scores, I noticed that he hadn't indicated any CP credit. 2495 times 62 sections equals 154,690 points. I was a little worried now, since Keith's score is usually somewhere between 130,000 and 160,000, and if I had been sitting on the other side of the 160,000 mark, I would have felt better about it. But as I said before, it was too late now.

The following night, after an agonizing day at school, I QNIed NYS net, asking for a word with W2FEB. Ever so slowly the NCS got around to granting it, and after what seemed like ages, Keith was saying GE to me as I zeroed him up ten. Beating me to the punch, he asked, "How did you do in the contest?" and I had no alternative but to tell him my score. "Vy FB," he replied. "You're doing better each time."

Finally my impatience overcame my manners, and I asked, with trembling v.f.o., "What was your score?"

"Oh," he replied, "don't you remember? I told you in January I wasn't going to enter the contest, just so you could win one for a change." [1]

As I said, Keith and I are buddies and all that, but there are four times a year when I just cannot tolerate him. This was no exception.

[1] Ha, see p. 75, this issue.—*Ed.*

Hamfest Calendar

California — The Santa Clara County Amateur Radio Ass'n will hold a hamfest at the Santa Clara County Fair Grounds, in San Jose, on July 26. For further information contact W6CFK, chairman of the Bar-B-Q Committee.

Georgia — The Amateur Radio Club of Augusta, Inc., will sponsor its annual Savannah River Hamfest on July 13 at the Julian Smith Casino. Printed programs will be mailed to all hams in Georgia and South Carolina. Anyone else desiring a program, and all those wanting reservations, contact Bill Towne, K4KAR, 359 Heath Drive, Augusta.

Idaho — The 26th Annual WIMU (Wyoming-Idaho-Montana-Utah) Hamfest will be held at Big Springs on August 1, 2 and 3. Further info may be obtained by writing to Mr. and Mrs. Ray Hunnicutt (W7YHC and W7YHB), Box 555, Harlowton, Mont.

Illinois — The Quad-Co. Amateur Radio Club will sponsor the Breakfast Club Ham Picnic at Terry Park near Palmyra on Sunday, July 27. Free coffee until 9 A.M. Bring your own basket lunch — sandwiches and soft drinks available on the grounds. Mobile talk-in on 3873 kc. and 29 Mc. from 4 A.M. to 11 A.M. All sorts of contests and prizes. Auction. Registration is $1.00 in advance, $1.25 at the gate. Registration until noon. Contact G. H. Hierman, P. O. Box 21, Waverly.

Illinois — The Central Illinois Radio Amateur Picnic sponsored by seven local area clubs, will be held July 20 at Robert Atherton Park, near Monticello. Go west on Highway 47 for a distance of 4 miles from the junction of 47 and 105, then follow the hamfest signs. Bring your own picnic lunch. No fees of any kind. Registration starts at 10 A.M., CDST. For further info contact Jim Card, W9GLR, R.R. #1, Champaign.

Illinois — The second annual hamfest of the Shawnee Amateur Radio Ass'n will be held July 20 at the Community Park in West Frankfort. Lots of contests, prizes, displays, and fun. Bring the family — swimming for the kids. For further details write Wayne Wright, 219 West Lindell St., West Frankfort.

Indiana — The Indiana Radio Club Council Picnic and Family Outing will be held at the Tippecanoe County Fair Grounds, Lafayette, on July 20. For further information contact Thomas Connor, W9RGY, 3030 Union St., Lafayette.

Indiana — The annual V.H.F. Picnic sponsored by the Wabash Valley Amateur Radio Ass'n will be held Sunday, July 27, at Turkey Run State Park. Plenty of games, contests, prizes, swap tables, etc. Everyone to bring his own picnic lunch. Dinner will be available at the park hotel or lunch room. For further information contact Charles Hoffman, W9ZHL, 3925 Hollywood St., Terre Haute.

Kentucky — The annual summer meeting and hamfest of the Mo-Ark-Ky Association and the Paducah Amateur Radio Club will be held on Sunday, July 13, at the community house area of Noble Park in Paducah. The noon meal is $1.00 for all you can eat. Everyone welcome. For further info contact Jack Brooks, K4ODQ, R.F.D. 1, Paducah.

Maryland — The Maryland Emergency Phone Net invites all amateurs and their families to attend its annual hamfest and picnic, to be held on Sunday, July 13, at Braddock Heights Park, 5 miles west of Frederick, on route 40A. Advance registration of 75¢ per person (children under 12 free) can be made with Kenneth S. Teeple, W3PSP, 718 E 33rd St., Baltimore 18.

Louisiana — The Caravan Club of Louisiana will sponsor a hamfest on Sunday, July 13, at the American Legion Club in Shreveport. Registration begins at 9 A.M. — 50¢ for adults, 25¢ for children. W5DSZ will be giving directions on 3825 kc. Bring your own picnic lunch — free soft drinks. For further info contact Elwood D. Henry, 3021 Burson Drive, Shreveport.

Michigan — The Hiawatha Amateur Radio Ass'n will hold a hamfest on board the motorship *Tahquamenon* on Sunday, Aug. 3. Just before and after the boat trip there will be an opportunity for a ½-hour ride on a Toonerville trolley. On board the boat you will cruise along the Tahquamenon River, with the chance of seeing deer, eagles, bear, and other wildlife in their natural habitat. Bring your own lunch, or purchase one on the boat. Registration is to be on the boat, and will be $1.50 for each ham and his immediate family. For further info contact Zelma Neault, W8HAV, P. O. Box 483, Marquette.

Montana — The 24th annual Glacier Park Hamfest will be held July 19 and 20, at the Apgar campgrounds. All sorts of speakers, an auction, baby sitters, bridge parties for the XYLs, children's party, contests, prizes, fishing, boating, and camping. Program schedules are available from Lavon Garnett, W7OOG, P. O. Box 367, Great Falls.

New York — The annual N. Y. State Phone Net picnic will be held Saturday, August 9, at Green Lakes State Park, near Syracuse and the Thruway, and will be held rain or shine. Swimming, boating, and bathing facilities available. Open to all hams and their families. If overnight motel reservations are needed, contact W2IFV, Robert Kopp, 521 Terry Rd., Syracuse.

North Carolina — The Asheville Independence Day Hamfest and Southern Ham Gear Exposition will be held on July 4 and 5. Exhibits will be in the Exhibition Hall of the City Auditorium, while hamfest headquarters will be in the Vanderbilt and Battery Park Hotels. There will be a code contest, swap tables and auction, and all sorts of miscellaneous contests. Registrations and advance information may be obtained from D. P. Sykes, 631 Merrimon Ave., Asheville.

Pennsylvania — The 21st annual hamfest of the South Hills Brass Pounders & Modulators will be held Sunday, August 3, at the South Park Totem Pole Lodge. There will be contests for young and old. A swap shop. Pre-registration is $1.50, $2.00 at the door. Contact William E. Guthrie, W3LDB, 4949 Roberta Drive, Pittsburgh, 36.

Virginia — The third annual Graveyard Picnic will be held at Bonny Lake, Lynchburg, on July 5 and 6. There will be a business meeting, mobile judging contest, swap session, auction, games for the ladies, swimming, and rides for the children. There are motel, hotel, and camping facilities. Reservations may be obtained from K4HIV, 304 Sussex St., Lynchburg.

West Virginia — The annual picnic of the Blennerhasset Amateur Radio Club will be held Sunday, July 27, at the City Park in Parkersburg. Fun, contests and prizes for all. For further information contact Fred M. Beatty, 5301 Second Ave., Vienna, W. Va.

Wyoming — The annual Wyoming hamfest will be held Saturday and Sunday, July 12 and 13, at the South Fork Recreational Area in the Big Horn Mountains, 18 miles west of Buffalo, Wyoming, on U. S. Highway 16, sponsored by the Sheridan Radio Amateur League. Cabins or camping available in the area. A full program of banquet, contests, transmitter hunts, prizes. Registration, including the banquet, $4.50. Register with Robert B. Miller, W7QPP, 362 E. Loucks St., Sheridan.

Strays

A note from Fred Mason, KH6OR, says that he's had such a flood of inquiries as a result of his article in May *QST* that answering each in detail would leave time for nothing else — in particular, no time to work on a new multiband beam which he hopes will have some very interesting features. If the new antenna works out the way tests on models indicate it will, a *QST* story is planned — and the many questions on dimensions, tuning and the like that have come up as a result of the May article will be covered in full.

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W4SOD admits there are several excellent books on how to get *started* in ham radio, but he wants one on how to get *out!*

Correspondence From Members-

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

PICKERING TALKS BACK

2920 W. Nelson
Chicago 18, Illinois

Editor, *QST*:

I am quite pleased to read of W7UJH's success with the n.s.b. system, as reported in the May, 1958 issue of *QST* (Page 182). I am sure that he now realizes the merits of this method of communication. However, I should like to urge him not to dismiss the system, having once tried it. It *is* radical, you know, and we need pioneers to help establish this method of communication.

I have since discovered a device which renders much simpler the task of turning the transmitter on and off for signaling. It is available in certain military surplus stores, and carries the designation *J-38*. Its exact function in the military application is not clear, but it works admirably well in the n.s.b. system. Reader Cromley is urged to obtain one of these devices.

Also, my thanks for the tolerant acceptance of my article by W4GCB, W9PCQ, and K2VDJ. I, too, am a Rapp fan and can appreciate their concern at not finding one of his masterpieces in the April issue. We shall, I hope, hear from him soon.

I received a QSL card from one of the East Coast boys, confirming our QSO on 80 meters, using n.s.b. He doesn't make one thing clear, however. What is a %/$8980#JZ-R antenna?

— *Tom Pickering, W9LRA*

P.S. W5ERY's receiver (p. 95 May) will work admirably with the n.s.b. system provided a resistor of about 3.9 megohms is wired in series with the speaker leads.

A1 & A3?

217 Porterfield Place
Freeport, L. I., N. Y.

Editor, *QST*:

I have just finished reading W2TB's article in the May issue of *QST*. I work the c.w. bands almost exclusively with a powerful 75 watts and am able to work my share of DX on the band where it can be found. However, if the bands were opened to complete occupancy of A1, A3, s.s.b., etc., as W2TB suggests, where does that leave us fellows with low power? Maybe W2TB runs a gallon or a half gallon backed up by a beam on A3, maybe not. At any rate I know I would not want to compete with him under any conditions if he was working phone and I, c.w. The A1 portion of most bands is a literal madhouse at the present time without also burdening them with all the other types of operation.

As far as W2TB's assertion that rag chews at 18–25 w.p.m. are almost non-existent is concerned, I would suggest to the gentleman that he come down on the c.w. portion of the bands a little bit more often than he does. They do rag chew at those speeds, especially on 40 meters during the daytime.

— *William R. Miller*, K2GCE

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Tennyson, Indiana

Editor, *QST*:

This is in answer to the W2TB article in May *QST*.

We c.w. operators have enough trouble with other c.w. QRM and I hate to think what would become of the c.w. operator if all those phone carriers came down to plague him. You get proof of the damage done, especially on 40, when an average DX phone station is on. An operator on c.w., with 100 watts (we can't all afford kw.'s), just has to move on. Single sideband is worse yet.

As far as competition is concerned, it's like a cat and mouse; c.w. wouldn't have a chance. That's probably one of the main reasons why A3 was separated from A1 in the first place. Anyone can hear how much c.w. is carried on in a fone band like 40 meters. I work 100% c.w. at about 35 w.p.m. and have no trouble chewing the rag.

If someone wants to try to exterminate c.w., opening up the A1 bands to A3 would be one of the easiest ways to do it. I think we've all got it pretty nice, so let's leave well enough alone.

— Ralph Kissel, K9GNV

—•••—

7504 Mt. Carmel Rd.
Pittsburgh 6, Penna.

Editor, *QST*:

If W2TB's proposal to open the entire width of each band to phone should materialize, the c.w. ragchew, now a rarity, would shortly become extinct. Anyone who has done commercial or military operating can testify to the havoc a single phone station can wreck on a c.w. net, or nets. The c.w. men are crushed by the roar of garbled speech and the whistle of carriers, against which the only defense is a many-kc. QSY. In many cases the phone men, with their cold b.f.o.'s, would not even know they were QRMing. Such a condition on the ham bands would drive the prospective c.w. man to phone in self defense, leaving his potential operating ability undeveloped.

We can't afford to kill c.w. Good code operating gives prestige to the hobby; it is the mark of a good radio operator; it is a skill which cannot be picked up from a book and which sets the amateur apart from the tinkering layman, who could acquire all other knowledge of the hobby through reading and listening. Don't let's forget that a ham's first duty is toward his country. In time of crisis Uncle Sam can turn out phone operators in a fraction of the time it takes to train c.w. ops.

TB's opinion that the ragchew is fading from the scene is, sadly, apparently true, but when a person is drowning we don't step on his head. The best way to save c.w. is for TB and other experienced code men to devote more time to the key and less to the mike, demonstrating to newcomers the enjoyment and satisfaction that can result from experience and desire to improve.

— *Steve Moroso, K3AGF*

THANKS

435 Best Street
Buffalo, New York

Editor, *QST*:

This is to inform you that Lynn Nichols, KN2DGU, (see Dec. 1957 *QST*, page 65) has passed his general class examination and has dropped the N from his call. As you will remember, he had to have both arms amputated after coming in contact with a high-voltage line while erecting an antenna. Lynn's accident happened in July 1957, when he was 14 years old. This is a good example of hazards which should be studied by would-be amateurs.

With my help, and with the help of amateurs the world over, who answered my plea for QSLs while he was in the hospital, he obtained his Novice ticket in September 1957, his Technician in March 1958 and his General, April 26, 1958. He overcame many obstacles, having to send code with his feet and taking the code test orally in words.

Lynn will soon be fitted with artificial arms and will be able to use them in place of his feet. Ham radio has speeded his recovery, giving him something to do while regaining his health, taking his mind off his brush with death.

Needless to say, I am very proud of my part in helping him these many months and watching his courageous spirit. He and I both want to thank the many hams who contributed funds for his equipment, and the 1500 who sent him QSLs before he got his ticket, urging him along.

— *Clara Reger, W2RUF*

UHITUS

IGY Station
Thule, Greenland

Editor, *QST:*

I should like to call to the attention of the s.s.b. gang, the disease which is now rampant on the high ends of the phone bands. I call it "uhitus," or more formally — a high frequency of vocalized pauses. The use of VOX is a great convenience to voice communications, but it tends to make us sound like a bunch of babbling fools.

I realize that all of us have a tendency to keep the relay on transmit, and to keep the other fellow from breaking while we are searching for a word, but let's not allow this thing to get the best of us. We are getting to the point where our minds are continually racing, and a QSO becomes more of a workout than anything else.

Why don't we all take a critical listen on the bands, and then approach our 1958 style of communications in a more intelligent manner? Let's s-l-o-w d-o-w-n, and r-e-l-a-x. Let's get away from uh's and ah's. Let's *enjoy* s.s.b.

— *L. Dennis Shapiro, KG1GY, W2URX*

3700–3750

906 Morris St.
Salem, Ohio

Editor, *QST:*

In regard to article "Crystals Where You Want Them," if I were a Novice presented with a 3720 kc. rock, I would plug it in my transmitter and fire it up. To grind off 30 or more kc. would only provoke the great white fathers in Washington — when they would hear a novice calling CQ above 3750 kc.

— *Frederick J. Krauss, W5SPR*

Editor's Note: Let's face it — when we goof we don't fool around!

ROCK BOUND

223 Forest Hills Drive
Wilmington, N. C.

Editor, *QST:*

After reading W3JQE's letter in the May, *QST* I didn't quite know what to think. The Novices have enough trouble as it is on the crowded 40- and 80-meter bands, and if they are taken off the 15-meter band that would deprive them of about the best DX spot there is for them.

I heartily disagree with W3JQE's letter and I think that a man who has a Conditional, General, or Amateur Extra Class license, and who can move off a band when the QRM gets too rough, shouldn't complain when a Novice tries for some DX. However, I don't think a Novice should break into a conversation between two stations, one being a DX station, when contact has already been established between the two.

If the Novices are taken off any portion or all of the 15-meter band it will discourage future amateurs.

— *Joseph D. Hancammon, W4IFT*

—•••—

34539 Glenwood Road
Wayne, Michigan

Editor, *QST:*

I think that John P. Stowe, W3JQE, is off on the wrong track concerning novices. They certainly don't have enough room. I think that amateur radio might suffer the loss of many members if 15 meters is taken from them. With a frequency allocation conference coming up soon this is just what we don't want.

In regard to giving 2 meters to the technicians, this is crazy. If the technicians would get that 13-per they could work any band they wanted to.

— *Paul Selwa, K8HQU*

REBUTTAL

93 Broad Street
North Attleboro, Mass.

Editor, *QST:*

With reference to the reply of W3JQE to the letter of WØAWK, as it appeared in the May, 1958 *QST*, I would like to make a few comments. Mr. Stowe says that "the most horrible temptation to be dangled before a Novice is the two-meter fone band. It has been the downfall of many an aspiring ham." Well, I for one am one of those fellows who was on two-meter fone for the duration of my novice ticket. I also passed the General class examination, and I continue to operate two meters only. A truly "aspiring" ham will see to it that he gets the code speed up by practice sent by W1AW or W6OWP as the case may be. The theory is another matter, and the lower bands won't help anyone to learn the theory. QSOs here are of the "hello-good-by" variety, while on two-meter fone, one can discuss problems and theory.

I would also like to say at this time that I fully agree with the letter written by VE7AIH on the "contribution to the art." This requires technical initiative on the part of the amateur, and not just a large pocketbook.

73 for now, or until I read something else that gets my dander up. — *Edward L. Meade, Jr., K1AGB*

CRETE

General Delivery
Hiram, Ohio

Editor, *QST:*

There is no denying the fact that the people of Crete are poor, but in my year spent on the island, I found the people to be quite the opposite from the implications in the May issue of *QST* (The Invasion of Crete). If the English and the Germans had decided to have their eyeball QSO over L. A., Stewart might be that pauper who lives in the adobe shelter. Too bad that he was not a little more interested in economics, history, and charity, instead of so many QSL cards. When I was there, one of my friends had a license so I got a chance to do a little DX from Crete myself. I rather resent the little insertion ". . . the only guy (that sent QSL cards) . . ." In the two months that we were actively on the air, we spent over $50.00 on postage in excess of the IRC's which were sent to us. I hope that the manager of the next DX-pedition to Crete, or elsewhere for that matter, will be a more discreet ambassador for the U. S., or not say anything at all. If he knew how hard it is for a Greek to get a license, he would really appreciate the chance he had. As we used to say on Crete, he never had it so good!

— *Maynard T. Howe, K2JQW*

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R.F.D. No. 5, Country Road 537
Fremont, Ohio

Editor, *QST:*

Sure enjoyed the article, "Invasion of Crete," and the experiences and operating observations of SVØWQ. I really got a bang out of his description of the operating practice of "good ole Charlie Brown." To carry the point a little further, I have noticed that even many of the top DX boys cannot resist the temptation to insert at least a "pse QSL OM" which in an operation like the aforementioned doubles the length of the signal exchange. Let's face it, fellows — if the DX op is a good joe he knows you want his QSL and he will see that you get one. If he is a stinker you may as well save your fist. — *Raymond G. Grob, Jr., W8YFJ*

KEEP IT LEGAL

4427 Pescadero Ave.
San Diego 7, Calif.

Editor, *QST:*

The San Diego DX Club feels that self-enforcement of regulations is by far the best policy for amateur radio. To this end, we will continue to police our own ranks to the best of our ability.

We have recently noted with concern, however, that certain amateurs have freely admitted the intentional violation of maximum power input regulations. Since this clearly indicates that self-enforcement of this particular regulation has been inadequate, we heartily endorse the recent "crack down" on violators by FCC officials. We hope that recollections of this action will serve as a deterrent to future violations and that self-enforcement will again assume its rightful place in amateur radio.

The San Diego DX Club approves (but did not initiate) the complaints to the FCC of these violations. We wholeheartedly disagree with recent editorial opinion branding the complaints as an "axe grinding . . . bunch of kids . . . running to mother," — *Don Stansifer, W6LRU*

Preview—1958 ARRL DX Contest High C.W. Scores

Here are totals claimed by leading brass-pounders during the 24th ARRL International DX Competition of last February and March. Figures denote score, multiplier, and number of contacts:

Single Operator

W3LOE	922,355	365	854
W3BVN	668,118	318	701
W4KFC	664,320	346	640
W6ITA	658,698	311	706
K2DCA	589,057	301	655
W1NMP	574,948	292	657
W2WZ	565,812	279	676
W1BIH	553,185	285	652
W9HUZ	539,250	305	590
W8BKP	538,986	287	626
K6EWL	521,434	284	615
W9LNM	491 604	284	577
W3ECR	478,380	268	595
W1JYH	466,200	280	555
W4BGO	442,890	259	570
W6TT	426,096	269	528
W8OCT	421,175	225	461
WØNUC	416,556	261	532
W3GRF	407,778	266	511
W2BYP	402,204	242	554
W2GUM	401,982	238	563
W2HMJ	358,974	222	539
W3MSR	352,758	227	518
W3MSK	350,595	245	477
WØGDH	349,170	226	515
W3DBX	342,124	217	524
W1GET	333,450	234	483
W1AXA	331,824	223	496
W6LDD	328,725	225	487
W9GRV	327,321	243	449
W4BJ	325,080	215	504
W6FOZ	313,092	223	468
W2BBV	306,774	207	494
W1AZY	306,720	213	480
W1ODW	299,676	221	452
W4LVV	296,964	219	452
W1ADM	296,916	218	454
W6FSJ	295,320	214	460
W2FBA	294,036	214	458
W2AYJ	292,032	208	468
W1EOB	287,754	241	398
W8UPN	287,001	223	429
W6ZVQ	286,974	214	447
W9ERU	284,919	219	436
W1BOD	281,472	216	440
W5CKY	283,176	228	414
W9GIL	280,581	217	431
W1HZ	274,050	210	435
W8DUS	271,488	224	404
W2SAW	258,000	200	430
W6HOC	258,000	215	400
W9FKC	257,706	206	417
WØDAE	257,094	207	414
W1VG	253,539	197	429
W3EIS	253,368	207	408
W3ALB	253,260	210	402
W6IBD/6	241,605	195	413
K4LPW	239,274	188	422
W3ZAO	237,518	206	385
W6TZD	234,060	188	415
W2EQS	232,368	206	376
W3LEZ	232,245	195	397
W2PTI	230,346	201	382
W2JVU	227,562	194	391
W6JWT	225,888	181	416
W3IYE	225,762	197	382
K2YOR	225,099	189	397
W1FZ	224,154	189	396
W6SR	222,855	179	415
W4NBV	215,388	193	372
W3GHS	213,120	192	370
W2HO	211,770	181	390
K2VFR	211,680	180	392
W5KC	211,470	190	371
W2TQR	210,714	173	406
W6ANN	207,090	177	390
W8EV	204,660	180	379
VE2WW	201,564	198	306
W2TQC	200,910	185	362

Multiple Operator

W3AOH	723,444	334	722
K6EVR	611,754	299	682
W3MFJ	590,620	296	665
W3BES	562,392	292	642
W4YHD	507,464	277	611
W3FYS	503,034	279	601
W6WWD	500,400	278	600
K4CTU	366,480	240	509
W6AM	339,105	235	485
W9IRH	291,720	220	442
W6ALQ	266,706	198	449
W3CGS	251,286	193	434
W3WV	251,262	198	423
W3KFQ	215,688	172	418
W3DRD	209,169	183	381

From overseas came these outstanding results:

Single Operator

KH6IJ	1,165,360	112	3469
XE2FA	1,022,671	97	3525
VP7NG	922,320	108	2852
CN8GU	824,004	94	2922
KH6MG	810,810	90	3003
KH6AYG	790,330	91	2895
KL7CDF	404,712	77	1754
SVØWP	400,530	65	2054
XE1YF	387,288	66	1956
ZL1MQ	304,902	78	1303
OZ1W	302,979	69	1465
OZ7BG	281,724	68	1381
F9MS	280,170	66	1415
PAØLZ	252,882	63	1338
EA4GA	234,048	64	1226
EI9J	229,524	62	1234
DJ1BZ	225,018	54	1389
DL7AH	221,004	63	1218
PAØLOU	207,270	63	1104
F8VJ	197,056	64	1028
CE3AG	192,060	66	970
CO7PG	173,880	54	1084
PAØBW	172,026	57	1006
KH6BVM	169,984	64	910
ZL1APM	160,864	48	1131
PAØBV	159,552	64	831
KH6BIB	155,550	51	1030
OQ5GU	155,532	52	1045
KV4AA	153,627	41	1249
I1ALU	153,615	49	1045
G3HJJ	145,390	62	784
PJ2ME	143,782	58	843
OA4BP	137,535	53	875
G2QT	137,160	60	762
DL4AB	132,110	55	878
G3FKH	128,898	62	693
HB4FE	127,764	36	1183
DU7SV	125,874	42	999
PJ2AN	124,431	59	703
KL7BPK	122,670	58	705
KZ5LY	120,963	61	669
F8ZF	119,780	61	680
KL7AUG/KL7	117,798	58	677
G2DC	113,735	56	677
PY7AFK	111,642	46	809
GM3EOJ	109,604	47	780
EA1AB	108,597	53	683
LU4HU	107,200	50	718
HB9QO	106,248	57	622
VP9CR	105,948	54	654
TF2WGT	105,210	42	835
ON4LX	102,926	53	654
HI8BE	102,438	63	542
G2HPF	101,565	61	555
HB9EU	101,969	49	699
HA5BW	100,110	47	710

Multiple Operator

KG6FAE	522,915	71	2465
DJ3JZ	384,120	66	1940
KX6AF	305,868	71	1436
KG6AAY	182,840	40	1540
OK1KTI	159,636	53	1010
SM6APH	130,389	49	889

More large non-W/VE scores: OK1AWJ 95,616, KH6BG 93,912, F8TQ 85,488, PY4OD 85,080, SP8CK 81,356, F9QV/FC 75,636, ZE2JS 75,164, FF8AJ 74,037, OH2LA 73,032, OA4FA 70,080, OZ4FF 62,135, JA3LK 58,793, LA2HC 58,752, VQ4FK 57,165, HC1HL 56,862, EA5CS 55,704, CR6DA 54,648, ZC5AL 53,532, EA3KT 52,640, KR6BF 52,107.

Fumbling through the stacks, we couldn't help noticing other c.w. logs from CR4AD CR7CI CR7LU CT2BO CT3AB CT3AV EA8BK EA9AP EL1K FF8BF FK8AS HS1C JT1AA KR6SF OD5BZ OHØNC OQ5IE OY7ML ST2AR UF6FB UO5AA UR2BU UR2DX VQ4KPB VS1HU VU2JA VU2RM W4WHP/KG6 YJ1DL ZD3G ZK1AK ZK2AD and 4X4IL. And who — outside of the 200-confirmed crowd — doesn't need one of *those* for DXCC?

The following phone tallies have been reported since last month's copy deadline:

W9NZM	96,382	143	227
F8PI	192,672	54	1265
KP4VA	187,070	65	961
ZS6UR	161,253	69	779
ZS5JY	143,832	52	922
I1AIM	81,532	44	619
HC1HL	74,703	37	673
SM6NN	40,096	32	421
CR4AD	22,688	32	237
SM2AKA	21,114	34	207
DU7SV	20,355	23	295
ZP9AU	15,972	33	163
OA4FA	14,528	32	156
EA1FD	11,770	22	268
LA9MC	11,193	13	287
PAØXX	10,914	17	214

As anyone can plainly see by studying the scores and the toothsome prefixes above, the 1958 DX Test was a corker! All U. S. and Canadian totals are in, but foreign entries continue to arrive daily. The moment the influx subsides and the sorting and checking can be completed, the final results will appear in *QST*.

Strays

His many friends will be glad to know that the late Cy Read's call, W9AA, has been assigned to the Hamfesters Radio Club, in memoriam.

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K9CME worked one of the Navy stations in the Antarctic while using a transmitter with one watt input.

Operating News

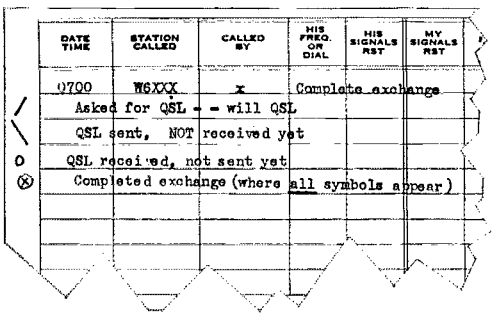
F. E. HANDY, W1BDI, Communications Mgr.
GEORGE HART, W1NJM, Natl. Emerg. Coordinator
PHIL SIMMONS, W1ZDP, Asst. Comm. Mgr., C.W.

ROBERT L. WHITE, W1WPO DXCC Awards
LILLIAN M. SALTER, W1ZJE, Administrative Aide
ELLEN WHITE, W1YYM, Asst. Comm. Mgr., Phone

Recording QSLs Sent and Received. The following suggestion and report in a letter from KØMUF (Nebr.) is especially welcome. A simple marking of one's log helps solve that common problem for all amateurs to carry through with the traditional courtesy of a full exchange of station cards and reports.

"Quite often I have received more than one QSL card from *the same* amateur. Also finding myself sometimes sending more than one card to verify the same QSO, I have adopted a plan that works quite well to prevent omissions and duplications. The system also helps me to tell at a glance if a confirmation has been returned.

(1) On the left hand edge of my logbook just opposite an entry I make a slant bar (/) wherever I wish or need to QSL. This can be put in during QSO or logging. (2) When my card is filled out



	DATE TIME	STATION CALLED	CALLED BY	HIS FREQ. OR DIAL	HIS SIGNALS RST	MY SIGNALS RST	R
	0700	W6XXX	x	Complete exchange			
/	Asked for QSL - - will QSL						
\	QSL sent, NOT received yet						
O	QSL received, not sent yet						
⊗	Completed exchange (where all symbols appear)						

and ready to send I cross the slash thus making an "X" to indicate that I *have sent* the QSL. (3) When I *receive* a QSL card for this contact I make an "O" by the entry. (4) Any completed exchange of QSLs thus is shown as a circle with an X inside. In this way I always know how I stand. If I see an "O" with no "X" I know someone is waiting for *my* QSL and immediately correct this situation by sending one in return. This scheme has worked very well with me."

Readability. Too often we fear readability is habitually given as a sterotype as part of RS or RST. Various operators engaged in casual amateur work have at times received reports of readability-five even though comments received at the same time prove the signals *not* perfectly readable. However, when used correctly, readability reports are highly useful and permit the adjusting of sending speed and operating procedure appropriately. In correct reporting of either readability or strength it is highly important to *follow the definitions* in the RST reporting scale. Otherwise this signaling procedure may have no value for the operators concerned. While the signal *strength* is a matter of audibility alone, *readability* depends on other conditions. A loud signal may be unintelligible in the presence of interference or a weak one readability-five if the reception is clear of noise or other signals.

One can ask for a *full* report (RST?) or request his readability by voice if on phone, or in the course of c.w. communication ask the readability by the use of QRK? Here are the meanings in the five point readability scale:

1 — Unreadable
2 — Barely readable, occasional words distinguishable
3 — Readable with considerable difficulty
4 — Readable with practically no difficulty
5 — Perfectly readable

Readability should be a measure of *how you are actually copying.* Any report given should be in consideration of what can be set down accurately on paper in the face of such unfavorable factors as the QRM, QRN, keying, receiver background and the like. Reports should not be given with contradictions such as "RST 579 but not copying much due to QRM." The proper report of RST 279, without further words properly describes the condition.

Used correctly a readability-three (QRK3) may mean that one still can successfully communicate or pass traffic in the face of some difficulty. However, to cope with such conditions takes good operator judgment and ability; the operation will become unnecessarily difficult if an operator, after receiving such a report, still insists on sending at his top speed!

Readability reports can be used to indicate how the operator should adjust his speed and routine. For example, an unreadable signal (R1) may require discontinuing the QSO. Readability-two would be expected to call for a very slow speed and perhaps for sending plain language twice. QRK3 takes slow steady sending such as sending plain language once, but especially difficult groups twice. QRK4 while good for almost one's top speed, could require care, especially on difficult words or groups, and of course QRK5 will permit communications at full speed in accordance with the ability of the operators and any customary speed rules of the net.

Readabilities are assumed always to be four or five unless otherwise established by specific instructions or report. QRS and QRQ are excellent specific advices to "send more slowly" or "send faster." Besides such operator signals, QSZ is used in c.w. work to indicate "send each word or group twice."

Further Operator License Suspension. Supplementing the FCC report and FCC orders reported last month we now add the following information.

FCC ordered (March 13, 1958) that the Novice Class amateur operator license of Jack O. Scrogings, San Francisco, California be suspended until October 17, 1958, that the license be turned in to the FCC, and KN6EYK not be permitted to be operated by any person during the six month period of suspension, *it appearing that the licensee* on various occasions during the period from Feb. 26, 1957 to Oct. 16, 1957 operated an unlicensed radio station in the 50 and 144 Mc. bands, using A-3 emission and the call signs W1SOX/6 and W6YXI, not lawfully assigned such station, a violation of Sec. 301 and 318 of the Communications Act. After receiving the station license KN6EYK (Oct. 17 to Nov. 6) but contrary to the terms thereof, operation was continued in these bands using W6YXI in violation of Sec. 12.23 and 12.158 of FCC rules.

How to Avoid Duplicate QSOs in Contests. Whenever one works so many stations in a short period that memory is inadequate to prevent duplicates, as in the popular Sweepstakes contest or in Field Days, we recommend use of our Operating Aid Six. A modified version of this is often prepared by club groups to more perfectly fit any one particular licensing area, for v.h.f. activity, etc. K6UJS, FD Chairman of the North Bay Amateur Radio Association, gives us a new lead to pass along in this connection. He writes as follows, "A good source of ready-made check sheets for the FD or SS was turned up recently by the NBARA. It was found that a telephone address book (the kind you get for asking at the telephone business office) makes a convenient and neat arrangement for logging stations as you work them. It's a good way to make sure you don't work the same guy twice." —*F.E.H.*

RESULTS, APRIL CD PARTIES

Whacking away at his first c.w. CD Party, Official Observer W6ZVQ wound up atop the heap with 294,385 points as ORS W3TMZ, landing all states but Utah and Montana and 66 ARRL Sections, became the third appointee ever to break 700 QSOs. Although Sixes monopolized the "top ten" brasspounders, it was a horse of a different color the week end of April 19 and 20. Here easterners, mainly New Englanders, shone as W1ARR and W2VCZ came through in a dead heat to pace the phone crowd.

All c.w. scores above 50,000 and phones above 5000 follow, the figures indicating claimed points, QSOs, and different sections contacted. Final and complete results will be carried in the July CD Bulletin.

C.W.

W6ZVQ	294,385-501-65	W9LNQ	142,380-447-63
W6JVA	260,520-442-65	W7RGL	141,568-277-56
K6SXA	252,858-416-67	W8FNI	140,400-463-60
W3TMZ	250,800-760-66	K2OMT	138,000-457-60
W6WNI	248,226-414-66	W4KFC	131,730-411-63
W6ISQ	242,710-411-65	W4BZE	128,960-411-62
W6BIP	188,305-318-65	K4CAX	125,280-458-55
W1EOB	184,800-553-66	W1ARR	125,040-415-64
W6WII	178,364-321-61	W4THM	124,800-416-60
W3KLA	168,970-534-61	VE7AC	122,854-241-56
W9YYG	165,330-496-66	K4HOU	121,800-400-60
K4BAI	164,610-529-62	W9SDK	117,760-361-64
K6ORT	162,480-297-60	W3JNQ	117,740-401-58
W9YT[1]	161,820-516-62	W2ORV	116,230-387-59
K4LPW	157,500-518-60	K6CQM	115,440-211-60
W4PNK	157,200-524-60	W7VIU/7	115,225-230-55
W2FEB	155,100-514-60	W1WEF	115,200-405-56
K2KIR	154,690-492-62	W1MX[2]	114,840-396-58
W3NF	152,810-511-59	K6GUZ	113,033-202-61
K6QHC	144,594-277-58	KL7CDF	111,777-231-53
W6YCF	143,955-250-63	K6IYJ	106,818-206-57
W0PBI	106,680-318-64	K0AZJ	67,310-250-53
W1AQE	105,450-370-57	K1BCS	67,230-243-54
W3GQF[3]	103,840-346-59	W7JC	66,990-132-55
K2KTK	102,480-359-56	W3AXA	64,500-253-50
W4WHK	102,300-325-62	K6EWY	63,596-132-52
W1JYH	101,260-325-61	W5VLW	63,555-223-57
W0BDR	96,075-305-63	W9DYG	63,300-205-60
W8YDR	93,765-329-57	K8DEY	62,985-242-51
K4OAH	93,330-361-51	W0BQJ	62,010-229-53
W5ZKT	91,980-292-63	W1DZV	61,500-241-50
W8PBO	90,630-338-53	K0IDV	59,400-212-55
W8NOH	90,200-323-55	VE3BZB	59,040-284-41
K4GEZ	89,100-330-54	W2MTA	58,880-251-46
W3GYP	87,465-352-49	W4AKC	57,720-215-52
W3LXW	85,590-311-54	VE2DR	55,250-215-50
W3EIS	82,460-260-62	W1RAN	54,720-222-48
W1MIX	81,620-273-53	K4CEF	54,145-221-49
W8SVL	79,650-266-59	VE3EAM	54,050-230-47
W3MSR	77,050-328-46	W3MCG	53,820-200-52
W1KGJ	75,905-318-47	W3KUN	53,240-235-44
K2DXV	74,460-287-51	W8DAE	52,750-204-50
K2ERG	71,675-300-47	K2QYI	52,750-247-50
W6FSJ	71,073-145-53	W1MTX	52,675-212-49
W8LT[2]	70,720-272-52	W2CVW	51,230-211-47
K9ELT	68,880-242-56	VE6NX	51,165-123-45
W0WYJ	68,685-234-57	W9ZAB	51,000-200-51
W0PHR	67,865-270-49	K4QES	50,960-192-52
W4ZM	67,575-250-53	K5BSZ	50,880-207-48
W0VBQ	67,570-228-58	W1HKA	50,470-206-49
W6BKZ	67,416-138-53		

PHONE

W1ARR	25,200-133-36	W1KGJ	10,080- 91-21
W2VCZ	25,200-141-35	W1VW	10,005- 83-23
W1FYF	23,405-151-31	K4LTA	8102- 56-29
W1YNP	22,720-135-32	K2ERC	7810- 66-22
W1JYH	18,000-113-30	W4KMS	7040- 64-22
W9YT[1]	16,500-104-30	W2EWO	6720- 59-21
W3NF	15,730-114-26	W1HKN	6660- 74-18
W4NYN	14,250- 95-30	K4BAI	6210- 44-27
W1DGL	13,640-119-22	W1KGJ	6035- 66-17
K1BCS	11,500- 86-25	W1ADR	6000- 59-19
W8NOH	11,315- 68-31	W1GVK	5890- 62-19
W1AW[4]	11,070- 75-27	W7RGL	5795- 30-19
W1YRC	11,000- 85-25	W3LOD	5490- 57-18
W3PYF	11,000-100-22	W6JVA	5420- 29-20
W4ZM	10,320- 81-24	K2OMT	5035- 50-19

[1]W9SZR, opr. [2]Multiple operator station. [3]W3WZL, opr. [4]W1WPR, opr.

CODE PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying run from W1AW will be made on July 22 at 2130 Eastern Daylight Saving Time. Identical texts will be sent simultaneously by automatic transmitters on 3555, 7080, 14,100, 21,010, 28,060, 50,900 and 145,600 kc. The next qualifying run from W6OWP only will be transmitted on July 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.

Date	Subject of Practice Text from May *QST*
July 2:	*The Driven Beast*, p. 11
July 7:	*A Novel Side-Band Selector System*, p. 18
July 10:	*A 50-Mc. Station for the Beginner*, p. 22
July 15:	*Electronic High-Voltage Regulator*, p. 30
July 18:	*An End to Trap Troubles*, p. 32
July 24:	*1957 Sweepstakes C.W. Results*, p. 50
July 29:	*A Hot Contest*, p. 66
July 30:	*Invasion of Crete*, p. 80

There are two kinds of amateur operation. One is the casual, spontaneous, sometimes inane chatter that goes on in our amateur bands from day to day as one amateur talks to another about nothing much in particular. The other is the communication aimed at a specific purpose and objective concerned with the general welfare of amateur radio and the nation as a whole. Here, in this column, we are concerned with the latter, or at least with a specific part of the latter. Yet, the casual aspect of amateur radio influences and affects us in the work we do.

This subject comes up because of the experiences some of us emergency organizers have had in offering our services at various places and times in the name of "amateur" radio. The first reaction is apt to be unfavorable, caused, if by nothing else, by the very word itself, signifying as it does inexpertness. "We don't want any *amateurs*," they'll say, spitting out the "amateurs" like the wormy part of an apple. So from the beginning we may have an uphill battle, made worse in some instances by officials who have had their television interfered with or who have listened to some of the balderdash that goes on in the phone bands. The reception that we, collectively, get when we present our services, will be equal to the impression that we, collectively, have previously made.

At the time we are presenting ourselves, it is too late to do anything about past impressions. These already will have come home to roost, for better or worse. But once we get our foot in the door, we can do a great deal about the impression we make from that time on. Listening to some of the so-called drills of our AREC/RACES organizations often makes us wonder if we are doing all we can in this respect. Informality, inherent in our casual operations, too often is carried over into our service-rendering ventures, where it has no place. The tendency to "ham it up" on a fraternal basis is a hard one to shake; yet it sounds very juvenile to official listeners who are used to the terse procedure of police and fire circuits and it leads to the allegation that amateurs are no good as communicators because they can't get away from rag chewing.

This is a vague and useless generalization. Of *course* some amateurs can't get away from rag chewing, but a great many others make excellent communicators because of their experience in communicating, easily supplemented by a little training in procedure. We have to pick our people; just *any* amateur is not suited for network operating, but shucks there are over 150,000 amateurs and out of them we can find several thousand who *are* good communicators. Those who cannot adapt themselves to procedure (fewer than you might think) may nevertheless be utilized in our emergency service as technicians, as maintenance men, or in certain of the organizational phases. There is a place for all amateurs who are interested.

An important thing for us to remember is that a lot depends on the impression we make on the impartial listener. Ask yourself if your net or drill sounds like a group bent on a communications purpose, or like a bunch of amateurs having fun. If the latter, steps should be taken to bring it into line. Not that there is anything wrong with being a bunch of amateurs, or having fun, but there is a time and place for everything, and an emergency drill should sound like an emergency drill, not a bull session.

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W1MDW, en route to work near Agawam, Mass., on Jan. 17, spotted an accident in which a man had been struck by a car while adjusting his chains at the side of the road. He relayed this information to W1GQP, who was also on his way to work. W1GQP stopped at the home of W1EVZ to telephone the information to the police, whose ambulance was on the way to the accident scene in jig time — thanks again to an assist by ham radio.

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After an explosion in Niagara Falls, N. Y., on Jan. 22, K2DPA spent over five hours of continuous operation handling traffic relative to blast area, casualties and danger areas. W2RUF also pitched in, activating the New York State Phone Traffic Emergency Net.

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During a heavy snowfall in Erie Co., N. Y., from Feb. 12 through 14, the Sheriff's Department requested communications assistance. *K2s* GH EE KQC LLL, W2FWQ and W3VV helped out by contacting the Wyoming County Sheriff and various highway departments. They also handled some individual emergency traffic.

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W2ZRX has sent us a very complete report of the Newfoundland emergency described in May *QST* (p. 99). We're sorry we cannot include all the lurid details he adds, but we can at least make some corrections to the item as printed in the May issue. In the first place, it was VO1BF and W3IZY who installed the equipment at Bell Island (May *QST* had *both* of these calls wrong). Secondly, W2ZRX's report gives the following additional calls of amateurs who took part: *VO1s* CL DN DQ DT ET and VO2GA.

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On March 17 W3CRU of Levittown, Pa., contacted W3WFP and W3BOM of Baltimore, Md., to ask that they get help to rescue a dog stranded without food or water in a house near Baltimore. The Fire Dept., Police Dept., and Animal Rescue Service in Baltimore could not help, but eventually near neighbors were contacted and effected the rescue, after a two hour struggle — so a dog owes his life to amateur radio.

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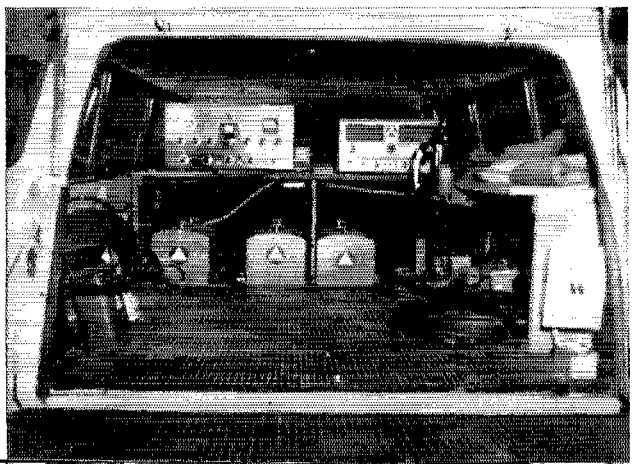
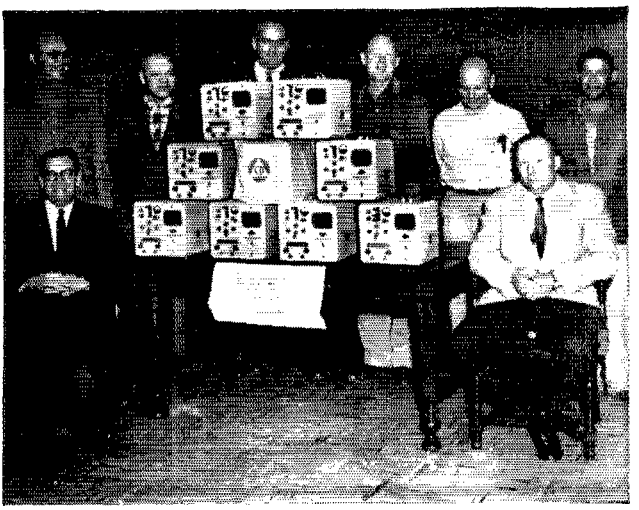
The Montgomery County (Pa.) AREC was called into action on March 20 and 21 when a late season snowstorm dumped up to 30 inches of wet, clinging snow on the area. Telephone facilities were seriously disrupted and power lines were torn down over a large area. Nearly half a million homes in greater Philadelphia were all but isolated. At about 1300 County EC W3ZXV received a report that the fire box system in Norristown was completely out. W3CBH was dispatched with portable 2-meter equipment and established a link between the fire department and the NCS, who alerted net members in Norristown to be on fire watch. For a time, this amateur link was the only way of reporting fire, and a state of emergency was declared in Norristown. Later, service was restored and W3CBH was called in. W3PWL took control of the net when W3ZXV's power went out for 3½ hours. W3FSZ and W3VWY opened up the Norristown headquarters station, W3CNO, setting up early liaison between the AREC and c.d. Other operators assisting in operating W3CNO were *W3s* EQZ GTZ CNO and URU. Routine reports on conditions throughout the county were gathered during the day. C.d. and Red Cross groups were



One of the most compact yet versatile c.d. mobiles we have seen is this one which belongs to the Volusia County (Fla.) Civil Defense. It includes three f.m. circuits and land line communications equipment as well as a 150-watt transmitter and all-band receiver for RACES. A 2500-watt gasoline generator is also included with the station wagon. W4RWM is Communications Officer and EC.

A very strong and active RACES unit exists in Ottawa, Ill. Shown at the right are the operators and their c.d. communications equipment. Seated at left is W9TV, president of the Ottawa Radio Club; at right, W9VOK, Ottawa C.D. director. Standing, left to right, are W9EU, W9PBY, W9JID, K9AFE, K9JAW and W9SEV.



active throughout the area, and liaison was established with W3PNL, Bucks County c.d., to receive reports from that area. The c.d. director in Hatboro reported that emergency sleeping facilities were being set up for persons without power for heating and cooking. One report stated that an aircraft was dropping flares over Valley Forge Hospital and W3WOM/m was dispatched to verify the report. When he reached the hospital he verified the report but said the aircraft had left the area. At 2020 EST the Montgomery County Emergency Net was called in its regular session, on both 2 and 10 meters, and during the drill County RO W3CNO made a quick check on the extent of power and telephone failures. The net was secured at 2205 but resumed at 0900 the next day, each station reporting local conditions as he came on. W3URU and W3FSZ shared the direction of the net during the day on an alert basis. As time went on, reports showed improving conditions. The following amateurs, in addition to those already mentioned, participated in this emergency operation: *W3s* QV IIO YHU UYI NYT PQV TWQ 1D GLI KAA JKH HQY NLC LKI FWC TUW IKZ AHZ EQW JSA YEA CMD. — *W3ZXV, EC Montgomery County, Pa.*

The Chester County (Pa.) Emergency Net was in operation for five days in the same emergency, from March 20 to Mar. 25, assisting the county c.d. organization. Twenty-five amateurs actively participated in handling over 500 emergency messages. Roving mobile units reported such incidents as a plane in distress, a fire in a lumber yard, need for an emergency generator at a hospital, road blocked by snow, fallen wires, or cars, stranded motorists, and investigated snowbound homes and institutions to see if help was needed. Mobiles were also sent out with heavy pieces of equipment and all missions of state rescue trucks, and assisted in evacuation of several families. Another mobile served as a base station at the helicopter port and relayed vital information on the 35 relief missions carried out by Navy helicopters — missions such as the dropping of food, *medicine, fuel, equipment (one farmer was milking 135 cows* by hand until a generator was dropped to supply the needed electricity!), and evacuating stranded or sick people. Radio Officer W3DBL tells of one net member who had a wild ride on a bulldozer with a drunken driver and of incidents where the evaculated people looked so much more alive than the mobile unit operator as to raise the question of who was rescuing whom! Anyway, a mighty fine job by the Chester County RACES group.

W2WKI, radio officer for Burlington County, N. J., had his organization active during and after the storm. Operating his home station on emergency power, he maintained contact with W2KHW, W2GOK, K2QIJ, K2PPV, K2MXN and K2SOX, all civil defense officials in nearby and surrounding communities. Occasional contacts were also made with Camden County and Philadelphia stations.

About two feet of wet snow fell in Maryland, causing widespread damage to electric and telephone service. An emergency net sprang up on 10 meters when W3JZY in Washington County contacted W3DMW in Baltimore, after an urgent CQ, and passed an emergency message for the Gas & Electric Company. From this small beginning "Operation Snow Plow" started and grew on 29.5 Mc. and 3820 kc. The Maryland Emergency Phone Net was also alerted. On Friday (Mar. 21) a report was received that Clarksville, in Howard County, was isolated and without power and that the EC there (W3EVP) needed mobiles. W3MAZ was dispatched from Baltimore, with the assistance of W3YYF, W3YYB and W3WZA, and finally succeeded in setting up communication between Clarksville and Ellicott City. This emergency net was finally secured on Sunday, March 23. The county commissioners, National Guard and State Road Commission all expressed appreciation for the help of the amateurs, all AREC members. The following are listed as additional participants: *W3s* BKT CDG/m DXA FVK GBU IRL HWZ JE NNX PKC. — *W3PKC, SEC Med.-Del.-D. C.*

A report from W3MAZ, EC for Baltimore, indicates that he received a call Saturday morning (22nd) from the Red Cross Disaster Chairman requesting assistance in communicating with W3YYB and W3YYF, who were out in Howard County assisting in the distribution of dry ice to the dairy farms and needed a Baltimore contact. W3ZCK was obtained for a contact on 29.5 Mc., with W3RKK as an additional monitor and frequency-clearer. W3IRL also assisted monitoring and relaying for the duration of the operation. About 1400, W3MAZ and W3WZA relieved

A.R.R.L. ACTIVITIES CALENDAR

June 28–29: Field Day
July 3: CP Qualifying Run — W6OWP
July 19–20: CD QSO Party (c.w.)
July 22: CP Qualifying Run — W1AW
July 26–27: CD QSO Party (phone)
Aug. 6: CP Qualifying Run — W6OWP
Aug. 20: CP Qualifying Run — W1AW
Sept. 4: CP Qualifying Run — W6OWP
Sept. 17: Frequency Measuring Test
Sept. 18: CP Qualifying Run — W1AW
Sept. 20–21: V.H.F. QSO Party
Oct. 1: CP Qualifying Run — W6OWP
Oct. 11–12: Simulated Emergency Test
Oct. 17: CP Qualifying Run — W1AW
Oct. 18–19: CD QSO Party (c.w.)
Oct. 25–26: CD QSO Party (phone)
Nov. 6: CP Qualifying Run — W6OWP
Nov. 8–9, 15–16: Sweepstakes Contest
Nov. 17: CP Qualifying Run — W1AW
Dec. 3: CP Qualifying Run — W6OWP
Dec. 23: CP Qualifying Run — W1AW

YYB and YYF and worked until about 2200, but were back on the job again the next morning until noon. W3FVP operated the headquarters station during all this time. Operation consisted mostly of scouting the countryside with a guardsman, reporting downed lines, poles and other hazards, checking on isolated communities. A National Guard truck would tackle the snow-choked side roads to otherwise-inaccessible farms, leaving the communications mobile on the highway. After the truck returned, information would be transmitted back to the county seat. Some gasoline generators were made available to dairy farmers who could not milk their cows without electricity, while others were given instructions (by amateur radio, of course) on how to use the vacuum from the intake manifold of a gasoline engine to operate the milking machines. W3IRL did a lot of relaying, and W5BQU also gave some assistance while the skip was in. All concerned received much official praise.

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On Sunday, April 13, a C-133 transport from Dover Air Force Base crashed near Georgetown, Del. On Monday morning members of the Delaware Emergency Net were asked to provide additional communications in connection with rescue operations. W3SPL and W3ENW set up W3SPL/3 at the scene and established net operations on 3905 kc. with W3CZS/3 at the air base. The net was in operation from 1400 to 1615, at which time a reliable landline was established. Operators at the base were W3CZS and W3RRF. K2DGQ and K2TNM helped with relays and in keeping the frequency cleared.

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The Canal Zone Emergency Corps went into action in March when Gorgas Hospital needed quick action to locate an artificial kidney for a patient badly burned in an airplane crackup. *KZ5s* KA FL HO VR and DH got on 15 meters with *K4s* HSC QOW AEE KVJ KKR, W5IXL/m and W7LZE/5 and in three hours had located artificial kidneys in Atlanta and New Orleans. They arranged for doctors in the Canal Zone to talk directly with doctors in the states in making plans to fly the patient to New Orleans. — *KZ5WA, SCM Canal Zone.*

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Nineteen amateurs in the Memphis, Tenn., area assisted in a search for two lost nine-year-old boys on March 31st. Within a short time after being alerted, 10 mobiles were in operation on the ten meter emergency frequency, searching assigned areas until the report was received that the boys were found by the Memphis police about three miles from home. Amateurs participating included fixed stations *K4s* ENA GRB and W4OTJ. Mobiles and assistants included *W4s* ADM BAQ UDI WBK YMG, *K4s* BMC CPM BXJ JSF PBL CCH PYH BOM, K2EAS/4 and W5CXI.

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On April 5, Fayetteville, Ill., was struck by a tornado concurrent with severe rainstorms in the area. Members of the St. Clair Amateur Radio Club manned the communications room at the c.d. control center all day on April 5, handling messages from the c.d. directors at the scene. The twister was a small one and hit only the southern end of the community, killing one and injuring six. Those active in the emergency communications activities included *W9s* RQR UWP TCX JMY NXY and JZQ.

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Those who think that a communications emergency is impossible in a large city during normal times, read this: W2AOJ's mother, unable to sleep, was drinking coffee in the kitchen of her Staten Island home at 0500 on April 12 when she heard a tapping at the window. Looking out, she came face to face with a grinning man waving a pair of wire cutters. Frightened, she ran to the telephone, but found it dead, so she aroused the family. Unable to use the telephone, W2AOJ fired up his rig on 40, contacted W2CDJ in Long Branch, N. J., who telephoned Staten Island police. A prowl car searched the neighborhood ten minutes later, picking up a suspicious character, who was no doubt surprised that the alarm had been spread so quickly at that time of the morning.

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On April 15 K4LCF, hearing a tornado alert on the radio while he was at work, immediately went to his home station and got into the Hurricane Net. He was on the air when a tornado struck Ft. Pierce, Fla., and furnished the local broadcast station at New Smyrna with a complete report of the damage and casualties. — *K4ISA.*

In the evening of April 19, W7LAN/m came upon a bad highway accident near Anacortes, Wash. He immediately sent out a call for help on the frequency of the Washington Amateur Radio Traffic System (3970 kc.) and was answered by W7UNI in Aberdeen, who notified state police. As a result of this quick action, a police car was on the scene within five minutes, the ambulance in 12 to 13 minutes. W7LAN took the least injured to the hospital in his own station wagon. The following fixed stations also assisted in relays: *W7s* CQK EKQ IC ORK and RCM. — *W7PGY, SCM Washington.*

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On May 2, on his way home after a "cook-out" at K2VIX's place in Lawrence, L. I., K2RKL/m came upon an accident. He promptly called for assistance on the Long Island 6 Meter Emergency Net frequency. Net control K2VIX cleared the frequency and relayed traffic to the police and the AAA. An ambulance arrived shortly afterward. — *K2TWZ.*

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March SEC reports totalled 21, representing 6095 AREC members. Two new sections, Southern Texas and Indiana, were represented. This is the same number of reports received last March, but slightly fewer AREC members are represented. In addition to the two new ones mentioned above, SECs of the following sections also reported: Ont., San Joaquin Valley, N. M., R. I., E. Fla., Santa Barbara, Conn., Colo., Ala., NYC-LI, N. Texas, Ga., Wis., Mont., Santa Clara Valley, Mich., E. Bay, Mo. and Md.-Del.-D. C.

RACES News

Another Operation Alert has been completed, and reports are starting to come in; not many yet, but we expect we'll have enough for a complete report of the operation in October or November *QST*. So far, results seem to have been about the same as last year, except that this year non-RACES amateurs were not asked to participate. FCDA wanted to evaluate the capabilities of our present RACES "plant." If you are one of those who participated, we'd like to have a brief summary of your results, plus any observations or comments, prior to July 15.

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The RACES Plan for Vermillion County, Ind., has been approved, according to W9LNC, EC and RO. A regular net has been started. W9LNC says they have a lot of work to do, but cooperation is good from both the local AREC gang and c.d. officials.

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Mercer County (N. J.) RACES personnel met at c.d. headquarters on Apr. 22 for combined drill and instructions. Contact with municipalities and mobiles was conducted on two meters and between check points and mobiles on six meters. After the drill, a coordinator's meeting discussed Operation Alert plans and reviewed operating during the March snow storm in which RACES personnel distinguished themselves.

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On April 20, the RACES group of Los Angeles County (Calif.) carried out what is believed to be the largest controlled mobile disaster drill in amateur history, purpose to test the ability of mobile and portable units to activate and assemble in the various districts and then to move under the direction of their district ROs over long distances and varied terrains to simulated disaster sites. The drill started at 1230, and thirteen convoys were formed. In addition to the communication in motion between members of each convoy, convoy leaders were in communication with county staff radio officers stationed at strategic points. Frequencies used were 1995 and 3995 kc. for county command, and various frequencies on 10, 6, 2 and 1¼ meters for intra-convoy purposes. A total of 109 mobile units assembled at a point near Vastaic, Calif. Following this assembly, all units were moved as a single caravan to the Placerita Canyon camp ground, where the Red Cross and county disaster services prepared and served a meal to those participating — a total of 340 persons.

The success of the operation was evidenced by the maintenance of command communications at all times, despite large distances and irregular terrain. In addition to the mobile units involved, many districts provided portable units and hand-carried units. The exercise received the highest

commendation of Disaster Service Director Roy Hoover and Sheriff Eugene Biscailuz. Says W6QJW, who developed and helped implement the plans for this "Operation Black Top": "No small factor in the success of this enterprise is that the Los Angeles County RACES group, the largest in the nation, has maintained weekly drills from the time RACES was initiated to the present, in which an average of 350 stations participate each week."

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On April 17–18, the United States Civil Defense Council, Region 3, annual conference was held in Savannah, Ga. At approximately 0920 on the 18th a county-wide school evacuation demonstration was held for the benefit of the conferees. Amateur radio furnished four mobile units, two fixed stations and one home station, the latter as a back-up and relay station on the outskirts of town. The amateurs, when called on for specific information, quickly dispatched a mobile and in each instance completed their mission promptly and efficiently. Operation was on 3995 kc. The control station at the conference hotel easily covered the entire state, using less than 100 watts on a folded vertical half-wave dipole. The amateur network easily accomplished several communications missions that police radio was unable to accomplish. This was called "Operation Bliss." — *W4KGP, EC Chatham, Effingham, Bryan & Liberty Counties, Ga.*

TRAFFIC TOPICS

The midsummer days are now upon us, the time of year when we separate the traffic men from the traffic boys. Many organized nets close up for the season, its members too busy with vacations and outdoor preoccupations to take much interest. The few who remain on the air have all the work to do, and they do it because they love it. In the fall, they have become so entrenched in their work that it seems both difficult and unfair to ask them to start sharing it with the sun-tanned hordes who return with an expectation of resuming BPL listings.

We have always had summer "slumps" in traffic work, and probably always shall — as long as the majority of our traffic men handle traffic for pure pleasure, and as long as amateurs have money enough and time enough to take vacations in unlikely places. The problem is not to eliminate the slump, but to minimize it as much as possible so our traffic lanes are kept open during the slack season.

One way of doing this (hope this doesn't get us in bad with a lot of XYLs, including our own) is to take a rig along on your vacation and set it up at your vacation QTH. There are times in the warm summer evenings at a vacation QTH when you find yourself without anything special to do, and pounding a little brass can be a welcome relaxation. Sometimes it even rains, and this usually puts the damper (ooh!) on planned activities. Or, if you're planning on traveling from one place to another, fix up your mobile for traffic operation, phone or c.w., and tuck an antenna away in your trunk that you can throw into a couple of trees in jig time.

Maybe a lot of you will say that you really have to love traffic handling to go to those extremes. Well, a lot of us do, and some of us get a kick out of reporting into a net from some place different from the usual — like, for example, from a moving car. Personally, we'd feel like a tail without the dog if we didn't have a rig along on a vacation.

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Net Reports. Transcontinental Phone Net reports: 1st Call Area, 1674; 2nd Call Area, 2215; 4th, 5th, 9th and 0th Call Areas, 616; total, 4505. Interstate Side Band Net reports traffic total of 682 in 30 sessions, an average of 52 stations per sessions and an average time of one hour, six minutes per session. The 7290 Traffic Net had 45 sessions, handled 913 messages with 1351 check-ins. The North Texas Oklahoma Net had 30 sessions, 839 check-ins, traffic total of 449. Early Bird Transcontinental Net reports 30 sessions, 823 messages.

National Traffic System. When NTS first started up, on Oct. 1, 1949, it was on a Monday thru Friday basis. A few years ago, under pressure from some of the NTS zealots, we extended the schedule officially to put NTS on a six-day-per-week basis. Net managers responded gallantly, some trying it but finding the Saturday session impractical to maintain, some continuing the six-day schedule they had maintained since before it was made official, some finding that a Saturday session was well attended, and some finding acceptance so avid as to start campaigning for putting NTS officially on a seven-day-per-week basis.

In our annual year-end net directory, we find that two of the three Area Nets are on a seven-day schedule, the other on six days. Of the regional nets, three are operating seven days, six are operating six days, two are operating five days. Among section nets, we find 22 operating seven days per week, 31 operating six days per week, 17 operating

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for April traffic:

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W2KEB	322	1744	1277	511	3854
WØBDR	130	1251	1146	11	2538
W7BA	20	996	965	30	2011
K6MCA	124	667	637	5	1433
W9CXY	7	676	647	29	1359
W3WIQ	79	604	581	64	1328
K5FJA	416	446	21	425	1308
W4PL	11	640	594	17	1262
W8UPH	19	616	573	39	1247
K1BCS	267	486	437	44	1234
W5RCF	21	598	568	30	1217
WØLCX	36	569	546	23	1174
W9DO	12	555	520	47	1134
WØLGG	51	504	480	18	1053
W1BXT	458	293	287	4	1022
WØCPI	4	489	450	39	982
W6GYH	141	329	320	11	801
K6HLR	53	371	290	74	788
WØEQD	1	393	390	2	786
WØGAR	5	374	372	7	758
W3CUL	60	254	401	29	744
W9NZZ	179	276	6	268	729
W7PGY	39	339	298	41	717
K4SJH	132	300	245	35	712
KØDCW	10	348	4	343	705
W6EOT	5	350	304	37	696
W9OHJ	0	338	321	16	675
WØSCA	2	341	324	0	667
W1EMG	1	327	288	39	658
W4RCM/5	61	224	360	4	649
WØZWL	8	271	10	358	647
WØCZ	10	316	300	16	642
WØKQD	53	287	259	29	628
W1LDE	5	311	259	52	627
WØBLI	1	302	266	35	604
W9MAK	25	303	248	21	597
K4ELG	44	284	227	41	596
W1UEQ	481	53	34	16	584
W6ZJB	181	263	115	15	574
K9GDF	263	164	81	49	557
K2FBM	205	150	115	75	545
W5FPI	254	244	24	18	540
K2SIL	45	247	212	33	537
WØSCT	55	244	230	7	536
K4DSN	96	222	213	4	535
WØGBJ	11	257	199	58	525
W2JOA	62	242	201	18	523
W1FYF	25	258	187	50	520
K4AET	1	259	255	4	519
K2KIR	12	274	224	5	515
W3UE	39	226	235	15	515
WØKLG	71	253	182	9	515
K5JCC	15	244	146	109	514
K6GK	11	250	121	129	511
K6UOD	9	253	176	73	511
W5DWB	12	254	225	15	506
WØTOL	82	253	154	11	500
Late Report:					
WØBLI (Mar.)	1	302	265	35	603

More-Than-One-Operator Stations

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W6YDK	259	213	168	45	685
W9SIM/9	300	0	300	0	600

BPL for 100 or more *originations-plus-deliveries*

K2PHF	259	K4AVU	116	W9PCQ	105
K6GIZ	192	W9ETM	116	K8ADD	103
W8PHA/5	170	W8GFE	115	K2YTD	102
W3CUL/4	177	W5GNE	113	K5PNQ	102
W1YBH	167	W4QDY	111	W8DAE	102
W1YRZ/1	160	WØQDL	111	KL7BJD	102
K5MZS	136	K4DAS	110	K2YJL	100
W1BTV	134	K5KTW	110	K4FBA	100
K9GDQ	134	W8WGU	110	KØBMQ	100
K2UTV	128	KØGCN	108	Late Reports:	
W5ZIN	124	KØIDV	107	K2OXS (Mar.)	118
W5EGD	122	KNØMMZ	107	WØVPQ (Mar.)	118
K6OSO	119	K5EGS	106	K2QBW (Mar.)	112
KØJCF	119	KØDCC	106	W3CVE (Mar.)	112
K6YBV	118	W3FCI	105	K9GVD (Mar.)	103

More-Than-One-Operator Stations

K3WBJ	133
KG1DT	122

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: W1BXT, K2YTD, W3TN, K4AET, K4DSN, K4OAH, W5SMK, K6MLL, WØTOL.

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.

five days per week and 17 operating less than five days per week. This means that as of that time a greater percentage of section than regional nets were on a seven-day schedule. Since then, however, 2RN has moved into the "daily" column.

During the summer months, managers of regional and area nets not now operating seven days per week (the seventh day, Sunday, is still unofficial) will be queried as to whether they think it advisable to extend the NTS schedule, and if their net could comply. If those who reply in the affirmative added to those who already are on seven days are more than half of the fourteen area/regional nets, NTS will officially be put on a daily basis as of October 1, 1958.

This is not just something for net managers to worry about. It's largely up to *you*, because *you* are the ones he will have to rely upon to fill NCS and liaison spots in the Sunday schedule. So this is to request that you give the matter some thought and let your NTS net manager, whether you operate at section, regional or area level, know where you stand.

April reports:

Net	*Sessions*	*Traffic*	*Rate*	*Average*	*Representation (%)*
1RN	26	559	.392	21.5	91.7[1]
2RN	52	534	.368	10.3	99.2
3RN	43	389	.360	9.1	97.7
4RN	50	588	.281	11.8	61.7
RN5	52	921	.545	17.5	87.6
RN6	35	545	.474	15.0	30.8
8RN	45	142	.170	3.2	——
9RN	59	1429	.529	22.3	91.9
TEN	90	1241	.425	13.8	61.9
ECN	21	49	.131	2.3	65.1[1]
EAN	23	1472	1.057	64.0	97.7
CAN	30	1494	.856	49.8	100.0
PAN	29	1296	.654	44.6	97.7
Sections[2]	764	6558			
TCC East	74[3]	297			
TCC Central	60[3]	1113			
TCC Pacific	103[3]	1110			
Summary	1319	19738	EAN	13.1	CAN
Record	1319	19738	——	17.8	100.0

[1] Regional net representation based on one session per night. Others are based on two or more sessions.

[2] Section nets reporting: CN & CPN (Conn.); SCN (S.C.); SCN (Calif.); ILN (Ill.); NJN (N.J.); Iowa 75; S.D. 40 Phone & S.D. 75 Phone; GSPN (N.H.); GSN (Ga.); TLCN (Iowa); KSN, KYN, KPN (Ky.); STX (S. Texas); MDD (Md.-Del.-D.C.); MJN, MSPN (Noon), MSPN (Evening) and MSN (Minn.); WSN (Wash.); FMTN, Gator & FN (Fla.); AENB, AENP & AENT (Ala.).

[3] TCC functions reported, not counted as net sessions.

3RN is having trouble maintaining its late session because of the lateness of the hour for its highly dependable "squirt" contingent. W4QDY and W4SHJ put out a very FB monthly 4RN Bulletin. W9DO reports that CAN is holding its own against QRN, but needs more TCC support from the eastern area. PAN certificates have been issued to WØKQD, W6GQY, K6EWY and K6GES; this area net is toying with the idea of moving to 40 meters for the summer.

Transcontinental Corps. "Daylight saving" time has raised its customary havoc with TCC schedules, but things are beginning to settle down now. The biggest need is for night owls on the east coast to handle traffic from the Pacific Area. If interested, contact W3WG. Most of the vacancies are still in the eastern area. Here's the TCC breakdown for April:

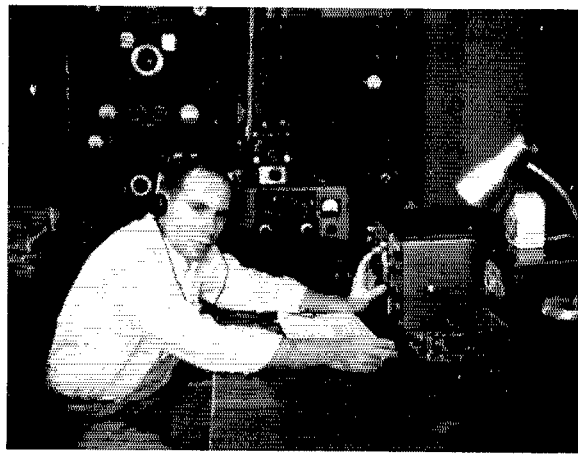
Area	*Functions*	*% Successful*	*Traffic*	*Out-of-Net Traffic*
Eastern	74	97.3	1814	297
Central	60	97.7	1886	1113
Pacific	103	95.1	2211	1110
Summary	237	96.2	5911	2520

The TCC roster: Eastern Area (W3WG, Mgr.)—*W1s* AW EMG NJM, *W2s* HDW VDT ZRC, K2KIR, *W3s* COK LXU WG, K4KNP, K8BPX, W9DO; Central Area (WØBDR, Mgr.) — *W9s* CXY DO, *WØs* BDR LCX LGG SCA; Pacific Area (W6BPT, Mgr.) — *W6s* ADB PLG BPT EOT VZT HC YHM, *K6s* DYX EWY HLR GES ORT GID, W5DWB, W7GMC, *WØs* KQD WMK.

MEET THE SCMs

The recently-elected SCM of Eastern Pennsylvania, Richard B. Mesirov, became interested in amateur radio in 1939 and was licensed as W3JNQ in 1941.

An ardent contest participant, SCM Mesirov enters W/VE Contests, Field Day activities, DX Contests, Sweepstakes and CD Parties. He has been high man in his



section many times in the latter two and was awarded the W3ATR Memorial Trophy, donated by W3GJY, former SCM of Western Pennsylvania, for making the highest score by a Pennsylvania operator in the 1956 Sweepstakes. He currently holds appointments as Official Relay Station and Official Observer and is activities manager of the Frankford Radio Club, Philadelphia.

The equipment in W3JNQ's shack (the bed is in the radio room!) consists of p.p. 4–400As and a single 813 for contests, both driven by a Viking Ranger and/or a Lysco 600, and an HRO-60 receiver. Antennas are an all-band "trap" 110 feet long (à la 3DZZ) and a 20-meter ground plane. Bands covered by the transmitter are 160, 80, 40, 20, 15 and 10 meters, phone and c.w., but 20-meter c.w. is most used.

Dick enjoys playing chess and his favorite sports are basketball and swimming; he swam competitively for thirteen years at distances of from fifty yards to four miles in National AAU Meets. He is self-employed as a manufacturer of ecclesiastical vestments.

W1AW SUMMER SCHEDULE

(All times given are Eastern Daylight Saving Time)

A map showing how to get from main highways (or from HQ. office) to W1AW will be sent to amateurs advising their intention to visit the station. Also, a master schedule showing complete W1AW operation will be sent to anyone on request.

Operating-Visiting Hours:

Monday through Friday: 1300-0100 (following day).

Saturday: 1900–0230 (Sunday). Sunday: 1500–2230.

Exception: W1AW will be closed from 0100 July 4 to 1900 July 5 in observance of Independence Day. Also station operation July 8–24 and Aug. 1–15 inclusive is between 1900 and 0100, Mon. through Fri. during the attendants vacation periods.

Official ARRL Bulletin Schedule: Bulletins containing latest information on matters of general amateur interest are transmitted on regular schedules.

Frequencies (kc.):

C.w.: 1820, 3555, 7080, 14,100, 21,010, 28,060, 50,900, 145,600.

Phone: 1820, 3945, 7255, 14,280, 21,330, 29,000, 50,900, 145,600.

Frequencies may vary slightly from round figures given; they are to assist in finding the W1AW signal, not for exact calibration purposes.

Times:

Sunday through Friday, 2000 by c.w., 2100 by phone.

Monday through Saturday, 2330 by phone, 2400 by c.w.

General Operation: Use the chart on p. 100, May *QST*, for

determining times and frequencies for W1AW general contact with any amateur. Note that since the schedule is organized in EDST, the operation between 0000 and 0100 each day will fall in the evening of the previous day in western time zones.

Code-Proficiency Program: Practice transmissions at 15, 20, 25, 30 and 35 w.p.m. on Monday, Wednesday and Friday, and at 5, 7½, 10 and 13 w.p.m. on Sunday, Tuesday, Thursday and Saturday are made on all the above-listed frequencies except 1820 kc. Code practice starts at 2130 each day. Approximately 10 minutes' practice is given at each speed. On July 22 and August 20, instead of the regular code practice, W1AW will transmit certificate qualifying runs.

DXCC NOTES

This month we announce the discontinuance and deletion of Kermadec credits given as the result of the current ZL1ABZ operations. This action comes as the result of careful DXCC Committee review following many complaints about the nature of the ZL1ABZ communications being confirmed. Because a significant number of such confirmations presented for DXCC credit fall into a highly doubtful classification, all DXCC credit for the current operation of ZL1ABZ will be deleted and DXCC totals will be adjusted to reflect these deletions. Until such time as the conditions which have caused this situation are rectified, no DXCC credit will be given for ZL1ABZ confirmations.

ZL1ABZ's transmissions have been confined, by the terms of his license, to the 3.5-Mc. band, where very low power has been used, although he can receive on 14 Mc. and other bands. Because he is an amateur with limited experience, he has accepted the advice and guidance of others in making cross-band contacts. However, many amateurs have reported that in numerous QSOs his signals have been below the level at which they could be positively identified. As a result, it has many times been necessary for a third party to relay advice on 14 Mc. as to when ZL1ABZ was transmitting and when he was standing by! On-the-air observation of this specific operation shows, beyond any doubt, that in many cases no direct contact with ZL1ABZ was ever made — yet confirmations were received for these "contacts."

A QSL is normally considered to represent that a two-way direct exchange of information has taken place between the station sending the QSL and that station to whom the QSL is made out. This system of confirmation by QSL is basically sound. However, it is quite obvious that irresponsibility on the part of persons sending out QSLs, as well as those receiving them, can make the system completely meaningless.

The ARRL cannot permit off-beat individual and group action in setting up false documentary claims to QSOs to make DXCC become a less meaningful award. Some ZL1ABZ contacts are undoubtedly legitimate, but in view of the impossibility of accurate screening of all confirmations to separate the good from the bad, we are obliged to deny all contacts made with and confirmed by ZL1ABZ while the present pattern of operation persists. To all those who are affected by this deletion, we sincerely regret that this action has been made necessary.

DX CENTURY CLUB AWARDS

HONOR ROLL

W6AM.....279	W6ENV....273	W2HUQ....271
W8HGW....278	W8NBK....273	W6RW.....271
W1FH.....276	W2AGW....272	W6MX.....270
W9NDA....275	W8BRA....272	W3JNN....270
KV4AA....275	W68YG....272	W5ASG....270
PY2CK....274	ZL2GX....272	W6DZZ....270
W3GHD....273		G2PL.....269

Radiotelephone

PY2CK....273	W8HGW....262	W9NDA....252
W8GZ.....265	ZS6BW....261	W3JNN....252
VQ4ERR...264	W8BF.....257	W6AM.....252
W1FH.....262	CN8MM....255	CX2CO....249
	W9RBI....254	

From April 1, to May 1, 1958 DXCC certificate and endorsements based on postwar contacts with 100-or-more countries have been issued by the ARRL Communications Department to the amateurs listed below.

W3LOE....250	W0GAX....106	W1WTE....102
PA0FX....157	DL1TS....106	W6TMX....102
W6OBH....144	W1OOS....105	W2DGW....101
W7AQB....136	W2LRJ....105	W2UZF....101
OH1TQ....134	W3QQL....105	KØDRR....101
HC1HJ....129	W3TLN....105	W0ZYB....101
HB9UL....121	SM5AQB...105	VE6JR....101
CO3YP....120	K4IGS....104	W5DRI....100
FK8AO....118	K9ALP....104	K6EIE....100
W7YGN....115	W9HCR....104	W8TTN....100
SM5LN....112	DL9WR....104	KØDQI....100
K4GOZ....111	K7FAE....103	DL3LB....100
J1BAF....111	W0SMV....103	VE1YB....100
KP4AIO...111	GI3JXS...103	DL6CL....100
W1KGH....110	VE3AHU/SU103	HB9DK....100
DL8CM....110	W1RLQ....102	ZL1ACO...100

Radiotelephone

W3LOE....174	W2IWC....106	G2ACK....102
W8HBI....140	W3NIG....106	VE6TF.....102
HC1HJ....129	K2GSO....105	OD5AU....101
W2IHX....115	5A1TB....105	W1BAN....100
OK2AG....115	W0SPU....104	W6NGZ....100
K4CVF....111	VE2BR....104	W8QNF....100
W4DWN....111	W1LHZ....103	W8UMR....100
HBWN.....111	W1YQC....103	EA1GH....100
J1BT.....111	W3PQB....103	F3NG.....100
W0WYV....110	W8JXY....103	YO3CV....100
	W2DSB....102	

ENDORSEMENTS

G4CP.....265	W2CNT....230	DL7AP....206
W6YY.....252	K6ENX....230	W2AYJ....205
KH6IJ....242	W1TYQ....229	W7EJD....202
W4LZF....241	W8EV.....223	W8CQ.....202
W7KTN....241	W6QNA....221	W7QGF....202
G3HLS....241	W6FOZ....220	OK1HI....202
W2DS.....240	W8GLK....220	W1RB.....201
W8UPN....240	K2BU.....218	W2NUT....200
W2CTO....239	W8CLR....218	W2TQR....200
W7FZA....234	W7AJS....215	W3WU.....200
OK1MB....231	K6CJQ....211	W9JUV....194
EA4CR....193	PA0ZL....170	W1JSS....133
VE3AIU...191	VE7MD....170	KL7MF....133
W2FBS....190	VE3PZ....169	W5MZP....131
ZL1AH....190	W2OBX....168	W9PQA....131
ZL4AA....190	W9ERU....165	W6GSL....130
W7MGT....187	W6TKX....162	W2PDB....130
W4AZK....186	W1PFA....160	W6KG.....130
G6XL.....184	W3KFQ....160	SM5OW....130
W2YTH....182	W6PLR....160	LA5HE....129
W4TFB....182	W0GUV....160	W4DRK....128
K6ENL....182	G3IDC....157	G3GSZ....124
VE3DIF...182	EA2CB....152	W1YPK....121
W5HJA....181	W3GRS....150	W4IKL....121
PY7VG....181	W3MZE....150	PJ2AV....121
W9RQM....180	W4HKJ....150	W1BDI....120
JA6AO....180	W4TAJ....150	W1GET....120
OK1KTI...180	K6KJR....150	W1RLV....120
PA0HP....176	W8NJC....150	W5URU....120
W1NI.....174	W9FVU....150	W9OAN....120
W2FXE....174	OH1ST....150	WØBNK....120
W3SWV....174	W8ILG....149	WØEWH....120
VE3JZ....172	PA0LOU....144	OK1AEH....120
W3EBG....170	W9QNO....142	K4HXF....115
W3MJF....170	G3VA.....141	VE2BR....114
W4JBQ....170	W2AXR....140	W2PTD....111
W4SRT....170	W8FPR....140	VE2YU....111
W5LGG....170	K9AGB....140	W2MOF....110
W6PZ.....170	K2CF.....139	W8YCP....110
W6RLP....170	WØMLY....135	W9FGX....110
W8DLZ....170	W3AOH....134	W9QGR....110
	W6FLT....134	

Radiotelephone

W2AFQ....210	W2HTI....150	I1TBU....122
W6SYG....203	W2TQR....150	W5JCY....121
VE3AIU...181	W8BHU....150	W1YPK....120
PY2JU....180	WØEHF....150	W2TXB....120
W7MGT....173	CT1MB....150	W6NOT....120
W5HJA....172	EA2CB....150	W8CUO....119
PY7VG....171	W1QGJ....145	W1RLV....115
TI2LA....169	I1ZCT....145	W3AOH....115
VS2DQ....162	W9JUV....143	W9PQA....115
W2FXE....160	W4SKO....141	I1ZFT....115
W4TFB....160	W6LTY....140	I1BAF....111
WØGEK....159	OZ7FG....140	W3TBP....110
PY7YS....154	W6OBH....131	W8GUZ....110
W8AJH....151	W1JSS....130	WØQVZ....110
VK2JZ....151	W1PNR....130	HK4CO....110
	W1FPH....124	

W/VE/VO Call Area and Continental Leaders

W4TM.....255	VE3QD....210	VE7ZM....239
W7AMX....267	VE4NO....118	VE8AW....195
WØAIW....255	VE5QZ....147	VO6EP....190
VE1PQ....192	VE5RU....147	Z86BW....263
VE2WW....210	VE6NX....200	4X4DK....241

Radiotelephone

W2BXA....215	VE1CR....120	VE6NX....112
W4HA.....212	VE2WW....138	VE7ZM....201
W5BGP....228	VE3QA....195	G2PL.....242
W7HTB....198	VE5RU....143	4X4DK....232
WØAIW....233		ZL2GX....242

• All operating amateurs are invited to report to the SCM on the first of each month, covering station activities for the preceding month. Radio Club news is also desired by SCMs for inclusion in these columns. The addresses of all SCMs will be found on page 6.

ATLANTIC DIVISION

EASTERN PENNSYLVANIA—SCM, Richard B. Mesirov, W3JNQ—SEC: DVB. RM: PDJ. PAM: TEJ. The PFN meets Mon. through Fri. at 1800 on 3850 kc.; E. Pa. Net Mon. through Fri. on 3610 kc. New appointments: VSD Philadelphia, TOL Adams as ECs; DTK as ORS; FYR as OPS; WQL as OO. Section Net certificates went to BUR, FKE and KMD. CUL made the BPL from the 4th district and also from her home QTH in the same month! AMC and BNR have a new L-1000-A linear tied behind their 5100-B and 51SB. DVB will have his beam up after the college term ends. New officers of the Bucks Co. ARC are JF1, pres.; CHL, vice-pres.; HHP, treas.; IKI, secy.; GBO, trustee. ALB added a third 40-meter ground plane to his antenna farm. PDJ has a new HQ-160. K3ALD is on with a DX-40 and an SX-99 and has 28 countries. WHK reports that the Central H.S. 807 Club has a 66-ft. dipole and an AT-1. FVM has returned to the air in the U. S. after a stint as KA2MM with a Valiant plus a Matchbox and an HQ-110 and has a 3-band beam on the way. HNK has a new "V" beam on 75 meters that is 70 ft. high and now is heard on the PFN. ELI moans that QRP is no go in the phone section of the CD Parties. IW is all set for summer snow now that he has an emergency generator from the State. NF finds that his 80-meter "V" beams work better for stations 200 miles or out but that the dipole is better for locals. WPG is building a new 6-meter converter and parallel 4-250A final. KN3CTC added a QF-1 to his receiver. IVS has a new 300A and an SX-100. The Delaware-Lehigh ARC applied for W3OK as a memorial club station call. ZRQ has a new Gonset 11I on 6 meters and a new tri-band beam on 10, 15 and 20 meters. New officers of the Lancaster RTS installed at the Apr. 19 meeting and dinner are JYL, pres.; KFI, vice-pres.; HXY, treas. Distinguished speakers at the dinner included Director YA, SEC DVB and SCM JNQ. The Mt. Airy V.H.F. club will hold its 3rd Annual Picnic Sun., Aug. 10 at Fort Washington State Park; information from SAO. UIU and ARK report many Novices are out of band mostly because of tuning to the wrong harmonics. Traffic: (Apr.) W3CUL 744, FCI 383, WHK 247, CMN 228, TEJ 180, BFF 96, HNK 76, PDJ 69, ZRQ 57, AXA 48, NF 48, AMC 32, K3ALD 24, W3LHA 15, BNR 12, DVB 12, NQB 10, ELI 6, PYF 6, WQL 6, FKE 5, ADE 4, EPL 4, IW 4, BUR 3, KN3CTC 2. (Mar.) W3ELI 39, K3ALD 10.

MARYLAND—DELAWARE—DISTRICT OF COLUMBIA—SCM, Louis T. Croneberger, W3UCR—Asst. SCM Delaware: Ray de Courcelle, 3DQZ. SEC: CXG. Section nets: MDD 3650 M-S 1915 EST, MEPN 3820 MWF 1830, SS 1300 EDST. DelEN 3905 Sat. 1830 EDST. New appointments: LJV as OO and AZK as OPS. The NCVHFS held its annual big meeting with an impressive panel of v.h.f. and propagation experts, including 1HDQ, 3ASK, 1VLH, KØCIQ, 1DEI, 4AO and 4LTU. The RCARA joined the NCVHFS for this meeting. On Apr. 4 the WRC had filams on Viking Rockets, entitled "Horizon Unlimited." ECP, WRC president, conducted an "Antenna Symposium" at the Apr. 18 meeting. The HCARA elected PRC, pres.; K3AHB, vice-pres.; 4EKO, secy.; and HZT, treas. The U. of Md. ARC has been reactivated and the following officers were elected: ZWS, pres.; ZEO, vice-pres.; YTW, secy.; and VEB, treas. The station call is EAX. The RCARA had an installation of officers at its Apr. 11 meeting. The ARA had a field trip to the Marlowe Dispatching Station on Apr. 15, with RAH conducting the tour. The DelEN established communications for a plane crash on Apr. 13 with many of its members assisting in the operation. SPL and ENN established the net on 3905 kc. with CZS/s at Dover AFB. The Kent County ARC reelected Ed Cooper, pres., and elected JFR, vice-pres.; ZNF, secy.; and WLO, treas. The Kent Co. ARC bulletin now is called *Delaware Station Break*. KLA advises that a special QSL for the June V.H.F. Contest will be available to those who contact PGA and request it. The CSRC held its spring auction Apr. 18. The Brandywine ARC's officers are PYD, pres.; KOA, vice-pres.; IHY, secy.-treas. and 4KFT, act. mgr. The club call is K3CSH, which will be used to guide mobiles into Washington for the ARRL National Convention Aug. 15-17. The facilities of the club will be utilized as control for all outside convention activities. WTVIC has just released its third edition of the *Washington Area Directory*. It is available from K4LMB and OBR for $1.50. LGS now is on from Havre de Grace with a WRL-300A and a trap antenna. K3CJT is working out on 2 meters with a Communicator III and ten-element beam. New Delaware hams are KN3s CVB, CXS, DIS and K3DKV. DQZ reports a new jr. operator for UMV. TZI has new beams for 2 and 10 meters. HC reports the new location is fine for 2 and 10 meters. NNK (ex-KL7NNK) has returned home from an overseas tour as a Philco TechRep. WLO was tops in the Delaware QSO Party. SLR has qualified for admission and also won a competitive scholarship to M.I.T. KN3CWK is both mobile and fixed on 2 meters. PZW is now KB6BJ. OYX is doing a fine job as editor of *QRV*. ARA's new club bulletin, CQX is representing Hagerstown in MDD. BUD has moved to a new home in California, Md. KN3BSG is civil defense director of Garrett Co. Congratulations to the many who took part in OPAL 58. AIR was awarded a 15-year pin at APL. 4YEC, a student at George Washington U., a member of Alexandria RC and an employee of NRL passed away on May 9, a victim of cancer. CU at the MEPN Picnic July 13, Braddock Heights Park, and at the ARRL National Convention, Washington, D. C., Aug. 15-17. Traffic: (Apr.) W3UE 515, WG 301, K3WBJ 181, W3MCG 162, NNM 158, TN 116, PQ 96, HIZ 74, WV 70, EKO 54, COK 46, OYX 15, CN 14, CQX 10, BKE 4, BUD 4, EAX 4, EQK 4, FNM 3, UCR 3. (Mar.) W3CVE 251, JZY 10.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG—SEC: YRW. PAM: ZI. RMs: YRW, HDW and ZI. Appointment of the month: K2PRE, Vineland, as OBS. 1YRZ/1 and K2FBM originated 342 servicemen messages at McGuire AFB. RG was NJN's QNI champ for April. K2EWR is back with a new rig. Gloucester Co. EC K2SOL is soliciting membership for AREC. K2JGU, Glassboro, is an Asst. NCS on MARS. K2AAR and 3BCJ, DVRA members, have been added to the State c.d. operating staff. K2CPR, Pennsauken, has reached 230 worked. BAY, Haddonfield, is back on 6 meters with a new beam. The DVRA's Old Timers Nite again was a big success. FDE edits the *DVRA News*. Another OM and XYL team—KN2MKZ and KN2OPW, Egg Harbor. WN2JBH, the XYL at K2HPX, is ready to drop the "N." Add *SCARA News*, edited by K2BKG, to the list of fine club bulletins and papers. NJN is now holding Sunday sessions. HDW is net manager. JBF is heard on the Jersey Phone Net. The Morris Radio Club offers a WANJ certificate for working the 21 New Jersey counties. SVV, Mercer County EC, again is active after a recent operation. REB and GQO with their XYLs attended the Dayton Hamvention. K2INQ is now Burlington County RC secretary, succeeding K2KPF. LS, Pleasantville, is doing FB OO work, reporting over 60 discrepancies in April. K2QPJ is Salem Co. Radio Club secretary. Support the section ECs in their efforts to coordinate our emergency communication facilities. Traffic: (Apr.) K2FBM 545, W2HDW 279, W1YRZ/1 256, W2RG 174, K2EWR 75, W2BZJ 65, K2SOL 53, JGU 45, W2ZI 38, K2QOS 32, SOW 24, SOL 20, CPR 9, SOX 6. (Mar.) K2PPV 14.

WESTERN NEW YORK—SCM, Charles T. Hansen, K2HUK—SEC: PPY. V.H.F. PAM: LXE. RMs: RUF and ZRC. NYS C.W. meets on 3615 kc. at 1800, ESS on 3590 kc. at 1800, NYSPTEN on 3925 kc. at 1800, NYS C.D. on 3509.5 and 3993 kc. at 0900 Sun., TCPN 2nd Call Area on 3970 kc. at 1900, SRPN on 3980 kc. at 1000, LSN on 3970 at 1600. K2SIL and K2KIR made BPL this month—the third in a row for K2SIL. K2YJN

(Continued on page 94)

A LOOK AT VOX

ONE of the many advantages that SSB operators are enjoying today is the use of voice operated break-in. This type of operation, popularly referred to as VOX, is not by nature confined purely to SSB use. Indeed, it can be employed by any AM station. However, it has not achieved wide spread popularity other than among the SSB fraternity and thus we have some justification in claiming VOX as an additional feature of SSB.

IN ORDER to derive the fullest enjoyment from the benefits resulting from VOX, there are several points we should keep in mind. The natural type of conversations carried on by the older sidebanders creates a feeling of intimacy and friendliness which is not encountered in other types of operation. One way to become adept in utilizing VOX is to imagine that we are carrying on a face to face conversation with the other operators in the round table. Transmissions should be kept short, with frequent pauses, so that another member of the group can immediately comment on a point which has just been made.

IT IS not necessary to preface each transmission with call letters; this only robs us of time to converse. And it certainly is unnecessary to end a statement with "go ahead", "over", etc. When we stop talking, the other operators know that our VOX system has cut off our transmitter and turned on our receiver, and will comment if they have something to say. (Don't forget FCC Reg. 12.82 (1), though!)

ALONG this same line we should avoid "turning it to" another station. He may have no comment at the moment, and if he does he will make it without anyone's formal invitation.

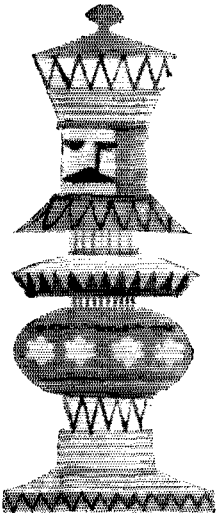
ANOTHER pitfall which can detract from the fun of VOX is the unnecessary use of phonetics. Once we are checked into a group they all can recognize our calls without phonetics, and phonetics take time. Furthermore, anyone can recognize the prefix W or K and the figures from 1 to ø. It is extremely ponderous to say "Kilowatt number nine," or "William the figure Six." A simple K9 or W6 will get through just as well.

THERE are two cardinal sins. The first is long CQs. VOX allows us to say "CQ twenty" three or four times, give our call once and pause for a breath. A station desiring to contact us can call us during this pause, and will be spared the irritation of waiting two or three minutes while we call "CQ." The second sin is the use of "break, break" when calling in to an established contact. A simple "hello" will get the new station in much more quickly.

IF THE new sideband operator will keep these few points in mind he will find that he is more readily accepted by the older SSB enthusiasts and will quickly become a popular member of the clan. Further, he will realize the ultimate in operating pleasure as afforded by the well designed, smooth operating VOX circuit found in Hallicrafters SSB equipment.

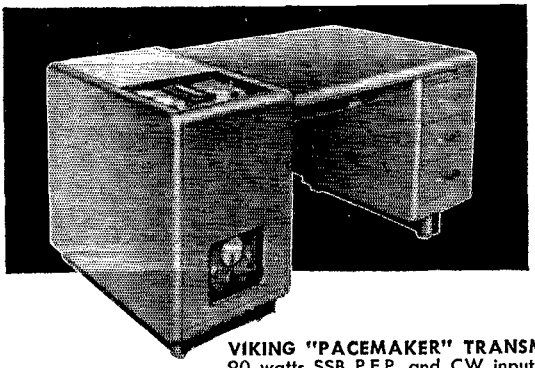
—TOM STUART, WøREP

Checkmate QRM with full communication power!



First choice‡ among the nation's amateurs, Viking transmitters deliver solid communication power to punch your signal home every time! For effective practical design and honest dollar value, Viking transmitters stand ahead of all others. So, whether you choose the "Adventurer" as your first transmitter, or the power-packed Viking "Kilowatt" as the "last word", you know beyond a doubt that your transmitter dollar is soundly invested with Viking equipment.

‡Results of a recent nationwide survey conducted by an impartial organization prove that Johnson Viking transmitters in use outnumber those of any other manufacturer. Published copies of this survey available on request.

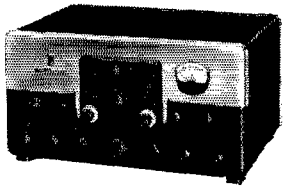


VIKING "KILOWATT" AMPLIFIER—in a class by itself . . . the only transmitter available that provides full, maximum legal power in all modes SSB, CW and AM—more than 2000 watts SSB*. Class C final amplifier operation provides plate circuit efficiencies in excess of 70% with unequaled broadcast-type HIGH LEVEL AMPLITUDE MODULATION with more than three times the AM power obtained in KW class linear equipments! Continuous tuning 3.5 to 30 mcs. Excitation requirements: 30 watts RF and 10 watts audio for AM; 2-3 watts peak for SSB. Wired and tested, with tubes.

Cat. No. 240-1000 Wired and tested . Amateur Net $1595.00
Matching accessory desk top, back, and three-drawer pedestal.
Cat. No. 251-101-1 . . . . . FOB Corry, Pa. $132.00

VIKING "PACEMAKER" TRANSMITTER/EXCITER—90 watts SSB P.E.P. and CW input . . . 35 watts AM. Instant bandswitching 80, 40, 20, 15 and 10 meters. Excellent stability and suppression. Temperature compensated VFO; VOX and anti-trip circuits; high efficiency pi-network output. More than enough power to drive the Viking "Kilowatt" or grounded-grid kilowatt amplifiers. With tubes and crystals, less key and microphone.

Cat. No. 240-301-2 Wired and tested . Amateur Net $495.00



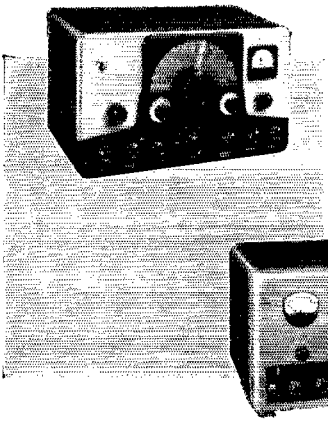
VIKING "COURIER" AMPLIFIER — Rated a solid 500 watts P.E.P. input with auxiliary SSB exciter as a Class B linear amplifier; 500 watts CW or 200 watts AM linear. Self-contained desk-top package—may be driven by the Viking "Ranger", "Pacemaker" or other unit of comparable output. Continuous coverage 3.5 to 30 mcs. Drive requirements: 5 to 35 watts depending on mode and frequency desired. Employs two 811A triodes in parallel. Pi-network output will match 40 to 600 ohm loads. TVI suppressed. With tubes and built-in power supply.

Cat. No. 240-352-1..Kit.....$244.50 Amateur Net
Cat. No. 240-352-2..Wired and tested.....$289.50 Amateur Net

VIKING "THUNDERBOLT" AMPLIFIER — The hottest linear amplifier on the market—engineered to provide maximum "talk-power" to smash through QRM. 2000 watts P.E.P.* input SSB; 1000 watts CW; 800 watts AM linear; in a completely self-contained desk-top package. Delivers a dominant signal on all amateur bands—continuous coverage 3.5 to 30 mcs.—instant bandswitching. May be driven by the Viking "Navigator", "Ranger", "Pacemaker" or other unit of comparable output. Drive requirements: approx. 10 watts in Class AB_2 linear, 20 watts Class C continuous wave. Final amplifier employs two 4-400A tetrodes in parallel, bridge neutralized. Complete with tubes and built-in power supply.

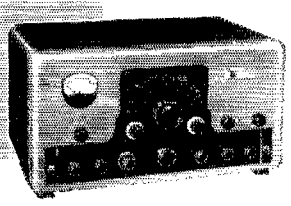
Cat. No. 240-353-1..Kit.....Amateur Net $524.50
Cat. No. 240-353-2..Wired and tested.....Amateur Net $589.50

** The F.C.C. permits a maximum one kilowatt average power input for the amateur service. In SSB operation under normal conditions this results in peak envelope power inputs of 2000 watts or more depending upon individual voice characteristics.*



VIKING "RANGER" TRANSMITTER/EXCITER—This popular 75 watt CW or 65 watt phone transmitter will also serve as an RF and audio exciter for high power equipment. Completely self-contained . . . TVI suppressed . . . instant bandswitching 160 through 10 meters. Extremely stable built-in VFO or crystal control. Final amplifier tube is a 6146. Easy to assemble—with tubes, less crystals, key and microphone.

Cat. No. 240-161-1. .Kit . . . . . Amateur Net $229.50
Cat. No. 240-161-2. .Wired and tested . . . . . Amateur Net $329.50

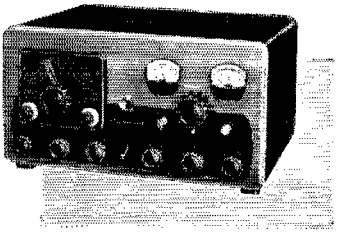


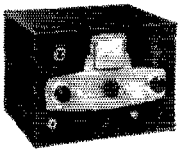
VIKING "VALIANT" TRANSMITTER—Here is power to slice through terrific QRM! 275 watts input CW and SSB (P.E.P. with auxiliary SSB exciter) and 200 watts phone. Instant bandswitching 160 through 10 meters—operates by built-in VFO or crystal control. Pi-network output matches antenna loads from 50 to 600 ohms . . . final amplifier utilizes three 6146 tubes in parallel. TVI suppressed—timed sequence keying—low level audio clipping—built-in low pass audio filter—self-contained power supplies. Complete with tubes, less crystals, key and microphone.

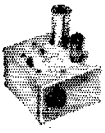
Cat. No. 240-104-1. .Kit. . Amateur Net $349.50
Cat. No. 240-104-2
Wired and tested. . . . . Amateur Net $439.50

VIKING "FIVE HUNDRED" TRANSMITTER—Rated a *full* 600 watts CW . . . 500 watts phone and SSB. (P.E.P. with auxiliary SSB exciter.) Compact RF unit designed for desk-top operation—power supply/modulator unit may be placed in any convenient location. All exciter stages ganged to VFO tuning—also may be operated by crystal control. Instant bandswitching 80 through 10 meters—TVI suppressed—high gain push-to-talk audio system—low level audio clipping. Final amplifier uses a 4-400A high efficiency tetrode. Pi-network output will match a wide range of antenna impedances. Complete with tubes, less crystals, key and microphone.

Cat. No. 240-500-1 . . Kit . . . . . Amateur Net $749.50
Cat. No. 240-500-2 . . Wired and tested . . . . . Amateur Net $949.50







VIKING "ADVENTURER" TRANSMITTER—This completely self-contained 50 watt CW transmitter was used to earn the first novice WAC! (Worked All Continents) Instant bandswitching 80 through 10 meters . . . operates by crystal or external VFO control. Rugged 807 transmitting tube—wide range pi-network output—TVI suppressed. Easy to assemble—complete with tubes, less crystals and key.

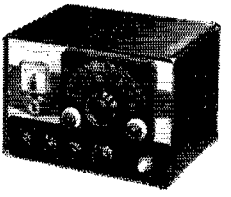
Cat. No. 240-181-1 . . Kit . . . . . Amateur Net $54.95

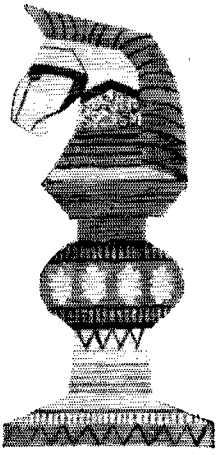
SPEECH AMPLIFIER/SCREEN MODULATOR—Designed to provide phone operation for the "Adventurer". High gain—use with crystal or dynamic microphones. Simple installation. With tubes.

Cat. No. 250-40 . . Kit . . . . . Amateur Net $12.25

VIKING "NAVIGATOR" TRANSMITTER/EXCITER—This flexible CW transmitter/exciter has enough RF power to excite most high powered amplifiers on CW and AM. 40 watts input—6146 final amplifier tube. Bandswitching 160 through 10 meters. Built-in VFO or crystal control—TVI suppressed—timed sequence keying. Pi-network output will match 40 to 600 ohm loads. With tubes and self-contained power supply, less crystals and key.

Cat. No. 240-126-1
Kit . . . . . Amateur Net $149.50
Cat. No. 240-126-2
Wired and Tested . . . Amateur Net $199.50





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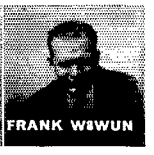
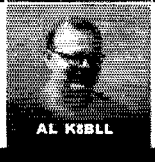




All of these licensed radio amateurs make important contributions to the Heath line of fine ham kits. In a sense, they are your personal representatives within the company, because their design ideas and performance preferences reflect not only their own "on-the-air" experiences, but those of the amateur fraternity with which they are in constant contact. With this kind of representation in Benton Harbor, you can continue to rely on high-performance Heathkit amateur radio equipment designed by hams, for hams!

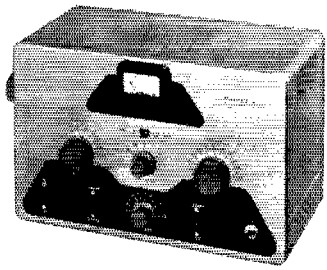
HEATH *hams work to bring you*

ROGER MACE (W8MWZ)
SENIOR HAM ENGINEER
HEATH COMPANY

HEATHKIT 50-WATT CW TRANSMITTER KIT

MODEL DX-20

$35.95



If high efficiency at low cost in a CW transmitter interests you, you should be using a DX-20! It employs a single 6DQ6A tube in the final Amplifier stage for plate power input of 50 watts. The oscillator stage is a 6CL6, and the rectifier is a 5U4GB. Single-knob band-switching is featured to cover 80, 40, 20, 15, 11 and 10 meters, and a pi network output circuit matches antenna impedances between 50 and 1000 ohms to reduce harmonic output. Designed for the novice as well as the advanced class CW operator. The transmitter is actually fun to build, even for a beginner, with complete step-by-step instructions and pictorial diagrams. All the parts are top-quality and well rated for their application. "Potted" transformers, copper-plated chassis, and ceramic switch insulation are typical. Mechanical and electrical construction is such that TVI problems are minimized. If you desire a good clean CW signal, this is the transmitter for you! Shpg. Wt. 19 lbs.

HEATHKIT "APACHE" HAM TRANSMITTER KIT

- Newly Designed VFO—Provision For S.S.B. Adapter
- Modern Styling—Rotating Slide Rule Dial

MODEL TX-1 **$229.50** Shipped motor freight unless otherwise specified. $50.00 deposit required on C.O.D. orders.

Fresh out of the Heath Company laboratories, the brand-new "Apache" model TX-1 Ham Transmitter features modern styling and is designed as a handsome companion to the also-new Heathkit "Mohawk" receiver. The "Apache" is a high quality transmitter operating with 150 watt phone input and 180 watt CW input. In addition to CW and phone operation, the "Apache" features built-in switch selected circuitry providing for single-sideband transmission through the use of a plug-in external single-sideband adapter. These Heathkit adapters will be available in the near future. A compact, stable and completely redesigned VFO provides low drift frequency control necessary for single-sideband transmission. An easy-to-read slide rule type illuminated rotating VFO dial with vernier tuning provides ample bandspread and precise frequency setting. Simple band-switching control allows flip-of-the-wrist selection of the amateur bands on 80, 40, 20, 15 and 10 meters (11 M with crystal control). The "Apache" features adjustable low level speech clipping and a low distortion modulator stage employing two of the new 6CA7/EL-34 tubes in push-pull class AB operation. Time sequence keying is provided for "chirpless" break-in CW operation. The final amplifier is completely enclosed in a perforated aluminum shielding for greater TVI protection and transmitter stability. Cabinet comes completely preassembled with top hatch for convenient access without taking chassis out of cabinet. Die-cast aluminum knobs and front panel escutcheons add to the attractive styling of the transmitter. Pi network output coupling matches antenna impedances between 50 and 72 ohms. Incorporates all the refinements necessary with many "plus" features for effective and dependable communications. Shpg. Wt. 115 lbs.

...top quality at lowest prices!

HEATHKIT "MOHAWK" HAM RECEIVER KIT

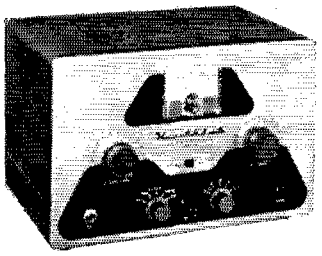
- All Critical Circuits Prewired and Aligned
- Crystal Controlled Oscillators for Drift-Free Reception

MODEL RX-1 **$274.95** Shipped motor freight unless otherwise specified. $50.00 deposit required on C.O.D. orders.

Outstanding results can be expected with the new "Mohawk" receiver which is designed to combine all the necessary functions required in a high quality communications receiver. A perfect companion for the Heathkit "Apache" transmitter, the "Mohawk" features the same wide-band slide rule type vernier tuning and covers all of the amateur bands from 160 through 10 meters on seven bands with an extra band calibrated to cover 6 and 2 meters using a converter. External receiver powered, accommodations are available for these converters which will be available in Heathkits soon. The "Mohawk" is specially designed for single-sideband reception with crystal controlled oscillators for upper and lower sideband selection. A completely preassembled, wired and aligned front end assures ease of assembly. All critical wiring is done for you insuring top performance. This 15-tube receiver features double conversion with IF's at 1682 kc and 50 kc. Five selectivity positions from 5 kc to 500 CPS. A bridged T-notch filter is employed for maximum heterodyne rejection. Complete accuracy is obtained with the use of a built-in 100 kc crystal calibrator and the set features 10 db signal-to-noise ratio at less than 1 microvolt input. S-meter and many other fine features built-in for top-notch signal reception. Shpg. Wt. 90 lbs.

HEATH COMPANY A Subsidiary of Daystrom, Inc. BENTON HARBOR 9, MICH.

HEATHKIT PHONE & CW TRANSMITTER KIT



MODEL DX-40 **$64.95**

The DX-40 incorporates the same high quality and stability as the DX-100, but is a lower powered rig for crystal operation, or for use with an external VFO. Plate power input is 75 watts on CW, permitting the novice to utilize maximum power. An efficient, control-carrier modulator for phone operation peaks up to 60-watts, so that the rig has tremendous appeal to the general class operator also. Single-knob switching covers 80, 40, 20, 15, 11 and 10 meters. Pi network output coupling makes for easy antenna loading, and pi network interstage coupling between the buffer and final amplifier improves stability and attenuates harmonics. A line filter is incorporated for power line isolation. The efficient oscillator and buffer circuits provide adequate drive to the 6146 final amplifier from 80 to 10 meters, even with an 80-meter crystal. A drive control adjustment is provided, and the function switch incorporates an extra "tune" position so that the buffer stage can be pretuned before the final is switched on. A switch selects any of three crystals, or a jack for external VFO. High quality D'Arsonval meter for tuning. Shpg. Wt. 26 lbs.

HEATHKIT DX-100 PHONE & CW TRANSMITTER KIT

MODEL DX-100 **$189.50** Shipped motor freight unless otherwise specified. $50.00 deposit required on C.O.D. orders.

You get more for your transmitter dollar when you decide on a DX-100 for your ham shack! Recognized as a leader in its power class, the DX-100 offers such features as a built-in VFO, built-in modulator, TVI suppression, pi network output coupling to match a variety of antenna impedances from 50 to 600 ohms, pi network interstage coupling, and high quality materials throughout. Copper plated 16-gauge steel chassis, ceramic switch contacts, etc., are typical of the kind of parts you get, in assembling this fine rig. The DX-100 covers 160, 80, 40, 20, 15, 11 and 10 meters with a single bandswitch, and with VFO or crystal operation on all bands. RF output is in excess of 100 watts on phone and 120 watts on CW, with a pair of 6146 tubes in parallel for the final amplifier, modulated by a pair of 1625 tubes in parallel. VFO tuning dial and panel meter are both illuminated for easy reading, even under subdued lighting conditions. Attractive front panel and case styling is completely functional, for operating convenience. Designed exclusively for easy step-by-step assembly. No other transmitter in this power class combines high quality and real economy so effectively. Here is a transmitter that you will be proud to own. Time payments are available! Shpg. Wt. 107 lbs.

more fine ham gear from the pioneer

HEATHKIT GRID DIP METER KIT

A Grid Dip Meter is basically an RF Oscillator used to determine the frequency of other Oscillators, or tuned circuits. Numerous other applications such as pretuning, neutralization, locating parasitics, correcting TVI, adjusting antennas, designing new coils, etc. Features continuous frequency coverage from 2 MC to 250 MC, with a complete set of prewound coils, and a 500 ua panel meter. Has sensitivity control and a phone jack for listening to the "Zero-Beat". It will also double as an absorption-type wave meter. Shpg. Wt. 4 lbs. MODEL GD-1B **$21.95**

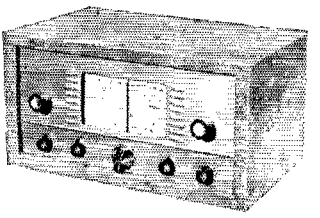
Low frequency coil kit: two extra plug-in coils extend frequency coverage down to 350 KC. Shpg. Wt. 1 lb. No. 341-A **$3.00**

HEATH COMPANY A Subsidiary of Daystrom, Inc. BENTON HARBOR 9, MICHIGAN

HEATHKIT ALL-BAND COMMUNICATIONS-TYPE RECEIVER KIT

Ideal for the short wave listener or beginning amateur, this Receiver covers 550 KC through 30 MC in four bands. It provides good sensitivity and selectivity, combined with fine image rejection. Amateur bands are clearly marked on the illuminated dial scale. Features transformer type—power supply—electrical band spread—antenna trimmer—separate RF and AF gain controls—noise limiter—internal 5½" speaker—head phone jack and AGC. Has built-in BFO for CW reception. An accessory power socket is also provided for connecting the Heathkit model QF-1 Q Multiplier. Will supply 250 VDC at 15 ma and 12.6 VAC at 300 ma. Shpg. Wt. 12 lbs.
Cabinet: Fabric covered cabinet with aluminum panel as shown part 91-15A. Shpg. Wt. 5 lbs. **$4.95**

MODEL AR-3
$29.95

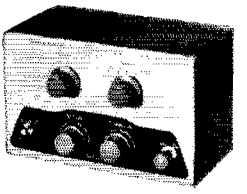


ALL-BAND RECEIVER

HEATHKIT ELECTRONIC VOICE CONTROL KIT

Here is a new and exciting kit that will add greatly to your enjoyment in the ham shack. Allows you to switch from Receiver to Transmitter merely by talking into your microphone. Lets you operate "break-in" with an ordinary AM transmitter. A terminal strip is provided for Receiver and speaker connections and also for a 117 volt antenna relay. Unit is adjustable to all conditions by sensitivity and gain controls provided. Easy to build with complete instructions provided. Requires *no transmitter or Receiver alterations to operate.* Shpg. Wt. 5 lbs.

MODEL VX-1
$23.95

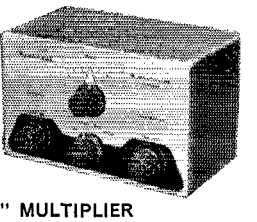


ELECTRONIC VOICE CONTROL

HEATHKIT "Q" MULTIPLIER KIT

This fine Q Multiplier is a worthwhile addition to any communications, or Broadcast Receiver. It provides additional selectivity for separating signals, or will reject one signal and eliminate a hetrodyne. Functions with any AM Receiver having an IF frequency between 450 and 460 KC that is not AC-DC type. Operates from your Receiver power supply, and requires only 6.3 VAC at 300 ma (or 12.6 VAC at 150 ma), and 150 to 250 VDC at 2 ma. Simple to connect with cable and plugs supplied. Effective Q of approximately 4000 for sharp "peak" or "null". A tremendous help on crowded phone or CW bands. Shpg. Wt. 3 lbs.

MODEL QF-1
$9.95



"Q" MULTIPLIER

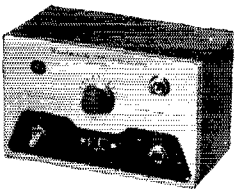
NOTE: $10.65 WHEN ORDERED WITH AR-3 BECAUSE OF EXCISE TAX.

...in do-it-yourself electronics!

HEATHKIT "AUTOMATIC" CONELRAD ALARM KIT

Designed to give instant warning whenever a monitored station goes off the air, the CA-1 automatically cuts the AC power to your transmitter, and lights a red indicator. Works with any radio receiver; AC-DC—transformer operated—battery powered, so long as the receiver has AVC. A manual "reset" button is provided to reactivate the transmitter. Incorporates a heavy-duty 6-ampere relay, a thyratron tube, and its own built-in power supply. A neon lamp shows that the alarm is working. Simple to install and connect with complete instructions provided for assembly and operation. Shpg. Wt. 4 lbs.

MODEL CA-1
$13.95



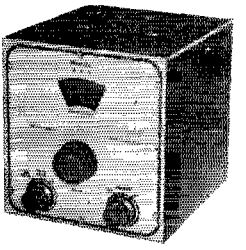
"AUTOMATIC" CONELRAD ALARM

HEATHKIT VARIABLE FREQUENCY OSCILLATOR KIT

Enjoy the convenience and flexibility of VFO operation by obtaining this fine variable frequency oscillator. It covers 160-80-40-20-15-11 and 10 meters with three basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Requires 250 volts DC at 15 to 20 ma, and 6.3 VAC at 0.45 a, available on most transmitters. It features voltage regulation for frequency stability, and has illuminated frequency dial. VFO operation allows you to move out from under interference and select the portion of the band you want to use without having to be tied down to only 2 or 3 frequencies through the use of crystals. "Zero in" on the other fellows signal and return his CQ on his own frequency! Shpg. Wt. 7 lbs.

MODEL VF-1

$19.50



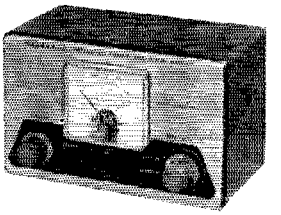
VARIABLE FREQUENCY OSCILLATOR

HEATHKIT REFLECTED POWER METER KIT

A necessity in every well equipped ham shack, the model AM-2 lets you check the match of the antenna transmission system, by measuring the forward and reflected power or standing wave ratio. Handles up to one kilowatt of energy on all bands from 160 to 2 meters, and may be left in the antenna system feed line at all times. Input and output impedances for 50 or 75 ohm lines. No external power required for operation. Meter indicates percentage forward and reflected power, and standing wave ratio from 1:1 to 6:1. Shpg. Wt. 3 lbs.

MODEL AM-2

$15.95



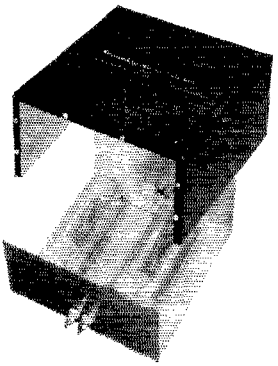
REFLECTED POWER METER

HEATHKIT BALUN COIL KIT

This convenient transmitter accessory has the capability of matching unbalanced coax lines, used on most modern transmitters, to balanced lines of either 75 or 300 ohms impedance. Design of the bifilar wound Balun Coils will enable transmitters with unbalanced output to operate into balanced transmission line, such as used with dipoles, folded dipoles or any balanced antenna system. Can be used with transmitters and Receivers without adjustment over the frequency range of 80 through 10 meters. Will handle power inputs up to 200 watts. Shpg. Wt. 4 lbs.

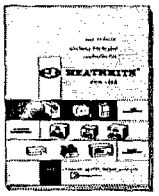
MODEL B-1

$8.95



BALUN COIL

save ½ or more . . . with HEATHKITS



FREE 1958 Catalog

Send for this Free informative catalog listing our entire line of kits, with complete schematics and specifications.

☐ **Rush Free 1958 catalog.**

HEATH COMPANY

BENTON HARBOR 9, MICH. a subsidiary of Daystrom, Inc.

name _____

address _____

city & state _____

QUAN.	ITEM	MODEL NO.	PRICE

$_____enclosed. Parcel post, include postage—express orders are sent shipping charges collect. All prices quoted are Net F.O.B. Benton Harbor, Mich. and apply to Continental U.S. and Possessions only. All prices and specifications subject to change without notice.

QST

TO ALL HAMS!

National Amateur Radio Convention

SHERATON-PARK HOTEL

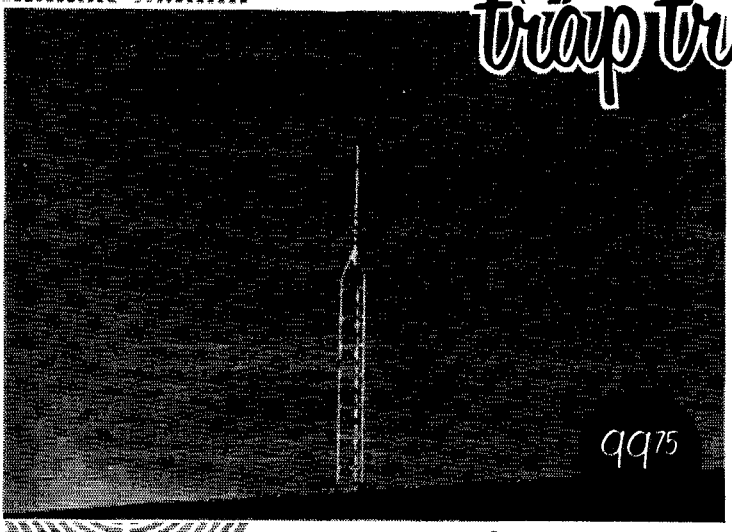
Washington, D. C. August 15, 16, 17, 1958

Sponsored by The Foundation of Radio Amateur Clubs, Inc.

- Make Your Hotel Reservations Early
- Take Advantage of the Special Low Pre-Registration Fee — Register by August 1

(See page 66 for details)

here are the hy-gain FULL-SIZED trap tribanders



There are more hy-gain trap tribanders in use than all other three band beams combined! The 3-element Tribander, shown to the left, is now considered the standard of performance in the field of amateur radio communications. F/B Ratio: approx. 25 db. Forward gain: 8 db. average.

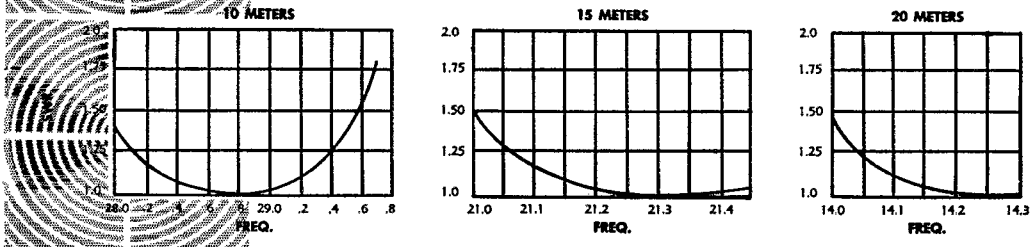
The 2-element Trap Tribander is for use in limited space when top quality transmission is desired on 10, 15 & 20M. Single transmission line. F/B Ratio: average 18 db. Forward gain: 5.8 db average.

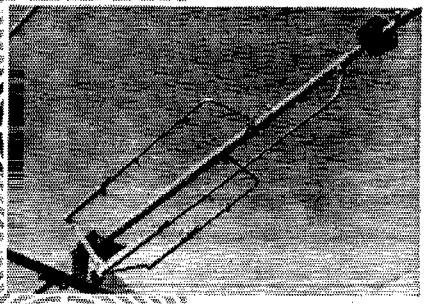
69.50

The world's champion, the finest, highest gain rotatable array: the 5-element Trap Tribander. Heavy duty construction. Uses 36', 2x3" rectangular aluminum boom. F/B Ratio: average 25 db. Forward gain: average 12 db.

395.00

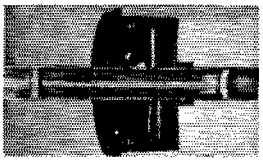
SWR CHART FOR HY-GAIN TRIBANDER MODEL 152T3 TUNED ON PHONE FREQUENCIES





Perfect 1:1 SWR

The new, pre-calibrated Triaxial Gamma Match System with coaxially formed reactance cancelling capacitor built-in, makes possible for the first time a perfect 1:1 SWR on a 3-band antenna system. Exceptional band width maintains low SWR over the entire band. Coax connector for 52 ohm feed line included. Gamma rod and capacitor section calibrated for exact setting over each band. No external baluns, antenna tuners or matching networks needed. The Triaxial Gamma Match System completely obsoletes the "old fashioned" split dipole feed, maintaining perfect balance. Used exclusively in the hy-gain 3-band antenna, this system is factory pre-assembled and weather sealed.



Automatic Switch Action!

Streamline, silhouette traps, only 3" in diameter, make possible for the first time a really efficient multi-band antenna system, acting as insulator at its resonating frequency, but allowing radio energies of other frequencies to pass, isolating various sections of the antenna. Mechanically and electrically stable, the hy-gain traps are hermetically sealed in a polyethylene cover and cap. Hi-Q coils wound on large 3" diameter styron form. Capacitor dielectric is solid styron. No air dielectric.

No Bulky Sleeves!

The hy-gain lumped constants trap circuit accomplishes decoupling in the smallest, most efficient, most weather-proofed manner possible. Housed in a tight, 3" unit, they eliminate moisture, dust and breakdown. Compare this with trying to weatherproof an eight foot sleeve. The creative design of the hy-gain traps guarantees less total wind loading area than any other full-sized 3-band beam in existence.

Power Traps!

The new traps now take 2 KW (P.E.P.) RF Power, enough to handle the most modern high powered linear amplifiers, more than any other tribander now made.

hy-gain traps are guaranteed for the life of the beam!

TOP TRADES • COMPLETE STOCKS
PERSONALIZED PROMPT SERVICE

Only 10% DOWN

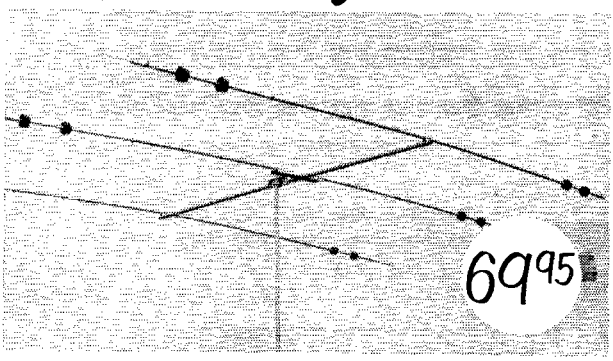
and Introducing the **NEW...**

hy-gain

LIGHTWEIGHT, MINIATURE 600 WATT

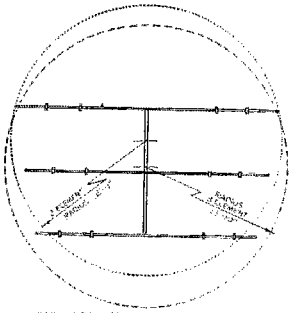
Mini-Tribanders

Small-sized, 3-band beams (10, 15 & 20M), with single feedline



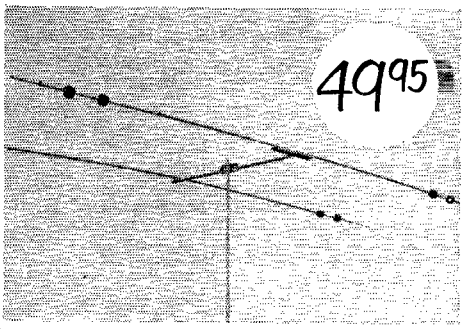
The 3-Element Mini-Tribander is extremely lightweight, weighing only 39.8 lbs. With a turning radius of 13 ft., 10 inches, this space-saving beam may be installed almost anywhere, yet boasts most of the features of the hy-gain full-sized trap tribanders.

The world-famous hy-gain Trap Tribanders which most efficiently couple energy into space on 10, 15 & 20M with a single feedline, have now been reproduced in the smallest practical size consistant with efficient operation, allowing installation in the smallest city lots. Light weight, they can be easily rotated by most TV rotators. They are factory pre-tuned, with dimensions given for quick, easy assembly in a matter of minutes.

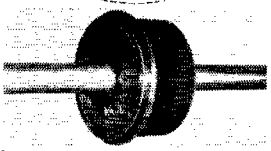


Turning Radius Sketch

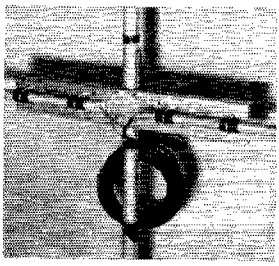
The short turning radius of hy-gain's Mini - Tribanders facilitate installation almost anywhere. Note schematic at left.



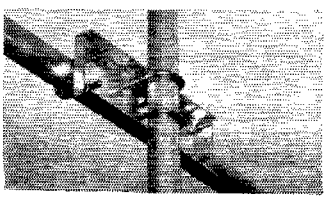
The 2-Element Mini-Tribander is practically a feather-weight. Weighing in at only 33.8 lbs., it is easily one-man installed in the shortest possible time . . . and nearly anywhere, with it's turning radius of only 12 ft., 11 inches. Note its top features at its minimum cost.



Designed especially for the Mini-Tribanders, these new insutraps are extremely small and lightweight, weighing only 3 oz. Factory pre-set, sealed and weatherproofed, traps never need be opened, since no adjustments are necessary. Will take 600w AM, 100% modulated. Hi-Q airwound traps are enclosed in weatherproof, carbon activated polyethylene cap and covers. Capacitor dielectric also solid polyethylene. No air dielectric. The only weatherproof traps in the industry, they are guaranteed for the life of the beam. Compare this advanced design with the heavy metal-enclosed non-weather protected, low efficiency traps.



Split Insulated Dipole Feed with coaxial choke results in SWR of less than 2:1 on all bands. No adjustments needed; simply attach 52 ohm feedline to dipole terminals. Heavy 12 ga. hot dipped galvanized steel channel and polyethylene insulated U-bolts support hy-gain's driven element. Compare this construction with the flimsy, aluminum supports using self-tapping metal screws.



Boom is 1½" dia. by .065" wall thickness, hot dipped galvanized steel. Elements are 6061T6 high strength aluminum alloy. Telescoping sections of 1", ⅞", ¾" sizes are used. Compare this with small diameter, light wall tubing elements. High quality, galvanized and iridite treated hardware used throughout.

LEO I. MYERSON, WØGFQ

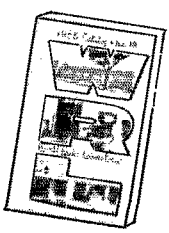
Leo says:

"HONESTLY, FELLOWS,

HERE'S THE FINEST TRI-BANDER BEAM IN THE INDUSTRY . . . SEND FOR INFORMATION ON THE COMPLETE HY-GAIN LINE!

AND

World Radio's **FREE** *1958* CATALOG"



Station Activities

(Continued from page 82)

has been appointed OPS. K2RHQ now is on s.s.b. with a 10B. BZN now has the Thunderbolt on s.s.b. SSC worked WAS in 24 hours. The IBMARA is constructing a satellite tracking system. MTA is in charge of antenna construction. K2LGJ has received 25-w.p.m. CP. Big news in the Buffalo Area is that K2DGU passed his General Class exam. Lynn passed his code test using his foot on the key. K2UZJ got WDEL CP. EUP earned his WAS. ATC has built a modulator. K2MLT and K2LHK have set up an RTTY link between their shacks on 6-meter AFSK. CTA and K2RAA are constructing 2-meter tranceivers. The RAWNY will start a club project, building 6-meter transmitters and receivers under the direction of PPY. CNT now has 227 countries confirmed, SAW has 218, TXB has 222, TQR has 195 and QJM has 208. These DXers all belong to the Rochester DX Assn. K2BUK has gone 6-meter mobile in a Volkswagen. K2OGG edits the college net modulator. Said net meets on 3895 kc. Fri. at 1600 DST. The RAGS is having its picnic Aug. 24 in the Longbranch Area at Onondaga Lake park. The RARA is having its picnic July 20 at Canfield Woods Pavilion at Mendon Pond Park. These are family affairs —everybody is invited. GBX has been appointed EC for Erie County. The North Chautauqua ARC held its annual banquet with more than 150 people present, including your SCM. Clubs in the section are invited to nominate candidates for appointment as OO. All stations, please note that Form 1 activity report cards are available from ARRL Hq. for the asking. I would be pleased to get a report from your station. Traffic: (Apr.) K2SIL 537, KIR 515, IYP 346, RYH 287, W2RUF 151, YJN 149, K2GWN 74, UZJ 74, RTN 71, JBX 66, GQU 62, UYK 42, W2RUT 36, OE 29, FEB 27, K2MES 22, W2RQF 22, K2HUK 11, LGJ 9, RHQ 8, UNZ 8, W2BLO 7, K2RIT 3. (Mar.) K2TQC 26.

WESTERN PENNSYLVANIA—Acting SCM, Anthony J. Mroczka, W3UHN—SEC: OMA. RMs: GEG and NUG. PAMs: AER and TOC. The WPA Traffic Net meet Mon. through Fri. at 1900 EST on 3585 kc. A new appointee is IWT as OO. Congratulations to KN4DHN on receiving his ticket, since he overcame a physical handicap of being blind. KUN is bothered with ITV. KZF got his General Class ticket. LXU transmits Official Bulletins on 3585 kc. at 1845 EST. NUG is building a new rig. YDK is installing the rig in the trailer. McKean County C.D. has seven 6-meter stations. LMM now has 199 DX stations confirmed. New Novices in Cambria County are KN3DOI and KN3DOM. Cambria County RACES now has a 10-meter c.w. drill on Thurs. at 1930 EDST. QJJ was main speaker at the ATA May meeting in Pittsburgh. LUX is putting up a new DX antenna. The Coke Center RC is working on 160 meters. Up Erie way: AU is recuperating after a short visit to the hospital: WDK has a new '58 station wagon; UQE and FVH are on 6 meters; K3CLC has a new 3-brand beam antenna: WDK now is Erie County Radio Officer; CSM, UCZ, JOQ, JTF and MED provided a 6-meter link for the Sports Car Event. YCD has a new Globe Champion. 8PHJ has worked ten stations in the Pittsburgh Area on 10-meter ground-wave, a distance of over 300 miles. The Breeze Shooter's Net on 10 meters has a roster of approximately 500 stations. The Etna Radio Club toured TV station WQED. K3BWW shortly will operate ham TV on 441.25 Mc. NVM has 175 countries confirmed for DXCC. The Pennsylvania QSO Party held during April had over 250 individual stations participating. The Western Pennsylvania DX Society meets the 1st Thurs. of each month at the transmitter site of WQED at Pittsburgh. GJY is building a new 500-watt final using a new RCA-7094. WGH works plenty of good DX using a DX-100 and a three-element beam on 14 and 21 Mc. BSF has a new kw. final on 20 meters. RTB is closely behind with a new kw. final almost finished. ZAO can be heard on 14-Mc. c.w. and s.s.b. chasing foreign exhalers to build up his DX total. Twenty minutes after RBE finished moaning about not receiving his YK1AT QSL card to add to his DXCC collection, it was in his hands via GJY. CRA, BSF, CXX and RTB took in the Dayton Hamvention. Traffic: (Apr.) W3WIQ 1328, LXU 322, BZR 141, UHN 62, TOC 11, GJY 10, WRE 8, EPM 6, KUN 4, LOD 1. (Mar.) W3NUG 3, PDY 2.

CENTRAL DIVISION

ILLINOIS—SCM, Edmond A. Metzger, W9PRN—Asst. SCM: Grace V. Ryden, 9GME. SEC: HOA. RM: MAK. PAM: RYU. EC Cook County: HPG. Section Net: ILN, 3515 kc., Mon. through Sat. at 1900 CDST. New appointments: TOE, as OES, K9GUA, as OPS. New Novices heard were KN9LVB and N9LVC. The Sangamon County RACES program was confirmed by Battle Creek and an extensive training program was started in Springfield. ZL1AKL-G3AYL is now working at the Illinois Condenser Co. in the Windy City and would like to make new friends with an eyeball QSO. SKR is rebuilding his receiver and hopes to bring in the DX. UVM is back hamming after a Minnesota vacation. TZN is now active in his new QTH, MAK, who recently acquired a new HQ-110, reports that the ILN cleared 405 messages in 30 sessions. K9CVU received his General Class ticket. K9EUF, K9BES and RYU are 6-metering with Gonsets. They, with the rest of the Rock Isalnd County RACES gang, demonstrated at their local Scout A Rama program. K9GUA is taking operating time off to refurbish his shack. ASQ, QKE, K9ANI and KN9IEB participated with the Evanston and Chicago Civil Defense Scout Drill in a mock bomber explosion. QST's Technical Asst. 1JEQ, was guest speaker at the Apr. 25 Hamfesters (Chicago) meeting. K9AMD hit the pages of *Popular Electronics* with her first full-dress, paid-for, illustrated article. BON finally has succumbed to s.s.b. K9EDI will QSO from Pensacola while on vacation. NIU reports that the Starved Rock Radio Club is progressing rapidly with hamfest plans. K9GSG and K9JIN are on the air with new 15-meter three-element beams heading for DX. PCQ is plagued with antenna problems. Not being allowed an outside wire, he is using an 8-ft. indoor vertical. We welcome K9MHW to this area. KN9JHR is awaiting her Technician Class license and has equipment ready to get on the 6-meter band with the OMs. CSW and the North Central Phone Net report a traffic count of 638 for the month. ILN, RLH and FTJ are newcomers to mobile. PSP reports that the May 6-7 Operation Alert C.D. Drill was very successful and wishes to thank all who participated. IFA, PBI, NN, HPG, ADN, FKC, TZN, K9GFV, K4AWV/9 and PDC/4 were participants in the last Frequency Measuring Contest sponsored by the League. The St. Clair Amateur Radio Club participated in the recent storm in Fayettesville and assisted the local c.d. and other authorities. BA, RQR, UWP, TCX, NXY and JZQ were at the helm manning the radio operations. Reports have been pouring in from the various clubs regarding Field Day to be held June 28 and 29. Be sure to appoint a publicity chairman so that newspapers and other favorable write-ups can be placed to the amateurs' advantage. GMK, IMG, XOI, K9KLA and K9KLU made solid 6-meter phone contacts with Africa during the recent band openings. EXP and his CARCC (Chicago) project receives our orchids for the month. Club members are helping to teach code and theory to the polio victims at the Illinois Research Hospital. DO, SIM/9, PCQ and FAW made BPL. Traffic: (Apr.) W9DO 1134, SIM/9 600, MAK 597, K9GDQ 374, ERH 313, W9WBE 205, K9EDI 176, W9PCQ 176, FAW 98, IDA 81, AXL 73, CSW 69, K9JIN 61, W9VEY 48, UVM 24, BUK 17, TZN 12, RYL 10, PRN 6, SKR 4, YYG 4. (Mar.) W9MAK 369, ERH 168, K9GVD 139, W9UVM 6.

INDIANA—SCM, Arthur G. Evans, W9TQC—Asst. SCM: Seth Lew Baker, 9NTA. SEC: CMT. PAMs: BKJ, KOY, SWD and UXK. RMs: DGA, JOZ and TT. The Ind. Radio Clubs Council meeting was held Apr. 27 with about 35 clubs represented. The Hoosier Amateur Womens' Klub, Michiana V.H.F. Club, Owen County ARC, Standard ARC (Whiting) and Vanderburgh AR Emergency Service were voted into membership. Please send information on all nets to KN9IXD or TQC for the new Indiana Net Directory. EJW was awarded the Hoosier Courtesy Award. The Michiana ARC elected BYY, pres.; CSV, vice-pres.; K9AJC, secy.; ZGC, treas.; WTY, corr. secy.; ZZA, act. mgr.; GFA, dir. and K9AUI, chief op. The Double Circle RC's officers are CKD, pres.; LCL, vice-pres.; and Paul McAllister, secy.-treas. AMW is working out on 160-meter mobile with 8 watts. JIY and MHP are using m.c.w. on 6 meters to give some of the gang code practice. KSR is using a B&W 5100. K9GGC erected a 60-ft. tower for his 32-element 2-meter beam. DSC is building a 6-meter rig for the Double Circle station. VAY has f.m. equipment for 147.3 Mc. EJC for Miami Co., LNC for Vermillion Co. and RTH for Jackson Co. report approved RACES plans. RDG built a 6-meter portable rig to operate on 6 v.d.c. or 117 a.c. Listen for BKJ who will leave July 1 for a 60-day trip to Yellowstone. SWD reports 1FN traffic as morning 172 and evening 403. TT reports RFN traffic as 75. EHZ reports CAEN traffic as 59. JOZ reports QIN traffic as 178. QIN meets at 1930 CDST on 3656 kc. daily. Don't forget the IRCC Hamfest at Tippecanoe County Fairgrounds, Lafayette, July 20. Traffic: (Apr.) W9NZZ 729, JOZ 448, VAY 306, ZYK 294, TT 189, ETM 171, K9AYI 155, W9BDG 152, K9EOJ 148, W9EHZ 123, SWD 102, RTH 100, TQC 96, K9HMN 57, GBB 52, W9DGA 40, DOK 39, WHL 39, SNQ 34, BKJ 33, GJS 33, CC 30, BUQ 29, K9LEJ 28, W9VNV 27, QYQ 26, NTA 22, CDW 19, EJW 19, K9HGF 18, W9ENU 17, WID 17, YYX 17, SVZ 13, BRW 12, QR 11, HRW 8, MHP 8, MMY 8, K9BSU 6, DWK 6, EOH 6, W9HUF 6, MLF 6, PQZ 5, K9HDY 4, W9HXR 4, 1MIU 4, K9CFG 3.

(Continued on page 96)

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W9AMW 2, K9GSV 2, W9WAU 2, AB 1, KN9IXD 1, W9JZV 1, STC 1, WLY 1. (Mar.) K9BSU 32, DGO 13, W9WTY 10, LGD 5, PPS 5.

WISCONSIN—SCM, George Woida W9KQR—SEC: YQH. PAMs: NRP and AJU. RMs: K9AEQ and W9FFC New appointees: DYB, UOI and NUC as ECS; K9ELT as OPS; K9HIZ as OO Class III and IV. K9ELT has WAC. RQM is at 182 confirmed with UF6KPA and XW8AG. OTL has a BEN certificate now and is teaching Novices. GIL is chasing DX with a new 54-ft. tower. PJT is using a new Vibroplex for his OBS skeds. YQG and QYW are now DXCC. FDX and GIL completed WAZ. DXer DYG is active on WIN, UTL and 9RN. NLJ promises another DXpedition in Sept. CCO visited VK9YT (a former Wisconsin operator) on Manus and VK2OQ. The BARC of Janesville had an exhibit of homemade gear at the YMCA Hobby Show. GFL, OO Class I, had an average error of 4.9 parts per million with 3 frequency measurements in the Feb. F.M.T. NHE has a 250-watt 6-meter final. K9LMX, former operator at Clark Field, P. I., is now an active WIN member. KKM, another WIN operator, was a former Navy radioman. GPI, DYG, SIZ, KQB, NRP and K9GDF gave talks and demonstrations on traffic-handling at the MRAC meeting called "Traffic Night." K9DTK has become a very active phone traffic operator as a member of the BEN. Dunn County Radio Club members YCY, IYF, YFZ and WDK held successful c.d. drills. K9EVB has a new vertical for DX. K9AEQ handles the 9RN NCS duties Tue. nights. YQH is busy meeting with ECs getting c.d. operations in order. LVC has a new 4 x 150 coax final and 256-element colinear array for 432 Mc. The Fox River Emergency Net operates on 50 Mc. Mon. and Wed. at 2100 CST. HCR and LSV made DXCC. There is a new amateur club at Lake Geneva. IXA is busy with TV service. Naval Reserve, Cub Scouts and a new shack. KQB sent out his first phone contact QSL after 28 years on c.w. to K9ELT. Appointments are available for all but OBS. In the MRAC's '57 Wis. QSO Party, chairman FDX announced the awards at the Wausau Hamfest. Top score was RQM 8958, top phone only K9CAN 5270, top c.w. DYG 1035. Traffic: W9CXY 1359, K9GDF 557, ELT 176, W9DYG 75, SAA 58, QJW 46, K9DTK 37, W9MWQ 18, CBE 17, SIZ 17, KQB 16, ERW 14, OTL 14, GIL 4, NHE 4, PJT 4, K9IQO 3, W9RTP/9 3, MUM 1.

DAKOTA DIVISION

NORTH DAKOTA—Acting SCM, Arnold L. Oehlsen, W9YCL—The North Dakota Phone Net meets on 3845 kc. at 1800 CST. Net control stations are Mon. KØCCA; Tue. KØCNC; Wed. YCL; Thurs. KØAIB; Fri. and Sat., KLP. Since many of the net members are engaged in farming, net activity is suffering its usual seasonal drop in the number of check-ins. Any North Dakota amateur interested in net activities is invited to participate. We urge that all items of interest be forwarded to the SCM. Traffic reports may include traffic handled on any net or at times other than an organized net activity. Traffic: KØCNC 83, W9YCL 16.

SOUTH DAKOTA—SCM, Les Price, WØFLP—Asst. SCM: Gerald F. Lee, ØYKY. SCM assistants: FKE and NEO. SECs: YOB and GOE. PAM: SCT. PAM for 2 meters: RSP. RM: GWS. The S.D. 40-Meter Phone Net reports 26 sessions, KØAPZ 3, EXX 1, KØLXF 19, SCT 1, NNX 2; QNI 489, high 28, low 14, average 22.653; traffic 90, high 9, low 0, average 3.461; informals 52, high 5, low 0, average 2. The S.D. 75-Meter Phone Net had 34 sessions. ZLB 4, GWA 5, KØCRD 4, CTZ 1, EXX 2, SCT 18; QNI 1002, high 40, low 15, average 29.47; traffic 82, high 8, low 0 (6 times), average 2.41; intormals 100, high 9, low 0, average 3. YVF will be Fri. NCS, replacing GWA, who has moved to Sun. night. ZLB still is Sun. morning NCS with KØCRD Mon. night. The WX Net reports 26 sessions, QNI 388, high 19, low 12, average 14.9; QTC handled 397, high 21, low 12, average 15. NNX experienced WTI (windmill tower interference). When transmitting, his voice could be heard coming from up in his windmill tower in the farmyard. DVB and EQV are busy with schedules with Hawaii for servicemen from Lead. KØGDS has added 40 to 75 meters as workable frequencies. KØEWH is back on after having the bugs taken out of the DX-35. SCT and KØGDS were visited by KØMDF and KØJOK, students at U. S. D. The WX Net is officially closed for the summer. Traffic: WØZWL 647, SCT 536, KØBMQ 180, WØDVB 97, KØAIE 30, HSW, 26, WØZLB 21, KØBQR 18, WØFLP 16, KØLXF 14, WØSDE 10, NNX 8, KØINZ 2, WØOFP 2, KØKLR 1.

MINNESOTA—SCM, Robert M. Nelson, WØKLG—Radio club picnics are scheduled as follows: Mankato, July 27; St. Cloud, Aug. 10; Minneapolis, Aug. 17. Inquire on the Minnesota Nets for exact locations and further details. Attend them all if you can! KØGCN, KØIDV, KØJCF, KLG and QDL made BPL. OPX's daughter Pat got her ticket. Her call is KNØPKR. KØOWD is a new ham at Duluth. He works for WDSM-TV. KNØMPK, of Red Lake Falls, has taken his Conditional Class exam. ALW and KØIKR have received their WAS awards. Thanks to the help of SFF, the following hams are on the air at Crookston: KØGVS, KNØJWK, KØLRT and KNØMVH. The St. Paul Mobile Radio Club (REA) had a successful drill with fixed stations set up at Redwing, Mankato and Hudson and used 10-, 6- and 2-meter phone and 80-meter c.w. A nice report from PHD, Northwestern Minnesota EC, indicates a fine AREC organization is taking shape there. WDW has moved to Los Angeles. His call is now K6QXC. KØGCN has received the Traffikers Club 1000 certificate. DQL, CGK, KLG and KØGCN were supper guests at OMC's in Hutchinson. KØEOW has been reelected secretary of the Lake Region Amateur Radio Club. Other offiers elected are AAU, pres.; KØGCM, vice-pres.; KØGLS, treas.; and LUP, act. chairman. KNØLBA passed the General Class exam and is active on MJN. KØJCF raided QDZ's shack and with the loot built himself a neat foot-switch. Traffic: (Apr.) WØKLG 515, KØGCN 273, IDV 260, WØQDL 168, KØJCF 133, DNM 93, GVX 87, KEJ 54, WØRQJ 53, DQL 50, PET 33, UMX 32, OJK 30, TCK 29, WMA 29, VEM 28, KØDIA 27, KNØORK 24, WØALW 20, FGP 20, QVR 20, KØAEE 18, EPT 17, WØQDZ 17, OJG 14, BUO 12, KFN 12, QVQ 12, KØEWC 11, WØOPX 11, UCV 11, IRJ 10, KØKYK 10, WØVBD 10, LST 9, KØGQU 8, WØWCD 7, KØLBC 6, WØPBI 6, KØISV 5, KNØMIJ 4, KØIZD 3, KNØLBA 3, KØGKI 2, WØRXL 2, KNØOBM 1. (Mar.) WØPET 10.

DELTA DIVISION

ARKANSAS—SCM, Ulmon M. Goings, W5ZYY—SEC: K5CIR. PAM: DYL. RM: ZSJ. We were glad to see RACES really active for the first time in Arkansas during Operation Alert. YUZ did a very nice job as NCS. The club at Russellville has received the call K5PMP. We are very sorry to hear that K5LMS, GOF and OHW have moved out of the State. We enjoyed the 'Fest held at Eureka Springs and was glad to have seen so many there. K5MAD has a new 20-A, a new Thunderbolt final and a new 20-meter beam and tower. The Osceola Amateur Radio Club held its regular monthly meeting recently and received three new members. K5KQD has purchased a new Valiant. We would be glad to have more hams send in traffic reports and station activities for this column. The Arkansas Emergency Phone Net meets Mon. through Sat. at 0600 on 3885 kc. The OZK C.W. Net meets Mon. through Fri. at 1900 on 3790 kc. We invite participation in these nets. A new ham in Jonesboro is KN5QCC. Traffic: K5FJA 1308, W5SZJ 176, BYJ 73, K5HSO 49, W5WZN/5 49, K5IPS 26, W5WSM 13, KRO 11, K5KAC 10, W5CEU 8.

LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—K5GPB has been appointed an OPS. TVW has been appointed OO Class I. He made 14.2 parts per million in the F.M.T. EA reports that LAN, the Louisiana section of the NTS, meets nightly at 6:30 P.M. CST on 3615 kc. SWG put up a new Mosley beam for his HT-32 and grounded-grid 813. K5KLA got an invitation from F.C.C. because of TVI. EKF now answers to RN5 and LAN. USN is getting ready to run RTTY on 7100 kc. for Official Bulletins and ragchews. CEZ continues to pile up high totals in traffic-handling. K5AGJ is the proud owner of a CP-25 certificate. FYZ reports activity on c.d.-RACES communications and is acting as chief engineer for Webster Parish. CEW, QH and BV visited EGU at Alexandria. The SCM visited the Algiers Radio Club and had a most enjoyable time. K5JJY reports that the radio club at Jesuits High is doing FB and is in its second year with nine operators and four beginners. EIH made 6.2 p.p.m. in the last F.M.T. For a barefoot 75A-4, that's pretty good. Please mail your reports about the first of the month so that material will be on hand in time for the column. The Lake Charles Radio Club held a very successful hamfest on May 3 and 4. Sorry that I could not make it; the Red River in North Louisiana was very high and flood conditions over the State took me into the field. Traffic: W5CEZ 394, K5AGJ 51, W5EKF 48, TVW 30, EA 14, VAR 10, EA 8, USN 8, KLA 5.

MISSISSIPPI—SCM, John Adrian Houston, sr., W5EHH—K5BKK, in school at Alexandria, Va., took the 1st-class radiotelephone exam. FPI reports the Hattiesburg Radio Club has been reorganized with UHT, pres.; MRH, vice-pres.; IM, secy.; K5CHZ, act. mgr. DEJ reports the Meridian Amateur Radio Club, recently reorganized, has 27 members. Meetings are held the 1st and 3rd Fri. nights. DEJ, Meridian Club pres., says activity in the area is on the upswing. KN5QDJ and KN5QDM are new in the Cleveland Area. K5DLN, K5EEC, K5HYO, K5IEW, K5HPV, K5HUE, K5LWP, K5LWQ and UXJ, of the Cleveland Area, are now members of Air Force MARS and are working on a 2-meter project. UXJ has two new towers with a 75-meter an-

(Continued on page 98)

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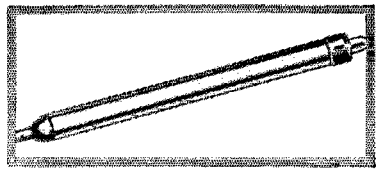

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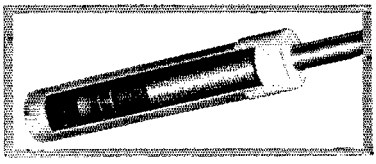

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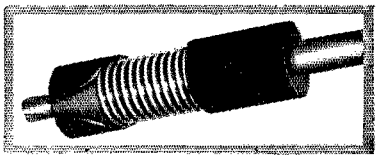

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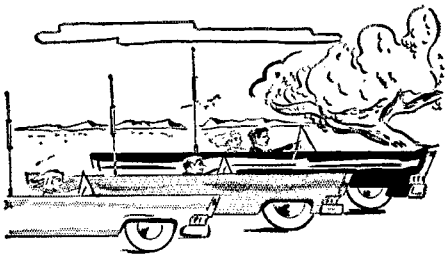

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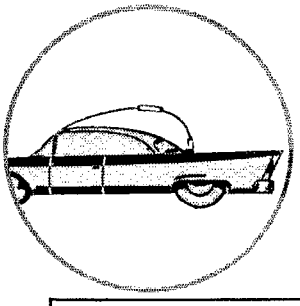

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tenna between them. The new Biloxi Amateur Radio Club's officers are SPX, pres.; UOO, vice-pres., QYX, secy.-treas., TRF, act. mgr. Other charter members are GIA, ISV, RWV, 4ZGR, K5LUX, K5MXR, K5LGB and YOZ. Meetings are held Tue. nights at the recreation building of the Methodist Assembly. The club announces a hamfest to be held Aug. 24. Traffic: W5FPI 540, JHS 32, K5IUE 21, DFD 19, MFY 10, CFG 6, W5NRU 6, K5EXG 4, GRV 3, MOH 3, IOG 1.

TENNESSEE—SCM, R. W. Ingraham, W4UIO—SEC: PRV. PAM central time zone: UOT. PAM eastern time zone: PAH. V.H.F. PAM: ZZ. S.S.B. PAM: VQE. RM: NHT. Congratulations to VOS on his DXCC Award. K4KYL reports 6-meter openings and that he is building a 220-Mc. station. New officers of the Kingsport Amateur Radio Club are K4BTM, pres.; CBU, vice-pres.; PAH, act. mgr.; TYV, secy.-treas. The Oak Ridge Radio Operators Club will sponsor the Crossville Picnic to be held July 20 at Cumberland State Park. PL and RCF earned BPL with FB totals. VQE reports an average QNI of 21 for the S.S.B. Net. UVU announces his marriage to K4JJN. CXY, Oak Ridge EC, reports a good AREC plan. Traffic: W4PL 1262, W5RCF 1217, W4VJ 97, SCF 73, K4ONQ 70, W4IY 54, PFP 37, UVL 32, K4LLB 29, W4PAH 28, NHT 25, UIO 19, DMS 17, K4KYL 14, LTA 14, W4RRV 8, CXY 7, TYV 7, WGJ 6, K4GFL 4, W4HUT 4, UVU 2.

GREAT LAKES DIVISION

KENTUCKY—SCM, Albert M. Barnes, W4KKW—SEC: JSH. RM: AIS. PAMs: K4ECJ, K4LOA, OGY and SUD. I hope to meet every active Kentucky ham at the Dix Dam Picnic July 13. KPN cleared 225 messages in 29 sessions. The PAMs are looking for volunteers for NCS. V.H.F. PAM K4LOA is doing a fine job organizing the Kentucky Six-Meter Net with help from K4HTO, NCS of the eastern section. The Owensboro Amateur Radio Club has been very successful with its code and theory class held in Owensboro Tech. High School. CSN has a windmill tower for 2 and 6 meters. KYN cleared 456 messages in 56 sessions. New stations QNI are RPZ, K4LHQ, K4LHR and K4KIL. The Kentucky Novice Net (KNN) will operate as a training net. K4PGF is the new KNN manager. Congrats to K4CC on receiving the Dayton Hamvention Merit Award! KPN certificates were sent to NUQ, K4MHM and K4PNA. K4OCN is a new OO. K4SPJ is changing the rig. K4DLI is back at the home QTH. YOK/4 worked DL4AAS. NRH is busy as OBS. K4OAH needs help to get on 6 meters. QCD/8's new QTH is RFD 2, Box 382, Vienna, Ohio. HSI moved to Cleves, Ohio. K4KIN is on 2 meters. K4MMW is doing a great job as manager of morning KPN. CDA will have parts left over. K4JOP has audio trouble. KKG was bitten by s.s.b.! JUI is covering 11 ham bands. BAZ has a new Johnson Valiant. The Kentucky S.S.B Net (KSN) is perking along under K4ECJ, PAM and manager, with NGN, K4HBF and NOW as NCSs. Traffic: (Apr.) W4ZDB 303, K4AIS 276, W4KKW 249, BAZ 222, K4CSH 156, OAH 136, KIO 132, W4RPF 126, HSI 111, K4MHM 97, W4JSH 83, K4WBG 71, KIN 70, PGF 65, MMW 50, CC 50, W4CDA 42, NSZ 41, K4JUP 40, KIS 36, W4KKG 20, MWX 17, K4HOE 12, W4SZB 12, NGN 11, JUI 6, SZI 2.

MICHIGAN—SCM, Thomas G. Mitchell, W8RAE—SEC: YAN. Don's reports indicate a healthy growth in AREC activities, thanks to the fine cooperation he is receiving from both old and new members. Your continued support will mean continued growth of the AREC in Michigan. BPL certificates were issued to WGU and ADD for April traffic totals. The February E.M.T. resulted in participation by the following section members: K8s AOA, CXI and GFR and W8s AYY, BKV, BVY, DD, DJN, HPR, QMI, TZD and WQF. All participants held their average errors within the minimum accuracy required for qualification as Class I Official Observers. Congratulations to all on the turnout as well as the results. Congrats also are in order to the GRARA for the fine job of staging the convention. The Shiawassee ARC meets the 1st Wed. of each month at the Owosso Red Cross Headquarters with UQQ, pres.; and CDW, vice-pres. SWF again is active with a Viking Valiant. FX is working on a suitable rebuttal to the "roasting" accorded to him during the QMN Dinner in Grand Rapids. Those in line for the treatment will be sure that it will be served "Tate style." The Muskegon gang is starting hidden transmitter hunts to be held on the 2nd and 4th Fri. of each month. They also are busy fitting their new 6 x 6 trailer for emergency communications work. EGI felt like rare DX during the April CD Party and had no trouble finding stations looking for Michigan QSOs. He piled up 14,040 points in three hours of operating! Guess he could have used some help from the rest of us. CUP says that the "Party Line Net" (3883 kc. 1000 to 1200 Sat.) does much to hold the Detroit Edison Radio Club together. This sounds like a good idea for others who

(Continued on page 102)

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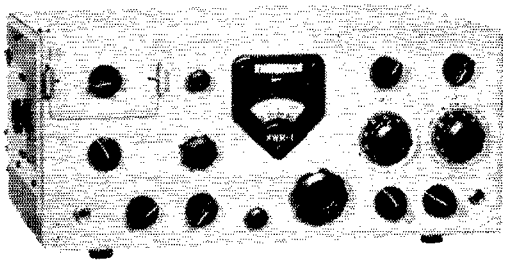

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KWM-1 Net Price $820.00
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V40 vertical for 40, 20, 15, 10, 6 meters.....$14.95 ☐
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Switch from one band to another. Operate anywhere from 6 to 160 meters. Work the DX on whatever band is open.

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Less than two minutes is all you need to put your vertical together. No special tools or electronic equipment required. Full instructions given.

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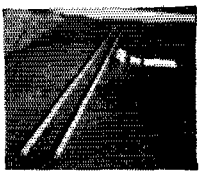

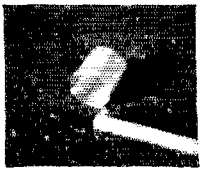

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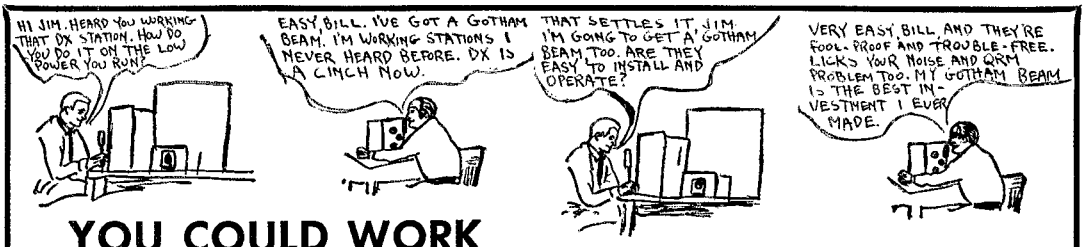

YOU COULD WORK WONDERS IF YOU HAD A GOTHAM BEAM!

Study these specifications—compare them—and you too will agree, along with thousands of hams, tha GOTHAM beams are of the best!

TYPE OF BEAM. All Gotham beams are of the full half-wave plumber's delight type; i.e., all metal and grounded at the center. No wood, tuning stubs, baluns, coils, or any other devices are used.

MORE DX CONTACTS

GAIN. Gotham beams give the maximum gain obtainable. Our 2-element beams give a power gain of four (equivalent to 6 db.); our 3-element beams give a power gain of seven (8.1 db.); and our 4-element beams give a power gain of nine (9.6 db.)

THOUSANDS IN DAILY USE

MATCHING. Matching of the transmission line to the beam is extremely simple and quick. No electronic equipment or measuring devices are required.

ALCOA QUALITY ALUMINUM

ASSEMBLY AND INSTALLATION. No special tools are required for assembly and installation. Entire job can be done by one man in less than an hour. Full instructions are included with each beam.

CONSISTENT PERFORMANCE

MAST. Any Gotham beam can be mounted on a simple pipe mast. Diameter of the pipe should be between ¾" and 1⅝".

YOU WILL WORK THE WORLD

STANDARD AND DELUXE BEAMS. Standard beams in the 6, 10 and 15 meter bands use ⅝" and ¾" tubing elements; the deluxe models for these bands use ⅞" and 1". In 20 meter beams, the standard has a single boom, while the deluxe uses twin booms.

TRIBANDER BEAMS

6–10–15 TRIBANDER.....$39.95
10–15–20 TRIBANDER..... 49.95

Do not confuse these full-size tribander beams with so-called midgets. The Tribander has individually fed (52 or 72 ohm coax) elements and is not frequency sensitive, nor does it have baluns, coils, traps, or other devices intended to take the place of aluminum tubing. The way to work multi-band and get gain is to use a Gotham Tribander Beam.

TWO BANDER BEAMS

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10–20 TWO BANDER..... 36.95
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Each Two Bander has twin 12' booms, and full-size half-wave elements. ⅞" and 1" aluminum alloy tubing, all castings and fittings are supplied. Assembly is easy.

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10–20 TWO BANDER.....	☐ 36.95		
15–20 TWO BANDER.....	☐ 38.95		
TRIBANDER			
☐ 6-10-15	$39.95	☐ 10-15-20	$49.95
2 METER BEAMS			
☐ Deluxe 6-Element	9.95	☐ 12-El	16.95
6 METER BEAMS			
☐ Std. 3-El Gamma match	12.95	☐ T match	14.95
☐ Deluxe 3-El Gamma match	21.95	☐ T match	24.95
☐ Std. 4-El Gamma match	16.95	☐ T match	19.95
☐ Deluxe 4-El Gamma match	25.95	☐ T match	28.95
10 METER BEAMS			
☐ Std. 2-El Gamma match	11.95	☐ T match	14.95
☐ Deluxe 2-El Gamma match	18.95	☐ T match	21.95
☐ Std. 3-El Gamma match	16.95	☐ T match	18.95
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☐ Deluxe 4-El Gamma match	27.95	☐ T match	30.95
15 METER BEAMS			
☐ Std. 2-El Gamma match	19.95	☐ T match	22.95
☐ Deluxe 2-El Gamma match	29.95	☐ T match	32.95
☐ Std. 3-El Gamma match	26.95	☐ T match	29.95
☐ Deluxe 3-El Gamma match	36.95	☐ T match	39.95
20 METER BEAMS			
☐ Std. 2-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 2-El Gamma match	31.95	☐ T match	34.95
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(Note: Gamma-match beams use 52 or 72 ohm coax. T-match beams use 300 ohm line.)

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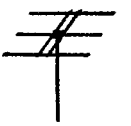
Each has a TWIN boom, extra heavy beam mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.



☐ Beam #R6 (6 Meters, 4-El).....$38.95
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may not be using the idea. Shoot your Field Day stories to me by early July so that report will have some interesting reading. Traffic: (Apr.) W8WGU 307, FWQ 115, ILP 113, K8ADD 110, W8FX 109, OCC 79, YAN 44, K8AXL 43, W8QIX 36, K8CKD 28, W8JKX 18, SCW 14, TBP 14, WVL 11, AUD 10, VYG 10, HKT 9, SWN 8, WXO 8, TIC 6, UCN 5, DLZ 4, DSE 4, EGI 3. (Mar.) W8QQO 41, DLZ 24, RVZ 10, SWF 6, TIN 2.

OHIO—SCM, Wilson E. Weckel, W8AL—Asst. SCM: J. C. Erickson, 8DAE. SEC: UPB. RM: DAE. PAMs: HPP, HUX and HZJ. CSK and K8BPX received VA-JF certificates. The Akron C.D. Net meets Mon. on 51 Mc. at 1900. The T-Can Net meets Wed. on 50 Mc. at 1800. TZO received a Keystone Award and a "50" sticker for the Frankfort RC certificate and bought a new HQ-110. Columbus ARA's *Carascope* tells us PEG discussed "Ham Gear vs Commercial Gear." Antennas were explained to the club by GZ, longwires; QQ, beams; and VWX, verticals. The Cuyahoga County AREC demonstrated amateur radio to a Boy Scout troop, with AEU, JHF, PVC, TFW, K8s DPA and GJW taking part. Also mobiles and fixed stations worked with the Cancer Society Drive with AEU, EIL, ISK, JGQ, LBJ, LHX, NLJ, NRI, OIB, OKE, PVC, SNO, SQU, TFW, TTL, UDL, K8s ADQ, BWH, CQY, DPA, ETF, GJW and JHS taking part. ARO moved to Montana. QIE underwent surgery. INQ has an eight-element Hy-Gain beam and a new tower. The 1958 Ohio QSO Party, sponsored by the Ohio Council of ARC, was won by HPP with a score of 10,065 with HZJ, WFB, IBX, BVF, LVH, FEM, YGR, CPU, WYS, VZE, HTT, HSW, 9VBV/8, EQN, AL, DAE, BDO and KN8JJV following. The Canton ARC won the 1957 Ohio Council SS Contest cup. Wayne County ARC's 1958 officers are WRR, pres.; ITF, vice-pres.; and KN8EOG, secy.-treas. Meetings are held the 2nd Thurs. of the month. KN8HGD is off the air as lightning hit her home. NBK, one of the country's outstanding DX men, told the Massillon ARC how he worked 276 countires with 271 confirmed. The Ohio Council of ARC's 1958 officers are FEZ, chairman; ILC, vice-chairman; VHO, secy.; and AL, treas. The stork brought baby boys to LVH and QLJ and a girl to TTJ. K8JTL is a new ham in Springfield. THV worked ZE2JV on 6 meters. TIF is a Naval air cadet. ARRL General Mgr. 1BUD, Director SPF, Vice-Director UPB and your SCM attended the Springfield ARC's tenth anniversary banquet. The club's *Q-5* tells us of well-organized 2- and 75-meter nets. UPB spoke at the Fort Hamilton ARA's meeting and BVF and CGF have new 80-meter dipoles. Be sure to go to the Greater Cincinnati ARA's Stag Hamfest on Sept. 7. The Dayton Hamvention was another huge success with 2100 registrations, including G2AH and a VP5, over 900 attending the banquet and 317 taking FCC examinations. K8IJW won the Globe King, OTK an NC-300 and Fred Zerkle an SR-34. 4NBY (now K4CC) won the tri-state outstanding amateur award. 3NAL was the banquet speaker. Among those attending were 1BUD, SPF and UPB. April BPL's were made by DAE, GFE and UPH with over a thousand for the third consecutive month. New appointments are QCU as ORS, K8BJL as EC and EXI, KFS, VWX and K2DRF/8 as OOs. Toledo's *Shack Gossip* names TWD as its Ham of the Month. VOZ spent several weeks in a hospital. TZL joined Silent Keys and QOV and SPU are proud grandparents. CTZ is librarian of the Radio Library for the Blind and would welcome any contributions of money and/or magnetic tape to assist in supplying material in radio to the blind of U. S. and Canada. Traffic: (Apr.) W8UPH 1247, K8BPX 369, W8QLJ 192, GFE 178, DAE 161, HXB 112, AL 50, CTZ 47, K8CTQ 39, AAG 38, W8FFK 37, WYU 34, K8BIZ 33, W8GQD 30, LT 28, K8DDG 23, W8YGR 21, SJQ 18, STR 17, DSQ 16, LMB 16, K8HXF 15, W8AAU 13, IBX 10, LGR 10, PLQ 10, K8CCZ 8, HZJ 8, EVT 7, W8BEW 6, LZE 6, STF 6, PSX 4, WTO 4, QCU 3, BUM 2, UHW 2. (Mar.) K8AEC 437, W8LZE 4.

HUDSON DIVISION

EASTERN NEW YORK—SCM, George W. Tracy, W2EFU—SEC: KGC. RM: PHX. PAMs: IJG and NOC. Section nets: NYS on 3615 kc. at 1900, NYSPTEN on 3925 kc. at 1800, ENY (emerg.) on 145.35 Mc. Fri. at 2100, MHT (Novice) on 3716 kc. Sat. at 1300. Congrats to three BPL winners: K2YJL, UTV and YTD. New appointments: AZO and BAC as OOs, K2QJL and UTV as ORSs and K2SQV as OPS. Endorsements: HZZ and K2CXO as ECs, K2BE as ORS. K2PRB reports the Peekskill Club meets bi-monthly and conducts code and theory classes. New officers of the Rip Van Winkle Club in Catskill include EYG, pres.; OXX, vice-pres.; K2YJL, secy.-treas. A new station in Kingston is KN2REF. Ham radio helps—K2PRB says his physics teacher raised his mark when he brought a 6-meter printed circuit rig to school. Our RM, PHX, was QRT for a week because of a flooded basement but there was no damage to the rig. Basic colored TV and its operation was the

(Continued on page 104)

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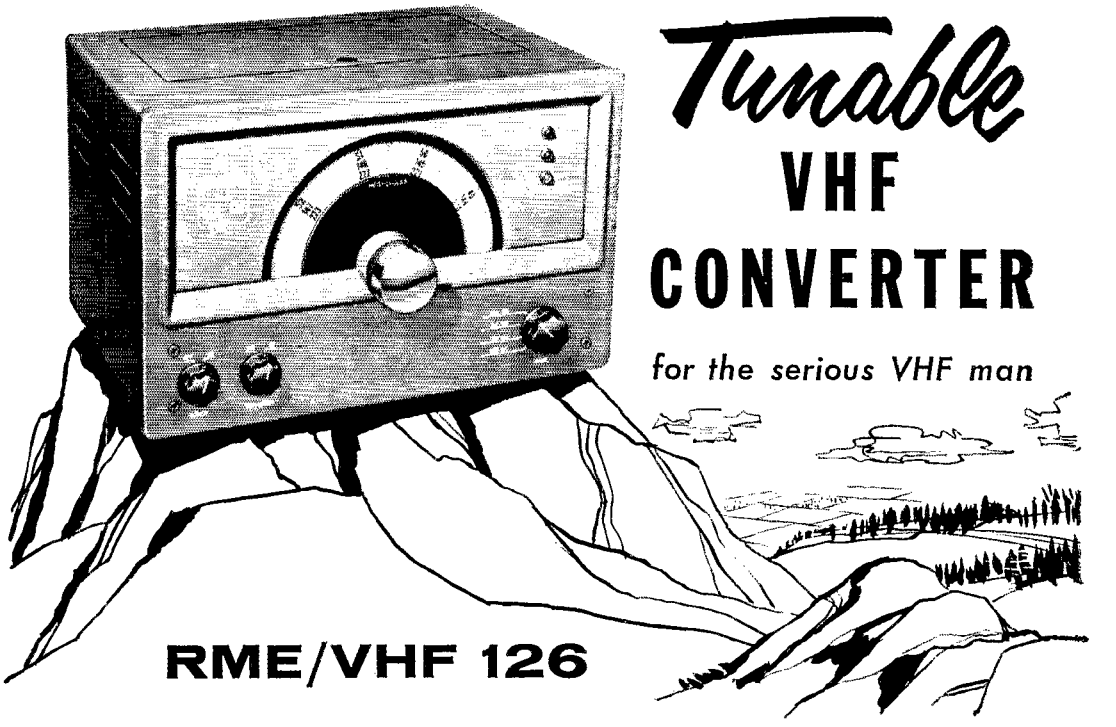

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Division of Electro-Voice, Inc., Buchanan, Michigan

topic at the Apr. meeting of the Albany Assn. The XYL's auxiliary meets the same night as the OMs at members' homes. Only two F.M.T. reports were received for E.N.Y. members on the Feb. F.M.T. All OOs should try their skill in frequency measuring during subsequent F.M.T.s. Remember you get a full personal report of your accuracy from ARRL. Your SCM was a guest of the Rip Van Winkle Club May 2. Could we meet your group this fall? Let us know when and where you meet. K2UNN headed the Hobby Show Committee for display in Schenectady. A late report shows K2OXS made the BPL in March. The Pelham H. S. Club has 5 licensed members and a new Knight 50-watt rig. Traffic: (Apr.) K2UTV 222, HPQ 208, YTD 177, W2ATA 148, PHX 147, K2YJL 139, W2EFU 109, K2LKI 67, MBF 60, VTW 59, UYK 42, HJX 26, HNW 26, KN2CRB 25, K2QJL 20, W2SZ 15, K2CKG 4. (Mar.) K2OXS 118, QJL 26.

NEW YORK CITY AND LONG ISLAND—SCM, Harry J. Dannals, W2TUK—SEC: ADO. RM: WFL. PAM: OBW. V.H.F. PAM: K2EQH. Section nets: NLI, 3630 kc. nightly at 1930 EDST and Sat. and Sun. at 1915 EDST; NYC-LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 EDST; NYC-LI AREC, 3908 kc. Sun. at 1730 EDST; V.H.F. Traffic Net, 145.8 Mc. M-W-F at 2000 EDST. Please note the changes in the section net schedules. BPL cards go to KEB, JOA, K2PHF and QBW. Forty-four stations reported traffic this month! JOA received the first all-c.w. Worked-Conn. Award. VDT is awaiting the cards to complete DXCC. WN2KQX is operating the CD-2 on 144 Mc. at DSC. New licensees at the Oyster Bay HSRC are KN2s PNZ and QPJ. Ex-K2PMI signs K4UZA in Miami. Your SCM contacted 101/6 in San Diego on 10-meter mobile and Cal is looking forward to contacts with the NYC-LI gang. JT1AA gave K2OPJ a phone-only total of 125 countries, with 180 worked both phone and c.w. The Tu-Boro RC will operate BMW/3 from Shohola, Pa., for Field Day. The Radio Club of Brooklyn has formed a net on 29.4 Mc. at 2030 local time. All are welcome. A new SX-100 is in operation at K2RKL. K2TGV is using a Mosley vertical. Your SCM regrets reporting W2s MPC, VOU and K2LPA as Silent Keys. AZA joined the 6-meter mobile gang with a Communicator. K2EQH is mobile with an AF-67. K2LVS, also 3VDN, is stationed at the Coast Guard station at East Moriches and runs an Adventurer. K2BSA has a Globe Scout 680A on 6 meters. A new 10-meter mobile is K2CMV with his Tri-Band and 807 rig. AOC runs 250 watts on 220 Mc. with a 32-element beam. EHA completed an all-band 10-watt mobile transmitter-receiver. A new DX-40 is in operation at K2KRH. K2OEG needs North Dakota to complete his WAS. K2QOA, ex-K8CPE, is active with an HQ-129X and a DX-100. A DX-40 and AR-3 form the station at KN2RHL. K2VST, the Garden City HSRC, is active on 10 meters with a DX-40. New officers of the Columbia U. ARC are K2LWQ, pres.; K2ABA, vice-pres.; K2UDN, secy.; K2LBG, treas.; K2VXX, tech. dir.; and K2JYD, comm. mgr. New members of the Order of Boiled Owls are AZS, ESO, ICO and IRV. K2PTS completed his WAC with a JA-QSO. K2SDY made WAC on phone. New stations heard on 6 meters are AYV and K2s HCT, HSB, IYZ, SYA and TIZ. HQN moved to Bayside. K2CMJ has a Globe Champion active on all bands. UWG is operating s.s.b. on 144 Mc. KN2RBL, a YL, is a newcomer on 2 meters. K2RDP has 70 watts on 144 Mc. KN2OFD runs a DX-20 and an S-38D. K2RBS added a five-element beam to his 8-watt 6-meter rig. K2IHS dropped the "N." K2TSW is active with an RME-4350A and a Globe Chief. K2UVQ added a 10-meter beam to his station. New members of the Levittown ARC are W2s COR and YJD and K2s EYJ, YOZ and ZBA. Your SCM had the pleasure of attending a farewell get-together for K2EQO sponsored by the 6-meter group. The NYC-LI 6-meter group has grown tremendously in the last few years. Traffic: (Apr.) W2KEB 3854, JOA 523, K2PHF 481, W2VDT 448, DSC 257, K2QBW 146, W2BO 81, K2BH 70, W2OME 65, CKQ 63, K2HVY 58, W2DRD 48, K2PTS 44, W2JBQ 40, DUS 28, GP 28, K2SSE 27, VUI 26, SEK 24, TNM 22, W2TUK 22, K2OPJ 21, W2LGK 18, K2MHY 17, W2EC 15, K2DDC 14, TSW 14, W2IN 13, K2OQC 12, W2PF 11, K2RKL 11, KN2KTE 10, K2EQH 9, MEM 9, W2OBW 9, IVS 8, K2IRS 7, LVS 7, UEK 4, BSA 2, W2PZE 2, K2RBS 2, CMV 1, W2HAE 1. (Mar.) K2QBW 267, W2AEE 69, K2MHY 31, W2MUM 8, K2OPJ 8, HVY 6, ITZ 3, OQC 3. (Feb.) K2OPJ 14.

NORTHERN NEW JERSEY—SCM, Lloyd H. Manamon, W2VQR—SEC: HN. PAM: VDE. V.H.F. PAM: K2KVR. RMs: BRC, NKD and CGG. K2MFX needs Asia for WAC. The NJ Six-Meter Net is doing very well. A total of 27 stations report into the net regularly. K2KFR is lending a hand setting up the Warren County Civil Defense Net. GCV passed the Extra Class exam. WOJ is active on both c.w. and phone in the CD Parties. K2YWG is active in Raritan Twp. RACES.

(Continued on page 106)

At home . . . from your car in motion . . . on vacation . . . anywhere you go . . your GONSET Communicator just can't be equalled for real operating pleasure.

COMMUNICATOR

MODEL III

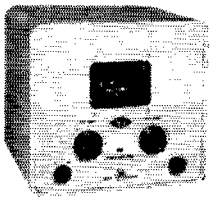
"Communicator" is a complete station. Transmitter, receiver, universal power supply completely integrated within a handsomely styled, conveniently carried "package." Models of this versatile equipment are available for either 2 or 6 meter amateur bands, for C-D, CAP and various commercial, industrial and ground-to-air applications.

Each model is a complete station, has transmitter, receiver and power supply. Latter is self-contained, operates on 6 and 12V DC and 115V AC (all three). Only one vibrator used. Simple interior strapping speeds change to DC voltage. Silicon diodes eliminate rectifier tubes in power supply, save current drain.

Models are available for either 2 or 6 meter amateur bands. Each has calibrated, tunable receiver, utilizes low-noise 6BZ8 RF tube in sensitive "Cascode" circuit. AVC is applied to avoid possibility of blocking by very strong locals. Special gang-tuned circuits give high image rejection. I-F selectivity is improved. All models have noise limiter, adjustable squelch, earphone provisions. Tuning dial is full-vision, slide rule type. Switchable panel meter replaces "green eye", indicates exciter or final output or receiver output level.

2E26 in transmitter delivers 6 to 8 watts output. New modulator uses 6L6GB tube, gives heavier modulation. All tunable circuits have adjustment knobs on panel. Gang-tuned circuits reduce spurious responses to negligible values. Transmitter has provision for 6-crystals, selectable by switch. Operation may optionally be with external VFO. (Illustrated.)

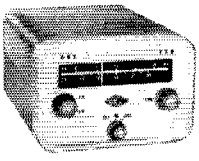
Cabinets are 10¾" wide, 10" high, 8¼" deep, are finished in Alpine White. Knobs are in Gunmetal Blue.



RF LINEAR AMPLIFIERS

Linear RF amplifiers available for either 2 or 6 meters to increase carrier output of associated Communicator to 50-60 watts. No alterations required on Communicator. Tune up is easy, fool proof without danger to tubes. Switching Communicator to transmit automatically activates amplifier, including internal antenna relay. Uses 2-826 VHF triodes with forced air cooling. Heavy-duty power supply uses 2-5U4GB rectifiers. Cabinet matches Communicator III models.

2 meters....#3211.
6 meters....#3212.
Either, 169.50



2 AND 6 METER VFO

Compact, highly stable VFO provides frequency control for both 2 and 6 meter Communicator III models. Both 2 and 6 meter bands are spread fully across slide-rule-type dial, either band being selectable by panel switch. Unit also has "spotting" switch. VFO is actuated automatically by associated Communicator. Power supply for 115V AC operation is self-contained. Tubes: 2-6BJ6, 1-OB2. Cabinet is finished in Alpine White to match Communicator III models.

2 and 6 meter VFO.
#3226 Net..69.50

Usable only with Communicator III models.

2 meter Communicator III (6-12V DC, 115V AC)
#3133 .....Net..269.50

6 meter Communicator III (6-12V DC, 115V AC)
#3136 .....Net..269.50

GONSET DIVISION OF YOUNG SPRING & WIRE CORPORATION
BURBANK, CALIFORNIA

Many thanks to Chief Dreyer, K2CNL, for his help in straightening out the Eagle Rock situation, as reported in this column last month. The chief assures us that any mobile stations may transmit from the Rock, or from any part of the park, which is open to the public until 2200 every day. K2PIM is QRL school work. CCF was elected president of the Livingston Radio Club. BVE is a new member of the NJFN. EWZ has received WANE and W-DEL certificates. K2BHQ is building a new mobile rig. RZO is NJN representative in 2RN on the early and late sessions Sat. nights. The Lakeland ARA of Rockaway took part in a simulated emergency drill May 2. K2PSX will enter Seton Hall U. in the fall, and would like to contact any other hams who intend to enter with him in the freshman class. The GSARA wishes to express thanks to the Hq. gang for the hospitality and courtesy extended the members during their visit to West Hartford. K2VAB invites all Novices to join in on the Eastern States Novice Net, meeting at 1100 on 7160 kc, every Sat. K2JTU has received a W-DEL certificate. The All-Service Net is a new net that meets every Sun. at 1400 on 7275 kc. Anyone who was or who is in the military service is welcome to check in for traffic all over the U. S. A. K2GIF reports good activity to date on this net. The Rahway High School Radio Club has just received its brand-new call, K2MYY. Three new hams in the section are KN2HHT, KSL and REH. KN2SZQ received his Tech. Class ticket. QFY and K2IDQU are on 10 meters. ASW and K2ZAH are on 6 meters. David Davis, age 9, awaits his Novice Class ticket. The Amateur Radio Club of Troop 38 B.S.A. is awaiting its club call. CFB has done an excellent job of editing and publishing the first issue of the Ocean County ARA *News Bulletin*. NJN shows 29 sessions, 453 attendance and 287 pieces of traffic for the month of April. NJN Sunday skeds are picking up in activity but BRC, the net mgr., requests that more stations join in and lend a helping hand. These Sunday schedules are expressly for the training of new traffic men, and the speed is way down. The NJN boys turned out in full force for the April CD Party. K2GAS soon will be leaving to join the service. ANG hopes to be part of a DXpedition to FP8-Land. K2OBJ has a new GPR-90 receiver. K2QYI is installing full break-in in order to facilitate traffic work. Traffic: K2OAM 132, W2RXL 79, MLW 78, BVE 72, K2QYI 61, VAB 59, W2ZVW 51, BRC 50, K2AAK 31, W2IUC 19, OXL 19, K2BWQ 18, MFX 13, W2RZO 12, DRV 10, EBG 7, K2SCU 7, SKK 7, MFF 5, BHQ 4, W2CVW 2, K2JTU 2, W2KFR 2, K2VNL 2, W2WOJ 2.

MIDWEST DIVISION

IOWA—SCM, Russell B. Marquis, WØBDR—Officers of the 75 Meter Phone Net: NGS, net control; LGG, 1st alt.; MEL, 2nd; KØAPL, 3rd; GJT, 4th; GKN, VWF, ADB, TTT, CGL, and UTD, board of directors, with VWF as chairman; WLY, secy. VQX, KØHLF, GOQ and LKL received EC appointments. ZMU renewed his KØAPS received an ORS appointment. INR received a TLCN Section Net certificate. FZO reports 32 stations in Area 7 for RACES. GXQ and KØBXO used their stations in the C.D. Alert. KØMYG passed the General Class exam. KNØPBB is a new Novice in Des Moines. The Linn County C.D. Council has procured a used 6 x 6 Army truck to use as a communications van. KNØMMZ reports his 3rd BPL, which makes him the first Iowa Novice to get the ARRL medallion. YI has a new Hy-Gain beam. BLH finally made YLCC. FMX has a Johnson Valiant. KØAZJ currently is being QRMed by a new YL harmonic. VWF is active again from KØCFB at Clear Lake. We regret to report DJY as a Silent Key. Traffic: (Apr.) WØBDR 2538, LCX 1174, LGG 1053, SCA 667, CZ 642, KØCLS 473, WØGXQ 414, QVA 185, LJW 151, BLH 128, KNØMMZ 118, WØNGS 111, KØCYF 104, OHO 93, BIJ 47, WØSLC 44, VWF 44, KØWAD 36, WØNYX 26, NTB 25, KØAPS 24, WØBTX 24, IUY 24, KØEXN 21, WØUTD 17, VQX 17, CGL 16, ZMU 16, JPJ 10, REM 10, UHO 10, KØAPL 9, WØBTR 9, KØDHQ 9, HBD 9, JIY 8, WØMEL 8, KØBPE 7, BRE 7, IQB 7, WØFMZ 6, KØGOQ 6, IGU 6, WØEEG 4, KØGHH 4, WØGQ 4, KØGOT 3, HFQ 3, WØHNE 3, SEF 3, KØGOT 2, HFQ 2, WØFDM 1, YI 1. (Mar.) KØCVD 19, WØADB 8, GHZ 8, DIB 5.

KANSAS—SCM, Earl N. Johnston, WØICV—SEC: PAH. RM: QGG. PAM: LEW. U.H.F. PAM: ZJB. DEL has been appointed zone director for Kansas and Missouri for the 10th AF MARS; he has a new Panadaptor. WYK has been appointed State Coordinator for MARS. He has finished wiring a new Valiant and has a new 10B s.s.b. exciter. UOL, editor of *Midwest Relay*, has a new folded dipole antenna, a B-W TR Switch and a Model 12 teletype printer. ITO is using a 20-meter vertical with great success. LZJ has a converted ARC-5 running about 15 watts and is building a ten-element Yagi. BLI has a Johnson Navigator with a Currier Linear replacing his

(Continued on page 108)

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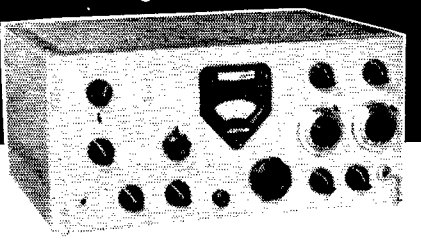

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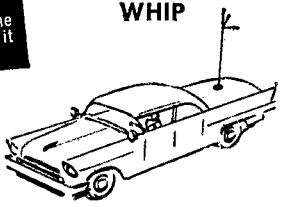
MARK 3 BAND HELI-WHIP



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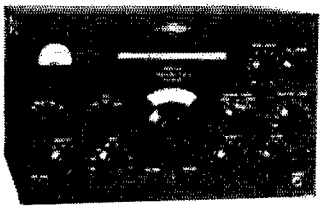

75A-4

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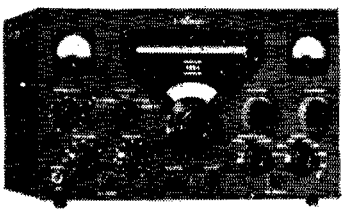
KWS-1



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OPEN ALL DAY SATURDAY
July 5th

Viking I. HAJ, president of the CKRC, is moving to Kansas City as a result of a nice promotion. Quen Engwall, vice-president of the CKRC, will take over for the remainder of the term. KØETB is building a high-power v.h.f. rig. KØOYD is a new call in Concordia. IFH has a new sideband rig. KØIZM, of Eldorado, is organizing a local net for storm warnings. Five made BPL in April: EDQ, OHJ, BLI, TOL and UOL. Traffic: (Apr.) WØEQD 786, OHJ 75, BLI 604, TOL 500, FNS 365, UOL 283, KØBXF 120, WØORB 118, QGG 100, ZRB 73, ABJ 69, SYZ 66, KØBIX 59, WØIFR 47, SAF 44, KØHVG 38, WØQQQ 36, FDJ 19, KØIRL 15, IHA 14, WØUTO 13, LZJ 10, TTG 10, HL 6, LEW 4, ITO 3, KØAWO 2. (Mar.) WØBLI 603.

MISSOURI—SCM, James W. Hoover. WØGEP—April net reports: MON, 44 sessions; QNI 206, QTC 260; NCSs, OUD, GBJ, RTW and WFF. The Hayseed Fone Net, 14 sessions; QNI 157, QTC 40; NCSs, ORB, VZB and KØs IRL and JID. CPI attended the Eureka Springs Hamfest. KØLNQ and KØHHG received ORS appointments. VVU is temporarily shut down while cleaning up some minor TVI. The Regional Novice Net, on 7152 kc. at 1730 CST, has the welcome mat out for new members. WYJ has a new 10- and 15-meter quad antenna and has had good DX reports. EBE has sufficiently recovered from his recent illness to work part time. KØIHY reports a 2-meter net is being established in the Joplin Area. KNØJPJ has taken his Conditional Class exam. New officers of the Missouri School of Mines Radio Club are YTB, pres.; and K4AGT, vice-pres. The St. Louis Amateur Radio Club held a lively Fourth Annual Auction. The Heart of America Radio Club is showing good attendance with 43 present at the April meeting. *HARC News* lists 40 stations active on 6 meters in the Kansas City Area. *Sidebands*, published by the St. Louis Amateur Radio Club, showed the circuit for a transistorized m.c.w. oscillator which may be connected to a microphone input. The author was QHL. KNØJPJ worked some rare DX, KP6AL, AUB and son, TDR, are having a private DX contest on 10-meter c.w. Each has worked 70 countries since October. QHL worked HC1JW on 6 meters with 20 watts and a drooping ground-plane. KNØPFF has a new DX-40 transmitter. Traffic: (Apr.) WØCPI 982, GAR 758, GBJ 525, KØLNQ 310, WØVVU 238, BVL 152, OUD 135, KØHHG 108, LWX 79, WØRTW 71, VZB 62, OVV 55, CKQ 45. KNØONK 26, WØWYJ 26, PME 23, IJS 22, KNØLGZ 8, WØEBE 2, KØIHY 2. (Mar.) WØVPQ 148, EEE 54, ECE 23.

NEBRASKA—SCM, Charles E. McNeel, WØEXP—NIK reports the Western Nebraska Net in April had 27 sessions, 673 QNI and 83 QTC. KØKJP is a new member. MAO reports the Nebraska 75-Meter Emergency Phone Net, on 3983 kc. daily at 1230 CST had QNI 512, QTC 74, with 39 stations now on roll call. New members are KØIIA, THF and MPE. The Nebraska Slow-Speed Net, with 13 stations on roll call, had QNI 249 and QTC 86. New members are KNØMBF, KNØOVH, KNØMRI and KNØONK. The 75-Meter Morning Phone Net, on 3980 kc. daily at 0730 CST, had KNI 519 and QTC 146 with 31 stations on roll call. New members are PUT and MPE. WØVZJ and SCT are 100 per cent reporting stations. DVI, EXJ and HTA handled traffic for two Holt County newspapers during the time telephone lines were out. The Holmsteader Radio Club reports two new members, KNØOVX and KNØOVV, a father and son team. MAO and ZOU received ARRL Public Service Awards. Traffic: WØDDT 172, MAO 160, DGW 127, ZWG 83, ZJF 80, KØBDF 75, WØVZJ 68, KØKUA 61, WØNIK 60, KØAKR 42, WØEGQ 41, KØLXS 33, WØKDW 32, OKO 32, MPX 24, PDJ 24, LJO 22, PUT 21, KØHKI 20, BRQ 17, WØZOU 15, KØELQ 14, WØBOQ 12, VEA 11, SPK 9, VGH 9, OCU 8, URC 8, KØHAV 5, WØZWF 5, WZR 4, KØELU 3, LTR 3, ACZ 2, WØBSR 2, KØCDC 2, WØQKR 2, IFJ 1.

NEW ENGLAND DIVISION

CONNECTICUT—SCM, Victor L. Crawford, W1TYQ—SEC: EOR. RM: KYQ. PAMs: YBH and FHP. Traffic Nets: CPN, Mon.-Sat. 1800, Sun. 1000 on 3880 kc.; CN, Mon.-Sat. 1800 and 2130 on 3640 kc.; CVN, Mon., Wed. and Fri. 2030 on 145.98 Mc.; CTN, Sun. 0900 on 3640 kc. Congratulations to FYF and YBH on making BPL. RM KYQ advises CN handled 381 messages (including 92 on the second session) during 26 sessions with an average of 12 stations per session. High QNI goes to GVK, KAM and RFJ. Fifty-eight members of the Conn. nets enjoyed the Sixth Annual Get-Together at Cheshire Apr. 5. TWX and WXR had their "first harmonic" Mar. 23. K1CKZ has converted his DX-20 to 6 meters. KHL won a 2-meter transmitter hunt sponsored by the Norwalk AREC. YBH reports CPN met 29 times handling 320 messages with an average daily attendance of 29. QNI honors go to DHP, FHP, K1BEN, TVU and YBH. KLK received a NY V.H.F. certificate plus first-place honors for Conn. in the Delaware QSO Party. KAC has a new 2-meter beam plus an 829B rig. dfis XYL, K1BOI, has dropped the "N." K1BML has a new Communicator

(Continued on page 110)

RAYTHEON'S MISSILE PROGRAMS

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III. FHP reports the CVN handled 45 messages during 13 sessions with an average of 10 stations. High QNI goes to K1BML, FPF, FHP, FDO and KN1DDY. VW was the highest OO in the last F.M.T. KN1GUD is a new Novice in New Britain. KN1AAE has dropped the "N." The CQRC held 5 sessions on 2 meters with an average of 11 stations per session. Section Net certificates were issued to K1AQB, K1BEN and JFK. The Tri-City Radio Council held another enjoyable hamfest Apr. 26 in New London. K1BEB, of Stamford, is a new member of CPN. KN1DWL is putting up a sixteen-element 2-meter beam. VWP is building a 108-Mc. converter. MWB enjoyed the CD Party until his v.t.o. gave up. FHP, K1BML and KN1DDY gave a demonstration to 65 Scouts and their parents. KN1HKH is a new Novice in Sherman. The U. of Conn. emergency net helped fight a forest fire on Apr. 21. BDI was host to ZL1WB. MDB enjoyed her first CD Party. ULY's son, ULZ, was home on leave. K1BJU and K1CEC received their General Class tickets. WAC on phone and "Worked all Conn." are the latest awards at ECH. KAM has three ARC-5s on the air. New appointments: K1BEB and KLK as OPSs; K1AJJ as OO; ZTT as OES. Appointments renewed: LV and ADW as ORSs; ADW and OAX as ECs; ETF as OES. Traffic: (Apr.) W1FYF 520, YBH 483, KYQ 402, K1AQB 302, WIAW 276, K1BEN 274, W1EFW 208, TYQ 146, GVK 118, MWB 111, MQT 108, FHP 102, KLK 85, QJM 85, DHP 65, YU 63, BDI 54, CUH 54, K1BEB 49, W1ULY 38, OBR 36, YIY 33, MDB 21, K1BFJ 16, W1GVJ 15, KN1DDY 11, W1LV 10, ECH 6 HQM 5, KAM 5, K1BML 3, W1AMY 2, FPF 2. (Mar.) W1LXV 77. (Feb.) W1LXV 75.

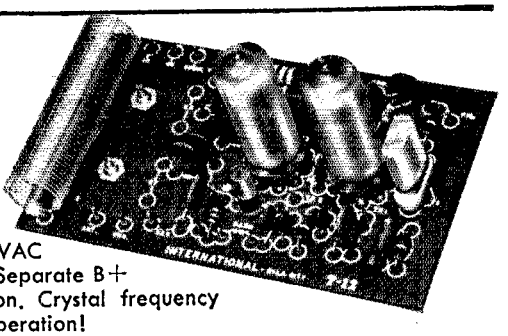
MAINE—SCM, John Fearon, W1LKP—SEC: QJA. PAMs: VYA and JMN (v.h.f.). RM: EFR. The Sea Gull Net meets on 3940 kc. Mon.-Sat. at 1700; the Pine Tree Net on 3596 kc. Mon.-Fri. at 1900; the Barnyard Net on 3960 kc Mon-Sat at 0800 New appointments: RJE and OTQ as OPSs; IHN as OO. Sorry to report the passing of LYW Apr. 22. YMJ showed excellent movies of the Antarctic Region at Rockland May 13. EOX has a Supreme AF-100. LER had an average error of 2.8 parts per million in the Feb. F.M.T. AE and CV are active on 20-meter c.w. TC is living in Edgecomb. K1APM has a DX-100. PWD is in the E. Me. Gen. Hosp. LAO has moved to Lynchburg, Va. COM's store in Norway was damaged by fire. SGN certificates were issued to DLU, NRE and K1AET. KN1GXA is a new Novice in Newagen. IHN has an S-40B and is working 40-meter c.w. FNI is active on 6 meters. GKJ enjoys being in the CD Parties again. K1DIK has his Conditional Class license. ZEN reports 766 stations reported into the Barnyard Net during Apr. ZBN, Radio Officer of the training ship *State of Maine*, is building an 811 final. KN1GTL, HAR, HAU, HAV and HAW are new Novices of the first radio class of the Gardiner Radio Club. GHV is a welcome addition to the PTN from York. HCE has moved to an antenna farm in Jay. GEG is now at Sournahunk Lake. ICN is building a kw. KN1GTG, GNA and GDX are new Novices in Saco. ED, YYW, SNE, SCY, K1CVU and their XYLs made a trip to W1WRZ's Apr. 5. ED, ARV, AUR and RLK are planning to reactivate the "Abusive Net" on 29 Mc. AWY has a new rig, 813 final, with 250 watts. KN1GVD has his 1st-class telephone ticket. Traffic: W1IHN 267, LKP 223, CEV 57, UDD 44, EFR 40, QJA 37, GPY 33, HYD 32, K1AKO 25, W1BX 24, K1BXI/1 23, AIF 18, W1FV 17, TGW 16, KN1DWQ 12, W1IZK 11, OTQ 11, LWO 10, K1BYE 8, W1LHA 8, K1BAY 4, W1KFY 2.

EASTERN MASSACHUSETTS—SCM, Frank L. Baker, jr., W1ALP—New appointments: AOG as OPS; QVK RO Sector 1C, YYI Carlisle VYH Topsfield, VYI Area 1 RO and QJB SCR Sector 1D as ECs; OGU as OO. Sorry to have to announce the death of OUI. Area 1 Radio Comm. met at Sector 1D Hq. with VYI, JZQ, QVK, SPL, ALP and QJB present. KN1GOE is on 2 meters. AJU/6 is in San Diego now. KAH has a Viking Adventurer. Our sympathy to AYI on the death of his mother C.d. directors and ROs met at Sector 1-B. Net certificates have been issued to the active stations in the 6-meter Crossband Net. Appointments endorsed: AKN Sandwich, KT Georgetown, AR Belmont, LL No. Attleboro, DWY Beverly, WNP Concord, DPO Chatham, MD Hingham, YHY Fall River as ECs; AR as OPS; RCQ as ORS; SPL as OBS, RQZ as OO. KICFV is on 6 meters. The Federation of Eastern Mass. Clubs held a meeting and discussed a future hamfest. LL is ex-1LSA. The following took part in the Feb. F.M.T.: WPG, BGW, TZ, SMO, CMU, GDJ, HJP, JLN, HZA, PLJ and A. MacMillan. GJA is on 75 meters. New officers of the Norfolk Co. Radio Assn. are ALK, pres.; IXI, vice-pres.; IIP, secy.; WTF, treas. The Bedford Radio Club held its Annual Ladies Night. WEJ is in the hospital. The T-9 Club met at WKN's QTH. The Braintree and South Shore Clubs held meetings. TUP is on a trip to California. The QRA had a talk and demonstration on "High Fidelity!" CTW had a mild heart attack but is home now. GAG and IHM lost beams in a storm. The

(Continued on page 112)

● T-12 TRANSMITTER 12-WATT

3500-4000 KC 7000-7300 KC

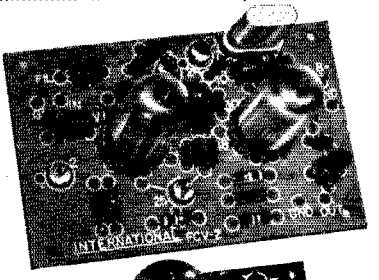


Pi-network output enables operator to couple into almost any type antenna. Low drive oscillator with International FA or F-6 crystals; may be used in close tolerance applications. 12BH7 Oscillator-buffer and 5763 final. Power requirements: Filaments 6.3 VAC @ 1.35 amp. Plate supply 350 volts dc @ 50 mils. Separate B+ input connection to final for addition of modulation. Crystal frequency same as output frequency; uses straight through operation!

T-12 Wired with tubes and one 80 or 40 meter crystal (Specify KC).....$15.95

(Kits for assembly also available)

● FCV-2 CONVERTER



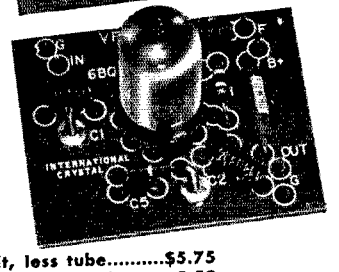
- **Model 50—6 Meters**
- **Model 144—2 Meters**

A 6U8 tube is used for oscillator-mixer. Cascode r-f amplifier using 6BQ7A. IF outputs available from broadcast band through 30 MC. Designed to mount in a standard 3" x 4" x 5" minibox.

Kit with crystal (less tubes).....$12.95

Wired with crystal and tubes.....$17.95

● VFA-1 CASCODE PREAMPLIFIER



For 2 Meters or 6 Meters, using the 6BQ7A in a low noise circuit. Designed to mount in a standard 3" x 4" x 5" minibox.

Kit, less tubes.....$4.75

Wired, with tubes..... 6.95

● IFA-10 IF AMPLIFIER

For use between converter and receiver. Uses 6AH6 type tube. Available for I-F ranges from broadcast band through 30 MC. Designed to mount in a standard 3" x 4" x 5" minibox.

Kit, less tube.....$5.75
Wire, with tube..... 8.50

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Please include in check or money order sufficient postage and insurance for your Parcel Post Zone. Shipping weight of Printed Circuit Units, 2 lbs.

PARCEL POST RATES

Zone	Amount
1 and 2 (Up to 150 miles)	.27c
3 (150-300 miles)	.29c
4 (300-600 miles)	.31c
5 (600-1000 miles)	.36c
6 (1000-1400 miles)	.40c
7 (1400-1800 miles)	.46c
8 (Over 1800 miles)	.51c

For Insurance, add:
10c up to $10.00 Value
20c up to $25.00 Value

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Orders for less than five crystals will be processed and shipped in one day. Orders received on Monday through Thursday will be shipped the day following. Oraers received on Friday will be shipped the following Monday.

Malden Club had an auction. 3FAR visited RP. RP went to the Hamfest in New London. MD is rebuilding the shack. GBW and CNZ have a new NC-300 and a tower. K1AGB is getting out on 2 meters. Fall River has RACES: YHY is RO and NXH Atl. RO. Swansea has RACES: NNN is RO. BB is active with 160-meter DX. KN1GYJ is new in Wmthrop. DEL is operating at K4MC. WNP, RO-EC, says things are coming along well in Concord. BGW got his card from JT1AA. New officers of the Braintree Radio Club are JOB, pres.; MME, vice-pres.; OTZ, secy.-treas. JSM is doing some building. The Fall River Club held an auction. LVQ and HJP spoke at the Framingham Club. RP built a new linear amplifier. JNV still is active as OO. HPH/5 is in Dallas, Tex., mobile. RCQ has a sked with 6QDF daily. LMZ will be on 6 meters. TZ is active on the nets. EPE is getting back on the air. HIL has a new six-element beam. FJJ made WAS. WU got one of the masts up. LGO has 45 for WAS on all bands. AUQ now is at National Co. W1AZU-W6HUR (Montibello, Calif.) in early May hooked up 1AVY with his No. 1 son, 1WGN, for a 100 per cent 10-meter chat. AVY is now back in New Bedford. Traffic: (Apr.) W1EMG 658, AWA 367, EAE 248, FJJ 182, UKO 68, RCQ 60, MIX 48, K1BYL 38, W1AUQ 34, CZW 26, LMZ 25, K1DGI 19, W1ATX 14, K1CMS 12, W1IBE 12, TY 12, EU 11, LGO 10, K1DGG 8, W1WU 8, NRY 7, AHP 4, DTB 4, NF 4, SMO 4, TZ 4, AKN 3, K1ATO 3, W1EPE 3, HWE 3, BY 2, HIL 2, HKA 2. (Mar.) W1QPU 75, K1DIO 74, W1NJL 35, HGN 14, BB 3, NF 2, NRY 2, KCR 1. (Feb.) W1AOG 6.

WESTERN MASSACHUSETTS—SCM, Osborne R. McKeraghan, W1HRV—RM: BVR. PAM: MNG. The regulars on the WMCW Net are doing a very fine job, but more representatives are needed from the larger cities in the section. The Mass. Phone Net is going strong on 3870 kc. LDE and UEQ, both phone men, made BPL. EC and OBS endorsements go to SPF. RB reports breaking the DXCC 200 mark with 201 confirmed. TVJ is busy erecting a vertical tower antenna with underground radials and has been quite active from K1WAR at Worcester Tech. ZPR/1 is a teacher at Mount Hermon School and is very active on WMN. KGJ received a Worked Delaware Award and honorable mention in the Mass. QSO Party. EKO reports 100 confirmed out of 130 worked for DXCC and sent in a very fine frequency measuring report. EKO and YQA advise that a new ham club is being formed in the Brookfields. AGM is being heard on the air again after a sojourn in Florida. The Hampden County Assn. heard a fine talk on the forthcoming International Conference by John Huntoon of ARRL at its latest meeting; also a talk and demonstration of transister mobile power supplies by two Sickles Co. engineers was very much enjoyed by all. The Hampden County Assn. now has a total membership of 132. Two new Novices in the area are KN1s DDB in East Otis and GXB in Huntington. DPY has a new Tri-Band beam and BKG a new full-size 14-Mc. beam. Looks like the Berkshire boys are going after the DX in earnest. Operation Alert 1958, just completed at this writing, indicates an exceptional amount of amateur activity throughout the section. Reports are coming in and there will be more information next month. Traffic: W1LDE 627, UEQ 584, BVR 103, DGL 57, DZV 52, ZPB 38, KGJ 29, OSK 29, EKO 7, HRV 5, AGM 4, DGA 1.

NEW HAMPSHIRE—SCM, John A. Knapp, W1AIJ—SEC: BXU. RMs: CRW and COC. PAM: CDX. V.H.F./PAM: TA. Your SCM attended the Great Bay Radio Club Annual Chowder Party at Hampton Beach, with EIO presiding. YMJ's narrated color movie added considerably to the events of the evening, including the now famous clam chowder dinner. Approximately 80 attended. RACES hq. station in Concord has a new high-gain base-fed vertical trap antenna for 80, 40, 20 and 10 meters. Congrats to K1BCS on his impressive April traffic total. RMH is active on 80- and 2-meter RTTY. TTU also is RTTY on 2 meters. MEL reports FB DX results with an AT-1. HKA was among the high scorers in the April CD Party using 25 watts. FZ now is WAE. WSKAD and WAA. New appointments: K1BCS as OPS and OO Class IV. TNO as OO Class IV. Certificates endorsed: JB as OPS and FZ as ORS. Traffic: (Apr.) K1BCS 1234, W1HOU 161, HKA 111, YMJ 58, ENM 55, K1BOO 36, W1AIJ 26, KVG 15, MOI 14, HQ 11, MEL 10, CDX 6, BYS 3, CUE 1. (Mar.) W1YHI 25, MEL 7, BYS 4.

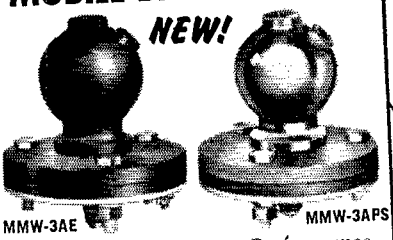
RHODE ISLAND—SCM, Mrs. June R. Burkett, W1VXC—SEC: PAZ. PAMs: KCS and YRC. RMs: BBN and BTV. Please note the SCM's new address in the front of this issue. OGT and VXC moved recently and are busy getting back on the air. At the PRA annual Dinner Dance on May 3, KKR was given the club's "Most Outstanding Amateur of the Year" Award. BTV held a meeting for the RIN members on Apr. 25 at his home. HKN is trying s.s.b. HFC will leave for W6-Land in July. Many BVARC members recently have been

(Continued on page 114)

HEAVY DUTY

MOBILE BASE MOUNTS

NEW!



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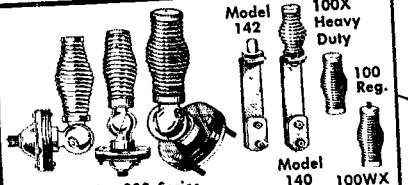

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New *Plug-In* type coils for the Ham, designed to operate with a standard 3' base section and standard 5' whip

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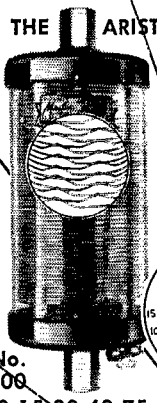

No. 900
10-15-20-40-75 METERS

THE VICTORY

- Rigidly tested & engineered—found to have "Q" of 525
- Handles 500 Watts input
- Operates into a 52-ohm cable
- Positive contact—noisefree, troublefree operation
- Weathersealed
- Factory pre-tuned—no adjustments needed

No. 999
10-15-20 METERS

YOUR CHOICE
Amateur Net
$14.95

Now! 2 New Coils... just plug in and presto! your coil is ready for operation on the desired band! No switches, no sliding contacts, no loose connections. Built and pre-factory tested in Master Mobile's own laboratories.

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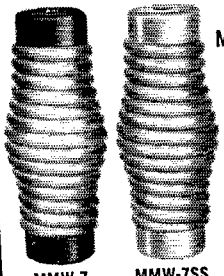

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PROTECTS YOUR MOBILE ANTENNA

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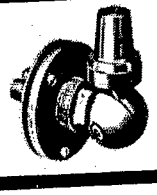

No. 321 BODY MOUNT

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FOR 10 11 12 15 20 40 80 METERS

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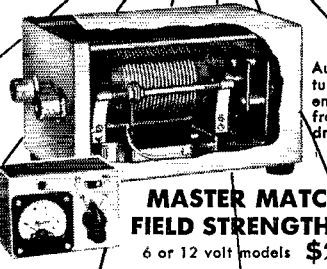
Positive action, just slide whip in or out to loading point and lock nut into position. **$17.95**



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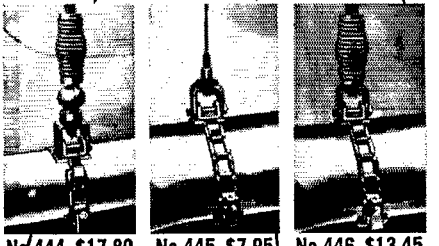

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licensed for RACES. YRC requests more consistent representation from the South County Area on the RISPN (3915 kc., 1830, Tue., Thurs., Sat. and Sun.). Section Net certificates have been awarded to HKN and DDD. NARRO members YLH, JZT, ICJ, WQU, WAN, WWN, ZPT, K1EGM, ASB, AZH, KN1CZH and KN1BZN provided radio communications for the Annual Motor Cycle Endro in March. KNE has returned from a sea duty tour of eleven months. WWN operates K1NAP about 18 hours daily on 15 and 20 meters s.s.b. with the Pole. BTV has earned his BPL medallion. Congratulations to FVZ and his XYL on the arrival of their new son. Traffic: W1YRC 207, HKN 199, BTV 156, CMH 112, VBR 27, TXL 24, WED 11, LSP 8, DDD 4.

VERMONT—SCM, Mrs. Ann L. Chandler, W1OAK—SEC: EIB. RM: BNV. PAM: ZYZ. BXT made BPL for the fourth time and has resigned as net manager of GMN. ZYZ will manage both VTPN and GMN. Together both nets handled 136 messages with fine section participation. VTN cleared 59 messages in 25 sessions. NJM, of ARRL, spoke on May 4 at the home of EIB, our SEC, to County ECs and alternates on building up AREC in our section. EIC and VSA demonstrated walkie-talkie operation. Others present were MEP, NH, OAK and KN1DQB. RACES operated between all districts during the recent alert, tying in with Region 1 and handling all traffic, but additional frequencies are needed to clear messages more speedily. On 144 Mc. in Rutland are DWR, SET, K1BVH, K1DWB and K1CSD. K1DKN received his Conditional Class license. FMK has a new TRI-X tower on 50 Mc. Traffic: W1BXT 1022, OAK 210, KJG 79, K1CYY 38, W1VSA 36, ZYZ 33, ELJ 25, EIB 24, K1BGC 15, W1ZJL 6, K1BOL 4, W1LMI 4.

NORTHWESTERN DIVISION

ALASKA—SCM, Eugene N. Berato, KL7DZ—Active on the Arctic Circle on 20, 15 and 10 meters are CMT, OOT, W2YVZ/KL7, ES and CCW. OOT also is on RTTY CKT, CBZ, CCF and CMI have returned Stateside. In his first ten months of operation CDF has worked 162 countries and 40 zones, and is active on 40, 20, 15 and 10 meters, c.w. and a.m. W2YVK/KL7 is building an s.s.b. exciter to drive a 4-1000A linear. CEJ's XYL is busy with code and theory. BHE took 2nd place in the recent YL-OM Contest. All Alaska hams are reminded that the Alaska Hamfest dates are July 18, 19 and 20. Phone, write or wire your reservation to CCP. BBJ has a new XYL. RZ's new QTH is Juneau. AZI and MS moved to W5-Land. New appointments: AH as OES and BJD as OBS. BYA reports the Panhandle Net meets on 3850 kc. at 10 p.m. week days with about 15 stations participating and that Sitka is organizing a ham club. BJD has a new Ranger exciter with a Tri-Bander. KG6AGS/KL7's new QTH is Kodiak. Traffic: KL7BJD 285, ALZ 85, CDF 23, BHE 5, PIV 2.

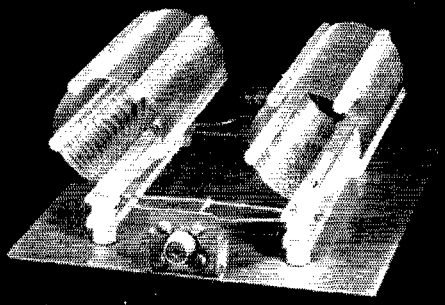
IDAHO—SCM, Rev. Francis A. Peterson, W7RKI—Congratulations on a fine job done by all on the C.D. Alert. VQC is stirring up ham c.d. groups in Moscow. WHZ is back bucking QRM after attending night school all winter. The Shoshone County Club plans ten 2-meter units for local c.d. work. ACD got 48 DX QSL cards in one day. DWE finally licked his noise problem. The Pocatello Club got the whole gang into action for the C.D. Alert. GGV tried out a Viking II, contacted W1GGV, so bought the rig. YBA is changing QTH. AWD has 50 watts s.s.b. at Osburn. RKI also built a high-power s.s.b. unit to cover the State. ALA is burned up over a burnt-up transformer. *Hambone* and *Ham Hill News* are going fancy with photos now. Your SCM has just gotten a new supply of station activity report cards for you. Don't forget the Big Springs Hamfest Aug. 1, 2 and 3. Traffic: W7VQC 44, EEQ 39, WHZ 13.

MONTANA—SCM, Vernon L. Phillips, W7NPV/WXI—SEC: KUH. PAM: EOI. RM: KGJ. The Montana Phone Net meets Mon.-Wed.-Fri. at 1830 MST on 3910 kc. New calls: K7CYT in Great Falls and KN7DHZ in Ronan. New Conditionals: K7BKH, HUZ, IUN and ZPZ. DXQ's XYL passed away. KUH and YCQ have new jr. operators. FUY passed the Montana medical exam. IJEQ visited the gang at Billings and Great Falls. CTM vacationed in W6-Land. QYA and VMB vacationed in Mexico. AYG and CPY returned from spending the winter in Arizona. KN7BND and KN7CZQ moved from Logan to Livingston. FHC moved from Billings to Luther. New officers of the Butte Club: NWC, pres.; AQN, vice-pres.; CJN, treas.; and JFR, secy. The 24th Annual Glacier Park Hamfest will be held July 19-20 at Apgar Camp Grounds in Glacier National Park. The 26th Annual W.I.M.U. Hamfest will be held Aug. 2-3 at Big Springs, Idaho. Recent appointments: JHL and LBK as Official Observers. Traffic: W7SFK 45, OOG 16, OIP 15, K7AEZ 12, W7DWJ 11, TSG 9, CQC 7, NPV 7, K7BVO 6, W7ZUK 6, BKB 5, K7BON 5, W7LBK 5, DEO 2, EEO 2.

OREGON—SCM, Hubert R. McNally, W7JDX—The

(Continued on page 116)

air dux BALUN



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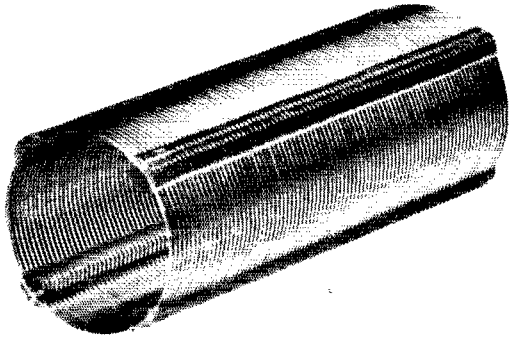
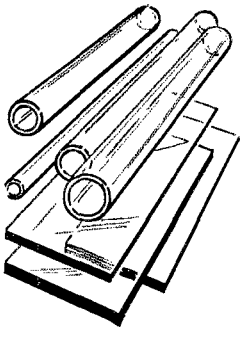


a complete and versatile line of air wound coils for the amateur. For use in pi networks, interstage, oscillator, and LC tank circuits. Manufactured from the finest materials, and crafted with expert workmanship. Available in a wide range of diameters from ½ inch to 3 inches, and lengths from 2 inches to 10 inches.



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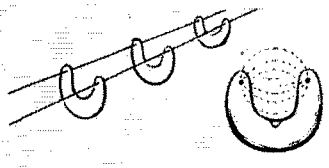

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OARA Convention at Salem now is history but will be recorded as one of the best ever held in Oregon. The total crowd was about 750, with about 560 preregistered. DOK won the Collins receiver. Congrats to the swell committee—TMF, RHX, WTK, WD, AVK, AWE, DAA, WTM, MTT, SDW, UIU, RBU, LBV, AGS, SBS, DAA, FRT, BVV, EOS and others. IJEQ, from ARRL, was present as was 7CPY, our Director. Vern made quite a hit with everyone with his big smile! GLZ is busy on MARS and AREC. YKT still is tied up with school. FTA turned out a swell OEN booklet which is being enjoyed by all. DEM spent 6 weeks in California and Arizona but is back and is fishing in the Rogue River with JDX. The Dalles Radio Club is figuring on an OBS. GWB reports nice activity on the Six-Meter Net in Portland. Six meters appears to be attracting more interest each month. DNY reports for the Oregon Tualatin Valley Club. The OARS held an election. Both Portland and Roseburg applied for the 1959 Convention but at the meeting held in Salem, Roseburg won out. We'll be seeing you all in Roseburg in 1959. Traffic: W7CUW 67, OMO 43, LT 42, AJN 30, BVH 28, ZFH 23, JDX 22, SPB 7, DEM 3.

WASHINGTON—SCM, Robert B. Thurston, W7PGY—SEC: PQT. RM: AIB. PAM: PGY. Recommendations are in order for a PAM to replace PGY. Approximately 25 amateurs attended the May 1 meeting at KOMO-TV. The guest speakers were Vernon Chambers, IJEQ, of ARRL, and Rex Roberts, CPY, Northwestern Division Director. New officers of the West Seattle Amateur Radio Club are LCS, pres.; TWU, vice-pres.; PN, secy.-treas.; CWN, sgt. at arms.; DFN and ZEQ, stewards; AUK, EWP, BDK, GRM and UJT, trustees; ERS, historian. A new General Class licensee in Poulsbo is HXE. AVM still is looking for bugs in the 6-meter mobile rig. New Novice calls heard in the Puyallupp Area are KN7s DOB, DQZ and DFJ. The first two are products of the VARC, Inc., code class. HMQ rebuilt his 3-L beam while RMI did all the work raising the 73-ft. stick. USO reports a slow-down of activity on WSN, possibly because of warm weather. KN7BBO has a new SX-99 and Ranger transmitter. A new amateur radio club has been formed in Moses Lake with the following officers elected: DGP, pres.; GJS, vice-pres.; K7DNB, secy. SLB and OIV mobiled to KL7-Land. RNC is convalescing from a serious injury suffered in an explosion while at work. JJK, HMQ, GWK and MPH are QRL converting surplus walkie-talkies for Pierce County C.D. GMC and his XYL, of Lewiston, Idaho, were visitors at PGY's. A number of the W7s from Washington attended the Oregon Convention at Salem, Ore., held May 3 and 4. OEB is sweating out DXCC—125/96. UJA and PSL are building new 813 finals. The Chelan County c.d. drills on 2 meters 1930 to 2030 the 1st Tue. and 3rd Thurs. of each month. Traffic: (Apr.) W7BA 2011, PGY 717, GIP 173, DZX 172, APS 116, QLH 99, AIB 86, AMC 55, JC 49, GJS 36, WQD 36, USO 35, EHH 14, HUT 13, FZB 5, HDT 2. (Mar.) W7GIP 147.

PACIFIC DIVISION

NEVADA—SCM, Albert R. Chin, W7JLV—SEC: JU. VIU reports activity is on the increase in the Elko Area. K7AHA dropped the "N" and is building a DX-100. New hams in Elko are CFF and K7ARV. VIU still is working DX with contacts with BV1US, CR6AI and UI8KAE, and has the only Nevada award for VAJF. AHA and UPS also worked BV1US. UPS made phone WAC with an African contact. YNO returned from his first overseas cruise aboard the USS *Beatty*. He got married in May and will settle down at Newport, R. I. BJY reports achievement certificate No. 59 goes to 6NGC. Endorsement No. 2 for 75 Nevada contacts goes to YKQ, who holds No. 39 and the No. 6 endorsement for 50 contacts. Bring up your ideas for an All-Nevada Day where we can get all the Nevada hams on the air on all bands to help some of the boys throughout the country make WAS. I would suggest Admission Day as one thought. Traffic: W7VIU 14.

SANTA CLARA VALLEY—SCM, G. Donald Eberlein, W6YHM—SEC: NVO. RMs: QMO and ZRJ. Get five licensed amateurs who are members of the League to sign a nominating petition for SCM and mail it to ARRL Headquarters before the deadline listed in June *QST*. Traffic totals sent in by amateurs in this section have shown a steady growth over the past year. The handling of traffic is one of the sides of this hobby that brings the amateur into the most favorable contact with the public. If not now a member of a traffic net you can double your enjoyment in your hobby by becoming a part of the group doing this very pleasant work. TYC has been appointed Asst. EC in charge of K6OTR. K6DYX will be in W8-Land working portable from there in June and July. KN6RHA is a new Novice in Milbrae. PLG has been QRT because of illness. K6CSD will go to Germany as an exchange student this summer. This is the second year that an amateur radio operator

(Continued on page 118)

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1958 AMATEUR GEAR

The Finest in

TRANSMITTERS • RECEIVERS
AND MATCHED ACCESSORIES

RAP 250S POWER SUPPLY

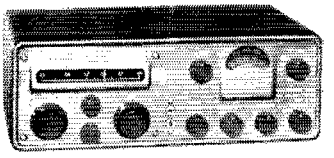
AC power supply; dual speakers. **$41.50**

RVP 260 POWER SUPPLY

Vibrator power supply powers MB-6 Receiver and MB-565 Exciter. **$44.75**

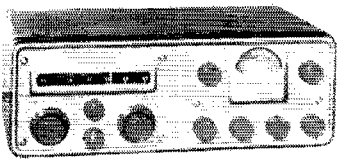
RVP 260B POWER SUPPLY

Same as RVP 260 but also provides 75-V. regulated bias for MB-565 modulator. **$49.95**



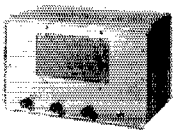
MB-565 TRANSMITTER

Covers 80-40-20-15 and 10-meter bands. 60 watts AM. **$249.50**



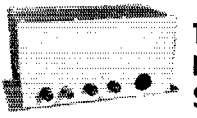
MB-6 RECEIVER

13 tubes; 80-40-20-15 and 10-meter bands. **$239.50**



RTS 600S POWER SUPPLY

For 115-volt AC operation of MB-565 and MB-6. **$142.50**



TV 600A POWER SUPPLY

High voltage vibrator, 6 or 12 volt operation. **$79.50**

SH 7 SPEAKER

5" x 7" size; metal case. **$11.50**

MK-N1 MIKE

Push-to-talk carbon mike. **$16.95**

FS-1 FIELD STRENGTH METER **$19.50**

MLV 50, 6-12 ANTENNA TUNER

Remote control. Motor driven. 75-80, 40-20-15-10 meter bands. **$24.95**

TH 1 TOP HAT

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GC 6, 10, 15, 20 NOISE FILTER

Tuned circuit "hash" filter. Atten. qenerator noise, brush sparking. **$4.55**

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has been chosen to represent the Mt. View High School. QMO reports that plans are being made to have an NCN picnic this summer and details will be sent to all net members soon. Traffic: (Apr.) W6BPT 476, QMO 370, RSY 359, K6DYX 287, GZ 247, GID 146, YKG 76, W6PLG 74, DEF 51, AIT 44, YBV 43, FON 38, HC 37, K6DHO 30, W6YHM 24, K6HGV 14, W6MMG 9, OII 9, K6OTR 9, VJI 7, CQM 3. (Mar.) K6DYX 299.

EAST BAY—SCM, B. W. Southwell, W6OJW—NCN held a dinner Apr. 27 at the Coit-Ramsey Hotel with 31 present, including HC and yours truly. The NCN 6-Meter Net changed its frequency to 50.55 Mc. WLI was made Class I OO. AKB still is chasing DX. TMX made DXCC and WAZ. K6AHV skeds KG6AAY for traffic. K6RMD is operating portable in Eugene, Ore. EBRC held a meeting at Cornell School on Apr. 8 and saw FB movies on WX. The HARC XYLs signed their charter. QEN and DEX are new Asst. ECs in the Concord-Martinez Area. The club call of the MDARC is CX. OHR is now a fully ordained minister. The MDARC Emergency Net was activated during the recent flood emergency for the second time this winter. RVC was flooded out. K6RPY is now a General Class licensee. K6OSO made BRAT and BPL in April. JOH and K6ONK are new members of the NCN. The NCDXC racked up over four million points in the ARRL DX Test. K6GK made BPL and is modifying a 522. K6OSO scored 16,000 points c.w. and 300 phone in the CD Party. K6ZBL has a new 75A-4 and is working on RTTY/AFSK. He also is a member of MARS on 148.01 Mc. The NCDXC held a meeting Apr. 11 at Villa De La Paix in Oakland. KEK worked KC4AF and is sweating out his WAZ certificate. We hear TT in there trying to grab DX ahead of the Southern California gang. By the time you read this the first East Bay section V.H.F. SS will be history. CAN, our SEC, is tracking down ECs for the Greater Oakland Area. Anyone interested? Those interested in the AREC should contact CAN also. PIR is the new Asst. SCM for the section and is trying to set up a traffic net within the section. Traffic: (Apr.) K6GK 511, OSO 227, DMW 173, ZBL 64, W6JOH 57, K6AHV 23, RMD 8, W6OJW 4, TMX 2.

SAN FRANCISCO—SCM, Fred H. Laubscher, W6OPL—Asst. SCM: Edwin L. Olmstead, K6LCF. The month of April was most eventful. One of the really nice things to report is the fact that the Marin RC and the Tamalpais RC are planning a joint hamfest. According to the inside scuttle-butt, "It's going to be a dandy!" SLX, Eureka EC, tells us that 2WSP has moved to Eureka and is signing /6. QMO (of NCN fame) reports the net dinner held the 27th was well attended. We understand that this is one of the fastest-growing organizations in traffic-handling. GES has been very active in traffic and is in the process of arranging skeds with KH6AED, SCM Hawaii, for traffic from RN6. GES also is holding Tue. skeds with EWY at 100 w.p.m. on RTTY. GGC (Golden Garbage Can) was baby-sitting his grandchildren during the month of March. Seems the kiddies' home was flooded from the heavy rains. YC is waiting patiently until PY2AJK and his brother will visit him en route to South Africa and Japan. K6EKC, Fortuna EC, says the Tri-County Net is going along FB and he also reports two new Conditional Class licensees and one new Novice. Last month we reported to you that the new Communications Center at San Francisco was coming along in fine shape. To bear this out, it gives us pleasure to announce that the EC for the City and County of San Francisco, K6ANP, has been working day and night on behalf of the city. To show you that all was not in vain, on the evening of the National Civil Defense Drill, ANP fired up the net control station at c.d. hq. and was able to establish communication with the entire c.d. network. He had 100 per cent effectiveness with all 9 c.d. battalions throughout the city, plus much traffic handled. To top it all off, the c.d. chief, Admiral Cook, sent out many test messages, and with the wonderful cooperation of the Mission Trail, American Legion and the National Traffic System Nets was able to clear each and every piece of traffic on his desk. (And if you don't think that's a job, brother, try sitting at a net control station in the midst of a national c.d. drill. Hi!) Local operators in the drill included K6KTP, GHI, K6EJW, K6MZN, K6OHJ, OST, K6AES, K6LCF, UDL, OYH, K6LRN, GGC, K6ANP and OPL. Fellows, San Francisco is ready and able to do a job if disaster strikes! There are many stations who took part in this drill and we may have overlooked some in compiling this list. To those of you who so willingly gave of your time to participate, we want to thank you and on behalf of all the city and county officials of San Francisco, and as your SCM, say, "A job well done!" Traffic: K6GES 323, LCF 15, W6GGC 9, OPL 8, BIP 4, K6EKC 3, W6YC 2.

SACRAMENTO VALLEY—SCM, LeVaughn Shipley, K6CFF—May I again remind everyone that all activity reports to the SCM should be mailed prior to the 4th of

(Continued on page 120)

Transistor Power Supplies* and Components

*Complete Units

D SERIES (Standard)

Continuous operation at 30 watts. Selective taps at 200, 250 and 300 volts; intermediate voltage at ½ selective taps. Both voltages can be drawn simultaneously if total power does not exceed continuous ratings. Positive or negative ground operation. Input and output filtering included except for intermediate tap.

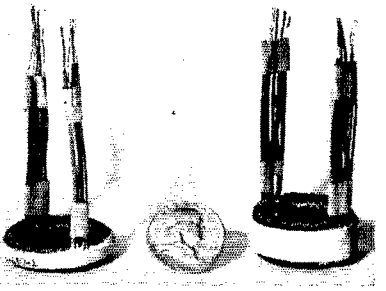
Size: 4⅜" x 3¼" x 1⅛" Wt.: 10 oz. 6- or 12-V Input: **$39.95** 24-V Input: **$61.95**

DA SERIES

Continuous operation at 45 watts. 450 volts and 225 volts simultaneous if total power does not exceed continuous ratings. Intermittent duty to 90 watts, 450 volts at 150 MA; 225 volts at 100 MA (5 min. on, 20 min. off). Positive or negative ground operation. Input (primary voltage) filtering; partial high voltage filtering provided.

Size: 4⅜" x 3¼" x 1⅛" Wt.: 14 oz 12-V Input: **$57.50** 24-V Input: **$79.50**

Toroid Transformers for Transistor Power Supply Application



H SERIES

H-6-450-1 Input: 6-VDC. Output: 450-VAC center tapped...450 and 225 VDC from bridge rectifier...45 watts.

H-14-450-12 Input: 12/14-VDC. Output: 450-VAC center tapped...450 and 225-VDC from bridge rectifier...55 watts.

H-28-450-15 Input: 24/28-VDC. Output: 450-VAC center tapped...450 and 225-VDC from bridge rectifier...65 watts.

H-6-100-125-150-D Input: 6-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 100 MA.

H-12-100-125-150-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 125 MA.

H-24-100-125-150-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 150 MA.

Without Encapsulation (2 ozs.). 1-10 units: **$16.00** ea. With Encapsulation (3 ozs.). 1-10 units: **$18.50** ea.

HD SERIES — 2000 CPS

HD-14-225-300-2-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

HD-28-225-300-2-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

Without Encapsulation (3½ ozs.). 1-10 units: **$18.50** ea.
With Encapsulation (4½ ozs.). 1-10 units: **$21.50** ea.

HDS SERIES — 2000 CPS

HDS-14-225-300-3-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

HDS-28-225-300-3-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

Without Encapsulation (3½ ozs.). 1-10 units: **$21.50** ea.
With Encapsulation (4½ ozs.). 1-10 units: **$24.50** ea.

400 CYCLE SERIES

14-115-1.5-400 Input: 12/14-VDC. Output: 115-V at 1.5 amp.

24-115-1.5-400 Input: 24/28-VDC. Output: 115-V at 1.5 amp.
Dim: 3" dia. x 1" thick. Without Encapsulation (12 ozs.).
With Encapsulation (16 ozs.). Per Unit: **$76.00.**

Matched Pair HD Transistors:
12/14-V operation—**$11.00** per pr.
24/28-V operation—**$21.00** per pr.

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each month. Most reports this month were received too late to be included herein. Aside from the late reports very little was submitted. Several nights ago I was asked, "What's new?" The only way the SCM really knows what is going on in the section is from your reports. He can spend long hours operating and can visit various clubs on their meeting nights but the "real scoop" comes from you. Let's make our sectionn column more interesting and entertaining with better monthly reports to the SCM. Individual activity reports are always welcome but regular reports from clubs are of particular interest. Why not have your secretary submit a report of your club activities each month? Many fellows wonder why our column in *QST* is not as lengthy as some of the others. Really it's a simple matter of arithmetic. Our allotment of lines is based upon the number of League members in our section. If we want more space we must increase our ARRL membership. Traffic: K6YBV 378, W6VIJ 245, ZF 13.

SAN JOAQUIN VALLEY—SCM, Ralph Saroyan, W6JPU—HAB got an SX-101 and an HT-32 and reports very fine results. The Turlock gang had a fine time participating in the recent V.H.F. Contest. Tulare County's 2- and 6-meter RACES station is ready for operation. K6BGO and the Coalinga gang held a drill during the C.D. Alert. K6BGO and K6HII took in the hamfest in Auburn. K6RLX worked KP6AM with 10 watts on 80-meter c.w. K6TNZ has a Pacemaker and a passionate pink ham shack. GHS is the Mayor of Manteca, HKV is the Mayor of Kingsburgh. K6BGK is working out very nicely in the foreign phone band on 20 meters. K6LKJ has a Gonset twin in his Ford and is having the time of his life. QFR has a new 75A-4. PPO is working all kinds of DX with his quad antenna. K6GTI got a new DX-100. JUK has a new SX-101, and is working out on 15 meters with his 3DZZ beam and 32V-2. The Stockton gang really turned out to help during the flood, and used v.h.f. with good results. K6OGR and K6QLW both wrecked their cars in different accidents and are off the air temporarily. K6VAZ got a new car and his XYL resents any extra holes in the body for antennas. KN6QDU is a new ham in Manteca and is on 2 meters. I would like some reports from the Bakersfield Area, along with all the others. The Fresno Radio Club meets the 2nd Fri. of each month on the 10th floor of the PGE Building. Traffic: (Apr.) K6CPQ 195, RLX 193, W6ADB 123, EBL 12, ARE 4, HAB 2. (Mar.) K6CPQ 105.

ROANOKE DIVISION

NORTH CAROLINA—SCM, B. Riley Fowler, W4RRH—SEC: HUL. PAM: DRC. V.H.F. PAM: ACY. This is to inform all official appointees in the State that unless you send in an activity report each month your appointment will have to be cancelled. This includes ECs, RMs, ORSs, OPSs, OOs, etc. I am delighted to appoint anyone who is willing to work and will make a report on the proper form each month. Thirty days after this appears in print your appointment will be cancelled if your report is not received. The ECs should report to the SEC at each month's end so that the SEC report will reach me before the 7th of the month. If you desire to remain in the Official ARRL Family please get your reports to the proper place and on time. Your Emergency Coordinators should file a report with the SEC each month even if there is no change in status in your district from the previous month. PCN of Manteo, N. C., is the new net manager of the NCN C.W. Net which meets each evening at 7. The net is looking for outlets in many places in the State. Your support is solicited for this net. By the time this reaches you the Tar Heel Net will have changed procedure. This net deserves your support. The C.W. Net meets on 3509.5 kc. and the Tar Heel Net on 3865 kc. The THEN meets Mon. through Fri. at 7:30 P.M. GXR is the top traffic man for the month, with DSO second and K4DNW third.

SOUTH CAROLINA—SCM, Dr. J. O. Dunlap, W4GQV—SEC: K4PJE. RM: AKC. PAM: YOS. The S. C. S.S.B. Net, which was organized at a supper meeting in Columbia Apr. 19, will meet on 3925 kc. Mon. through Fri. at 1900. K4EGI is net manager, HMG traffic manager, VJI secy.-treas. K4PIK, business manager of *Scarab*, has dropped the "N" from his call. WIQ has a new jr. operator. K4OBB writes of the 2-meter and RACES activity of the Aiken Club under the leadership of K4GXJ. *Parasitic Oscillations* is the new bulletin of the Dreher High School under the sponsorship of K4JGZ and it is hoped to stimulate interest in other high schools. K4BEG gives many good reports on monitoring 3930 kc. from Bedford, Mass. IHA, of Great Falls, is active on 40-meter c.w. and is planning a local club. New ECs are W4GIF for Georgetown, K4MBN for Holly Hill, OLO for Lancaster and IBX for Kershaw. The York County C.D. Net on 2 meters has been activated and meets at 1900

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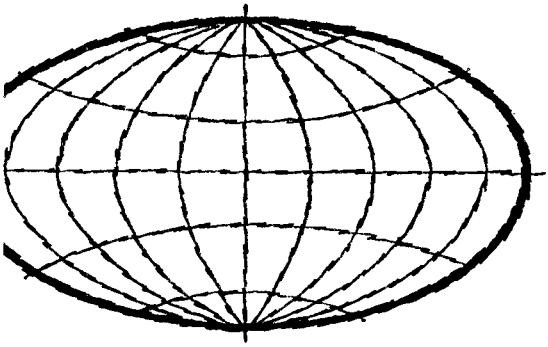

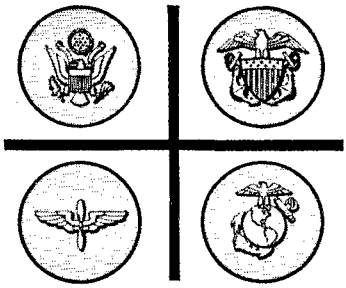

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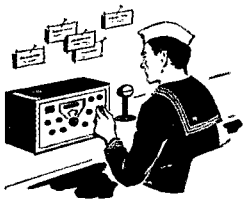

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Mon. and Fri. FFH has written an FB article on Tuning Receivers which will be printed in *Scarab*. Traffic: (Apr.) K4AVU 203, BVX 69, W4AKC 27, PED 26, K4HJK 24, W4CJD 22, K6RUO/4 7, KN4RJA 6. (Mar.) K4AVU 121, W4DAW 99.

VIRGINIA—SCM, John Carl Morgan, W4KX—SEC: PAK. Nets: VFN, 3835 kc. 1900 daily: VSN and VN, 3680 kc. 1830 and 1900. VSN Mgr. LW says activity is so good they plan to continue throughout the summer unless there's a marked drop-off. ZPE reports the 2-meter net thrives with a number of new QNIs, including the Richmond, Norfolk, Hopewell, Chester and Petersburg Areas. K4BRK is sparking the growing 6-meter net in the Valley Area. OOL says SVARC had the usual "bow-wow" stand at the Apple Blossom Festival. OOL also found the antenna works better when not in the fish pond. EFX, FJ, GF, K4EDU and EUS are concentrating on v.h.f. in the Richmond Area, and FJ and K4EUS attended the Capitol V.H.F. Society's April meeting in Washington. K4QER, the XYL of QES, is now General Class. YHD's XYL is now KN4TTG. YHD is rushing completion of the Herndon antenna farm. That other w.k. antenna farmer, KFC, bagged ZD7 and VS9 for 2 new ones. JUJ says, "Between 2 CD Parties, 2 YL-OM Contests, the Penna. QSO Party, the Richmond Roundup and VA-JF work there's practically nothing cooking!" CXQ says the study grind at V.P.I. is keeping himself, AAD, K4BUG, BUI and DQL out of mischief and off the air, although they did have the V.P.I. club station, K4KDJ, set up at the engineering exhibit. FZG says he finally cleaned up TVI the hard way, with a shielded shack. K4ACH is leaving Virginia for Louisiana and VCY is moving to New Jersey. The SCM had personal visits from K4DWP, K2GWW of PFC and K4HPD. K4AET is maintaining a schedule with his son (3DAD) at ET2US. We regret that AJA found it necessary to resign as EC for Hampton. Any volunteers? Traffic: (Apr.) K4ELG 596, AET 519, W4QDY 475, K4KNP 323, QES 206, JKK 182, W4IA 177, K4QIX 170, MEV 143, W4IT 133, BZE 96, K4DSD 72, W4SHJ 52, PFC 43, KX 35, BGP 33, BYZ 30, CFV 29, K4PTG 25, IIP 22, DPX 20, EAS 19, W4OOL 12, RHA 12, K4ACH 11, W4CXQ/4 11, K4ECD 10, W4SNH 10, KFC 6, LW 4, BRF 2, YHD 2, JUJ 1. (Mar.) K4JKK 319.

WEST VIRGINIA—SCM, Albert H. Hix, W8PQQ—Asst. SCM: Festus R. Greathouse, 8PZT. SEC: KXD. PAM: FGL. V.H.F. PAM: K8AON. RMs: GBF, HZA, PBO and VYR. SHC is on 40- and 20-meter s.s.b. CLX revamped his Johnson KW for 2-kw. pep s.s.b. operation and is on 75 and 20 meters. IRN is in a new QTH. JCK won 1st prize and GNZ 2nd prize in the recent W. Va. QSO Party. K8BVH is a new General Class licensee in Weston. HZA has been in the hospital. A ham picnic will be held at Jackson Mills July 5 and 6. ESH is a very faithful OES reporter for 6-meter activity. The 6-Meter Weather Net has applied for NTS affiliation. DZU and WHQ gave an interesting talk on mobile operation at the recent Kanawha Radio Club Picnic. KN8s JBP, ITT, JUY and IFZ are new hams in Ripley. QWW is quite active. ZOJ was injured in an auto accident. The Black Diamond Club will hold a ham picnic at Bass Lake near Hinton Aug. 31. CRM is on 75 meters with a good signal. JUW, of Anstead, is DL4FS. One of the operators of HL9KR is from White Sulphur Springs. EAB has joined the Weather Net. VII and KN8GIH are working lots of DX on 15 meters. CQV is a new General Class ham. His sister is KN8HTU. K8JNF is a new ham on 6 meters. GBF, SS and HNK did a good job in the recent ARRL F.M.T. JXA is a new ham. VYR helped him obtain his ticket. K8JVR and JVS are OM and XYL hams in South Charleston. Traffic: (Apr.) W8FNI 168, VYR 87, HID 75, PBO 53, NYH 41, BWK 35, CNB 32, FUM 9, K8HRO 9, W8DDB 2, PQQ 2.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, B. Eugene Spoonemore, WØDML—SEC: NIT. PAMs: CXW and IJR. OBS: KØBTU. OOs: OTR and RRV. ECs: AGY, KØBIL, KØCEN, KØCOI, KØDCC, DLZ, GDC, KQD, LO, NUU, NVX, OMN, PGX, PXZ, RRV, SFS, SIN, UPS, VSM, WMK and YMP. OESs: KØCLJ and FKY. RUG gave a talk on amateur radio over station KLMO. New hams in the Longmont Area are FSY from Pueblo and KØMIDT from Worland, Wyo. A new Novice is KNØMPD. KØAYK is working 2 meters using an R-28 and a T-23 converted and a four-element beam. The Annual Denver Radio Club Hamfest will be held July 20. The LCL-YL Net is celebrating its first anniversary and now has 24 members in good standing. Meting time is every Mon. at 10 A.M. on 7234 kc. Denver has 25 6-meter members in its net and meets Wed. and Sun. at 2200 on 50.300 kc. The Larimer County Amateur

(Continued on page 124)

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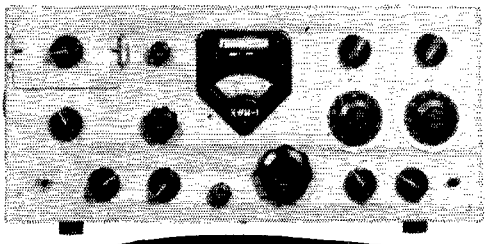

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Radio Club has 20 members. KØKZY and KØJST work 2 meters. KØDCW was appointed Radio Control for the Jefferson County School evacuation. Those participating were KØHPF, VDY, YHI, KØDXF, KØCOI, PG and KØEVG. KØLTF, the Pueblo Amateur Radio Club station, and 22 mobiles participated in the Pueblo County School evacuation program under the guidance of NIT. Traffic: KØDCW 705, WØKQD 628, KØDCC 129, WØDQN/Ø 98, KØKFQ 63, WØQOT/Ø 60, TVI 36, RRV 14, ENA 11, NIT 8.

UTAH—SCM, Thomas H. Miller, W7QWH—Asst. SCM: Col. John H. Sampson, jr., 7OCX; PAM: BBN. RM: UTM. V.H.F. PAM: SP. The representation of the Utah section in the Rocky Mountain Net has dwindled. OCX is now the only station checking in regularly. Come on, gang, let's keep Utah on the ARRL traffic map. FSC is now mobile on 10 meters but is rockbound. KN7s DJK, DJM and DJZ are three new Novices in the Ogden Area. All three are blind. JSS, who also is blind, is helping them with their antennas. K7BGU is a new station in St. George. FND is mobile on all bands with an AT-1. The ham population in Utah is rapidly increasing. OCX gave two Novice and ten Technician Class exams during April. The Beehive Net, which meets Sun. at 1230 on 7272 kc., has been quite active. OCX keeps us busy with his activity as liaison station from RMN to PAN. Send your monthly reports to the SCM. Traffic: W7OCX 112, UTM 3, QWH 2.

NEW MEXICO—SCM, Allan S. Hargett, K5DAA—SEC: CIN. PAM: ZU. V.H.F. PAM: FPB. OOs: LEF, GRI and KØCSW/5. OES: RFF. ORSs: WNU, RFF, DWB and K5IPK. OBS: IGO. OPS: KØCSW/5. The NMEPN meets Tue. and Thurs. on 3838 kc. at 1800 MST and Sun. on 3838 kc. at 0730. The Breakfast Club meets on 7272 kc. at 0700 MST. RMN meets Mon. through Fri. on 3570 kc. Please try to check in on as many of these nets as you can. Albuquerque now has an OBS, IGO. Listen for her on 3580 kc. Mon. through Fri. at 2000 MST for all Official Bulletins. We welcome K5ONP to the EC ranks. The EC Net still meets on 3980 kc. at 1800 MST each Sun. night. NM MARS held a meeting in Santa Rosa on May 3 and 4. From all reports a grand time was had by all. I hit rock bottom on news this month so would everyone please send news. ECs must have their reports to CIN by no later than the 2nd of each month and traffic reports to K5DAA by the 6th of each month. Traffic: (Apr.) W5DWB 506, CIN 11, K5HRK 11, W5ZU 9, KØCSW/5 9, K5GLJ 8, DAA 7, LFE 5, ONP 5, W5VC 5, BZB 4, WPA 4, K5DAB 1, IQL 1, LFF 1. (Mar.) K5IPK 166.

WYOMING—SCM, James A. Masterson, W7PSO—SEC: MNW. RM: BHH. The Pony Express Net meets Sun. at 0830 on 3920 kc. with AMU and MWS alternating as NCS. The YO Net meets Mon., Wed. and Fri. at 1830 on 3610 kc., BHH, DXV and NMW alternating as NCS. THG is operating portable Ø at Boulder, Colo. CQE is a new call in Greybull. New officers of the Cheyenne Radio Club are YJG, pres.; N7BZC, vice-pres.; YWW, secy.-treas.; QPV, pub. chairman. MNW, QPV, K7ANG, HRM, MWS, KUB, GGG and EUZ are now sidebanders in Cheyenne. BHH has a new DX-100 and Hi-Gain vertical. LKQ and PSO have new HT-32s. July 12 and 13 are the dates of the Wyoming Hamfest. The Sheridan gang has promised a real fine event and it is hoped that all the Wyoming amateurs who can possibly attend will be there. Visitors, of course, are welcome. The get-together is west of Buffalo on US 16 in the foothills of the Big Horn Mountains. Additional details may be obtained by contacting QPP.

SOUTHEASTERN DIVISION

ALABAMA—SCM, Clarke A. Simms, jr., W4HKK—SEC: EBD. PAMs: DGH and K4BTO. RM: RLG. Welcome to two new ECs, RNX, Ft. Payne and Dekalb Co., and YXZ, Montgomery. Don't forget the Tuscaloosa Club Picnic to be held Sept. 14 at Northport Community Center. Contact RLG for details. The jr. operator of CEF has passed the Novice Class exam. Congratulations to new General Class licensees K4TDJ and TDG; also new Novice KN4VAL. ZSH now has WAS No. 8892. The new Novice net in Jefferson County is doing FB. Any Novice desiring to join should contact EBD for instructions. K4LUT has moved to Gainesville, Fla. WAZ earned the Citizenship Award made yearly at the Birmingham Hamfest. His outstanding work in supplying the *Alabama Section Bulletin* to several hundred hams at regular intervals resulted in this award. Traffic: (Apr.) W4RLG 438, KIX 141, K4CXC 79, CFD 59, W4MI 42, K4AJG 35, JDA 34, AOZ 32, W4PVG 29, K4CYA/4 23, KJD 16, W4CEF 14, CRY 14, K4PHH 11, IPF 10, AAQ 7, W4CIU 7, K4GOW 7, BWR 6, W4ZUP 4, HKK 3, EOH 2.

(Continued on page 126)

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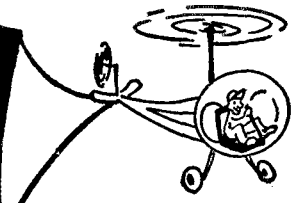

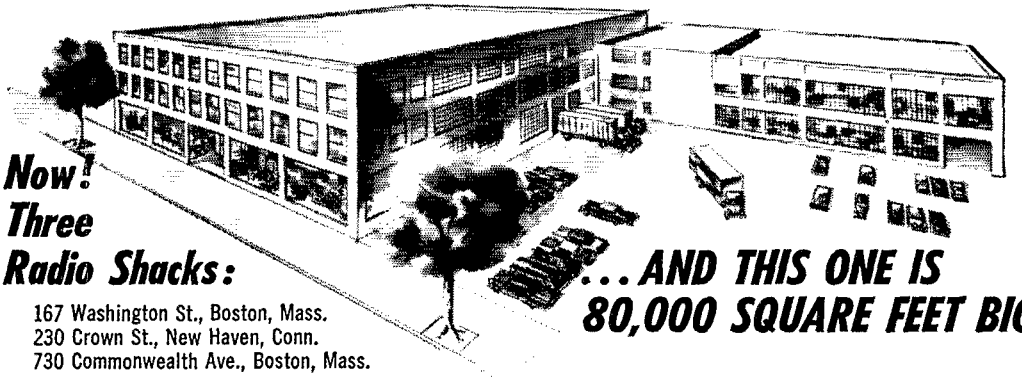

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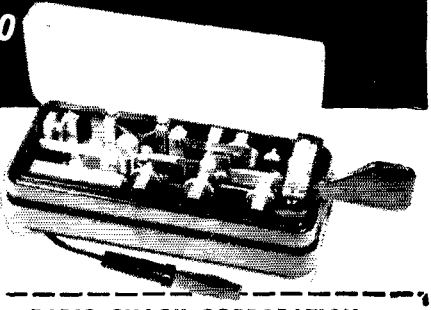

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EASTERN FLORIDA—SCM, John F. Porter, W4KGJ—SEC: IYT, RM: K4SJH, PAM: TAS. K4PAE received his WAS and RCC certificates. CO2UG will be off the air until conditions are better in his country. K4LCF has a Globe Champion and an NC-98. K4MEV has a DX-40 and an SX-100. K4COO was appointed ORS. K4SHN is mobile on 6 meters running 10 watts. K4GPI is off to Massachussetts for the summer. The Floradoras' new officers are BWR, pres.; KOH, vice-pres.; and Margaret Poppel, secy.-treas. New officers of the Manatee Amateur Radio Club are FGK, pres.; AFN, 1st vice-pres.; KN4UVK, 2nd vice-pres.; K4QBR, secy-treas.; and RRC, act. mgr. New officers of the Lakeland Amateur Radio Society are K4HNC, pres.; KN4QZX, vice-pres.; KN4RDG, secy.; and GPE, treas. K4SJH won the QLF (left-foot sending) Contest at Ft. Lauderdale. The 6-meter division of the Dade County Emergency Net got off to a flying start with EHV as net control. RMU is having repeated QSOs with KKU in Miami on 6 meters. The Gold Coast v.h.f. group holds monthly meeting on a rotating basis in Dade, Broward and Palm Beach Counties. LRV has been working IKK in Signal Mountain, Tenn., and is running only 10 watts on 6 meters to a 2E26. I am still looking for a PAM for v.h.f. in this section. I believe we can set up a v.h.f. net running the length of our State with the proper help. Drop me a line and let me know your views on this matter. Traffic: (Apr.) K4SJH 712, DSN 535, W4IWM 448, W3CUL/4 382, K4KDN 346, DSN 323, W4PJU 294, K4DAS 287, LCF 203, W4LMT 128, K4AHW 87, COO 81, EXN 80, AKQ 74, BLM 70, W4WS 66, IYT 63, EHW 63, K4BNE 62, W4PZT 50, K4RLL 49, BR 47, AEE 46, ILB 43, MEV 39, W4LDM 35, K4RBJ 33, W4FE 29, TAS 28, K4JJZ 28, W4SJZ 21, HNV 21, KZT 12, BWR 11, K4ODS 11, W4BJI 11, K4PAE 9, CO2UG, 8.

WESTERN FLORIDA—SCM, Frank M. Butler, jr., W4RKH—SEC: PQW. RMs: AXP and BVE. Ft. Walton: New hams are KN4s, UGL, UGM, UIL and VCV. VCV bought an AF-67 and an SX-100 from CEW, who is going overseas. 5BZQ, CSS, OCG and others worked into Alabama, Mississippi, Louisiana and Texas on 2 meters. Panama City: K4PTP is EC for Bay County, with COH and FIU as assts. The USNMDL Club now has its own meeting place and club station, led by IDX. TJQ uses an NC-300 and a DX-100. K4OID still is QRT for transmitter repairs. A new net for Florida teen-agers meets at 1300 EST Sun. on 7210 kc. Pensacola: Mobiles at the polling places on 10 and 6 meters covered a school-bond election and reported returns to a central point for use by newspapers and radio. About 30 stations participated and got good publicity for ham radio. PLI worked 1AEO/AM in a KC-135 on 6 meters for about 30 minutes. K4IVD is now Gen. Class with a DX-100. AXP and BVE represent the section in LO Parties. K4APE is back on 40-meter c.w. and active as an OO. New appointees are PTP and QVL.

GEORGIA—SCM, William F. Kennedy, W4CFJ—SEC: K4AUM. PAMs: LXE and ACH. RM: PIM. GCEN meets on 3995 kc. at 1830 EST Tue. and Thurs., 0800 Sun.; ATLCW on 7150 kc. at 2100 EST Sun.; GSN, Mon. through Sat. at 1900 EST on 3595 kc. with PIM as NC; with 75-meter Mobile Phone Net each Sun. at 1330 EST on 3995 kc. with UUH as NC; the Atlanta Ten-Meter Phone Net each Sun. at 2200 EST on 29.6 Mc. with VHW as NC; GTAN each Sat. at 1000 EST on 7290 kc. with K4ORR as NC; the GPYL Net each Thurs. on 7260 kc. at 0900 EST with K4IFF as NC; the Kennehoochee Emergency and Traffic Net each Sun. at 2130 EST on 29.46 Mc. The Albany Radio Club elected K4PGZ, pres.; K4PGY, vice-pres.; K4ICW, secy.-treas.; IPV, act. mgr. ATO was retained as chairman of the TVI Committee. The Cherokee Amateur Radio Club elected K4LDX, pres.; K4PNP, vice-pres.; KN4SSP, secy.-treas.; K4SCP, act. mgr.; K4KMH, pub. dir. The club meets at the Civil Defense Center the 1st and 3rd Mon. of each month in Dalton. Don't forget the Augusta Hamfest July 13 in Augusta, the Georgia Cracker Radio Club Picnic at Durr Lake on July 27 at Macon and the CSCS Hamfest-Picnic Aug. 17 at Lakewood Park, Atlanta. KN4SDL is on the air with an AT-1 in Albany. K4LVE has an MM-1 installed in the shack. PIM is doing an FB job with GSN. DDY is net control for GSN. K4LVE is out of the hospital. YEK, Fulton & DeKalb County EC, was in the hospital for a check-up. ZWT won the Delaware QSO Party in Ga. IMA is going mobile on 40 meters. K4CZQ is now in Smyrna, Ga. The Kennehoochee Club is organizing a Novice net. The Savanna River Net is on 3807.5 kc. at 12:30 P.M. Traffic: K4MCL 313, FBA 305, LVE 170, W4PIM 168, K4FCI 147, W4DDY 123, ETD 113, K4HOU 40, W4ZWT 29, K4OQY 24, LEM 11, CZQ 6, APC 4.

WEST INDIES—SCM, William Werner, KP4DJ—
(Continued on page 128)

SEC: AAA, AJZ is active on 40 meters organizing a 7275-kc. net. AJZ uses a Globe Chief at 75 watts. FAE, of the UPRRC, has a new HQ-110 receiver, a new four-element 10-meter beam and a 40-meter antenna on 40-foot poles for use on MARS frequencies. WP4AMA, now KP4, is on 15-meter c.w. using a Globe Scout 680. WP4AKJ, now KP4, is on 15-meter phone and c.w. WP4AKH is on 15 and 40 meters with a DX-40. WP4AMN, now Tech. Class, will work 6 meters using a Globe Scout 680. AJY has been transferred Stateside. ACW and AKI are building 15-meter beams. AGG, chief operator at USA, has been reassigned to Washington, D. C. USA is now on s.s.b. AMG is operating portable/PJ2 at St. Martins DWI, while making microwave tests on 891 Mc. for IT&T. KV4BD is moving to Rhode Island. RE has a new DX-40. BU has Gonset twins in the car. YT has 40 zones confirmed for the first WAZ in P.R. DP, ES, MS, RC, ED and TP are exclusively on s.s.b. ACW built the 10-15-20-meter converter as per *QST*. AND has a kw. on s.s.b. KV4BA assembled a WRL antenna tuner. ABN advises there are now 27 KP4s on 6 meters. BD is back on 75 meters with p.p. 4-125As. AAA, in a new QTH in Urb. Universidad, is putting up a tower for 15- and 20-meter beams. ALY, in a new QTH in Urb. Paraiso, put up a 15-meter beam on a 50-ft. mast. His son passed the Novice Class exam. DV was Stateside on CAP business. RH is transferring to Atlanta with the CAA. K6VFU and his XYL, KNØAHG, recently taught KP4s employed by the Radio Corp. of P.R. about Lenkurt carrier equipment. KD got Utah on phone for phone WAS. KD's son, K4PUJ, in Washington, keeps daily skeds with his father on 21,090 kc. KD worked KC4USB on 11 meters. KP4ACH, using a Techcraft 50-Mc. transmitter and WRL linear amplifier, is the first KP4 station to work ZL on 6 meters.

CANAL ZONE—SCM, P. A. White, KZ5WA—BG has been appointed Route Manager, taking over the position formerly held by BE, who is now in Washington State. A schedule is being planned on 20- or 40-meter c.w. to tie the Canal Zone into the Fourth Regional Net through W4QDY of Norfolk. VR checked into the April LO Party. She also gave a talk on amateur radio at the April meeting of the College Club at the home of LR in Ancon. K4GYF is here from Miami on a visit to brothers RM and CC. BG organized the CZARA for Field Day and appointed RM, RU, VR and WF on the equipment committee; WA, UJ and BG on the antenna committee; and JJ on the refreshment committee. UJ and CJ, Jim and Joy Hagen, have moved from the Atlantic to the Pacific Side of the Isthmus. KQ has been heard on single sideband. Traffic: KZ5HO 42, VR 22, WA 12, EL 7, RV 3.

SOUTHWESTERN DIVISION

LOS ANGELES—SCM, Albert F. Hill, jr., W6JQB—SEC: LIP. PAMs: K6BWD and ORS. RMs: BHG and K6HLR. BPL was earned by K6MCA, GYH, K6HLR and ZJB. K6HLR is the new RM and is on SCN early to clear traffic at 1900 PDST daily. K6OZJ has a new tape recorder. K6OQD is net secy. for MCAN-7. K6KZY reports the Teen-Agers Net meets on 3540 kc. Tue. and Thurs. at 1830 PDST. K6EA still is making relief "Sparks" runs for Matson, the last one on the SS *Hawaiian Builder*, KKOO! YRA is organizing an Intercollegiate Net meeting on 7270 kc. at 1415 PDST daily. For information contact YRA at U.C.L.A. SRE reports a very fine emergency drill in San Gabriel. K6YQS is the new call of the Glendale High School Radio Club. K6GLS is sporting a new HQ-110 receiver. K6COP is working a lot of good DX. BES is putting up a 3-band quad. K6IYJ is experimenting with some 3-c.m. radar gear. ORS is putting up ten-element Yagis on 2 meters! K6QMK reports some openings on 6 meters to South America. New officers of the Inglewood Amateur Radio Club are PZV, pres.; K6HFZ, vice-pres.; K6KKU, secy.; K6MLJ, treas. The Victor Valley Amateur Radio Club has a new call, K6QWR. K6PQL received his WAS. New officers of the San Bernardino Microwave Society are IFE, pres.; RNA, vice-pres.; OYJ and K6LZF, secys.; VIX, treas. Support your section net, the SCN meeting on 3600 kc. at 1930 PDST daily. Traffic: K6MCA 1433, W6GYH 801, K6HLR 788, W6ZJB 574, K6OZJ 464, W6BHG 299, K6OQD 276, KZY 201, W6HJY 128, K6GUZ 70, QMK 69, EA 49, HOV 46, UYK 42, W6USY 38, K6GCC 27, HVC 27, W6YRA 18, K6ETK 10, W6BUK 6, K6BWD 6, W6CIS 6, ORS 5, SRE 4 (Mar.) K6HVC 33, W6BUK 7, ORS 5.

ARIZONA—SCM, Cameron A. Allen, W7OIF—SEC: YWF. PAM Copper State Net, 3895 kc.: NYT. Mike is doing a fine job as PAM on CSN. The net now has 65 check-ins. NEO/7 checks in from Arizona's newest town, Page. There still are a number of towns where we need stations. If you can get on 3895 kc.,

(Continued on page 130)

im·ped·ance match·ing

"the adjustment of the source and the load impedances to produce the most efficient transfer of power from one to the other"

IMPEDANCE MATCHING, *edited by Alexander Schure, Ph.D.*

The most efficient transfer of power from one point to another is paramount in every electrical and electronic system. This is the function of impedance matching. This book, the first one devoted completely to this important subject, presents comprehensive coverage of the theoretical as well as the practical considerations relating to the delivery of maximum power between any type of generator and the load. To make the book most usable, explanatory numerical examples illustrate the application of equations in the mathematical treatment. Impedance matching devices, their application at audio and radio frequencies and in transistor circuits are covered.

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CHAPTER 3 — *Impedance-Matching at Audio Frequencies.* The relationship of the output tube to the speaker, multi-match transformers, multiple speaker installations, impedance-matching in modulation systems, and microphones-to-line or-grid relationships.

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how about checking in? K7CJX is a new call at Ft. Huachuca. UVR has the mobile rig working again but had plenty of trouble with it. K7WBC, the MARS station at Ft. Huachuca, is active on CSN with RGV and KEJ as operators. WUC reports the Catalina Radio Club Net on 29.625 kc. is active in the Tucson Area. CIX, president of the Yuma County Radio Club, publishes the *Desert Rabbit* with news of the Club and the Yuma County Net on 3885 kc. Prescott has the newest club in the State. Meetings are held the 1st and 3rd Mon. of the month. BKP is pres.; OPY, vice-pres.; RTE, secy.; EAW, treas.; and BFA, act. mgr. Traffic: (Apr.) W7OIF 14, K7WBC 12, W7PKM 10. (Mar.) W7OIF 15, CAF 14, FMZ 10.

SAN DIEGO—SCM, Don Stansifer, W6LRU—K6AWZ has moved to the Washington, D. C., Area. YSP is a new member of the Helix Club. KSE is the proud father of a boy, and K6IPV of a girl. We regret the passing of FSH and JAY. WNN has now worked 31 ZLs on 50-Mc. phone. In April BKZ worked 8DLU on 3.5 Mc. 8DLU was his first QSO in 1921. The QSO was overheard by G5VB. The Chula Vista Chamber of Commerce has given free QSL cards to amateurs in that city. In May the South Bay Amateur Radio Society celebrated its first birthday by a special party. K6BCG has a new three-element 15-meter beam, and is trying for DXCC on that band. K6UJL, now General Class, is on all bands with a Viking Valient and an HQ-110. Operation Alert headquarters for San Diego City was e.d. Headquarters with 7 nets in operation. Twenty-five amateurs on 80 meters and 144 Mc. worked during the Cancer Drive in the Area. Each mobile unit collected over $1000. KN6AQE (now K6AQE) did a good job as liaison station. K6DVF was Net Control. SK has now worked 90 countries. The May San Deigo DX meeting was held at the home of JH. BTN, BYE, FBF and K6BPI, all members of the Coast Guard Auxiliary, operated from Ensenada, Mexico, for the annual boat races in which 298 boats participated. KUU has resigned as SEC because of his high noise level and inability to copy many stations on the Sun. morning 3825-kc. AREC Net. Until a new appointment is made LRU, your SCM, and EWU, EC for the City of San Diego, will share the duties of SEC. This section has no EC for Orange or Imperial Counties. There are active AREC members in both areas, and inquiries regarding the appointment of an EC for either area are more than welcomed by your SCM. Traffic: (Apr.) W6EOT 696, YDK 685, K6UOD 511, W6SK 126, KN6IYK 28, W6LYF 27, BKZ 12.

SANTA BARBARA—SCM, Robert Hemke, K6CVR—The Santa Barbara Radio Club had an FB talk on Telemetering and a motion picture by Mr. Loyle Baltz. K6CRJ is back on 10-meter mobile with a new gas buggy. K6KPU went off the air temporarily. YCF received the "Outstanding Operator of the Month" award for March 1958 for his outstanding contribution to the MARS program as NCS of the c.w. training net and official monitoring station. K6THH plans to use a long-wire antenna for his mobile rig. FYW is experimenting with a direct grounded-grid circuit for his 2-meter linear amplifier. K6VDW has a new 2-meter converter. The Paso Robles Radio Club worked on the civil defense emergency set-up in an ambulance. KSW has completed a p.p. 813 final and now has a 75A-4 and "V" beam on a 60-ft. tower. The latest addition to the ham roster in Atascadero is KN6RFK, who received his call in April. Traffic: W6YCF 10, ENR 4, FYW 4, IHD 1.

WEST GULF DIVISION

NORTHERN TEXAS—SCM, Ray A. Thacker, W5TFP—Asst. SCM: E. C. Pool, 5NFO. SEC: BNG. PAMs: K5AEX and IWQ. RM: ACK. New OO appointees are ONQ, K5ILX and K5DXJ. A new OBS is DKT. K5PXV, formerly KØGVE, is a newcomer to Dallas. LR proudly announced his XYL's new call as KN5QFA! KN5PZP, KN5PZU and KN5QEN are new to the air from Crowell. AUJ reports the Lubbock gang is going all-out for 6 meters. BOO advises the Centex Emergency Net averages seventy members with average check-in at sixty. GY is now an NCS on NTX and lending a helping hand to RN5. NFO reports the Terry County ARC now has six transceivers operating on 6 meters for emergency work. K5GIF is doing very well on 20-meter c.w. pulling in some good DX for himself. K5GES has resigned as president of the Wichita Falls ARC prior to his departure for overseas assignment. K5BWM and her OM, K5BWF, are now at their new QTH in Wichita Falls. A note from K5HBP, now living in Buffalo, reports his new call as K2QOX. The time fast approaches to get set for that big function of the year, the West Gulf Division Convention, this year to be held in Oklahoma City! Begin to think about getting the mobile rig checked over, make those reservations and we'll see you! Please remember, the

(Continued on page 132)

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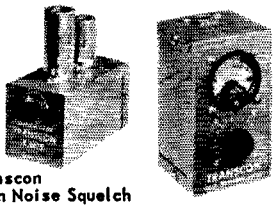

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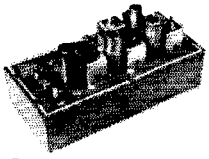

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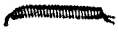

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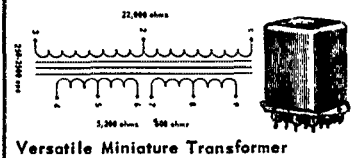

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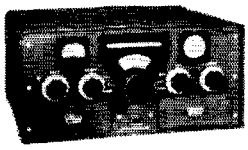

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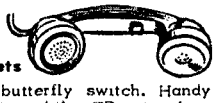

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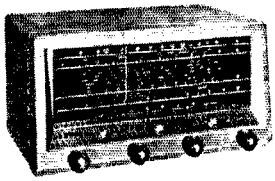

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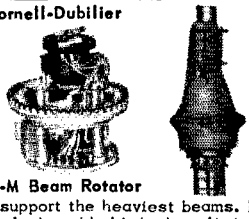

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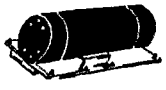

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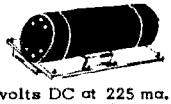

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fifth of the month is the deadline for items in this column. Traffic: (Apr.) W5GNE 317, DAG/5 239, BKH 194, K5DNQ 98, W5GY 86, K5EMR 64, W5BOO 56, K5ILL 39, W5CF 31, K5IGD 26, PXV 18, W5BNG 12, LR 10, K5HTH 8.

OKLAHOMA—SCM, Richard L. Hawkins, W5FEC —SEC: LXH. PAM: MFX. RM: JXM. The Quartz Mountain Hamfest was well attended by hams from five states. New Novices in Bartlesville are KN5PVC and KN5PVE. KN5PVC is only 10 years of age. MMD made DXCC on c.w. and now is trying for phone. VNC is back home after attending a hamfest in Nagaoka, Japan. LPL moved to Tulsa. EHC recommends 50 Mc for local contacts. Old-time c.w. man MFX has been converted to 2-meter operation. K5LAP recently was awarded the Bronze Star by the Army for operating a radio station under cover during the Japanese occupation of the Philippines in WW2. K5EGS was awarded a Public Service certificate for work in the Batesville, Ark., fire. The West Gulf Division Convention will be held in Oklahoma City July 25, 26 and 27. OKD moved to Bartlesville. MRK still monitors Alpha-1958. (Explorer I to non-moonwatchers.) The Sooner Nooner Net had 618 check-ins and handled 81 messages during April. Oklahoma Ham of the Month: EJK, for his faithful attendance in the phone nets. Traffic: W4RCM/5 649, W5JXM 260, ESB 250, K5KTW 157, EGS 131, PNQ 103, W5KY 74, K5DUV 56, W5MFX 37, FEC 36, K5CBA 33, W5GOL 22, FKL 18, K5DUJ 13, W5VLW 13, ERI 11, CCK 10, IER 9, PNG 9, BBA 9.

SOUTHERN TEXAS—SCM, Roy K. Eggleston, W5QEM—SEC: QKF. RM: FCX. PAM: ZIN. Welcome back to LFM from Alaska. Congratulations to QLT on his Ph.D. degree. He is teaching a radio class for Boy Scouts, Explorers and others, with 10 boys signed up. The Corpus Christi Radio Club, under the direction of QKF did a bang-up job in handling communications for the Buccaneer Days Parade and other activities. FY visited in Corpus Christi and greeted old friends at the radio club meeting. New officers of the Baytown Radio Club are K5HOM, pres.; NRS, vice-pres.; JDD, secy.; RZM, treas.; and KN5PAP, pub. chairman. EGD won first place in the c.w. portion of the YL-OM Contest. Congratulations to EGD, K5JCC, ZIN, 8PHA/5 and K5MZS on making BPL. EGD for the fifth time and the others for the first. The 7290 Traffic Net had 45 sessions, 1351 stations check in and 913 messages handled. The STS C.W. Net had 25 sessions, 163 stations and 189 messages handled. ZTB is the new EC at Woodville. QKF and ETA visited the Beaumont Radio Club. BRZ was heard mobiling up San Antonio way. Traffic: (Apr.) K5JCC 514, W8PHA/5 422, W5EGD 278, ZIN 215, K5MZS 163, BSZ 79, W5FCX 63, UMY 62, EPL 50, K5MRP 24, W5NXZ 10, K5KRZ 6, W5QLT 2. (Mar.) K5MZS 181.

CANADIAN DIVISION

MARITIME—SCM, D. E. Weeks, VE1WB—Asst. SCM: Aaron Solomon, 1OC. SEC: AEB. FQ, our genial QSL Manager, after handling thousands of choice DX cards for others, took time off the other day and found that he qualified for DXCC! Congratulations to ACJ and his XYL on the arrival of a new jr. operator. Many Maritime amateurs participated in the C.D. Exercise Cooperation No. 2. CL reports working WIBYL at Newburyport, Mass. This was a solid 45-minute QSO. Congratulations and best wishes to ZZ and his bride on their recent marriage. VO2NA reports receiving WAS, RCC, CP-30 w.p.m., 1st (Labrador) Delaware QSO Party and 1st in Goose Bay QSO Party certificates all in one month! OS doesn't need to see a Western thriller movie to describe the reactions of the victim of a train robbery. He was a member of a mail car crew when a "would-be" Jesse James staged an armed holdup on the Sydney run!! AEB requests your full support of the AREC program. The Maritime AREC Net meets every Wed. at 1830 on 3790 kc. Newcomers are welcome. Traffic: (Apr.) VO2NA 39, VE1VN 32, ABJ 20, AEB 14, DB 11.

ONTARIO—SCM, Richard W. Roberts, VE3NG—Send 35 cents to cover costs to your R.I. for a copy of the new Radio Act. New certificates also are in effect. See or write the R.I. in your district. GRA worked on FK8 in the wee hours of the A.M. The Gray-Bruce Net has brought out a new bulletin. DPO is the editor. Exercise Cooperation II saw IZ, UT, DHG, DBY, CWN, BCC and AIB assisting the c.d. group in the Toronto Area. RH is well on the road to good health again. Dot, DXZ, is now on the recovery list. Hubby DTO is planning maritime mobile on his cruiser this summer. BQG and his XYL have a new harmonic. YG and CE are active in Barrie. DQL has new Collins gear. Congrats to the following, who

(Continued on page 134)

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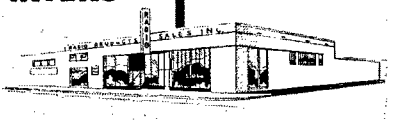

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recently passed the necessary to get on the air: CMR Toronto (Nortown RC), CJO St. Denis and CKC Timmins (Porcupine RC). BUR is hot on 21 Mc. AJA works 14- and 28-Mc. mobile. A.m. mobiles heard are DHB, CO, NG, ABA, AAD, ARF, EO, KM, CDX, DSM and BLQ. BVF is back in Beaumaris. The Scarboro RC visited the Collins Factory in Toronto. The North Bay Hamfest will be held June 27. TX is in charge. BPR is on 6 meters. NW is out of the hospital. AML received a fine hand-carved camel from the gang in the Middle East for his untiring traffic efforts. DGB is on with d.s.b. EIC is on 75 and 20 meters. AGL is rebuilding. DPG is rebuilding his DX-100. KM is back after his trip to W6-Land. The Scarboro RC holds frequent hidden transmitter hunts. CGD works DX with 30 watts. CFR worked 800 different stations in 10 months. Traffic: (Apr.) VE3DCX 175, BUR 93, NG 79, DPO 77, AML 61, EII 55, BJV 52, AUU 43, BZB 43, DTB 37, EAU 26, DSX 20, DWN 19, RW 17, AOE 16, CE 15, DZA 15, EOW 15, APL 10, CGD 9, DLC 6, ELC 6, AVS 2.

QUEBEC—SCM, C. W. Skarstedt, VE2DR—Nets: OSN/PQN, 3535 kc. at 1900; Que. Fone Net, 3780 kc. at 1845. Hats off to BE and MH, who have retired and will now have more time for hamming. The MARC station at the Westmount YMCA Hobby Show was very successful. IL now is VE3CZ. BG is the old O.T., celebrating 50 years as a ham. All correspondence to the St. Maurice Valley Radio Assn. must be addressed to AJD. VE is planning a 2-meter net. ATL will attend the ARRL National Convention in Washington, D. C. DR is erecting a 15-meter three-element rotary beam. ATE is planning to operate at Contrecoeur this summer. AWO derived benefit from the code and theory classes at the MARC. AFI is doing well on 20 meters using an AT-1 and a doublet. AAH/2 was the headquarters station at the pleasant Sugaring Party. AWD, AWV, AWR, AVL and many others enjoyed this outing. Welcome back to AED. An excellent film, "Calling CQ," depicting all phases of ham radio, was much enjoyed by members of the MARC. CP is active in the CD Parties. XX, VV and QA are pursuing the side-band project. JW has a new 10-meter rotary beam. SC installed a 24-volt generator for his mobile. ASA now is in Cornwall, Ont. 7QW is back as PX and is located at Beaconsfield. YI is QRO 80-meter c.w. ABE received phone endorsement. AKS, AVM and APH are young newcomers at Quebec City. Traffic: VE2DR 82, BG 24, EC 24, XR 21, CP 20.

ALBERTA—SCM, Gordon W. Hollingshead, VE6VM—PAM: OD. I am pleased to acknowledge my election as your SCM for the coming term. Activity reports from around the Province have not as yet found their new address, but the situation is bound to improve. Your SCM anticipates the coming season to be a very active one. PQ is holding a construction class on Wed. for 2-meter mobile gear. VM has wound up a course for would-be hams. MF has lined up many activities for the CARA in the coming year. HM is using a new Geloso v.f.o. with his rig. BF is being heard on 2 meters mobile. Traffic: VE6HM 118, TT 30, OD 14, PV 4, SS 2.

MANITOBA—SCM, James A. Elliott, VE4IF—The last meeting of the ARLM was well attended. Highlight of the evening was a showing of the TV film "Here and There," one of the best presentations of ham activities we have ever seen. NI is reported to be in good condition, in fact he was not sick at all. Recent visitors to Winnipeg were KP, AY, 5GQ and 3ECP from Dryden. We enjoyed your visit, please come again. SA, TJ, VJ, TT, JW and EF have been working their share of DX on 20 meters. FK has a new HQ-110, a G4ZU beam and a DX-35. The mobile gang: LO, CX, VG, PU, JE, HL, IF, GC, WS, MP, LF, AR and BB. HL is trying out a new "Rusco Screen" for receiving. Plans are under way for the Dept. of Industry and Commerce to supply free QSLs. Let's hear from you, gang! Traffic: VE4RR 22, GE 13, PA 10, AN 8, KN 5, IF 2.

MEMBERSHIP CHANGES OF ADDRESS

Four weeks' 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.

50-Mc. Receiver

(Continued from page 17)

nals. It is also useful in centering a signal that is tuned in with the i.f. set in the broad position. Otherwise, the tuning being so uncritical, it is likely that a signal will be lost when the filter is cut in, unless the b.f.o. is used to make certain that the signal is tuned at least within the audio range of zero beat. It will be found that the beat oscillator will make weak signals stand out when tuning the band in the sharp position, permitting much faster tuning than would be possible without it.

It will be seen that the beat oscillator is crystal controlled. The use of a crystal oscillator actually simplifies the construction by eliminating the extra precautions that would have to be taken to insure b.f.o. stability, if a tunable oscillator were used. With the crystal mounted on an L bracket, and the other components arranged as shown, the stray injection can be kept quite low. It produces less than a volt of a.v.c. bias, which is not objectionable. For serious work on c.w., however, the constructor may wish to disable the a.v.c. in the c.w. position. This could be accomplished with a double-pole switch for S_3, the other pole being used to ground the a.v.c. line, at the low side of the T_1 secondary.

The builder should study the arrangement of the tube sockets, the shielding, and the orientation of the parts, for in all but the rectifier and audio output circuits undesired coupling can introduce regeneration and other harmful side effects. With the parts arrangement shown a considerable margin of safety exists in the amplifier circuits. When this layout is duplicated alignment should not be cantankerous.

Adjustment

The beat oscillator may be used for preliminary alignment of the i.f. stages, if no signal generator is available. However, as the injection is by way of the interelectrode capacitances of the 6U8, the effect of adjustments preceding it will be negligible or confusing. To counteract this a short piece of wire may be connected temporarily between the crystal holder and the mixer grid, to insure plenty of signal where it will do the most good during this procedure. A vacuum tube voltmeter monitoring the a.v.c. voltage can be used as an indicator. Final adjustment may be made on actual signals, tuning by ear, with the filter in the circuit.

Adequate space is available near the second detector and first audio tube to permit the addition of a squelch circuit. It should be pointed out that signals at such low levels that they produce negligible a.v.c. voltage can be copied readily. Such signals would not actuate the squelch.

The importance of care in the construction of the high-frequency oscillator cannot be overemphasized. Rewarding performance is available to the constructor who is willing to sprout a grey hair in this effort. In the original receiver, stable signals remain within the narrow band width for an hour's test run, even from a cold start.

Flexible Frequency Control

(Continued from page 20)

power supply operating from the heater winding supplies collector voltage for the two transistors. The 100-μf. capacitor gives adequate filtering for the counter although it might not be sufficient for other purposes. The square wave at the output of Q_2 is applied through a capacitor to a metering circuit consisting of the two 1N90s and the meter M_1. The current through the meter will be proportional to the frequency of the square wave since the capacitor is the main element limiting the current. The meter therefore reads frequency directly. Switch S_1 selects different capacitors for different full-scale ranges. Full-scale ranges of 200, 2000, and 20,000 cycles are provided. If the series capacitance is made smaller, however, the circuit will measure frequency up to 100 kc.

Frequency Measurement

The same setup can be used for frequency measurement in conjunction with a 100-kc. crystal oscillator and 10-kc. multivibrator. The signal to be measured is first tuned in using v.f.o. No. 1. v.f.o. No. 2 is then set to zero beat with v.f.o. No. 1 using the frequency meter on its lowest scale. Then the 100-kc. standard and multivibrator are turned on and fed into the input of the receiver and the nearest 10-kc. harmonic is tuned in on the receiver using v.f.o. No. 1. The frequency meter then reads the difference between these two frequencies.

When tuning in the signal and the multivibrator harmonics it is essential that either zero beat or the same beat note be obtained each time, otherwise the difference between the v.f.o. frequencies will not show accurately the separation between the signal and the 10-kc. harmonic. This method has the advantage that the received signal and 10-kc. harmonic used do not both need to be within the receiver band pass to obtain a beat note. Also, QRM appearing on the signal does not appear on the beat note, thus making it easier to measure the beat note. This system was tried out in the most recent frequency-measuring test and the average accuracy obtained was 9.5 parts per million, sufficient for Class I Observer but not quite good enough for *QST* listing. With a digital counter to measure the beat frequency, accuracy within a few cycles could be obtained.

Possible Variations

In the earlier stages of developing the system, before the second v.f.o. was built, the low-frequency band of a BC-348 was used instead of the fixed 479-kc. i.f. strip. This made it possible to tune in stations several kilocycles away from the transmitter frequency without changing the v.f.o. setting. Eventually it is planned to use a Hycon high-frequency crystal filter[5] for selec-

(Continued on page 140)

[5] Goodman, "What's Wrong with Our Present Receivers?" *QST*, Jan. 1957.

tivity on both transmission and reception and then the W8OPB system [1] will be used to permit the same filter to function for both transmission and reception. It is also intended to provide a panadaptor whose input will be taken from a separate mixer at the output of the 80-meter r.f. stage.

This system solves completely the problem of setting the transmitter on the right frequency. It permits single-dial control of both transmitter and receiver frequencies but does not tie the operator down to this type of operation.

Power — 25 Watts

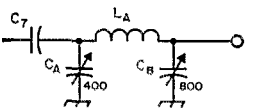
(Continued from page 43)

the need for a wheelbarrow. This little rig should fill the bill. For those so inclined, a small 300-volt 100-ma. vibrator or transistor supply could be built into a separate chassis that could replace the a.c. power chassis in the event of an emergency. The exchange of supplies could be made in a matter of seconds.

Build this rig and find out what fun can be enjoyed with low power. My first contact away from home, with the antenna strung from a curtain rod above my head across the motel room to another curtain rod and back again, gave me as much of a thrill as working a new country!

—···—

Editor's Note: The diagram of a suitable pi network output circuit is shown below. C_A and C_B are respectively single- and dual-unit broadcast-replacement-type variables, the two sections of the latter being connected in parallel. The coil,



L_A, may be a 3-inch length of B & W Miniductor 3015 or Air Dux 816 (48 turns No. 20, 1-inch diameter). Approximately half of the coil should be shorted out for 40-meter operation. The input capacitor C_A may be mounted on top of the shelf and the output capacitor C_B below.

The World Above 50 Mc.

(Continued from page 48)

W4AZC, Birmingham, Ala. — Would like extended-range skeds on 50 Mc., particularly with stations in South Carolina, Louisiana and Mississippi. Rig is 4-250A at 500 watts input.

K4EUS, Chester, Va. — During aurora QSO with W1OAX on 144 Mc. April 18, signals started to fade and W1OAX turned his beam south. QSO was concluded with 589 signals. Was this tropo, or something associated with the aurora fadeout? Would like to make similar checks on future aurora openings.

W4FNR, Ft. Lauderdale, Fla. — Gold Coast V.H.F Group, about 50 hams, meets in Dade, Broward and Palm Beach Counties on rotating basis.

K5HTH, Amarillo, Tex. — Sporadic-*E* season looks promising on basis of early weeks' results.

(Continued on page 142)

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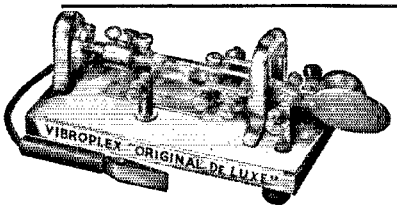

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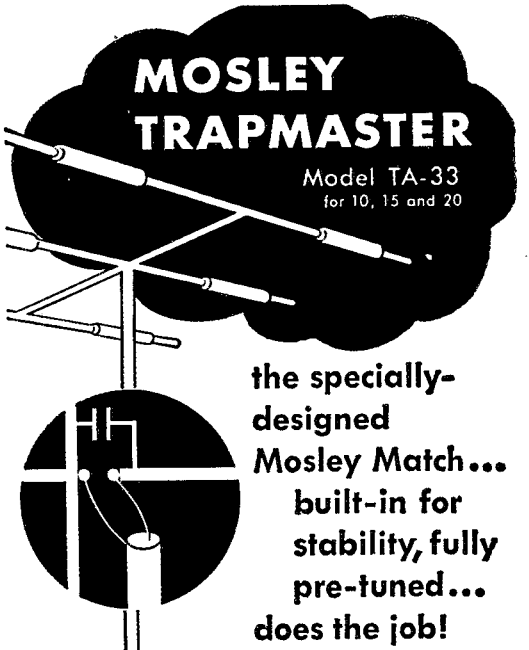

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W6WAI, San Jose, Calif. — Have 3-transistor front end for 50 Mc., ultimate aim being completely transistorized 50-Mc. receiver having communications-receiver characteristics.

W7EPZ, Billings, Mont. — End of first year on 6, May 1, shows 382 contacts with 332 different stations.

W7QDJ, Clearfield, Utah — Reception of Maracaibo Channel 9 (186 to 192 Mc.) by observers in Arkansas, reported by K6EDX, should encourage greater effort on 144 and 220 Mc. over long paths. This 2300-mile haul is over the Trade Wind inversion area.

W8NOH, Grand Rapids, Mich. — Western Michigan V.H.F. Conference will hold annual picnic first Sunday in August at Allegan Country Park. Bring your lunch, family, neighbors, and swap gear.

Complete silver plating of 417A-6BS8 144-Mc. converter made 1.6-db. improvement in noise figure. Converter was built on copper chassis, which was also silver plated. Also noted about 10 per cent improvement in output from 4X350B coaxial-tank amplifier after plating.

W9JIY, Indianapolis, Ind. — Suggest operation above 220.4 Mc. to avoid interference from Channel 13, which blocks low end of band in this area. Have Sunday-morning sked with K9GWP, Bloomington, on 220. Signals run about equal to those on 50 Mc. over same path.

Working W9MHP on m.c.w. on 50 Mc. to build up code speed and to provide code practice for local amateurs who operate solely on 6.

W9NHE, Fond du Lac, Wis. — Six-meter net operates Mondays and Wednesdays at 2100 CST with K9GEI as NCS. All 6-meter men welcome.

How's DX?

(Continued from page 58)

around the same age . . . . . K2QXG entertained VK3SX and family for two pleasurable weeks in May. Mac really holds an open house, expecting similar calls by a ZL, a ZS and more VKs before the year is out. "My QSOs *bring* their QSLs." . . . . . W6CG seeks European radioteletype skeds, suggesting 21,090 kc. by day, 14,340 kc. by night. Other DX areas also are invited to apply . . . . . W8ESR moved to Kilofornia after nailing down 169 countries and some 23 certifications in Grand Rapids. That town's ten-c.w. specialist, W8KX, waggles flirtatious ears at 14 Mc. now that 28 Mc. is at summer ebb . . . . . W3AZQ enters a plea for QTH data on the SV6FP active in 1956 . . . . . WGDXC finds that W4KC/KS4 is most active on Mondays, Wednesdays and Thursdays around 0300-0400 GMT, voice or code as the mood befits him . . . . . OVARA's *Ether Wares,* with W8JIN ably handling the DX editorial stint, reports VP2VB mm aboard *Yasme II* due to arrive the Caribbean from Madeira around this time. Danny plans extensive on-the-air activity at points along the new Federation strand. *Yasme* sleeps four, so this Caribbean undertaking may become a multioperator affair.

Ten Years Ago in "How's DX?" — In opening the July 1948 column your conductor emphasizes that "How's" is meant to be written by its readers, Jeeves & Co. merely providing the QSP . . . . Old 75 phone gets in some surprising licks on the DX front. VE3QD, for example, reports a recent A3 round table that included G8VB, CO7CX, HH2CW, VP6CDI and other VEs . . . . On 40 c.w. there are EK1AA, HE1GJ, Js 2SCS 9AAQ, MDs 5KW 7AZ, XAFQ of Trieste and ZD1LQ for your transoceanic pleasure . . . . Twenty phone reports are lacking but the blinker boys grab off AC4YN, Cs 6YZ 7FD 7OK 8YR, one CZ2ZC, EK1GM, ET1IR, F8NE/Corsica, HE1s CE EO, HL1BA, Js 2BNR 3AAD 6KDV, KAs 1AK 6FA, MDs 1D 5LD, MI3FG, OY3IGO, PK3MR, RV2 of Tahiti, TA1BB, VR2AZ, VR1, VR5PL, Ws 6ANX, C6 0OZW 'KS6, YR5s B I T, YU7KX, ZCs 1CL 6AA 6AB 6AC and Tristan's ZD9AA . . . . Typical ten-phone fare: C1CH, HL1s AN AZ MH, Js 2IMR 5LQK, KA1ACF, KG6AW VK9, MF2-AA, MI3ZJ, ST2s AM CH, SU1HF, W4MCI, KG6 and Basutolander ZS4L . . . . Among the miscellany we see that W6ZZ (ex-W1WV) worked his *1185rd* G, Papua VK4s are becoming more recognizable as VK9s, and one PX1A tells W1EH he's positively the only amateur in Andorra.

Strays

KV4BA was testing a new s.w.r. bridge and was answered by W4SWR.

A.R.R.L. QSL BUREAU

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

W1, K1 — G. L. DeGrenier, W1GKK, 109 Gallup St., North Adams, Mass.

W2, K2 — North Jersey DX Association, Box 55, Arlington, New Jersey.

W3, K3 — Jesse Bieberman, W3KT, P.O. Box 400, Bala-Cynwyd, Pa.

W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.

W5, K5 — Robert Stark, W5OLG, P.O. Box 261, Grapevine, Texas.

W6, K6 — Horace R. Greer, W6TI, 414 Fairmount St., Oakland, Calif.

W7, K7 — Joseph P. Vogt, W7ASG, P.O. Box 88, John Day, Oregon.

W8, K8 — Walter E. Musgrave, W8NGW, 1245 E. 187th St., Cleveland 10, Ohio.

W9, K9 — J. F. Oberg, W9DSO, 2601 Gordon Drive, Flossmoor, Ill.

WØ, KØ — Alva A. Smith, WØDMA, 238 East Main St., Caledonia, Minn.

VE1 — L. F. Fader, VE1FQ, 125 Henry St., Halifax, N. S.

VE2 — George C. Goode, VE2YA, 188 Lakeview Ave., Pointe Claire, Montreal 33, Que.

VE3 — Leslie A. Whetham, VE3QE, 32 Sylvia Crescent, Hamilton, Ont.

VE4 — Len Cuff, VE4LC, 286 Rutland St., James, Man.

VE5 — Fred Ward VE5OP, 899 Connaught Ave., Moose Jaw, Sask.

VE6 — W. R. Savage, VE6EO, 833 10th St. N., North Lethbridge, Atla.

VE7 — H. R. Hough, VE7HR, 1684 Freeman Rd., Victoria, B. C.

VE8 — W. L. Geary, VE8SAW, Box 534, Whitehorse, Y. T.

VO1 — Ernest Ash, VO1AA, P.O. Box 8, St. Johns, Newf.

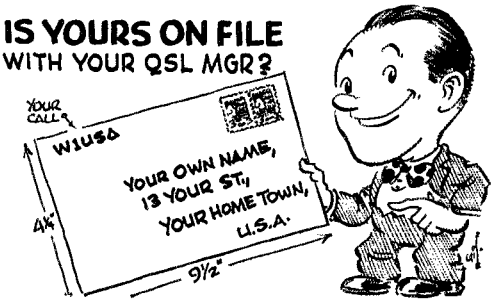
VO2 — Douglas B. Ritcey, Dept. of Transport, Goose Bay, Labrador.

KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.

KH6 — Andy H. Fuchikami, KH6BA, 2543 Namauu Dr., Honolulu, T. H.

KL7 — KL7CP, 310-10th Ave., Anchorage, Alaska.

KZ5 — Catherine Howe, KZ5KA, Box 407, Balboa, C. Z.



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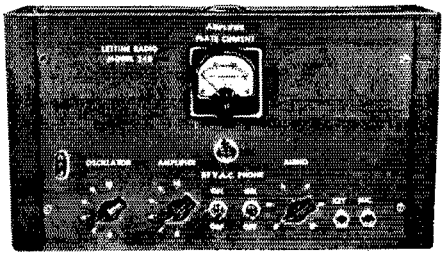

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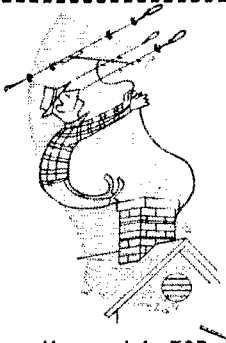

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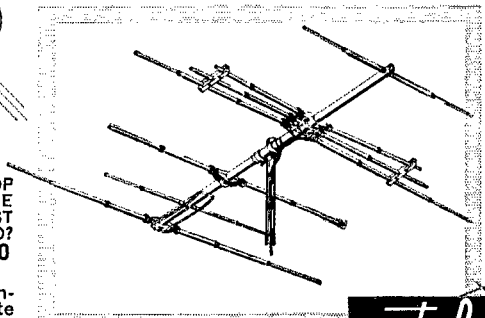

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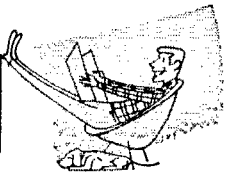

Board Meeting Minutes

(*Continued from page 61*)

the American Radio Relay League, meeting at Hartford, Connecticut, on May 9, 1958, directs its Secretary, while in attendance at the 26th National Convention of the Liga Mexicana de Radio Experimentadores at Mexico City, May 27–31, 1958, to convey to its sister IARU society its warm wishes for a pleasant and successful meeting.

46) At this point, Mr. Doyle, as Chairman of the Planning Committee, read the Committee's recommendations. Moved, by Mr. Brabb, to refer back to the Planning Committee the recommendations as concerns QSL Bureaus; but there was no second, so the motion was LOST. Whereupon, after discussion, on motion of Mr. Crossley, unanimously VOTED that the Committee be congratulated on its conclusions and recommendations.

47) On motion of Mr. Engwicht, unanimously VOTED that the Housing Committee is continued for another year.

48) On motion of Mr. Roberts, unanimously VOTED that, pursuant to the terms of the Trust Agreement under the Pension Plan, the following persons are appointed to serve as a Pension Committee from June 2, 1958 to June 2, 1959: Arthur L. Budlong, George Grammer, and David H. Houghton.

49) At this point, the Board proceeded to consideration of the election of additional members to the Executive Committee as provided in Article 7 of the Articles of Association. Moved, by Mr. Crossley, that at this time no additional members be elected to the Executive Committee; but there was no second, so the motion was LOST. On motion of Mr. Roberts, unanimously VOTED that three additional members be elected to the Executive Committee as provided in Article 7. Further, on motion of Mr. Gowan, unanimously VOTED to act on the three elections separately.

50) The Chair thereupon announced the opening of nominations for the election of one additional member of the Executive Committee. Mr. Roberts nominated Mr. Houghton; Mr. Brabb nominated Mr. Cooke, but Mr. Cooke withdrew his name; Mr. Engwicht nominated Mr. Crossley, but Mr. Crossley withdrew his name; Mr. Roberts nominated Mr. Handy, but Mr. Handy withdrew his name. Whereupon, on motion of Mr. Roberts, unanimously VOTED that the nominations are closed and the Secretary is instructed to cast one ballot electing Mr. Houghton as a member of the Executive Committee until the next annual meeting of the Board.

51) The Chair announced the opening of nominations for a second additional member of the Executive Committee. Mr. Born nominated Mr. Handy; Mr. Engwicht nominated Mr. Doyle, but Mr. Doyle withdrew his name; Mr. Brabb nominated Mr. Maer, but Mr. Maer withdrew his name. Whereupon, on motion of Mr. Doyle, unanimously VOTED that the nominations are closed and the Secretary is instructed to cast one ballot electing Mr. Handy as a member of the Executive Committee until the next annual meeting of the Board.

52) The Chair announced the opening of nominations for a third additional member of the Executive Committee. Mr. Joos nominated Mr. Doyle; Mr. Brabb nominated Mr. Roberts, but Mr. Roberts withdrew his name; Mr. Born nominated Mr. Cooke; Mr. Engwicht nominated Mr. Denniston. The Chair declared the nominations closed, and appointed Messrs. Grammer and Marmet as tellers. The tellers announced the result of the first ballot as follows: Mr. Cooke, 8; Mr. Doyle, 6; Mr. Denniston, 2. On motion of Mr. Denniston, unanimously VOTED that the election of Mr. Cooke as an additional member of the Executive Committee, until the next annual meeting of the Board, be made unanimous.

53) The Chair announced the opening of nominations for President. Mr. Doyle nominated Mr. Dosland. On motion of Mr. Canfield, unanimously VOTED that the nominations are closed, and that the Secretary is instructed to cast one ballot electing Mr. Dosland as President for the new term.

54) The Chair announced the opening of nominations for First Vice-President. Mr. Roberts nominated Mr. Groves; Mr. Brabb nominated Mr. Crossley, but Mr. Crossley withdrew his name; Mr. Joos nominated Mr. Noble. The Chair declared the nominations closed, and appointed Messrs. Grammer and Marmet as tellers. The tellers an-

(*Continued on page 148*)

nounced the result of the first ballot as follows: Mr. Groves, 13; Mr. Noble, 3. On motion of Mr. Brabb, unanimously VOTED that the election of Mr. Groves as First Vice-President for the new term be made unanimous.

55) The Chair announced the opening of nominations for an additional Vice-President. Mr. Engwicht nominated Mr. Noble. On motion of Mr. Brabb, unanimously VOTED that the nominations are closed and that the Secretary is instructed to cast one ballot electing Mr. Noble as a Vice-President for the new term.

56) The Chair announced the opening of nominations for an additional Vice-President. Mr. Born nominated Mr. Handy. On motion of Mr. Roberts, unanimously VOTED that the nominations are closed and that the Secretary be instructed to cast one ballot electing Mr. Handy as a Vice-President for the new term.

57) The Chair announced the opening of nominations for Secretary. Mr. Brabb nominated Mr. Budlong. On motion of Mr. Born, unanimously VOTED that the nominations are closed and that the Secretary be instructed to cast one ballot electing Mr. Budlong as Secretary for the new term.

58) The Chair announced the opening of nominations for Treasurer. Mr. Reid nominated Mr. Houghton. On motion of Mr. Cooke, unanimously VOTED that nominations are closed and that the Secretary be instructed to cast one ballot electing Mr. Houghton as Treasurer for the new term.

59) On motion of Mr. Chaffee, unanimously VOTED to approve the application of the Providence Radio Association to conduct a New England Division Convention in Providence, Rhode Island, on September 28, 1958.

60) On motion of Mr. Maer, unanimously VOTED that the General Manager is directed to include in the League's petition to FCC for the creation of exclusive c.w. band segments on 50 and 144 Mc., a request that immediate consideration be given to the matter so that the proposed amendments, if adopted, may be effected for as much as possible of the balance of the 1958 International Geophysical Year program.

61) On motion of Mr. Brabb, the following Resolution was unanimously ADOPTED:

WHEREAS, the radio amateurs stationed in Antarctica have selflessly spent long hours in handling messages on behalf of their companions, with the cooperation of public-spirited amateurs in the United States, and

WHEREAS, these activities have earned high praise from the U. S. Navy, scientific groups and the press as a major contribution to the morale of Antarctic personnel, therefore,

BE IT RESOLVED, that the Board of Directors of the American Radio Relay League, on behalf of its staff and membership, does hereby heartily commend these radio amateurs for outstanding performance of an important public service.

62) On motion of Mr. Cooke, the following Resolution was unanimously ADOPTED:

WHEREAS, the technical writings of Lewis G. McCoy on home-built equipment appearing in *QST* have contributed tremendously in the education and experimental phases of our hobby by newcomers and old-timers alike,

BE IT RESOLVED, that the Board of Directors extends its thanks and gratitude for these efforts and looks forward to more of the same, both in the primary and advanced stages of technical information.

63) Moved, by Mr. Crossley, that the Board authorize the establishment of a part-time information office at Washington, D. C.; but the motion was REJECTED.

64) On motion of Mr. Born, unanimously VOTED that the Board go on record as commending the Field Engineering & Monitoring Bureau of the Federal Communications Commission for its assistance and cooperation rendered amateurs over the past year.

65) On motion of Mr. Born, unanimously VOTED that the Board hereby expresses its sincere thanks and deep appreciation for the untiring work and devotion of the Vice-directors, assistant directors, SCMs, SECs, and QSL managers of the League.

66) Moved, by Mr. Engwicht, that it is the sense of the Board that ARRL national conventions be held no oftener than once every five years. On motion of Mr. Roberts, unanimously VOTED to amend the motion by striking the word "five" and substituting therefor the word "three."

(Continued on page 150)

The question then being on the motion as amended, the same was ADOPTED.

67) On motion of Mr. Denniston, unanimously VOTED that the Board now discuss frequency allocations. After extended discussion, moved by Mr. Denniston, that the General Manager be instructed to hold discussions with the Federal Communications Commission as to the possibility of amateur radio operation being authorized between 1750 and 1800 kc. The yeas and nays being ordered, the question was decided in the affirmative: whole number of votes cast, 15; necessary for adoption, 8; yeas, 9; nays, 6. Those who voted in the affirmative were Messrs. Anderson, Born, Brabb, Chaffee, Denniston, Doyle, Engwicht, Joos, and Maer; those who voted opposed were Messrs. Canfield, Cooke, Crossley, Gowan, Payne, and Roberts; Mr. Reid abstained. So, the motion was ADOPTED. During the course of the above, the Board was in recess from 9:45 P.M. to 9:53 P.M.

68) At this point, the Chair announced the following committee appointments for the coming year:

Housing Committee:
Mr. Canfield, Chairman
Mr. Anderson
Mr. Chaffee
Mr. Roberts
Mr. Budlong

Merit & Awards Committee:
Mr. Anderson, Chairman
Mr. Budlong
Mr. Engwicht

Finance Committee:
Mr. Chaffee, Chairman
Mr. Maer
Mr. Joos

Planning Committee:
Mr. Brabb, Chairman
Mr. Denniston
Mr. Cooke

Membership & Publications Committee:
Mr. Born, Chairman
Mr. Doyle
Mr. Gowan

69) On motion of Mr. Maer, the following Resolutions were unanimously ADOPTED:

WHEREAS, Ray H. Cornell, W6JZ, had for several years served the American Radio Relay League and amateur radio as Director of the Pacific Division, and

WHEREAS, the institution of amateur radio is deeply grieved by his passing on February 23, 1958, now therefore,

BE IT RESOLVED, that the Board of Directors of the American Radio Relay League, meeting at Hartford, Connecticut on May 9, 1958, on behalf of amateur radio hereby expresses its deep sense of loss at his passing.

WHEREAS, Col. William H. Jacobs, W4CVQ, had served the American Radio Relay League and amateur radio as Director of the Roanoke Division in 1951–1952, and

WHEREAS, the institution of amateur radio is deeply grieved by his passing on November 15, 1957, now, therefore,

BE IT RESOLVED, that the Board of Directors of the American Radio Relay League, meeting at Hartford, Connecticut on May 9, 1958, on behalf of amateur radio hereby expresses its deep sense of loss at his passing.

70) Whereupon, on motion of Mr. Reid, the Board adjourned *sine die*, at 10:48 P.M. EDST.

71) (Time in session, 9 hours, 16 minutes; total authorizations, $34,650.)

A. L. BUDLONG
Secretary

YL News and Views

(*Continued from page 55*)

necessary to include the time of contact when submitting a list of the 100 YL contacts. It is still necessary to include the names of the operators in alphabetical order and the date of contact. Silver stickers have been discontinued and only gold stickers for endorsements will be awarded.

The annual picnic of the Blue Ridge YL Net will be at Skyline Drive, August 3.

Los Angeles YLRC — New officers for the 1958-59 season are Pres. W6JZA; V. P. K6BUS; Recording Secy. K6PFY; Corres. Secy. W6AVF; Treas. K6OQD. The membership sadly reports that Gracie Woodhouse, W6QWC, is now a Silent Key.

San Diego YLRL — Meetings are the second Tuesday of the month at 7:30 P.M. at the Red Cross Building, 3650 5th Ave. Current officers are Pres. W6GGX; V. P. K6YGJ; Secy. W6OLP; Treas. K6RDV. Present membership is 18 — new YLs cordially invited.

SPARCYLs — New officers for the coming season are Pres. W4WPD; V. P. W4TDK; Secy.-Treas. W4BIL. Mac, W3CUL and Esther, W8ATB, and their respective OMs were guests at a Spring meeting.

Floridora YLs — New officers are Pres. W4BWR; V. P. W4KOH; Secy.-Treas. K4LCD. Twenty-five members enjoyed a talk by Mac, W3CUL, 1956 Edison Award winner, at the Orlando Hamfest on April 12.

OPERATING:

Lois, W5HWX, received DXCC certificate No. 1171 dated March 27, 1958 (all phone contacts). . . . K1DGI, Gladys, of Reading, Mass., is NCS of the new Six Meter Cross Band Net. . . . A YL-OM Contest log from OM JA8AA arrived too late to be included with the results published last month, but Takeo worked 8 YLs on c.w. and two on phone on 20 meters. . . . Hilda, ex-K2IWO, is on the air from Japan using her OM's Japanese call, KA2JA. Anxious to work YLCC from Japan, Hilda operates around 28,375 kc. on week ends and during the week when her teaching duties permit. Lois, K4CXJ, also in Japan, hopes to operate as soon as she moves to a U. S. Government controlled area.

MISCELLANY:

Both Ena, K5CHF, and Delphine, KØIEK, operated portable from their hospital beds after giving birth to new harmonics recently. Ena maintained frequent schedules on six meters with her OM K5AON from the Baylor Hospital in Dallas. Delphine was back on the air chatting with her husband and ham friends in the St. Louis area only hours after delivering a nine-pound daughter. . . . Thirteen-year-old W5IOZ of McAlester, Oklahoma, was a finalist in the Oklahoma state "Spell-Offs" after winning top spelling honors in McAlester schools. . . . Ann, W6KYZ, is now living in Palmdale, Calif. on Q5 street. . . . Certificate No. 100 of the Texas Young Ladies Round Up Net was issued to Marge, K5PIO. . . . Some 40 W1 YLs gathered for the annual Spring luncheon of the Women Radio Operators of New England at Boston, May 3. . . . KL7-BLL, Margie, and KL7BHE, Sheila, are co-editors of *Northern Lights Carrier*, a monthly bulletin of the Anchorage, Alaska ARC. . . . Rita, W8VJO, will replace Jeanne, W8IAA, as co-editor, along with Marie, W8MIBI, of the Ohio bulletin *Ham Shack Gossip*. Jeanne is moving to a new QTH. . . . K4CZP, Mattie, is the new president of the Peninsula ARC of Florida. . . . The new address of Ruth Sherman, W1WED, custodian of the Rhode Island YL Certificate, is 128 Massasoit Drive, Warwick, R. I.

Strays

A fellow who neglected to give us his call says that his very first QSO was with W8JHI and his second was KN6JHI.

—···—

At least seven different Novices have made BPL.

HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others. No Box Reply Service can be maintained in these columns nor may commercial type copy be signed solely with amateur call letters.

(3) The Ham-Ad rate is 30¢ per word, except as noted in paragraph (6) below.

(4) **Remittance in full must accompany copy, since Ham-Ads are not carried on our books. No cash or contract discount or agency commission will be allowed.**

(5) Closing date for Ham-Ads is the 20th of the second month preceding publication date.

(6) **A special rate of 7¢ per word will apply to advertising which in our judgment, is obviously noncommercial in nature.** Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, takes the 7¢ rate. Address and signatures are charged for. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising so classified takes the 30¢ rate. Provisions of paragraphs (1), (2) and (5), apply to all advertising in this column regardless of which rate may apply.

(7) **Because error is more easily avoided, it is requested copy, signature and address be printed plainly on one side of paper only. Typewritten copy preferred but handwritten signature must accompany all authorized insertions.**

(8) No advertiser may use more than 100 words in any one issue nor more than on ad in one issue.

Having made no investigation of the advertisers in the classified columns except those obviously commercial in character, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

QUARTZ— Direct importers from Brazil of best quality pure quartz suitable for making piezo-electric crystals. Diamond Drill Carbon Co., 248 Madison Ave., New York City 16.

MOTOROLA used FM communication equipment bought and sold. W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

WANTED: Cash or trade, fixed frequency receivers 28/42 Mc. W9YIY, Troy, Ill.

MICHIGAN Hams! Amateur supplies, standard brands. Store hours 0830 to 1730 Monday through Saturday. Roy J. Purchase, W8RP, Purchase Radio Supply, 327 E. Hoover St., Ann Arbor, Michigan. Tel. NOrmandy 8-8262.

WANTED: Early wireless gear, books, magazines, catalogs before 1922. Send description and prices. W6GH, 1010 Monte Dr., Santa Barbara, Calif.

WANTED: All types aircraft & ground transmitters, receivers ART-13, RT/ARC1, R5/ARN7, BC610E, ARN6, BC788C, ARC3, BC342. Highest prices possible paid. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

ATTENTION Mobileers! Leece-Neville 6 volt 100 amp. system alternator, regulator & rectifier, $45.00. Also Leece-Neville 12-volt 100 amp. system, alternator, regulator & rectifier, $85.00. Good condition. H. A. Zimmerman Jr., K2PAT, 115 Willow St., Brooklyn 1, N. Y. Ulster 2-3472.

CASH for your gear. We buy as well as sell. Write for cash offer or trade. We stock Elmac, Gonset, Hallicrafters, Hammarlund, Johnson, Lysco Master Mobile Morrow, National and other ham gear. H & H Electronic Supply, Inc., 506 Kishwaukee St., Rockford, Ill.

WANTED: Receiver R5/ARN-7, MN-62A transceivers, RT18/ARC-1, AN/ARC-3, BC-788C, 1-152C, Collins, Bendix equipment, test sets, dynamotors, inverters. We pay highest prices. Advise quantity, condition, price in first letter. Aircraft Radio Industries, Inc., 70 East 45th St., New York City. Tel. LExington 2-6254.

MULTI-BAND Antenna, 80-40-20-15-10, $21.95. Patented. Send stamp for information. Lattin Radio Laboratories, Owensboro, Ky.

SAN FRANCISCO and vicinity. Communication receivers repaired and realigned. Guaranteed work. Factory methods. Special problems invited, any equipment. Associated Electronics, 58 South P St., Livermore, Calif. W6KF, Skipper.

RECEIVERS: Repaired and aligned by competent engineers, using factory standard instruments. Authorized Factory Service Station for Collins, Hallicrafters, Hammarlund, National. Our twenty-first year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

RADIO magazines. Buy, sell or trade. Bob Farmer, Plainview, Texas.

TECHNICAL Manuals TM11-273, 120 pages covering BC-312 receivers and BC-191 transmitters, $2.50. ID-60/APA-10 Panadaptor maintenance manuals. $2.75. Both postpaid in U.S.A. Electronicraft, Bronxville, N. Y.

AMATEUR Paradise Vacation Spot: Livingstone Lodge and Lodge Cabins, Muscoma Lake, Enfield, N. H., gateway to White Mountains, for couples and Family Groups. 100 acres, eleven buildings, Main Dining Lodge, fine sandy beach, boats, sports, skiing, Dartmouth golf & tennis, churches, LaSalette Shrine, Fishing, 29th year, 75 and 40 meter rig in Lobby. American plan, $40 per week up. Children half that. Booklet. Write A1 Q, Livingstone, W2QPN.

"PIG-In-A-Poke"? Not if you visit Ham Headquarters, USA, and pick your choice from the hundreds of "Like-New" bargains in the world-famous Harrison Trade-in Center. Greater values, because tremendous turnover means lower overhead! Terms. Trades. Send us postcard for mouth-watering photograph and price-list. For the best in new and used equipment it pays to come to Ham Headquarters, USA! BCNU. Bill Harrison, W2AVA, 225 Greenwich St., New York City.

QSLS? SWLS? Finest and largest variety samples 25¢ (refunded). Callbooks (Summer) $5.00 postpaid. "Rus" Sakkers, W8DED, P.O. Box 218, Holland, Michigan (Religious QSL samples 10¢).

QSLS. Neat, Attractive. Samples 10¢. Woody's. Box 164, Asher Sta., Little Rock, Ark.

QSLS — We've printed a million! Samples 10¢. VYS QSLS. 1704 Hale, Ft. Wayne, Ind

QSLS. Reasonable. 3 Week Delivery. Samples dime (coin). Dick, K6GJM, Box 294, Temple City, Calif.

QSLS-SWLS. High quality. Reasonable prices. Samples. Bob Teachout, W1FSV, 204 Adams St., Rutland, Vt.

QSLS-SWLS, 100, $2.85 up. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

QSLS, SWL's, VHF's, XYL-OM's. (Sample assortment approximately 9¾¢.) Covering designing, planning, printing, arranging, mailing, eye-catching, comic, sedate, fabulous, DX-attracting, prototypal, snazzy, unparagoned, cards. Rogers, KØAAB, 737 Lincoln Ave., St. Paul 5, Minn. Also glamorous, pulsating (Wow!).

QSLS, Taprint, Union, Miss.

QSLS. Plain and fancy samples 10¢. Fred Leyden, W1NZJ, 454 Proctor Ave., Revere 51, Mass.

CREATIVE QSL and SWL Cards. Are you proud of your card? If not let us print your next order. Write for free samples and booklet. Personal attention given to all requests Bob Wilkins Jr., KN6ZMT, Creative Printing, P. O. Box 1064-C, Atascadero, Calif.

QSL-SWL samples free. Bartinoski W2CVE Press, Williamstown, New Jersey.

QSLS-SWLS. Samples free, Spicer, 4615 Rosedale, Austin 5, Texas.

QSLS "Brownie." W3CJI, 3110 Lehigh, Allentown, Penna. Samples 10¢ with catalogue, 25¢.

QSLS-SWLS. Samples 10¢. Maigo Press, 1937 Glendale Ave, Toledo 14, Ohio.

QSLS, Sharp! 200 one color, glossy, $4.75 Multi-color samples dime. K9DAS QSL Factory, Edward Green & Sons, 4422 Marquette Dr., Ft. Wayne, Ind.

QSLS-SWLS. 100, $2.50. Samples 10¢. QSO file cards, $1.00 per 100. Rusprint, Box 7507, Kansas City 16, Mo.

QSLS of distinction. Three colors and up. 10¢ brings you samples of distinction. Uncle Fred, Meshoppen, Penna.

QSLS. Twenty exclusive designs in 3 colors. Ruth $3 for 100 or $5 for 200 and get surprise of your life. 48 hour service. Satisfaction guaranteed. Constantine Press, Bladensburg, Md.

QSLS, High gloss, 2 colors, samples 10¢ (refunded). K2VOB Press, 62 Midland Boulevard, Maplewood, N. J.

FREE Samples. QSLS-SWLS, Backus, 703 Cumberland St., Richmond, Va.

QSLS. Samples, dime. Printer, Corwith, Iowa.

QSL-SWLS that up returns! Samples 25¢ deductible. Log file cards $2.00 per 200, $6.50 per 1000. C. Fritz, 1213 Briargate, Joliet, Ill.

QSLS, samples dime, Eddie W. Scott, W3CSX, Fairplay, Md.

QSLS. Glossy. Samples 10¢. W1OLU Press, 30 Magoun, Medford, Mass.

QSLS for economy-minded hams. $4.65 for 500. Free brochure. K9EUP Print (Charley Vorderberg), 1839 46th St., Rock Island, Ill.

QSLS: Cartoons, colors, something different. Samples 20¢. Chris, W9PPA, 365 Terra Cotta, Crystal Lake, Ill.

RUBBER Stamps for hams, sample impressions. C. W. Hamm, W9UNY, 542 N. 93rd St., Milwaukee, Wis.

QSLS, 100 for $3.00, glossy. Samples free. R. A. Larson, 32 Midland Ave., Stamford, Conn.

WANTED: Unused electronic tubes, commercial gear, lab test equipment and components. Will pay cash or swap for choice ham gear, etc. Write for Barry's "Green Sheet", chock full of bargains in ham gear, tubes, relay racks, transformers, etc. Barry Electronics Corp., 512 Broadway, New York 12, N. Y.

HAM Licenses, Resident courses, Novice and general classes, 3 evenings weekly, Delehanty Institute, 117 East 11th St., NYC 3, GR 3-6900.

"THE Saga of Telegraphy", LP recording & brochure. Historical. $3.75. Ralph Graham, W4RJX, Box 3556, Arlington 3, Va.

GLOBE-CHIEF, excellent condition, $40; Knight VFO, $20. Oscar Kaelin, W2AKN, Rd. 2, New Paltz, N. Y.

COAXIAL Cable, 53 ohms, 100 ft. $4.35. Postpaid. Satisfaction guaranteed. Van Dick, Riverlawn Drive, N. J.

SSB — Latest diagram, template, 3 xfrms, disc ceramic & mica condensers, coils, L1 thru L7 for "W2EWL Special" (Mar. 1956 *QST*). $10.95 postpaid. A. Vitale, W2EWL, E. Glen Rd., Denville, N. J.

416B Owners, brass mounting plate, machined ¾ — 40 hole, $2.50. Robert B. Flint, W9YBV, RR #2, P.O. Box 290A, Bridgeport, Ind.

VR6TC QSL to W4TAJ with self-addressed envelope.

CALL plates. Deluxe 8" x 1¾" black phenolic laminate with engraved white letters. Only $1.00 p.p. Polished plexiglass base, $1.00 extra. L. & J. Products Co., P.O. Box 122, Downers Grove, Ill.

BARCO'S in Sandusky, Ohio, for your best deal in Ham Gear. National, Hammarlund, Hallicrafters and WRL Globe transmitters. Hy-Gain and Mosley beams. 1725 Columbus Avenue. Main 5-9864.

CANADIANS! NC-300 for sale, 16 mos. old in excellent condx. $425 cash, no deals or swap unless you can throw in the XYL to boot. Hi! G. McKendry.

KITS assembled, wired and tested promptly. Our charge 20% of kit price. Experienced with all makes ham equipment, test instruments and high fidelity. Partly wired kits same price. Finest checking equipment. Also equipment designed and built, factory standard workmanship. Have kits sent direct to us. Surplus gear converted. (Licensed ham since 1924, Ex W9AXJ). Money back guarantee. KØKJX, L. P. Jackson, 645-A Marshall Ave., St. Louis 19, Mo. Tel. WOodland 2-2048.

MOBILE Batteries, Vita-Plate Special Service Types, 6 and 12 volt, for all cars. Used by Police and Fire Departments. Free data. Cornell Communications, 1340 Ford Rd., Cleveland 24, Ohio (Paul, W8EFW).

BARGAINS: Send for list of reconditioned receivers and transmitters with new guarantee. 10% down with up to 24 months to pay. In stock, new Collins, Johnson, Hallicrafters, WRL, National, Hammarlund, Gonset, Elmac, Drake, Central Electronics, B&W, Hy-Gain, Mosley and Gotham beams. Shipped on approval. Write Ken, WØZCN or Glen, WØZKD, for your best deal. Ken-Els Radio Supply Co., 428 Central Ave., Ft. Dodge, Iowa.

PITTSBURGH Hamfest: Biggest yet! 21st annual hamfest of the South Hills Brass Pounders & Modulators. Sunday, August 3, 1958. South Park Totem Pole Lodge. Contests for young and old. Swap shop. Preregistration, $1.50. Write or call William E. Guthrie, W3LDB, 4949 Roberta Drive, Pittsburgh 36, Pa. $2.00 at door.

VACATIONS. Modern housekeeping cabins, American plan; ham with my equipment. Lighthouse Lodge on Big McKenzie Lake. Spooner, Wis., Tony, W9HZC.

YOU asked for it. A broad band I.F. coupler tuned to 455 Kc for double sideband reception. This unit will plug into the mechanical filter socket of a 75A-4. Only $12.95 postage prepaid. Busacker's, 1216 West Clay, Houston 19, Texas.

ELMAC AF-67 for sale. Perfect. Like new. Never mounted. Perfect condx. Sacrifice, only $140. Mary, W4VJX, Box 48, Lewisburg, Tenn.

MODEL 600 2.5 KVA motor generator, Salsbury engine 4 cycle Leland alternator; ball bearing 120V 1 phone 60 cycle 1800 rpm; 20 amp circuit breaker protection, AC filtered, belt-driven with 2 Vee belts, condx excellent. Best reasonable offer. Arnold Trenn, 80 Niehaus Ave., Little Ferry, N. J. Tel. HU 7-3933. Call evenings after 6 P.M.

SELL: Viking Adventurer, excellent, $35; SX-24, very gud, $60; Bassett vacuum coil, 15 meters, $7. Want: Brown Electronics recorder, or equal. MV calibration, circular or strip, single or multipoint. W1LWV, 99 Water, Millinocket, Me.

NEW Mercury outboards and boats. Will take ham gear on trade. Write: Boyd Reter, KØIMO, Boyd's Marine Shop, Clinton, Iowa.

WANTED: Aircraft, Airline, Military, Electronics gear and test equipment. Collins, Bendix, ARC, Airforce, Narco, BC348, BC61-OE, ARN6, ARN14, ART13, 51R3, MN62A, others. We pay C.o.d. advise price, condition. Ritco, Box 156, Annandale, Va., Phone Jefferson 2-5805.

WILL sell or trade mobile Gonset Twins G66 and G77. Need late model receiver. Carroll Curb, K5VFK, Monahans, Texas.

S.S.B. Transformers identical and exact as used in W2EWL exciter (see *QST* March 1956). Brand new 3 for $4. No C.o.ds. please. S. Tucker, W2HLT, 51-10 Little Neck Parkway, Little Neck 62, N. Y.

FOR Sale: Hallicrafters SX-99 with matching speaker, in exc. condx, one year old. Price only $120. Write Harry Bergman, 88-30 199 St., Hollis 23, L. I., N. Y.

YOUR QSL made into a laminated plywood plaque, $3.00. Satisfaction guaranteed. Solomson, 46 Cornhill, Boston 8, Mass.

WANTED: B & W 5100 B, in gud condx. Will pay $200 cash. Write or phone John L. Wilson, Esq., W8ZWX, 1225 13th St., N.W., Washington 5, D. C.

TUBES: 417A at 3.50 each. W. H. Goodell, Jr., 132 E. 5th Ave., Roselle, N. J.

WANTED: Receiver and TVI suppressed transmitter, prefer NC-300, DX-100 or equivalents. Give complete details, condx, age, etc. George Laine, W2NXP, 222 East 7th St., Brooklyn 18, N. Y.

FOR Sale: ART-13, like new, converted to 110V A.C. with power pack. Make offer. Also QSTs from 1936 to 1957. Make offer. W8OAR, 8610 Hough Ave., Cleveland 6, Ohio.

SALE or trade: Matchbox, like new, $40; Millen R-9er, $20. Both for $55, or trade for Collins mechanical filter and/or what have you. Appreciate offers. Guaranteed reply. W9IZX, Lee Boschen, 403 W. Tilden Drive, Brownsburg, Ind.

FOR Sale: Complete SSB station of the late Joe Williams K5CAW. B&W 5100 with 51SB mike and key, also 75A4 with speaker. All in excellent condition. Price: $995. 1433 Thomas Dr., Las Crucas, New Mexico.

COMPLETE G-E 147.3 Mc. mobile transceiver, $75; 80 watt FM 6 meter mobile, $75; PE-103 dynamotor w/cables, $20; 6 volt Leece-Neville alternator, complete, $35. W9FNQ, 2550 Park St., Terre Haute, Ind.

FOR Sale: 1-20 M 3-el. Mosley Minibeam, 1-Hy-Gain 80 AV Topper vertical 10-80 in. antenna with base for pipe mount. Best offer. P. B. Summers, 410 Maple St., Delphos, Ohio.

SELL: Postwar HT-9 for 10-20-40 spare 814 top condx, $75; new Gonset 6-12 volt Super Six converter and clipper, both $40. Shakespeare Wonderod with Master 20 center loading coil, Premax bumper mount and spring, Vaaro coupler, all $15. W2NQR, M. J. Devaney, 8 Wagon Wheel Rd., Mamaroneck, N. Y.

SELL: AT-1 modified 90 watts input, $29; VF1 with reg. pwr. supply, $20. Also misc. parts. Write for complete list. All F.o.b. Pawhuska, Okla. W5VVQ, Box 682.

FOR Sale: Collins 75A4 receiver, like new, with two mechanical filters, $550; Collins 32V3 transmitter like new, $475; B&W 51 SSB generator used only a few hours, $225; Johnson Ranger new, but not assembled too neatly. Needs resoldering and a little "cleaning up"; $125. Want: Lampkin 105B and 205A test instruments. W. F. Thompson, K4DOA, Williston, S. C.

COLLINS KWS-1 75A4, in exc. condx. Frank Gregory, 1855 Taylor St., N.W., Washington, D. C.

WANTED: Scott Philharmonic console radio, 1947 or later model, or similar model. State full particulars as to model, condition, and price. Jack Rhodes, 1880 Juniper St., Prince George, B. C., Canada.

WANTED: Modulation transformer for KW rig or complete modulator. Mars station, AFROTC Detachment 585, Duke University, Durham, N. C.

SELL new pair Vocaline transceivers, AT30, 420-450 Mc tunable. Line of sight communication, good for several miles. Tested only. Original packing and instructions. Cost $198. Will sell for $100. J. E. Cain, Jr., W4MB, 1101 Belle Meade Blvd., Nashville, Tenn.

21 Mc. coils for BC-455, $2.50 postpaid. R. N. Hayes, 218 Eleventh St., S.E. Massillon, Ohio

GLOBE-KING 400C, with push-to-talk, speech filter and all coils 10 thru 80. PE condx, $300.00. S. C. Lough, W7VL, 5042 Harold Place N.E. Seattle 5, Wash.

TWO-WAY Communications, Mobile, Industrial, Aviation. Free catalog. RCE, 520 S. Virginia, Reno, Nev.

75A4, sell for $535 F.o.b., used less 10 hours positively, to his 75 SSB, never for QSO. This receiver considered new and untampered with in any way. O. Julin, W1LBR, 51 George St., Arlington 74, Mass. Tel. MI 3-3392.

NC-173, $110. In good shape. W3HRA, HO 8-5268.

WANTED: 51J-3. Will consider earlier models. Paul Lee, 6606 Hillandale Rd., Chevy Chase, Md.

LIKE New HQ150, $225; UTC S-50, $28; Gonset Triband, $25; Elmac 4-250A, $29; Lysco 10M and 75M, mobile rigs, $16.50 each. All unused; used xfrmrs, condensers, chokes, meters, reasonable. W2LBM, 56 Harwood Ave., White Plains, N. Y.

VAN SICKLE gives one radio directional tinder free with purchase of National NC-66, $129. Limited quantity, W9KJF, 4131 N. Keystone Ave., Indianapolis, Ind.

SELL: WRL 755 VFO, DB22A, S72 portable, each best offer over $40; RME 100 speech clipper, $12; Millen phase-shift network, 10A transformers, $12. Chester Benson, W9IFB, 333 So. 5th, Richmond, Ind.

FOR Sale: Homebuilt Class AB1 40 W modulator, page 270, 1958 Handbook, built complete on 3½ rack panel w/meter, $60; Bogen 600 master w/two 60R remote intercom stations, $35; UTC CVM-1, $12; Akro-Mils small parts cabinets; J-64-SD, $20; J-32-SD, $10; J-16, $5; SC-12, $5; SC-18, $10; 6 ft. length, .250 wall dural mast, $15. Richard Ebeling, K2UTC, 33 Randolph Rd., White Plains, N. Y.

SALE: Hallicrafters S-53A receiver. In gud condx. Best offer over $50. 2E26 six-meter xmttr, p. 424, 1957 Handbook. Best offer over $10. K5KML.

SELL: New Gonset 6 meter Communicator III, 12V DC, 110V AC including new 6 meter 4-el. Telrex beam and FT-12 Alliance rotator, all in cartons, never used. Need the cash. Philip Kantz, 2101 W. Venango St., Philadelphia 40, Pa. W3JLD. Tel. BA 3-6908.

TELEVISION Personnel. Available September 1, a young, married, sober, educated, imaginative, producer-director. Would like to be associated with a live-wire TV operation. Need another ham on your staff? I'll go anywhere. Examples of my work available on kine. Resume and excellent references. David L. Bell, W8GUE, 128 Haven Road, Syracuse 10, N. Y.

FOR Sale: Globe Chief xmttr. Heath V.F.O. ant. coupler, $70 f.o.b. Binghamton, N. Y. Mike Brechko, 25 Ogden St.

WILL Trade — 10 Select-O-Vend candy and gum vending machines (8 new, two used, cost $49.95 each) for DX100, Johnson Ranger or what have you? W3ISA, RD #2, Meadville, Penna.

BEAM Antenna for sale: E. F. Johnson Co. 3-element 20 meter with T-match, used, $50; E. F. Johnson Co. 10 or 15 meter 4-el. with T match, new and unused, $50; Western Gear Delta Tenna 10-meter ground plane, used, $10. W8UJB, John A. Bailey, 1104 W. Market St., Akron, Ohio.

WYOMING Hamfest July 12-13. Program, banquet. Tourist mobiles welcome. See Hamfest Calendar this issue.

MINIATURE 1" meters: Popular ranges available from stock. Free literature. Alco Electronics, Lawrence, Mass.

SALE: Inverter, 6V DC to 110V AC 60 watts continuous, $12; 522 transmitter/receiver gud condx. Transmitter $15, receiver, $10, both for $22.00; Motorola T-69-20-A mobile transmitter with 6V DC pwr supp; 40 watts AM on 33 Mc. Easily put on 10M, $25; 6V DC Carter dynamotor, 400V DC, 225 Ma., at 5.5V DC, mounted filtering and relay, enclosed, $20; new: Noise filters guaranteed attenuation 80 d.b. or better ½ to 1000 Mc., 20A, 500V DC or 125V AC, $5.00; 7A, $2.50; rotary inductors 75 watts 80-10 meters, $1.50. W9GBD, F.o.b. Chicago, Ill. 1107 West Albion Ave., Chi. 26, Ill.

SELL: Dyna Labs Gaussmeter Model D-79 with instruction book, carrying case, two probes. In new condx, not adaptable our special research problem: $225.00, prepaid for cash. Lampkin Laboratories, Inc. RFD #1, Bradenton, Florida.

MOBILE Rig, complete Elmac AF-67, PMR-6A recvr, 6V DC vibrator and dynamotor supplies for above, antenna with all-band loading coil, relays, connectors, etc. All in gud condx. First $200 takes it. K5EAT/4, Ens. Wren, BOQ, NAAS Whiting Field, Milton, Fla.

SSB Station for sale. Going mobile! HT-32, NC-300, 10M5796, Terex, AR-22, 10 ft. tower, Mon-Key, Vibroplex, D-104 mike and many extras. Going for $1,050 with free delivery within 50 miles this place. Special if you make pick-up. K2RSP, AS4-7154, Smith, 31-80 36th St., Long Island City 6, N. Y.

HAMFESTERS Radio Club announces its 24th Annual Picnic to be held Sunday, August 10th, 1958, at Santa Fe Park, near Chicago. See July Hamfest Calendar or write W9PBM.

MOBILE Units: Link 2210, $45; Motorola FMTRU-41V, $125. J. F. Coleman, Charlestown, Ind.

SACRIFICE! Mosley 40-20-15 meter beam, cost $150. Will sell for only $60; TBY-8 28 to 80 Mc. transceiver complete with original 110V AC and vibrator supplies, antenna, mike, phones, key, tubes $35. Everything in exc. condx. Sorry, can't ship! Pick-up deal only. K6BTH, 123 Forbes Ave., San Rafael, Calif.

SELL: Pair BC-611 Handi-Talkies, $160; RK-65, $8; pair UV-849s, $150; 3E29, $10; antique pair 205-D Western Electric triode tubes, best offer, postpaid. Socci, W2RUK, 202 Franklin St., Auburn, N. Y.

NATIONAL NC-183D looks and works like new. Guaranteed perfect. A best buy at $225. F.o.b. W3IGI, 67 Pumpkin Hill Rd., Levittown, Penna.

TRADE: Kodak Retina IIA, case, Minicam flash and many accessories, all in exc. condx. Wanted: 20A, 10B — VFO, 88B xmttr/exciter, linear amplifier or good AM rig. Cash. R. G. Berrisford, Apt. 1551B, Blytheville AFB, Blytheville, Ark.

DX Radio Coop forwards outgoing QSLS, 2¢ each. Callbook, $5.00, Schematics, 59c. Sam's Information free with schematic. 500 QSO File Cards, $4.00. Free Flyer. "DX Radio Coop", Box 5938, Kansas City 11, Mo.

SELL as a unit: DX-100, RME receiver, Johnson Matchbox, Mike, voice control, coax Antenna Relay, homemade SWR bridge. $300 or will trade for car. Paul White, W9WDU, 1536 George St., La Crosse, Wisconsin.

POWER Supply for sale, 1250-1500 each side, 300 mils. Bargain, $15. Sorry, no shipping! W1FDN, MacKenzie, 29 John Carver Rd., Reading, Mass.

WANTED: Hallicrafters SX-25 receiver in operating condition: cash deal. Write Fritz, W8CRS, Jacksonville, Ohio. Athens County.

SELL: Factory wired Viking II with push to talk and instrux book. Gud condx. $200 plus shipping cost. Claude Black, 411 Cherokee Road, Richmond 25, Va.

GONSET G77A xmttr, factory-sealed, $249; Elmac PMR7, $109; PMR6 with 6V supply, $89; Millen grid dip OSC and coils, $43; HRO60 AA-AC-E-F coils, $17 each; 4D32 tube, $17. All guaranteed like new condx. F.o.b. Chicago 35, Treger, W9IVJ, 2023 N. Harlem Ave.

TWO German military communications receivers (1943) MHZ Fu. H.E.C. Fu H.Eul, built-in xtal calibrators, etc.; portable 8 tube BC792A rcvr, 8 bands from 100 Ke. thru 65 Mc; three T.S 170/ARN58. Swap or sell for best offer received. K6KRS, 246-41st Ave., San Mateo, Calif.

WESTERN Electric 1.5 Ke pass band, 50 Ke filters, $4; GμE 5F115V AC selsyn followers, $5 pr.; 304TLs, $5; 7000V CT 500 Ma. xfrmr, $35; huge Kw variable, $8, etc. Send for complete list. E. Getchell, Causeway St., Medfield, Mass.

SELLING Out: Brand new Communicator III 6M, best offer over $200 takes it; 132JC bodymount $3.00; 60" whip, $2.00; Mallory 12V battery charger, $15; T-17-D, $2.50; GP-4 2M ground plane, $2; pair Stewart Warner Citizen's Band Portafones with 12V DC and 110V AC power supplies, $95. Fred S. Eggert, W8FIL, 11833 Wisconsin, Detroit 4, Mich.

TRADE: Atlas Metal Turning Lathe with accessories. Will ship. Want mobile transmitter, Paleo, Gonset, Commander? W9KBL, 7623 North Eastlake Terrace, Chicago 26, Ill.

SELL: Viking II plus VFO, $250. Seldom used, also Hallicrafters S-77, $25. Bart Hebble, 717 Lexington Ave., Terrace Park, Ohio.

10 METER xmttr, Stancor 5T-203A w/Mallory 6V. inp., 300V at 200 Ma. power supply. Sell for $45 F.o.b. Boston. Ernie Sochin, W1VHE, 47 Deland Ave., Revere 51, Mass.

FOR Sale: Heath DX20, like new, $25 or trade for gud VTVM. Ernest Bergen, 2007 No. President St., Wheaton, Ill.

FOR Sale, like new, KWS-1 for $1425 and 75A2 for $285. Luck time for much active operation. Will consider deal involving KWM1 trade for KWS-1. Pick up. Rye, N. Y. W. Davidson, K2DGP, 4 Boulder Rd., Rye, N. Y.

SELLING Out: Complete Collins KW-1 station, receivers, etc. W3LXE.

FOR Sale: Early Superheterodyne with UX199s RCA Radiola 32 in perf. condx. Console cabinet like new. Built-in loop antenna and AC power pack. Write for pictures and make offer. Paul Mueller, 6850 N. Keeler, Lincolnwood 46, Ill.

MEISSNER 150-B transmitter 300W phone c.w. 813 final w/time delay relays, VFO 80 M thru 10 M, $250; 300 mile delivery. Heathkit T-3 signal tracer factory-checked, $21; Johnson Whipload-6, $15, both in like new condx, delivered price; Gonset Super Six, $29.50. I want Harvey-Wells T-90 and R-9 12V. Valleau, K5HIR, 2314 — 23rd Ave., Gulfport, Miss.

WANTED: 6 to 12- 304TL tubes; also 25 μμfd vacuum capacitors. Callanan, W9AU, P.O. Box 155, Barrington, Ill.

WANTED: National Company's HRO with 175 K.C. I.F. made for U.S. Navy in late 1930's and early 1940's. Designated RAS. Any condition. Must have 3.5 to 7.3 Mc coil coverage. Power supply not necessary. W4GLV, P.O. Box 30, Leesburg, Va.

FOR Sale: Elmac A54H and 6V/600V supply, $115; DB23 Preselector, $35; Pacemaker, factory-modified, $400. C.E. 600L amplifier, $400; 20A-C exciter and QT-11, $200. James W. Craig, Jr., 62 N. Huntington, Peru, Ind.

FOR Sale: Unused prop pitch motor and transformer, $27. Dumont 3 in. 'scope, $25. Sorry, no shipping. S. Rand, 27 Forest Ave., Ossining, N. Y.

FOR Sale: Hallicrafters SX-99 with Q multiplier and matching spkr' used less than one year. Priced $119.00. D. W. Cole, Seneca, Mo' Tel. PRospect 64D01.

TRADE 35 mm Voigtlander Vitessa with synchro-compur shutter, F2 lens, built-in light meter, set of filters, flash, carrying case and new German 35 mm daylight developing tank for an SX-99, NC-188 or HQ-100. All letters will be answered. John Moffit, Mechanicsville, Iowa.

500 WATT Multiband VFO transmitter; ½ kw. antenna tuner; Alliance Tennarotor; 2 mtr. walkie-talkie, $14; Heath Q mult., $9; Shure 707A xtal mike, $9; EVptt stand, $9; B&W lopass filter, $12; Johnson 100 Ke calibr., $12; 400/500V DC, 3a supply, $15; 15 mtr. broadband preamp, $5; 250TH; 866s; 807s, 100 W mod. xfrmr. 4μfd, 2 KV cond., at $4; 2½ v. 10A xfrmr, $4; 25K 200W. adj. Wirewound, $2; all items F.o.b. Lumberton, N. C. Ramon Britt, 819 East Fifth, Tel. RE 9-4968.

WANTED: Globe-King 500B, interested in buying either with or without the modulator section. Describe transmitter in full and quote your lowest selling price in your first letter. All letters ans'd. H. Richards, Box 382, Freeland, Mich.

COLLINS 75A2 in a like-new condx, $295. Used for SSB work with Antarctica, Ice Islands, western Pacific. Great receiver — great value! Stu Cowan, W1RST, 45 Park Ave., Old Greenwich, Conn.

FOR Sale: One Kilowatt phone transmitter built from 14th Edt. of The Radio Amateur's Handbook, push-pull 250TH final uses Ranger, Viking, 32V, DX-100 or B&W 5100 driver. With spares, $400. New Elmac 4X250B, $30, pair of SK-600 Elmac sockets, $18, Jennings VVC-25, $8; 2000V DC .5 amp supply, $45; new HD 50 ft. push-up mast, base, $14; 3" DC meters; 0-5KV, 0-2KV, 0-500MA, 0-800Ma, 0-1 Amp, $5 each; 9-300 Ma, 0-500V, 0-15 Ma., 0-200V, 0-300V, $4 each; 3½" x 4½" 0-3.5 K VDC meter, $7; capacitors; 2 μfd 4K VDC, $5; 4 μfd 8K VDC, $8, 2μfd 3K VDC, $5; 4μfd, 2.5K VDC, $7; 2 μfd, 5K VDC, $6; Superior powerstat, 230/115V 0-270V 2.4K VA 9 amp, $30. W1GOL, Perry Valente, 5 Summit Ter., Peabody, Mass.

WESTERN Radio Amateur; the West's largest amateur radio magazine. DX by Spenceley, KV4AA; VHF by record-holder K6EDX; Antenna column by Judge, W6LMB; legal notes by ham attorneys; outstanding construction articles, chit-chat and editorial content. Pages of low-cost ham-ads and scads of surplus advertising. Subscriptions $2-$3.50; $5 for 1 to 3 years. Foreign add $1/yr. extra. 13300 South Central Ave., Los Angeles 59, Calif.

RECONDITIONED, Shipped on approval with easy terms. Hallicrafters 840B $79.00; SX99 $119.00; SX71 $149.00; SX96 $189.00; SX100 $229.00; SX101 $299.00; HQ129X $129.00; HQ100 $139.00; HQ140X $189.00; HQ150; National NC98 $99.00; HR050T $199.00; NC183D $279.00; NC300 $279.00; Viking I $129.00 Viking II $199.00; Ranger $179.00; Valiant; Pacemaker; PMR6A; PMR7A; AF-67; Collins 75A1; 75A2; 75A3; 75A4; KWS1. Many other items. Write for list. Henry Radio, Butler, Mo.

COMPLETE Station: S38C receiver, 80-40 meter 40 watt c.w. transmitter, key, 100 ft. of new coax, coax connectors, etc. Above practically new. Everything $50. Will ship. Stanley Zuchora, W8QKU, 2748 Meade St., Detroit 12, Mich.

WANTED: Mobile equipment for 6 volts. Must be in good condition and priced right. Homebrew equipment OK if it is well constructed. I prefer all-band equipment. Write quoting condition and best price for cash sale. Sol Herzog, P.O. Box 6, Millington, Tenn.

BARGAINS: with new guarantee: KWS-1 $1,399.00; Collins 30K-1 $575.00; S-72 $49.50; Hallicrafters HT-30 $349.00; HT-31 $299.00; NC-98 $119.00; NC183D $329.00; Lysco 600 $69.00; Eldico SSB-100 $395.00; Eldico TR-75TV $25.00; Johnson Pacemaker $385.00; Ranger $199.50; Phasemaster II $239.00; Gonset Linears (2M)$99.00 — (6M) $119.00 Morrow MAH-B $460.00 (DEMO); Globe King 500A $455.00; Globe King 500 $435.00; Globe King 500B $599.00; Scout 65A $69.00; NEW Gonset Communicator II #3077B or #3025B $199.50; Communicator II 6 meter $179.00; Sonar SRT-120P $199.00; Johnson Rotomatic $125.00. Free trial, terms, write Leo, W9GFQ for best deals. World Radio Laboratories, 3415 West Broadway, Council Bluffs, Iowa.

WANTED: NC-300; Bill Beaton, VE4BG, 36 Elm, Park Rd., St. Vital, Manitoba, Canada.

SIX Meter, 2 Kw. final with 1 KW modulator, power supplies, rack, shielded, $275; 500 watt phone transmitter, rack, complete: $245. W4UCH.

WANTED: Heathkit DX35, reasonable. W6TFO, Box 4274, Calistoga, Calif.

NC-300 Matching speaker and National 2 meter converter for sale, $285; 500 watt CW and phase modulated 2 meter transmitter in 6 ft. enclosed rack and dolly; 4X250B final and one extra 4X250B, fully metered and three powerstat controls, $225; miscellaneous power supplies, 100 watt AM modulator, 3" Dumont 'scope, meters, coaxial relays and other parts at half current net price or lower. Due to ill health must be pick-up deal only. Visit and browse around. W1AXW, Homer H. Richardson, 17 Whittier St., Dover, N. H.

SELLING: RME-4350 recvr with speaker, $180; RCA Senior Voltohmist, $40; 250 watt linear amplifier; other equipment and miscellaneous parts. Send for complete list. K2HPC, Robert Golostein, 38 Forest Ave., Saratoga Springs, N. Y.

FOR Sale: National HRO5RA1 complete and in perf. condx w/xta calibrator, Central Electronics Model B Slicer and DB20 Preselector: $175; Supreme AF100 tranmsitter in FB condx w/4-65A final, $50. Pick up deal, no shipping, sorry. W2LLQ, L. Horowitz, 146-19 61st Rd., Flushing 67, L. I., N. Y.

SALE! 40-watt 2-meter transmitter 6146, 2-meter cascade converter with P.S. IF 14-18 Mc., 3 db noise, 417A converter (has 2-417As and 404A in front end.) 1.5 db noise IF 14-18 Mc. DX-35 with all Novice xtals in 80 and 40-meter band. Dick Mehner, W2PQU, 408 West High St., Glassboro, N. J.

WANTED: Viking kilowatt, state price and condx. P.O. Box 5032, Memphis, Tenn.

FOR Sale: Viking II transmitter with matching VFO. In perf. condx. $175 cash. Larry Bauer, W8GWJ, 514 West Hardin St., Findlay, Ohio.

FOR Sale: Late 75A4 #4088, 3 Kc filter and all latest factory modifications, less speaker. In perfect shape. Best offer over $575 F.o.b. Whitehall, Mich. Harry Barrett, W8OQY, 5230 Scenic Drive, Whitehall, Mich. Tel. WH 2-6692.

FOR Sale: S-85 Heath QF-1, $95; Heath VF-1, $20; "7094" rig QST for Feb. '58; SSB-AM-CW 500 watts, best offer over $150. Gary Robinson, K2QIA, 81 Met. Oval, N. Y. 62, N. Y. Tel. TY 2-4731.

HT-32, six months old. Works perfectly. Looks like new. Not one scratch on it. A steal at only $550. T. Joseph Shank, Jr., W8KBT, 2310 Washington Blvd., Huntington, West Va.

MOBILE: Elmac AF67, PE101C dynamotor and 110V AC home built power supply for Elmac, Gonset Super Six, coax relays, manuals, $225 f.o.b. K4RRJ/4, Box 1101, Vanderbilt University, Nashville, Tenn.

OLD QSTS wanted. Need December 1915 and January through July of 1916. Will pay cash or will trade Bound Volumes I (yes, Dec. 1915 thru Nov. 1916), 18 (1934), 19 (1935), 20 (1936), 21 (1937), 23 (1939), 24 (1940), 28 (1944). L. A. Morrow, W1VG, 99 Bentwood Rd., West Hartford 7, Conn. Phone ADams 2-2073.

SELL Lysco 600, 35-watt all-band VFO unit, TVI-suppressed, $60. K2GFQ, 76 Hewlett, Rye, N. Y.

SELL-Swap homebrew KW station for small SSB transceiver or station. Brocher from W3BJI, 1804 Maltravers, Glen Burnie, Md.

SELL: Drake 8SB receiver, $230; CDR rotator, 2 meter SSB amplifier, HT33, HT32, Tecraft converter, transmitter, pwr supply — 2 mtr., parts for Mosley VP 15 and 20 meter beams, Mohawk midget tape recorder, tape-disc recording unit, E-V mobile mike, remote control coax switch, 6 volt mobile power supply, 400 volts at 375 Ma., Leece-Neville 6 volt alternator. Make offers. R. R. Lamb, 1219 Yardley Rd., Morrisville, Pa.

FOR Sale: New oil conds. 50μfd 3000 VDC, $30; new Chicago plate xfrmr, 4700 VCT, 300 Ma. $20; new UTC PA108 choke 10 hy. 500 Ma. $9; Choke 9/60 hy. 400 Ma., $5; Tube #37, $1.00; 4/3B29, $6 ea.; want 20A cabinets & NC101X. Phone PO 7-2271, Chas. Copp, W2ZSD, 3 West Dr., Pt. Washington, N. Y.

SELL: NC300, $325, Viking Ranger, $189.50, Viking Matchbox, $39.50; Gonset Superceiver, $89.50; B&W T-R Switch, $15; 12V Vibrator supply with relays, fuses, and schematic 500V 160 Ma., $15; 12V dynamotor 400V 111 Ma., 280V 134 Ma., $15; 12V dynamotor, 275V 110 Ma., $5. You to pay shipping. Tony Casciato, 1120 Mac Dade Blvd., Woodlyn, Pa.

TRANSMITTER: 2, 6, 10, 11 meters, 150 watts (reduceable) complete. Coils plus 6, 10 meter xtals; VFO usable. Will trade for DX-100, Globe Scout 680A with VFO and similar transmitter. Will also sell. Write Jon Wilder, K8IYN, 1302 Ogden, Benton Harbor, Mich.

FOR Sale: HQ110C and spkr, $190; DX-35, $40; Heath VFO, $17. K9EIL, 2714 West 16th St., Chicago 8, Ill.

B&W-518B, $80; NC-300 (used only a month), $325; Heathkit VFO VF-1, $15. Vibroplex Lightning Bug, $10. W7NUT, 463 N. 7th St., Laramie, Wyoming.

SELL: NC-300, crystal calibrator, matching speaker, practically unused. Cost $440.90. Ship in original containers, $365 F.o.b. R. W. Meyer, Hamlet, Ind.

SELLING: Collins KWS-1, latest version (12/57) using 4X250Bs; Transcon-10 mobile transmitter, converter, two dynamotors, Vibrapack, Signal Shifter VFO, two xtal CW transmitters (80–20), much more; list, W4LDW, 5514 N. 16th, Arlington, Va.

SELL: SX-25 with speaker and manual, recently aligned and in exc. condx, $60; F.o.b. Kent, Ohio. Also tubes, clean, unused, in cartons, priced each, postpaid: 2-813, $5; 2-866A, $1.25; 2-866JR, $1; 4-1616, 50¢; 2-830B, 25¢; 2-8020, 75¢ 2-832A, $4; 2-5021, $3.50; 1-815, $1.75; 2-3C24, $1.00; 1-2E25, $2; 1-705A, 50¢; 1-1623, $2.50; 1-826, 50¢. Burt Rotnem, W8CRQ, 722 Allerton, Kent, Ohio.

DX Stations please QSL. All my contacts sent Airmail 5½ x 7 color QSLs. Help me get that 100 country SSB two way. WØCVU, 1500 Center Point Rd., Cedar Rapids, Iowa, USA.

SELL: Hammarlund HQ100 including clock timer, $130, F.o.b. Boston, Mass.; excellent condition and in orig. factory carton. Used Millen R91ER with one 10 meter coil and tube, $8. Charles Madek, W1RWU, 6 Dawes Terrace, Boston 25, Mass.

FOR Sale: Complete station, includes Valiant xmttr and SX-100 revr w/spkr, allband trap ant. (two 50 ft. steel tele. poles, set of Reyco coils, 160 ft. KW twinlead, mike and relay. Lloyd G. Crosby, W7HLI, Box 394, Cascade, Montana.

CODE Practice tapes, name your speed. $3.75 each. Bob, W4BJN, 931 Maple Ave., Dayton, Ky.

DX-100, $199.95; in new condition: Z-match, $75; Hy-Gain 3-el. Tribander, $75. W9KNZ, 465 South Edward, Decatur, Ill.

VIKING 500, factory-wired, like new, $699. KØJEJ, 522 S. Minnesota, Wichita, Kansas.

MUST Sell complete station, costing over $700: Transmitter, Supreme AF100 10 thru 80 c.w. and phone input 150 watts, factory assembled and wired; Receiver, RME-45 Calomatic dial model, frequency std. 500 Kc. Cash and carry deal. $225. H. K. MacLeod, W2CIT, 3919 William St., Seaford, N. Y.

SELL: Viking II with Heathkit VFO, $195; Gonset Triband converter, $20; Heathkit Q-Multiplier, $6. F.o.b. Scotch Plains, N. J. W2HHP, 2334 Lyde Pl.

FOR Sale: Tape recorder, like new, Wilcox Gay Hi-Fi Imperial Recordio with 4 speakers, 10 watts 15,000 cps remote control. Cost with discount, $199. First $99 money order or cash gets it. Also National speaker 10 inches, $12. Gil Vazquez, 522 W. 136th St., NYC. Tel. TO 2-6979.

SELL: Heath DX-40, perf. condx, $60 prepaid. John Ditmer, 2233 Cypress St., Wantagh, N. Y.

SELL: Johnson Ranger, grid block keying, home wired, $150; Hallicrafters SX-96, $175; both good. Pick-up or I will deliver within 100 miles. James Jones, W1GDK, Green Hollow Road, Danielson, Conn.

TRADE: Guaranteed used oil burners, controls, and heating accessories for ham equipment. Write to Paul Fassman, 726 Vermont St., Brooklyn 7 N. Y.

SELLING Out: NC-300, crystal calibrator, 6M, 2M and 1¼M converters, converter cabinet, complete, $390; DX100, $150; 10A, $75; 458 VFO with deluxe cabinet, $25; 250W linear with power supply, $95; B&W LP filter, $13; 250W Matchbox, $30; BC453, $5; 6V dynamotor, 400V .150A, $6. K2CQM, 2857 Faber Terrace, Far Rockaway, N. Y.

GRID-DIPPER, $10; Vibroplex, VOM, 4-125A, 1000 Kc calibrator, $5 each. Freeman, K2BIB, 307 Richardson Dr., North Syracuse, N. Y.

VIKING I, factory-wired, screened, TVI-Suppressed ("clean"). Spare 829B tubes. Viking VFO. All $130; Astatic mike, JT30, new, $7.50. K6HJN, 4747 W. 165th, Lawndale, Calif.

SELL: Brand new dynamotors: 12V input 440-200 Mil output, $9.00 F.o.b. Wilmington, N. C. Guy E. Pigford, W4EC, 611 Murchison Building.

CANADIANS: Sell Johnson "Adventurer" transmitter wired 25/60 cycle, less cabinet, $50; mobile coil-changing all-band transmitter. It is the "Mighty Mo" Senior. Input 40w. wired for 6v., $40. Complete mobile power sypply, G-E dynamotor 6V input-output 420V on 280 mils, $25. Bill Lovsin, VE2AVN, 1171 Sullivan Rd., Val D'Or, Quebec, Can.

DX-100 with coax relay for sale. Outstanding signal reports while used less than 1 year. Perf. condx. $175. Will deliver up to 100 miles. W6AAZ, McMlain, 7622 Highway 128, Healdsburg, Calif.

SELL or trade the following, need high quality amateur receiver. Hallicrafters SX-62A, like new, $195; RCA hi-fi recording head MI-11862, new, $45; two new Elmac 4-250A, each, $25; Hickok sweep-marker generator, like new, $125; Westinghouse new 4" meters 0–25 Ma. dc; 0–500 Ma. dc, 0–1.5 amps dc, each, $9; total hours meter 120 volts 60 cps, sola constant voltage xfrmr, new, primary 95 to 130, or 125 to 250 volts; 50/60 cycles, single phase, 1000 volt-amps. Secondary 118 volts 8.48 amperes, catalog number 50B54, $95. J. Swift, 1381 Richmond Court, East Meadow, L. I., N. Y.

FOR Sale: BC645 partly converted for 420 Mc., as per QST, $10; Handy-talkie CRC/7 on 121.5 Mc. minus battery, $10; O.K. used tubes, 832A, $2.00; 813, $4; 1625, 807, 811A, $1.00 each. Frank Seaverns, KØMNQ, 9190 Ogden St., Thornton, Colo.

FOR Sale: Hammarlund HQ100 with clock and Central mod. B slicer, like new, $159; Gonset Mobile G66B receiver with 3-way power supply, used 5 hours, $190. Gone KWMI. J. DiLiberti, K2IQZ, 290 Greve Drive, New Milford, N. J.

TRADE: $800 Magnecorder for commercial xmitter or mobile revr and transmitter. W9MAQ, 5609 Russett, Madison, Wis.

75A3, $370, or new SX101, $360. Selling only one. Send for list of other gear, 250 wt. rig etc. Can finance you. Want SSB xctr. Henry Hayes, K9CLC, Rt. 2, Fulton, Ill.

SELLING Out: DX-100, $175; SX71, $150, in exc. condx. Fred Stein, Warsaw, Ind.

TUBES — Brand New 4-65A's $12.00, 4-125A $15.00, 4-400A $30.00, 4-1000A $45.00, 3X2500A3 $50.00, 813 $7.50, 810 $8.00, 832A $4.75, 3E29 (829B) $6.00, 2E26 $2.25, 304TL $8.00, 4E27 $6.50, 250TH $17.50, 800 $2.00, 802 $2.00, 803 $2.00, 814 $3.50, 872A $2.00, HY25 $2.00, 211 $2.00, 815 $1.75. New BC-348 Receiver $60.00, ART-13 Transmitter, perfect condition $125.00, R.C.A. Signal Generator #163A 550kc — 34mc $25.00. Stancor TCS Modulation Transformer. Both sides 6000 OHM $6.50 ART-13 Modulation Transformer $8.50. Have surplus Army Tech Manuals, Meters, Chokes, H.V. condensers, plate and modulation transformers. All guaranteed C.O.D.'s OK, Bill Slep, W4FHY, Box 178, Ellenton, Florida.

KWM-1, $720, 12V DC supply, $200, mobile rack, $50, in orig. cartons and never used. Bob Drake, W8CYE, Miamisburg, Ohio.

KITS wired: For details write Stephen Callender, KN2DVM, 130 Franklin Ave., Pearl River, N. Y.

WANTED: Two Vestal (or similar self-supporting type) towers 60 ft. to 120 ft. and two Johnson rotomatic rotators (or similar heavy duty type). A. F. Kray, 1653 Taylor Ave., Racine, Wis.

HAVE the following new gear for sale or swap for SSB equipment: Collins AN/388URR and Hammarlund SP600JX receivers, still in orig. cartons; also a few tubes including 4-400, 100TH, 829B, 832A, 4D32, 3E29, used ART13, 32RA7 Collins xmttr with 80 meter coils, speech and NC614I and BC22I signal generator. Sell all or part or swap. What am I offered? WØUIF/5, 1121 Grant St., Cordell, Okla.

GLOBE Chief and modulator, $50. Want DB23 and Matchbox. N. R. Thornton, Madison, Ind, RFD #4.

NEW Factory wired tube checker. $30; S40A in fair condx, $50; battery charger, etc. Send stamp for list. Want late Lettine 240. L. Blum, 396 E. Whittier St., Columbus 6, Ohio.

NEW Receivers for sale, purchased by manufacturer for market analysis: Technical Material GPR-90, $295; RME 4300, $95; Collins 75A4, $495; Central Electronics signal slicer Model A, $19.95; Hallicrafters SX-100, $195; National NC-300, $295. Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N. Y.

VIKING II with Matchbox, VFO and RME clipper; modified for push-to-talk and 6N2; Grid block keying kit, $300; HQ-140X with xtal calibrator, $150; Elmac A54H transmitter with dynamotor supply. Elmac revr PMR6A with 6 volt supply, $75 each. All in exc. condx. K2HEA, 12 Elm St., Lynbrook, L. I., N. Y. Tel. LYn 9-2356.

ALUMINUM from Dick's, plus your ingenuity, will make you the best beam for less. Write today for list of tubing, angle, channel, castings, plain and perforated sheet, and complete beam kits. Dick's, W8IJL, Cherry Ave., Rte. 1, Tiffin, Ohio.

WANTED: 10 meter ground plane or coaxial antenna. Emmet C. Weber, 31 Wolcott Rd., Chestnut Hill 67, Mass.

WANTED: AR22. W1DUR.

PERSONAL: All hams! Don't forget you have an appointment with me at the stroke of midnight at the ARRL National Convention in Washington, August 16, 1958, to obtain your certificate of the Royal Order of the Wouff Hong. This is the hour and moment of truth. Signed, "The Old Man".

DX-100, used 3 months, $185, F.o.b. Great Barrington, Mass. Tom Keiller, Tel. 1490. 122 Hallenlich Ave.

NOW Available for amateurs. Factory punched chassis, panels, boxes. Advise specifications of your project. Also aluminum sheets, angles, tubing. Advise requirements. P. Nugent, 149 Millet St., Boston 24, Mass.

MUST Sell: Vy hot NC81XA receiver, reconditioned, with spkr and instr. book, cost me $150. Sacrifice for $89; S-38-D with Q-multiplier, $43 or will sell separately. Beautiful VFO-xtal exciter-xmttr 616, built for perfect keying, absolutely no clicks, chirps, etc. Rack size complete 80-10 with cabinet, steal for $39. Ocean Hopper with all coils, headphones, etc. Cost $21. Total sell $14. Complete satisfaction guaranteed on all equipment. Will ship. David A. Smith, 829 East Edwards, Edmond, Okla.

TUBES: Two 4-1000As. Guaranteed. $37.50 each but go to those who offer most, or trade for?? Chuck Jaeger, Burma Road, Lake Grove, Oregon.

DX100, $175; Ranger, $175; SX9 as is, $15. F.o.b. Northport, L. I., N. Y. Art Ford, W2HAE, 85 Franklin. Tel. NOrthport 3-050J

SELL: One BC-611 with brand new transceiver chassis, $45. Ben Kittredge, Box #305, Wilton, Conn.

FOR Sale: Hallicrafters S53A guaranteed. Brand new in original carton, price $70. Charles W. Ehlers, 319 Union St., Jersey City, N. J. Tel. HE 2-2145.

KITS Wired and tested. Prices 15–20% of kit price. Write Mark, K8GAZ, 1914 Bethel Rd., Columbus 14, Ohio.

SELL: Viking Valiant, factory-wired, late model, in new condx, $325; Vibroplex, original model, like new, $10; Dynamotor Carter 6V input, 420V-280 mil outp, used only few hours: $15.00. Wanted: Harvey-Wells Bandmaster Z match antenna coupler; APS-90AC power supply and connecting cable. I will pay freight. Albert J. Bertolisi, W2ALT, 6 Smith St., Amityville, L. I., N. Y.

WANTED: 152–174 Mc receiver; electric typewriter; Polaroid camera (swap?); Stewart-Warner Portafones; Communicator; TBY transceiver; sell or trade; tape recorder; TV booster, CRT checker/rejuvenator. W9WFT, 2029 Bradley, Chicago 18.

HAVE unused Elmac AF-67 and some cash for a swap on a Communicator III 6 meter. W3DCY, phone Williams 8-6000, Spangler, Pa.

WAVERLY Wholesale, Box 21, Waverly, Ill. New and used gear, etc. 100 QSL's, $1.25.

BECOME A Radio Amateur. Free information on how to pass code and theory FCC examinations. American Electronics, 1203 Bryant Ave., New York 59, N. Y.

JULY Special on first class used and demonstrator equipment: Collins KWM-1, $625; Collins 75A, $595; Hallicrafters HT-32, $575; HT-33 Kilowatt Linear, $495; SX-71, $149; National NC-300, $295; Central Electronics 600L linear, $375; Gonset 500W linear, $149; Eldico SSB-1000 linear, $415; Johnson Viking 500, $675; WRL 400B King, $235. Write today. Burghardt Radio Supply, Box 746, Watertown, So. Dakota.

FOR Sale: National NC-300 receiver, brand new condx. Total use 5 hours: $255. George Schwartz, W1VDW, 371 Highland St., Newtonville, Mass.

WHO wants to swap a DX-40, 35 or Globe Chief for a complete station plush cash? (The Bedside Ragchewer, CQ, Jan. 1957). Details and photo for stamped envelope. Need rig for Jr. Op turned Novice! Charles Dutton, W9QLK, Rte. #2, Box 91-B, Elgin, Ill.

COLLINS KWS1 and 75A4 both like new, best offer over $1800. F.o.b. W2ZLD, Irv Fishelberg, 2606 Atlantic Ave., Longport, N. J.

SELL: Heath AR-3, excellent condition, $25 or best offer. Fred Friedman, 418 Beach 138th St., Belle Harbor, N. Y.

SELL Pacemaker, $400; Matchbox, $35; SP400X, $190. Want: SP600JX. W1JUO, Linden, 110 Riverside Drive, Riverside 15, R. I.

COLLINS 75A4 receiver, in perf. condition, $490; Collins 800 cycle filter, $38; Collins KWS-1 transmitter, new tubes throughout, perfect, $1450. Spare new ceramic 4 x 250B and socket, $35; Collins SC101 speaker, station control with audio circuits to record or playback to phone line on 75A4 and KWS1. All cables and conduits cost $775. Perfect, $495; Regency ATC-1 transistor converter, perfect, $40; instrux books and shipping cartons. W4AHG, Byron Roudabush, 203 Valley Brook Dr., Falls Church, Va., Tel. JEfferson 4-2105.

WANTED: 51J, 75A, 32V; Teletype equipment; URA-8; #14, #15, #19, #26, #28. Printers; BC-348, BC-342, ART-13, BC-221, taken in trade for new Johnson, Hallicrafters, Hammarlund, National, Barker & Williamson, Gonset, Fisher Hi-Fi, Bell, etc. All types amateur, commercial, Signal Corps, Navy, or AAF electronic equipment taken in trade for part or full payment for NEW gear. Write or phone Tom, W1AFN, Alltronics-Howard Co. Box 19, Boston, 1, Mass. (Richmond 2-0048) Stores: 278 Friend St., Boston, 60 Spring St., Newport, R. I.

I am a member, are you? W1WQU.

PENETROX anti-corrosion beam lubricant (recommended in Bill Orr' "Beam Antenna Handbook") $1.00 postpaid. Culbertson, W6TTY, 2515 Novato, Palos Verdes Estates, Calif.

SELL: SX-25 with speaker and Q multiplier, in gud condx, $100; TBS 50 C with power supply, 459A and 696, VFO, $100; VHF152A, gud, $25; Gonset Tribander converter, $20; P.E. 103, gud, $25. Earl Rohlfing, W9DSX, Osman, Ill.

URGENTLY need band spread dial face for Hallicrafters SX-24. Send information. Dick Quinlan, 4853 Elm Court, Denver, Colorado.

FOR Sale: Collins 32V2, $350; B&W 51SB, $175; B&W L-1000 A, $350; all in excellent condx. H. M. Warner, K2BN, 110 Long Hill Road, Great Notch, N. J.

MUST Sell: 900-750 volt power xfrmr, $10; 250 watt modulation xfrmr, $15; filament xfrmrs, 2000 volt power xfrmr, $15; large rack, panels, chassis, $20; milliameters, $5 each; diathermy cabinet, $7.50; 500 resistors, $4; D-104 mike w/stand, $12.50; antenna relay, $3.50, 600 watt power supply, $35. K8GJM, 20942 So. Woodland, Cleveland, Ohio.

MILLEN VFO 90711, band switching, excellent, $50; Gardiner sender, apes, $15; Johnson SWR Bridge, $6; Q-1 Ma. meter, $2; MB40L, $8. Enclose postage, please. W5SAR, Box 314, Guthrie, Okla.

TOWER For sale: Aermotor M5 97 ft. tower for 20 sq. ft. of antennas at 85 mph wind resis. All parts, bill of material, drawings and instrux, brand new cost $620, now $350. Cash and carry deal only. No shipping, sorry. F. A. Hayes, K2VVL, Middletown, N. J.

PE-103 Dynamotor, $12; BD-77 dynamotor for high power mobile, 12V input, 1000V output, new, $15; new multimatch modulation xfrmrs 60W, $7.50; 30W $5.00. Shipping charges extra. Tom DelBray, 2281 Harding Rd., Cuyahoga Falls, Ohio.

KW Thordarson, Stancor power supply, $75; KW Thordarson Multimatch modulator with driver and filament xfrmr, 805s, $60; BC221, freq. meter, pwr supp., mod., $65; all items in excellent condx. W8SY, 287 Philip, Detroit 15, Mich.

FOR Sale: Collins KWS-1, slightly used, in exc. condx, $1450. George R. Homan, K6GS, 418 "D" St., Niles, Calif. Tel. Niles 2298.

MORROW Twins: Complete mobile: MB560A xmttr; MBR5 revr, complete with James power supply, instrux manuals and matching mike. Includes bumper mount, whip and loading coil. $400 takes all! Erv Winter, Oak Grove Trailer Park, New Brighton, Minn.

SELL HT32: $500. W2ADD.

SELL Or swap: Globe King 500A w/755 VFO for Thunderbolt or $450. John Wertz, K4CRF, Springfield, South Carolina.

POWER Supply: 12 volt 50 ampere or 24 volt 35 ampere output, 110 volt 60 cycle input. Operate surplus equipment without modification. Full wave selenium bridge rectifier. Only $125. Page Airways, Box 1132, Rochester, N. Y.

SELL or Trade: Mosley 10/20 beam, $60. Need Johnson Matchbox and LP filter. W1KSJ, 5 Allston Court, W. Medford, 55, Mass.

SUPER-TWIN Mosley beam for 15 and 10, $45; Master Mobile Mounts matcher and field strength meter, new, $18; Gonset G-77 and G-66B, only 1 year old, perfect condx, all accessories; Fiberglas whip and base, mike; Bassett all-band coil, $425. Going sideband. G. H. Garrison, 1104 N. Broom St., Wilmington, Del.

VIKING 500. Good condition. One year old; $700 f.o.b. Nashville, Tenn. Reason for selling: Trying to finish KW. Frank Schwartz W4KFK, 2400 West End Ave., Nashville, Tenn.

CRYSTALS Airmailed: Novice, Net, Mobile, FT-243, any kilocycle, 3500 to 8600, $1.00. 1700 to 3499, $1.75; 8601 to 21,500, $1.95. Write for marine crystal brochure and amateur listing. Crystals since 1933. C-W Crystals, Box 2065Q, El Monte, Calif.

SELL: Viking Valiant and Matchbox, used 10 hrs., factory-wired, $375; SX-101, like new, $340; going mobile. First check or money-order takes either piece. Complete station, $700. W2EUX, 225 Broad St., Staten Island 4, N. Y.

TOWERS: All steel triangular 15" face, up to 80 ft. high complete with guy strands, base plate and hardware, easily asembled in 10-ft. sections, 130 lbs. per section. Ideal supports for all types of antenna. Complete price $2.90 per ft. F.o.b. our plant. Bergen Wire Rope Co., Lodi, N. J.

FOR Sale: Parallel 813 final per January 1954 QST. Filament xfrmr handles both tubes. Grid tank is National MB40SL unit. Plate tank condenser has 4500 volt spacing. Frequency multiplier is B&W model 504 on same chassis. Completely shielded and TVI suppressed. Components cost over $150, asking $75. Also have Sonar VFX 680 with NBFM. Make offer. Arthur Terrien, W1QKC, 15 Gardner St., Worcester 10, Mass.

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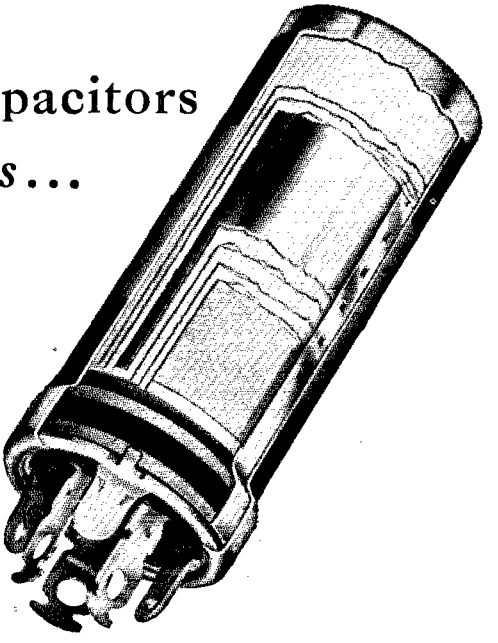
MALLORY HAM BULLETIN

Why Mallory FP Capacitors ...with *etched cathodes*... won't develop "Middle Age Hum"



Ever notice how some electrolytic capacitors allow hum to develop after a few weeks of service? Even though they test out OK when installed, they let filter hum grow to an objectionable level in a relatively short time.

This is "middle age hum." It's caused not by capacitor leakage current, but by loss of capacitance. It's a common ailment of capacitors with plain foil cathodes. And it won't happen with Mallory FP capacitors, because they are made with *etched cathode* construction.

Here's the explanation. Maybe it's something you never realized goes on inside a capacitor. Actually there are *two* capacitors in series inside every electrolytic; one at the anode, and one at the cathode. The anode capacitor is the one that is formed electrically during manufacture. The cathode "parasitic" capacitor is due to the naturally formed oxide coating on the cathode foil. In a *new* capacitor, this cathode film is so thin, and capacitance thus so high, that the net microfarad value you measure at the capacitor terminals is hardly affected.

In a circuit having heavy ripple currents, the cathode can be driven positive with respect to the electrolyte during reverse peaks of the cycle. This action causes the oxide film to increase in thickness . . . *reducing* cathodic capacitance. The net series value goes down. And when the cathode capacitance gets comparable in size to the anode, the loss in filtering ability can be serious enough to cause considerable hum.

A capacitor with a plain cathode has no built-in "safety factor" to protect against capacitance loss, because its available cathode area is limited.

An etched cathode—as you'll find in Mallory FP's—eliminates this source of trouble. Because etching produces so much greater capacitance per unit area, the cathode capacitance is extremely high when the component is new. And build-up of the film during service doesn't reduce capacitance to a magnitude that will cause appreciable change.

Etched cathode is standard at *no extra cost* in Mallory FP capacitors and in popular Mallory metal and cardboard tubulars. It's another of the premium features that you're always sure of getting from Mallory, to assure the best in performance in your amateur rig or in repair jobs that you do in your shop.

See your Mallory distributor soon. He has Mallory capacitors with *etched cathodes* in the ratings you need.

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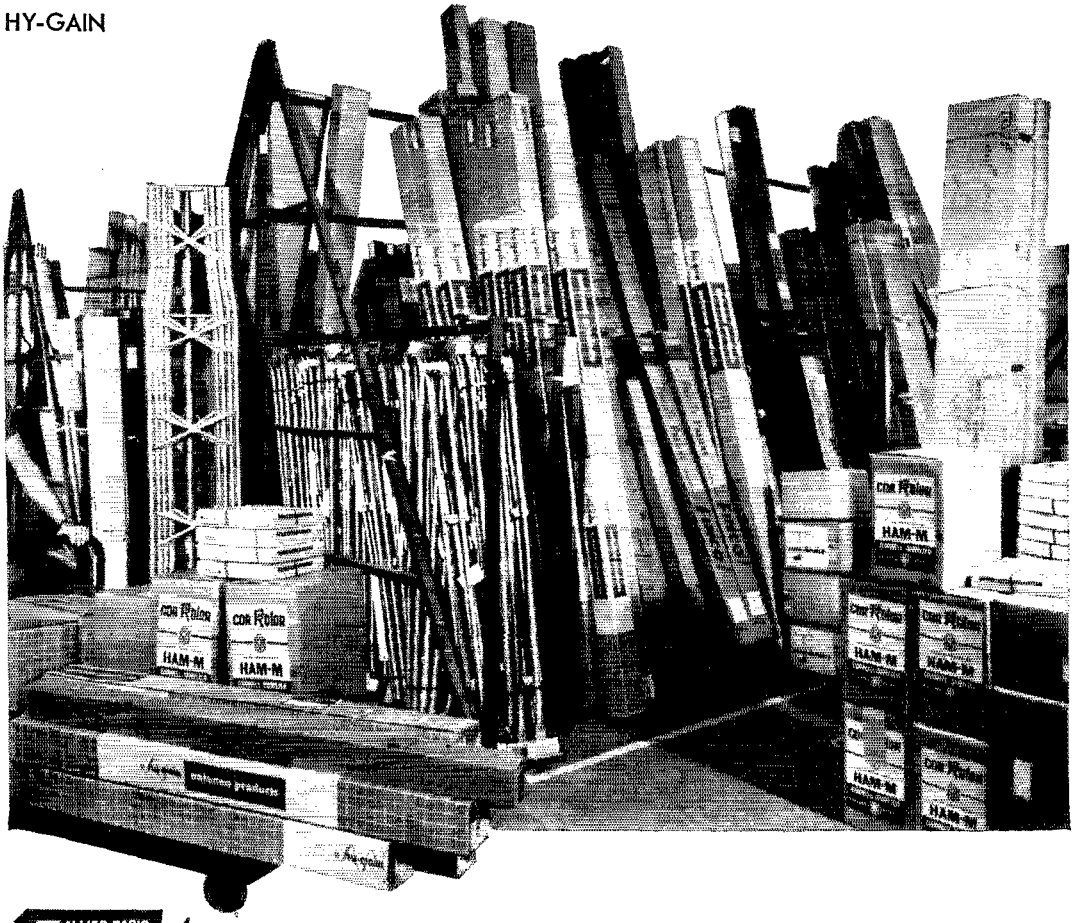

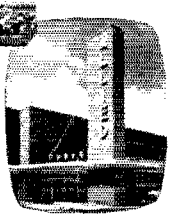

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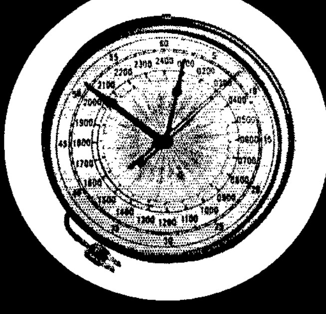

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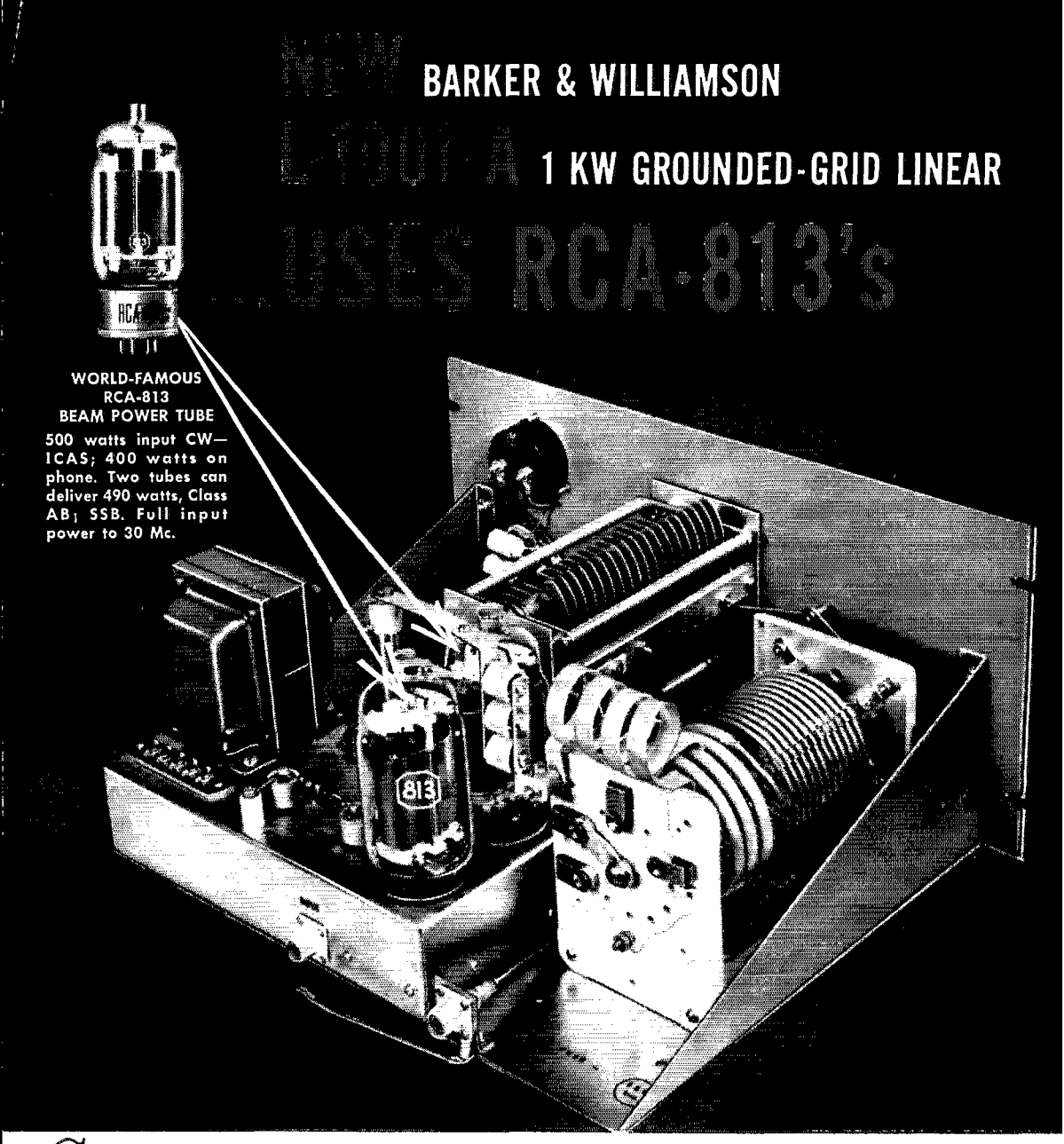

Capable of packing a mighty wallop on all amateur bands from 10 to 80 meters, Barker and Williamson's new "table kilowatt" opens the way for economical SSB operation up to the legal power limit. RCA is proud that the L-1001-A is designed around a pair of RCA-813's.

Here is a high power amplifier that requires no forced-air cooling (RCA-813's require only free circulation of air). High power is achieved with relatively low plate voltage (RCA-813 high-perveance design makes this possible). RCA beam power tube design offers more watts per dollar than other beam power types of equivalent power (pays off in lower tube and equipment costs).

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