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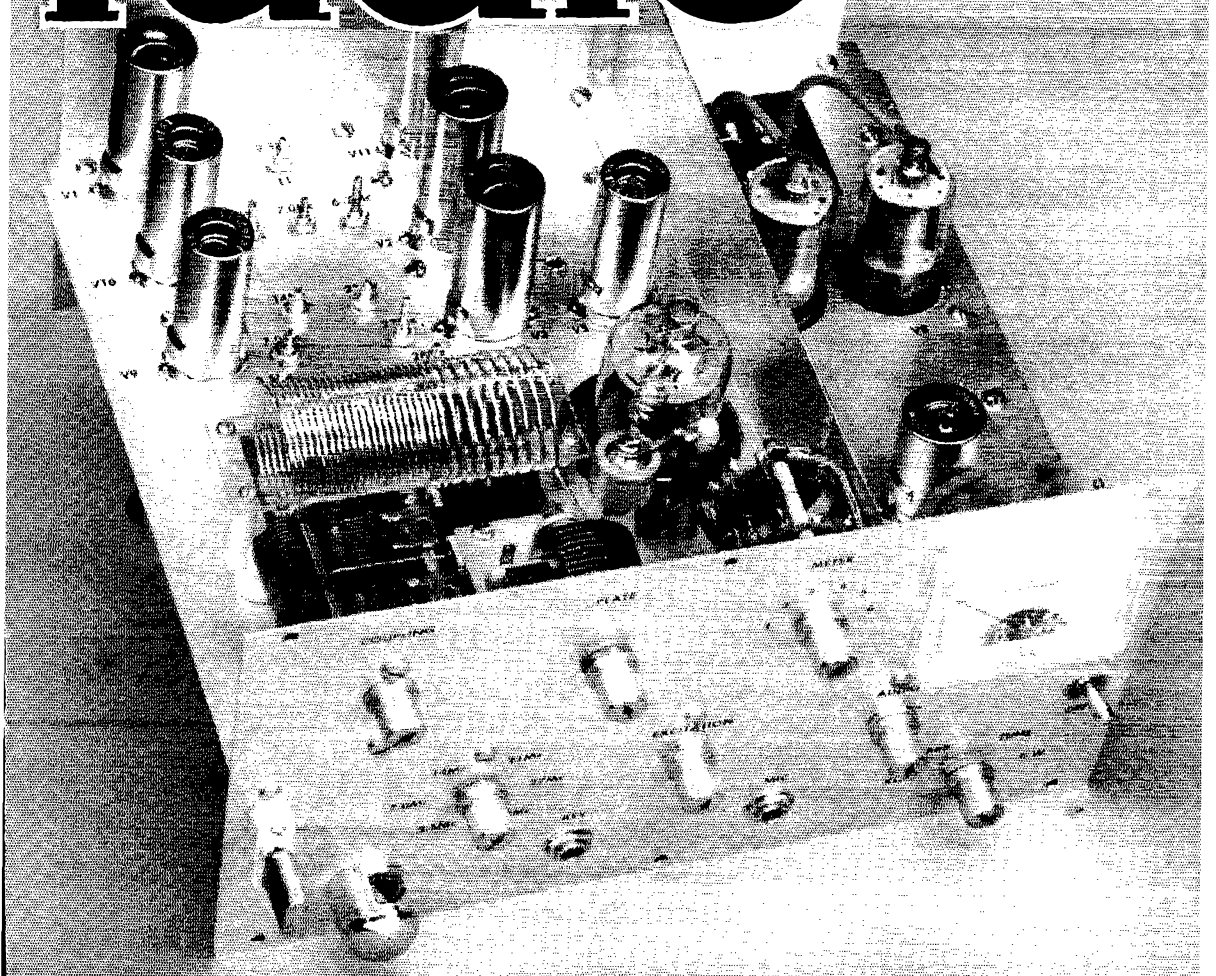

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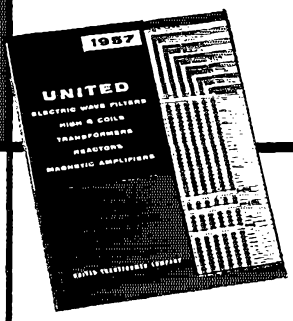

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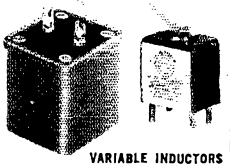
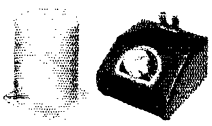
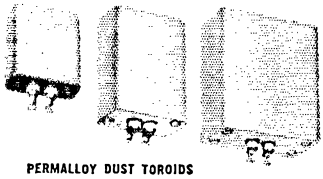


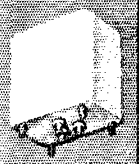
VARIABLE INDUCTORS
Standard,
Hermetic MIL-T-27A



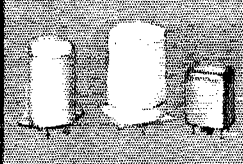
LOW FREQUENCY INDUCTORS
INDUCTANCE DECADES



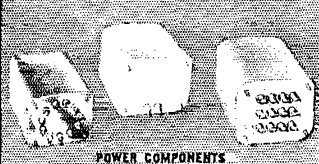
PERMALLOY DUST TOROIDS
Hermetic, MIL-T-27A
Highest Q, accuracy and stability



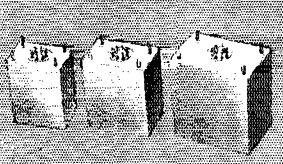
LOW PASS, HIGH PASS, BAND PASS FILTERS
Hermetic, MIL-T-27A



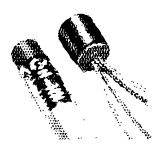
AUDIO COMPONENTS
Hermetic MIL-T-27A
for every application



POWER COMPONENTS
Hermetic, MIL-T-27A
Power, Plate, Filament Transformers,
Filter chokes



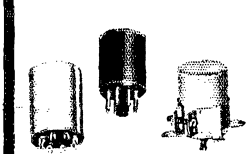
MAGNETIC AMPLIFIERS
Hermetic, MIL-T-27A



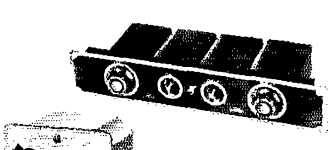
DECI-OUNCER
Transistor transformers .1 oz.
Hermetic, MIL-T-27A

PULSE TRANSFORMERS
Wound Cord, MIL-T-27A

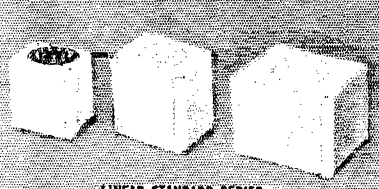
SUB and SUB-SUB OUNCER TRANSFORMERS
Audio and Transistor



OUNCER AND PLUG-IN
Wide Range Audios



EQUALIZERS
Broadcast and Hi-Fi



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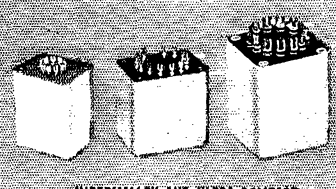
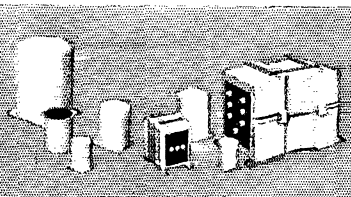
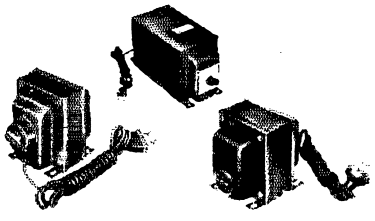
Highest Fidelity Audio Units



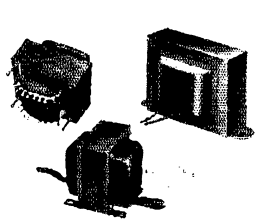
HIPERMALLOY AND ULTRA COMPACT
Broadcast and Hi-Fi Favorites



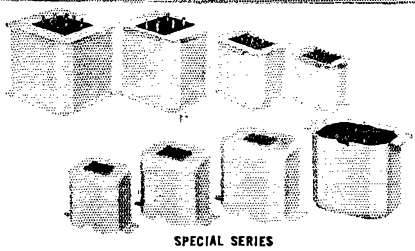
COMMERCIAL GRADE
Power and audio units for industrial service



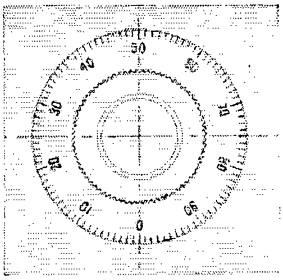
VOLTAGE ADJUSTORS . . . STEPDOWN and ISOLATION TRANSFORMERS



REPLACEMENT TYPES



SPECIAL SERIES
Units for every amateur application.



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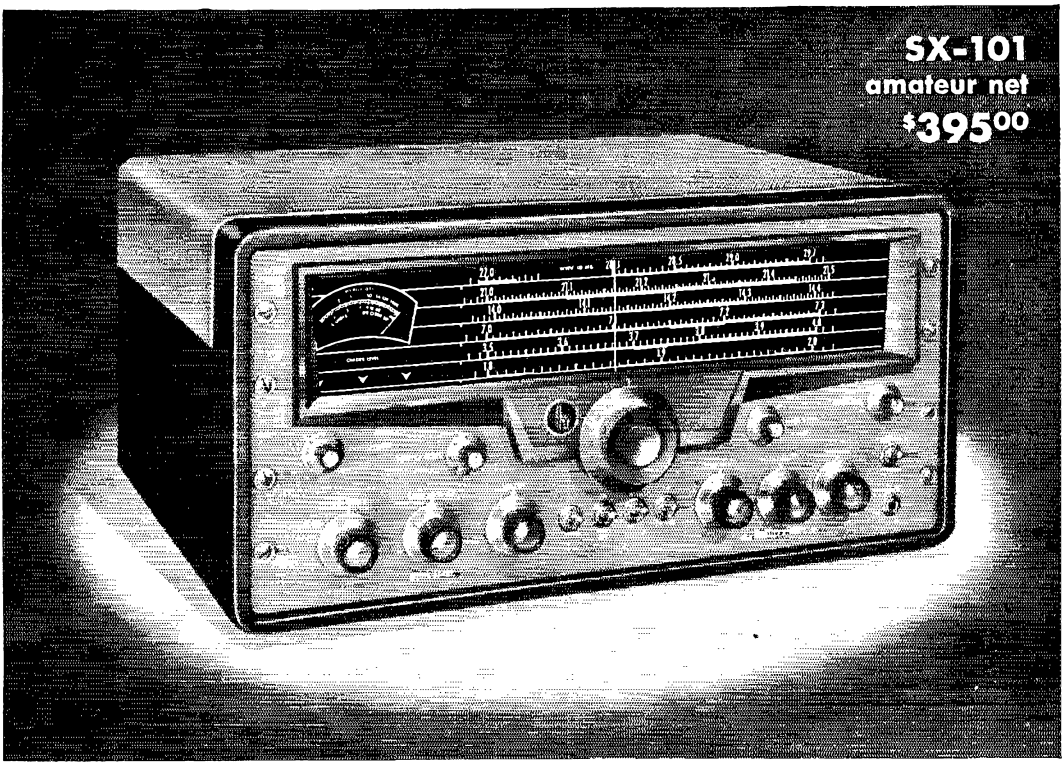
Hallicrafters new SX-101 receiver employs heaviest chassis in the industry . . . offers selectable sideband . . . has complete coverage of seven bands.



It's all amateur—and as rugged as they come! Hallicrafters presents the complete answer to ham reception, with every essential needed for today and for the future.

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PLUS: Band in use individually illuminated...built-in crystal calibrator...antenna trimmer...dual conversion...full gear drive from tuning knob to gang condensers...five steps of selectivity from 500-5000 cycles...sensitivity—less than 1 microvolt on all bands...direct coupled series noise limiter...50 to 1 tuning knob ratio...and many more.

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QST

JULY 1957

VOLUME XLI • NUMBER 7

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OFFICES

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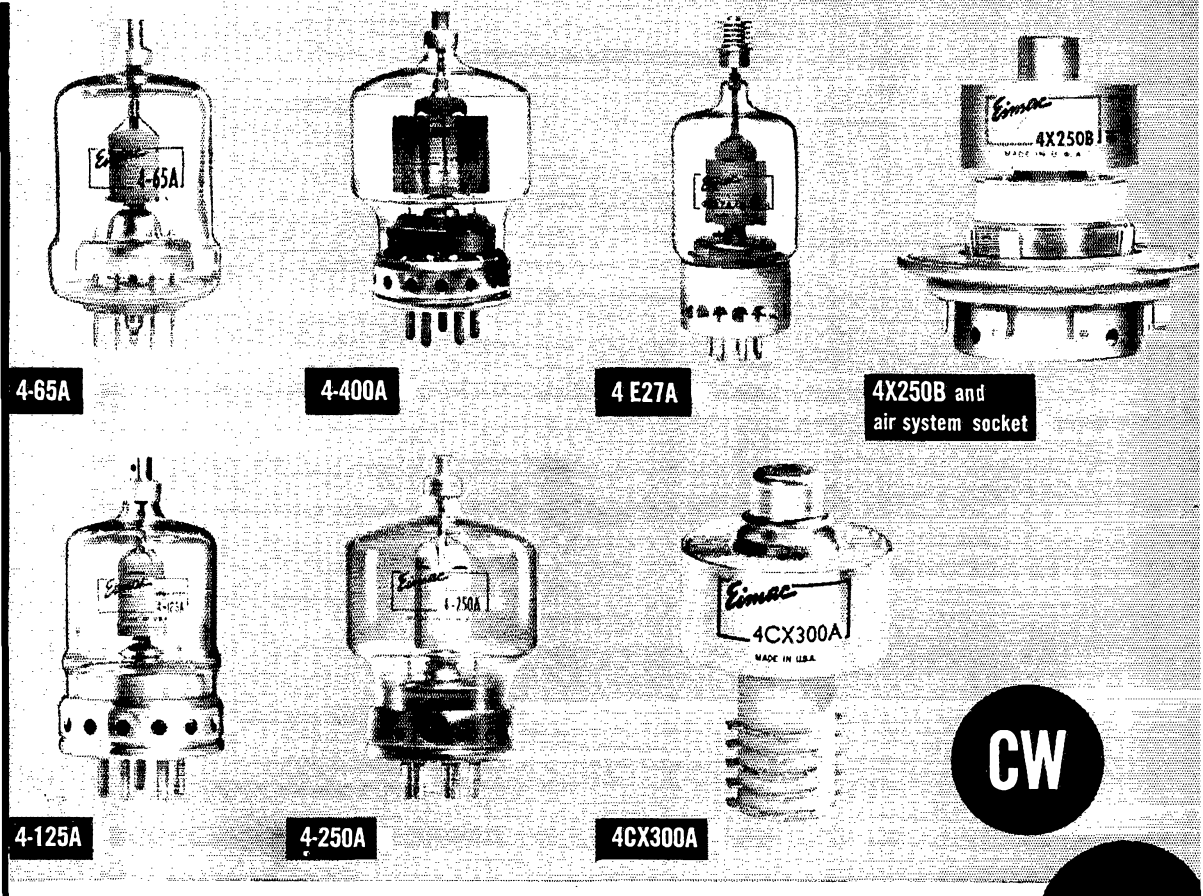

Eimac First...for all band transmission

4-65A Radial-Beam Power Tetrode

Smallest of the Eimac internal anode tetrodes, the 4-65A has a plate dissipation rating of 65 watts and is ideal for deluxe mobile as well as fixed-station service.

	CW	AM	SSB
Plate Voltage	3000v	2500v	3000v
Driving Power	1.7w	2.6w	0
Power Input	345w	275w	195w

4-400A Radial-Beam Power Tetrode

Highest powered of the Eimac Big Six, it will easily deliver a kilowatt per tube in CW, AM or SSB application. Forced-air cooling is required.

	CW	AM	SSB
Plate Voltage	3000v	3000v	3000v
Driving Power	6.1w	3.5w	0
Power Input	1050w	825w	900w

4E27A Radial-Beam Power Pentode

The 4E27A gives outstanding performance in all types of operation. When suppressor-grid modulated, it will deliver 75 watts at carrier conditions.

	CW	AM	SSB
Plate Voltage	2500v	2500v	3000v
Driving Power	2.3w	2.0w	0
Power Input	460w	380w	345w

4X250B Radial-Beam Power Tetrode

A compact, rugged tube unilaterally interchangeable in nearly all cases with the famous 4X150A, with the advantages of higher power and easier cooling.

	CW	AM	SSB
Plate Voltage	2000v	1500v	2000v
Driving Power	2.8w	2.1w	0
Power Input	500w	300w	500w

4-125A Radial-Beam Power Tetrode

The versatile tube that made screen grid transmitting tubes popular. This favorite for commercial, military and amateur use is radiation cooled.

	CW	AM	SSB
Plate Voltage	2500v	2500v	3000v
Driving Power	3.8w	3.3w	0
Power Input	500w	380w	315w

4-250A Radial-Beam Power Tetrode

A high power output tube with low driving requirements. A pair of Eimac 4-250A's easily handle a kilowatt input in AM, CW or SSB service.

	CW	AM	SSB
Plate Voltage	3000v	3000v	3000v
Driving Power	2.6w	3.2w	0
Power Input	1035w	675w	630w

4CX300A Ceramic Power Tetrode

A new all ceramic-metal high power tetrode designed for rugged service. Will withstand heavy shock and vibration and operate with envelope temperatures to 250° centigrade.

	CW	AM	SSB
Plate Voltage	2000v	1500v	2000v
Driving Power	2.8w	2.1w	0w
Power Input	500w	300w	500w

Information on Eimac tubes and their applications is available free upon request from our Amateur Service Bureau. Write today for copies of our Quick Reference Catalogue, Application Bulletin No. 8 "Power Tetrodes," Application Bulletin No. 9 "Single Sideband," and other valuable literature.

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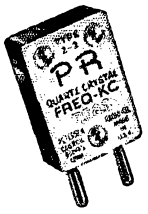


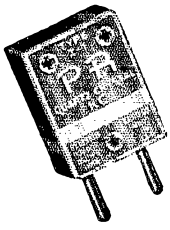
40, 80 and 160 Meters, PR Type Z-2

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

20 Meters, PR Type Z-3

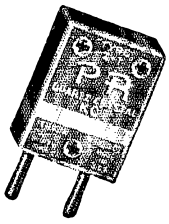
Harmonic oscillator. Low drift. High activity. Can be keyed in most circuits. Stable as fundamental oscillators. Fine for doubling to 10 and 11 meters or "straight through" 20 meter operation.....$3.95 Net

COMMERCIAL



COMMERCIAL, PR Type Z-1

Designed for rigors of all types of commercial service. Calibrated .005 per cent of specified frequency. Weight less than ¾ ounce. Sealed against moisture and contamination. Meets FCC requirements for all types of service.



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Type Z-1, AIRCRAFT

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

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Official assigned transmitter frequencies in the range.

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

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

100 Kc. . . . . $6.95 Net

PR PRINTED OSCILLATOR KIT

Has many uses—

- As 100 Kc. Marker
- As 1000 Kc. Marker for Check Points up to 54 Mc.
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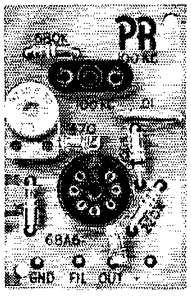
Assembled in minutes. Kit contains everything but 6BA6 oscillator tube and crystal.



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Type 2XP

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

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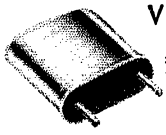

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For Lear, Narco and similar equipment operating in the 121 Mc. region, requiring crystals in 30 Mc. range.

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British Columbia	VE7JT	Peter M. McIntyre	981 West 26th Ave.	Vancouver, B. C.
Yukon				
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* Official appointed to act temporarily in the absence of a regular official.

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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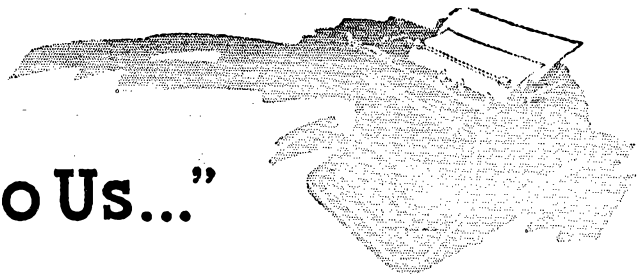


"It Seems to Us..."

DO-IT-YOURSELF

In the early days of amateur radio, most of us — of necessity — built all our own equipment. In the case of receivers, this meant assembling tuning units on the basis of rolling pins, or graduated sizes of salt and oatmeal boxes; in the case of transmitters, the lowly Ford spark coil was one of the first "conversions" to ham use from other than ham gear. It was very largely a do-it-yourself hobby. The challenges presented, and the enthusiasm engendered thereby, might well be what the old-timer has in mind when he now speaks of the "good old days." There is presently a great tendency for us to buy all our equipment ready-made. There are, of course, points to be made on both sides of the argument of whether to build or buy. We don't propose to get involved in that discussion right now — but we have been interested to note how other fields of endeavor have run into the same problem.

A few months ago L. W. McKeehan, emeritus professor of physics at Yale University, spoke before a meeting of the American Physical Society, and his remarks were reprinted in *Physics Today*. What he said could well apply, in many cases, to radio amateurs, and we'd like to take a few excerpts at random:

"Do-it-yourselfing has an honorable past, which is hard to remember nowadays, when a good purchasing agent can substitute painless, and equally thoughtless, delay for the busy fun of the 'string and sealing-wax' era, when the would-be experimenter was making do with substances of low cost and, often, of undesired properties. . . .

"There are groups of people who, as individuals, do not shine as do-it-yourselfers. Among these are most members of successful football teams, research teams, or teams of any kind devoted to communal activity at the expense of individuality. If you try do-it-yourselfing and find yourself suffering from loneliness or agoraphobia, you may be constitutionally a busy bee, belonging in a hive of industry doing one thing happily forever. To me that would be a dull life. . . . When you do it yourself you are never 'saved by the bell.' There are no fixed times for work or its opposite. When the spark is alight you will find yourself keeping outrageous hours and alienating the affections of your loved ones . . .

"I am sure that many interesting, and even useful, discoveries are being delayed right now because too many of the best minds available in physics are tied to soothing desk-chairs, to time-saving telephones, and to conferring with other best minds, rather than being exposed to the contrariness of hand work, to laboratory stools, and to impatient waiting for things to happen before their very eyes . . .

"I have implied that do-it-yourselfing is inefficient, and it is. It is also time-consuming. But I put it to you that it is precisely when you are 'wasting' time in this way that your inventive genius, or, if you like this better in other words, your scientific intuition, is most likely to be irritated into fruitful activity. . . ."

NATIONAL CONVENTION

Three of the four postwar ARRL National conventions have been held west of the Mississippi, but the next two years will even the score — 1957 Labor Day Weekend in Chicago, and during 1958 in Washington, D. C.

The Chicago Area Radio Club Council has been hard at work to arrange a program of interest to persons engaged in practically every phase of our hobby. Watch for the full convention story in next month's issue, which will leave no doubt that Chicago has lots in store for you. By all means plan a trip to the Windy City, and bring the family. This year's affair promises to be one of the biggest and best ever.

NOTICE

Effective with the August issue, *QST* will discontinue general distribution through newsstands in the U. S. and Canada until further notice.

Readers who are accustomed to obtaining copies regularly through a newsdealer and who still prefer single-copy purchase will find *QST* continuing to be available at most radio equipment distributors. Those not having convenient access to a nearby radio store — in fact, all newsstand readers who wish to continue *QST* regularly — are urged to fill out the application bound into the newsstand edition of this issue and receive the magazine each month as part of ARRL membership.

COMING A.R.R.L. CONVENTIONS

July 27–28 — West Gulf Division, San Antonio, Texas
August 16–17–18 — Southwestern Division, Long Beach, California
August 30–31–Sept. 1 — ARRL National Convention, Chicago, Illinois
August 31–Sept. 1–2 — Maritime Provinces, Charlottetown, Prince Edward Island
September 21–22 — Midwest Division, Kansas City, Kansas
September 21–22 — South Dakota State, Huron, South Dakota
October 18–19 — Ontario Province, Toronto, Ontario
November 8–11 — Far East Pacific Division, Guam

A.R.R.L. WEST GULF DIVISION CONVENTION

San Antonio, Texas — July 26–27–28, 1957

The San Antonio Radio Club, Inc., will be host to the 27th Annual West Gulf Division Convention to be held in San Antonio on July 26, 27, and 28. Over one thousand amateurs and their families are expected to be registered from Texas, New Mexico, Oklahoma, and Louisiana.

The convention will unofficially start with a Friday night party at the Lone Star Brewery Picnic Grounds, and will end with a banquet on Sunday at the spacious Grand Ballroom of the Gunter Hotel, convention headquarters. Special ladies' activities, luncheons, transmitter hunts, and a dance along with top-notch speakers will be featured.

The registration fee of $9.50 will include all activities, except the Friday night kick-off party, which will be $2.00 for an excellent Mexican dinner. Contact Eugene Jank, W5EJT, P. O. Box 62, San Antonio, Texas, for information on registration and hotel reservations.

Strays

The Great Lakes Naval Training Center will be the site of a great homecoming this summer from May 27 to October 7. Navy men and women who served there (and there are nearly two million of them) are invited to return to their "Alma Mater" and see 50 years of progress in the U. S. Navy. Among the many exhibits will be amateur station K9USN in building 63. Over thirty Navy amateurs will take turns in keeping the station on the air.

—...—

W2JOA and W3JOA both report into the Eastern States Net. W2JOA lives on Burns St., while W3JOA is named Burns!

HAMFEST CALENDAR

California — The Ramona Radio Club of San Gabriel will hold its annual Hamfest and picnic from 10 A.M. to 4:30 P.M. on July 28 in Barnes Park, McPherrin and Newmark Avenues, Monterey Park. On the program are games, contests, a transmitter hunt for 2, 6, 10 and 75 meters, a mobile judging contest, exhibits, a QSL contest and picnic lunch. Tickets for $1.50 donation. Contact Ray Meyers, W6MLZ, 717 Anderson Way, San Gabriel.

California — The Bay Cities Amateur Radio Club of Santa Monica is holding its first annual picnic on Sunday, July 21, at the Ladera Park, Slauson and Labrea, Los Angeles. Contests, transmitter hunts, refreshments.

Colorado — See New Mexico listing.

Illinois — The Central Illinois Radio Amateur Picnic (10th annual free hamfest) will be held on July 21 at the Illinois Memorial 4-H Camp at Robert Allerton Park, two miles south of Highway 47, midway between Champaign and Decatur. Transmitters on 3885 and 28560 kc., or follow hamfest signs. Bring your own food.

Indiana — The v.h.f. picnic at Turkey Run State Park will be held on July 28. Registration starts at 8 A.M. Bring your own lunch. Games for the ladies, swap table, and all the usual. Sponsored by the Wabash Valley Radio Club.

Maryland — The Annual Picnic and Hamfest of the Maryland Emergency Phone Net will be held in the Braddock Heights Park on Sunday, July 7, from 10 A.M. until sundown. The usual contests, a rummage sale and auction, ladies program. 50¢ adults, children under 12 free.

Massachusetts — The South Eastern Mass. Radio Association will hold an Amateur Radio Festival on July 28 at Edaville, South Carver, on Route 58. Features will include a ride on the Edaville RR, admission to the antique railroad and gun museums, and a chicken barbeque. Register at the door, beginning at 11 A.M., $1.75 for adults, 99¢ for children.

Mississippi — The Jackson Amateur Radio Club Hamfest will be held on Sunday, July 28, at the American Legion Park five miles east of Jackson on Highway 80. An all-day affair, so bring your lunch. Tickets are $1.00 for men, 50c for ladies. Contact Bob Knellinger, W5OER, 1434 Winchester St., Jackson.

Montana — The 22nd Annual Glacier-Watertown International Peace Park Hamfest will be held July 20–21 at Apgar camp grounds, on the edge of Lake McDonald, in Glacier National Park. Contests. Trailer space, camping and cabins available. Contact Frank B. Hart, W7UPR, Route 1 Sunset Drive, Kalispell.

New Jersey — The Lakeland Amateur Radio Association will hold its Second Annual Hamfest and Picnic on August 4. In case of rain, postponed until Aug. 11. Festivities begin at 10 A.M. at the Dover Water Department Park, Princeton Ave. (off Route 46). $1.00 for adults, children free. Contests, hidden transmitter hunts, auctions etc. Contact Eugene Carey, K2TML, 7 Center St., Morristown.

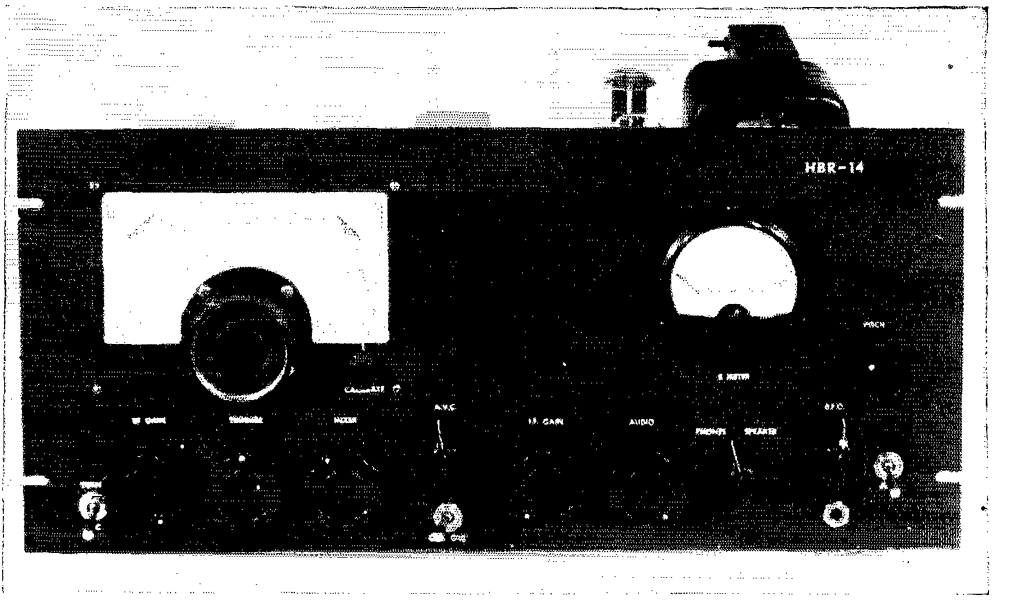
New Mexico — The Totah Amateur Radio Club will sponsor a Fourth of July gathering at Pine River Dam, just a few miles northeast of Durango, Colo. Free, no prizes, plenty of camp sites and fishing. Contact Leonard Norman, W5CIN, 903 North Butler, Farmington.

North Carolina — The Winston-Salem Amateur Radio Club and other organized amateurs in the Piedmont area are sponsoring a hamfest at Tanglewood Park near Route 158 eleven miles west of Winston-Salem on July 7. Swapfest, hidden transmitter hunt on 10, barbecue dinner, s.s.b. lecture, many contests. Registration starts at 9 A.M. Advance registration $2.25, at the gate $2.75. Children $1.25. Motel/hotel reservations available. Contact Beacham Leonard, W4RXG, 810 South Hawthorne Rd., Winston-Salem.

North Dakota — The annual North Dakota Hamfest will be held at Beaver Lake State Park in Burnstad on July 14. No registration fee. For further details contact Tom Bryant, WØKLP, Napoleon.

Wisconsin — The Badger Emergency Net will hold its ninth annual basket picnic at Lakeside Park, Fond du Lac, under the sponsorship of the Fond du Lac Amateur Radio Club. Registration will begin at 10 A.M. Basket lunch.

Canada — The 1957 Alberta Hamfest will be held August 3–4 at the New Stampeder Hotel, MacLeod Trail, Calgary. More details by contacting the Hamfest Committee, P. O. Box 196, Calgary.



This complete ham-band receiver features stand-out performance and simplicity of construction. The panel controls (knobs) from left to right are r.f. gain, antenna trimmer, 2nd mixer gain, i.f. gain, audio volume and (near the meter) b.f.o. pitch. The toggle switches are transmit-receive, calibration oscillator and a.c. The rotary switch above the calibration oscillator toggle switch turns the a.v.c. on or off, a phones-speaker rotary switch is located under the S meter, and the b.f.o. switch is above the headphone jack at the right. The small knob to the right of the tuning knob sets the 10-$\mu\mu$f. trimmer capacitor in the oscillator circuit; it permits bringing the calibration scale into exact line. Panel is 8¾ inches high, and chassis is 10 × 17 × 3 inches.

Ham-Band 14-Tube Double-Conversion Receiver

Simplified Construction of a High-Performance Receiver

BY TED CROSBY,* W6TC

• In the author's own words, "If you are one of those 'average hams' who has successfully built practically everything in the shack except the receiver and who has always had a secret yen to 'go all the way,' you are the person to whom this article is dedicated." It should also appeal to the hams who haven't all of the money in the world and have been knocking their ears off trying to combat present QRM levels with receivers of ancient vintage and/or mediocre performance. You can build this high-performance receiver for less than $150 with brand-new parts, and by shopping around a little you can trim nearly $50 off that estimate. For those who already have their receivers, there are *divertissements* for you elsewhere in this issue — this is a receiver-man article.

* 10126 Colwell Drive, Sun Valley, Calif.

OVER THE YEARS it seems there has developed a rather deep-seated conviction that the "average ham" is completely incapable of constructing and aligning a receiver even remotely comparable to the best of the commercially-built jobs. I, too, had gradually become accustomed to accepting this unmitigated myth as a fact. Fortunately, for me, I decided some two years ago that, accepted opinions to the contrary, there must be some relatively simple and reasonably-priced method of getting "out from under" my outdated receiver. A thorough scanning of all the available literature was of little help. "Do-it-yourself" articles on worthwhile receivers were few and far between. Even these invariably turned out to be so complicated one would have had to be a combination of graduate engineer and master mechanic to follow through successfully on them. Although neither engineer nor mechanic, during some 45 years of hamming I had managed to accumulate some slight knowledge and understanding of the inner workings of a good receiver. And I did possess the usual assort-

ment of hand tools available to most of us. Receiver number one became a reality shortly thereafter. It worked rather well, too, believe it or not. A couple of receivers later, I came up with the present number, hereafter referred to as the "HBR-14 Communications Receiver." I have used it for the past several months, with no further urge to try and improve on it. In other words, I like it. So do a number of my local ham friends, some of whom are using receivers costing upward of half a grand.

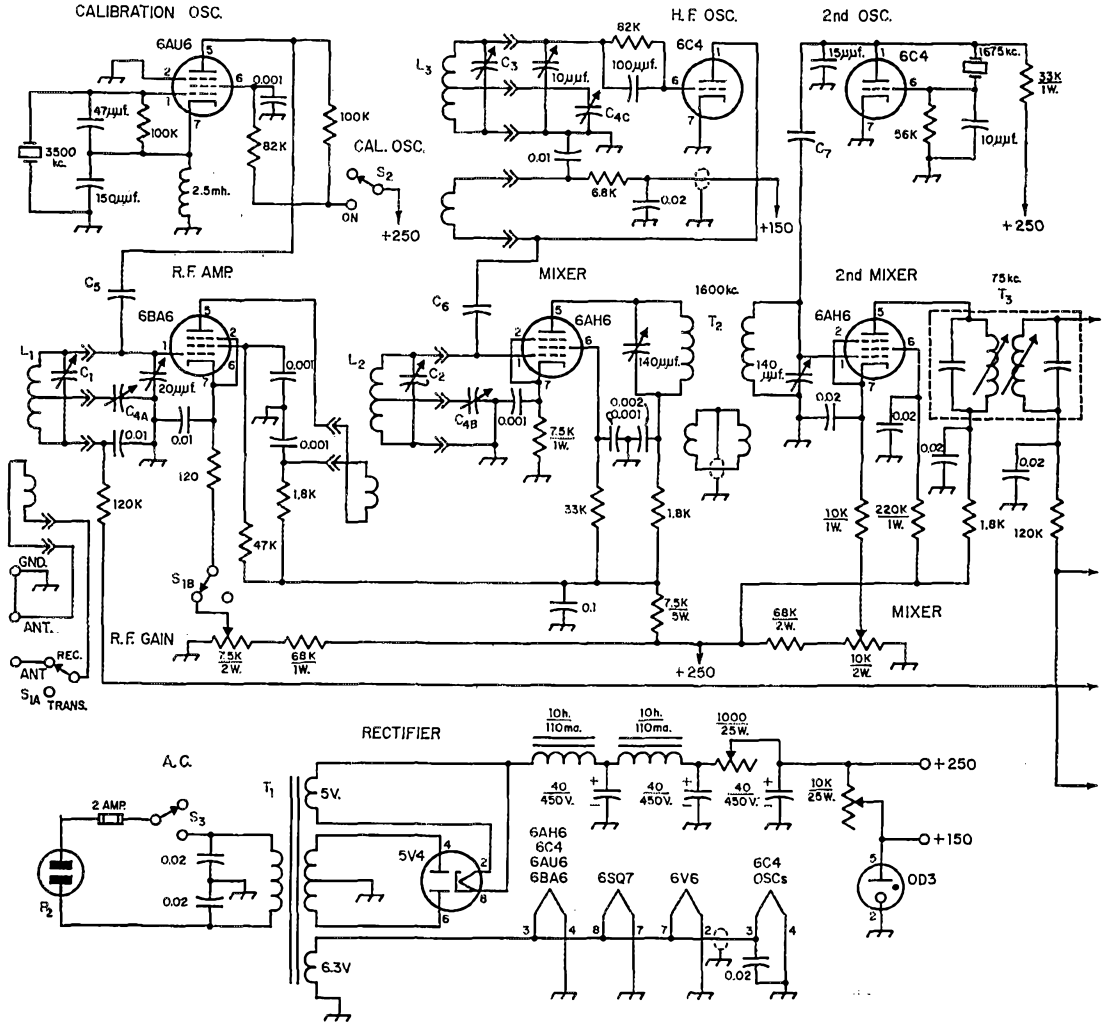


Fig. 1 — Schematic diagram of the HBR-14 receiver. All resistors ½-watt unless otherwise specified. All capacitances in μf. unless specified otherwise. Fixed capacitors under 1000 μμf. in oscillator circuits are mica; capacitors marked with polarities are electrolytic; other fixed capacitors are ceramic or tubular.

The Circuit

The HBR-14 is a double-conversion superhet covering the ham bands only, using plug-in coils in the front end, a homemade 1600-kc. link-coupled transformer in the first i.f., and very effective 100-kc. iron-core transformers (padded down to approximately 75 kc.) in the second i.f. amplifier. With the exception of the plug-in coils and the easily made 1600-kc. transformer, standard parts are used throughout. The receiver is very stable and has a better signal-to-noise ratio than any other we've heard. The i.f. band width of about 3½ kc. 40 or more db. down provides true "single-signal" selectivity [1] on c.w. and yet is not so sharp that it seriously impairs the intelligibility on phone. The circuitry used is straightforward and to the point, incorporating those things needed to provide the sort of results we desire, but not including some additional gadgets that could only confuse the issue.

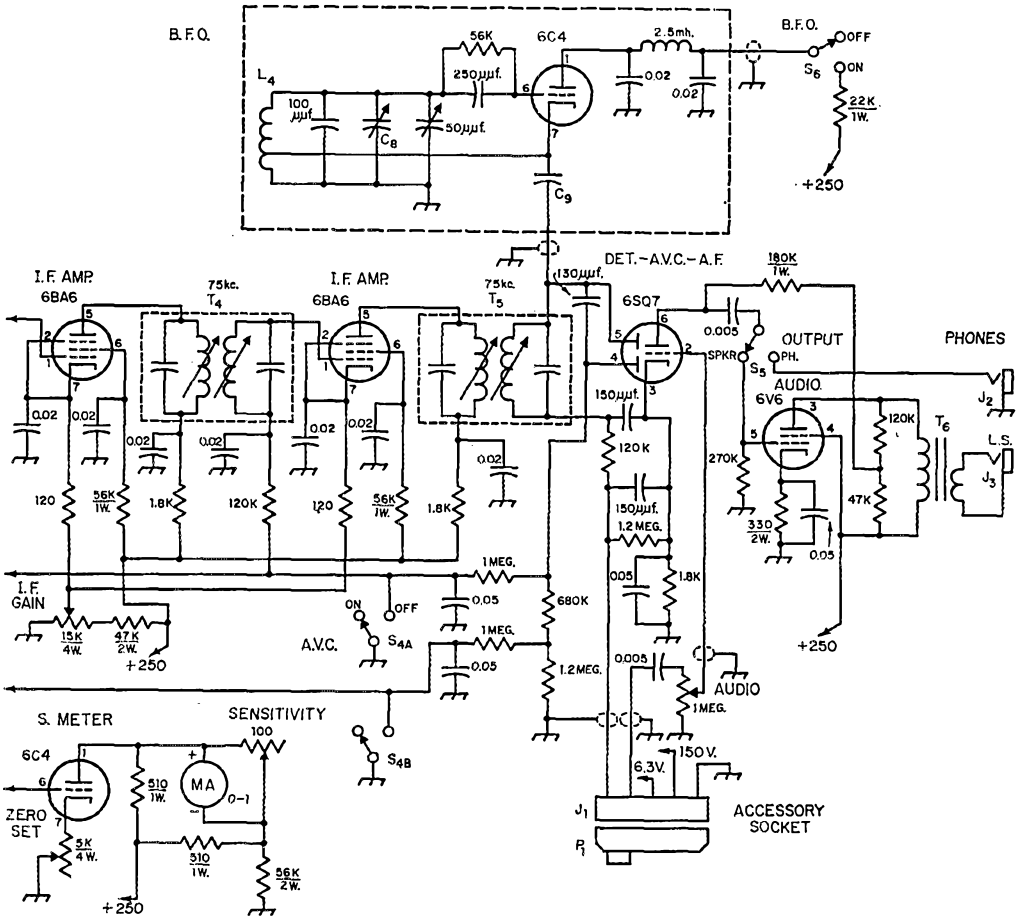
Separate gain controls are provided for the r.f.

[1] "Single-signal selectivity" means the elimination of the audio image in code reception. In other words, you tune into a signal, go down to zero beat and find no beat note on the other side. This should not be confused with "super-selective c.w. reception" which requires an i.f. amplifier so sharp that it will accommodate a single c.w. signal with very little to spare. This latter type of i.f. amplifier is too sharp for phone reception. — *Ed.*

stage, the second mixer, and the (two-stage) i.f. amplifier. This may seem like an unnecessary complication, but it has turned out to be one of the features of the receiver. Normally the r.f. stage is run wide open, the mixer gain at about halfway, and the i.f. gain is advanced only enough to provide suitable signals at the detector. The r.f.-stage gain is backed off only when a very strong signal attempts to take over the receiver.

band-switching type of front end. Plugging in coils isn't as convenient as switching, but the improved results are readily apparent, especially on the 10-, 15- and 20-meter bands. [2]

The 3500-kc. crystal oscillator provides a very convenient frequency standard, always available at the flick of a switch. The fundamental and harmonic frequencies of this oscillator furnish signals at the low edges of all the bands covered



C_1, C_2, C_3 — See coil table.
C_4 — Three-gang variable, 26-μμf.-per-section (Miller 1461).
C_5, C_6, C_7, C_9 — See text.
C_8 — Part of L_4 assembly.
J_1 — 5-pin socket.
J_2, J_3 — Open-circuit phone jack.
L_1, L_2, L_3 — See coil table.
L_4 — 132-kc. b.f.o. coil (Miller 612-M5).
P_1 — 5-prong plug to fit J_1. Note short-circuiting strap for audio.
P_2 — A.c. line plug.
S_1 — D.p.s.t. toggle.
S_2, S_3 — S.p.s.t. toggle.
S_4 — Two pole 2-position rotary.
S_5, S_6 — Single-pole rotary.
T_1, T_2 — See text.
T_3, T_4, T_5 — 100-kc. high-Q transformers, interstage type (Miller 1890-P1). Primaries and secondaries shunted by additional 150-μμf. silver-mica capacitors to bring resonance to 75 kc.

Delayed a.v.c. provides full sensitivity on weak phone signals.

The plug-in-coil type of front end greatly simplifies the receiver construction, and the band-set and band-spread methods used eliminate most of the "tracking problems." When properly done, this type of front end also does away with the long leads, multiple switching contacts, and poor L-to-C ratios usually present in the conventional

by the HBR-14. Typical of practically all receivers, the first oscillator is sensitive to temperature variation which, of course, means there will be some change in the dial calibration between an ice-cold receiver and one that has been operating for a number of hours at normal room tempera-

[2] The coils used by W6TC are wound on 1¼-inch diameter polystyrene forms; they are probably better coils than are found in any band-switching receiver. — *Ed.*

ture. The 3500-kc. oscillator plus a small panel-controlled trimmer capacitor provide the answer to this problem; the band-edge dial calibration can be maintained at the normal reading, regardless of the temperature variation otherwise present. It also is rather convenient to have always available a reliable indication of the lower band-edge frequency in these days of DX chasing via the v.f.o. method. Furthermore, this oscillator provides a signal of rock-bound stability at an amplitude just right for a touch-up tuning of the receiver's over-all alignment, if and whenever desired. Having aligned it originally, the builder most certainly is qualified to maintain the alignment precisely "on the nose."

The selectivity curve of the HBR-14 is such that the average 87 code signal can be "nosed in" as solid copy to the experienced ear, even though a similar signal is present only 250 cycles or so away. Furthermore, these average signals will be "single signal" to the extent of appearing only on one side of zero beat. Very strong signals will show some audio image on the opposite side but will be attenuated to where a relatively weak signal can be copied over them with no difficulty. An initial exposure to this sort of selectivity can be an enlightening experience. Amplitude-modulated phone carriers of average strength are cleanly separable 3½ to 4 kc. apart, provided they are being properly modulated. The "splatter effect" produced by the heavily modulated phone transmitter remains a problem. The inherent selectivity, stability and adequate b.f.o. injection of the HBR-14 meet s.s.b. requirements nicely.

The effective c.w. selectivity of the receiver can be increased appreciably by the addition of an outboard Selectoject, operated in the selective, or boost, position. The receiver has an accessory socket for the express purpose of connecting to an outboard Selectoject whenever desired.

The receiver alignment is rather easily accomplished by use of the transmitter exciter as a signal generator and the receiver S meter as the indicating device.

At full retail net, the HBR-14 costs under $150.00 to build, complete with tubes and crystals, but minus a cabinet. Bargain hunters and owners of well-stocked junk boxes can do it for considerably less. If the project appeals to you otherwise, don't let the rather formidable-looking schematic (Fig. 1) frighten you away. Broken down into its various sections, it's nothing more than a group of well-known circuits, completely familiar to most of you.

Construction

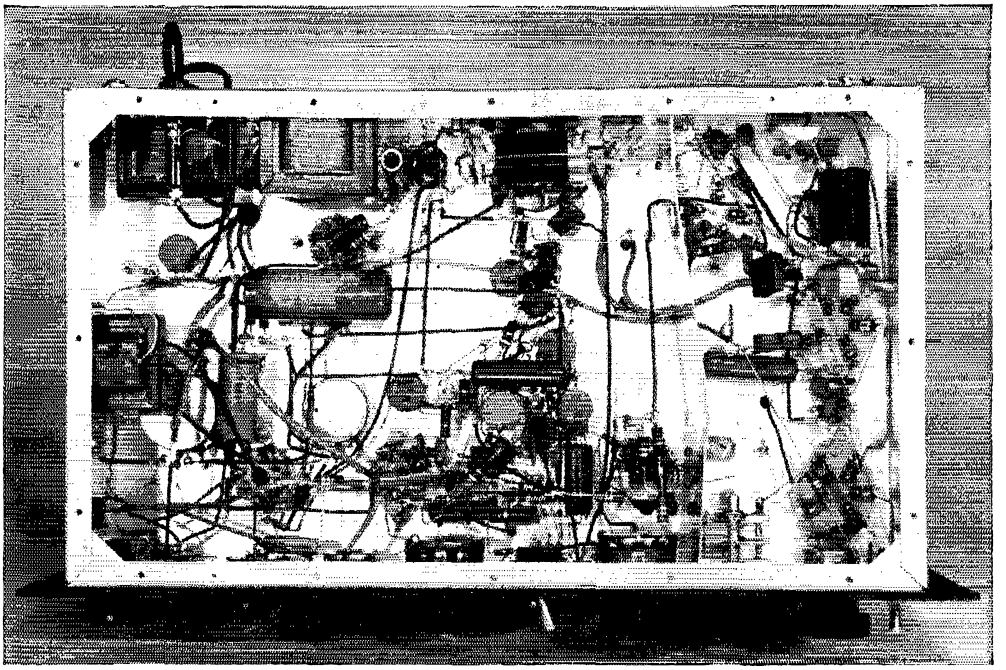
Before starting the construction of the receiver, study the photographs and their captions until you have located the positions of the major components. The two aluminum shields visible were made from sheet aluminum and attached to the chassis with small L-shaped brackets.

As a starting point constructionwise, the panel should be marked and drilled (from the front side) for the controls and accessories mounted along the bottom three inches of the panel. Remove the burrs so that the panel will rest snugly against the chassis front, and use the drilled panel as a template for marking the location of the transmit-receive switch at the left, and the a.c. off-on switch to the right. Drill these two holes in the chassis front, and remove the burrs. Attach the panel to the chassis by mounting the two switches and tightening them securely into place. The panel will now serve as a direct template for the balance of the chassis-front drilling, assuring the proper alignment of the various holes. The final installation of all the controls will provide a solid

This view of the HBR-14 shows the location of most of the major components. The top of the r.f. coil, L_1, shows above the U-shaped shield at the right. The tube shield inside the U-shaped shield surrounds the 6BA6 r.f. tube, and the adjacent coil is the mixer coil, L_2. The mixer 6AH6 and its shield are masked by the U shield. The plug in coil in the foreground is the oscillator coil, L_3, with the 6C4 oscillator sitting just in front of it. Holes for the screw-driver adjustment of the 140-$\mu\mu$f. tuning capacitors of the 1600-kc. transformer T_2 will be seen on either side of the oscillator tube. Note the long shaft from the panel to the 10-$\mu\mu$f. oscillator trimmer; the tube near it is the 6AU6 calibration oscillator, and the associated crystal is between the tube and the panel.

The crystal at the center foreground is the 1675-kc. crystal for the second oscillator; the associated 6C4 is directly behind it and the 6AH6 second mixer is to the right. The string of three high-Q transformers hides the two 6BA6 i.f. amplifiers that are between the transformers. The metal tube in front of the meter is the 6V6 output stage, and the metal tube to the right of it is the 6SQ7 detector-audio.

The power transformer at the left hides most of the b.f.o. assembly, but a corner of the b.f.o. deck is just visible. The tubes to the right of the transformer, reading toward the front panel of the receiver, are 5V4 rectifier, OD3 regulator and (hidden by the OD3) the 6C4 S-meter amplifier. The small knob showing between the two metal tubes is the S-meter sensitivity control; the similar knob for the zero-set control is masked by the b.f.o. assembly.



A shield partition sets off the receiver "front end" (right-hand side) from the rest of the receiver. One winding of the 1600-kc. transformer is mounted on the side of the chassis (upper right) and the other mounts on the rear wall of the chassis (upper center); the shielded coupling link runs to the rear wall of the chassis and around the shield partition. The other shielded wire in the front-end section is the oscillator heater lead.

The accessory socket J_1 is located on the side wall of the chassis near the front panel; part of it can be seen here in the lower left-hand corner. The output transformer is mounted on the side wall (left) and the two power-supply filter chokes on the rear wall (upper left).

The cluster of three shielded leads coming out of the hole at the extreme left center are from the b.f.o. compartment; they carry B+, heater and 75-kc. r.f. Other shielded leads in the receiver are in the audio circuits and the second-oscillator heater lead.

joining of panel to chassis. The location of the cutout for the dial mount, and the holes for the pitch-control and calibrating-capacitor shafts, can be determined after the tuning gang, calibrating capacitor and b.f.o. assembly have been permanently mounted on the chassis. Once the dial has been installed, an eye-pleasing placement of the S-meter cutout becomes a simple matter.

The b.f.o. assembly is completely enclosed in a $2\frac{1}{8} \times 1\frac{5}{8} \times 4$-inch aluminum chassis box (ICA 29200), the external connections being made with shielded wire. The various parts and connecting wires are mounted on the top or cover portion of the box. The bottom section is bolted to the main chassis, and a $\frac{1}{4}$-inch hole drilled therein to provide an exit for the shielded wires. The 132-kc. Miller b.f.o. transformer is padded to the desired frequency by a 100-$\mu\mu$f. capacitor.

The three-gang tuning capacitor is mounted one inch above the chassis on L-shaped end brackets cut from aluminum sheet thick enough to insure a solid mounting. It was suggested earlier that you do not mount the dial prior to mounting this capacitor because it is much easier to match the dial to the capacitor than to proceed in the opposite manner. The two end plates of the capacitor are already drilled for the 4-40 screws and nuts used to attach the brackets.

The 1600-kc. transformer consists of two identical inductors, wound on 1-inch-diameter plastic forms. Twelve-inch lengths of polystyrene rod are available at most radio supply stores. Each coil is 90 turns of No. 26 enameled wire, and the link is 5 turns of the same wire spaced $\frac{5}{8}$ inch from the coil. Both are tightly close-wound in the same direction. Tie one end of the wire to a convenient door-knob, stretch the wire to remove the kinks and bends, then hold the wire taut while winding the coil through a process of rotating the coil form. Use 4-40 screws and nuts plus small soldering lugs for the coil terminals. Solder the wire ends directly to the lugs. Use a $1\frac{3}{8}$-inch 6-32 screw, enclosed in a 1-inch-long metal sleeve, at the link end of each form as a "standoff" type of mounting. The connection to the capacitor stator will anchor the coil at the other end. The line connecting the two links is a suitable length of shielded wire, with the outer shield serving as the grounded side of the line. This transformer tunes quite sharply, doing a good job of eliminating secondary image response (150-kc. images).

The 150-$\mu\mu$f. silver-mica padding capacitors across the 75-kc. transformers are subchassis mounted across the i.f. transformer leads at the point where these leads are normally terminated. Strategically located multiple tie points should be subchassis mounted prior to attempting to wire the receiver. "Point-to-point" wiring is recommended, with every connection made as short and direct as possible.

The power transformer, T_1, can be of most any make or type, provided it contains windings furnishing 5 volts at 2 to 3 amp., 6.3 volts at 5 or 6 amp., and 600 to 720 volts (center-tapped) at 110 to 150 ma. The desired 250 volts from the filter can be obtained from a proper positioning of the sliding contact on the 1000-ohm resistor. The various gain-control circuits "double" as bleeders for the power supply.

The plug-in-coil data are given in Table I. The specified five-prong plastic forms have a recessed flange at the top end that accommodates the APC type of air padder. Employing the doorknob winding technique previously described, the entire coil is wound in the same direction, the smaller winding being placed at the base end of the form. More suggestions on the coil construction can be found in the caption accompanying the photograph of the coils.

Each of the small coupling capacitors, C_6, C_7, and C_9, is made of two pieces of No. 18 plastic-covered hookup wire twisted together. I used four twists at C_6, six twists for C_7 and twelve twists for C_9, but the capacitance varies with the insulation thickness and these are merely suggested values for you. As for C_5, drill a small hole in the subchassis shield near the 6AU6 tube socket. A piece of No. 18 plastic-covered wire is passed through this hole, with one end soldered to the 6AU6 plate. The opposite end serves as a small "antenna," capacitively-coupled to the r.f. stage. This coupling is variable according to the length of the free end of the wire and its position in relation to the r.f. stage coil socket.

Table I
Coil Winding Data

Each coil is wound on a 5-pin 1¼-inch diameter polystyrene plug-in coil form (Amphenol 24-5P). All secondaries except 80-meter wound with No. 22 enam.; 80-meter secondary wound with No. 26 enam. Taps counted from ground end. Primaries and ticklers No. 26 enam. close-wound. C_1, C_2, C_3 are 50-$\mu\mu$f. midget (Hammarlund APC-50) on all bands except 80 meters. On 80 meters, 75 $\mu\mu$f.

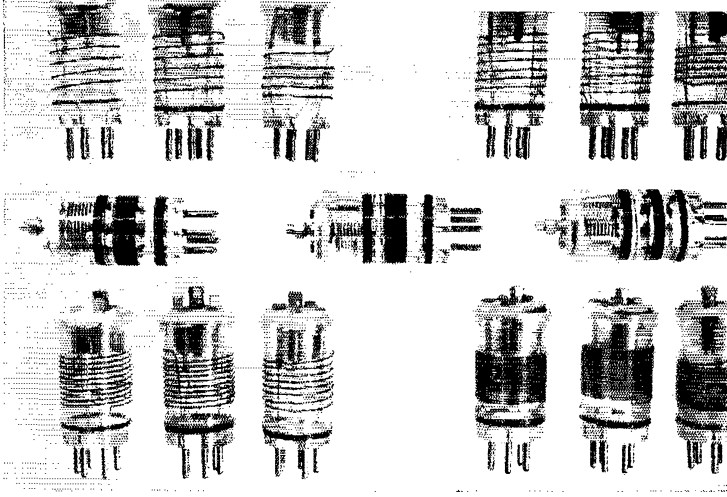
Band	Secondary	Primary or Tickler
10 m.	L_1, L_2: 5½ turns, spaced to 1¼-inch winding length; tapped at 2¼ turns.	L_1: 4⅞ t., ¼-inch spacing from secondary
		L_2: 3⅞ t., ¼ spacing
	L_3: 3½ t., spaced to ½; tapped at 1½ t.	L_3: 1⅞ t., 5/16 spacing
15 m.	L_1, L_2: 7½ t., spaced to 1⅛; tapped at 2 t.	L_1: 5⅜ t., 5/16 spacing
		L_2 6⅞ t., 5/16 spacing
	L_3: 5½ t., spaced to 11/16; tapped at 1½ t.	L_3: 2⅞ t., 5/16 spacing
20 m.	L_1, L_2: 10½ t., spaced to 15/16; tapped at 2⅛ t.	L_1: 5⅞ t., 7/16 spacing
		L_2: 4⅞ t., 7/16 spacing
	L_3: 7½ t., spaced to 15/16; tapped at 2½ t.	L_3: 4⅞ t., ⅜ spacing
40 m.	L_1, L_2: 17½ t., spaced to 1; tapped at 9¼ t.	L_1: 6⅞ t., 5/16 spacing
		L_2: 8¼ t., 5/16 spacing
	L_3: 15½ t., spaced to ¾; tapped at 6¼ t.	L_3: 6⅜ t.; ¼ spacing
80 m.	L_1, L_2: 25 t. close-wound, followed by 1½ t., spaced over ¼ inch, followed by 9 t., close-wound. Total of 35½ t., tapped at 26¼ t.	L_1: 9¾ t., 5/16 spacing
		L_2: 12⅞ t., 5/16 spacing
	L_3: 14 t. close-wound, followed by 1½ t., spaced over ¼ inch, followed by 10 t. close-wound. Total of 25½ t., tapped at 15¼ t.	L_3: 8⅞ t., 5/16 spacing

Alignment

As a prelude to the receiver alignment, the S meter must be adjusted for proper operation. Insert the 7-Mc. plug-in coils and all of the tubes in their sockets, except the 6C4 tube used in the S-meter circuit. Turn on the power supply, and as it warms up adjust the 100-ohm sensitivity control to give a full-scale meter reading. Then insert the 6C4 in its socket and, as it reaches normal operating temperature, turn the a.v.c. control to the "off," or grounded position and adjust the 5K zero set for a "zero" meter reading. The S meter is now ready to serve as an indicating device for the alignment of the receiver. An explanation of this circuit can be found in the ARRL *Handbook*.

The initial alignment could be accomplished with any particular set of coils in the front end, but for the purposes of this article we will use the 40-meter range as an example. Place the receiver within a few feet of the transmitter, and connect a piece of flexible insulated wire 3 or 4 feet long to the antenna terminal. If the exciter is low powered and completely shielded, unbutton the final stage. Set the trimmers of T_2 to approximately two-thirds maximum capacitance. The six slugs of the i.f. transformers are adjusted to leave about one third of an inch of each screw outside the transformer can. Set the antenna trimmer to half-scale capacitance, and the 10-$\mu\mu$f. oscillator capacitor at about one third its full value. Place the a.v.c. control in the "on," or ungrounded position. Set the r.f. gain, second-mixer gain, and audio gain controls in an "all-the-way-on" position; the i.f. gain about halfway on. Set C_1 to half capacitance and C_2 to two-thirds maximum. Set the exciter for 7000-Mc. output and turn the receiver dial to "5" on the scale, near the maximum capacitance value of the tuning capacitor.

Connect the headphones to the phone jack and turn on the exciter and receiver. Place the antenna in the immediate vicinity of the exciter, and vary the capacitance of C_3. Some sort of signal should be almost immediately present in the headset, and perhaps visible on the S meter as well. The 7000-kc. signal you're seeking will be easily identified, as it will be much stronger than any spurious response you may hear. It should appear with C_3 set at about one half its full value. Turn the exciter off and on a couple of times to be certain you do have the correct signal. Also retard the r.f. gain control a bit to be certain the r.f. stage isn't oscillating, as it may do when connected to a short antenna. Once the 7-Mc. signal is present, any one of a number of things can be done next. It becomes only a matter of adjusting



The plug-in coils are tightly wound in the same directions on 1¼-inch diameter polystyrene coil forms, with an air trimmer mounted within the form. The smaller coil is wound first and its ends soldered in the proper pins. A ¼-inch diameter hole drilled in the side of each form makes the job of connecting the coil tap a relatively simple one. The air trimmer is held in place by Duco cement plus two wire leads running from it to the proper pins; these leads are pulled taut when the pins are soldered. The pins carrying the coil and capacitor wires should be reamed out slightly with a drill. Use pins 1 and 5 for the smaller windings and 2, 3 and 4 for the larger ones.

Care must be exercised in soldering to the pins, because if the soldering iron is held against the pins too long the form will soften. A small daub of soldering flux will speed the soldering.

the various tuning capacitors and i.f. transformer slugs to bring their associated circuits into proper resonance, using the S meter as an indicator. Such tuning will be required for C_1, C_2, and all of the i.f. trimmers and slugs. Naturally, the S-meter reading will increase in direct ratio to the progress of the alignment. As it tends to go off-scale, it can be pulled back by a repositioning of the antenna, and by retarding any or all of the gain controls involved. However, the secondary trimmer on T_2 should be adjusted only when the second-mixer gain control is fully advanced. Once you are certain the alignment is correct, having checked and rechecked to be positive of such, retune the exciter to a mid-band frequency and check the tracking of the front end at this new frequency by retuning C_1 and C_2. (A mid-band frequency will appear at an approximate scale reading of 45 on the receiver dial, due to the unsymmetrical shape of the tuning-capacitor plates.) Some small deviation may be apparent in the L_1C_1 circuit, caused by antenna-loading effects, and this explains the need for the antenna trimmer. The L_2C_2 circuit should show little if any off-resonance effects at this mid-band frequency, provided the coils have been properly space-wound. It should be possible to peak the r.f. and mixer stages at this mid-band frequency, and find the tracking will hold over the entire band.

The composition of the above lengthy paragraphs was much more difficult than the actual alignment will ever be. Dealing with duplicated inductances and predetermined capacitance values, as we are in this particular case, it's not the complicated job you may always have considered it to be, and it can be done in a few minutes' time. The alignment of the plug-in coils for any of the remaining bands will require only the correct adjustment of the C_1, C_2 and C_3 band-set capacitors located in that particular set of coils. Since the oscillator should be 1600-kc. higher than the signal circuits, be sure that on 10 and 15 meters the setting of C_3 is the lesser-capacitance one that brings in the signals.

If it is found that a band-set capacitance must be increased to bring a circuit into track at the high-frequency end of a range, it indicates that the inductance tap is too high, and the turns between the tap and the ground end should be pulled apart slightly and the alignment procedure repeated, starting at the low-frequency end. If the band-set capacitance must be decreased at the high end, the inductance tap is too low, and the turns between tap and ground should be moved closer together and the alignment procedure repeated, starting at the low-frequency end. After the coils have been adjusted to track properly, the turns should be tacked in place by the judicious application of a few drops of Duco cement.

Hints

The following paragraphs may seem somewhat anticlimactic, but are worthy of inclusion as a sort of "Helpful Hints" department.

If the receiver is placed in a metal cabinet following the initial alignment, it will be necessary to recheck the entire alignment. If it is to be used without a cabinet, an aluminum bottom plate should be attached to the under side of the chassis to insure there will be no direct pickup of spurious signals by the wiring. The addition of this bottom plate may also call for a repeat alignment.

Low-loss sockets throughout are to be preferred, and most certainly should be used in the front end. A socket that will hold the coils firmly in position and yet allow for relatively easy and fully-seated insertion is a "must."

I used the 6SQ7 and 6V6 tubes because I had them on hand. A 6AV6–6AQ5 combination can be substituted if preferred. The R and C values would remain the same.

High-impedance headphones must be used with the HBR-14. The low-impedance type does not provide the proper load for the 6SQ7 audio stage, and the output is practically nil. The low-priced 2000-ohm variety are only slightly better. A load of 20,000 ohms or more is required, which is supplied by the better grades of magnetic headsets, or those of the crystal variety.

I suggest that a rather small speaker (5- or 6-inch), mounted in a small open-backed baffle,

(Continued on page 148)

Test Meters and How To Use Them

Some Basic Principles of Trouble Shooting

BY LEWIS G. McCOY,* W1ICP

• A test meter is a mighty useful gadget to have around the shack when a piece of gear, for no obvious reason, isn't working properly. In this article W1ICP discusses the advantages and disadvantages of some of the various test meters and then goes on to show how they are used.

SOONER OR LATER in amateur radio the ham is going to have to learn how to trouble shoot. By trouble shooting we mean finding what is wrong with a piece of equipment and fixing it. Whether one builds a kit or a homebrew piece of equipment — or even has a store-bought rig — the day is likely to come when something goes wrong and the unit needs fixing. In this article we propose to show you a simple method of pinpointing trouble sources.

Equipment Needed

An important piece of test equipment needed by the ham who wants to do his own servicing is a volt-ohm-milliammeter (v.o.m.). This is a single instrument that is capable of measuring resistances, direct current, and a.c. or d.c. voltages. Such a meter is a sound investment for the ham because he will find it has many uses in the shack. However, before running out to the store and buying the first unit you see, write some or all of the distributors of ham equipment listed in *QST* and obtain their latest catalogues and sales flyers. Then you'll be in a position to get the best buy for your money.

When you start looking through the catalogues you'll find that the test meters are rated by "ohms-per-volt." The number of ohms-per-volt determines the sensitivity of the instrument.

*Technical Assistant, *QST*.

For example, when the 250-volt scale of a 1000-ohms-per-volt meter is used, the meter has a total resistance of 1000 times 250 or 250,000 ohms. By Ohm's Law, the current required for full-scale deflection would be 1 ma., which means the instrument uses a 0-1-ma. meter. Another common type of test meter is the 20,000-ohms-per-volt unit which uses a 50-microampere meter. Also, you'll see advertisements for vacuum-tube voltmeters (v.t.v.m.) both as kits and completed units. Their advantage lies in their very high resistance (10 megohms or more).

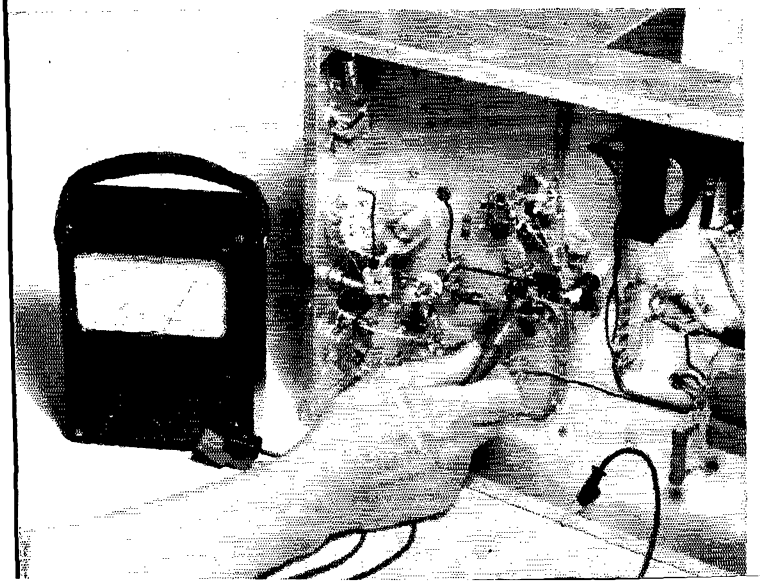
Advantages and Disadvantages

Each of the three instruments listed above has certain limitations. The accuracy of any voltage reading will depend on the calibration accuracy of the meter and to what extent the meter "loads" the circuit being tested. A 1000 ohms-per-volt unit uses less resistance in series with the meter than the other two types, and consequently more current will be drawn from a circuit being checked. However, once you understand this point, you can use the 1000-ohms-per-volt meter for most transmitter work. The only place in a transmitter where this type of meter may be at a disadvantage is in checking the grid bias across a high-resistance grid leak. If the meter resistance is less than 8 or 10 times the grid-leak resistance, it is better to use the meter as a milliammeter and connect it between the grid resistor and ground.

If receiver or high-resistance circuit trouble shooting is contemplated, then purchase either a 20,000 ohms-per-volt v.o.m. or a v.t.v.m.

The v.t.v.m. will measure a.c. and d.c. voltages and also resistance. Most commercial units have an input resistance of 11 megohms and consequently any loading of a circuit being tested is held to a minimum. The v.t.v.m. does not measure current but it is a simple matter to determine the current flow by checking the voltage drop across a known resistor and then using Ohm's Law.

The v.t.v.m. requires a 115-volt a.c. power source as it does not use batteries for its power supply. Unless the v.t.v.m. is



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It is convenient to clip the leads to the circuits under test.

well shielded and the line cord is filtered, it is susceptible to r.f. pickup when working around an operating transmitter.

Using the Test Meter

There are a couple of important points to remember when using your test meter. Never, *never*, use ohmmeter scales to check live circuits. If there are voltages present in a piece of equipment being checked *don't use* the ohmmeter scales.

Always use the highest voltage or current scale when checking an unknown quantity. Otherwise you may have a burned out piece of test equipment or a badly bent meter pointer.

The test meters are usually furnished with insulated leads that have metal probes at the tips. The tips are OK for some tests but you'll find many instances when it is more convenient to clip the leads to the circuit being tested. There are insulated clips available that will slip over the ends of the probes and at least one should be purchased for your test meter.

Safety First

In doing trouble shooting the most important thing to remember is that you are working with dangerous voltages and currents. You cannot permit yourself to be careless at any time you are testing a live circuit. Turning the power off is not always a sure method of removing voltages from a piece of gear. If the bleeder resistor should happen to open up, the capacitors in the power supply may retain their charges for long periods of time. To be safe, take a metal screwdriver that has a well-insulated handle and short the hot power supply lead to the chassis. This will discharge the capacitors. Many amateurs are inclined to be careless around low voltages, believing that only high voltages are dangerous. Whenever you do any trouble shooting always remember that you are working with live circuits — get careless and the circuits may be live but you won't!

Where to Start

Fig. 1 is a circuit diagram typical of a rig used by many amateurs. It consists of a crystal oscillator and an amplifier. We'll use this circuit to illustrate the various check points in trouble shooting.

When something goes wrong in a piece of equipment that has been operating there are a few things the operator should check before doing any voltage testing. Such obvious things as key leads, a.c. power source and plug, fuse, antenna system, etc., should all be checked out. If the tubes are glass, look and see if the heaters are lighting. If the tubes are metal, see if the envelopes are warm to the touch. Should one be hot and the other cold, try another tube in place of the cold one. In other words, try to analyze the problem before actually digging into the equipment.

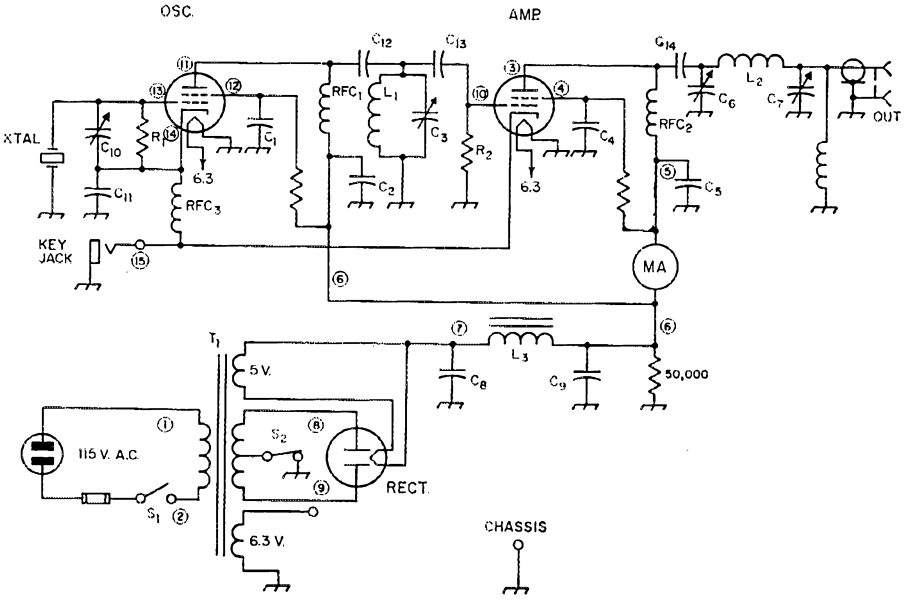


Fig. 1 — Circuit diagram of two-tube typical transmitter with power supply.

When a piece of gear fails there are three signposts that will narrow our trouble-shooting area. First, the tubes don't light or aren't warm. Second, there is no plate current present. And last, no grid current shows. In Fig. 1 we don't show meter switching but most transmitters meter both the grid and plate by switching.

We'll start our trouble shooting by taking each of the three visible signs and going through them separately. Table I shows the expected meter readings, check points, and trouble spots for the heater circuits, excluding the obvious checking of the a.c. line power, switch S_1 and fuse to the power transformer, T_1. The v.o.m. scale used for each check will depend on the voltage being

TABLE I

Heaters Don't Light or Tubes are Cold to the Touch.

Check Points	Normal Reading	If No Reading, Possible Cause
With S_1 closed, between 1 and 2	115 volts a.c.	Faulty power switch. Blown fuse. Faulty wiring in line cord or plug. Blown fuse in house wiring.
Across 6.3 volt heater winding on power transformer.	6.3 volts a.c.	Open heater winding.[1]
Between the heater pins at tube sockets.	6.3 volts a.c.	Poor ground connection for 6.3-volt winding. Bad connections at tube sockets or terminal soldering points on heater line. Poor ground connections at socket.
Heater pins on tubes. Remove tubes from sockets for this check.	Low resistance.[2]	Open heater.

[1] An open heater winding doesn't mean a new power transformer is required. A filament transformer can be installed in the transmitter and the power transformer can be retained.

[2] Always use the low resistance scales of the test meter for continuity checks, unless it is desired to check the resistance in a circuit or continuity through high-resistance circuits.

be sure that the key leads haven't been disconnected. If the key isn't closing the circuit then the cathodes of the oscillator and amplifier are not being connected to chassis ground and the tubes won't draw current. If there is grid current but not plate current, then it can be assumed that the power supply is working. However, due to a faulty component or wiring, the power supply output may not be reaching the amplifier. Should you have output from the rig and show no plate current, then it is apparent that the meter isn't functioning or the movement is sticking.

With the heater checks we were only concerned with a.c. so voltage polarity was no problem. In Table II we will be working with d.c. and the chassis ground is our reference point; the voltages are either positive or negative with respect to chassis. On the test meter, the lead jacks are marked plus and minus or are red and black. The black is minus or negative, and this lead is connected to chassis ground for all of the checks in Table II. Our positive lead is the one used for all the checks.

If there is plate voltage present and the tube does not draw current, there are three things to look for. An open cathode circuit will prevent current

checked. However, always remember to use the highest scale when checking an unknown voltage point.

You will notice reference to *bad wiring* and this can mean faulty soldering, poor connections, etc. When checking at a terminal point that has several branches, the test probe should be touched to each of the component leads, not just the terminal point. Also, a common wiring error beginners make is to solder insulated wire ends to terminals — particularly enameled covered wire. Always remove the insulation and clean the ends of the wires before soldering.

In Table I, the first column gives the check points where the v.o.m. leads are connected. The second column shows the expected meter reading. The last column lists expected trouble spots.

No Plate Current

In our checking in Table I we had a clear-cut road to follow. However, in finding why there is no plate current our road has several branches which must be checked out. In Table II each check point will show us what is happening up to that particular point. Before doing any checking with the test meter there are a few things to look for that may be the cause of trouble. First,

TABLE II

R.F. Tubes Lit but No Plate Current Indicated

Measure + Voltage Between Chassis and Check Point:	Voltage Yes	Voltage No	Cause
3	X		See note at bottom of chart
3 6	X	X	This indicates power supply voltage is OK but there is an open circuit between points 6 and 3.
3 5	X	X	Meter OK, but RFC_3 is open.
5 6	X	X	Meter open.
4 5	X	X	Open screen dropping resistor, or C_4 shorted.
7		X	Open filament in rectifier tube, wiring error or faulty transformer winding.
8 or 9; close S_2. (Use 1000-v. a.c. scale)	X		Bad rectifier tube. Bad connections at rectifier socket.
		X	Faulty switch at S_2. Open winding in high voltage secondary of T_1.

If there is voltage at the plate and screen of the amplifier and the circuit being tested uses grid-leak bias (Fig. 1), then the probable reason for no plate current indication would be an open cathode circuit or a defective plate milliammeter.

from flowing. If there is no voltage at the screen grid, very little or no current will flow. And last, if the grid is biased beyond cut off (and there is no grid drive), the tube won't conduct.

In Table II we start off at the plate of the tube and work back to the power supply. The first

OBVIOUS THINGS SHOULD ALL BE CHECKED OUT
(Cartoon idea from *West Coast Ham Ads*)

column gives the check point, which is the circled number in Fig. 1. The next two columns indicate the presence of voltage. There are no definite values for voltages given because they would probably be meaningless if applied to your rig. Your instruction manual will give the important voltage and current values and these can be applied in your testing. The last column gives the cause of the trouble.

No Grid Current

Before making voltage measurements for grid current there are some simple checks that can be tried which may show the trouble spot. Listen to your receiver at the crystal frequency for the oscillator signal. If there is no signal then try another crystal, and don't forget to tune the receiver to the new crystal frequency. Should there be a signal heard from the oscillator, then tune C_3 to see if the amplitude of the signal changes. If it does — and gets louder at one point of the tuning — it indicates the oscillator and tuned circuit are operating properly. The trouble is then likely to be in the meter failing to read and show grid current. On any of the tests mentioned above, don't hold the key down any longer than necessary, as the amplifier tube will draw excessive plate current when no excitation is reaching it.

In Table III all voltage measurements are made in the same manner as in Table II, with the exception of the check at point 10. This is the grid of the amplifier and the voltage will be negative with respect to chassis. The meter leads should be reversed for this test, positive lead to chassis ground and the negative lead for testing. Also, a 2.5 mh. r.f. choke must be connected in series with the test lead when checking at point 10. Otherwise, the test meter will detune the grid circuit and no reading or an incorrect one will result. If your transmitter has an r.f. choke between grid and grid leak (R_2), then you won't need to use another r.f. choke; the test probe can be touched to the junction of the r.f. choke and the grid leak for the voltage check. If your test meter is the 1000 ohms-per-volt type, then use the highest voltage scale for this test. The highest scale puts the most resistance in the voltmeter circuit, and the shunting effect on the grid leak is minimized. If a v.t.v.m. is used for testing, then it usually isn't necessary to use an r.f. choke with the probe.

Additional Tests

If grid and plate current are obtained and the transmitter doesn't work, then the trouble should be in the amplifier tank circuit. Continuity checks should be made to determine if there are any wiring mistakes or bad connections. In the case of a pi network as in Fig. 1, the output capacitor C_7 should be set at maximum capacity and C_6 tuned for resonance as indicated by the dip in plate current. If the tank circuit resonates, then you can be reasonably sure that the transmitter is working and your problem is one of loading or shorted C_7.

If the transmitter is a kit or homebrew job,

(*Continued on page 150*)

TABLE III

No Grid Current Indicated	
Step 1.	Check for voltage at point 11. If there is none, then check at point 6 to see if the power supply output is present. If the supply is not functioning, refer to Table II for trouble shooting. Voltage at point 6 and none at 11 indicates bad wiring or open RFC_1.
Step 2.	Voltage at point 6 and none at point 12 indicates bad wiring, open screen dropping resistor or shorted C_1. Check resistor with ohmmeter. Check C_1 by removing oscillator tube and measuring resistance between point 12 and ground.
Step 3.	Turn off power and switch test meter to read ohms (high resistance). Connect one test lead to oscillator grid, point 13, and the other lead to the cathode, point 14. Meter should show approximately the same resistance reading as value of R_1. If not, it indicates bad wiring, grid to cathode short in oscillator tube, or resistance of R_1 has changed.
Step 4.	Leave one test lead at point 14 and move other lead to point 15. Meter should show continuity. If not, it indicates bad wiring or open RFC_2.
Step 5.	Move lead at point 15 to the grounded terminal of key jack and leave attached at point 14. Open and close key. The meter should read when key is closed, indicating continuity from oscillator cathode to chassis ground. If not, check wiring to key.
Step 6.	Turn on power, switch meter to read d.c. high voltage, connect positive meter lead to chassis and make voltage check at point 10, amplifier, with key closed. Failure to obtain reading when C_3 is resonated (see text) indicates bad wiring, grid-to-cathode short or faulty components at C_{12}, L_1C_3, C_{13}, or R_2. Depending on the type of test meter used, an r.f. choke may be needed in series with the test probe. (See text).

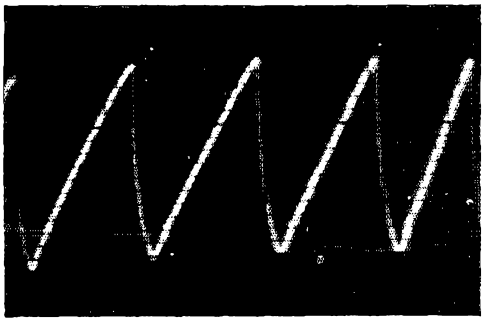
A Saw-Tooth Crystal Calibrator

Harmonic Generator and Amplifier with 100-Kc. Markers to 50 Mc.

BY E. LAIRD CAMPBELL,* W1CUT

• **An improved harmonic-generating circuit is used in this crystal calibrator to give more uniform output at 100-kc. intervals throughout the high-frequency spectrum. Usable marker signals can be obtained through the 50-Mc. band.**

ONE OF THE NUISANCES connected with using conventional crystal calibrators is the drop in marker strength at the higher frequencies. At 10 meters, when the band is open, it is sometimes impossible to hear the markers through interference and background noise. The 100-kc. crystal calibrator described here uses a conventional type oscillator, but its output is fed into a network that converts it into a saw-tooth wave,[1] a wave form which is superior to others in this application because of its more uniform harmonic content. Incorporating a tuned amplifier, the device provides entirely adequate output up to 30 Mc. and usable harmonics to 50 Mc.



Output of the saw-tooth generator as measured at the grid of the amplifier. A wide-band (10-Mc.) oscilloscope was used to obtain this photo.

The Calibrator Circuit

The circuit of the calibrator is shown in Fig. 1. The triode section of a 6AN8 (V_{1A}) is used as a 100-kc. crystal-controlled oscillator. The output of the oscillator is fed to the saw-tooth generator network consisting of CR_1, CR_2, R_1, C_2 and C_3. The operation of this circuit is as follows:

At the beginning of the positive portion of the 100-kc. signal, point A is more positive than point B, so capacitor C_3 begins to charge slowly through CR_1 and R_1, and the slowly-rising voltage across C_3 as it becomes charged shapes the sloping portion of the saw-tooth wave. When the polarity of the 100-kc. input reverses, point A becomes more negative than point B, and since under this condition the path from B to A is practically a short circuit, through CR_2, C_3 can discharge rapidly, thus giving the vertical portion of the saw-tooth wave.

The saw-tooth wave is applied to the grid of the pentode section of the 6AN8, V_{1B}, and the

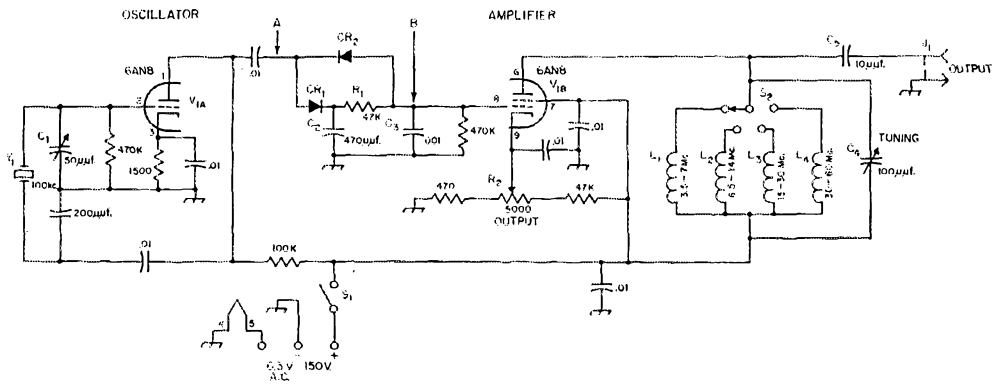


Fig. 1 — Circuit of the 100-kc. crystal calibrator. Unless otherwise indicated, capacitances are in μf., resistances are in ohms, resistors are ½ watt.

C_1 — 50-μμf. midget variable (Hammarlund MAPC-50).
C_4 — 100-μμf. variable (Hammarlund HF-100).
CR_1, CR_2 — 1N31A.
J_1 — Phono jack.
L_1 — 3.5–7 Mc., 10-μh. (National R-33 r.f. choke).
L_2 — 6.5–14 Mc., 4.7-μh. (IRC type CL-1 r.f. choke).
L_3 — 15–30 Mc., 1.0-μh. (IRC type CL-1 r.f. choke).
L_4 — 30–60 Mc., 0.22 μh.; 4 turns No. 20 plastic-insulated wire, ⅜-inch diam.
R_2 — 5000-ohm potentiometer (Mallory U-14).
S_1 — S.p.s.t., mounted on R_2 (Mallory US-26).
S_2 — 1-section, 1-pole, 4-position miniature phenolic rotary switch (Centralab PA-1000).
Y_1 — 100-kc. crystal.

* Technical Assistant, *QST*.

[1] F. Papouschek, U. S. Patent No. 2,742,572. (*Electronic Design*, December 1, 1956, page 90.)

This view shows how the major components of the calibrator are mounted. The 100-kc. crystal is in the metal tube envelope. Output from the unit is taken from the phono jack at the rear of the chassis. The three leads coming through the grommet are power leads.

«

desired amplified harmonic is selected through the tuned circuit by setting switch S_2 and capacitor C_4 appropriately.

No power supply is included in this circuit. Power usually can be taken from the receiver, but a small power supply capable of delivering 150 volts at 10 ma. and 6.3 volts at 0.5 amp. can be added if a larger cabinet is used.

Construction

This particular calibrator is built in a $4 \times 5 \times 6$-inch steel cabinet (ICA 3819), having a self-contained chassis welded to the front panel. The output control, R_2, and the band switch, S_2, are mounted on the panel and the remaining components are placed on the chassis. The amplifier tuning control, C_4, is above d.c. ground so the shaft is brought through the panel by means of an insulated extension (ICA 2110 or Allied Radio No. 60 H 355).

When mounting the tube and crystal, be sure to leave a little space between them so that heat from the tube will not cause the crystal frequency to drift. However, make the leads from the tube to the crystal as short as possible. As shown in the bottom view of the calibrator, the tube, crystal and calibrating capacitor C_1 are all mounted within a short distance of each other.

Most of the wiring is associated with the tube socket and does not require any special tie points. However, for wiring convenience the sawtooth network (components between points A and B) is soldered to a terminal strip. Leads are then run to the components on the strip.

The photograph shows how the amplifier tank inductances are soldered to the band switch, S_2. With this arrangement only two leads to the tank inductance assembly are necessary.

The three power leads are brought out through a grommet in the rear of

»

Bottom view of the calibrator. The sawtooth network is on the terminal strip at right center. The calibrating capacitor, C_1, is the small variable capacitor at the left.

the chassis for connection to the receiver or other power source.

Using the Calibrator

The calibrator is connected to the receiver antenna post through the coupling capacitor C_5. On the lower frequencies, markers from the calibrator can sometimes be detected without connecting the unit directly to the receiver, but this depends on how well the receiver is shielded. Output is fairly constant up to 30 Mc., but starts to fall off rapidly above that frequency.

To use the unit, turn on switch S_1, advance the output control to full on (minimum resistance) and turn the band switch to the position covering the desired output frequency. Then tune the receiver near a check point until the signal from the calibrator is detected. The output control is used to adjust the level of signal after being peaked up by the tuning capacitor, C_4.

It is advisable to check the accuracy of the 100-kc. crystal oscillator. The most common method is to zero beat a harmonic of the oscillator to one of WWV's standard frequency signals. WWV schedules and the procedure for adjusting to zero beat are given in the chapter on measurements in the *Handbook*. The frequency adjustment is made by tuning capacitor C_1 to zero beat.

Once the 100-kc. oscillator frequency has been set the calibrator can provide accurate marker signals every 100 kc., as far up in the spectrum as 50 Mc. These markers can be used to calibrate a receiver, to set a v.f.o. for band-edge operation, or for any other general calibration purpose.

Strays

Say, all these awards *are* confusing. K9GDF tells us about the fellow who thought WAS meant "Worked All Stations."

—···—

The Heath Company of Benton Harbor, Mich., well-known maker of kits, is building a new plant in South St. Joseph, Michigan. The new structure, located on a 16-acre tract, will have 135,000 square feet of floor space devoted to office, engineering and factory areas. The new plant, scheduled for completion later this year, will continue to use the Benton Harbor mail address.

—···—

A discerning young op of Gravette
Heard some nonsense come through on his set
He fiddled a while,
Then wrote with a smile:
This is more of that "Novice Accent."

— *W8HSG*

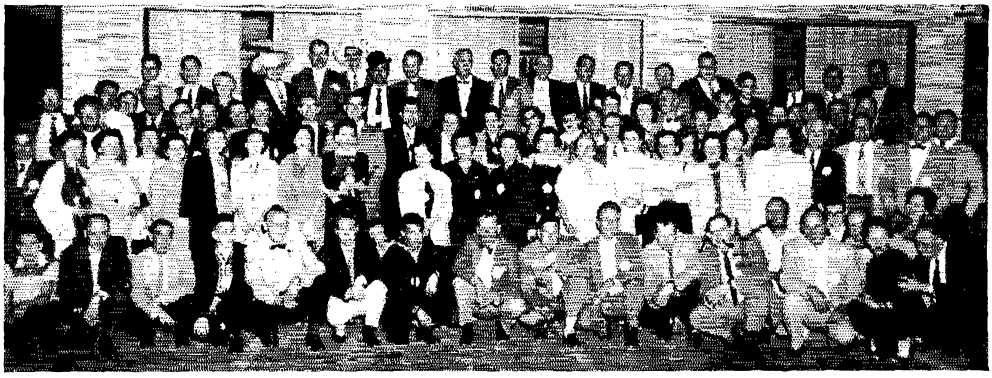
—···—

OZ9CW has just been issued a phone WAC.

K6AKS called CQ on 10-meter phone and was answered by both K5CPR and K8CPR, neither of whom could hear the other.

—···—

W8HWA and W8MTZ were working each other mobile one afternoon when they decided it would be nice to meet in person and have a cup of coffee or other refreshment. They finally rendezvoused in front of a tavern, and because of lack of time decided to go in there despite its dubious appearance. They had also been QSO K8BOM and had made several disparaging remarks to him concerning the appearance of the tavern. Upon entering the tavern they were greeted by distinct coolness on the part of the customers, the bartender and the waitress. However, the silence was soon broken when one of the men at the bar began repeating the derogatory comments that our heros had been making over the air. It seems that the mobile signals had come in loud and clear over the tavern's juke box! The moral of this story? Be careful — you never know who may be listening!



Although we can't identify each of them, this shows who all was present at an s.s.b. dinner in Atlanta on March 30. This is the fifth year that the dinner has been held. Attendance was 125, with 23 being from Birmingham, Ala.

25 Years Ago
this month

July, 1932

. . . The lead article in *QST* 25 years ago was the first of a two-part series on building a low-cost phone rig for 160 meters, using the new Class B modulation. This rig used the new type '46 tube in all seven sockets.

. . . Also featured in this issue were two schemes for break-in operation on phone.

. . . Other articles relating to phone operation included some info on a new tube type ('57) which could be used as a high gain audio amplifier, a phone and c.w. transmitter by W5AQO, and hints on how to operate a condenser mike.

. . . This July issue of 25 years ago reports on the 1932 Board meeting, and in the photograph of that Board we find four familiar faces that are also listed elsewhere in *this* issue — Budlong, Handy, Reid and Segal.

. . . "Living-Room Television" was advertised 25 years ago — featuring a 4 × 5 screen and an eight-tube receiver.

Strays

In case you've been puzzled by some of the goings-on over WWV, something new has been added — temporarily — to the s.f. transmissions. During the International Geophysical Year information on "Alerts" and "Special World Intervals" is being sent at 4½ and 34½ minutes past the hour. These terms refer to periods in which efforts are made to intensify the observational activity of the thousands of scientists engaged in IGY. The code is as follows:

5 As — State of alert
5 Es — No state of alert
5 Ss — Special World Interval begins at 0001Z the following day
5 Ts — Special World Interval terminates at 2359Z
3 long dashes — Special World Interval in progress.

—•••—

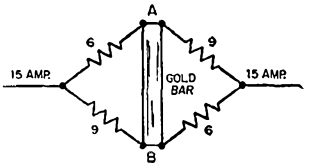
In a Stray on page 55 of May *QST* we reported on the coincidence of W6HX working JA1ACA and JA1ACB in succession with no QSOs in between. W7PEW now reports that he did the same trick but in reverse — working JA1ACB and then JA1ACA with no QSOs in between.

FEEDBACK

Either gremlins or our printer's devil dropped four important letters from our editorial on page 9 of the June issue, and as a result *Peru* was erroneously omitted from the list of countries with which amateurs can handle third-party traffic.

Quist Quiz

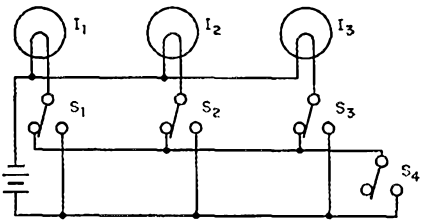
Robert Tschannen, W9LUO, takes an otherwise simple bridge circuit made of two 6-ohm and two 9-ohm resistors and shorts it out with a gold bar of large cross-sectional area. (Source of gold brick unknown.) Thus for all practical purposes the resistance between A and B is zero.



Problem: How much current flows through the gold bar and in which direction does it flow?

—•••—

The solution to last month's Quist Quiz involving three lamps and four switches is shown below, with each switch in the "off" position.



Silent Keys

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

W2HXQ, Kathryn I. Kibling, Rye, N. Y.
W2PL, Daniel E. Lindsay, New York, N. Y.
W2PV, Herbert H. Ammenheuser, East Greenbush, N. Y.
W3KBB/W3RJH, William V. Canham, Philadelphia/Hellertown, Pa.
W4AQJ, William A. Douglas, Key West, Fla.
K4GSO, Barney M. Franklin, Ocala, Fla.
W4OTG, Weston M. Ackman, Atlanta, Ga.
W4PJY, Claude H. Oliver, North Miami, Fla.
W4QBR, Franklin P. Keefer, Leesburg, Fla.
W5VLZ, Markham Swartz, Las Cruces, N. Mex.
W5MGH, Clovus M. Nix, Pryor, Okla.
W5TOU, Philip L. Freshwater, Los Alamos, N. Mex.
W6UZQ, Ralph Manley, Lancaster, Calif.
W6YDQ, Thomas Rucker, Edwards, Calif.
W7FXY, Robert K. Bolton, Beaverton, Ore.
W7HON, Don C. Smith, Salem, Ore.
W7IGU, Sam W. Elsom, Cobalt, Idaho
W8INS, William T. Robenalt, Zanesville, Ohio
W8KPK, Leonard G. Qualls, Lincoln Park, Mich.
ex-W8OXV, Henry S. Eckerson, Massillon, Ohio
W9SZS, George J. Holy, Chicago, Ill.
WØNPP, Mat E. Walz, Anoka, Minn.
KH6BEH, Bert S. Nott, Honolulu, Hawaii
VE5BO, Aage S. Nielson, Swift Current, Sask., Canada
VE6LC, Albert L. Donovan, Calgary, Alberta

A Simple Support for Quad Antennas

Lightweight Low-Cost Framework Construction

BY J. T. HALL,* W3PRU

• Within recent months, the quad antenna has been looked upon with renewed interest. This article describes a simple and inexpensive method of making a support for the bamboo spreaders.

THE quad antenna [1,2,3,4] has proved to be an economical high-gain performer. However, the rather peculiar supporting framework required for an antenna of this type may present a mechanical problem.

The simple arrangement shown in the photographs results in a structure light in weight and resistant to corrosion. Materials are readily available and easily worked with ordinary hand tools. Element spacing is readily adjustable, and the cost can be kept within ten dollars.

As the photographs show, an aluminum plate at each end of the 1¼-inch tubular boom carries a pair of crossbars to which bamboo spreaders may be attached. The assembly is clamped to the boom with ordinary TV-type U bolts.

Fig. 1 shows a sketch of the plate. It is made of 3/16-inch aluminum sheet. The "dog ears" at the four corners provide a means of clamping the crossbars to the plate so that the X formed by the bars will not tend to collapse while the quad loops are being strung. The boom rests in the V-shaped notch. This notch should not be cut until the crossbars have been temporarily attached.

The two crossbars are 30-inch lengths of 1 × 1 × ⅛-inch aluminum angle stock. They are fastened on opposite sides of the plate by a ¼-inch bolt through holes drilled at the centers of the crossarms and plate. If the crossbars are placed with their open sides downward, as shown in the photographs, there will be less tendency for rain water to run into the open butt ends of the bamboo spreaders.

When the crossbars are temporarily fastened to the plate, they should be turned so as to run along opposite diagonals of the plate. Then the V notch can be scribed along the upper edges of the crossbars. It is important to cut the notch so that the edges of the plate do not protrude above the edges of the crossbars. When the U bolts are tightened up, the boom should be drawn against the flat surfaces of the crossbars, rather than against the narrow edges of the notch. To further reduce any tendency for the boom to be deformed by the U bolts, the ends of the boom can be plugged with snug-fitting wood dowels.

After the notch has been cut, the crossbars can be fastened in place again while the holes for the U bolts are marked on the crossbars.

(*Continued on page 160*)

* Rice Lane, R.F.D. 5, Baltimore 7, Md.

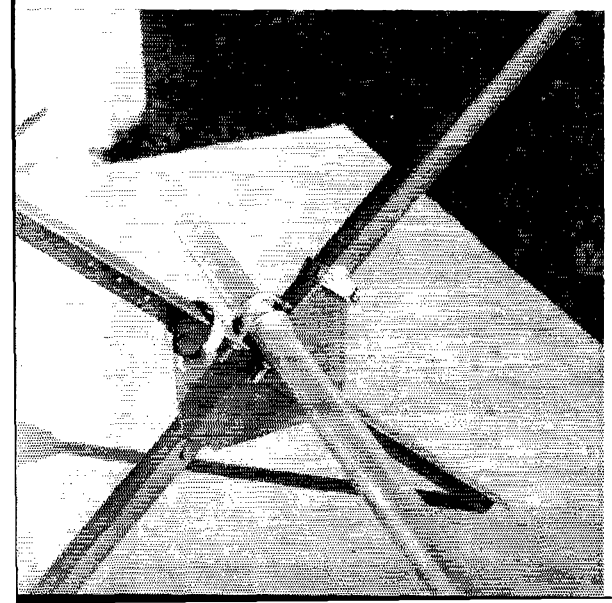
[1] Leslie, "A Cubical Quad for 20 Meters," *QST*, Jan., 1955.

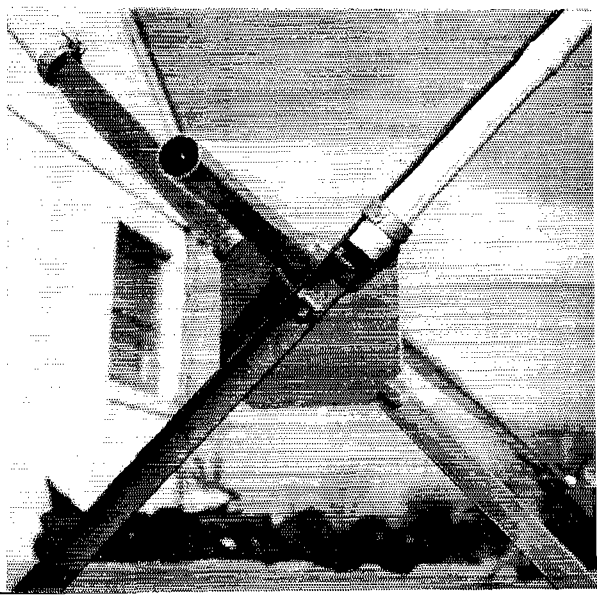
[2] Magagna, "A Dual Quad for 15 and 10," *QST*, May, 1956.

[3] Pomeroy, "A Tri-Band Quad," *QST*, Sept., 1956.

[4] Leach, "A Three-Band Cubical Quad Antenna System," *QST*, Apr. 1957.

Inside (left) and outside (right) views of the spreader support for a quad antenna. The assembly is clamped to the tubular boom with U bolts. The bamboo spreaders are clamped inside the aluminum-angle crossbars with adjustable hose clamps.





Rule 11 . . .

Concerning the Altering of DX QSLs

BY L. A. MORROW*, W1VG

> **• This all boils down to one point — don't *you* alter any of those cards you submit for DXCC credit, even if the DX station made a slight error. This rule is designed to protect the innocent, for we're sure that *you* don't want to be classed in the same boat as the occasional character who falsifies a card in attempting to boost his DXCC score.**

You work a DX station; you need the QSL for DXCC; you wait for the card, confidently at first, then with increasing impatience as you tear open each envelope from the bureau, until at last you get the confirmation. FB! — but what if the DX operator made an error on the QSL, like giving you a c.w. report for a phone contact? Or caught his mistake and erased or marked over it? Or suppose the QSL is blank and you're asked to fill it out yourself?

This problem was brought home to me by two recent incidents and I checked with our Communications Department to be sure I knew what to do about it.

The answer is definite: DON'T MONKEY WITH THE QSLS.

DXCC Rule 11 states: "All confirmations must be submitted exactly *as received from the stations worked.*" Surely this is clear, but unfortunately the rule is sometimes broken and the DXCC claimant suffers the consequences. Rule 11 says further: "Any altered or forged confirmation submitted for CC credit will result in disqualification of the applicant."

Take the UB5 card reproduced here, for example. My log shows that W1VG worked UB5-5659 at UB5KAB on the date and at the time written on the QSL. Not only that, but my log has a notation that the operator insisted on calling me WØVG. Furthermore, *there's no* WØVG in the Call Book. So, I might tell myself that since there's no doubt the card is meant for me, why not change it?

NO! If I do that, I'm sunk. "Any altered . . . confirmation . . . will result in disqualification of the applicant."

Another recent incident, and one that occurs every now and then: I received a card from an OQ5 with my call and the band filled in but with the rest of the card left blank. An accompanying note asked me to complete the card.

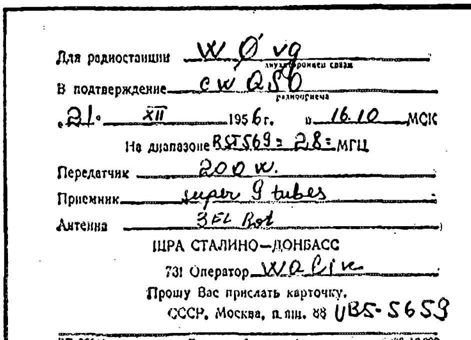
Again, NO. ". . . exactly *as received from the stations worked.*"

So — I know what I should not do: I should not change a QSL. Let's see what I can do.

Is either the UB5 or the OQ card of any value? In the case of the UB5, no. I can send it back through Box 88 and ask for a QSL correctly made *out*, and that's about all. It's a tough break if I need UB5 for DXCC, but the card confirms a QSO with WØVG, not with W1VG. If I submit it — unchanged, of course — DXCC credit will necessarily be refused.

On the other hand, if I submit the OQ card — unchanged — with the envelope, there's a chance, since the QSL does actually confirm a QSO with W1VG. Of course, if the card had been left completely blank, it could not have been used for a confirmation at all.

Another source of trouble, and perhaps the most common offender, is the card changed by the sender. It can happen easily. Precious time is taken from operating to write cards; there's a stack to make out; the ham is in a hurry so he does not take the minute required to write a new card when he makes a mistake. Besides, QSLs are not cheap. But the result can be disastrous. The fellow receiving the card may be too jubilant to notice that it's been changed so he shoots it in for DXCC credit. Boom! "Any altered . . . confirmations . . . will result in disqualification."


Для радиостанции W Ø vg
внутрисоюзной связи
В подтверждение cw QSO
радиосвязи
21. XII 1956 г. в 16.10 МСК
На диапазоне RST 569 = 28 = мгц
Передатчик 200 w.
Приемник super 9 tubes
Антенна 3 EL Rot
ШРА СТАЛИНО—ДОНБАСС
731 Оператор W.A. Lik
Прошу Вас прислать карточку.
СССР, Москва, п. ящ. 88 UB5-5659
БП 07544 г. Сталино, облтипография 2936 10.000

So, to summarize: Look over your QSLs carefully before you send them in for DXCC credit. Be sure that no card has been changed by marking over, erasing, adding or removing information, or in any other way. And to those making out cards, and that means all of us: *Don't* send out altered cards. Some poor ham may get into trouble if we do. Let's take that extra minute and write a new card, correctly.

---

* Advertising Manager, *QST*.

Simplified CRPL DX Predictions

Rapid Plotting of DX Conditions by Means of Transparent Maps

BY LESLIE C. CONSTERDINE,* W8CUP

LONG-DISTANCE communications requirements for the armed services in World War II resulted in the development of a system for planning optimum frequency usage. Charts of the type developed for military use have been available to the general public since 1946, as *Basic Radio Propagation Predictions*,[1] issued monthly, three months in advance, by the Central Radio Propagation Laboratory of the National Bureau of Standards. Magnetic, solar and ionospheric observations are gathered from all over the world daily, in order to provide a basis for these predictions, which show the maximum usable frequency for communication by means of the F_2 layer, for any path.

For point-to-point communication these charts are readily used, but as anyone who has attempted to use them for random DX work knows, their adaptation to hamming is a rather involved process unless some special arrangements are made. This article describes an adaptation of the CRPL method, using transparent maps for plotting paths between your location and other points on the earth's surface.

The usual method for employing the charts involves laying out the great-circle path between the two locations concerned. This path is then superimposed on a chart supplied by CRPL for the month in question. The latter represents the earth's surface, but all that is shown is latitude (in horizontal lines), local time (in vertical lines) and wavy and often elliptical lines showing the predicted maximum usable frequency (m.u.f.). Points 1200 miles from each end of the path are marked on the great-circle route, and the m.u.f. at these points is read. This is the m.u.f. for the whole path, at the time in question. To find what is the highest frequency that can be expected to be open for the path, slide your great-circle path laterally on the CRPL chart until the *control points* (those two spots 1200 miles from the ends of your path) are over areas of the chart that show the highest figures at both ends. The lower of the two figures is the m.u.f.

The CRPL publications include information on drawing great-circle routes, and they provide a scale for locating the 1200-mile control points. Normally, each path must be drawn separately, which is a time-consuming task. If you are concerned with only your own home location, and you want to know quickly what conditions are likely to be at various hours, the process can be simplified considerably by the use of a transparent map marked up for your location.

Making Simplified Maps

An example of such a map, set up for Topeka, Kansas, is shown in Fig. 1. To make yours, find your location on the CRPL world map contained in the *Instructions for Basic Radio Propagation Predictions*.[2] You will want this when you subscribe to the *Predictions* the first time. Another publication that is helpful is *Ionospheric Radio Propagation*.[3] Now, mark off the 1200-mile points in various directions around your home site, as shown in the example. This will not be a true circle, except at the Equator. The directions to various active DX areas of the world can be indicated on this oval. Next, locate these distant points and draw in the great-circle path from them toward your location for 1200 miles. These lines are shown in Fig. 1 with a dot at the DX location, and an arrowhead at its control point.

Once the transparent maps are made up, the use of them is merely a matter of laying one over the suitable charts and reading the m.u.f. at the arrowhead and point on the oval for the path in question. Note that there are *three* prediction charts: one each for the three zones, E (Asia), I (Europe-Africa) and W (North and South America). Use of the CRPL information can thus be speeded up if five transparent maps are made up and joined side by side. To do this effectively, the CRPL Figs. 2, 4 and 6 should be cut out, trimmed and joined side by side, E, W and I, in that order. If five transparent maps and the corresponding three CRPL charts are used in this way, the m.u.f. to any point can be read quickly with an accuracy that is suitable for most amateur work.

The Simplified System

An example of how it's done: Suppose we want to check conditions between Topeka and Southwestern Australia on 14 Mc. For this path our control point appears under the western perimeter of the local oval. The control point at the far end is indicated by the arrowhead in the center of Australia (E zone). With the equator on the transparent maps lined up with that on the prediction charts, slide the transparent maps east and west until both control points are over m.u.f. curves that are above 14 Mc., but under 30 Mc. The Topeka m.u.f. should be read on the W-zone maps; the VK m.u.f. on the E-zone map. If a considerable spread east and west can be found where both points are over 14 Mc., but not too much over, the hours when 14-Mc. communica-

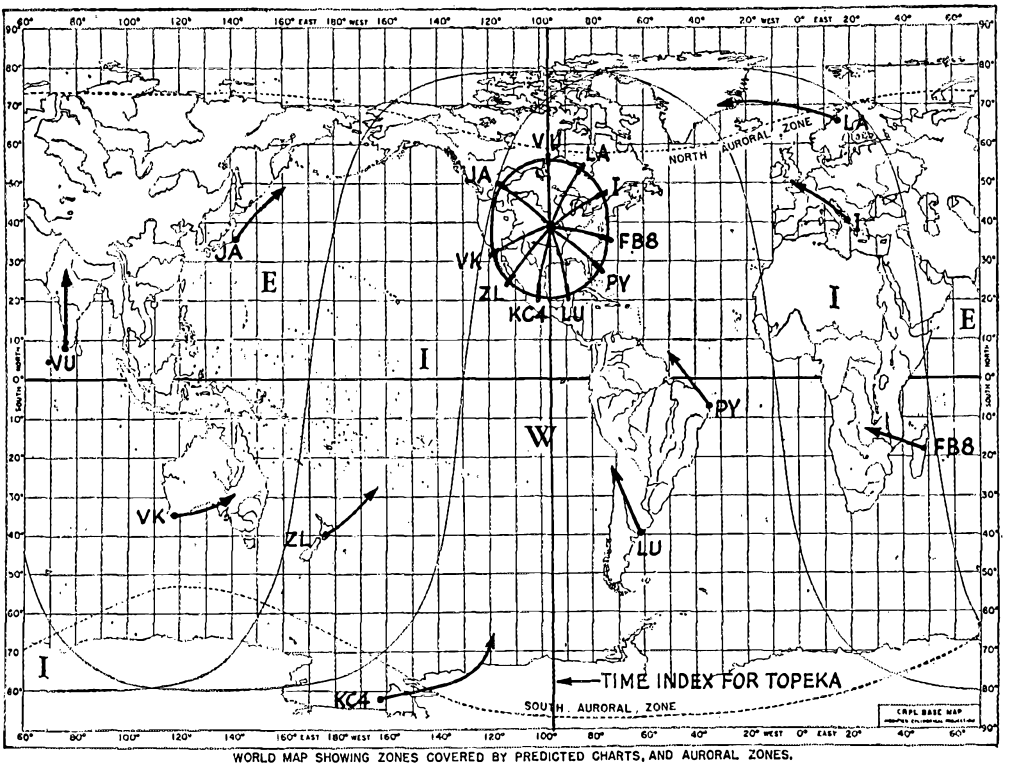
* 213 East LaSalle St., Royal Oak, Michigan.

Government publications mentioned in the article may be obtained from the U. S. Government Printing Office, Washington 25, D. C. — *Ed.*

[1] *Basic Radio Propagation Predictions*. Issued monthly, 3 months in advance. Single copies, 10 cents, 12 issues, $1.00.

[2] *Instructions for Basic Radio Propagation Predictions*. Order with first subscription, 30 cents.

[3] *Ionospheric Radio Propagation*. 210 pages of helpful information. Optional, $1.00.



WORLD MAP SHOWING ZONES COVERED BY PREDICTED CHARTS, AND AURORAL ZONES.

Fig. 1 — CRPL World Map, modified for use as a transparency with the DX prediction charts. Map may be printed on clear plastic or transparent paper. Typical DX points are shown. Draw in others to suit your own requirements.

tion should be possible will be indicated by this spread. Local time is read on the vertical line passing through Topeka.

Note that it was stressed above that the m.u.f. should not be too much higher than 14 Mc. If the charts indicate that 28 Mc. should be open, for example, conditions on 14 are not likely to be good, also, especially on long paths. The optimum working frequency (o.w.f.) is just slightly below the m.u.f. Outlining the 15-, 22- and 30-Mc. contours on the prediction charts in heavy crayon will make it possible to tell at a glance how conditions stack up on the various DX bands.

In checking the m.u.f. it is well to remember that the charts represent median values for the month of the prediction. The actual m.u.f. may rise considerably higher on the best days. This is particularly important to 50-Mc. DX enthusiasts, as a prediction of 44 Mc. is high enough to make a path worth watching for possible 6-meter DX on the peak days of the prediction month. The charts are likely to be quite accurate as to time, indicating very closely when the m.u.f. for a given path will reach its peak each day.

Transparent maps can be made up using air-mail stationery type of paper. Some amateur photographers will be able to make their own positive 8 by 10-inch transparent copies of the maps with the control-point oval and the arrows drawn in before the copy is made. Commercial photographic plants can make them at moderate cost.

With a set of transparent maps, the CRPL predictions, and some experience as a guide you'll be able to tell when to burn the midnight oil, and when to saw logs! Your comments will be appreciated. Further information about the system and the transparent maps will be sent upon request.

Strays

If you admired the "Modified 'Standard of Comparison' Mobile Receiver" in the March issue and would like to duplicate it, the author offers a chassis hole layout sketch to anyone who requests it and encloses a self-addressed stamped envelope. Address your request to Mr. R. J. Gunderman, Designers for Industry, 4211 Fulton Parkway, Cleveland 9, Ohio. Mr. Gunderman points out two small errors in the article: C_2 is really only 11 $\mu\mu$f. per section, although the type number is correct, and L_2 for 20 meters is on an LS-5 form and not an LS-6.

—•••—

For filing QSLs I use a 4 × 6 card file of heavy stock. Index tabbed cards with state names already imprinted are available. — *W4BHD*

Simple Gamma-Match Construction

BY FRED REYNOLDS,* W2VS

MANY of us have shied away from using a gamma match because of the problem of providing a suitable waterproof container for the gamma capacitor. The following is a description of a gamma match used by the author which will overcome this difficulty and also provide a good mechanical assembly.[1] Once adjusted, it may be easily waterproofed and will not be subject to changes due to vibration. The one in use by the author has been up for over a year without any necessity for readjustment.

Referring to the accompanying drawing, the ¾-inch aluminum, the ⅝-inch polystyrene and the ½-inch aluminum tubings form the gamma capacitor. The ½-inch tubing has been extended to form the gamma rod. Varying the dimension A changes the capacitance of the gamma capacitor. This value changes at the rate of approximately 15 $\mu\mu$f. per inch engaged. The length of the gamma rod is controlled by dimension C. The table gives maximum dimensions for the various bands.

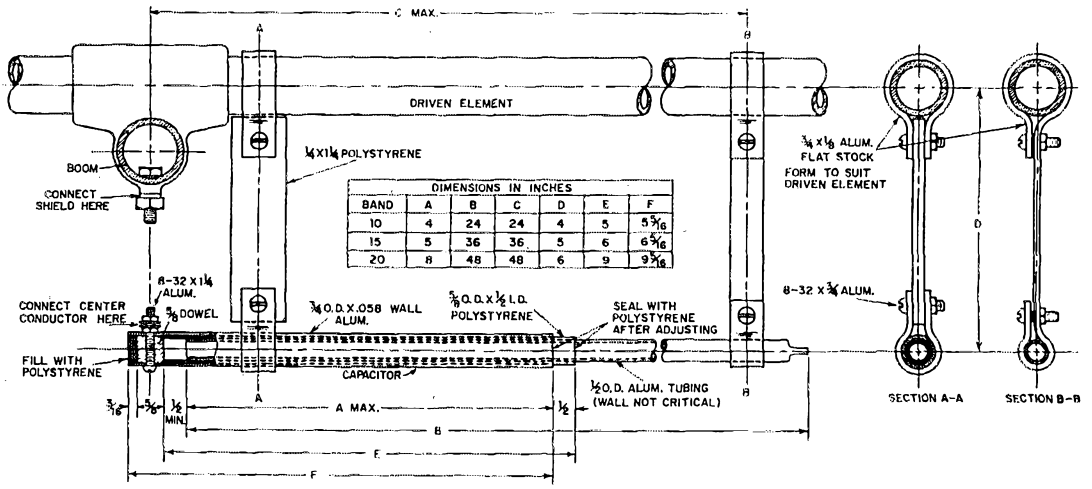


Fig. 1 — Sketch showing the constructional details of the gamma matching section used at W2VS for 52-ohm coax line. The reactance-compensating capacitor is in tubular form. It is made by dividing the gamma rod or bar into two telescoping sections separated by a length of polystyrene tubing which serves as the dielectric.

Adjustment

Adjustment procedure is the same as with the conventional gamma match. The author's two-element 20-meter beam was adjusted in approximately one-half hour as follows:

1) The elements were adjusted to the desired frequency using the ARRL *Handbook* data.

2) An s.w.r. bridge was connected at the station exciter and to the beam through an electrical half-wave length of 52-ohm coax.

3) Measurements of s.w.r. were taken throughout the 20-meter band with the gamma capacitor and rod set at the maximum dimensions. It was found that the point of minimum s.w.r., although high, was still at the desired frequency.

4) With the exciter at this frequency, the length of the gamma rod was decreased for minimum s.w.r.

5) With the gamma rod clamped tight to the driven element, the capacitance of the gamma capacitor was varied to further reduce the s.w.r. This can be done by leaving the clamp tight on the driven element and sliding the gamma rod in the lower part of the clamp.

Because of the interaction between adjustments, it may be necessary to repeat steps 4 and 5 several times. With careful adjustment the s.w.r. can be brought close to 1 to 1. The writer ended up with dimension A as 6 inches and dimension C as 40 inches with a center frequency of 14,250 kc. Adjustments were made at 15 feet above ground and did not change appreciably when the antenna was raised to 35 feet. Once a match has been obtained any convenient length of feed line may be used.

Several coats of polystyrene cement or similar material at the joints and end will provide the necessary waterproofing and rigidity.

A similar setup could be used with a T match or, with suitable dimensions, on the higher frequency bands.

* 957 Chili Ave., Rochester 11, N. Y.

[1] The description of a very similar arrangement was submitted by Edward H. Bailey, W5SDA. — *Ed.*

Wavemeters Using Butterfly Tank Circuits

135 to 1000 Mc. in Two Handy Units

BY W. GERALD BANSHAK *

Its high circuit Q, compactness, and large tuning range make the butterfly-type tuned circuit a "natural" for use as a frequency measuring device. Its rigid construction and mechanical simplicity insure high stability and permanent calibration. The wavemeters shown here can be constructed using simple hand tools, and their accuracy is limited only by the care used in calibrating them. The butterfly units used in these wavemeters are available from many surplus houses. The tuning ranges of the two described are 135 to 185 Mc., and 300 to 1000 Mc.

How the Butterfly Circuit Works

The butterfly is, in essence, a complete tuned circuit containing both inductance and capacitance. The ones used in this case are of the type shown in Fig. 1A. The equivalent electrical circuit is shown in Fig. 1B. The electrical circuit between points A and A^1 is equivalent to a high-impedance tuned circuit and external connections to the circuit are usually made at these two points. Points B and B^1 are the electrical midpoints of the circuit, and either one may be used. When the rotor is in the dotted position (see Fig. 1A) the capacitance and inductance of the unit are both at their maximum and the circuit is resonant at its lowest frequency.

The total circuit capacitance is composed of two parts, at A and A^1. The two capacitances are in series, which reduces the total of the circuit.

* 1638 E. 86th St., Cleveland 6, Ohio.

The inductance of the circuit consists of the two semicircular strips which are shown shaded. Notice that these are in parallel, which reduces the total circuit inductance. As the rotor is moved out into the space where it no longer meshes with the stator plates the capacitance is decreased and at the same time the inductance is decreased, as the rotor has now occupied an area which was previously filled by lines of flux encircling the

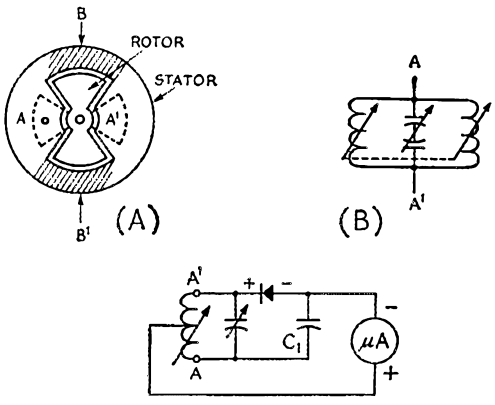
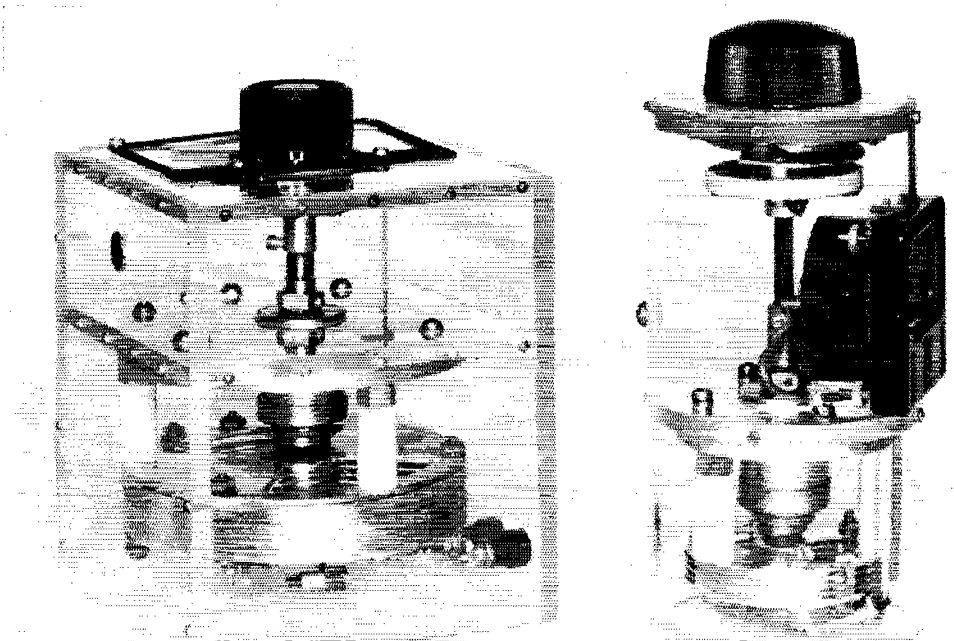


Fig. 1 — The butterfly tank circuit, A, is in effect two inductors in parallel, tuned by two capacitors in series. High-impedance points are at A and A^1; low-impedance points at B and B^1. The equivalent circuit is shown at B. In the circuit for the wavemeter C_1 is an inherent part of the small butterfly. For the larger unit it should be about 90 $\mu\mu$f.

The two butterfly wavemeters. The larger covers 135 to 185 Mc. The smaller tunes 300 to 1000 Mc.



inductance strips. It is this unique feature of simultaneous variation of both inductance and capacitance which gives the butterfly its large tuning range; in some units as great as eight to one. The price paid for this extended tuning range is a reduction in the angle that the rotor turns in going from the low to the high-frequency positions. This angle is approximately 85 degrees.

A schematic diagram for both wavemeters is shown in Fig. 1. When the circuit is resonant at the frequency being measured, a large r.f. voltage is developed across points A and A'. To preserve the Q of the circuit only half of this voltage is rectified and applied to a d.c. microammeter. Capacitor C_1 provides a return path for the r.f. current, preventing it from flowing in the meter. A 1N23 crystal is recommended for the high-frequency unit, a 1N21 for the lower.

Construction

The high-frequency unit is housed in a 6½-inch length of ¼-inch Plexiglass tubing of 3½-inch outside diameter. Two disks of quarter-inch plastic are cut to fit snugly inside the tubing. The butterfly is mounted on one of the plastic disks and the National tuning mechanism on the other. A hole was cut in the plastic tubing to accommodate the 0–100-microampere meter.

The unit is assembled as shown in the photograph, the disks being fastened to the tubing with No. 2 self-tapping screws. A 3-inch-diameter dial is cut from 1/16-inch plastic. White paper is glued to its back, and the dial and knob mounted on the vernier mechanism. Calibration lines are scribed into the plastic dial with a needle at the time of calibration and later filled with black ink, which makes them stand out against the white paper backing. The high-frequency unit comes with a crystal detector and by-pass capacitor mounted as shown in the photograph. The meter's positive terminal is connected to an electrical midpoint and the minus terminal is connected to the by-passed side of the crystal diode which is the larger diode terminal.

The low-frequency unit is mounted in a 5 × 5 × 5½-inch plastic box with a partition 1¾ inches from the top end. The material is ¼-inch Plexiglass, fastened together by drilling and tapping for 2-56 screws. A National type MCN tuning mechanism is used and terminals are provided for an external meter. This butterfly assembly came equipped with mounting hardware for an acorn tube, but this was removed. Electrical connections are exactly the same as those for the high-frequency unit and can be clearly seen in the photograph. A crystal diode holder was improvised from a fuse clip by removing one of the clips and replacing it with a solder lug of the type which has ears to grip the wire. The lug ears are bent so that they grip the small terminal of the crystal diode. The by-pass capacitor is 90 $\mu\mu$f.

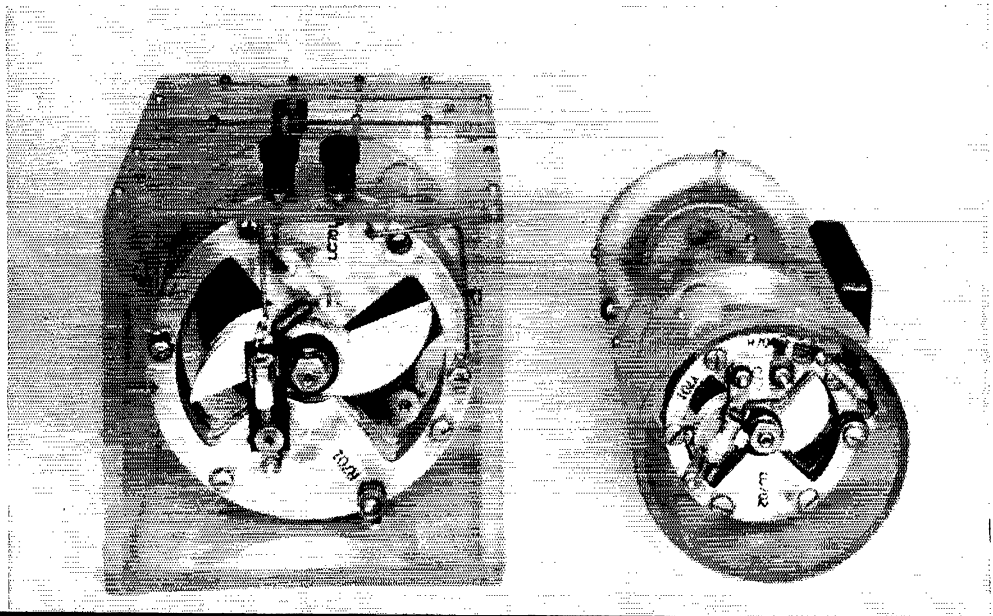
Calibration and Use

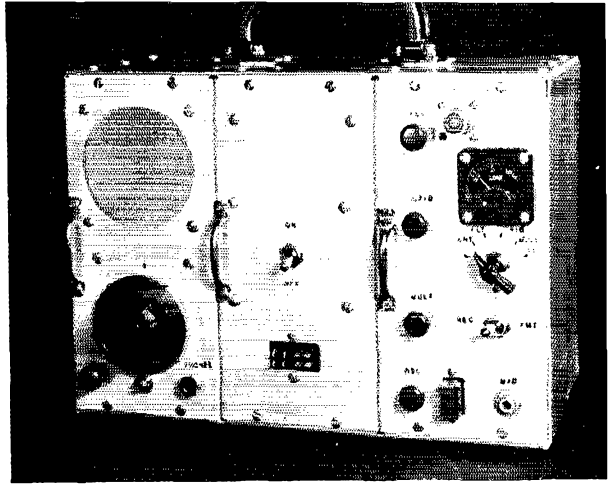
Both of the units were calibrated using a u.h.f. oscillator which was available at a local university. The accuracy of the generator was 2 per cent. An alternative method would be to use a variable-frequency oscillator and Lecher wires. Ours were calibrated simply by placing the wavemeters near the unterminated output cables of the oscillator, and rotating the butterfly until maximum meter deflection is observed. For each frequency within the range of the butterflies maximum meter deflection will be observed for two positions of the rotor. Use the position such that the resonant frequency increases with a clockwise rotation of the rotor. An indication may be obtained when the wavemeter is tuned to a harmonic of the calibrating oscillator. This indication will be much smaller than the one for the fundamental frequency.

Operation of the completed wavemeters is extremely simple. The wavemeter is placed next to the equipment whose frequency is unknown and tuned for maximum current as indicated by the microammeter. The frequency is then read

(Continued on page 156)

End view of the wavemeters. The crystal diode clips and by-pass capacitor are integral parts of the small unit. The crystal mount for the lower-frequency assembly is made from a fuse clip.





A 2-meter station, complete with transmitter, receiver and dual-purpose power supply, is mounted in a case only 6 by 8 by 12 inches in size.

Packaging a Portable Two-Meter Station

Familiar Circuits in a New Housing

BY H. F. PRIEBE, JR.,* W2TGP

DEVELOPING the most satisfactory form that electronic equipment will take is an important part of the industry. This phase of design work is often referred to as "packaging." Though good equipment packaging will not make a poor circuit effective, poor design work may render a good circuit almost useless.

Of the numerous problems associated with packaging, two are particularly important to the home constructor. His equipment should be capable of accommodating a wide variety of circuit changes, and it should allow for substitution of components for those originally specified. Rarely does the amateur duplicate exactly a design that has appeared in print. Personal preferences and lack of availability of certain components are important to most of us.

The two-meter portable station described here presents nothing new in the way of circuitry. It makes use of familiar designs that have been described in *QST*,[1,2] and emphasis is instead placed on the actual packaging, as this important element of equipment design is often overlooked.

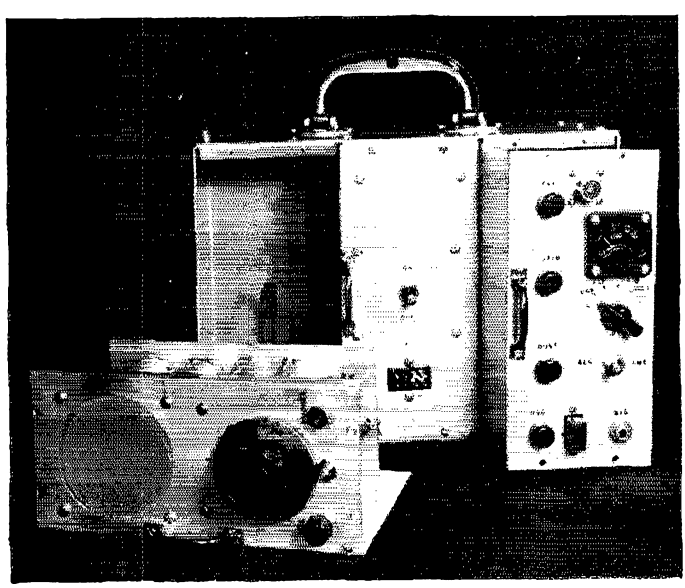
*192 Mills St., Morristown, New Jersey.

Portable-Station Problems

Our station had to be readily portable; light in weight, and easily carried in one hand. It needed a flexible power supply, for operation on

[1] Ehrlich, Wells and Preston, "A Compact Portable 2-Meter Emergency Station," *QST*, April, 1952.

[2] Southworth, "A One-Package Station for Two Meters," *QST*, April, 1954.



The portable station with the receiver, left, removed to show the method of mounting in the case. Transmitter is the unit at the right. Power supply, center, operates on either 6 volts d.c. or 115 volts a.c., selection being made by the connections on the power plug.

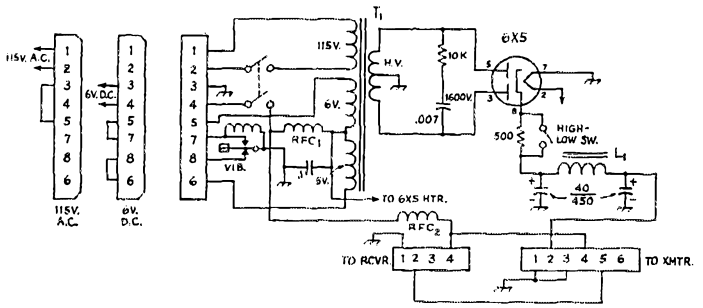


Fig. 1 — Schematic diagram of the dual-input power supply used in the 2-meter portable station. T_1 is a standard replacement-type power transformer, a Stancor PM-8409. The change from 115-volt a.c. to 6-volt d.c. input is taken care of in the power plugs. L_1 is 10 hy., 100 ma. RFC_1 and RFC_2 are 50 turns No. 16 enam., scramble-wound on ¼-inch form about 1½ inches long.

6 volts d.c., or 115 volts a.c. Push-to-talk operation was considered highly desirable, as was the ability to change frequency readily. It was desirable to have it independent of other equipment for normal tuning adjustments.

To satisfy these operational requirements, certain circuit and equipment features were required, as follows: Portability places a restriction on power output. The higher the power, the bigger and heavier the equipment becomes. All the equipment necessary for the operation of the station was incorporated into one compact case, equipped with a handle.

For dual operation, from the car battery or a.c. line, a vibrator supply is the simplest solution to the power supply problem. Unfortunately, so far as the author is concerned, a dual transformer is an expensive and not very common item. To get around this, a standard replacement power transformer (Stancor PM-8409) was used, as shown in Fig. 1. The output voltage in battery operation is much lower than when it is used on 115 volts a.c., but it has given satisfactory performance, even so. Wiring changes in going from one power source to the other are taken care of automatically by means of separate terminals on the power plug.

For push-to-talk operation the number of circuits that can be switched by a relay depends on the number of contacts on the relay. A convenient type is a double-pole double-throw relay that transfers the antenna and the B-plus from receiver to transmitter. Separate audio sections are required if this is to be done simply, but this feature is desirable in any event, in view of the unit construction employed.

Frequency changing involves changing the crystal, so it and the various tuning adjustments were made available from the exterior.

The unit carries its own meter for use in tuning adjustments. A miniature 0–1-ma. meter is a natural for this job.

Mechanical Considerations

The two-meter station is made up of three basic units, a transmitter, a receiver, and a power supply. Mechanical division along these lines permits the builder to change any one unit without affecting the others. Construction and maintenance are greatly simplified by this sectionalization. This is of even greater importance if several of the units are to be constructed as a group project.

Though the station is rather compact (12 by 8 by 6 inches over-all) the components are not crowded. This is important when considering

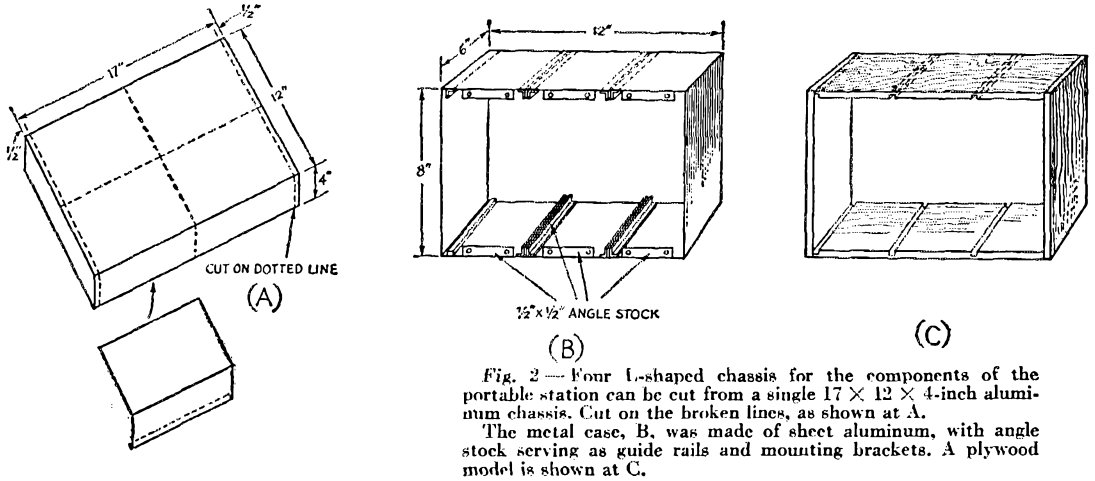
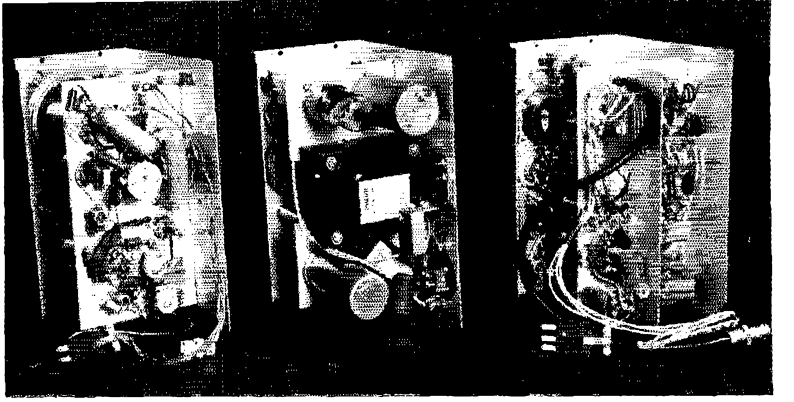


Fig. 2 — Four L-shaped chassis for the components of the portable station can be cut from a single 17 × 12 × 4-inch aluminum chassis. Cut on the broken lines, as shown at A.

The metal case, B, was made of sheet aluminum, with angle stock serving as guide rails and mounting brackets. A plywood model is shown at C.



Rear view of the receiver, power supply and transmitter. Electrical design features were drawn mainly from previous *QST* articles.

necessary parts substitutions, as often an electrical equivalent is not a physical equivalent. The vertical chassis construction provides the greatest useful area in the least over-all size.

The panels and chassis for the units are similar, so discussion of one will suffice. Four panels, with their side or partition brackets, can be cut from a standard 17 × 4 × 12-inch aluminum chassis, as shown in Fig. 2A. The vertical chassis are supported inside the case by right-angle brackets, as shown in Fig. 2B and the photographs. The case used by the author was made of sheet aluminum, cut and bent to the desired dimensions. However, not all builders will have the necessary sheet-metal tools to do this work properly, so two alternative methods are suggested.

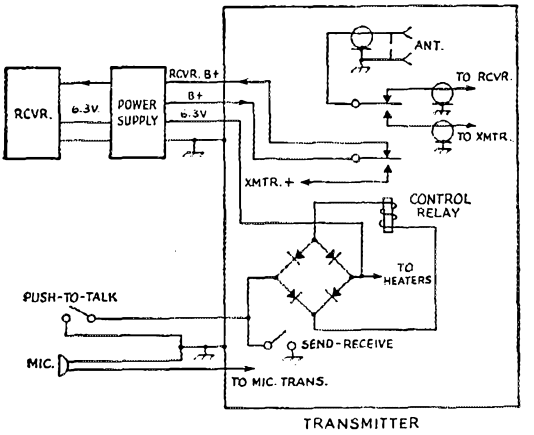


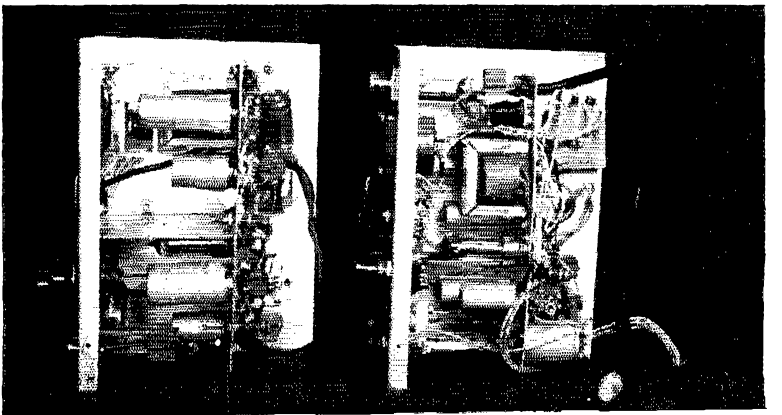
Fig. 3 — Control system for the portable station provides optional push-to-talk or panel switch control, working identically, whether the power source is a.c. or d.c.

The case could be made of plywood, with slots cut in the top and bottom, as shown in Fig. 2C. A standard metal cabinet, such as the ICA No. 3850, could also be modified readily to suit the purpose. If the case has folded-over edges, as in the ICA model, the long edges could be slotted, and guide brackets installed inside the box. The panel surfaces of the units will all fasten to the cabinet edges in this case, so the chassis assemblies will all be simple L-shaped design, which could be bent up readily from sheet stock. The dimensions can be modified as required to suit available case sizes.

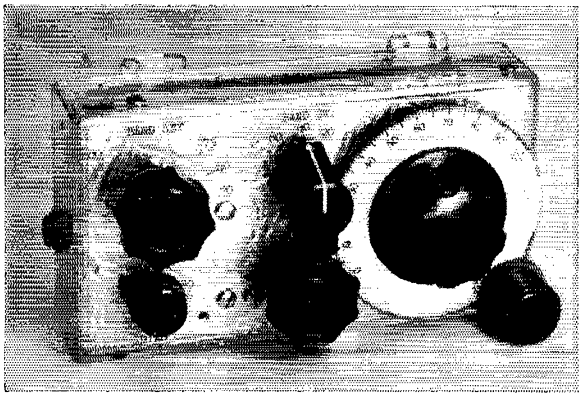
Control Circuits

Interconnecting leads are kept to a minimum by proper location of the common elements. Power leads and relay circuits are shown in Fig. 3. The selenium rectifier (Federal No. 1017) permits a d.c. relay to be used, whether the operation is on a.c. or d.c. The relay, a 26-volt d.c. miniature by Clare, was obtained from a piece of surplus gear. Its coil was rewound with No. 30 enameled wire, to permit operation on a lower voltage. Standard 6-volt relays can be used, of course. The push-to-talk arrangement requires that separate leads be run from the microphone element and the push-to-talk switch. A common lead, such as that on the T-17 microphone, would couple the rectified a.c. in the relay circuit into the speech equipment, resulting in hum.

Information on a job of this kind is most readily conveyed by pictures, so several photographs of the units have been included, to give a clear idea of how the work was done. If they give the reader some useful items for his pet project, the purpose of the article will have been served.



Side view of the receiver, left, and transmitter assemblies.



This complete transistorized ham-band receiver is built in a plastic tackle box. The bias knob at the lower left also turns on the 1½-volt battery; the lower center knob is the regeneration control.

Transistorized Regenerative Receiver

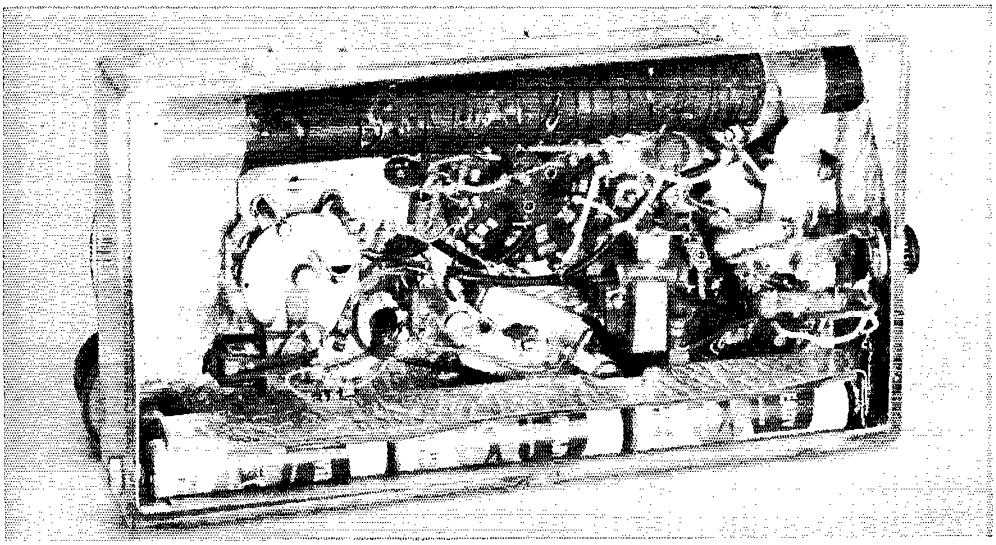
A Compact Set with Good Performance

WHEN W6WXU, S. A. Sullivan of Sonoma, Calif., sent us the little gadget shown on these pages, we thought it was just another transistorizing stunt that could hardly be expected to show more than mediocre performance. To the great surprise — and delight — of everyone who tried the receiver, it was soon found that the set could bring in signals amazingly well on 80, 40 and 20 meters. It was all the more astonishing in view of the built-in loopstick antenna. To operate the receiver, it was only necessary to plug in a set of headphones and turn 'er on.

The circuit is shown in Fig. 1; L_1 is wound on the 5⅛-inch-long rod of ½-inch-diameter ferrite that also serves as the antenna. The regeneration control is a 3-30-$\mu\mu$f. compression mica trimmer, with the screw extended through the panel and terminated in a knob.

W6WXU modestly states that the receiver was not submitted as a model for construction, although he does have a couple of good construction ideas. The "cabinet" is a small clear-plastic tackle box measuring 5¾ inches long, 3 inches wide and 1⅜ inches high; the metallic look was obtained by inserting inside the box a small piece of thin ornamental aluminum sheet, the type you find at the "do-it-yourself" counter of the hardware store, cut and bent to fit. The aluminum serves as a shield against body-capacitance effects. But let the builder tell you a little about the gadget:

"Of course, it is no HRO, but three bands with no antenna or ground is still pretty good for just two transistors and a pair of diodes. Admit-



W6WXU didn't intend this to be an example of picture-book construction, but the unit works like a charm. The 3-30-$\mu\mu$f. compression trimmer (with shaft added) used for the regeneration control is at the lower center. The metal used as a shield and common ground is thin ornamental aluminum sheet.

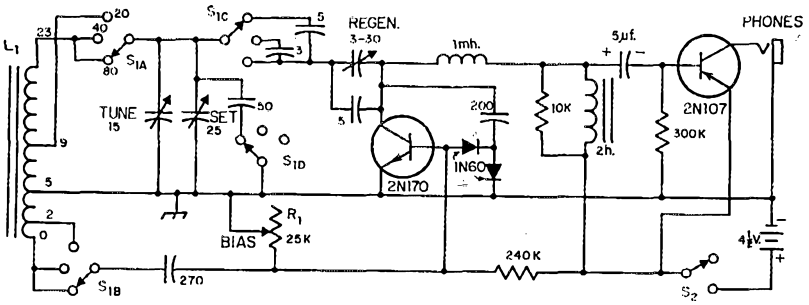


Fig. 1 — Schematic diagram of the transistorized receiver. The 2N170 serves as a regenerative r.f. amplifier to feed the 1N60 detector diodes; the audio is then fed back to the base of the 2N170 and then to the 2N107, in W6WXU's transistor version of the old "reflex" circuit. The inductor L_1 is wound on a ferrite rod with 23 turns of No. 24 enam., space-wound and tapped at the turns shown above. A subminiature 2-henry choke is used. Capacitances in μμf. unless specified otherwise.

S_1 — 4-pole 3-position rotary. S_2 — Mounted on R_1.

tedly, the receiver is a bit of a freak, since this particular 2N170 is the only one I have found that would hit 20 meters, out of a half dozen. I suspect that if it proves anything, it shows that manufacturers haven't got transistor production under control yet. On the other hand, all of the six transistors worked at 40 meters without any difficulty. Furthermore, even though their alpha cut-off is rated as 4 Mc., they out-perform beyond all comparison a 2N136 and a CK766 that I tried.

"The operation is the same as that of any regenerative receiver, with one exception. I found that the 2N170 base bias had to be set differently for each band. Otherwise the receiver tends to develop an audio howl at the edge of oscillation.

"The set should be held so that the pick-up coil is at least a few inches away from other objects. It works best in a cool room and of course not at all in a shielded room."

— *B. G.*

Strays

A bit of philosophy from W1GHZ — "I wish I knew today what I thought I knew when I got my Novice ticket."

A West Coast all-ham family (or should we say families). And the reason these folks all look so bright and shining is that the photo was taken one Sunday morning at 2:00 A.M. Left to right, OMs K6OQA, K6QPE and W6YFT, with their XYLs K6EXQ, KN6SYB and W6YFF.

American amateurs who will be in Europe between the 10th and 13th of August may be interested in a hamfest being held by *Savez Radioamatera Jugoslavije* near Koper, Istria. Main feature will be "fox hunts" on 80 and 2 meters. Lodgings will be available either in the hotel or in a camp, the latter at low rates. For information and reservations, write the *Savez Radioamatera Jugoslavije*, Trg. Republike 3-IV, Belgrade, Yugoslavia.

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Of course, not everyone lives near a plastics factory, but W8ZBC gets enough rejects from his local tackle manufacturing company to be able to make zepp antenna spacers from 5" plastic bait-casting plug bodies.

— • • • —

WN1NKV wonders if his c.w.-to-s.s.b. QSO with W5CTD on 15 meters Feb. 24 was a "first."

— • • • —

If you have equipment difficulties because of a damp location, you may be interested in a Dampp-Chaser. The Dampp-Chaser is a low-wattage electric heater inclosed in a ¾" aluminum tube, and the convenient shape allows it to be used in locations where the common light bulb will not fit conveniently or safely. It is manufactured by Dampp-Chaser, Inc., Hendersonville, N. C.

Conversion of the 6-Volt Gonset Communicator for 12-Volt Operation

Universal 6-, 12- or 115-Volt Operation with Simple Wiring Changes

BY ROBERT H. MELLEN,* W1IJD

THE CHANGE from 6- to 12-volt batteries in late-model cars has confined operation of many of the older 6-volt models of the Gonset Communicator to a.c. operation in the shack, for lack of a suitable mobile power source. Conversion to 12-volt operation in the usual way is not only expensive but it makes occasional use on a 6-volt supply all but impossible. Here is a simple conversion, costing next to nothing, which permits either 6- or 12-volt operation with only slight modification of the Communicator and the car battery.

The idea, shown schematically in Fig. 1A and 1B, is simply to reconnect the vibrator power supply so that it can be used either in parallel (A), with the filaments, for 6-volt operation, or in series (B) for 12-volt operation. Since the heater current requirements and plate supply are not exactly equal, the battery must be center-tapped to equalize the voltage drop for series operation. This is accomplished by drilling and tapping the center lead strap of the battery and installing an insulated binding post. (You may have to remove some of the pitch to get at the strap.) The two loads being roughly equal, wear and tear on each half of the battery will be the same for practical purposes.

*R.F.D. 3, Old Lyme, Conn.

Temporary Method

The simplest way to operate the Communicator temporarily on a 12-volt battery is as follows: Untape the six-wire battery cable and separate

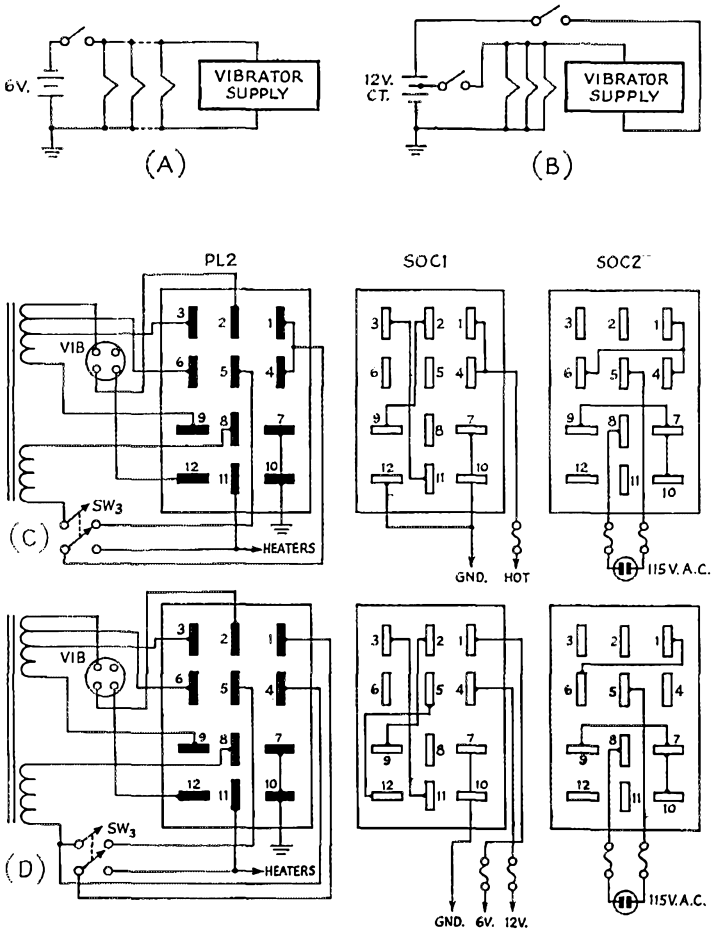


Fig. 1 — In the normal power circuits of the 6-volt Communicator, A, the heaters and vibrator supply input are in parallel. By connecting them in series, as at B, a 12-volt system may be used. Actual changes in the wiring of the power connectors are shown in row D. The original connections are given in row C.

out the green wire, checking the continuity to make sure it goes only to Pin 12. This pin goes to the vibrator and is grounded for 6-volt operation. For 12-volt operation it is connected to the 12-volt terminal, the main hot lead going to the 6-volt terminal. This procedure puts the rig into operation but it requires an external switch to cut off the 12-volt line.

Permanent Modification

The unused side of the Communicator power switch can be used for this purpose if the unit is modified permanently, as shown in Fig. 1D. This is accomplished by removing the vibrator supply from the cabinet, clearing Pin No. 4 and connecting it to the transformer end of the a.c. side of switch[1] SW_3. The battery plug is now rewired with wires of the six-wire cable to each of the pins, 1, 4 and 7, adding a jumper from 5 to 12. Pin 4 on the a.c. power plug must also be cleared to prevent shorting. Both the 6- and 12-volt leads now pass through the switch. The 12-volt lead should be fused at approximately 10 amp. For 6-volt operation this lead is grounded; a.c. operation is normal.

A modified 2-Meter Communicator now in use on the author's 1957 Ford Ranch Wagon is completely satisfactory. Be sure to check your Gonset wiring to make sure it corresponds to mine. [1]

[1] This switch is labeled SW6 in the 50-Mc. model. Instruction-book schematics for both Standard and De Luxe models of the 2-Meter Communicator were checked, and they, and the 6-meter unit, except for this switch designation, were identical for purposes of this conversion. — *Ed.*

Simplified Transmitter Control

Tubeless Version of the Transmitter "Turner-Onner"

BY T. A. MENDES*

A previous article[1] contained a diagram of an automatic transmitter "turner-onner" involving a quite complicated circuit with a twin-triode tube, complete with heater watts and plate dissipation. I give below details of a simpler circuit that has been in use here for some time where a number of transmitters are operated by remote control. The chief object here is to make a single line do for both "turning-onning" and keying. The control voltage is 12 volts d.c., and this will be considered in what follows, although the principles are independent of voltage.

By shunting a relay coil with a large enough capacitance it can be made to "hold" for any reasonable period after the battery connection is broken. However, for practical purposes this demands a high-resistance low-current sensitive relay, if the capacitance required is to be held within practical limits.

The relays in use here have a nominal resistance of 500 ohms and operate adequately at 6 ma., though designed (I believe) for use at 6 volts. For keying purposes off a 12-volt supply, we insert a 500-ohm resistor.

The circuit used for combined keying of the buffer and "turning-onning" of the oscillator is shown in Fig. 1. K_1 is the keying relay (contacts not shown) which operates in the normal way with R_1 as a current limiter. K_2 (contacts not shown) is the "turner-onner" in the oscillator cathode. R_3 provides a convenient method of controlling the delay time. R_2 serves as a buffer to limit the charging current through the 1N34A, which is present in the circuit to prevent C_1 from holding K_1 as well as K_2.

K_1 operates when the key is pressed. K_2 follows suit almost immediately as C_1 charges away rapidly through the 1N34A and R_2. When the key is released, K_1 also releases; but C_1 now discharges through R_3 and K_2 so that K_2 holds.

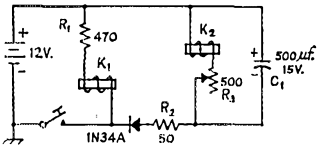


Fig. 1 — Schematic of the simplified automatic transmitter "turner-onner." For the circuit values given, 6-volt 500-ohm relay coils are satisfactory. K_1 keys the transmitter; K_2 turns on the oscillator and holds it on between characters.

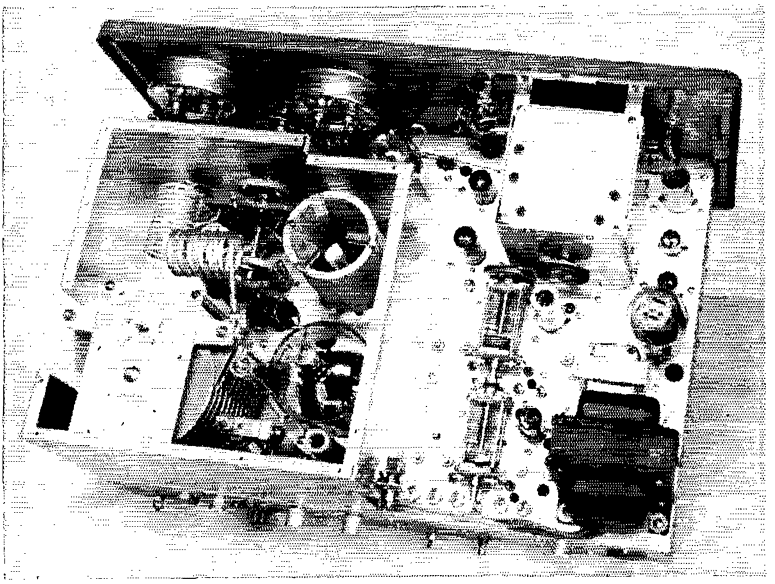
K_1 cannot be held by C_2 as the 1N34A blocks current in that direction. With the types of relays in use and the values shown, a delay time of about one second can be obtained with R_3 shorted out. (A point to remember in dealing with relays is that any relay with a single winding will "hold," if the voltage is steadily reduced, down to a value much smaller than that required to operate it.)

Obviously, the values given in the diagram are in no way critical — they serve only to explain the working of the circuit. With other control voltages and with other types of relays the values will differ. While circuit constants can doubtless be calculated, it is quicker and simpler to cut and try.

*Captain, Police Radio, Simla 2, Punjab, India.

[1] Goodman, "Keying the Radiotelegraph Transmitter," *QST*, July, 1956.

• Recent Equipment —



The r.f. package of the Viking 500 contains the r.f. section and the speech-amplifier stages. The small box at the upper right houses the v.f.o. circuits. The v.f.o. tuning capacitor is ganged with the exciter-stage tuning. The large box at the left serves as shielding for the final stage; the large tuning capacitor is a two-section affair and one section is switched out on the higher frequencies.

The Viking 500

THE Viking 500, one of the latest additions to the E. F. Johnson's line of transmitters, fills a power-level gap that was fairly conspicuous. Running 600 watts input on c.w. and 500 on a.m. (and 500 p.e.p. as a sideband linear, with separate exciter), it is just about 3 db. down from the kilowatt limit and 3 db. up from the Valiant. The 500 is housed in two packages; the r.f. and speech is in one cabinet that presumably mounts on the operating table or other convenient location, while the power supply (and modulator) package can be cached out of the way of feet and traffic. Frequencywise the 500 covers the ham bands 80 through 10 meters, v.f.o. or crystal-controlled. The r.f. package is 11⅝ inches high, 21⅛ wide and 18⅜ deep, and the power supply 15¾ x 20⅜ and 10⅞ inches high. The two packages total 175 pounds, but the r.f. package accounts for less than a fifth of this and, consequently, is easy to move around on the operating table if the occasion arises.

Referring to the block diagram of the 500 (Fig. 1), the v.f.o. stage uses uses a 6AU6 and the series-tuned Col-

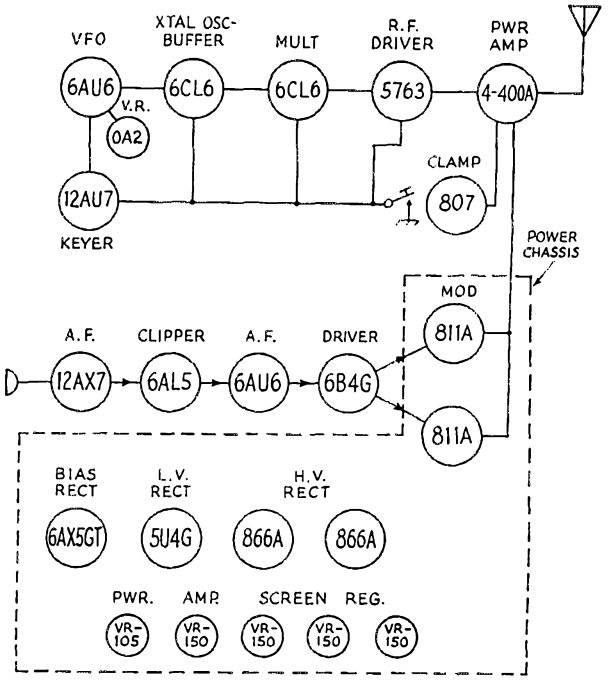


Fig. 1 — Block diagram of the Viking 500 transmitter. The transmitter is packaged in two units, an r.f. and a power (surrounded by dashed lines) chassis. Eight-foot-long cables are furnished that plug into sockets and jacks, making interconnection a simple matter.

pitts (Clapp) circuit. Two separate tuned circuits are used, on 160 and 40 meters, so that the v.f.o. is never operating in the same band as the output stage. Screen voltage on the 6AU6 is stabilized by the OA2. A 6CL6 buffer stage follows, and this serves as the crystal oscillator when crystal-controlled operation is used. A socket, available through the front panel, will take two crystals, and a three-position panel switch selects v.f.o. control or one of the crystals. A 6CL6 multiplier stage follows the buffer and is in turn followed by a 5763 driver. The driver is neutralized and works "straight through" on all bands. Excitation to the final is controlled by a panel drive control, a potentiometer in the 5763 screen circuit. The tuned circuits from v.f.o. to the driver plate are gang-tuned, and the tuning procedure is greatly simplified because setting the v.f.o. tunes everything up to the final plate circuit.

The power amplifier stage uses a neutralized 4-400A running at 2000 volts on the plate. The output circuit is a pi-L network; this combination offers greater harmonic attenuation than a straight pi network. In the screen circuit, the 807 clamp tube operates in the usual manner for c.w. and a.m. operation, and for s.s.b. linear operation the 807 is used to stabilize the screen voltage, in conjunction with a string of VR tubes in the power-supply section.

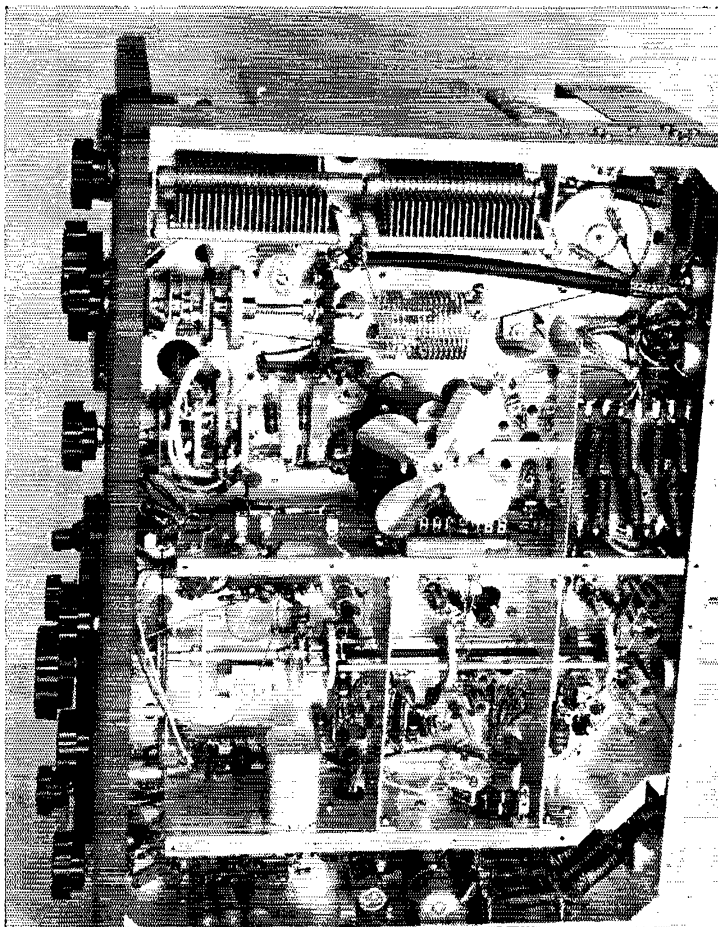
As shown in Fig. 1, the low-level stages are all keyed (grid-block). A 12AU7 keyer gives differential keying (oscillator turns on ahead of amplifiers and turns off after amplifiers) that insures chirp-free c.w. operation with full break-in.

The speech amplifier features a 6AL5 peak clipper; the clipping level is set by a potentiometer at the rear of the chassis. A low-pass filter follows the clipper, and the signal then goes to a triode-connected 6AU6 and the 6B4G driver stage. Although the microphone input is intended for high-impedance low-level microphones, an alternative audio input at 600 ohms and a higher signal level is also provided. The microphone jack is a three-terminal affair that permits push-to-talk operation with a suitable microphone.

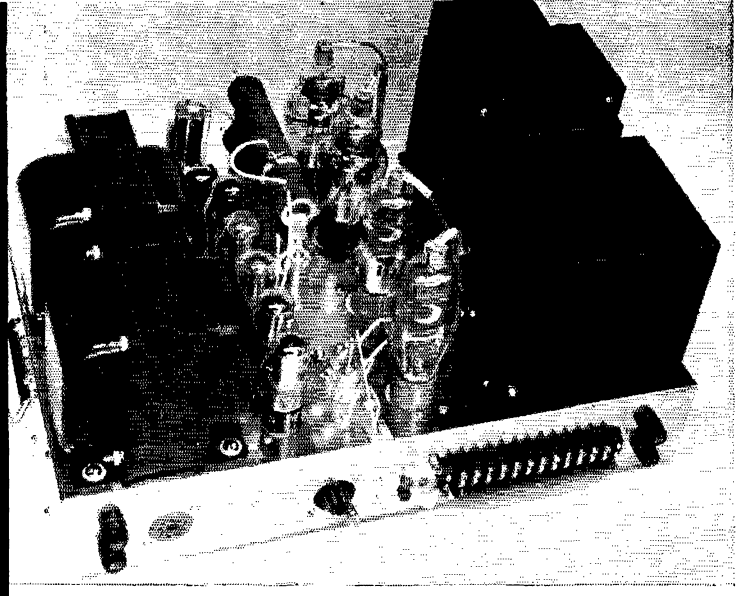
There are two meters on the panel of the 500; one reads total power amplifier cathode current and the other can be switched to read clamp-tube cathode current, driver or power-amplifier grid current, driver plate current and modulator cathode current.

Power Supply

The power-supply section, a heavy brute with welcome handles at each end, contains the 811A modulator tubes, the 866A high-voltage rectifiers, the other rectifiers for low-voltage and for bias and the string of VR tubes used in the 4-400A screen. It also contains several relays for power



Normally, solid panels cover the bottom of the 500, with a single hole cut out to let air in at the blower. The output loading capacitor is at the top and the L-section inductors are directly below. Note the abundance of r.f. chokes; all power and control leads leaving the unit are double-filtered for TVI reduction.



The power supply and modulator unit of the Viking 500, with its dust cover removed. The gadget in the foreground between a VR tube and an 811A is a shorting bar for the plate supply, closes when the cover is removed. Directly in back of it is a protective spark gap for the modulator; there is another protective gap in the r.f. package.

control. Owners of the 500 may arch an eyebrow at seeing the 811A modulators running at 2000 volts on the plates, but we learned that the Viking manufacturer has approval from the tube manufacturer to run them this way, at increased bias. The power supply can be used with either a 230- or 115-volt line; at this power level the 230-volt line is preferable. The three interconnecting cables between power supply and r.f. package are supplied; one of these 8-foot cables is shielded.

Some of the circuit features not apparent in Fig. 1 include interlocks and h.v. shorting switches in both units: the operator can't remove the case from these units without opening the a.c. line and throwing a short circuit across the high-voltage supply. There are protective spark gaps across the modulation-transformer secondary and across the high-voltage line. For TVI reduction, each power or control lead coming out of the r.f. package is filtered by two r.f. chokes and two by-pass capacitors. An overload relay in the cathode circuit of the power amplifier can be adjusted to drop out at something over 400 ma., for good protection of the final tube. The relay can be reset quickly by pressing the reset button on the panel of the r.f. package.

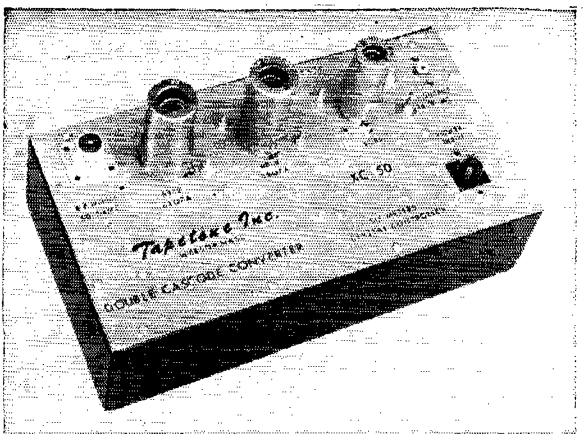
S.s.b. operation requires an external exciter capable of developing 3 watts p.e.p. across 50 ohms. When the mode switch of the 500 is set on SSB, the grid of the 5763 is switched to the sideband input jack at the rear of the r.f. package, and the power amplifier bias and screen voltage are switched to the proper values for linear-amplifier operation. Provision is included for tying in the output amplifier with the voice-operated relay in the side-band exciter, to cut off the output stage during receive periods and prevent any diode noise troubles when using VOX and an electronic t.r. antenna switch.

All things considered, the Viking 500 offers features that should appeal to the all-around amateur who likes to use c.w. and a.m. and, now or in the future, s.s.b. The operating conveniences, the various overload protections, and the excellence of the electrical and mechanical design should all appeal to any discriminating amateur. And, since the final stage is practically loafing at 2000 volts on the plate, we wouldn't be surprised to see a few "field changes" by enterprising 500 owners that would put the r.f. unit close to a kilowatt on c.w. and side band. — *B.G.*

The Tapetone V.H.F. Converters

LOW NOISE FIGURE is fine in v.h.f. converters, but as not a few purchasers and constructors of v.h.f. receiving gear have discovered, it is by no means everything. Attenuation of off-band signals is important, too. In many areas it takes precedence over low noise figure. A third factor needed for topnotch reception is uniform response across the v.h.f. band to be covered.

Tapetone's XC-144 converter was designed with these requirements in mind. When we first read Tapetone advertising copy we were sure that the copy writer had been laying it on. *QST* advertising has to be truthful, and we were ready to take those claims apart. But if you've read any of the firm's advertising recently you know that the performance figures stayed in. Noise figure of the unit we measured was even a bit better than the 2.8 db claimed for it. Attenuation of off-band signals is not easy to measure, at ratios of 80 to 90 db., but we can tell you this — if you hear images, or signals on the intermediate frequency with the Tapetone converters, you'd better look to your receiver. Rejection of both is excellent in the XC-144 and XC-50 and 51.



The Tapetone XC-50 crystal-controlled converter. Appearance of the XC-144 is similar, except that a special heat-radiating black shield is used on the 417A r.f. amplifier tube in the 2-meter model.

The latter, for the 6-meter fraternity, have lower noise figure than you'll ever need, but that is more readily done on 6. Any good r.f. stage will give a noise figure low enough so that you'll hear plenty of "antenna noise" on 50 Mc., even in the quietest locations.

How They Do It

How spurious responses are kept to such low levels should be of interest to discerning v.h.f. enthusiasts, whether they are the buying or building kind. Mechanically and circuitwise, Tapetone's designer used several tricks that are likely to become very popular in v.h.f. circles.

Spurious responses in v.h.f. receivers, other than those due to overloading, are of three main kinds. One results from stray harmonics that may be present in the oscillator-multiplier stages of a crystal-controlled converter. With an 8-Mc. crystal, for example, multiples of that crystal frequency appear all through the spectrum. If you have TV, f.m. or other commercial v.h.f. stations nearby, so that they put strong signals into your v.h.f. antenna, stray beats are almost sure to be heterodyned into your mixer and i.f. system.

To keep this from happening, you do two things. First, use a high oscillator frequency and few multiplier stages. Second, isolate the oscillator (and multiplier stages, if any) and couple out only the frequency desired for mixing with the signal frequency. These ends are served in the Tapetone converters by mounting the crystal oscillator (and multiplier, when used) in a separate aluminum box. Leads to the box are decoupled with r.f. chokes and feed-through bypasses, and the injection voltage for the mixer is taken off through tuned link coupling and coaxial line. The oscillator compartment, with its cover removed, is a feature of the bottom view photograph of the XC-50 reproduced herewith. The XC-144 is made the same way.

The second form of spurious signal is the image. If mixer output is on 14 Mc. in a two-meter converter, the injection frequency will be 14 Mc. below (it could be above, but it very seldom is done that way in v.h.f. converters) the signal frequency. The heterodyning process results in two outputs, the sum and the difference of the two frequencies mixed. If you feed 130-Mc. energy into a mixer you're going to receive signals on 130 plus 14 Mc., which you want, and 130 *minus* 14 Mc., which you don't. The only way to avoid hearing them both is to prevent the unwanted one, in this case 116 Mc., from getting to the mixer. That takes r.f. selectivity, which is not easily come by at 144 Mc.

The third kind of unwanted signal, all too common in v.h.f. reception, is the result of signals on the intermediate frequency leaking through the converter. Getting rid of them requires a combination of careful shielding and r.f. selectivity. As far as the Tapetone converters are concerned, everything that can be done to suppress i.f. leak-through has been done. If you hear

[1] Tilton, "Communications Receiver Hints for the V.H.F. Man," *QST*, April, 1955, p. 36.

[2] Van Duyne and Treptau, "Notes on V.H.F. Converter Design," *QST*, Feb., 1953, p. 52.

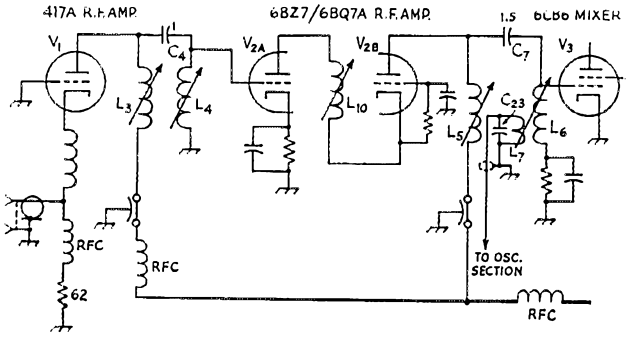
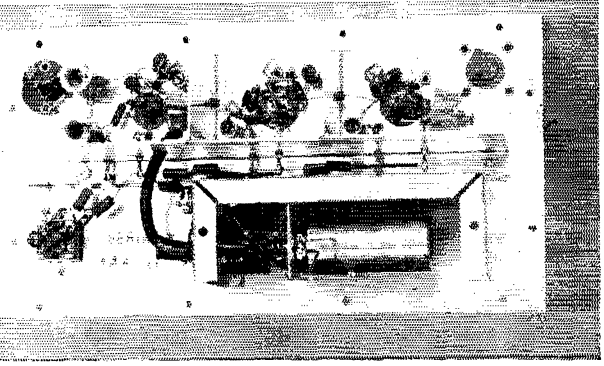


Fig. 1 — Part of the r.f. circuitry of the Tapetone XC-144 converter, showing interstage coupling method used. Coils L_3 and L_4, and L_5 and L_6, are not inductively coupled. Value of small coupling capacitors, C_4 and C_7, controls pass band of the r.f. system. Note use of tuned link coupling where oscillator injection is fed to the mixer tuned circuit. First stage, V_1, is grounded-grid r.f. amplifier, using high-*gm* 417A tube.



Interior of the Tapetone XC-50, showing the oscillator compartment with its cover removed. R.f. stages are in separate shielded sections along the upper portion of the picture. Leads coming through the shield are decoupled by means of feed-through bypasses and r.f. chokes.

14-Mc. signals along with the 144-Mc. ones, don't blame the XC-144. *QST* articles have given hints on curing this annoying trouble,[1, 2] where it is the fault of the receiver.

Down with Capacitive Coupling!

Before we became spurious-response conscious we used a single tuned circuit and capacitive coupling between stages in v.h.f. converters. It was the simplest and least expensive form of interstage coupling. But it gave a very broad response curve, allowing signals on almost any frequency to reach the mixer stage, if they appeared on the antenna in any strength. With intensive use of the v.h.f. spectrum by all sorts of communications services these days, the broadness of this type of circuit is a luxury we can no longer indulge in.

In the Tapetones band-pass coupling is used at every opportunity. Tuned circuits are used in each input and output circuit, in the form shown in Fig. 1. When L_3 and L_4 are so located that there is no inductive coupling between them, the value of C_4 determines the selectivity of the circuits. By using this type of interstage coupling in the r.f. coupling circuits at 144 Mc., and in the mixer output circuit at 14 Mc., the Tapetones achieve a band-pass response that is flat across the band desired, yet it drops off rapidly both above and below the band. When such coupled circuits are adjusted by means of a sweep generator they can be given just about any selectivity characteristic desired. Because of the very small coupling capacitance (about 1 $\mu\mu$f. at 144 Mc.; 1.5 $\mu\mu$f. at 50 Mc.), there is practically no coupling at the intermediate frequency.

Isolation of the various stages of the XC-50 is shown in the photograph. From right to left, we see the 6BZ7/6BQ7A cascode stages, and the 6CB6 mixer, each in separate shielded compartments. Coupling through the common power leads is prevented by extensive filtering. Each B-plus and heater lead that comes through the shield down the middle of the unit does so on a feed-through by-pass, and there is an r.f. choke on the low-potential side of the shield, in each case. The leads are bypassed again at the power connector.

The entire base plate and shield assembly is silver plated, and the shields are soldered as well as bolted to the base plate. The tube lineup in the XC-144 is a 417A r.f. amplifier, a 6BQ7A/6BA7 cascode r.f. amplifier, 6CB6 pentode mixer and 12AT7 crystal-oscillator-tripler. The injection circuits and tube are inside the small box. The dual triode Butler circuit used has been described in *QST*.[3]

In the 50-Mc. converters (XC-50 for 14- to 18-Mc. tuning range, XC-51 for 10 to 14 Mc.) two dual-triode cascode stages are used, in order to build up r.f. selectivity and bandpass characteristics. The mixer is similar to that in the XC-144. The Butler oscillator circuit is also used with a 12AT7 in the 50-Mc. converters, but its output is on the oscillation frequency, 36 or 40 Mc., depending on the desired i.f. tuning range. Gain of the 50-Mc. converters was adjusted so that it is about the same level as that of the 144-Mc. model, in order that the two bands may be covered without changing the receiver S-meter adjustment when converters are changed. This gain adjustment also reduces the tendency to easy overloading in the mixer that would result from two cascode stages running at full gain.

We understand, also, that later models of both 50- and 144-Mc. converters will have built-in gain controls, a very worthwhile addition. Both converters are definitely de luxe models. The use of the 417A, an expensive but high-performance r.f. amplifier tube, in the XC-144, brings the price up into the luxury bracket. There is some question whether this pays off to any great extent, for a less expensive tube would have come within about 1.5 db. of the XC-144's noise figure. Chances are you'd never be able to tell the difference, but one thing's sure with the XC-144 — if you don't hear them with it, they will not be heard on your antenna with anything you could buy or build. And rejection of i.f. and image signals on both the 50- and 144-Mc. models is superior to anything we've yet seen. — *E.P.T.*

[3] Tilton, "Overtone Crystal Oscillator Circuits," *QST*, April, 1951, p. 56.

Strays

K4IYE made a long-range weather forecast of rain and thunderstorms for June 22-23. Was he right?

Technical Correspondence

LONG-DELAY ECHOES

503 S. Copeland St.
Tallahassee, Fla.

Technical Editor, *QST*:

I wish to report for your information and possible interpretation my observation of a radio phenomenon of recent date:

Sunday 24 March 1957 2100 EST — My electric clock had stopped earlier in the day, and since my receiver (SX24) was set to 40 meters, I tuned to CHU on 7335 kc. Through the usual Sunday evening QRM I set my clock to the exact second, so I thought.

Monday 25 March, about 0250 — Turned on the receiver, still tuned to CHU, and noted that my clock seemed to be 15 seconds slow. On more careful listening, I noted a *double announcement* of time signals, the second an echo of the first, just 15 seconds later. Evidently it was to the echo that I had set my clock earlier in the evening.

I continued to observe the announcements each minute, and found the echo repeating the words "Eastern Standard Time" at 3-second intervals up to 20 seconds after the original words. In this case the original words were spoken several seconds before the tone marking the exact minute, and at 3, 5, 7, 10, 12, 14, and 17 seconds after the minute at 0255. Sometimes there was no echo, but at other times it was there in varying degrees.

It is a little unnerving to hear such weird things at that hour of the night, so I've been content to allow the accuracy of my clock to go unchallenged since then. For all I know, it is still 15 seconds slow. . . .

— *Louis A. Josephson, K4APE*

LONG *VS.* SHORT PATH

82 Prospect St.
Huntington, L. I., N. Y.

Technical Editor, *QST*:

This letter is a follow-up to a recent communication[1] concerning long great-circle path propagation and sheds a little more light on the phenomenon from a quantitative point of view. Having worked stations in South Africa from eastern U. S. A. via the long path on both 14 Mc. and 21 Mc. during March 1957, I was prompted to run off a few calculations of field strengths, using methods described in the National Bureau of Standards Circular 462, *Ionospheric Radio Propagation*, and in the *Elementary Manual of Radio Propagation* by Dr. Donald H. Menzel. The results are plotted in Fig. 1

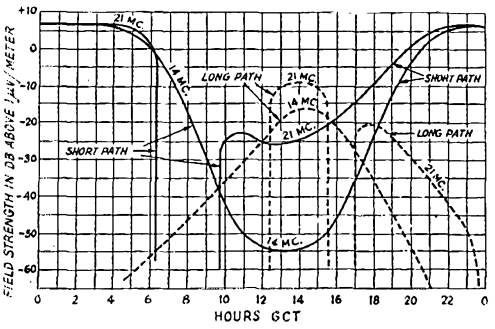


Fig. 1 — Calculated field strength, New York to Durban, South Africa, March, 1957; 100 watts effective radiated power.

for the paths to Durban, South Africa, for March 1957, and in Fig. 2 for the paths to Ceylon for July 1956. An effective radiated power of 100 watts from a short vertical antenna is assumed, together with appropriate seasonal, auroral and smoothed sunspot number absorption coefficients in each case. Expected field strengths are shown as a function of time (GCT).

[1] "Long-Path Propagation," *Technical Correspondence*, *QST*, May, 1957.

For the path between Long Island, N. Y., and Durban, S. A. (see Fig. 1), the short great-circle distance is about 13,000 km. and the long path is 27,000 km. Important points to note are that the calculated long-path field strengths are higher than for the short path by as much as 40 db. on 14 Mc. and 17 db. on 21 Mc. at the exact times when long-path propagation is actually observed. The absolute values of calculated field strengths are of course dependent on the validity of the method and assumptions employed. However, the figures clearly indicate that usable signal strengths can be expected via the long path at certain times, and that this would be the only practical means of communication with relatively low power. Fig. 1 shows that the long path on 21 Mc. should produce a slightly higher field intensity than on 14 Mc. when F_2-layer conditions will support 21-Mc. propagation. With multipath fading and reinforcement effects, variations in ionospheric absorption, and the use of some antenna gain, it is not surprising that signal intensities are very often observed to be higher than the median values plotted.

Calculations of field intensities from Durban for the month of March 1956 indicate an increase of about 5 db. over those shown in Fig. 1, because of lower ionospheric absorption on 14 Mc. one year earlier. The 21-Mc. long path was prohibited at that time by failure of F_2-layer propagation due to low m.u.f.'s.

Fig. 2 illustrates similar calculations at 14 Mc. for the

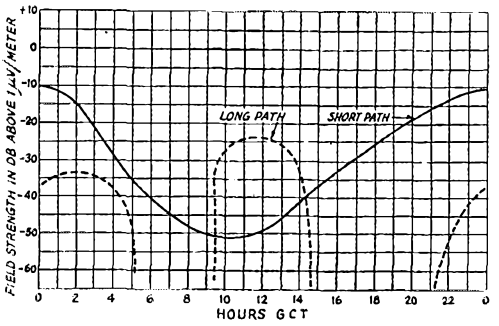


Fig. 2 — Calculated 14-Mc. field strength, New York to Ceylon, July, 1956; 100 watts effective radiated power.

path between Long Island, N. Y., and Ceylon during the month of July 1956. Although fields are lower on both the short and long paths in this case due to additional auroral absorption, there is a clear indication that the long-path signal predominates by about 26 db. at about 1200 GCT. Although at this time the m.u.f.'s were somewhat marginal for 14-Mc. propagation on the long path and did fail apparently at times, signals from Ceylon were nevertheless heard quite regularly via this path in eastern U. S. A. during July and August 1956.

Conditions sometimes exist, especially on 21 Mc., when both the short- and long-path signals can be heard without great difference in strength. This causes an echo effect which can make c.w. signals almost unreadable under certain conditions. For example, calculations for the long and short paths between New York and Warsaw at 1300 GCT on 21 Mc. during March 1957 indicate that the short-path signal is only about 20 db. stronger than the long-path signal. In such a case, the long-path signal is heard as an echo delayed by about 90 milliseconds. It is particularly noticeable, of course, when a directional receiving antenna is pointed along the long great-circle path, and is greatly reduced when the antenna is pointed along the short path. Similar effects have been noted from local stations located in the edge of the skip zone, where the direct signal is greatly attenuated and the round-the-world echo can be fully as strong as the direct signal.

— *J. Gregg Stephenson, W2OBX (ex-W1DGC)*

(*Continued on page 162*)

1957 Novice Round Up Results

BY RONNIE GANN,* W1FGF

A CLOUD of dust and a hearty CQ NR . . . the '57 Round up rides again! Not a masked contestant in the lot maybe, but a mighty fine herd of operators and some real sharp-shootin' brasspounding! Nice goin' podners.

There were 197 WN/KN entries from 49 different ARRL sections, with many of the entrants boasting a newly-made WAS and a few new countries for DXCC credit to boot. It seems everything was pointed in the general direction of "good," as even conditions have never been better for this "Battle of the Brass."

Watsa Om? . . .

"I'm convinced that the Novices who didn't know what was going on, and didn't participate, missed a great deal." — *WN1IWQ*. . . . "Hats off to all the non-Novices who contributed to the overall contest activity." — *KN8BXT*. . . . "Thanks to all the fellows who QSLed. I've made WAS!" — *KN6TBP/5*. . . . "I sure got a bang out of the SS, but this one topped them all!" — *WN7CNL*. . . . "I haven't had so much fun since I worked my first complete QSO." — *KN2UOP*. . . . "Got a call from WB6BE, the world's only WB6 call in the Canton Islands. I'll be looking forward to the many more ARRL contests." — *WL7BWY*.

Non-Novice Notations

"The stamps for the flood of QSLs I've received is going to ruin my beer budget for a couple of weeks! — *W1GF*. . . . "Had my yearly good time." — *W3UJP*. . . . "WN3JQL and KN5GLH are two very FB operators." — *K2ITZ*. . . . "Seems the Novices are getting better every year. Ran across some real fine operators." — *K2JVN/5*. . . . "The Novices this year had the best operating procedure of any year I can remember." — *K6HVV*.

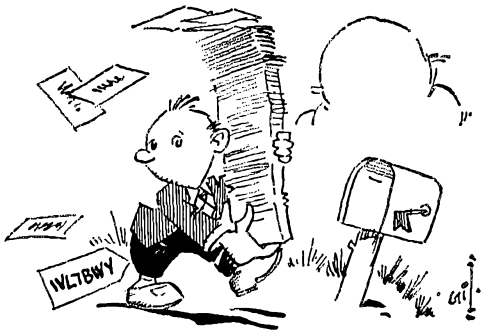
The following cowpokes went plumb loco and forgot when to stop, this resulted in the high score for their prospective call areas. Complete info can be found in the tabulation.

WN1IUU	11,950-224	KN6SXA	21,318-303
KN2SSU	14,472-253	WN7CNL	17,141-256
WN3FTM	12,864-253	KN8CZJ	10,500-230
KN4KXX	14,280-265	KN9DWK	12,667-219
KN5GLH	11,040-184	KNØGIW	9160-180
		WL7BWY	4797-117

The band most used was 40 meters with 15 running a close second; 80 and 2 meters following respectively.

A final word of thanks to all the non-Novices who once again came through with a helping hand *and* those much needed points. Following are their calls and scores:

W1AMY 1254, W1AQE 5520 W1AW[1] 2349, W1FEA 3150, W1FJJ 2158, W1GF 11,280, W1GJM 440, W1HAG 5525, W1JYH 4100, W1KVG 33, W2DSC 30, W2ILL 1664, W2TUK 308, W3ARK 3744, W3MSR 12,528, W3NRE 8241, W3UJP 374, W4EJP 795, W4GIM 7824, W4SIP 476, W5FTD 1035, W5UDL 580, W6PCA 2970, W7BOD 30, W7CCA 370, W7FZB 246, W8AYS 180, W8BDO 238, W8BMX 6380, W8CSK 360, W8FMJ 2574, W8GRG 77, W8SVL 3276, W8UPH 903, W9BVB 8 1846, W8WFM 2310, W8WKO 546, W8YPT 735, W9DGA 360,



FIRST ALASKA PSE QSL.....

W9MAK 1100, W9RWD 1, W9SZR 3900, WØWDW 4060, K2BUI 4332, K2CTK 248, K2HVS 880, K2ITZ 720, K2JLQ 3328, K2KFP 6426, K2LTC 11,180, K2MLH 1536, K2MLN 2926, K2MMM 100, K2OEG 135, K2ONP 370, K2QBW 162, K2SRA 893, K2UQX 598, K4BWV 1856, K4EJG 615, K4ELG 495, K4GLX 1736, K4AHV 1166, K4HBI 195, K4IKF 3922, K5BSZ 901, K6HVV 252, K6HWI 4017, K6ICS 6292, K6LGU 240, K6MSG 1716, K6PLW 4326, K6RFT 171, K8BPX 4100, K9AUE 6975, K9BTN 1062, K9CAN 6837, K9EWB 407, W9KLD/KL7 1020, VE3DDU 1242, VO6N 594.

SCORES

Scores are grouped by ARRL Divisions and Sections. The operator of the station listed first in each section is award winner for that section. *Example of listings:* KN6SXA 21,318-303-66-39, or, final score 21,318, number of stations 303, number of sections 66, total operating time 39 hours.

The man with the most. KN6SXA placed first nationally. Jim's NC-300, Viking Adventurer, 15 meter beam and 10 meter dipole aided in giving him 21,318 points with 303 contacts in 66 sections. He's completed over 1100 QSOs as a Novice and QSLs 100%. With all these contacts, let's hope the Sacramento Valley Post Office is well supplied with stamps!

QST for

*Communications Analyst, ARRL.

With 256 contacts in 61 sections (and a final score of 17,141 points!), WN7CNL still found time to work a slew of DX stations. Jack has had QSOs on all continents including a ten-hour WAC. He completed his WAS in under four months on the air, has 41 countries, sports an RCC and bangs brass at 25 w.p.m. Need we say more?

ATLANTIC DIVISION

Eastern Pennsylvania

WN3HPE.....160-16-10- 5
WN3IUB.....36- 6- 6- 1

Md.-Del.-D. C.

WN3GRO...9800-185-49-29
WN3HTP...9434-178-53-39
WN3HBV...3783- 97-39-25
WN3IJV....260- 20-13- 9
WN3HZI.....99- 11- 9-16
WN3HGT...2222-101-22-16
WN3HID...1232- 36-22-21
WN3IAF....760- 40-19-15
WN3GBF.....77- 11- 7- 5

CENTRAL DIVISION

Illinois

KN9EXB..10,350-197-50-34
KN9DTH...9408-168-56-27
KN9DTB...6232-154-38-14
KN9CHZ....4725-105-45-20

With a DX-35, an HQ-129X and a two-element 15-meter beam, New York's own KN2SSU really poured it on, wrapping up his part in the contest with 14,472 points. Bob's now a General and sports a new Viking II.

Southern New Jersey

KN2SLF....1541- 67-23-16
KN2UQK....966- 69-14-39

Western New York

KN2TSR....9600-185-48-39
KN2TFH....3850- 85-35-19
KN2SKB....3200-108-25- -
KN2UXD....2706- 67- 3-26
KN2TLQ....2080- 65-32-18
KN2SLZ....2048- 64-32-21
KN2SJB....1474- 67-22- -
KN2RSM....1420- 61-20-19
KN2UNR....960- 44-15-19
KN2UOR....663- 39-17-14
KN2VEE....555- 37-15- 8
KN2UOP....490- 35-14-14
KN2SWU....480- 32-15- 9
KN2RYP....207- 13- 9- 4

Western Pennsylvania

WN3FTM..12,864-253-48-38
WN3IAN..10,200-204-50- -
KN9GLG.....70- 10- 7- -

Indiana

KN9DWK.12,667-219-53-37
KN9CWD...7110-143-45-29
KN9GEL....6004-138-38-39
KN9DLJ....2880- 80-32-18
KN9EEL.....144- 12-12- 2

Wisconsin

KN9DID....6348-128-46-17
KN9CUA....5811-149-39-20
KN9ELT....5510-135-38-40
KN9DGC....3069- 78-33-24
KN9ELH....2775- 75-37-20

DAKOTA DIVISION

North Dakota

KØEBD.....6235-145-43-15

Minnesota

KNØGIW...9160-180-47-34
KNØGUJ....7872-149-48-19
KNØHUB...4223-103-41-35
KNØHJS....3162- 93-34-35
KNØHLA....560- 40-14-13

DELTA DIVISION

Arkansas

KN5EJQ....3192- 84-38-20
KN5HYB...1680- 60-28-37
KN5HSM....550- 25-16- 6

Louisiana

KN5ENY...5187-133-39-23

Mississippi

KN6TBP/5 .3286-106-31-16
KN5HFM...1100- 30-20-10

Tennessee

KN4IIL....2475- 75-33-36
KN4IOS....1512- 48-24-16

GREAT LAKES DIVISION

Kentucky

KN4IFB....8967-183-49-24
KN4JOP....4484-118-38-13
KN4KHG...3332- 98-34-33

Michigan

KN8ATN...6708-156-43-20
KN8BYJ....2204- 76-29- -
KN8DJR....1976- 66-26-27
KN8DCP...1806- 86-21-12
KN8CIO....297- 27-11-13
KN8BQZ.....115- 8- 5- 7
KN8DDU.....84- 14- 6- 9

Ohio

KN8CZJ...10,500-230-42-40
KN8CKZ....8190-180-42-40
KN8BXT...5957-141-37-40
KN8CKP...5742-159-33-27
KN8AHV...3531-107-33- 9
KN8BVI....2625-160-15-40
KN8BAL....2064- 71-24-18

HUDSON DIVISION

Eastern New York

KN2SSU...14,472-253-54-20
KN2UPD...5848-136-43-24
KN2UWY...3605- 88-35-22
KN2UQZ....1760- 80-22- -
KN2UTV....1700- 75-20-14
KN2SYM....322- 23-14-12

N.Y.C.-L.I.

KN2TSE....8786-176-46-34
KN2SIF....6764-178-38-19
KN2TNV...6335-166-35-29
KN2TYY...3782-102-31-16
KN2VGD...3146-133-22 23
KN2TNO...2133- 79-27-20
KN2TXT...1064- 56-19-19
KN2V1R.....782- 26-17- 5
KN2RGQ....468- 36-13- 8
KN2UQT....410- 31-10- 7
KN2VNT....130- 13-10- 6
KN2SWI.....6- 3- 2- 1

Northern New Jersey

KN2SBT....4560-100-38-14
KN2VAB....1300- 52-25- 5
KN2TWK...1104- 48-23- 5
KN2TEO....836- 38-22-24
KN2VZP....544- 34-16- 6
KN2USR....230- 13-10- 4
KN2VAH....126- 8- 7- 1

MIDWEST DIVISION

Iowa

KNØGEY...5289-119-41-32
KNØEMR...2263- 73-31-33
KNØERH.....81- 9- 9- 2

Kansas

KNØHVD...4840-121-40-27

Missouri

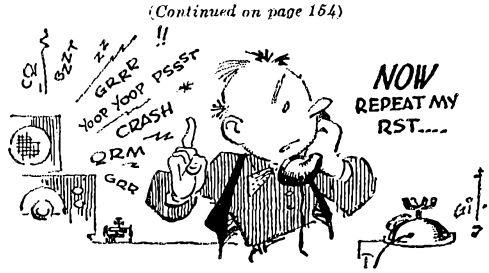
KNØHIM....665- 35-19-17
KNØGSV....493- 29-17- 8
KNØETZ....218- 19-12-13

NEW ENGLAND DIVISION

Connecticut

WN1IWQ...8788-159-52-40
KN1ACC....2507- 99-23-25
KN1AGJ....2352- 88-24-30
KN1ACQ....2320-101-20-30

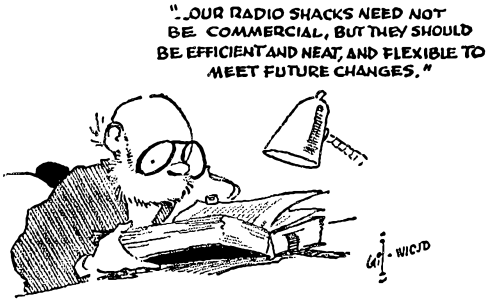
(Continued on page 164)



Those Wires in Our Wireless Shacks

BY WALT ROGERS,* W1DFS

My feelings on a ham shack can be colored by its location, by who owns the property, and by just how far I care to go in completing a neat and efficient shack that is conducive to good housekeeping. Many of us have visited about and seen both poor and good installations. Some installations are of such a permanent nature that any minor change is a major task, while others look like the haywire mess so often alluded to by The Old Man as "beyond description." This article is not written



with the idea of recommending anything to be copied in detail, but rather it is to suggest an approach to start interested readers thinking.

One of the loveliest installations I have ever seen was one that "Uncle Irving," W1ZE, had when he was 1HAA. His shack was out back, and the late K.B.W. regretted that he could not print the picture of it in the 1922 era. Irving had large borax "slop jars" to get d.c. to run an ex-ship-

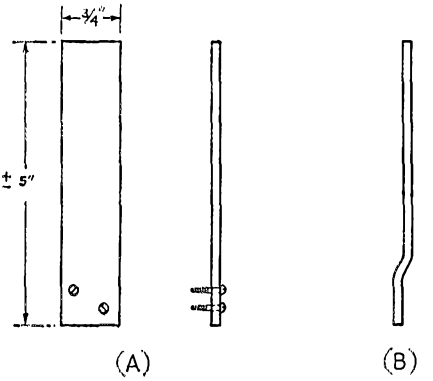


Fig. 1 — Aluminum cleats for holding wires and cables off the floor. The straight type (A) is for baseboards, and the offset type (B) is for use behind the operating table or where wall use is required.

board 500-cycle rig that, if memory is right, ended up in a "P" tube. By contrast, at one commercial installation, even a welcome visitor had to be given a chart on how to safely get through the maze of 872s and transformers to reach the operating position without being electrocuted.

Further, other stations have been visited that were permanently installed in conduit, real professional-looking jobs but not readily adaptable to growth and new plans.

My concept is that our radio shacks should permit experimentation and thus always be equal to present and future activities. We cannot usually go about it so that the property is disfigured. We cannot, as in many military installations, afford providing ducts and removable troughs for antenna, power, and operating leads. But we can make use of this principle.

The first job is to have all leads off the floor — the "deck" to the seagoing. With these leads off the floor, it is comparatively easy to keep the floor clean. Next is to group the wires and cables without going too far astray from good U/L principles of safe wiring.

(Continued on page 160)

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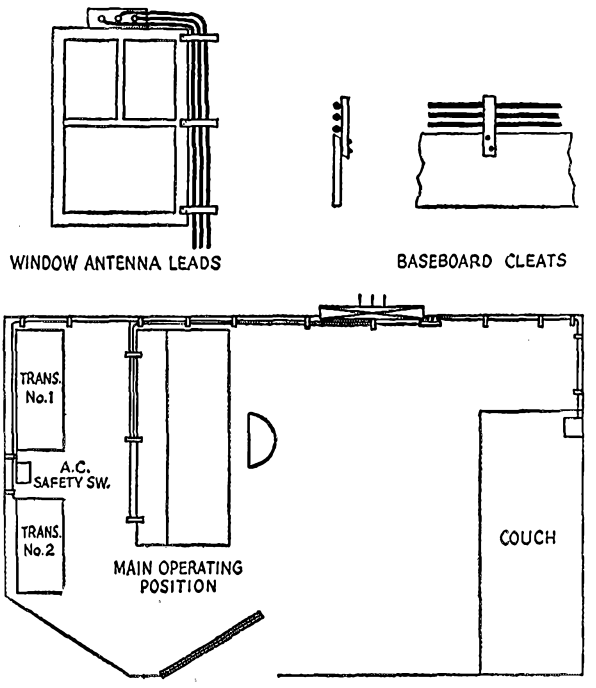


Fig. 2 — General arrangement at W1DFS, showing how wires and cables are run around the room. No leads are on the floor.

*24 Orient Ave., Melrose 76, Mass.

1957 ARRL DX Competition
High Claimed C.W. Scores

"Conditions superb and activity the greatest ever," one contestant bubbled enthusiastically. "What a paper storm West Hartford is in for!" He was right as rain. Even as this copy is prepared for the printer in late May, there is no letup in the mass of foreign entries arriving to clog ARRL's mail room. All W/VE reports are on hand, however, and the picture shapes up about like this, with claimed scores, multipliers, and QSO totals in that order:

Single Operator			
W4KFC	965,425	365	883
W3ECR[1]	946,596	354	858
W3LOE	910,974	366	835
W3GRF	879,648	352	833
W3MSK	874,245	349	835
W3JTK	820,113	344	797
W4YHD	769,472	328	783
W8FGX	758,775	335	755
W3BVN	751,356	324	773
W2IOP	719,550	325	740
W2WZ	692,370	314	735
W6YMD	690,096	318	735
W3EIV	661,287	319	691
W6ITA	636,548	301	716
W9LNM	611,010	310	657
W9FJB	594,425	295	674
W4RQR	563,456	284	662
W9HUZ	559,800	300	622
W2AGW	537,588	274	654
W6IBD	533,676	286	622
W3ALB	517,752	282	612
W1BIH	511,329	273	625
W3GHS	509,751	271	627
W3MFJ	459,948	259	592
W6BPD	456,448	256	603
W4BGO	440,640	270	544
W4CEN	438,615	285	513
W4LZF	437,310	258	565
K2DCA	421,005	255	555
K6EWL	418,080	260	544
W1NMP	417,183	247	563
W6VUP	408,126	271	502
W8UPN	396,435	247	535
W3VOS	394,500	250	526
W9PKW	389,856	218	524
W3MSR	374,220	231	540
W2PRN	372,519	213	511
W8DUS	354,858	238	497
W6LDD	351,966	234	502
W1AXA	351,351	231	507
W6NZW	348,270	235	494
W9FJY	344,124	237	484
W3IYE	343,980	234	490
W1VG	342,720	224	510
W4OM	338,128	228	492
W8BTI	337,464	218	516
W4DQH	326,830	230	474
W4LVV	326,370	230	477
W1ODW	326,151	217	501
W8EV	320,142	229	466
W9QDF	313,686	222	471
W5CKY	313,272	229	456
K4LPW	309,915	213	485
W8RQ	309,837	229	451
W2BBV	309,618	206	501
W1BOD	309,385	215	480
W1JYH	306,450	227	450
W1JEL	303,750	225	450
W3KDP	301,968	216	466
W4CYA	286,056	232	411
W3EIS	282,528	216	436
W9NWX	282,172	212	446
W2BOK	276,135	205	449
W7QGF	276,012	204	451
W2TE	268,140	205	436
W3DRD	267,102	209	426
W2FBA	261,429	211	413
W9GIL	256,878	213	402
W7PQE	254,200	200	425
W3ZQ	243,648	192	423
W1EOB	240,720	236	340
W5ZD	239,994	201	398
W1CJH	239,970	190	421
W4PNK	232,560	190	408
VE1PQ	232,470	189	410
W2GGL	230,811	203	379
W2EQS	229,743	201	381
W3NGV	229,000	200	415
W1TX	228,501	189	403
W6KG	224,664	184	407
W2BYP	224,070	194	385
W4KVX	222,852	196	379
W2JT	220,676	188	409
W1FZ	220,599	193	381
W1DLC	217,358	191	382
W3WPG	215,952	176	409
W4JAT	207,552	184	376
W1NI	203,082	187	362
W2PTI	201,474	182	369
Multiple Operator			
W3CTJ	867,888	328	882
W6RW	807,756	332	811
W2AIW	765,600	319	800
W3VKD	721,935	305	789
WØSQO	701,433	313	749
W6BXL	617,872	313	658
W4KXV	573,780	292	655
W6VSS	567,399	287	659
W1ICP	559,872	288	648
W3GHM	504,336	266	632
W6GTI	478,368	264	604
W6TPJ	474,744	262	604
W6PYH	459,360	264	580
W3EBG	418,417	251	557
W3PZW	399,645	249	535
W3TMZ	376,164	243	516
W3FYS	342,006	238	479
W3KT	332,688	232	478
WØNTA	313,260	227	460
W1MX	311,584	214	488
W3KFQ	291,600	200	486
W8OCK	287,100	220	435
W6AGO	278,973	223	417
W3CGS	277,704	203	456
W3EQA	276,424	218	429
W4AH	266,726	193	462

Pace-setters from outside the U. S. and Canada:

Single Operator			
XF1A[2]	1,289,340	114	3770
KH6CBP	987,462	102	3242
KH6IJ	965,400	100	3215
KP4ADS	856,340	94	3050
KP4DH	809,600	92	2988
KH6MG	721,355	95	2531
VP7NM	693,036	92	2516
KH6PM	535,336	88	2024
VP2LU	499,359	79	2107
OK1MB	371,520	86	1459
VK2GW	331,425	75	1473
JA1VX	312,967	59	1944
OZ7BG	305,550	70	1457
OZ1W	304,458	66	1541
KL7PIV	291,816	63	1544
EI9J	285,867	69	1381
ZL1MQ	273,600	80	1140
DL1JW	259,558	67	1302
F9MS	257,796	66	1302
PAØRE	251,049	67	1249
PJ2AV	248,490	66	1255
OK3DG	238,420	65	1225
JA3BB	230,956	58	1331
FK8AL	222,768	56	1326
VK2QL	222,345	61	1215
EA8BF	218,304	64	1137
G5RI	216,612	66	1094
EA6AF	208,986	61	1142
DL7AH	207,232	64	1081
W9KLD/KL7	201,564	66	1019
EA1AB	193,314	58	1111
ZP9AY	191,723	61	1066
PY7AN	184,509	57	1079
FA8RJ	183,876	58	1074
VK9XK	178,557	53	1125
VK7KM	170,676	66	868
ZE5JA	168,903	49	1149
OQ5GU	168,804	54	1050
I1NT	164,781	51	1077
SV1AB	160,539	59	907
I1AMO	156,123	57	937
FS7RT	150,993	57	883
G2QT	149,292	58	858
G2HPF	148,490	70	709
EA1BC	147,312	62	792
F8VJ	146,276	58	844
PAØVB	145,116	58	834
HH2DX	141,372	66	714
F3AT	141,069	59	797
CE3AG	134,940	65	692
IT1TAI	122,745	49	835
SVØWP	116,064	52	744
PJ2AJ	105,258	53	662
Multiple Operator			
KH6AYG	662,114	86	2566
VP5BH	569,985	79	2405
KL7AIZ	455,058	81	1873
DJ3JZ	261,954	66	1323
DJ1BZ	248,094	66	1253
G4CP	168,645	65	865
OK1KTI	165,816	56	987
KL7WAF	134,552	48	940
DL4PN	133,630	46	979

[1] W3MFW, opr. [2] In response to more than 300 queries, XF1A is a duly-licensed amateur in Mexico. Juan's photo, together with a caption explaining his activities in previous ARRL DX Tests, appeared on p. 52, September 1956 *QST*.

Add these high claimed phone tallies which have popped up since last month's listing: W6VUP 106,764, W4FKA 64,974, W6AGO 41,748, W2PUN 34,656, W6IIM 34,410, KH6MG 112,440, OK1MB 100,110, EA3JE 96,576, YN4CB 91,368, OE5CK 87,384, VP3HAG 63,415, DL4ASA 47,560, G5HZ 45,012, I1CHJ 44,694, VK5LC 36,852, KL7AIZ 31,824, OZ4FA 29,760, SM3EP 22,755, PAØNV 19,008, BV1US 17,628, SM3BIZ 16,065, DL9XR 15,219, CX7BR 13,020, I1CCO 12,798, EA4EP 12,700, F8XP 10,920, GB2SM 10,710.

There you have it: a few clues as to the final outcome. But careful checking will be necessary before the final results, slated for a later issue, can be announced. Please stand by. — *P. S.*

CAUTION

Under this country's treaty obligations and on formal notice received from other nations, FCC-licensed amateurs are warned to engage in no communications with stations in the countries listed below. This is in accordance with the FCC Public Notice of December 21, 1950 (p. 23, Feb., 1951 *QST*), and as since revised.

Cambodia (FI8, XU), Indonesia, (PK, YB-YH), Iran (EP-EQ), Korea (HL-HM), and Viet Nam (FI8, XV, 3W).

For those whose *QST* files do not go back to 1950 we will gladly supply, upon request, literature describing the circumstances of this prohibition.

Operating Achievement Awards

Basic Requirements for Obtaining 60 Certificates

BY PHIL SIMMONS,* W1ZDP

How are you fixed for awards? Wouldn't it be great to have a number of certificates adorning the shack walls in gorgeous, fulminating color? Envision the envious *Ohs* and *Ahs* when visitors drop around. This article is for the amateur whose bulkheads are bleak and barren and who would like to correct the situation.

Don't get the wrong idea, because the rewards in amateur radio are practically infinite. There's the kick derived from participating in traffic or other public service work, the inner glow resulting from landing a new country, the satisfaction derived from possessing a well-appointed and efficiently-functioning station. And surely the happy prickle that accompanied our first few QSOs can never be recaptured by any certificate. A tangible display of on-the-air achievements appeals to most amateurs, though (and can do wonders in concealing cracks in the plaster).

A few general considerations apply to the awards discussed here: (1) All are of a noncompetitive nature in the sense that you can plug away for weeks, months or years in their pursuit. They differ from the type won in a short-run contest activity when you defeat those in your ARRL section to earn certificate recognition. (2) Where confirmations are required, *always* include enough money, stamps or International Reply Coupons to finance their return by first-class mail. (3) None of the awards is processed willy-nilly and considerable care in handling is exercised, but sponsoring groups cannot assume responsibility for losses in the mails. It is wise, therefore, to register your cards and to include enough wherewithal to guarantee their return via the same medium. The moneylenders wouldn't bid a red cent for QSLs from 200 different countries but it might be impossible to replace them. Rely on registered mail. Play it safe! (4) It is a "must" that each applicant has adhered to good sportsmanship and observed the regulations for amateur radio in his country.

Short of publishing 13 *QST*s this year, we are unable to provide complete rules on awards. The information is sufficient to tell you in which direction to point the beam, so to speak, and calls and QTHs are given to help you trace down details on particular documents which suit your fancy.

ARRL Awards

A-1 Operator Club. Designed to promote a high caliber of operating. To become a member, one must be nominated by two or more amateurs already in the club. Careful keying and good voice operating practice, correct procedure, copying ability, judgment and courtesy are factors considered in selecting members. One does not apply for this certificate, he earns it.

BPL (Brass Pounders League). When your monthly traffic report to your Section Communications Manager (see page six for his name and address) is above a specified minimum, he forwards a membership certificate.

BPL Medallion. Handsome trinket for the watch chain presented to any amateur who makes BPL the third time provided that all traffic was handled solely by the station owner on amateur (not MARS) frequencies, in standard ARRL form, and duly reported to the SCM.

Code Proficiency Certificate. Offered to those who submit accurate copy of one of the qualifying runs transmitted by W1AW or W6OWP at six speeds from 10 to 35 w.p.m. Stickers for continued progress. See page 86 for full information.

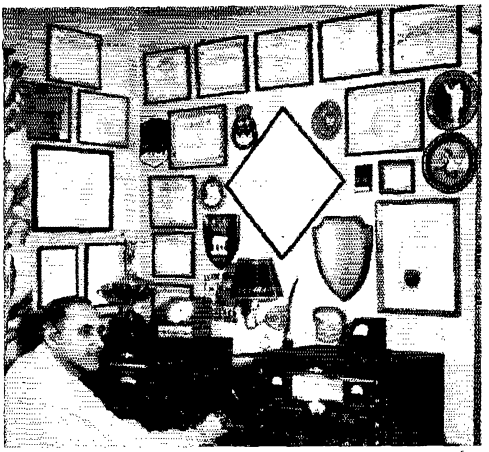
DXCC (DX Century Club). Requires proof of contact with at least 100 countries on the ARRL Countries List. Sticker endorsements for each additional 10 countries confirmed. Imperative that applicants familiarize themselves with detailed DXCC rules which are available from ARRL free on request.

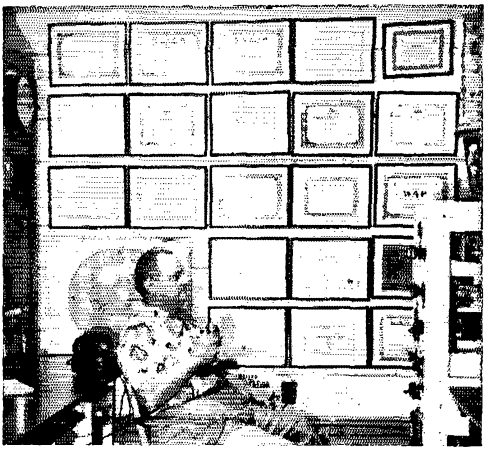
OTC (Old Timers Club). Open to any presently-licensed amateur who held an amateur ticket 20 years ago. To apply, send ARRL the date of your first license and a brief summary of your ham history.

Public Service Award. Recognition granted to amateurs who actually participate in a communications emergency involving the health or safety of the general public. Not worked for in the ordinary sense, but issued spontaneously after the service has been publicized in *QST*.

RCC (Rag Chewers' Club). Encourages friendly chats on the air. To join, chew the fat with any RCC member for at least 30 minutes. Then report the QSO to The Old Sock c/o ARRL and ask the member you worked to do the same. When both reports have been received and compared, your certificate will be forthcoming.

* Assistant Communications Mgr., C.W., ARRL.





An impressive array of awards can dress up the shack and make visitors gawk. *Left:* Stan Surber, W9NZZ, has earned numerous trophies, crests, and plaques because of years of concentrated traffic work for weathermen in the arctic. Known as "The Arctic Mailman," Stan won the Edison Award in 1953. *Right:* John Knight, W6YY, DXCC-233, specializes in contest and DX awards. Sporting one of the West Coast's most potent signals, W6YY perennially takes phone certificates for Los Angeles Section and Southern California DX Club in ARRL DX Tests.

WAS (Worked All States). Confirm contacts with the 48 states, substituting the District of Columbia for Maryland if needs be. To speed processing, place cards in alphabetical order by states before submission.

IARU Award

WAC (Worked All Continents) is issued by the International Amateur Radio Union on proof of contact with each of the six continental areas of North America, South America, Europe, Africa, Oceania, Asia. Amateurs in U. S. A., Possessions and Canada must be League members and should apply through ARRL, headquarters society of the Union. Those elsewhere must submit direct to their IARU member-societies. Residents of countries not represented in the Union may apply to ARRL inclosing $.50 or six IRCs. Special endorsements if all work on 3.5 Mc. or s.s.b.

YLRL Awards

WAC-YL. Submit proof of contact with YLs on the six continents to Barbara Houston, W3OQF, 109 Seneca Drive S.E., Washington, D. C.

WAS-YL parallels ARRL's WAS, except that you have to work lady ops in all 48 states. Pasteboards go to Grace Ryden, W9GME, 2054 N. Lincoln Ave., Chicago 4, Ill.

YLCC (YL Century Certificate). For this one, 100 different gals anywhere in the world must send you their cards, these clearly indicating that the stations were operated by duly licensed women amateurs. Stickers for each 50 additional. In charge is Katherine Johnson, W4SGD, Box 666, Fuquay Springs, N. C.

Club-Sponsored Awards

Worked All Arizona. Send confirmations of contact with fixed stations in each of Arizona's 14 counties to the SCM of Arizona, Cameron A. Allen, W7OIF, 1020 E. Maryland Ave., Phoenix, Arizona. Two or more bands must be used.

WACC (Worked All California Counties). QSLs from the 58 California counties to Oakland Radio Club, 906 Fallon St., Oakland, Calif.

W-DEL (Worked Delaware). Either QSLs or Delaware QSO Party logs are acceptable for contact with the Diamond State's three counties, but only QSOs after May 1, 1956 count. Notify Delaware Amateur Radio Club, c/o C. D. Justice, W3EEB, 315 First Ave., Newport, Delaware.

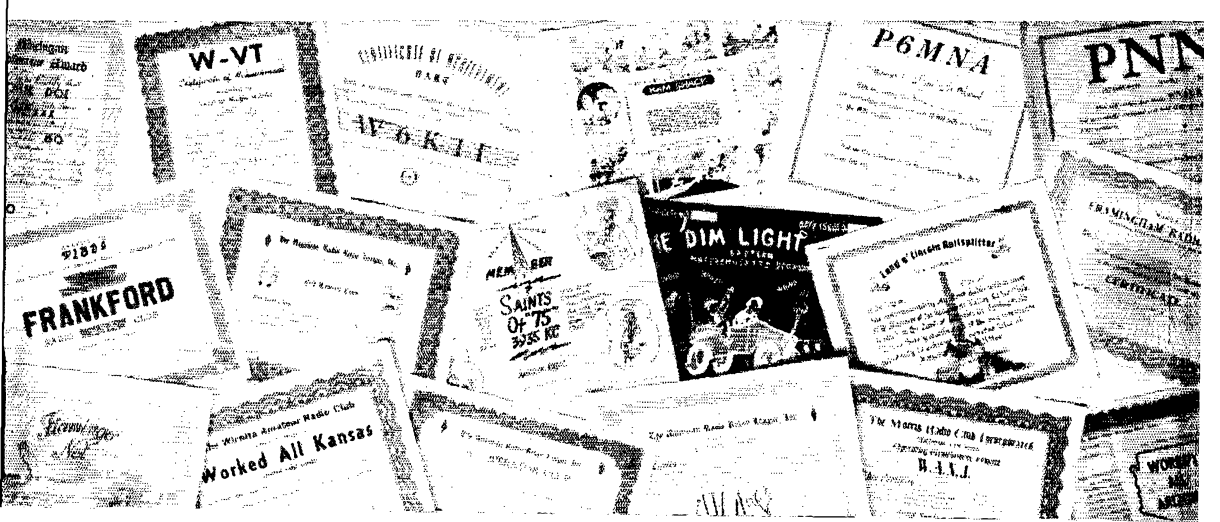
WAK (Worked All Kansas). Confirmations needed from 50 or more of the 105 Kansas counties, with stickers at the 65, 80, 95 and 105 levels. QSOs must be after January 1, 1956. Wichita Amateur Radio Club, 1203 E. Douglas, Wichita, Kansas, sponsors.

WAM (Worked All Maine). Produce proof of QSOs made after January 1, 1955 with Maine's 16 counties. Address inquiries and petitions for awards to Portland Amateur Wireless Association, 97 State St., Portland, Maine.

Michigan Wolverine Award. The W/VE contingent must work, after January 1, 1947, at least 60 of Michigan's 83 counties and submit cards plus $.50. Others send four IRCs and a log covering contacts with 25 or more counties, the list showing dates, times, calls, reports sent and received, operators' names. Everything is handled by Grand Rapids Amateur Radio Association, P. O. Box 333, Grand Rapids, Mich.

Nevada Achievement Certificate. Proof of contact with 25 Nevadans brings this from the Southern Nevada Amateur Radio Club, c/o Howard Kelley, W7BJY, 523 Birch St., Boulder City, Nevada. Endorsement for 50.

WANE (Worked All New England). Display evidence that you worked at least 50 of the 67 counties in New England, all six W1 states being represented. Stickers for 62 and 67 counties. Tender the QSLs to William F. Meehan, W1JWJ, Award Mgr., Port City Amateur Radio Club, Box 622, Portsmouth, N. H.



Sixteen-year-old W5DXW has latched onto 13 awards in a relatively short ham career but is proudest of his DX Century Club sheepskin.

WNH (Worked New Hampshire). Those who have worked the ten N. H. counties since October 8, 1949, earn WNH courtesy of the Concord Brasspounders. QSLs and/or participating logs for any of the N. H. QSO Parties are deemed satisfactory confirmation. Custodian is Gilman K. Crowell, W1AOQ, Dunbarton Road, Concord, N. H.

WANJ (Worked All New Jersey) has just become available to any amateur who demonstrates proper proof of contact with the 21 New Jersey counties. Confirmations and $.50 go to Morris Radio Club, Box 131, Whippany, N. J.

WACONYS (Worked All Counties of New York State) is issued by Binghamton Amateur Radio Association on receipt of cards verifying contacts with the 62 New York counties. Administrator is Carl Hinkley, W2JMF, 30 Doubleday St., Binghamton, N. Y.

WAPC (Worked All Pennsylvania Counties) requires no QSLs. Ship a log summary indicating two-way contacts with all 67 Pennsylvania counties to Western Pennsylvania Amateur Radio Club Council, c/o ARRL SCM, W. Penna.

WAVE (Worked All VE). Obtain two cards for QSOs after January 1, 1939, with each of these nine provinces: P. E. I., N. S., N. B., Que., Ont., Man., Sask., Alta. and B. C. Yukon and N. W. T. count in lieu of B. C. The clinker is that each of the two QSLs must be from a *different station* and for work on a *different band* for a total of 18 all told. Mail with $.50 to Nortown Amateur Radio Club, P. O. Box 356, Adelaide St. Postal Station, Toronto, Ont., Canada. Montreal Amateur Radio Club throws a W/VE Party every September, a delightful time to raise needed VEs. But contest logs cannot be used to confirm. For WAVE purposes you must get QSLs from the Canadians.

W-VT (Worked Vermont) is offered by Tri-County Amateur Radio Club when you confirm, via cards or your current Vermont QSO Party log, contacts with 13 of the state's 14 counties. Handled by Ray N. Flood, W1FPS, 2 Marlboro Ave., Brattleboro, Vt.

VA-JF (Virginia Jamestown Festival Award) is a new certificate distributed in connection with the 1957 Festival at Jamestown, Va. Submit proof of contact with 25 Virginia amateurs during the period January 1 through December 31, 1957 to Richmond Amateur Radio Club, Box 1985, Richmond 16, Va. Stickers for additional 25 QSOs at a time, up to 125.

Another extremely popular type of certificate is available to those who work so many members of a club or net or who raise a specified number of amateurs in a city or town. Quickly now, let's examine some of these.

Anchorage Amateur Radio Club. Land ten KL7s after January 1, 1955, four of which must be club members and one station in each of Alaska's four districts (Southeastern, Northern above Arctic Circle, Aleutian and Kodiak Islands, Central). Shoot the QSLs off to AARC, Box 211, Anchorage and the Alaska DX Certificate will be forthcoming.

Brady Amateur Radio Operators. Nine or more amateurs in Brady, Montana. W7SFK knows the details but you can apply for the Brady Award via anyone in town.

Browning School Amateur Radio Club. Three members. W9TBT, 5575 North 76th St., Milwaukee, Wis.

Car-le Radio Club. At least ten members. Write A. A. Rhoads, W3AHW, 234 South 2nd St., Lehighton, Penna.

Denver Radio Club. Mile-Hi Award for contacting 25 stations in the Denver metropolitan area, ten being club members. Denver Radio Club, Box 356, Denver 1, Colorado, handles.

Dimlight Boys. Ws must work any nine of these Eastern Massachusetts Wls while others need only four. Apply through W1KJD.

Dunsmuir Amateur Radio Club. Any five hams in Dunsmuir, Calif. Try W6JDN.

El Paso Amateur Radio Club. Earn Worked All El Paso by sending a list of 15 stations worked in that city to EPARC, 1501 Golden Hill Terrace, El Paso, Texas.

Flamingo Net. Any ten members of this Florida net which congregates on 29,044 kc. at 1930 EST Fridays.

Framingham Radio Club. Ten QSOs with different people in this Massachusetts group will swing it. Apply via W1MEG, W1ZEW or other Framinghamites you run across.

Frankford Radio Club. Check your ARRL Sweepstakes log for Delaware, E. Penna. and S.N.J. exchanges and you may find you already qualify for Worked Frankford Radio Club. The W/VE needs 25 FRC men (those elsewhere 15) worked after January 1, 1955. Stickers for 50, 75, 100. Mail list to FRC Awards Manager, Box 400, Bala-Cynwyd, Penna.

Goose Bay Amateur Radio Club. It's called Worked All Goose and is issued to any W/K/VE/VO who has worked five VO2s (or to others who've worked four) since April 1, 1957. List and three IRCs should be routed to O. F. Harvey, VO2AB, c/o Dept. of Transport, Goose Bay, Labrador, Canada.

Hilo Amateur Radio Club. U. S. hams must raise five Hilo KH6s and/or WH6s, others 15. Write Hilo Amateur Radio Club, Box 1659, Hilo, T. H.

Horseshoe Radio Club of Altoona, Penna., passes out a certif when you furnish a list of 25 members worked after January 1, 1946. W3KQD or others of the HRC clan can provide details.

Jacksonville Amateur Radio Society. K4BGU advises that the Ten Jars Certificate accrues when a tabulation of that many members QSOed is received by anyone in the society.

Jayhawk Amateur Radio Society. You become a Jar Ringer when WØYFT or KØBXF learn that you have contacted ten members of this Kansas club.

Johnson County Radio Amateurs' Club. Send calls of ten members worked to JCRAC, Red Cross Bldg., 5845 Roeland Drive, Mission, Kansas.

Kingsport Amateur Radio Club, Bays Mountain Radio Club. Hillbilly Net Certificate for list of ten net members worked after January 1, 1955. Apply via any Hillbilly. They favor 3900-kc. work week ends.

Lake Erie East Winds. If you pride yourself on your ability to shoot the breeze and can locate three present members of this organization, all in the Lake Erie vicinity, you qualify on submission of $2.00. W3YLR administrates.

McPherson Amateur Radio Club offers wallpaper to anyone who works six amateurs in McPherson County, Kansas after April 1, 1957. Send list to WØETX or KØAYS.

Night Owl Net. N.N.J. hams need ten, others five, to become a Night-Owler. Net works 10-meter phone exclusively and confirmations should be dispatched to K2CSY or K2BLS.

Phil-Mont Mobile Amateur Radio Club. Yanks need 35 members logged after January 1, 1957, while others need 25. W3SAI or W3NIP handle and lists only are called for. The Phil-Mont crowd prefers 29,493.2 kc.

Pittsburgh Novice Net convenes on 7161 kc. quite often and a PNN Award is forthcoming provided you work six of their WN3s. Last we heard, W3ERJ was doing the paperwork.

Pittsburgh 6 Meter Net, which meets Monday evenings, will send a certificate to anyone who has QSOed six of their members on the 50-Mc. band. W3HFE has the dope.

Saints of 75, who modestly claim to be the World's Champion Rag Chewers, meet very, very early each A.M. on 3935 kc. Check in and they may invite you to join.

Sangamon Valley Radio Club. The title of Honorary Railsplitter together with the Land o' Lincoln Award are conferred on amateurs working at least five of this Springfield

Novel method of displaying QSL cards boosts eye appeal of W6USY's certificate collection.

group after February 15, 1957. The QSLs go to Sangamon Valley Radio Club, Box 572, Springfield, Ill.

Shawnee Radio Club. It takes QSOs with five Radio Indians in Shawnee, Oklahoma. Further information may be secured from W5WSM.

Soo Radio Club. The number of members you have to QSO is contingent on the current club roster, so write Soo Radio Club, W0RTC, Sioux Ordnance Depot, Sidney, Nebr.

Sunflower Operator's Society. For the SOS Award, U.S.A. hams need 25 Kansas QSOs, ten of them in Sedgwick County, Kansas; those outside the country ten Kansas stations, four being in Sedgwick County. Contacts after January 1, 1955 only. QSLs are required and they go to SOS, 2350 S. Washington, Wichita, Kans.

Texas YL Round-Up Net. Regardless of gender, you can pick up a certificate by chatting with any 25 ladies in the net. Special rules and a net directory may be had from Custodian W5LGY for 25¢. Page 67 of last January *QST* has rules of the YL-OM 10CC Certificate, available to YLs alone and also sponsored by the net.

Toledo Radio Club. The Worked All Toledo Award goes to anyone who has swapped pleasantries with 15 amateurs in greater Toledo. Send applications, QSO list, questions *et al* to W8MQQ.

Westchester Amateur Radio Assn. Worked All Westchester is issued on confirmation of QSOs with fifty amateurs in postal zone 45 of Los Angeles. QTH: WARA, K6EBN, 7811 Agnew Ave., Los Angeles 45, Calif.

West Palm Beach Radio Club dispenses certificate recognition to those contacting five members of the Sailfish Net. Watch 28,960 kc. every second and fourth Friday evening.

A few hints, in closing. For details on ARRL awards, write the Communications Dept. for *Operating an Amateur Radio Station*, free to League members, 25¢ to others. WAE, H-22, DUF, DPF and other dearly-sought DX awards are admirably covered in W3AXT's *Dxerama* and RSGB's *Certificates and Awards*, two more manuals no would-be collector should be without. Watch the small type in *QST*, especially in "How's DX?" "Operating News," "Station Activities" and "YL News and Views" for announcements of new awards and revisions of old ones. Make it a habit to eye the ARRL Activities Calendar and Other Activities listing so that you won't pass up the Sweepstakes, DX Contests and Section QSO Parties which can smooth the road to attainment.

From now on it's up to you. Good luck!

Strays

K2LCN (age 14) demonstrates his bicycle mobile, which operates on 7 Mc. c.w. The receiver is a regenerative type with a 3Q4, while the transmitter uses a single 3A5 crystal oscillator. In addition, Pete has a transistorized conelrad monitor. His best DX to date is five blocks!

Hints and Kinks For the Experimenter

USING 115-VOLT AUTOTRANSFORMERS IN 230-VOLT PRIMARY CIRCUITS

MANY amateurs who have graduated from 115-volt primary circuits to the 230-volt system have no doubt wondered how to utilize their 115-volt autotransformer (Variac, Powerstat, etc.) in the new installation.

A simple and practical method of using the 115-volt units for control of primary voltage for 230-volt transformers is shown in Fig. 1. The

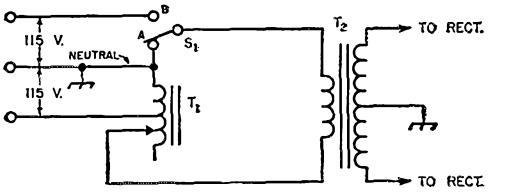


Fig. 1 — Circuit diagram showing how W7DET controls output from a 230-volt primary circuit with a 115-volt autotransformer. Both the autotransformer, T_1, and the control switch, S_1, must be rated for the current flowing through the primary of the plate transformer, T_2.

s.p.d.t. switch, S_1, provides a "two-step" operation. With S_1 in position A, the primary voltage for the power transformer, T_2, may be varied between zero and the upper limit of the autotransformer (usually around 130 volts). With S_1 at position B, the primary voltage may be adjusted from 115 volts to something above 230 volts with the highest voltage again being determined by the capabilities of the autotransformer, T_1.

— *William Vandermay, W7DET*

IMPROVED PUSH-TO-TALK CIRCUIT FOR MOBILE OPERATION

MANY mobile operators who parallel the receiver-disabling and antenna relays with the push-to-talk control experience trouble with momentary receiver overload each time the transmitter is turned off. This is caused by dynamotor "coasting" which keeps the transmitter energized for a brief period after the receiver has been activated. Although the problem can be licked by using the system described by W8RNA ("H&K," *QST*, June, 1955), there is a somewhat simpler solution that requires no *bleeding* of the dynamotor.

The control circuit used here at W3HXY has the antenna and receiver changeover relays connected in parallel with the *input* terminals of the dynamotor. After the push-to-talk control has removed input voltage from the dynamotor, the "coasting" action causes the generation of approximately 6 volts (12 volts with a 12-volt system) across the input terminals. By wiring the relays — antenna and receiver — directly across the input terminals, the relays remain energized until the dynamotor has coasted to nearly a full stop. Thus, the receiver does not come *alive* until after the transmitter signal has *died* away.

— *Roy W. Shetter, W3HXY*

ANOTHER METHOD OF STARTING MACHINE NUTS

I RAN ACROSS AN ITEM the other day which should prove of interest to those who build or service their own gear. It is merely another method of starting machine nuts in inaccessible places, but it seems to work as good or better than any other well-known way.

To apply the idea, a piece of solder is laid across the nut and given a slight tap with a hammer. This drives the solder into the hole and against the threads holding the nut securely. The screw is then started in from the opposite side of the nut. After the screw has *started*, the solder may be released by giving it a slight pull.

This method has been used with various sizes of nuts up to and including the 1-inch type. It worked equally well in all cases.

— *Robert B. Walker, W8MIH*

HOMEMADE TIE-POINT STRIPS

INSULATED TIE POINTS that are compact, inexpensive, neat and sturdy can be made from the bases of salvaged tubes. Remove the envelope from the base and unsolder the wires connected to the base pins. Discard the electrodes and then cut the base down to a height of ¼ inch or so. Drill a 3/32-inch hole through the guide key, invert the base and fasten it to the chassis

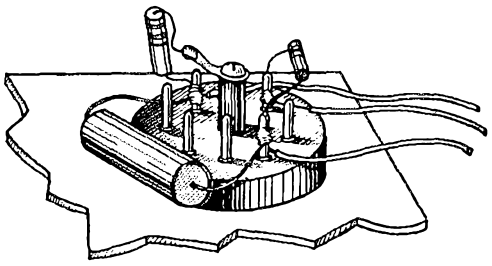


Fig. 2 — KH6GT uses old tube bases as tie-point terminals. An 8-prong octal base provides 9 tie points as shown.

with a sheet-metal screw. A solder lug under the head of the screw will make a convenient ground point as illustrated in Fig. 2.

— *Bunnie J. Chambers, KH6GT*

CONDUCTED BY EDWARD P. TILTON,* W1HDQ

WHEN W2UK and W4HHK first played their recordings of 144-Mc. meteor signals for the benefit of other hams some 5 years ago, they didn't create much of a stir. Your conductor found much the same response, in a swing around the country in 1954. The recordings were received with interest, to be sure, but the most common reaction was a shrug of the shoulders — and a "What-good-is-it?" attitude. It was a real surprise to everyone to learn that 144-Mc. signals could be heard over paths in excess of 1000 miles, almost at will, but the fragmentary nature of the signals discouraged most of the gang from giving meteor scatter a try.

But not everyone, fortunately. A few, to whom something new is always a challenge, seized on the idea of trying to make something useful out of these tantalizing pings. A handful of 2-meter operators, W1KCS, W2NLY, W2AZL, W2CXY, W3GKP, W4LTU, W5AJG, W5FAG, W6NLZ, W7LHL, W7LEE and W9KLR, to name some of the more ambitious, started keeping schedules. Results were slow at first, but as the sharper operators began to get the hang of the new game, some impressive changes showed in the 144-Mc. states-worked box. Books on astronomy were consulted to find out when meteor showers could be expected, and to learn when were the most propitious times to try for 144-Mc. DX.

W4LTU's fine article in April *QST* really did it. Walt boiled a mass of information on dates, times and antenna headings down to table form and gave every serious v.h.f. enthusiast something to get his teeth into. The result was a vast number of schedules, arranged months in advance, to take advantage of all known meteor showers, major and minor. It wasn't all merely a matter of setting a time, agreeing on a method of calling and signing, and then waiting for the DX QSLs to come in, however, as results in the major showers this year have demonstrated.

Skeds were kept all over the country during the Lyrids shower, April 19–23. One contact, between W2CXY and W4EQM, was managed, but results generally were disappointing. A similar effort was made by many of the same operators during the Aquarids, May 1–6, but with a difference. This time burst counts were up markedly, and there were many of the useful long bursts. Complete exchanges were made on single long bursts by several stations.

W2NLY, Metuchen, N. J., worked W5DFU, Tulsa, Okla., May 3, between 0600 and 0630 EST, receiving some 17 good bursts in the half hour. This was the first 144-Mc. contact between New Jersey and Oklahoma. Jim also heard bursts from WØZJB, Wichita, Kan., W5AJG, Dallas, Tex., and on the frequency of W5FAG, Albuquerque, N. Mex. Identification of W5FAG was

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

WØZJB	48	W4UCH	45	W8UZ	45
WØBJV	48	W4QN	44	W8RFW	45
WØCJS	48	W4EQO	44	W8LPD	44
W5AJG	48	W4FLW	43	W8HJR	43
W9ZHL	48	W4UMF	43	W8YLS	41
W9OCA	48	W4IKK	42	W8PCK	38
W6OB	48	W4RFR	42	W8NOH	34
WØINI	48	W4OXC	41		
W1HDQ	48	K4DJO	42	W9BRN	48
W5MJD	48	W4MS	41	W9ZHB	48
W2IDZ	48	W4AZC	40	W9QUV	48
W1LLL	48	W4FNR	40	W9VZP	47
WØDZM	48	W4ZBQ	38	W9RQM	47
WØHVW	48	W4IUJ	38	W9ALU	47
WØWKB	48	K4DNG	37	W9QKM	47
WØSMJ	48	W4AKX	36	W9UIA	45
WØOGW	48	W4AYV	36	W9UNS	45
W7ERA	48	W4GJO	35	W9MHP	43
W3OJU	48	W4ZD	35	W9MFH	42
W6TMI	48	W4HZG	34	W9JFP	42
K6EDX	48			W9CJI	41
		W5VY	48		
W1VNH	47	W5SFW	47	WØORE	48
W1CLS	47	W5LFQ	47	WØQIN	47
W1CGY	46	W5GNQ	46	WØNFM	47
W1LSN	46	W5ONS	45	WØTKX	47
W1AEP	46	W5ML	44	WØKYF	47
W1RFU	44	W5FSC	44	WØMVG	47
W1FOS	44	W5JLY	44	WØJOL	46
W1KHL	42	W5JME	42	WØUSQ	45
W1ELP	41	W5VV	43	WØFKY	45
W1SUZ	37	W5FAL	41	WØCNM	44
W1SPX	36	W5HEZ	41	WØYJF	44
W1UHE	35	W5BXA	41	WØURQ	44
W1LGE	33	W5HLD	40	WØJHS	43
W1FTF	31	W5FXN	40	WØIPI	43
W1WAS	31	W5EXZ	38	WØPKD	41
W1MFM	30	W5EUQ	38	WØZTW	41
W1FMK	26	W5FRK	36	WØQVZ	40
		W5HFF	33	WØVIK	36
W2MEU	47	W5WZF	33	WØBPM	35
W2AMJ	46	W5NSJ	32	WØWNU	34
W2BYM	46	W5ZVF	31	WØYZZ	30
W2RLV	45				
W2FHJ	45	W6WNN	48	VE3AET	45
W2RGV	44	W6UXN	48	VE3AIB	35
K2JNS	42	W6ANN	45	VE1EF	35
K2AXQ	42	W6NDP	45	VE3BBX	33
W2SHV	41	K6GTC	44	VE1QY	32
W2GYV	40	W6GCG	43	VE2AOM	31
K2HPN	39	K6HYY	43	VE3DER	31
W2ORA	39	W6ABN	43	XE1GE	27
W2QVH	38	W6IWS	41	VE3DER	31
K2ITQ	38	W6CAN	40	XE1GE	27
K2ITP	38	W6BWG	39	VE1PQ	23
K2HRB	37	W6ERG	38	VE3OJ	22
K2LTW	35	W6OJF	31	VE1WL	21
				CO6WW	21
W3TIF	47	W7FFE	48	VE4HS	20
W3KMV	44	W7HEA	47	CO2ZX	16
W3NKM	41	W7BQX	47	LU9MA	16
W3MQT	41	W7FDJ	46	PZ1AE	15
W3HUE	41	W7DYD	47	JA1AUH	5
W3MXW	41	W7ACD	45	VQ2PL	5
W3OTC	40	W7JRG	44		
W3FPH	40	W7BOC	42		
W3LFC	40	W7JPA	42		
W3AMO	36	W7FIV	41		
W3TDF	35	W7CAM	40		
W3UQJ	30	W7UFB	32		
W4EQM	47	W8CMS	47		
W4FBH	46	W8OJN	46		
W4LNG	45	W8SQU	46		
W4CPZ	45	W8NQD	45		

Calls in **bold face** are holders of special 50-Mc. WAS certificates listed in order of award numbers. Others are based on unverified reports.

not certain, but on May 5 at 0535 and 0557 5-second bursts were heard. If this was really W5FAG it is real 2-meter DX — about 1750 miles.

W2NLY has what is perhaps the most tremendous 2-meter antenna now in good working order: 8 24-foot Yagis with 2 wavelengths spacing between bays, 4 high and 2 wide. He would like skeds with stations in South Carolina, Arkansas and Minnesota, particularly, for meteor-scatter work.

W2AZL, Plainfield, N. J., worked W4EQM, Langdale, Ala., May 4. Carl would like skeds with South Carolina, Missouri, Nebraska and points west. W2CXY, Chatham, N. J., caught W4EQM on the Lyrids shower, April 20, and W9IFS, Minneapolis, Minn., the morning of May 4. Walt says the latter was a real QSO, not a "contact." They had one period of nearly 2 minutes of S9 signals. Evidence is on tape, and those who have heard it say that it is the loudest 2-meter signal ever recorded over a 1000-mile path. Don't be too sure of this until you have heard the Perseids tape of W6NLZ made last summer by W7LHL!

The Aquarids put W9KLR, Rensselaer, Inc., into the lead spot in the country for states worked on 144 Mc. With Vermont and Texas added, Bill is now W 2/3 S on 2! A 30-minute sked with W5AJG on May 1 paid off long before the allotted half hour had passed. They had excellent ex-exchanges with several bursts of 15 seconds or more, and a few up to 30 seconds. W1MMN, Orange, Vt., was worked May 3. W1MMN was hearing W9KLR at the rate of about 100 bursts per hour, many of them of good duration and strength. Bill heard around 44 per hour on W1MMN. Both were able to copy full sequences of information each way several times. This demonstrates that meteor DX is not only for the kilowatt stations. W1MMN runs only 100 watts to an 829B, feeding a 30-element array. W9KLR has 1 kw. and a 32-element job. W9KLR is now seriously considering the possibility of WAS on 144 Mc. and is hot after candidates for meteor contacts in Maine, Delaware, South Carolina, Georgia, Oklahoma, Colorado and New Mexico — as well as all W6 and W7 states. All those listed are within the range of other forms of propagation, also, so 38 to 40 states on 144 Mc. by a midwesterner seems to await only the right kind of activity in the right places.

W5AJG's observations for May 1–6 are the most complete we have at hand. We think you'll find excerpts from them of interest.

"May 1 — Sked with W9KLR, 0630 CST produced QSO right off the bat, with 30 sequences of bursts noted before end of logging. Lots of calls, full reports and OKs. Bursts rather strong and of good duration. Varied emissions here, including some solid key-down tests. W9KLR logged several of these accurately.

"May 2 — Eight bursts from W9KLR. Bad QRN here, but his sig seemed to be in weakly much of the time. Sounded more like scatter to me. W9KLR also had bad noise conditions and was not successful with me.

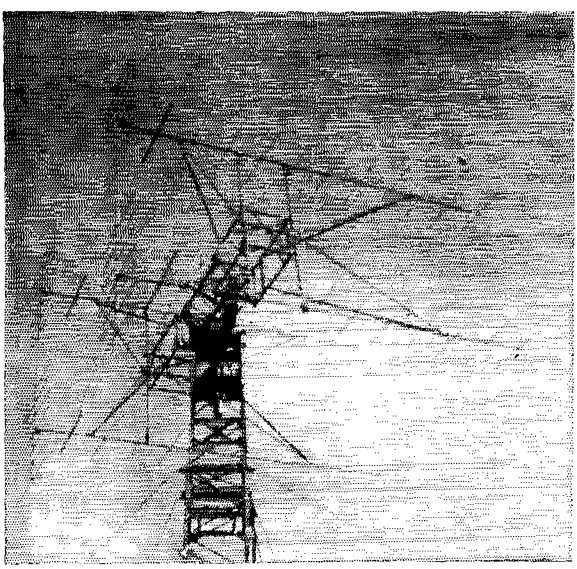
"May 3 — W9KLR again more like scatter, with sigs loud on bursts. Long periods, 20 to 25 seconds quite loud, with no fade, then sigs would drop off and ride noise level.

"May 4 — Sked with W4LTU, Orlando, Fla., 0600 to 0630 CST, produced one burst audible through bad power leak, but nothing distinguishable. He reported hearing 2 from W5AJG, including one key-down test. Sked with W9KLR, 0630, produced very loud signals, with many complete exchanges, and longest periods of signal yet experienced at this station; some full 30 seconds. Much better conditions than actually needed for QSO.

"May 5 — Several fairly good bursts from W4LTU; first sure results on easterly sked at this station. W4LTU reported some up to 30 seconds. W9KLR good enough for QSO, though bursts shorter and weaker than previous mornings. Sked with W2NLY no good due to very high noise level by this time, 0730–0800.

"May 6 — Two bursts heard from W9WOK, but far below what is needed for QSO. Several sequences heard from W9KLR, but much shorter and weaker than before. Peak of shower definitely past."

Two major showers will be coming up not long after this is being read, and minor showers string along so close together that meteor burst counts are likely to be up most of the time through the summer. Get out the table in W4LTU's article (April *QST*) and have a look. If you have a fair



The 72-element 4-bay 144 Mc. Yagi array of K2TLI, Oakhurst, N. J. not only rotates, but tilts up to 90 degrees. Each bay has a plane reflector, in addition to 10 directors.

amount of power on 144 Mc., a good converter, a big antenna, and some skill with the key, you're wasting your time if you don't boost your states total on 144 Mc before the end of August!

Swedish Amateurs Get 50-Mc. Authorization

Last month we reported the issuance of special 50-Mc. authorization to amateurs of Portugal, the Azores Islands and the Madeira Islands, CT1, CT2 and CT3, respectively. Also mentioned was the possibility that similar permission might be forthcoming for qualified Swedish amateurs. Now it's official. Word from Gunnar Lenning, SM5ANY, Secretary of the IARU-affiliate society in Sweden, SSA, tells us that special temporary authorization for operation between 50.0 and 50.5 Mc. is now being given to technically-qualified amateurs of Sweden on an individual basis. For the duration of the International Geophysical Year, June 1, 1957, through December 31, 1958, holders of the Swedish Class A license may apply for this 50-Mc. privilege through SSA. Maximum power to be used is 150 watts, and c.w., m.c.w. or voice may be employed.

Operation must be on a noninterfering basis, and the authorization may be rescinded at once if interference to other services develops, in Sweden or abroad. A positive check on the latter possibility is always available on the amateur's own receiver. If the 50-Mc. band is open to an area where other services are assigned, the operator should have no trouble in observing the condition merely by checking the band at frequent intervals.

The main chance for 50-Mc. work between the Americas and Sweden (and CT1, 2 and 3) should come this fall, when the m.u.f. begins to rise again. Just how high it will go is anyone's guess at this writing, but the prospects are good. Meanwhile, we should not overlook the possibility of sporadic-*E* skip across the Atlantic. We have occasional transcontinental openings on 50 Mc. during June and July — why not across the Atlantic as well? If you can work DX on 10, 15 or 20, now is none too soon to be lining up some prospects for transatlantic 50-Mc. tests, two-way or crossband.

Another prospect in this department is our old friend Arie Bles, ex-PA0UM, PK4DA, now PA0FM. Arie writes that he will be *on 10 this* fall, equipped for crossband work to 6. Having been active through the last cycle, Arie knows how it is done.

Still another 50-Mc. DX prospect: just as the above was being written a letter came in from SP2DX, Gdansk, Poland, who hopes to obtain authorization for 50-Mc. work. Wes is active on 144 Mc. at present, and he is building a 50-Mc. converter to go with his communications receiver. Should permission for transmitting not be obtained, he will be set up for crossband work to 28 Mc. this fall. Late report: effective June 20, SP2DX has official 50-Mc. authorization.

50-Mc. DX News

DX via the F_2 layer (or you name the layer!) continued well into May, and some strange things were observed by several operators. W6ABN, Long Beach, heard bursts of Oriental language around 50.1 Mc. at 1907 PST, April 21. K6PLQ acted fast and got some of this on tape. Samples have been run for several people who know Oriental languages, but the source has not been identified. Opinions differ as to the beam direction, but the signals were heard by *K6s* GRJ GXT PHE PLQ and W6ABN.

On the night of April 30 several Southern California stations worked CE3QG and CE3CC between 1700 and 1730 PST. W6PUZ was heard calling CP5AR, the first report we've had of activity in Bolivia.

On May 1, K6RNQ, Oakland, Cal., worked LU4DFN, LU7DDG and LU1DJC, 1333 to 1500 PST. The band was open, apparently for *Es*, to W5, 0 and 7 earlier. At 1445 PST, May 5, K6RNQ and W6AJF worked CX2RE. He faded out after a few minutes, but at 1750 things came to life again and several Bay area stations worked LU9MA and CE3QG. CE3CC and CE3US were heard. Several stations were calling VP8BF, but so far as is known, he was not worked. Has anyone information on this fellow? W6BAZ, Santa Rosa, and K6RNQ worked LU9MA again at 1200 PST, May 9, the last opening to South America that we have record of this spring.

DX prospects to keep an eye on include PJ2AO, Aruba, and a considerable list of Venezuelan stations. PJ2AO will be on 6 as the result of a cooperative effort by W2s QCY, WCM and MEU. A "Little Lulu" gang-tuned v.f.o. rig, a 6146 amplifier, and all the fixings have been received by PJ2AO, and he is expected on momentarily. Though no YV has yet worked into the United States, here are some *who are trying*: YV5s AE, 50.08; BX, 50.4; BI, 50.22; BS, 50.16; GU, 50.25; AC, 50.05; GB, 50.1; FK, 50.2 and AP, 50.17 Mc. For some reason, South American stations have never been worked during the principal part of our sporadic-*E* DX season. We get down into Mexico now and then, and Brazilian and Argentine TV stations have been logged in this country. Let's keep Aruba and Venezuela in mind when we're looking for DX this summer!

Hint for DX monitoring from W4ZBQ: Carl keeps his converter connected to two receivers in parallel. One is a

2-Meter Standings

	States	*U. S. Areas*	*Miles*
W1REZ	24	7	1175
W1PZJ	21	6	1120
W1RFU	20	7	1150
W1HDQ	20	6	1020
W1KCS	19	6	1080
W1AZK	18	6	850
W1AJR	17	5	810
W1IZY	17	6	750
W1UIZ	17	5	680
W1BCN	16	5	650
W1KHL	16	5	540
W1MMN	15	6	800
W1AFO	15	5	810
W2NLY	28	8	1220
W2ORI	27	8	1040
W2AZL	25	8	1050
W2BLV	23	7	1020
W2DWJ	21	6	720
W2OPQ	20	6	970
W2AMJ	20	6	960
K2CFH	20	7	910
W2PAU	20	6	880
W2UTH	19	7	880
W2AZP	19	7	650
K2IXJ	19	6	925
W2CBB	19	6	740
W2KIR	19	6	—
K2IEJ	18	6	745
W2AOC	18	6	660
W2LHL	18	7	620
W2RXG	17	6	675
W2SHT	16	6	650
W2PCQ	16	5	650
W3BGT	28	8	740
W3RUE	28	5	850
W3IBH	23	7	650
W3GKP	23	6	800
W3PPH	21	8	—
W3TDF	21	6	—
W3KCA	21	7	—
W3LZD	20	7	—
W3KWL	19	7	740
W3NKM	19	8	660
W3YHI	19	6	800
W3BNC	18	7	750
W3LNA	16	7	720
W4HHK	29	9	1280
W4HJQ	26	7	750
W4AO	23	7	950
W4DWU	22	6	675
W4JCJ	22	6	660
W4UMF	21	6	720
W4MKJ	20	8	725
W4JFV	18	7	830
W4OLK	18	6	720
W4VLA	17	7	825
W4WNH	17	7	750
W4TLV	16	7	1000
W4CLY	15	5	720
W4ZBU	14	5	800
W4WCB	14	5	—
W4TCR	14	5	720
W4IKZ	13	6	720
W4SOP	13	5	680
W4LTU	13	6	1080
W4CPZ	12	5	650
W4UDQ	11	5	850
W4MDA	11	5	68
W4GIS	9	2	335
W5RCI	21	7	925
W5AJG	16	6	1280
W5HEH	15	7	830
W5ABN	12	5	780
W5QNL	10	5	1400
W5CVW	10	5	1180
W5SWV	10	3	660
W5MWW	9	4	570
W5ML	9	3	700
W5NDE	8	3	520
W5PZ	8	3	500
W5FEK	8	2	580
W5VY	7	3	1200
W6NLZ	6	3	1000
W6WSQ	5	3	1380
W6DNG	5	3	660
W6AJF	5	2	640
W6RRZ	4	2	360
W6PJA	3	3	1390
W6ZL	3	2	1400
W6AJF	3	2	640
W6BAZ	3	2	400
W6MMU	3	2	388
W6ORS	3	2	365
W6LSB	2	2	360
W7VMP	6	4	1280
W7LEE	6	3	1020
W7LHL	4	2	1050
W7JU	4	2	353
W7JIP	3	2	850
W7YZU	3	2	240
W7JUO	2	2	140
W8WXV	28	8	1200
W8RMH	28	8	800
W8SRW	27	7	850
W8SFG	26	7	850
W8ILC	25	8	800
W8LPD	25	8	750
W8DX	25	8	720
W8LOF	24	8	700
W8SVI	22	8	725
W8JWV	22	8	710
W8PT	22	7	810
W8BAX	21	8	685
W8WRN	20	8	670
W8EP	18	7	800
W8ZCV	17	7	970
W8RWW	17	7	630
W8LCY	17	7	610
W9KLR	32	8	950
W9WOK	28	8	800
W9EVJ	26	8	850
W9ZHL	25	8	760
W9EQC	25	8	820
W9GAB	24	7	1100
W9EHX	24	7	725
W9BPV	23	7	1000
W9UCH	22	8	750
W9UED	22	7	960
W9AAG	21	7	850
W9KPS	21	7	690
W9MUD	19	7	640
W9REM	19	6	—
W9LF	19	6	—
W9ALU	18	7	800
W9JGA	18	6	720
W9MBI	16	7	660
W9JYI	15	7	560
W9LEE	15	6	780
W9DSP	13	6	760
W9DDG	16	6	700
W0EMS	27	8	1175
W0IHD	26	7	870
W0GUD	25	7	1065
W0UOP	18	6	—
W0ONQ	17	6	1000
W0INI	17	5	830
W0USQ	14	6	750
W0OAC	14	5	725
W0TJF	13	4	—
W0SMJ	12	5	775
W0ZJB	11	4	650
VE3DIR	26	8	915
VE3AIB	25	8	910
VE3BQN	17	7	790
VE3DER	16	7	820
VE3HPB	13	6	715
VE2AOK	12	5	550
VE3AQG	11	7	800
VE1QY	11	4	900
VE7FJ	2	1	365

relatively broad BC-454, which can be left on a special channel, or in the middle of the area of the band where DX is most likely to be heard. Then the sharper Super Pro can be used, simultaneously, for scanning carefully for weak ones. If the converter has enough gain there is no bad effect from this parallel hookup, and it is a great help in keeping the track of what is going on.

OES Notes

W1AHE, Stow, Mass. — Will be on 6 and 2 from summer location at Lincolnville, Maine, 85 miles NE of Portland.

W1UHE, No. Tiverton, R. I. — 220-Mc. rig now has 9903 in final. Eight states now worked on that band. No contact on skeds with W3LZD, but have heard both him and W3ARW. Now working on matching system on 220-Mc. array composed of 4 11-element Yagis.

W2LXE, Tonowanda, N. Y. — Built Monimatch, Mark II, from Feb., 1957, *QST*. Works fine on 144 Mc.

W4AZC, Birmingham, Ala. — Would like 50-Mc. skeds with 50-Mc. stations in North Carolina and Louisiana. Aurora openings April 22 and 23 brought signals from Oklahoma, Minnesota, Kansas, Colorado, Nebraska and Missouri on 50 Mc.

W4HHK, Collierville, Tenn. — 50-Mc. handsets built by W4GYS and W4HHK in 4 by 5 by 9½-inch package, complete with batteries. Uses two 3A5s, one receiving, one transmitting.

W4YRM, Madison, Tenn. — Erection of 60-foot tower and 3-element array has extended reliable coverage on 50 Mc. to around 200 miles.

K5DCQ, Irving, Texas — Tornado and flood disaster work on 50 Mc., April 2-3, 26. First sporadic-*E* skip of spring season April 12, to Florida. Examination of recent log shows contacts with over 100 different 50-Mc. stations in Northern Texas. Would like 6-meter skeds, 0100 to 0300 CST.

W6RLB, Redwood City, Cal. — Building high-power final for 50-Mc. using 4-400As.

W6SQD, Torrance, Cal. — New contacts on 220 this month: W6MMU and W6VIX. K6EPT reports working 30 different stations on 220 in 3 months on the band.

W7PUA, Eatonville, Wash. — Would like to talk with anyone who is working on stable gear for 1296 Mc. Can work any of the "d.c. bands" for this purpose, or correspond by tape or letter.

W7QDJ, Clearfield, Utah — New 6-over-6 beam now up Local activity increasing on 50 Mc. First E_s opening May 1, to NW. W7ACD, Shelley, Idaho, 160 miles on far side of 9000-foot peaks, hears W7QDJ on morning, but not evening, schedules.

W8NOH, Grand Rapids, Mich. — Just completed 28-element array like that described by W2AMJ in Oct., 1956, *QST*. Used RG-8/U coax in harness instead of RG-11/U. Only change required was to move the T-match connections to 2¾ inches from the ends, instead of 2 inches. Also used RG-18/U coax purchased from a local surplus house for about 8 cents per foot. Comparison test of RG-8/U and 18/U with 110-foot run showed 48 watts loss with the RG-8/U and 21 watts with the RG18/U, with 100 watts input to the line in both cases.

Michigan weather net on 145.25 Mc. now has members in Kalamazoo, Muskegon, Allegan, Bangor, South Haven, Grand Rapids, and Battle Creek.

W9DRN, Des Plaines, Ill. — Maintaining 220-Mc. sked at 2000 CST Mondays and 432-Mc. Thursdays at 2100. Working W9GAB, Beloit, Wis., regularly on 432 Mc.

WØDEY, Rolla, Mo. — Many meteor signals heard on 50 Mc. during April in early-morning hours.

Here and There on the V.H.F. Bands

Anyone interested in attempting to set up a trans-continental scatter network on 50 Mc.? W6BAZ, Santa Rosa, Cal., would like to give it a whirl. The trick could be turned with 3 or 4 well-equipped stations, depending on the directness of the route. Paul would be glad to hear from fellows who would cooperate in the endeavor. Also looking for 50-Mc. scatter skeds: W4RMU, Oceanway, Fla. Allen has 600 to 900 watts input and a 4-over-4 array. He has many times demonstrated his ability to put a scatter signal into W1, even when he was running lower power and a smaller array than now. Saturday mornings preferred.

Who has made WAS on 50 Mc. in the shortest time? An error was made in the reporting of the record of K6EDX. Bob's total elapsed time was 9 months and 12 days, certainly a record for a West Coast station. WØOGW, Lake Elmo, Minn., worked all 48 between April 15, 1956, and January 1, 1957, 8½ months.

Tests of s.s.b. during aurora openings continue to show conflicting results. Frequently the s.s.b. signal gets through when a.m. voice is useless, but not always. There are times when no modulation is intelligible. During the April 22 aurora, W3YHI, Washington, D. C., worked W9EGH, Goshen, Ind. Jack's 144-Mc. s.s.b. was readable during more than half of a 10-minute test, at a time when voice of other forms would have been useless. This is probably the 144-Mc. s.s.b. DX record, about 500 miles.

W3YHI will be closing down in August, as Jack is due to serve another hitch in Germany at that time. He was DL4CK over there some years ago and was active in v.h.f. work. Jack aims to continue working s.s.b. on 144 Mc. in Europe.

Anyone for f.s.k. on 144 Mc.? W3PYW was on RTTY on 144 Mc. some years ago, but he ran into considerable TVI trouble with the modulated signal and gave up when f.s.k. was made usable on lower bands. He now wants to try f.s.k. (850-cycle shift) on 2 and would be glad to hear from interested parties.

Looking for contacts on 50 Mc. is K9EID, Marissa, Ill., 60 miles SE of St. Louis. Bob has never heard signals from the southerly direction under normal conditions, and he would like to set up skeds with anyone in that direction who is active regularly on 6.

The first really good tropospheric opening of the 1957 season for W5AJG, Dallas, came on the night of April 23, running into the following morning. At about 2100 CST the WØs started dropping into Austin and Hamilton. They were weak in Dallas until around 2200, but then they were strong until everyone finally quit around 0200. Leroy worked the following WØs on 144 Mc.: BYC OZK CDH ZJB QDH JAS EKN ETX SUH UFP and KNØGIA, all well over 300 miles to the north. A check was made with WØZJB on 50 Mc., and a good signal was obtained on that band as well. Tropospheric propagation on 6 over such distances is considerably more rare than on 2.

An interesting check on the effect of antenna height was made during this session. W5AJG had one of the operators at the Channel 4 TV station put a Communicator on the 1500-foot tower array. The match is not good, but previous tests under dead-band conditions had shown that the height the TV array affords was a considerable aid to coverage. Under the good tropospheric conditions, however, W5AJG's high power and 32-element array, more than 1400 feet lower, put a much stronger signal up to the Kansas stations.

Activity on 6 in the Dallas area is going strong. Details of the 6-Meter Emergency Corps of Dallas were run last month. Almost the same personnel comprises the Dallas 6-Meter Club, except that social functions are the specialty of the latter group. They now have about 30 members, having started with 25 charter members in March. A certificate of honorary membership in the club is offered to 6-meter operators outside the Dallas area who work 10 or more members. No cards needed; merely send your list to Rosemary Randolph, K5BDL, 6209 Menger, Dallas 27. Picnics and transmitter hunts are on the program for the Dallas gang.

A v.h.f. picnic in the Providence, R. I., area last fall turned out to be such a success that another is being planned for July 14. It will be an all-day family affair, at Lincoln Woods, about 6 miles north of Providence, sponsored by the Southern New England 6-Meter Net.

It's a bit early to be making definite plans, but here's a v.h.f. party you'll not want to miss if you're within driving distance of Syracuse, N. Y. The Syracuse V.H.F. Club has their fall V.H.F. Roundup scheduled for Oct. 5. More details later on.

Strays

W6DYQ points out that there is a Ham's Station on Route 88, east of Sacramento, over which FCC has no jurisdiction. The only one in the country?

YL News and Views

BY ELEANOR WILSON,* W1QON

Anyone for Traffic?

PITY the plight of poor Patsy, W1YL, who because of the vision of the Lord High Commissioner of Roads in her progressive state, awakened one dismal morning to find her tight little ham shack right at the eastern terminus of the Great New Toll Road. Think of it! How awful, for Patsy is one of the queens of the air waves; she's hailed from coast to coast not only on 75 meters (she's drained that band almost to the depths) but on 10, 15, 20 and 40 meters too, phone only. And you know what a friendly lot the phone gang is. For normal people it would be trying enough to suddenly find themselves defending the last house before the toll gates if one is traveling West and the first house beyond the exit if one has motored East for any conceivable reason. It might not even be so inopportune for a male amateur to find himself in such a predicament, but for a YL who is YLRL, YLCC, DXCC, WAS, WANE, WAVE, BPL, and other things too numerous to mention, consider the complications.

After consulting with her psychoanalyst for four hours, Patsy still doesn't know what to do. Should she continue hamming as usual and radiate her kilowatt to thousands of vacationing hams, who upon the slightest provocation would seize any kind word she might utter, as a personal invitation to stop at her house for a road rest, a coffee break, brunch, lunch, dinner, the night — virtually anything.

Now Patsy is by nature a congenial, warmhearted soul who likes a bit of company now and then, but when hordes of hams descend, reinforced with their hot, tired, and thirsty XYLs, harmonies, yea dogs and cats too, one could safely presume that Patsy's smile might dim a bit and her usual vibrant conversation might run down. Then too, how can a YL possibly be a regular check-in of the HairWave Net, which meets only three times daily, if she is continually attending to the incessant clanging of the front doorbell?

Is Patsy's only choice to fold her antennas and disappear forever from the frequencies which well knew her winsome voice? Besides rag-chewing Patsy's great love was antennas. It had taken years and all of the brawn of local OMs to create the antenna farm which was so distinctive that it raised eyebrows for miles around. Now this haven of beams, poles, wires, and guys which she had master-minded might precipitate her mental and physical breakdown. Alas, poor lass — the innocent victim of eminent domain, withered by a complication of ham-fraternalitis.

Any unlicensed observer might readily draw several conclusions about the whole wretched mess and advise Patsy either to unsolder her

Need a contact with an Asian YL to complete your WAC/YL? Soma Wickramasinghe, 4S7YL, of Mattakkuliya, Ceylon, is one to look for. Soma has been doing what she can to afford contacts on 21 Mc. She receives with an AR88 and runs 50 watts into a long wire. (*Photo via W3AEV and W9BRD*)

door bell, camouflage all antennas, or pack up and go visiting members of the seventeen nets she belongs to herself all summer. A compassionate ham might suggest a retreat to 420 megacycles, where she would be known to so few that all visits would be by appointment only.

'Tis summer and take naught *too* seriously of this. Any similarity to live hams or super superhighways is coincidental, only the thought is real.

The National Convention

Cris Bowlin, W9LOY, Chairman of YL Activi-

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

The Los Angeles Young Ladies Radio Club is the largest of the affiliated clubs of the YLRL, having a current membership of almost one hundred. Here are the newly-elected officers of the unit who will serve during the 1957–58 season. Seated — Pres. W6DXI, Gladys Eastman; Vice President W6JZA, Elsa Wheeler. Standing — Corresponding Secy. K6ACF, Rosemary Dailey; Treas. K6OQD, Jean Kincheloe; Recording Secy. K6ANG, Billie Blakeley. (*Photo by W6QGP*)

ties for the ARRL Ninth National Convention and the YLRL Second International Convention, to be held August 30–31–Sept. 1, 1957, at the Palmer House in Chicago, outlines the program arranged for all licensed YLs who attend *the* big amateur affair of the year:

Friday, Aug. 30 — Registration and tours through local electronics industries. Free spaghetti supper and get-together.

Saturday, Aug. 31 — Shopping, sightseeing, etc., in morning. At 12:30 P.M. the YLRL Luncheon and Forum with principal speakers Mary Burke, W3CUL, 1956 Edison Award winner; Betty Frederick, W3PVH, President of the YLRL; Louisa Sando, W5RZJ, YL Editor of *CQ* magazine; and W1QON. In the early evening, dinner at Chinatown and at 10:00 P.M., special entertainment in the Grand Ballroom. The Wouff Hong at midnight.

Sunday, Sept. 1 — At 1:00 P.M. a boat excursion around Lake Michigan for the whole family. At 3:30 P.M. the ARRL Forum for all amateurs and at 8:30 P.M. the main banquet.

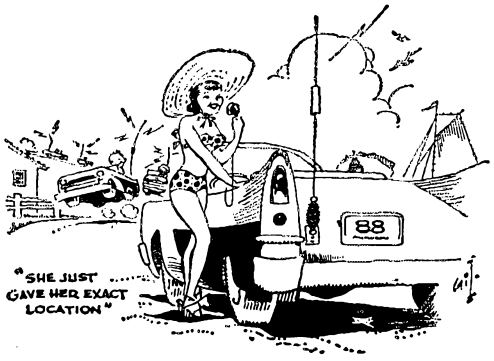
The cost of pre-registration, including banquet ticket, is $10.00; without banquet ticket, $6.50. Registration at the door with banquet ticket will be $12.00; without banquet ticket, $8.00. Inasmuch as the Grand Ballroom can only accommodate fifteen hundred persons for dinner, it is advisable to send your registration in as early as possible. The overflow will be seated in the Red Lacquer room, where there will be intercom communications with the ballroom.

Groups of YLs, such as clubs or nets, wishing to be seated together at the various affairs, should send in their registrations jointly in groups of ten per table. Requests for special seating arrangements should be directed to Marge Schum, K9EMP, 6223 N. McClellan, Chicago, Illinois.

Except in the case just mentioned, all registrations should be sent to the Chicago Area Radio Club Council, Inc., P.O. Box 6797, Chicago 80, Illinois. Checks should be made payable to the Council.

Now YLRL Chairman for the third district, Barbara Houston, W3OQF, is also a past Publicity Chairman for the club. She recently received a gold cup for winning top phone honors for three consecutive years in the Anniversary Party (1954–56). Licensed in 1948, Barbie uses her OM's call, W3MAX, when operating 10 thru 80 from her Forest Heights, Maryland, QTH.

All YLs are urgently requested to register well before the convention, as an aid to planning a better and smoother program for them.



Dallas Tornado

Cindy Dougharty, W5ZPD, YLRL chairman for the fifth district, supplied the following account of the role played by YLs in Dallas, Texas, when the area was recently struck by a tornado.

"The Women Ham Operators (WHO) have been very active on the air since organizing as a club in Dallas last year. Members have been handling traffic besides just plain rag-chewing, and net training plus the fact that they are available while their OMs are at work proved valuable in service after the Dallas tornado disaster of April 2, 1957.

Here is a tally of the messages handled by Dallas YLs during long hours of operation following the tornado: K5BNH, 250; K5GMI, 80; W5KEC, 130; W5RYX, 34; W5SPV, 67; W5YKE aided by her OM W5STI, 226. W5BDB spent many hours at emergency headquarters keeping the log and making telephone calls.

In Grand Prairie Iva Haley, W5SYL, assisted by her

(*Continued on page 152*)

Correspondence From Members-

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

HAM PUBLICITY

Shreveport, Louisiana

Editor, *QST:*

I am enclosing a tear sheet of a feature we did on a local ham from a news tip provided by you folks (concerning W5GAI's DXCC). We appreciate these news tips and hope that you keep sending them on all ham radio activities in this area. Hams are notoriously un-publicity minded and it is difficult to keep up with their activities — their clubs change officers, people move away, join the Army, etc., and as soon as we get some good news connections we lose them.

We run a page for teenagers each Thursday afternoon in the *Journal* and like to write up their activities and hobbies. Ham radio is an excellent and valuable hobby for a young man — I know it has really helped my son. So, keep sending us news of hams; we like to run it.

— *D. F. Attaway*
Managing Editor
Shreveport Journal

[EDITOR'S NOTE: Naturally, we'll keep the news coming from here. How about you fellows doing it, too? If you need help, write for our booklet, "Getting Newspaper Publicity for your Club and Amateur Radio."]

MORE RAPP

Galena, Alaska

Editor, *QST:*

In recent issues of *QST*, there have been many articles on all-band antennas but the idea of Larson E. Rapp in the April 1st issue is the ultimate.

The idea appealed to me at first but there were two difficulties. The first was getting a ferrite core of the proper size. The local trading post had only king size and jumbo size, so I had to fill a plastic tube with these to make up the proper size.

But, Rapp's statement that the ideal location would be a marsh directly over dry sand nearly made me think this was just another of his April Fool articles. Any fool knows that you don't find dry sand under a marsh. However, a little cogitation about the matter recalled the fact that here in the permafrost we do have such a situation. The permafrost keeps the water from penetrating the dry sand beneath. But how to dig a hole 40 feet in permafrost? Well, the prospectors are doing it all the time. So the next day I dropped a hint around the hot stove in the trading post about some mysterious radioactivity in the marsh behind my house. A couple of hours later, two sourdoughs with shovels, windlass and geiger counter were busy sinking a shaft. They quit at 35 feet. During the night I buried the "antenna" at the bottom of the shaft. The next day they filled in the hole again.

Performance of the antenna has been phenomenal, but now after breakup, the frogs are active in the marsh. The sight and sound of hundreds of frogs jumping in unison and croaking CQ de KL7BAU is driving the neighbors crazy.

— *J. W. Plamondon, KL7BAU*

1505 No. Sixth St.
Philadelphia, Pa.

Editor, *QST:*

Mr. Rapp's article was quite interesting. After listening to several earnest and serious discussions on the air about his revolutionary antenna, I thought — as any true, red-blooded, American — I would modify it to match into my existing system.

Using a ferrite core 4 feet in diameter and 3 inches thick wound with 200 turns of #46 enamelled wire and a one turn link of .042 Litz wire, we (W3DVB and W3ZJD) were able to obtain astounding loading. Several holes 3 inches in diameter were drilled for lightning purposes. These let the lightning pass through unharmed.

By inverting the antenna and observing the proper constants, we can force the solution to be directly proportional to t^2. That is, $E = \pi_2 t^2$.

This means that the farther away the receiving antenna, the stronger the received signal becomes.

— *Louis Tonik, W3DVB*

ABBREVIATIONS

Middletown, N. J.

Editor, *QST:*

I read with interest your QSO on "Abbreviations" on page 9 of the April number of *QST*, and turned hopefully to page 74, which I scanned with pleasure, and was just feeling very well briefed when I turned the page and bumped into "RSGB" and "WBE." However, perhaps it's just as well not to know this Spinach since I observe that knowing "WBE" might cost me a dollar.

— *Frank A. Hayes, K2VVL*

ORCHIDS

Millboro, South Dakota

Editor, *QST:*

I sure want to thank *QST* for publishing the article, "Economy Modulator for the Heathkit AT-1," in November, 1956, and especially to W0UJM for writing it.

I have worked stations 200 miles away on 75 meters with about 15 or 16 watts input power and have had good signal reports. I hope that others have had as good luck with this modulator as I have.

— *Richard L. Faubion, K0BMQ*

2748 Meade Street
Detroit 12, Michigan

Editor, *QST:*

Many thanks for FB article called "Careless Consumer." Read all the facts and believe you me it will always stick with me whenever I purchase commercial ham or other electronic gear. With shame I admit the article sure hit home — hi!

— *Stanley J. Zuchora, W8QKU*

2 Hiawatha Road
Mattapan 26, Mass.

Editor, *QST:*

Your article, "The Careless Consumer" (*QST*, May, p. 53), brought back some (now) amusing incidents that I have been trying to forget from my earlier days in this hobby. It proved the old saying that to do something quickly and more accurately, it pays to spend a little time reading the instructions so you know what the heck you're supposed to be doing.

A little wiser now (I hope).

— *Joel L. Richmond, KN1ATY*

2912 East Wabash Ave.
Spokane 28, Washington

Editor, *QST:*

On April 30, 1957, I took and passed the General amateur license examination, and I am writing to tell you how helpful the code-practice transmissions from W1AW were in preparing me for the code test.

I was able to receive the practice transmissions at least six out of seven nights a week on 14.100 kc., for the past four months, although sometimes it was pretty tough pulling it through interference from other amateurs.

I am 54 years of age and learning code is not too easy when you have gray hair, but your code practice was really of assistance.

— *John J. Marlatt*

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

How:

A current spate of TV shows and movies touching on two-way radio — commercial and amateur, DX and short-haul, alike — points up communications technique hitherto too scantily explored. You, like Jeeves, must be impressed by it. It's that numb and goofy look affected by any cinema or video performer called upon to handle mike or key.

Histrionic radiops no longer merely inspect meters, watch dials and spark gaps, or study message texts as they modulate or send. No, indeed!

With apologies to the Immortal Bard, "All the [shack's] a stage . . ." (*Cinema stills courtesy* OEM, *organ of Austria's* OVSV)

Directors rush cameras in tight for devastating close-ups of clenched jaws and glazed gazings deep into unfathomable space. Yes, it's definitely *de rigueur* to battle the ether in the clutches of some hypnotic stupor.

One recent network job was a lulu. Numerous airport radiomen and big-brass kibitzers, persistently pestering a pilot in thick overcast above, kept ogling the opaque ceiling of the shack. A bunch of army cots could have expedited the whole procedure. The empirical rule is simple: *the more significant the message, the more cockeyed the countenance.*[1]

This facial english is entertaining enough but it also makes one wonder. Could we DXers be missing some tricks? Might not our come-back percentages perk up if we adopt the proper far-away look as we dive into each pile-up? If so, other problems arise. We should, for example, keep our bearings straight; glaring grimly in the wrong direction could foul up a fine front-to-back ratio. Turntable operating positions synchronized with rotary beams? And it might behoove the high-power man to wear thick-lensed glasses, the QRP enthusiast to hoist reversed binoculars, and the c.w. hound to cultivate a tic. S.s.b.? An eye patch, of course. *Cut!*

Anyway, it's obviously no longer sufficient merely to read a book, watch TV, or glance idly out the shack window while calling rare DX. Let's get with it, gang. *Emote!*

What:

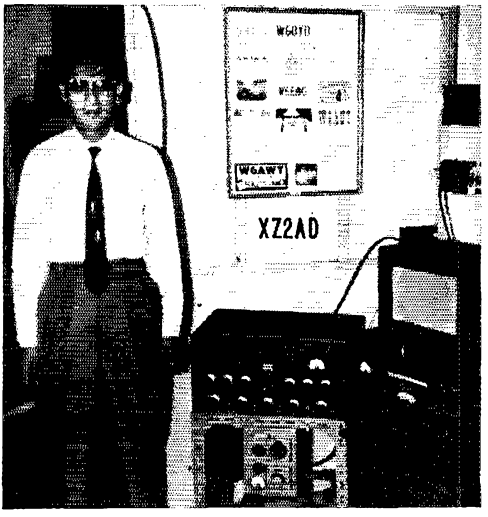
We could even *dress* the part, if necessary. What would be more appropriate for the 14-Mc. DX wars than sword, scabbard and shield? [Tanks and grenades, Boss. — *Jeeves.*] Or horns-and-tail make-up for the dedicated DX hog? Anyway, let's climb aboard the Bandwagon to see what ionospheric items summer holds in store for us. And remember that in the text to follow, frequencies (in number of kc. above the lower band limit) appear within parentheses, times without. E.g., (9) = 14,009 kc. if the paragraph treats 20-meter work. Times are GMT using the nearest whole-hour figure such as 7 for 0720, or 0 for 2349. Space considerations dictate that each DX-station suffix appear no more than once per band paragraph. . . .

20 phone is a midsummer night's DX dream if you have a few extra db. working for you. W9YSK conjured up QSOs with **FM7**WN (135) 3, **I5**FL (200) 4, **IS1**ZTG (127) 0, **JZ0**PC (163) 13, **KC6**RK (235) 13, **UA9** 1AB (128) 5, 9KCC (43) 4, **UI8**KAA (70) 3, **VK9**YT (165) 14 and **VQ6**LQ (63) 4. _ _ _ _ W9WIIM got the same IS1 I5 and UA9, plus Easter's **CE0**AC (150), **ET3**RL (195), **FB8**ZZ (160) and **YO3**GM (150). _ _ _ _ **HS1**A, **KA9**ND and **XZ2**SS make it an A3 95 for W6IIM. _ _ _ _ W9RBI scored in the Easter parade, too, and W8IBX reports raising s.s.b. **OD5**BZ (300) with a c.w. shout; W3LEZ is among those who scored with W4DQA, **KS4** of Swan. _ _ _ _ **BV1**US (295) 13, **C3**MH (195) 15 of the Red mainland, **CR6** 5SP (137) 6, 7CO (185) 13-14, 9AH (130-150) 16, **EA6**AR (115) 1, **HA5**BO (145) 5, **KC6** 4USH (285) 8, **6**SP (198) 17, **KG1**DT of old T-3, **LX1**DA (139) 7, **M1**B (153) 1, **SP6** 7HX (110) 5, 8CK (110) 4, **SV0**s FR WP WT, **TF2**WOK (297) 19, **UA4**UA (120) 4, **UB5**WF (143) 5, Direction's **VK9**AJ (173) 13, **VQ6** BO (140) 7, 8AR (150) 13, **VR6** 2CC (165) 5, 6TC (98) 9 (see "Where"), **VS6** 1CZ (124) 14, 2DW (146) 14, 2EK (106) 14, 6DJ (169) 14, **ZB2**R (199) 1, **ZD4**s CB (92) 7, DB (170) 3-4, **ZS7**C (170) 5, **3V8**BJ (240) 7-8, **4X4**s DR (180) 4 and JS are 20-meter phones suggested by NCDXC and WGDXC organs.

*4822 West Berteau Avenue, Chicago 41, Ill.

[1] Not to be confused with Grunt's hypothesis, for Grunt limits his treatment to keying pressure alone.

20 c.w.'s pile-ups sound even more sanguinary than usual because E_s short skip doubles or trebles the *audible* competition at this time of year. Reversing our call-phabetical order of reports in order to give Zeros, Nines and Eights a deserved break in these proceedings, we find at Iowa's *KØDQI:* **DU7**SV, HC1LE, **HK**1CV, **JAs** 1KM 1VX 8AA, **KG**1AX, **KV4**AA (80) 21–23, KH6AIK/**KG6**, CEs XEs. *KØARS:* **EA**4GA for No. 50. *W9UBI:* reached 52 on **CR7**AI, **EA8**BF, **HH**3DL, **SP**1KAA, **UAs** 1KFA 6KVB, **UB5s** EY KBR, DU HA KG1, scored WAC. *W7DJU:* **JAs** 1BFG 1BFJ 1VE 5AA 5EN 6AK 8AA/1 9CW, **KG**1AX, KH6CV/**KW6**, UA1KAE down south, **VS1**HJ, some of these raised at Dale's office set-up (W7GYR). *W6IIM:* rare Swede **SM**1BJA, **UAs** 3BN 4KHC ØKCA, **VS1**HB, now 101 worked. *W6KG:* **FF8**AJ (88) 7, **FY7**YE (35) 1, HH2OT (33) 5, **HK**3TH (33) 1, **KGs** 1AA (90) 8, 4AE (75) 3, LZ1KBA (45) 5, OA4FM (45) 3, **OX3**AB (92) 6–7, UA1KAQ (18) 7, **UB5**KIA (48) 5, **VQ2**IE (99) 5, **YO3**ZA (65) 5. *K6KVH:* **HA5**BW 6, **KAs** 4VN 15, 8RA 15, UA-4KYA 6, **UQ2**AB 7, **YO6**KBA 7. *K6LVT:* **CX**6CM, **FK8**AS (105) 7, **FY7**YF (43) 9, **OA4**FU (5) 2, **SP5**GN (94) 5,

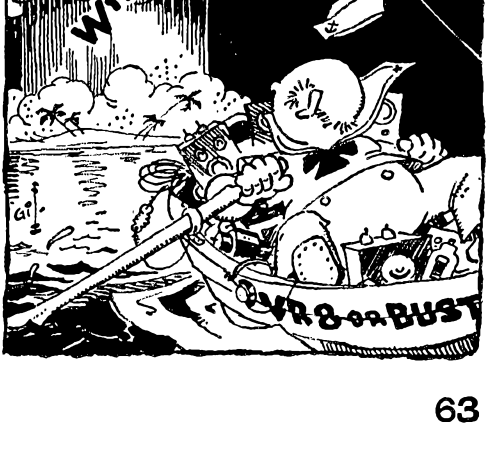


XZ2AD's Viking, 75A-3 and cubical quad perform well on his favorite bands, 15 and 20. W4IIVU snapped this photo during a round-the-world jaunt concluded early this year.

VR3s B (32) 8 of Fanning, G (53) 8 of Christmas, **VS**s 1GL (27) 11, 6DN (40) 9, **ZK1**BG (34) 8. *K6GLC:* **KC4**s USA USB, **OE5**SS, **UAs** 1KAG **ØF**B, **UB5**KBR, **YUs** 1RW 3FS. *K6RGO:* **ZL1**ACP on modest AT-1 rig and 12-ft.-high Windom. *K5KTP:* **UAs** 3KAB 4FE, **YU1**MB, ZK1, at 105/86. *K5CVI:* **KC6**JC, **ZC5**AL, two KC4s, VR3 JAs KAs, reached 117. *W4EJP:* made it 53/39 via CX2FD, **HA5**AJ, **HK1**GF, **PZ1**AP, **UA9**DX (42) 3, YO3AR, **ZP9**AU (64) 2, **4X4**IV (22) 3, 5A5TH 4. *W4NBV:* **CR9**AH (40) 8, **UAØ**KSA, **UJ8**KAA (47) 8, **VS1**GL, **ZD9**AC (80) 8, **4S7**WP, VR3, rose to healthy 190/168. *K4EYV:* VP2 LZ1. *K4IEX:* **YU3**OV, **4X4**JT. *K4IGD:* **SVØ**WR (87), **UB5**UA (16), **YO2**BU (40), **9S4**AZ (34), VR3, calculates he must work 5.55 new countries per month if he is to make DXCC before his next military reassignment. *W3DLI:* outpost **LUs** 1**ZZ** 5**ZC** both 10–11, **PJ2ME** 12, **TG9**MR 4, **VPs** 2LU 5BH, YV5FL, **KC4**s KC6. *W3LEZ:* **VP8**BY, KW6. *W3WPG:* **CX**5CO, **ET2US** (50) 14, **FP8**AP (80) 23, **JA3**AH, **KX6**AF (80) 11, **LU3ZS** (40) 22. **UAs** 6UF **9CM** (90) 5, **UB5**CJ (35) 6, **VP5**BL (45) 11, mare's nest ZD9AF, antarctic **ZL5**AA (70) 11, **3V8**AO (60) 3, **4X4**s FA 13, HK 22, **5A2**TY (50) 3. *W2DGW:* CP3CA (35) 23, **FB8ZZ** (78) 11, **EL2S** (45) 23, **FF8**BL (32) 20, **FG7**XD (85) 10, **LU1ZS** (80) 10, **UI8**KAA (59) 24, DU. *W2PXA:* **FK8**AL, OH-2AA/**Ø** of the Alands, **UC2**KAB, DU FY7 VP5 VR3 5As. *W2HMJ:* **BV1**US (60) 11, fancy Englander **GB2SM**, **JA3**BB with W6AM on the premises there, **KX6**BP (50) 13, **OY2**H (20) 0. **SU1**IC (40) 2–3, **UAØ**KJB (34) 13, **VK9**AU (62) 11, **VU2**s AJ (70) 22, JG (16) 0–1, Y12RM (80) 21, one ZA1KAA (30) 23, **ZDs** 2GWS (32) 0, 4BQ for Ghana credit, KC4 KC6 TG 4S7, received QSLs from **MP4BBE**, **UM8**KAA, for 231 confirmed; replaced trusty 2-element Yagi with popularized cube quad, "Still playing with it." *W2NCI:* **CE9**AS (52) 23, JA1AB, **OD5**LX (16) 3–4, UA2KAA, **VP3**AD (18) 1, **VQ4**KRL (17) 20–21, FG7 FY7 OY TG 4X4, still chases **EA9**BK (58) 2, **FL8**AB (18) 20–21, **ZD2**DCP (15) 3. *W2PDB:* **CR4**AH, **FY7**YG, LU2ZE, OQ5GU, SU1IM, others. *W2RA:* **VQ2**RE (49) 23, **VS2**DW (47) 22–23, **ZC4**BN (65) 22, the afo:ementioned FL8, UI8, VR3 items, now at 145 worked. *K2GMF:* **CT2**BO, LU1VV, **SVØ**WP (W3JTC), UA9DN, **UB5**KMA, VEØNE. *K2QXG:* pursues **FO8**AQ (100) 8, **ZK1**BG (35) 8. *K2TCD:* **9S4**CM (60). Harvard University's *W1AF:* (KØBIB reporting) **CE3**RE, **HH2**Y, **LZ1**s KNB WD O, **OY1**R 23, **SPs** 2AP 6CT 9EC all 22–0, **YVs** 1AD 5HM, **4X4**FR 4. *W1BDI:* during May's Russian DX test noted activity by UAs 3EQ 4FC 4KPA 6AQ 6KAE 6KOB 6KVB **9**KAB **9**KCE, **UB5s** KBA DW, **UC2s** AD KAD, **UD6**KAB (99) 22, **UF6**AC (100) 17, **UH8**KAA (80) 22–23, **UJ8**JG (70) 22, **UP2**KBC (100) 17, worked **FG7**XE, heard Grahamland's **VP8**BS (70) 0. *W1DBA:* **CE5**BG, **CN8**FQ, **DM2s** AGH AGO AHM AHN, **FA8**SD, **HA5**BG (4) 45, one HAØKHB (60) 23–0, **HK1**FF (60) 3, **KG4**AI (50) 2–3, **SPs** 6BY 6BZ 6WM 7HX 8EV 9KAD, **UAs** 1CB 3AZ 3KGA 4CE 6LF, **UP2**AS, **UQ2**KAA, RAEM, curious ZM1BL, UB5s ZS, says, "After giving 20-meter phone the once-over I have decided to stick to 20 c.w." *W1RB:* new Easterite **CEØ**WR (91) — or CEØAC? *I1ER:* **JAs** 2AT 2BL 3QY 6PA 7AD, **KH6s** IU WW, **KL7**BXH, VE8OW, ZLs, all Yank call areas. *KL7-BPK:* **JAs** 3AH 7BO, **KC4**USN at the geographic South Pole, **VP8**BO at Shackleton Base. DU OA UA1. "Am quite pleased with my new vertical." . . . . . Dan Ammann, whose call escaped us, nailed **SP3**PL, **VSs** 1HB 2FN and UAs. *Please* inscribe your call signs on mail to these offices, gang.

15 c.w. openings diminish in frequency but this fails to dismay *KØDQI:* **CE3**AG, **CT1**CO, **JA1**CO, **OE3**VP, **VPs** 2LU 5BH, **VQ3**TL, **YU3**AB. *W9MAK:* **OKs** 2KBE 3DG. *W9YKJ:* **UO5**AA (75), **VR2**BO, VS9. *K9DNR:* **GR6**CZ, FO8**AP**/MM of raft *Tahiti-Nui* (52) 5, **SV1**AB, **VQ6**LQ, **ZC4**IP, **ZL5**AA, **4X4**IB, hit 90/56. *W7DJU:* **HC8**GI, **JA1**ACB. *W7PEG:* **HA5**AM 15, **HS1**A 17, **OE3**RE, Dutch weather ship PI1LS/MM in the Channel, **PJ2ME** 2, **UAØKKB** 5, **VS6**CO 16, is just four countries short of the Century. *W7VJM:* stalks **FO8**AM. *W6ZZ:* **LA1**K. *K5EQW:* **JA7**AD, **YU3**AV, strange VRØA, VK ZS, asserts, "Fifteen really seems to be hot for Louisiana around 0700–0900 and 1600–1900 local time," heard **FB8ZZ**. *K5JWA:* flock of KH6s. *K4EYV:* ZB1. *K4HIG:* **OK3**EM. *W2FXA:* **CP1**s AF, CJ, **EAØ**AC, G3FYR/**VS9**, **OQ5**GU, **SVØ**WP, **VQ3FN**, VP5 à la Caymans. *W2PDB:* **CT3**AB, **ZP9**AY, CP VS9. *K2GMF:* **VP4**KL. *K2TCD:* **HA5**BW (90) 14, **SM2**BJE (66) 12 to clinch WASM effort, **SP5**GX (50) 15, **UB5**KIA (40) 22, **ZB1CY** (90) 3, **4X4**HK (85) 20, St. Martin, now at 60/33. *W1ETV:* **DM2**ACA, **OA4**Q, **OD5**AV, **SP1**KAA, **XE1**PJ, **YV5**BF, **ZB2**V, **9S4**AX, W1UBW/VE8 for 39/22. *I1ER:* KH6AIK/**KG6**, U.S. call areas One through Six. *KL7BPK:* **FO8**AO (120) 5, **JAs** 1AL 2BJ 5AF 9AC all 6–7, KH6CV/**KW6** (90) 6. *KL7CAW:* Europeans galore but bleeds for South America and WAC before leaving Alaska next month.

15 phone retains its hold on the not-so-QRO mike mob despite sagging m.u.f. figures. Choice catches are reported by *WØQGI:* **DU1**GF, **VS4**JT for No. 129 on phone with single 2E26 final, 185 all told. *W9RBI:* **HS1**A 17–18, **JZØ**PB (250) 14, **SVØ**WE 21. **VS6**AE 14. *W9WHM:* **CR4**s AP (240), AS (240), **EA6**AR (200), **FB8ZZ** (120), **JZØ**PC, **UAs** 1BE 3EG, **UP2**AS (140), **VP5**BH, **VS9**AI (152), W4DQA/**KS4** (300). *W9YSX:* Falklander **VP8**AQ (206) 1, VS6 VS4 EA6 UA3, **ZD6**RM (192) 20. *K9DNR:* **LX1**DC, **OQ5**HP, **SV1**AD, **VP3**HAG, **VQ2**JC, **ZE2**s JK KJ KP,



OH3OD touches up an exhibition by Hämeenlinna Amateur Radio Club station OH3AA. HARC caught Aland fever and scheduled a DXpedition to the islands last month with OH3s OD RA TQ and UO intending 3.5-through-28-Mc. operation as OH3AA/Ø. (*Photo via W1TG*)

ZS9G, 5A5TD, writes that "Fifteen phone has been fabulous!" *W8BKP:* MP4BCC 0, OD5AV 0, VK9AJ of Cocos-Keeling environs, VR2DA, VS2s DB ER, VU2RG, now has a record of 187/182 *on 21-Mc. phone alone.* *W7PEG:* DU6IV 14, FK8AC 3, YLs OA5M and OQ5FH, YN1JK, VS4. *W7VJM:* KB6BD, KG1KK, KX6BQ, VE8OF, VP5RA, VR2AZ, VS4 VKs ZLs, a quick rise to 57. *W6ONK:* KC4USK's s.s.b. *W6ZZ:* KC4USA, numerous KH6s and KL7s, VKs and ZLs in quantity. W6BMO/MM off Chile, contended with racket of craftsmen renovating his Menlo Park kitchen, sports new beam. *K6IUL:* EL5A (210) 17, OQ5GI, VE8PB, VP2KD (200) 17 of the Leewards, VS2DQ (200) 8 for 42 on voice. *W5FTP:* VR2BC, KG1. *K5CVI:* KG6AGY, OD5. *W4HVH:* ZK1AU, 4X4BO, JZØ VR2 ZD6, distant VK6s EZ FB FW LM, reports long-path work booming on 15. *W4TFB:* HZ1AB, OK1FC, SP8CK, New Guinean VK9BS, ZC4IP, KX6 VR2 ZK1, Caymans. *W4YOK:* HH7JL/m, VPs 2AD 4TE 5WS 7NE on week ends home from college. *W3AEV:* VS9. *W3LEZ:* HK5CH, TF2WBU. *K2TCD:* CE2HX, HC1FG, HI8RE (225) 18, PJ2AO (380) 4, VPs 5CM 5CP 7NF (240) 19, 4X4BT (190) 23, 5A1TC (248) 14. *W1HZ:* VS4. *W1PNR:* KC4 antarctican, QRL salmon-fishing in New Brunswick bailiwick.

15 Novice circumstances are paradoxical. When the younger fry finally are turned loose for school vacation and DX, along come 21-Mc. summer doldrums! At any rate KN2SSU caught CE3RE, CN2AQ, FA8CR, OE1FE, OK1KTA, PJ2AV, VK2QL, VO6N, VP6GT, VU2RM, YO8MIS, YU6QL, one ZA3B, ZLs 1APM 4KD, 4S7GE and 9S4CM . _ . _ . _ Neighbor KN2UPD scored with DM-2ACM, IT1TAI, OE5SD, UA1CI, WH6CCL, YO, gets big kick from European SWL cards received, now is 42/13 in first three months on the air, and finds his single crystal on 21,111 kc. entirely sufficient so far . _ . _ . _ KN2VAC did all right on UA3AH and 4X4SK (4X4HK?), while KN2YIZ managed VK3s AHQ and TX . _ . _ . _ KNØIKR's DX-20 clobbered CT1FX (c.w. to phone), WL7BZO, WP4s AIT and AJI.

10 phone hangs right in there this summer mainly thanks to the virulence of the 1957 sunspot display. First, at *W6IIM:* DU7SV, KA5MC's 9-watter, KR6s AF RT. *W6ZZ:* XE1BX. *K6LGF:* CE3TR, CX8CR, HH3TJ, HI8BE, HK3AB, HP3DA, KB6BF, KM6AX, OQ5s AO BK, PJ2CA, SVØWT, VPs 1JH 5CP 7BN VQ2HJ, VR3E, YV5ED, ZL1PA, KR6, expects to concentrate on 20 through the rest of the summer. *K6OHJ:* CT1PW (385), W6FVK/KG6 (360), ZP5IT (260), ZSs, DU HI KR6. *K6YGM:* CE3TH, CN8FV, KX6AF, OA5H, VPs 2LU 4LD, VSs 1FE 2DB, YV5GU, DU KB6 KM6 VR3, hears FK8AC, VS4JT, ZC5ID. *W5ERY:* CR6BH, SP8CK, VK5RV, YO3VI. *W4EJP:* HC2KU (300) 19, VP6TR (390) 23. *W4EJQ:* YV5HN. *W4TFB:* CN2BS, EA6AS, FK8AL, IS1ZDT, LX1HM, OY1R, VP8AQ, YO3VA, ZDs 2WAF 4CH, ZS7C. *W4WPF:* Cocos TI9, KX6, W4COW/KL7. Europeans when not QRL with duties as ARRL Assistant Director, Southeastern Division, *W3LEZ:* EL5A, FG7XE, OQ5s DO HP, ZB1HMQ. *W2VCZ:* OE1FF, PJ2AP, ZP5JP, 5A2TC, a 5-hour WAC, finds the DX game really jumpin' after his 6-year layoff. *W1EKU:* CN8GD, CR4AP, OD5AV, ZD2WAF, chases UB5UW, ZD4BV, HS1B. *W1GOU:* CR4AS, CT3s AI AN, FQ8AF, HE9LAA, SP8CK, SVØWE of Rhodes, UP2AC, VPs 5BH 8BU, VR2BC, VQ3ES, ZDs 1DR 1FG 3BFC 4BQ 6JL 6RM, 3V8BX, 9S4AX, has 160 confirmed on 28-Mc. phone.

10 c.w. types persist in shrinking number and the band is a mere shadow of its spring self. *W8KX:* VK9XK, says, "The summer lull surely has set in, not only on 10 meters but on other DX bands as well." *W4EJP:* HP1LO (52) 23, PJ2ME (40) 16, *K4EYV:* ZL. *W3GKY:* CR6AI, EAs 6AF 8BF, FA8s JO ZZ, GC3HFE, HA5s BU BW, JAs 1ACA 3AB 3JM 7AD, KW6CA, KG1LH, LX1FL, LZ1s KPZ WD, OH8PP, OQ5GU, OY7ML, PJ2AV, PZ1AH, SVs 1AB ØWP, TF3KG, UAs 1AU 3AA 3KBA, UB5s KAB UB, UC2KAB, UR2AO, UAØLA, VPs 2LU 5BH, VS9AI, YO3ZA, ZC4IP, ZE1JU, 3V8AD, 4X4s BX CJ FR IX, 9S4AX, runs only 75 watts — not bad for a 13-year-old, eh? *W3WPG:* many of the preceding specimens. FA9IO (170) 18. HH2DX (50) 17, LZ1KDP (130) 16, OA4BP (180) 20, VP7NM, YO3RF (140) 16, ZE5JA (120) 20, ZP9AY (200) 19. *K2GMF:* PY1HQ. *I1IR:* every U. S. call area but No. 7.

40 c.w. also has come upon evil DX days but our Bandwagon does have a few 7-Mc. holdouts aboard. Such as *W9MAK:* VO2NA. *W8GKB:* almost-too-good ZK2AD (100) 8. *W7DJU:* JAs 1AEA 1AGU 1HT 2BL 2OF, VK3s DQ YD. *W7ULC:* choice UAØKFF. *W6PMU:* ponderable ST2AR 7-8. *K5JWA:* KH6CBP, XE1MD, uses 16 watts and dipole. *K4IEX:* HK1BQ (50). *W3DLI:* the previous ST2, EA8AX, VP9DL. *W2JBL:* KH6BRJ. *K2RNV:* DJ2HC, EA7HU, KH6BLH, XE1FV . _ . _ . _ Novice news on 40 is sparse but W9JVI/KL7 bumped into rarities WB6BE (170) 18 and WG6AGY (175) 18, while KN4KHG busied himself with WH6s CBX and CEP . _ . _ . _ **Eighty c.w.** matters are kept alive by doughty W2DGW who pierced summer's QRN for EI9J (1-2) 3, LZ1KRU (2) 3, ZLs 3AQ (28) 10, 4DT (20) 10. DJ and HB trophies. Looks as though we're in for a sleepy stretch so far as low-frequency DX is concerned! But one never can be *sure.* . . .

Where:

Asia — W2ZGB agreed to handle VS9AG's W/K QSL chores on Lee's promise to airmail logs weekly. Gabe should be accorded the usual courtesy of stamped self-addressed envelopes . . . . . _ TA3US knows nothing of TAs 1FA and 3KW but this doesn't necessarily clinch the issue. SFC Foley of TA3US writes K2GFQ: "There are several operators in this country we do not know about and we are unable to forward cards to them." . . . . . _ From that DXer's DX man, AP2RH: "I am due to return to the U. K. on completion of my tour here either by air around July 1st or by sea about July 18th. I shall be in G-land for a spell and then off again to — I hope — rare DX. I have QSLd 100 per cent from here but if anyone still needs my card I shall be pleased to forward one." Ray's back-home QTH follows . _ . _ . _ W2RA points out that six, not five, IRCs cover airmail QSL return from Malaya. VS2DW gives the figures: U. S. A. airmail rate, $1.10; IRC exchange rate, 20 cents each . _ . _ . _ W6s FKH and HM, handling QSL matters for HS1A, uncorked 150 fast Thailand certifications to early birds.

Africa — ZS1MU of SARL's bureau informs that cards incoming for no-good ZD9AF must be destroyed except where IRCs are involved . _ . _ . _ One SX3D, with an Egyptian call sign, incongruously requests QSLs via SSA (Sweden) . . . . . WGDXC reports that SU1HM, QRT for traveling assignment, resumes Cairo activity next month and will concentrate on liquidating his QSL backlog.

Oceania — YL KZ5KA at the C. Z. bureau is overburdened by an influx of insufficiently-addressed VR6TC-destined QSLs. The "via Balboa, C. Z." route doesn't work unless "Pitcairn Island" clearly appears on each piece of mail. Kay recommends routing your VR6 mail directly to the island.

Europe — More snafu caused by licensing authorities who reissue still-warm call suffixes: "I receive QSLs and SWL cards addressed to my old call, SVØWD, which I no longer hold. Please be advised that William J. Koster (W8NYG) no longer is the licensee of SVØWD. These reissued calls make for a lot of explaining; when I first received SVØWD many stations claimed that I owed them QSLs for previous QSOs! And the same thing happened in another way when I gave up the call SVØWX in January of '53, for I continued to receive QSLs dated 1954, etc." Bill also signed KR6MN in 1953-'54. The curious distortion of bureaucratic economy that limits SVØ suffix assignments to an overworked 26 is something less than wonderful to behold . . . . . DL4HAB wants attention drawn to the new DL4 QSL Bureau address appearing in last month's "IARU

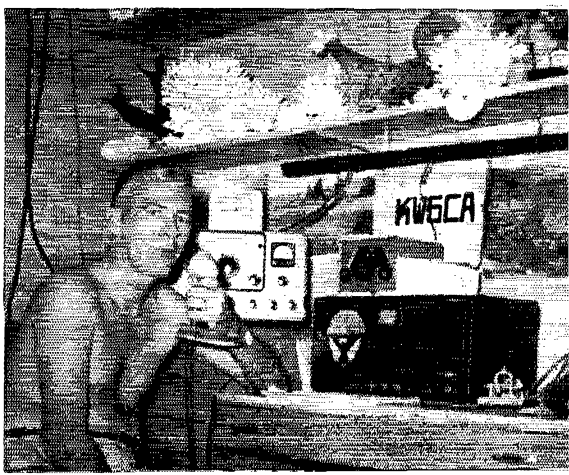
News," also stating that this non-APO route will work, too: c/o MARS Radio DL4HAB, 7425th Air Base Gp., Post Kitchburg, Flugplatz Hahn, Germany.

Hereabouts — Prince Edward Island, the "Utah" of Canadian provinces, now is less rare because of VE1NQ's 20-meter c.w. work. W9LNQ has George's QTH as 31 Admiral St., Charlottetown . . . . Busy VP2LU writes, "Have ordered a thousand more QSLs and send cards on a one-for-one basis. I'm a couple of hundred behind right now but I do the best I can with my limited time. Everyone who works me and QSLs will eventually get a card in return. Stamped self-addressed envelopes are appreciated here more than IRCs as our mail goes back by plane to Florida and is remailed there (so U. S. postage is okay). Also, it would be a good idea if the fellows who do send envelopes would put their calls on them; nothing is more fun than picking up an envelope marked 'John Jones, Cleveland, Ohio,' and then searching through several hundred cards in my Eight file for a Cleveland ham named Jones." Fred piled up some 2100 c.w. and 850 phone QSOs in the 1957 ARRL DX Test but left the phone log in New Hampshire where he was working on it while vacationing. Thus some VP2LU A3 confirmations will be delayed . . . . K2BSM, visiting down Bahamas way, witnessed the avalanche of 1000 QSLs that engulfed VP7NM upon conclusion of this year's ARRL Test. "C.N. says that all QSLs will be answered but that it will take a little time what with some 2500 contacts involved." So *you'd* like to be DX, eh? . . . . W1s DFY EKU FYF HZ RB UED WPO ZDP, W2HMJ, K2s RNV TCD, W3s AEV DLI GKY LEZ, W4s ANE TFB, W5FTP, W6s KG ONK, K6s BZP KYH LVT OHJ TYF VGM, W7s DJU FBD PHO, W8s BF BKP IBX IUA, W9s CFT LNQ UBI YKJ, WØs QGI ZVY, VP3AD, JDXRC, NCDXC, NNRC, OVSV, WGDXC and WIA combine talents to provide these individual items:

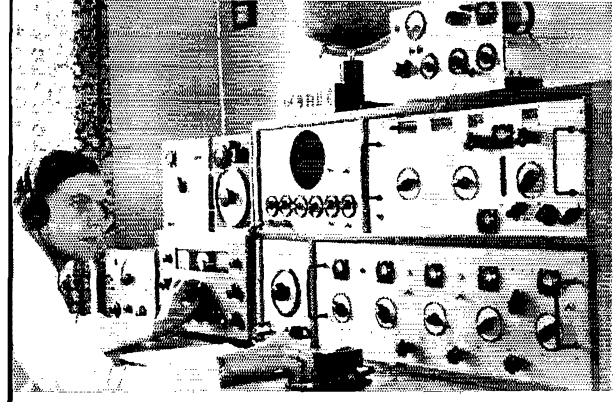
AP2LA, L. Alexander, Rawalli, District Gujranwalla, West Pakistan
ex-**AP2RH**, R. Hargreaves, G3FNF, 37 Thursby Rd., Northampton, England
CN2BS, A. E. Grilliths, American Consulate, Tangier, Tangier Zone, Morocco
FB8CC, P. O. Box 1310, Tananarive, Madagascar
FE8AH, J. Leroux Inspecteur P &T, Douala, Fr. Cameroons
FQ8AP, S. Canivenc (F8SH), Geophysical Center, Ionospheric Section, Box 793, Bangui, Fr. Equatorial Africa
G3FYR/VS9 (to VS9AI)
GB3SP (via RSGB)
HA5AM, Box 185, Budapest 4, Hungary
HH2DX (via WØGDH)
HH2OT (via W4HYW)
HI7s GB LMQ LS TB, Box 78, Sabana de la Mar, D. R.
HK3FV, C. A. Alvarez, P. O. Box 6197, Bogota, Colombia
HP5BI, P. O. Box 1272, Panama City, R. P.
HS1B, P. O. Box 1038, Bangkok, Thailand
JA2BJ, T. Ohno, No. 16-5 Azimazyutaku, Kitaku, Nagoya, Japan
JA4JU, M. Amano, 1982-4 Agarimichi Sakaiminato, Tottori, Japan
K2LGB/VE8, T/Sgt. W. G. Gutormson, 920th AC&W Sqdn., APO 863, New York, N. Y.
KA2JR (via FEARL)
KA8RA, 6921st RGM, Box 292, APO 919, San Francisco, Calif.
KB6BF, c/o CAA, Canton Island
KC4USK, Box 7C, FPO, San Francisco, Calif.
KG1DT, APO 23, New York, N. Y.
ex-**KT1AG** (to CN2BS)
KX6BT, 1253rd AACS Sqdn., APO 177, San Francisco, Calif.
KX6CG, USCG Loran Transmitting Stn., APO 187, San Francisco, Calif.
LZ1BA, T. Dikow, P. O. Box 205, Sofia, Bulgaria
MP4BCE (to W4GNC)
OA4FM, R. Schmalz, Box 1837, Lima, Peru
OH3AA/Ø (via OH3OD or OH3TQ)
OQ5DO, Box 117, Luluabourg, Belgian Congo
OQ5EI (via OQ5GU)
OQ5HP, Box 910, Stanleyville, Belgian Congo
PAØDXE, APO 292, New York, N. Y.
PY2BOQ, Box 22, Sao Paulo, Brazil
PY5QB, L. G. Medeiros, Caixa Postal 240, Blumenau, Sta. Catarina, Brazil
SM2CSA, Bengt Lindberg, P. O. Box 1420, Øjebyn, Sweden
SP1KAA, Szczecin Radio Club, Sw. Wojciecha 12, Szczecin, Poland
SP5GN, Wilcza 16 m. 18, Warsaw, Poland
SP5GX, S. Czarnecki, A. Jagiellonki 4, Zalesie Dolne, Warsaw, Poland
SP7HX, Box 424, Lodz, Poland
SV1AE, A. Socrates, P. O. Box 564, Athens, Greece
SVØFR, E. Ressort, P. O. Box 564, Athens, Greece
ex-**SVØWD** (see text preceding)
SVØWP, Larry Eisler (W3JTC), USASG, APO 206, New York, N. Y.
TF3KG, Kristinn Gudbjornsson, Blonduhlid 13, Reykjavik, Iceland
TI2ES, E. Solano, P. O. Box 30, San Jose, C. R.
UA3SS, W. Nowirowu, Ulica Ralinina, dm. 19 RW4, Stancia Lroblino, Moscow, U.S.S.R.
UM8KAA, W. Milko, 86 Dzerjinkogo St., KW2, Frunze, Kirghiz S.S.R.
UO5AA, G. Walen, Box 1, Kagul, Moldavian S.S.R.
UQ2AB, P. Brastiba, Box 126, Riga, Latvian S.S.R.
VEØNE (via VE1KW)
ex-**VK1VH**, F. van Hulssen, 15 St. Georges Crescent, Ashburton, Vic., Australia
VP1SD, S. D. Thompson, P. O. Box 339, Belize, Br. Honduras
ex-**VP7NG** (to KP4AGR)
VP8BO (via G8FC)
VP9DL (via VP9D)
ex-**VQ3DN-VK7DN** (to VR2CC)
VQ4MHA, K. Singh, Box 93, Nairobi, Kenya
VQ8AR (via VQ8AF)
VE2CC, Fred Carter, Korolevu Beach Hotel, Korolevu, Fiji
VR6TC, T. Christian, Pitcairn Island, So. Pacific (see text preceding)
VS1CZ, Ken de Sousa, 12 Rabey Crescent, Singapore
VS9AG (W/K QSLs via W2ZGB, DJ/DL/DM QSLs via DL7AH)
VS9AI, c/o Meteorological Office, RAF, Khormaksar, Aden
W6SFR/VE8, USCG Loran, APO 677, New York, N. Y.
WØBLV/KG6, J. Starkey, Box 145, Agana, Guam
XE1FV, F. Pasaran. P. O. Box 907, Mexico, D. F., Mexico
XE1RM, J. A. Romero C., Apartado Postal 726, Guadalajara, Jal., Mexico
XE1SZ, Rodrigo Brambila Pelayo, Cruz Verde No. 601, Guadalajara, Jal., Mexico
YI3AA (via YI2AM)
ZB1HMQ, Navy 240, FPO, New York, N. Y.
ex-**ZB2T**, GM3LKG, 10 Windhill Pl., Mansewood, Glasgow S. 3, Scotland
ZD4BV, T. C. Wigg, P. O. Box 3400, Accra, Ghana
ex-**ZD9AA** (to ZD2WAF)
ZK1AU, c/o Radio Stn., Rarotonga, Cook Islands
ZK1BG, D. C. Berry, c/o Survey Dept., Rarotonga, Cook Islands
ZK1BS (via W8VDJ)
ZP5JE (via RCP)
4S7RD, T. Galbraith, SAC, Ekala Transmitters, RAF Negombo, Ceylon
4X4JU (via 4X4GC)
5A1TC, P. O. Box 372, Tripoli, Libya
5A2TF, Box 372, APO 321, Tripoli, Libya

Whence:

Europe — Unhappy but not very surprising news via W5RS: "Received a letter from UP2AS and he signed it 'ex-UP2AS'. He writes that he, with UQ2AN and others, was accused of breaking rules of amateur radio communica-



KW6CA, billed in a gala return engagement on Wake Island, formerly wowed audiences as W4IKC/KW6 and KW6AR. Ivan's gear features Johnson, Hallicrafters and Telrex items and his confirmed countries number 198. Conchology is one of KW6CA's varied interests; a portion of his extensive marine collection is visible here. Wake is booming because, "All planes en route to the Far East, except those on the Aleutians run, stop off at the island." (*Photo via W1VG*)



DL9AU's country status isn't nearly so rare as the quality of his home-built table-top station in Celle. That close-fitting AR-88 is one of Helmut's few concessions to prefabrication. (*Photo via W6ITH/FS7RT*)

FK8AS, 22-year-old meteorologist in Noumea, finds his Harvey-Wells and Hallicrafters ensemble *very* attractive to North American customers on 3.5 through 28 Mc. (*Photo via W1ICP*)

tion and ordered to close down." UAs 3BJ 6UI 9OH 9PL, UC2AA and OK1MB are reported similarly disenfranchised by disciplinary measures we hope are temporary . . . . . Early next month British Boy Scouts activate GB3SP at their International Jubilee Jamboree, Sutton Coldfield, Warwickshire. This encampment commemorates the 100th anniversary of founder Baden-Powell's birth, as well as Scouting's 50th birthday. Thanks, W1UED . . . . . Canadian mariner *VE0NE* was worked by K4IGD while off Portsmouth, England. K4IGD has held W calls 1BTQ 2BTQ 2CLJ 5BTQ 8OQG and 9RFG . . . . . From W4EJP: HAFS (W8KJP) strives to contact all Ohio counties (88) from the Continent . . . . . ON4NC, with over 200 confirmed, seeks assistance in running down EQs 1RX 2L, W4BOW/Iwo, W4FVI/KX6 and HL1BB all worked during 1947-'49 . . . . . G3PU's 160-meter DX score stands at 32 countries worked on all continents, plus eighteen United States and all Yank call areas but Nos. 5, 6 and 7 . . . . . The Azores ex-CS3AC crew writes W2CWK seeking info on the crum who sporadically and illegally signs CS3AC on DX bands. This Yank MARS group engages in delicate negotiations with Portuguese authorities which they hope will lead to reinstatement of hamming privileges, but arrival of spurious CS3AC QSLs won't help matters at all . . . . . Through W1BDI and HB9EU we learn of HA4SA's safe emigration from Hungary. HB9EU also adds comment on Basle canton's relative rarity so far as USKA's H-22 certification is concerned; only HB9s BJ KU and MA perform regularly on DX bands.

Africa — "VQ9HAY is on Seychelles for 18 months, very slow c.w. on several crystal frequencies, and he answers only phone calls well away from his frequency. We hope in time he will get DX-minded. He uses a B2 transmitter-receiver with about 12 watts output." This delicious development via VQ4ERR and W1WPO . . . . . International Geophysical Year activities boom ham radio on every continent. W4LHT finds that F8SH took 2000 QSLs along to the IGY base at Bangui, French Equatorial Africa, where he will operate as *FQ8AP* for the next two years. Serge used the same call at Ft. Archambault a few years ago . . . . . K4IVF advises that ZS6AOI concentrates on QSOing W/K Novice stations around 21,100 kc., 1300 GMT . . . . . First Yank phone on 28 Mc. for ZD2WAF (ex-ZD9AA) is W4TFB . . . . . "WAS is most difficult in world!" exclaims EA9AZ in lines to W5ERY. Rafael now needs only Utah for the honor, seeking the Mormon State via 28,250 or 14,103 kc. around 1800 GMT . . . . . Ws 7FBD and ØQGI agree that Guy of FB8ZZ is back in France . . . . . DXers laboring toward "YL DXCC" can search out OQ5IE, newly ticketed XYL of OQ5GU, now active with c.w. on 10 and 20 meters . . . . . Through RSGB and W1BDI, ZD4BQ designates W9VIN as the first Yank to QSO Ghana on c.w. . . . . Club African items: (NNRC) CR4AS builds a double-con receiver with Italian components and plans a new 807s a.m. rig. . . . (WGDXC) FL8AB says he'll be F8UD again come November. . . . (NCDXC) FE8AE keeps his 50-watt phone handy while awaiting an 813 final; FE8AG contributes local QRM near by.

Asia — AC5PN schedules AC4NC daily at 0700 GMT on 40 meters, according to VU2RM. The Tibetan station rarely uses 20 these days and his rig cannot work 15 (fake 21-Mc. AC4NCs please copy). VU2RM himself, active in Rajahmundry on 7 through 28 Mc., has a 40-watt DX tally of 118/65 and still enjoys W/K QSOs . . . . . VS9AI's first Yank phone contacts were with W9s YSX YSQ WHM and ICL. VS9AD is another Aden entry reported readying for action . . . . . *Newark News* Radio Clubbers specify activity by *HL2AJ*, College of Engineering, Seoul National University, but Korea remains in ITU-FCC Ban List limbo . . . . . VS2DW, via W2RA, pleads for Ala., Fla., Me., Mo., Mont., Dakotas, S. C. and Vt. QSOs. Wonder why . . . . . Swifty of KA2FC is reported Stateside now by W7PHO . . . . . AP2RH, returning to G3FNF, writes: "All my equipment has been taken over by a newcomer to ham radio who hopes to be active shortly with the call AP2LA. My [16-month] stay over here has been a pleasant *one. It has been* a real pleasure to give the boys a 'new' one, especially the Stateside laddies for whose operating ethics I have nothing but the highest praise. Through the medium of your columns may I thank them for the hundreds of FB QSOs! I hope that AP2LA will derive as much enjoyment from our very fine hobby as I myself have." . . . . . HS1B joins HS1s A and MQ in the manufacture of local Bangkok QRM. Arthur writes W1EKU: "I am using mostly 15 meters and worked 40 countries in about 20 days, *many of* them Europeans. This business of being rare DX gets to be a little exasperating at times. I was in much the same situation back in Greece in 1951-'52 but this is much more so! The other night 15 was open to Europe all night long and I sat up until five in the morning before I got so hoarse I could take it no longer. About twelve contacts an hour is all I can average when fighting QRM, QRN and all the break-in stations. I like to sit and rag-chew but that is just impossible when they are stacked ten deep just drooling for an HS contact! It is a little late in the season for 10 and 15 meters to the States and I cannot hear W-land there. The West Coast comes in nicely on 20 but the U. S. East Coast is particularly poor here. Yet I just can't take that 14-Mc. QRM — life is too short!" HS1B plans to replace his long-wire radiator with a cubical quad or two . . . . . Asian notes via the clubs route: (NCDXC) VS2CR expects to visit personally with VE7s, Yank Sixes and Sevens this summer. HS1WR and friends construct a Channel Six television transmitter with a 4-65As final. . . . (NNRC) YA1AH, requesting no QSLs direct, is deemed good for Afghanistan. . . . (JDXRC) W6AM made quite a hit during his visit to the Orient this spring.

Oceania — KX6s BT and CG are fresh Eniwetok entries reported by K6TYF, one of the latter's operators. KX6CG works phone on 20 and 10; KX6BT specializes in 28-Mc. work . . . . . PARA (Philippines) marks its 25th anniversary this year by issuing certifications based on confirmed contacts with 15 different DU stations. W1UED understands that your log transcript will be sufficient if mailed to PARA, 2046 Taft Ave., Pasay City, Luzon, P. I. . . . . ZK1AU, newcomer to Rarotonga, tells W4TFB he anticipates a stay of several years . . . . . VK3AHH packed his bags for IGY travels, leaving WIA *Amateur Radio* DX-editorial duties in the hands of VK2QL . . . . . W1VG has KW6CA's program as 28 Mc., 2230 GMT; 21 Mc., 0230; and 7 Mc., 1030, mostly low-end-of-band c.w. on Mondays . . . . . From the expressive mill of KH6AIK/KG6 (ex-W4JFE): "Man-oh-man, how the DX piles up — not to mention Ws and Ks — when they hear that 'KG6'! Five weeks of operating here have netted me 109 countries and over 500 W/K QSOs. Guam now is represented by at least 25 stations on 14-, 21- and 28-Mc. phone with a few c.w. steadies like myself, K2ILQ, K6TSQ and W9NTJ, all '/KG6' on 14 and 21 Mc. We are working on a doctor to get his ticket for operation on Saipan. W6FVK is off to KG6IG on Chichi where he'll have a ball on 14- and 21-Mc. phone with a T350-XM and BC-610F, plus an Elmac rig on 28 Mc. Trust Territory activity is improving with more coming up for Truk Island." Frank has fun dodging ham-band birdies generated by half a hundred Navy transmitters each feeding up to 35 kw. into an antenna farm only a mile away. And KG6AGS works 20-meter phone next door

(*Continued on page 156*)

Happenings of the Month

BOARD MEETING

The Board of Directors of the American Radio Relay League held its annual meeting in Hartford, Connecticut, on May 17, 1957. In regulatory matters, the principal action was a decision to file League comment with FCC in opposition to the withdrawal of the 27-Mc. band from amateur use. The Board also directed the filing of an extensive statement on behalf of the amateur radio service in Docket 11997, which is an FCC study of the spectrum from 25 to 890 Mc.

Authorization was granted for the holding of a 1958 ARRL National Convention in Washington, D. C., under the sponsorship of combined Washington area clubs, with details subject to further approval by the Executive Committee. The Board also commended the Chicago Area Radio Club Council for its fine progress so far in preparation for the 1957 National Convention in Chicago over Labor Day weekend.

The Board transferred the state of New Mexico from the West Gulf to the Rocky Mountain Division. It ordered studies of the operation of the QSL Bureau system, of possible specific duties for vice-directors, and of the distribution of membership between Eastern and Western New York sections. The Board continued the usual authorizations for travel reimbursement for ARRL field officials in furtherance of League organizational aims.

In view of expanding operations at ARRL Hq., resulting from continuing League growth, the Board established a "housing committee" to study the general problem of suitable headquarters office facilities. Resolutions were adopted commending George Grammer for outstanding achievements as ARRL Technical Director, David H. Houghton upon completion of 35 years' service and Chief Accountant Alice V. Scanlan upon retirement after 28 years' service. The Board also again expressed its thanks to the Field Engineering & Monitoring Division of FCC for particular cooperation with the amateur service. The Hq. was asked to provide more information on radioteletype operation in *QST* and the *Handbook*, and to publish a ten-year index of TVI articles in *QST*.

Minutes appear at the end of this department.

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.

NATIONAL CONVENTION PROGRESS

Following up on page 56 of June *QST*, which contained news of the 1957 ARRL National Convention in Chicago on Labor Day weekend,

The ARRL Board of Directors and League officials at a luncheon recess during the meeting in Hartford on May 17. *Seated, l. to r.:* 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; Vice-President Noble; New England Director Chaffee; Rocky Mountain Director Maer; Great Lakes Director Brabb; Central Director Doyle. *Standing, l. to r.:* Southeastern Director Born; Counsel Quayle B. Smith; Technical Director Grammer; Dakota Director Gowan; Hudson Director Cooke; Roanoke Director Anderson; West Gulf Director Payne; Atlantic Vice-Director Badgett; Atlantic Director Crossley; New England Vice-Director Baker; Assistant Secretary Williams.

here are some additional highlights of program plans as they have developed:

Banquet seats will be numbered, with ten at a table. Clubs and groups who wish to sit together should, therefore, purchase convention registrations promptly in a single block. Make remittance payable and mail to the Treasurer, Chicago Area Radio Club Council, Inc., P. O. Box 6797, Chicago, Ill.

J. A. McGregor, W8DUA, of Battle Creek, Mich., Regional Warning & Communications Officer of the FCDA, will be one of the principal speakers at an AREC and RACES forum. Also at the forum will be George Hart, W1NJM, National Emergency Coordinator of the ARRL, and F. E. Handy, W1BDI, ARRL Communications Manager. All of the speakers will discuss the AREC and RACES programs in relation to civil defense planning. On display outside the hotel will be one of Chicago's mobile communications centers, a completely self-contained bus with provisions for maintaining defense communications for the entire city of Chicago.

Army and Air Force MARS will be represented with a display room containing the latest in military communications gear. This group also plans meetings at which there will be discussions of the MARS program.

An ARRL forum will be held on Sunday afternoon. Principal speakers will be Goodwin L. Dosland, WØTSN, League President, who will speak on "Amateur Radio in the Public Interest, Convenience and Necessity," and A. L. Budlong, W1BUD, ARRL General Manager, whose subject will be "The Amateur and the 1959 International Radio Conference." A general discussion will follow, with the speakers answering questions from the floor on ARRL activities.

The Young Ladies Radio League convention, which is to be held simultaneously with the general conclave, will have as its high light a luncheon and forum Saturday afternoon in the Crystal Ballroom. Guest of honor and principal speaker will be Mary Burke, W3CUL, winner of the 1956 Edison Public Service Award. Other speakers will include Betty Frederick, W3PVH, YLRL President, and Eleanor Wilson, W1QON, YL Editor of *QST*. YLRL activities will include a spaghetti supper for all licensed YLs on Friday night, a trip to Chinatown for dinner on Saturday night, and a sight seeing boat trip along Chicago's lake front on Sunday afternoon.

Watch August *QST* for a complete story on convention plans and program.

QST ARTICLE AWARDS

The Executive Committee has announced its selection of three outstanding articles which appeared in *QST* during 1956, and awarded the authors cash prizes of $300, $200, and $100. The judges were unanimous in choosing for the top spot the January article, "*LONG*, Long Yagis," by James A. Kmosko, W2NLY, and Herbert G. Johnson, W6QKI. For the second award, the Committee picked the operating-fundamentals article in the November issue, "Your Novice Accent," by Keith S. Williams, W6DTY. That November issue also carried another prize story — the third award was made to E. T. Bishop, K6OFM, for "The Wonder-Bar Antenna."

1957 EXAMINATION SCHEDULE

The Federal Communications Commission will give Extra and General Class amateur examinations during the second half of 1957 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 5.
Amarillo, Texas: September 11.
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 through Friday. When code test required, between 8:30 A.M. and 9:30 A.M.
Beaumont, Texas, 301 P. O. Bldg.: By appointment.
Birmingham, Ala.: September 4, December 4.
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 5, December 5.
Dallas, Texas, 500 U. S. Terminal Annex 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, 9 A.M.
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 11.
Hilo, T. H.: October 15.
Honolulu, T. H., 502 Federal Bldg.: Monday through Friday, 9 A.M.
Houston, Texas, 324 U. S. Appraisers Bldg.: Tuesday and Friday.
Indianapolis, Ind.: Sometime in August and November.
Jackson, Miss.: December 4.
Jacksonville, Fla.: October 26.
Jamestown, N. D., October 9, 9 A.M.
Juneau, Alaska, 6 Shattuck Bldg.: By appointment.
Kansas City, Mo., 3100 Federal Office Bldg.: Friday, 8:30 A.M.
Knoxville, Tenn.: September 18, December 18.
Lihue, T. H.: October 23.
Little Rock, Ark.: August 7, November 6, 1:00 P.M.
Los Angeles, Calif., 1431 Federal Bldg.: Wednesday, 9 A.M. and 1 P.M.
Louisville, Kentucky: Sometime in November.
Memphis, Tenn.: July 10, October 3.
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 8, November 7.
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 23, October 15.
Omaha, Nebr.: Sometime in July and October.
Philadelphia, Pa., 1005 New U. S. Customhouse: Monday through Friday, 8:30 A.M. to 2 P.M.
Phoenix, Ariz.: Sometime in July and October.
Pittsburgh, Pa.: Sometime in August and November.
Portland, Maine: October 8.
Portland, Ore., 507 U. S. Courthouse: Friday, 8:30 A.M.
Roanoke, Va.: October 5.
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 14, December 14.
San Antonio, Texas: July 26, November 7.
San Diego, Calif., 15-C U. S. Customhouse: Wednesday, by appointment.
San Francisco, Calif., 323-A Customhouse: Friday, 9 A.M.
San Juan, P. R., 323 Federal Bldg.: Thursday, and Monday through Friday at 8 A.M., if no code test required.
Savannah, Ga., 214 P. O. Bldg.: By appointment.
Schenectady, N. Y.: September 11-12, December 4-5, 9 A.M. and 1 P.M.
Seattle, Wash., 802 Federal Office Bldg.: Friday, 9 A.M.
Sioux Falls, S. D.: September 10, December 10, 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 13, November 13.
Tucson, Ariz.: Sometime in October.
Wailuku, T. H.: October 18.
Washington, D. C., 104 Briggs Bldg., 22 and E Sts., N. W.: Tuesday and Friday, 8:30 A.M. to 5 P.M.
Wichita, Kansas: Sometime in September.
Williamsport, Pa.: Sometime in September and December.
Wilmington, N. C.: December 7.
Winston-Salem, N. C.: August 3, November 2.

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.

MINUTES OF 1957 ANNUAL MEETING OF THE BOARD OF DIRECTORS

THE AMERICAN RADIO RELAY LEAGUE, INC.

May 17, 1957

1) Pursuant to due notice, the Board of Directors of The American Radio Relay League, Inc., met in annual session at the Statler Hotel, Hartford, Conn., on May 17, 1957. The meeting was called to order at 9:35 A.M. EDST, with President Goodwin L. Dosland in the Chair and the following directors present:

P. Lanier Anderson, jr., Roanoke 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
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; Percy C. Noble, Vice-President; A. L. Budlong, General Manager. Also in attendance, at the invitation of the Board as non-participating observers, were Atlantic Division Vice-Director Charles O. Badgett, and New England Division Vice-Director Frank L. Baker, jr. There were also present Treasurer David H. Houghton, Technical Director George Grammer, Assistant General Manager John Huntoon, and Assistant Secretary Perry F. Williams.

2) Without objection, ORDERED that the reports of the Finance, Membership & Publications, and Merit & Awards Committees be deferred for consideration later in the meeting.

3) On motion of Mr. Roberts, unanimously VOTED that the Minutes of the 1956 Special Meeting of the Board of Directors are approved in the form in which they were issued by the Secretary.

4) On motion of Mr. Reid, unanimously VOTED that the annual reports of the officers to the Board of Directors are accepted and the same placed on file.

5) At this point, 9:42 A.M., Directors James P. Born, jr., of the Southeastern Division, John H. Brabb of the Great Lakes Division, and John G. Doyle of the Central Division, and Mr. Quayle B. Smith of the General Counsel's office entered the meeting.

6) Mr. Canfield, as a member of the National TVI Committee, reported that the Committee had not met and had no report. Mr. Brabb, as Chairman, read the report of the Planning Committee. Whereupon, without objection, ORDERED that the report of the Planning Committee is accepted and the same placed on file.

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.

7) On motion of Mr. Engwicht, unanimously VOTED that the annual reports of the Directors to the Board of Directors are accepted and the same placed on file.

8) At this point, supplementary oral reports were rendered by the officers of the League, during the course of which General Counsel Paul M. Segal entered the meeting, at 9:58 A.M. At the request of the Board, the General Manager discussed frequency-allocations matters, pending FCC dockets 11994 and 11997, and the status of preparations for the 1959 International Telecommunications Conference.

9) The Board was in recess, during the above discussion, from 10:42 A.M. until 10:53 A.M.

10) On motion of Mr. Crossley, unanimously VOTED that the General Manager of the League is directed to file in opposition to Docket 11994, in accordance with his recommendations.

11) On motion of Mr. Canfield, unanimously VOTED that the General Manager is directed to make a filing in connection with Docket 11997, in accordance with his recommendations

12) Moved, by Mr. Crossley, that the ARRL Board go on record as approving the petition of USCDARA to FCC for long-range frequencies in the 80-, 40-, and 20-meter bands for RACES operation and so notify the FCDA at Battle Creek and USCDARA Chairman of this action. But, after discussion, on motion of Mr. Brabb, unanimously VOTED that the matter he laid on the table.

13) On motion of Mr. Born, unanimously VOTED that the Board now discuss the subject of reciprocal licensing. After discussion, on motion of Mr. Brabb, unanimously VOTED that the ARRL continue its policy of encouraging reciprocal operating agreements between the United States and other countries.

14) On motion of Mr. Born, unanimously VOTED that the Board now discuss frequency-allocations matters. But, after discussion, on motion of Mr. Brabb, VOTED that the matter be tabled for consideration later in the meeting.

15) Moved, by Mr. Payne, that By-Law 25 of the League

Governor Raymond Gary of Oklahoma signing the license-plate bill which authorizes call-letter tags in lieu of the numbered plates for mobile hams. Looking on are State Senator Basil Wilson; Joe McDonald, W5CCV; SCM Ewing Canaday, W5GIQ; SEC Ray King, W5LXH; Representative Tom Stevens. Governor Gary recently wrote of hams, "I know of no group which is more dedicated than yourselves to a spirit of cooperation and help for others everywhere."

Governor Stephen L. R. McNichols signing the license-plate bill for the state of Colorado. In the usual order, William McNichols, secretary to the chief executive; Governor McNichols; Frank Wallace, KØEBV; John Flink, WØVYP. The two hams were leaders in the legislative campaign, successfully carried through both houses of the legislature. A most persuasive argument was a display of sample plates from a dozen other states.

be amended to transfer the state of New Mexico from the West Gulf Division to the Rocky Mountain Division. After discussion, moved by Mr. Doyle that the motion be amended to provide that this matter be referred to the Planning Committee; but there was no second, so the motion to amend was lost. After further discussion, on a point of order raised by Mr. Maer, as to whether sufficient notice had been given to require only a two-thirds vote for adoption, RULED by the Chair that, prior notice not having been given by a director, a ¾ vote of the directors present is required for amendment. The yeas and nays being ordered, the question was decided in the affirmative: whole number of votes cast, 15; necessary for adoption, 12; yeas, 15; nays 0. All the directors voted in the affirmative, except Mr. Reid, who abstained. So, the By-Law was amended.

16) The Board recessed for luncheon at 12:05 P.M., reconvening at 1:31 P.M., with all directors and other persons hereinbefore mentioned in attendance, except Director Doyle.

17) On motion of Mr. Crossley, unanimously VOTED that the Board instructs the ARRL Contest Rules Committee to continue making examination of the rules so as to promote best relations with contest participants.

18) Moved, by Mr. Crossley, that the third sentence of By-Law 12 be amended by striking the word "twenty" and substituting therefor the word "sixty." After discussion, the yeas and nays being ordered, the question was decided in the affirmative: whole number of votes cast, 15; necessary for adoption, 12; yeas, 15; nays, 0. All the directors voted in the affirmative, except Mr. Doyle, who was absent. So, the By-Law was amended.

19) Moved, by Mr. Crossley, that the Board instructs the Membership & Publications Committee to make a rigid examination of all League publications with special thought of improving the material contained. Special reference is made to the tube tables in the *Handbook*. If this Committee has a recommendation, it should be passed on to the editors at once, so as to expedite the improvements. But there was no second, so the motion was lost. During the course of this matter, Mr. Doyle entered the meeting at 1:43 P.M.

20) Moved, by Mr. Crossley, to amend or correct By-Laws 1A1 by striking the words "either an amateur radio station license or." After discussion, the yeas and nays being ordered, the question was decided in the negative: whole number of votes cast, 16; necesary for adoption, 12; yeas, 1; nays, 15. All the directors voted in the negative, except Mr. Crossley, who voted in favor. So the motion to amend was rejected.

21) Moved, by Mr. Crossley, to rewrite By-Law 1A1 in such a manner as to not infer that a licensed amateur cannot pay his League membership for longer than a year at a time. RULED, by the Chair, that the motion is out of order inasmuch as it does not propose specific language to amend. On further motion of Mr. Crossley, unanimously VOTED that this matter is referred to the Planning Committee for study and recommendation.

22) Moved, by Mr. Crossley, that the Board instruct the Secretary, in the name of the League, to make a formal filing with FCC favoring a restriction in the 2-meter band (144–148 Mc.); that only c.w. operation be permitted in the lowest 100 kc. of that band. But, after discussion, Mr. Crossley, with the permission of his second, withdrew the motion, inasmuch as the report of the Planning Committee had already dealt with this subject.

23) Moved, by Mr. Crossley, that the Board establish a "Student Grade" of ARRL membership much like the similar grade established by engineering societies. This membership to be available for high-school students and others who, at the time of each yearly application for membership, shall not have reached their eighteenth birthday. This membership shall be limited to not longer than 3 years and the applicant must be a licensed operator of Novice grade or higher. This grade of membership shall be at the rate of $2.00 per year, and cannot be used in connection with the family or affiliated-club rates. Eligibility to the Full membership, of course, is not to be denied, if eligible, but while a Student Grade the member shall have no voting rights in ARRL elections. But there was no second, so the motion was lost.

24) Moved, by Mr. Crossley, that a 1958 National ARRL Convention be authorized under the sponsorship of combined clubs of the Washington, D. C. area according to the letter filed by the Secretary of the Washington Mobile Radio Club, Inc. Without objection, ORDERED by the Chair that this matter be laid on the table pending a study by the General Counsel of the Articles of Incorporation of The Radio Amateur National Convention, Inc.

25) Moved, by Mr. Crossley, that the Board make an investigation concerning the service being rendered by the ARRL QSL Bureau and the Call Area Managers to determine as to whether this service can be improved. After discussion, on motion of Mr. Maer, unanimously VOTED that the motion be amended by striking the text and substituting therefor the following: "That the Planning Committee make a study of the ARRL QSL Bureau System with a view to lessening the work imposed on the individual managers, while maintaining the same high standards of service, and report the results of such study to the Board at its next annual meeting." The question then being on the motion as amended, the same was unanimously ADOPTED.

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

> WHEREAS, The American Radio Relay League is a corporation representing the radio amateurs mainly of the U. S. and Canada; and

WHEREAS, holding the Annual Board of Directors Meeting at Hartford every year, never honors other sections of the country; and,

WHEREAS, for the greater value of joining hands with the rank and file of amateurs of other sections:

Therefore, BE IT RESOLVED: that it is the sense of this Board, that no more often than once in two years the Board should be receptive to invitations away from the New Engand area for the holding of the Annual Board Meeting.

27) Moved, by Mr. Crossley, to adopt the following Resolution:

WHEREAS, the League through its Board authorizes the holding of national ARRL conventions, and

WHEREAS, no provision has ever been made for directors out of the division in which it is being held to be encouraged to attend, which would enhance the importance of the convention.

Therefore, BE IT RESOLVED that, this Board go on record to encourage all directors attendance at the national conventions by authorizing payment of one-half total expenses of each director attending.

Moved, by Mr. Joos, to amend the motion by striking from the text the words "one-half." After discussion, on motion of Mr. Maer, unanimously VOTED that the matter is laid on the table.

28) Moved, by Mr. Crossley, that Article 8 of the Articles of Association be amended to provide as follows: That the Vice-Director having been duly-elected by the electorate of the Division shall represent that Division at the Board Meeting instead of the Director when the duly-elected Director is incapacitated due to illness, accident, or injury, if the Director or his physician shall have filed with the Secretary such positive statement before the start of the Board of Directors' meeting being held on proper notice. The Vice-Director shall serve instead of the duly-elected Director and shall have all expenses paid as though the Director, and shall have all rights and responsibilities of the elected Director until the normal return to his home, after which all responsibilities shall return to the elected Director. Nothing herein shall be interpreted that this temporary transfer of responsibilities shall be made in any other time or for any other reason. But, after discussion, RULED, by the Chair, that the motion is out of order because of lack of proper advance notification of intent to amend the Articles.

29) Moved, by Mr. Crossley, to adopt the following Resolution:

WHEREAS, The Articles of Association definitely define the responsibilities of the Board of Directors and also the Executive Committee; and

WHEREAS, Article 5 designates that the Corporation shall be governed by the Board (Webster defines govern — to direct and control; to restrain; manage; to be a rule, or law, for —); and

WHEREAS, Article 7 designates that between Board meetings the affairs of the Corporation shall be administered by the Executive Committee, etc.: (Webster defines administer — to manage or conduct, as public affairs, direct the execution, application or conduct of); and

WHEREAS, It is the belief of this Board that the Board's responsibility for the setting and/or establishing League policy is complete; and

WHEREAS, The Executive Committee has for some time been authorizing the answering of, or making filings in the name of the League without first having referred the matter or without having consulted the Board by mail, phone, telegraph or any other means: Therefore

Be It Resolved, That this Board now in annual meeting record objection to this practice and do hereby direct the present and future Executive Committees to desist in this type of action. Such actions are policy making and unless policy has been previously established or ordered by the Board in meeting or by mail, phone or telegraph vote, such determination shall be obtained before action can be taken by the Executive Committee. But, after discussion, on further motion of Mr. Crossley, unanimously VOTED that the matter be laid on the table.

30) Moved, by Mr. Crossley, that the matter of the responsibilities of the General Manager and President, to provide for an Executive Secretary, Public Relations Secretary, or whatever is suitable, be referred at once to the proper committee of the Board for consideration and that this Board committee is instructed to make its report to this Board before its final adjournment of this meeting, so that action may be taken. But, after discussion, the motion was rejected.

31) On motion of Mr. Cooke, unanimously VOTED that the Editor of *QST* be instructed to publish either by supplement or in an issue of *QST* as soon as practicable, a ten-year index of all TVI articles which have appeared in *QST* during that period.

32) Moved, by Mr. Cooke, that the General Manager petition the FCC to revise the radio amateur regulation controlling five-year operator-and-station-license renewals to eliminate the current necessity for radio amateurs to carry renewal cards. But, after discussion, during which the General Manager indicated he will be in touch informally with the Commission on this matter, Mr. Cooke, with the permission of his second, withdrew the motion.

33) On motion of Mr. Cooke, unanimously VOTED that the Communications Manager be requested to conduct a study of the membership numerically and the territorial areas of the eastern New York (ENY) and western New York (WNY) sections, presenting his findings and views to the Board at its next meeting on the feasibility of revising sectional boundaries between these ARRL sections to attain a more balanced membership and area of responsibility by elected section officials and appointment leaders, together with the several service networks.

34) Moved, by Mr. Cooke, that the Technical Editor of *QST* undertake a review of the problems created by SSSB techniques in operating and adjusting such equipment and receiving techniques, publishing positive solutions in *QST* at an early date. After discussion, on motion of Mr. Maer, VOTED to amend the motion by striking the text and substituting therefor the following: "That the Board urges the Technical Department to continue to emphasize the proper techniques of adjustment of amateur transmitters and receivers." Mr. Brabb requested that he be recorded as voting against the amendment. The question thereupon being on the motion as amended, the same was ADOPTED; Mr. Brabb requested that he be recorded as voting opposed.

35) Moved, by Mr. Denniston, that the ICAO phonetic alphabet be adopted as standard by the ARRL. But, after discussion, the motion was rejected.

36) On motion of Mr. Denniston, after discussion, unanimously VOTED that the General Manager be instructed to continue efforts to obtain increased operating privileges in the former amateur 160-meter band

37) The Board was in recess from 3:36 P.M. until 3:50 P.M.

38) Moved, by Mr. Engwicht, that the Board amend the Articles of Association so as to provide that there shall be at some time during the fourth quarter of the year a regular meeting of the Board of Directors. After discussion, moved by Mr. Denniston to amend the motion by deleting the words "fourth quarter" and substituting therefor the words "last half of the year"; but there was no second, so the motion to amend was lost. Thereupon, the question being on the original motion, the same was rejected.

39) On motion of Mr. Engwicht, VOTED that the Board amend the Articles of Association to provide that the Executive Committee shall have no powers either in the establishment of policy or in representing the League in its relations with the Federal regulatory authority.

40) Moved, by Mr. Engwicht, that the Board amend the Articles of Association to provide additional specific duties for vice-directors (such as liaison between the director and the field officers of the Communications Dept.). After discussion, on motion of Mr. Gowan, VOTED that the matter be laid on the table.

41) Moved, by Mr. Brabb, that Article 7 of the Articles of Association be amended in the following manner: In line 15 of the Article as published in the August 1, 1956 revision, delete the words "may in its discretion" and substitute therefor the word "shall"; and after the words "determination or decision" insert "all matters other than administrative." Whereupon, after extended discussion, the yeas and nays being ordered, the question was decided in the negative: whole number of votes cast, 16; necessary for adoption, 12; yeas, 7; nays, 9. Those voting in the affirmative were Messrs. Born, Brabb, Crossley, Denniston, Doyle, Engwicht, and Joos. Those voting opposed were Messrs. Anderson, Canfield, Chaffee, Cooke, Gowan, Maer, Payne, Reid, and Roberts. So, the motion to amend the Articles of Association was rejected

42) On motion of Mr. Engwicht, unanimously VOTED to lift from the table his proposal to amend the Articles of Association to provide additional specific duties for vice-directors. On motion of Mr. Chaffee, unanimously VOTED to amend the motion to provide that this matter is referred to the Planning Committee for study and report to the Board. The question then being on the motion as amended, the same was unanimously ADOPTED.

43) On motion of Mr. Engwicht, Mr. Reid abstaining, unanimously VOTED that the General Manager be instructed to ask the FCC for an increase in the power limit in the 420-Mc. band to 1 kw. if it can be determined that such an increase will not interfere with other services sharing this band. If a blanket increase is not feasible, for technical reasons, consideration should be given to a power increase for that part of the band used in the continental U. S.

44) On motion of Mr. Maer, the following Resolution was unanimously ADOPTED:

WHEREAS, George Grammer, W1DF, Technical Director of The American Radio Relay League, Inc., has made many outstanding contributions to the radio and electronics art;

BE IT RESOLVED that the Board of Directors, meeting in Hartford, Conn., May 17, 1957, expresses the sincere and deep appreciation of all radio amateurs for his fine work in this field and his devotion and loyalty to ARRL.

45) At this point, the General Counsel reported to the Board the results of his study of the proposed corporate setup of a group to conduct a national convention in Washington, D. C., in 1958. After discussion, on motion of Mr. Maer, unanimously VOTED to amend the original motion for the approval of a national convention by adding that this is also subject to the approval of the Executive Committee. Whereupon, the question being on the motion as amended, the same was unanimously ADOPTED.

46) On motion of Mr. Reid, the following Resolution was unanimously ADOPTED:

WHEREAS, Alice V. Scanlan will retire from the Headquarters staff of The American Radio Relay League, Inc., during 1957, and

WHEREAS, Miss Scanlan has served the League, as chief accountant, for more than twenty-eight years with loyalty, fidelity and devotion;

BE IT RESOLVED that the Board of Directors, meeting in Hartford, Connecticut, on May 17, 1957, expresses its deep appreciation for Alice V. Scanlan's service to amateur radio and the League, and its sincere good wishes for her continued health and happiness.

47) On motion of Mr. Doyle, unanimously VOTED that, pursuant to paragraph 3 of Article VII of the Pension Trust Agreement, the General Manager is authorized to continue, at his discretion, the employment of chief accountant Alice V. Scanlan beyond the nominal retirement date of June 2, 1957, as necessary, in order to provide adequate indoctrination of replacement personnel.

48) On motion of Mr. Roberts, unanimously VOTED that the General Manager is hereby authorized to reimburse the division directors for actual expenses incurred by them during the year 1957, in the proper administration of ARRL affairs in their respective divisions up to amount as follows:

Canadian Division Director	$1000
Atlantic Division Director	1500
Central Division Director	2000
Dakota Division Director	800
Delta Division Director	900
Great Lakes Division Director	800
Hudson Division Director	800
Midwest Division Director	900
New England Division Director	1000
Northwestern Division Director	1000
Pacific Division Director	1500
Roanoke Division Director	600
Rocky Mountain Division Director	1000
Southeastern Division Director	1300
Southwestern Division Director	1200
West Gulf Division Director	1200

49) 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 1957, but not to exceed amounts as follows:

Planning Committee	$2000
Finance Committee	2000
Membership & Publications Committee	1000
Merit Award Committee	750

50) 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 1957 a total amount not to exceed $5000 under terms prescribed by the Communications Manager following the general pattern established by the Board.

51) On motion of Mr. Cooke, 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 1957 a total amount not to exceed $5000, under terms prescribed by the Communications Manager following the general pattern established by the Board.

52) On motion of Mr. Gowan, unanimously VOTED that the General Manager is hereby authorized to pay, during the period between January 1, 1958 and the 1958 meeting of the Board, expenses against usual authorizations for administrative and committee operations in no greater amounts than 1957 authorized amounts.

53) At this point, Mr. Roberts read the report of the Finance Committee. Whereupon, on his motion, unanimously VOTED that the report of the Finance Committee is adopted and that the General Manager is instructed to carry out its provisions.

27-MC. DATE POSTPONED

We reported last month that the final date for comment on FCC's proposal to take the 27-Mc. band away from amateurs was June 10. This date has now been extended to September 3, 1957.

54) On motion of Mr. Brabb, unanimously VOTED that the report of the Planning Committee be adopted in the language as read.

55) At this point, Mr. Maer, as Chairman, reported that the Membership & Publications Committee had no report and no recommendations. Mr. Cooke requested that the report of the Merit & Awards Committee be deferred until after dinner; without objection, the Chair so ordered.

56) On motion of Mr. Canfield, unanimously VOTED that the National TVI Committee be dissolved.

57) On motion of Mr. Born, 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, 1957 to June 2, 1958: Arthur L. Budlong, George Grammer, and David H. Houghton

58) The Board at this point proceeded to the election of three additional members to the Executive Committee. On motion of Mr. Roberts, unanimously VOTED to act on the three elections separately. The Chair thereupon announced the opening of nominations for the election of one member to the Executive Committee. Mr. Engwicht nominated Mr. Roberts; Mr. Born nominated Mr. Cooke. On motion of Mr. Brabb, unanimously VOTED that the nominations be closed. The Chair appointed Messrs. Q. B. Smith and George Grammer as tellers. The tellers announced the result of the ballot as follows: for Mr. Cooke, 9 votes; for Mr. Roberts, 7 votes. Whereupon the Chair declared Mr. Cooke elected as a member of the Executive Committee.

59) The Chair announced the opening of nominations for a second additional member of the Executive Committee. Mr. Anderson nominated Mr. Houghton. On motion of Mr. Roberts, unanimously VOTED that the nominations be closed. Whereupon ORDERED by the Chair that the Secretary cast one ballot electing Mr. Houghton as a member of the Executive Committee.

60) The Chair announced the opening of nominations for a third additional member of the Executive Committee. Mr. Brabb nominated Mr. Maer, but Mr. Maer withdrew his name and nominated Mr. Handy. On motion of Mr. Chaffee, unanimously VOTED that the nominations be

(Continued on page 162)

Making WAS Is Easy . . .

If You Know How!

BY NEIL A. JOHNSON*, W2OLU

IT ALL BEGAN at Madison Square Garden, late one winter afternoon. Most of the crew had drifted across the street for a quick bite at the Garden Cafeteria. The rest of the television crew had brought along coffee and sandwiches . . . you guessed it: 'twas lunch time. Being Sunday, our evening hockey game was still a few hours away. The TV gear had been set up and fired a few hours before, and was purring away in fine style . . . sync generators and all cameras percolating OK with no trouble in sight. Hence, the good natured "bull" session that got under way in the television control room under the stands.

"What do you think, Neil," asked Rico, "win yourself a free receiver just for working WAS . . . think you'll ever get your WAS?" Other hams from the group took up the cudgel and began to work on OM Johnson: "Here a novice can work 48 states without any trouble, but how many have you got, OM?" Bud swore up and down that he had worked all 48 states back in the early 40s with only 15 watts input to a crystal oscillator. The most bitter blow of all came when Stan offered up that he had worked nearly that many on the old 5-meter band, that is, before the war . . . and so it went.

It all got me to thinking. How come those young squirts, some of them hardly into high school, can work all states, but I'm lucky if I've got 30 or 40. Why?? Got to figuring it out on the "D" train while subwaying home that night. To make a long story short, it looked

like OM Johnson would sure have to get on the ball and do something; that is, if I wanted to save the family honor.

A quick check through the stack of pasteboards in the QSL file at home showed that I had actually received QSL cards from 31 states. Later on the same evening I started checking through two complete logs; this was no easy job! But it was with a sigh of both relief and accomplishment that I doused the light and hit the sack around 2 A.M. the next morning — I had actually worked 36 states!! Three-fourths of the entire United States. Gee, dad!

The next few weeks found me calling "CQ Wyoming," "CQ Vermont," and just plain CQ, interspersed with listening for those missing states. Nothing akin to magic happened, except that the band went dead early one night by chance — most of my work is on 40 meters — so I set out to checking up on the facts & figures: Why did some states seem to fall into my lap, over and over, while others were so elusive?? Quickly I doped out that the seaboard states, especially those along the East and West coasts, were pretty well stocked with people . . . and also with radio amateurs. All rumors to the contrary, radio amateurs still are people!

Hams were found to be plentiful where the general population ran high, along the sea coasts, lakes, rivers and other easy means of transportation. The least ham activity was found in those states with a low population figure, the Western mountain states in particular. The upper three New England states and Delaware were also found to fit into this category.

I used my odd moments to good advantage by inveigling some of my previous contacts to QSL. One transient W1 from Rhode Island had to be chased clear down to Texas (via the U.S. mails) before I got my verification card from "little Rhody." Another card arrived from a Naval Reserve station in Phoenix, accompanied by a short note from the skipper of the unit, informing me that Joe, the op I worked for my first Arizona QSO, had been called into active duty and was now overseas . . . and so it went.

Some of the reluctant QSLs were pried loose by the Dale Carnegie method: Win friends and influence people. One ham, my sole Iowa QSO up to that time, worked in a BC station according to the remarks column in my log. So along with my card went a nice letter telling him all about our setup at work: the type equipment used, our working conditions, the hours, the pay and so on . . . he QSL'd! In other setups I wrote sad, but real sad letters. Some of my outpourings would make an old-line credit manager turn green with envy. . . . I coaxed, I cajoled, I pleaded, I coaxed . . . but it worked! In other cases I wrote the guy, merely outlining the situation, and — well, people sometimes surprise you with just plain kindness. My Vermont QSL, surprisingly enough, came from a visiting W3 from Delaware who was on his summer vacation at the time of QSO. The state of Delaware, ironically, had been unworked up to that time. By the dint of much careful listening I managed

(*Continued on page 168*)

*10 North 10th Ave., Mt. Vernon, N. Y.

W7DET

Seattle, Washington

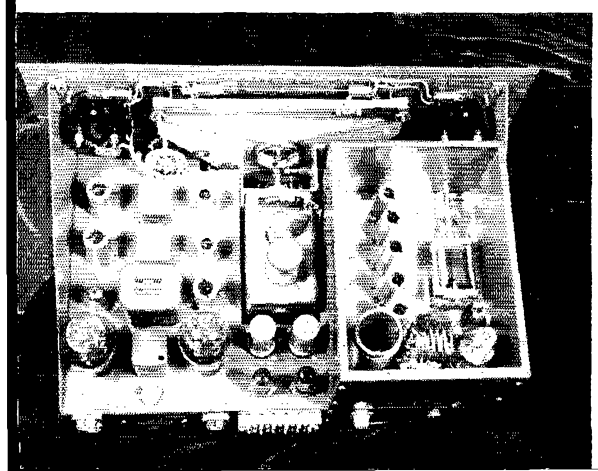
THAT W7DET has trouble convincing people this is a homebuilt station, not commercially assembled (except for the receivers), is easy to understand. W7DET reports that he was a year and a half in putting it together, doing all his own work in a very modestly-equipped basement workshop. We don't plan to go into extensive detail on the circuit details, which are more or less standard, but we do believe that there are many mechanical ideas here that some of you might find interesting enough to incorporate in your own layouts. What follows is a very brief description of the various units, and the photographs will tell the rest of the story.

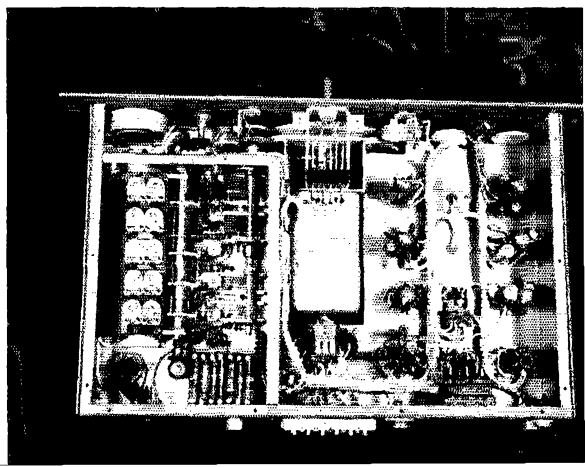
The complete station, pictured above, is built into a specially constructed desk top console, fabricated from stock angle iron and aluminum. The power supplies and modulator (the rear of which are pictured at the bottom of the next page) are attached behind the desk and may be serviced either through the desk's knee well or from the rear. The station operates on all phone and c.w. bands from 80 through 10 meters.

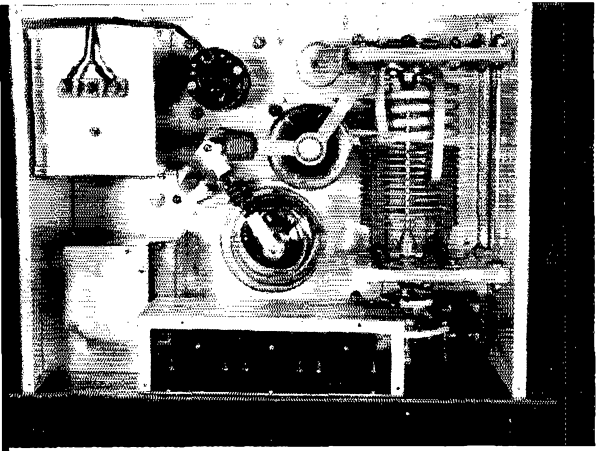
At the operating position, the 75A-2 is directly in the center of the layout, with the exciter to the left and the final at the right. Just below the exciter is a strip of control switches and fuses controlling the entire station and auxiliary functions, while directly below the final amplifier panel is a strip accommodating the electronic key, a Variac for controlling the p.a. high voltage, overload relay indicators and resets, and an a.c. outlet. On the second "deck" are a spare receiver, LM frequency meter, monitor scope, s.w.r. meter, running time meter, plate voltage meter, modulator plate meter, and local time clock. At the very top is a Navy type clock (normally kept on GMT) and a speaker. In other words, everything is right at his fingertips, making operating a pleasure.

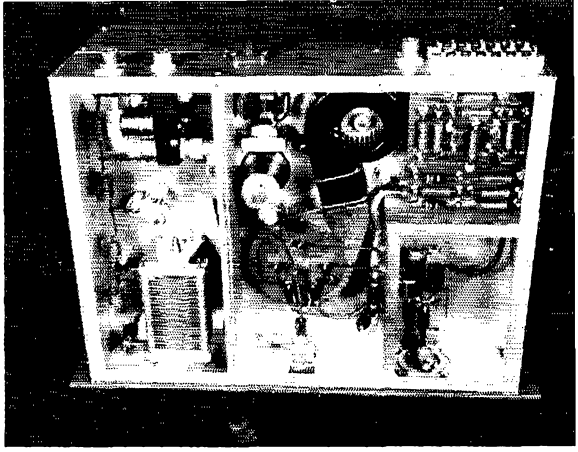
The Exciter

The r.f./audio exciter unit is a complete c.w./phone rig built around a Collins 70E8. It uses the p.t.o., with a 6AK6 buffer, band-switched and tracked 6AQ5 multipliers, and a 6146 in the output. Screen grid control is used to vary the output drive to the p.a. There is also included on the chassis a sidetone c.w. monitor. The audio gear includes a 6AN8 with two inputs, 12AU7, 6AL5 clippers, 6C4, and 6B4 drivers. The chassis is copper plated and Vector sockets were used to concentrate the components in each stage. Extensive use was also made of terminal boards and cabling in order to produce a neat lay-out. The meters are illuminated, and there is a special gear take-off from the p.t.o. shaft to the multiplier capacitor gang.





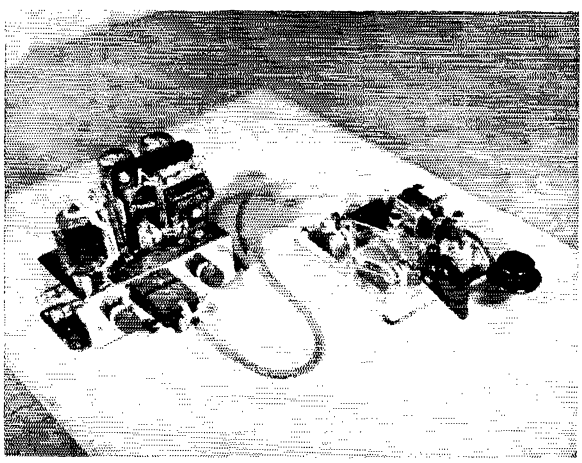




The Final

The final amplifier, pictured above, uses a single 4-400A with the customary air system socket, forced air cooling, and a vacuum-variable for the pi-network tank. The top view shows the shielded meter enclosure, the B&W inductor, and the other major components, while the underneath view again illustrates the use of terminal boards and neat layout. A low-pass filter is also included under the chassis, together with the antenna relay. No effort has been spared to de-TVI the rig. The main antenna is a multi-band beam of the W3DZZ type, homebuilt, on a 55′ tower. Separate antennas are available for 75 and 40 meters.

The individual antennas can be selected for use by means of push-button control at the operating position.

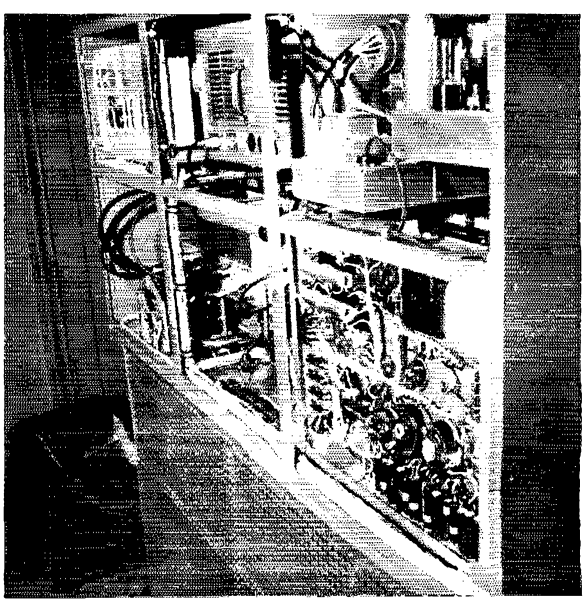


A further example of neat construction is this electronic key built by W7DET, patterned after the one described in *QST* by W6OWP. The keyer control head is a separate plug-in unit, of chrome-plated steel and plexiglas, and includes a straight key alongside the paddle. W7DET being a DX man, when not building new equipment (172 confirmed on c.w.), he finds the straight key a "must" under certain conditions. This key unit fits in the slot provided in the console panel for easy accessibility.

The modulator uses p.p. 100THs in Class B, with high level clipper and filter.

The modulator and the power supplies are mounted here behind the operating position, easily accessible for service yet not dangerously exposed. Here again, extensive use of cabling presents a neat appearance to even the most critical eye. Labelled terminal blocks used throughout the installation permit easy identification and tracing of circuits.

W7DET has a station of which he can well be proud. — *R. L. B.*



QST — Volume V

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

VOLUME V also records what was done to solve (in part) some of the problems which amateur radiophones — particularly those which were sending out so-called "concerts" to the defenseless public — were creating.

As to the amateur broadcasters, and the traffic-handling potentialities of amateur phones, an editorial at 30, 51, December 1921, had this to say:

. . . But the amateur concert fiends! How do they get that way? It looks as tho every bird who assembles a radiophone feels a heaven-sent inspiration to "favor" the community with music, without any regard whatever to the awfulness of the modulation, the ungodly supply ripple, the travesty on music which his alleged phonograph grinds out. Honestly we have seen some of these ginks with one-half of 60-cycles on the plate and a microphone in the ground lead, grinding out their terrible QRM for two hours per night on schedule, and blessed if they didn't think they were doing the community a big favor. With this sort of thing we haven't the least patience, and we think it ought to be handled the same as any other sort of deliberate QRM. . . .

For the handling of relay traffic the telephone so far has failed miserably, and it isn't at all likely that it will ever come into any general use for that purpose, mainly for the big reason that any telephone set is capable of covering three or four times its phone range when used for straight telegraphy. . . .

In January, 1922, the Department of Commerce amended paragraph 57 of its Radio Regulations so as to bring amateur radiophone-broadcasting to a complete halt.[56] It was believed that some useful services would later be continued, through the issuance of Limited Commercial Licenses;[57] but my recollection is that this expectation came to naught.

The "main actuating motive on the part of the Department of Commerce" was said to be "a desire to protect the radiotelegraph amateur, whom the Department recognized as the great national asset and [the man] whose activities were being fairly swamped by the amateur phones."[58]

For an interesting analysis of the virtues and shortcomings of code and phone stations of 1921–1922 vintage, I recommend close study of Mr. Kruse's article, called: "The Radiophone and the Code Station — An Argument for Cooperation," found at 21 to 24, March 1922.

A split in amateur ranks, between code and phone men, was already developing; and its dangers were being recognized at once.

Hard on the heels of the Second Transatlantics, came the thrill of the first two-way amateur contact between the Hawaiian Islands and the U.S.A.

On the Hawaiian end, this was virtually a one-man affair. All of the contacts were with Clifford H. Dow, 6ZAC, who used a tube transmitter (much like 6ZAF's) designed by Mr. G. M. Best, built by a Mr. Heintz, in San Francisco, and presented to Mr. Dow by the magazine *Radio*.[59]

At the time when the first two-way contact was made, Dow was located at Wailuku, on the island of Maui, T. H.[60] He had a fine spot "on the ocean side of a range of mountains some three or four thousand feet high, with nothing but open sea in

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

[56] 29, March 1922 (Editorial).

[57] 29, March 1922 (Editorial), again; pages 29 to 30.

[58] Again: 29, March 1922 (Editorial).

[59] See "Hawaiian Achievement," 39 to 40, June 1922. The transmitter used two 50-watters in a full-wave self-rectifying circuit (Same ref.).

The first mainland station ever to be heard in Hawaii had been 6EA (Seefred Bros., Los Angeles, Calif.), in the year 1920. See 41, August 1920, in Strays, where it is stated that 6EA had been heard there, many times, by an unnamed amateur who used an 8-stage amplifier of some undisclosed type. Also see 22, October 1920, editorial ". . . One of our number has been heard in Hawaii. . . ." And see 24, November 1920, editorial: ". . . 6EA got through to Honolulu. . . ."

The first inkling of Dow's plans to inaugurate 2-way communication with the U. S. A., on the 375-meter wave permitted by his Special License, will be found at 58, September 1921, where an undated letter written by him from Lihue, Kauai, T.H., is printed. At that time, he had no transmitter; and the letter mentions no receptions of Mainland ham signals.

On December 19 and 20, 1921, Dow (still on the Island of Kauai — see 39, June 1922) heard the following U. S. A. stations, in the order named: 5QA, 7YA, 6ZAF, 6ZB, 9GK, 7YG, 7ZU, and 6ZE. See the list at the head of "Calls Heard," at 52, February 1922. This list gives Dow's address as Wailuku, Maui, Hawaii; but that probably was his location as of the time when he mailed his list into *QST*.

Dow's log for the period December 14, 1921, to January 5, 1922, summarized at 7, March 1922, shows that he copied 24 amateur stations located on the Mainland, during this time. He still lacked a transmitter; but he had been copying message-traffic (broadcast "blind") from stations 6ZR, 6ZAF, 7ZJ, and 7XF; and he had been acknowledging these communications by cable or by mail. (7, March 1922).

Signals from 6ZAF (100 watts, c.w.) and from 6ZR (a 1-kw. 60-cycle synchronous spark set, on 375 meters) had been particularly good. (See 7 to 8, March 1922). And the signals from 6ZR were even louder than those from the Radiocorporation station at San Francisco, KPH (7, March 1922).

Dow's transmitter reached him on some unstated date prior to April 13, 1922 (39, June 1922). In answer to a letter, 6ZAF broadcast to him detailed directions, on April 11 and 12, telling him how to set up the apparatus and get it into operation; and he told Dow to call him at 11:00 P.M. on the 13th, for tests. On the 13th, however, 6ZAF was ill, and was confined to his bed; and the first two-way contact took place between 6ZQ (Berkeley, California) and 6ZAC. See 39, June 1922.

At 35, May 1922, Traffic Manager Schnell reported, that while in the Islands, Dow (6ZAC) had copied amateur signals from every U. S. district, even before he had gotten his transmitter into operation.

[60] 52, February 1922; 8, March 1922; 39, June 1922.

front of him for more than two thousand miles."[61]

In Volume V, there is only one description of the first QSO, which took place on the night of April 13, 1922:

". . . 6ZAC's call [for 6ZAF] was heard by 6ZQ, Berkeley, who immediately went back at him using 750 watts in a 500-cycle Telefunken spark transmitter with 10 amps. in a T aerial 40' long and 55' high. 6ZAC replied at once. They exchanged greetings and then passed messages, making a date for 1 o'clock the next night. . . ."[62]

The next two-way contact was between Mr. Babcock (6ZAF) and 6ZAC. His own account of this event reads:

". . . Of course the glad news [of the first contact] was handed around the following day by local telephone and other means of communication, so that on Friday evening, the 14th, practically the entire Coast was standing by for Dow's signals. At about five minutes to eleven, while I was waiting for the scheduled hour to come around,[63] I was suddenly pulled up with a jerk, hearing my call and the signature 6ZAC; and it's here the fun began. I went back at him promptly, and from eleven o'clock until nearly one, we worked continuously and without interruption, because everybody in the neighborhood was listening either to him or for him. It was fun to hear the chirpings of the various regenerative receiving sets in the neighborhood trying to get on his wave. Just before one o'clock — after more than an hour and a half of continuous communication — I told him that while I was getting a real thrill out of one of the rare experiences of life, I did think it was only fair to the others that I should let go and give someone else a chance. The instant I signed off, our neighborhood passed from absolute silence to bedlam. I picked out stations all the way from Vancouver to Arizona, all trying at once to be next in line. . . ."

As far as I have been able to discover, this last sentence, above-quoted, constitutes a description of the first "rare-DX pile-up." Mr. Babcock's account fails to record who won.

On April 21, 1922, 6ZF (ex-6ALE) worked NOF (Washington, D. C.) direct, and took a message for Hawaii. He immediately handed it to 6ZAC, in Maui; and in a few minutes Dow passed the answer back to NOF, via 6ZF.[64]

Although spark transmitters did not immediately vanish from the air, I think it is fair to state that by May or June, 1922, their best friends knew that the superiority of the tube set had been proved beyond any question; and that sparks were doomed.

One clincher was the exceptionally fine c.w. work being done by Major Mott's station, 6XAD, on Catalina Island. (See 29 to 31, April 1922.) In addition, the records of the Second Transatlantics[65] and the story of the Hawaiian two-way contacts were buttressed by several startling achievements by c.w. stations: 6ALE, using a single 50-watter, was the first station to be heard across the continent, using a power input of less than 1,000 watts.[66] Station 8LF, of Crafton, Pennsylvania, with a tube transmitter which delivered 46 watts to his antenna, had hung up a new World Record, on November 6, 1921, by covering approximately 5,500 miles. His signals had been heard at sea, aboard the S. S. West Prospect (KDUK), by operator G. C. Farmer, 2,750 miles west of San Francisco.[67]

At 35, May 1922, Traffic Manager Schnell noted that the shift from spark to c.w. had acquired additional momentum.[68] And an amusing

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[61] 40, June 1922.

[62] The *QST* account fails to say whether all these skeds were expressed in PST or in Hawaiian time. The quotation is from 39, June 1922.

If 1:00 A.M. the next evening, PST, was meant, that would be 1:00 A.M. on Saturday, April 15, 1922; corresponding to 10:30 P.M. on Friday, April 14, 1922, Hawaiian time. I'm inclined to think that PST was intended.

A bare announcement of the first QSO, and of later contacts with 6ZQ and 6ZAF, appears at 32, May 1922, in a box which is headed: "Hawaiian Relay Established."

It seems probable that 6ZAC first called 6ZAF somewhere near the scheduled time of 11:00 P.M., on the 13th; and because 6ZAF was ill, and not then on the air, 6ZQ stepped into the breach. See footnote 59, on preceding page.

[63] I think Babcock was counting on a call from 6ZAC at 11:00 P.M., having been unable to keep his previous schedule for 11:00 P.M. on the 13th. The 1:00 A.M. schedule was between 6ZAC and 6ZQ. See 39, June 1922.

[64] 38, June 1922; in the new department of *QST* known as "International Amateur Radio." Dow relayed the return message, and did not work NOF direct.

[65] The smallest set to bridge the Atlantic in these tests was owned by S. S. Heap, 1BDT, of Atlantic, Mass. This used a single 5-watt tube. Heap also "got across" on a 1-kw. spark set. See tables at 12, March 1922; and text at 16, March 1922. It is probable that many users of these 5-watters were getting as much as 20 watts of output from them by overloading. See 31, April 1922 (in description of station 6XAD).

9HM had lost his bet with Warner that more spark stations than c.w. stations would be heard in the Second Transatlantics. See editorial at 47, January 1922. (Editorial begins at 26, January 1922).

The British had heard no sparks at all in the Second Transatlantics. 12, February 1922; 40, February 1922; 17, March 1922. On the technical lessons of this test, see Higgy's statements at 17 to 18, March 1922, and Schnell's views at 42, February 1922.

[66] From Reedley, California, to Brookline, Mass. Date was November 23, 1921. Robert E. Siskind, 1ES, heard him at 5:14 A.M. (EST). See 19, January 1922. 6ALE later became 6ZF. See 38, June 1922. As 6ZF, he participated in the first Washington-to-Hawaii-and-return relay. (Same ref.)

Station 2PF was the first station to work across the continent with a tube set and have his record definitely established. His signals were heard by 6ALE, at Reedley. 32, April 1922. 2PF was J. K. Hewitt's station, in Brooklyn. (Same reference).

[67] 50, February 1922.

[68] "We are in the midst of the greatest scene of activity since the inception of the League. Probably the reason for it all can be attributed to broadcasting, but a great deal of it can be resolved down to the fact that the spark is passing away more rapidly and c.w. is coming into use nationally. . . ."

In constructing my Index to Volume V, I paid particular attention to recording "shiftings-over" of individual stations, when mentioned in the Division Reports, in letters, or elsewhere. Such instances were much more numerous than those encountered in Volume IV.

In May, 1922, there were 3,213 amateur messages handled by c.w., and 4,309 by spark, according to *QST* reports. These reports of course were by no means all-inclusive; but they can fairly be taken as evidence of a trend. See 39, July 1922. In October, 1921, the corresponding figures had been 17.2% vs. 82.8%. See 35, December 1921.

cartoon by 8UX was published at 45, April 1922, entitled: "Composite Picture of Several w. k. [well-known] Hams Trying to Dispose of a Spk. Set and Get a C.W."

A substantial boost to the c.w. cause was also furnished by the disclosure of an improved Reinartz Tuner, in the March (1922) issue.[69]

In Canada, c.w. was favored by new regulations which permitted all amateur c.w. stations to continue using 200 meters after the opening of navigation, but ordering sparks back to 50 and 100 meters for the summer.[70] And on April 1, 1922, the Dominion put ordinary amateur spark stations on 180 and corresponding c.w. stations on 200, and permitted special amateur stations to use 200 meters on spark and 275 on c.w.[71]

Volume V also contains a wealth of material on various subjects, small parts of which I have grouped below:

(*a*) *International Amateur Radio:* Mr. F. Clifford Estey's station at Salem, Mass., 1AFV, described at 48 to 49, January 1922, succeeded in passing three messages in a row to W. W. Burnham, at London. This was in the second week in January 1922. Mr. Burnham acknowledged their receipt by cable.[72]

On February 5, 1922, Mr. G. Perroux, at Paris, France, heard 1ARY's spark transmitter, located at the University of Vermont at Burlington. The receiver consisted of a regenerative detector and a 3-stage audio amplifier. The receiving antenna was a single wire about 35 ft. long, having a slanting lead-in about 55 ft. long.[73]

In Great Britain, the Wireless Society of London, acting for the various clubs, began negotiating with the Post Office Dept. to obtain more realistic regulations.[74] British 2KW received permission to use a 1-kw c.w. transmitter with a special antenna.[75]

Leon Deloy (French 8AB, of Nice), using two 50-watt tubes, began working Mr. Burnham (in London, acting for the various clubs, began nepool, Aberdeen and various points in the British Isles, at distances up to 1000 miles.[76]

French amateurs, after the Second Transatlantics, were allowed to use 100 watts of c.w. on a wave length of 200 meters.[77]

In Finland, the maximum wave for amateurs was set at 300 meters.[78]

An amateur station at the Dallas State Fair originated some traffic which was successfully delivered to Mexico City, Mexico.[79]

5YE, the station maintained by the Physics Department of the University of Mississippi, carried on sustained communication with some unspecified station in Tela, Honduras.[80]

5ZA worked a station in Juarez, Mexico, on phone;[81] and on low-powered phone Canadian 9AW worked Don Mix, 1TS, at Bristol, Conn.[82]

Dr. E. H. Valutini, 3rd (of Philadelphia, the holder of the call 3AAE), made arrangements with the State Department of Venezuela for tests between Venezuelan radio stations and Mr. Horace A. Beale, jr.'s fabulous station 3ZO at

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A strange ad appears at 120, April 1922:

"WARNING

"Do not discard your spark sets. They will prove invaluable later on.

"If you want to make your present spark set approach a c.w. set for results:

Write to

ROY C. BURR

19515 Tiverton Rd., Cleveland, O.

I know of no method by which reliable figures could now be compiled, to show how many U. S. A. amateurs were using tube transmitters in the period covered by Volume V, and how many were still clinging to their spark rigs. *QST* was never inclined to gather basic statistics, or to cite authorities for any statements.

[69] 8 to 10, 26, March 1922. So great was the demand for this information, that by May (1922) the entire supply of the March issue had disappeared. At 63, May 1922, the Editor published the following Notice, in a box:

"ALL OUT OF MARCH

"The great demand occasioned by the publication of the improved Reinartz tuner in our March issue has completely exhausted our supply of that number. However, we have a limited supply of the June, 1921, issue, in which complete information was given on the original tuner, hundreds of which are giving splendid performance in amateur stations. While they last, 20 cents the copy.

"*QST*, 1045 Main St., Hartford, Conn."

Reinartz also designed an interesting c.w. transmitter, described at 12 to 13, June 1922.

[70] 43, May 1922 (Russell's Report). Russell remarked: ". . . That sounds like ding dong bell for the poor old pebble squashers."

[71] 46, June 1922 (Russell's Report). The Navy Department of the Dominion issued these regulations.

[72] 46, February 1922. At 17, March 1922 it is said: ". . . Since the tests 1AFV (c.w.) has successfully transmitted messages on schedule to England, showing further that amateur transatlantic transmission is not an idle dream. . . ." International amateur radio had been predicted by Mr. Maxim at the First National ARRL Convention in September, 1921. See 9, October 1921: ". . . How much farther our indomitable American spirit will carry us remains to be seen. Already is our Traffic Department at work upon transatlantic tests. Who shall say they shall not succeed, and before we realize it, the continent of Europe be linked to that of North America. Indeed impressive will be that day when private citizens may communicate without cost from the shores of the great far-flung Pacific on the west to the limits of civilized co-operation and good government on Europe's east. I hope I may live to see the day. . . ."

[73] 24, May 1922. During the Second Transatlantics, 2ZL was said to have been heard in France. See 12, February 1922. I have found no further mention of this, however; and no details are given.

[74] 40, June 1922. They wanted (among other things) a medium wave around 400 meters, for c.w. and phone, plus a band running from 180 to 200 or 220 meters, for spark, c.w., and phone.

[75] 38, June 1922. The licencees were the Manchester Society and Mr. Burne, the most successful Britisher in the Second Transatlantics.

[76] 37 to 38, June 1922. It was Deloy who later participated in the first 2-way transatlantic amateur contacts. See 9 to 12, January 1924 (Volume VII). The published material on him ought to be collected. See photo and various data at 61, 63, 66, December 1922 (Vol. VI).

[77] 39, April 1922. Two French stations mentioned as being on 200 meters, and as using c.w. sets, were 8AE (Paris) and 8AH (location not given; but station equipped for both c.w. and phone). See 37, June 1922.

[78] 61, December 1921. No minimum wave is mentioned. The power-limit is stated, in the *QST* account, to be 50–100 watts for spark, and 5–20 watts for c.w. and phone.

[79] 50 to 51, December 1921. The Dallas and Houston Clubs cooperated.

[80] 66, June 1922.

[81] 24, July 1922. For a description of this outstanding station, owned by Louis Falconi, of Roswell, New Mexico, and winner of the Hoover Cup for 1921, see 19 to 25, July 1922.

[82] 36, November 1921. (Russell's Report). This was September 25, 1921. Canadian 9AW used only one Type ES-9 Ediswan tube. Mix used a single-tube receiver.

Parkesburg, Pennsylvania.[83]

A Stray at 53, March 1922, shows that amateurs had begun to dream of attaining world-wide ranges in the not-too-distant future:

> "The wonderful distances now being accomplished by short-wave c.w. make one wonder where the end is. That limit, friends, shortly will be determined only by the maximum distance on earth, roughly 12,000 miles. The greatest distance from any point on this sphere is the point diametrically opposite it on the other side of the earth, known as its antipodes.
>
> "In view of the successful transatlantics and transpacifics it isn't out of order to study a globe a bit and pick out a hard task for our next tests. Peculiar radio conditions are known to exist at antipodal points, and it is anticipated that reception there will be much better than at many intermediate distances. So we have dusted off our old globe and [have taken] a look-see. . . ."

Editor Warner suggested the possibility of sending somebody to Japan to listen for amateur signals.[84]

At 8, March 1922, relays from Honolulu to London, and from Peking to The Hague, were predicted. And at 40, June 1922, 6ZAC reported that ex-5YH[85] was in Peking; and he suggested that the latter should attempt to contact the Hawaiian Islands from there. Dow also stated that 6ZAC was ready for traffic from Japan, as soon as the Japs showed signs of life. (Same reference.)

To my mind, the most interesting suggestion is found at 38, June 1922: "We ought to be able to hear French 8AB's five amps. of c.w., strays permitting. Mebbe Godley will dust off the ol' Super and give it a whirl from — Otter Cliffs would be a good place."

"International Amateur Radio," a new *QST* Department, made its first appearance at 37 to 40, June 1922. It is worth careful study.

Among other items there included was an announcement stating that a newly formed International Advisory Committee of the Board of Direction of the League would aid amateur relay-work in foreign countries; and the item added: ". . . The League does not believe it wise to undertake the formation of foreign branches of the ARRL even upon request but will gladly be of every possible assistance in the formation of societies 'of, by and for the amateur' in such countries. Correspondents desiring data are invited to address the League secretary."[86]

(to be concluded)

[83] 26, April 1922. The test period was scheduled for March 15–25, 1922. 3ZO was to use a c.w. set working on 350 meters. In Venezuela, stations AYA, AYB and AYC were supposed to operate tube sets (1-kw. *output*) on 1600 meters. I have never heard how these tests came out, if they actually did take place.

On 3ZO, the most elaborately-equipped special amateur station of its day and age, see 7 to 12, May 1922. Among other things, it had two tubular-steel masts, 200 ft. overall, set about 375 ft. apart. These supported a 5-wire flat-top antenna, for use with a DeForest half-kilowatt arc transmitter, operating on a 2,500-meter wave length, under the experimental station call 3XW.

Portable station 3OI (also part of 3ZO) consisted of a small special house, mounted on a 5-ton truck. A neat little flat-top antenna adorned its roof. (See photo at 12, May 1922).

A regular staff of technical, operating, and administrative personnel was maintained at 3ZO: Thomas Appleby, Jr., Radio Engineer; Wynne Colman, Director and Constructor; Edward Sandrus, Asst. Constructor; Miss Bertha Hilton, Operator; Fred Morgenthaler, Operator; Miss Cora Hilton, Stenographer and Record-Keeper; and Warren Thompson, Official Chauffeur for the Traffic Department. 8, May 1922.

Numerous tube sets were available. A spark set, shown in one photo, was junked. 9, May 1922.

I have been unable to locate either *Parkesburg* (see 7, May 1922) or *Parksburg* (see 26, April 1922) in any of my three atlases. Maybe *Parkersburg* was the proper location. Misprints in early issues of *QST* were quite common.

[84] 25 January 1922.

[85] 5YH was Captain Norman Lee Baldwin. He was at Camp Pike, Ark., for a while. Then he went to Peking, China, as military attaché. See 8, March 1922. I believe he never set up an amateur transmitter in China.

The Honolulu-to-The Hague relay is again suggested at 32, May 1922. One from Honolulu to central Europe is suggested at 40, June 1922.

[86] 38, June 1922. The League expected that Canada would eventually organize a separate unit of its own, outside of the ARRL. See editorial at 33, August 1921

Strays

The Navy announces that sports pictures and other printed material have been sent via amateur radio facsimile from W2KCR to the Antarctic. Transmission was on the 20-meter band, by special authority of the FCC. Plans are underway for transmitting written messages by facsimile from W2KCR (Radio Amateurs of Greater Syracuse) to men on duty in the Antarctic.

—···—

Speaking of facsimile, we will shortly have a *QST* article on how some of the West Coast gang have gotten on the air with fax equipment on two meters.

—···—

Keep your ears open for K3BSA, a special call assigned by FCC for the Valley Forge Jamboree starting July 12. All scout hams are urged to participate by working each other during the period of the Jamboree — July 12–18 — and exchanging messages giving the serial number of QSO, rank or position in scouting, and BSA region.

—···—

Info on another award! The East-German training ship *Wilheim Pieck* is on a trip around the world, using the amateur call DM5MM, during the period May to September. Special certificates for working DM5MM on three or more oceans. Send *your* QSLs and 2 IRC to DM5MM, Box 185, Schwerin (Meckl), German Democratic Republic.

The Illinois RACES Target City Network

A Chart-Word Description of the Illinois Civil Defense Amateur Network

BY WILLIAM J. BRINKER,* W9BYU

• The Illinois state RACES setup has no particularly unique features. What it does have is simplicity, logic, and order — all features that might well be emulated by other RACES groups.

THE Federal Civil Defense Administration has designated certain cities in Illinois as "Target Cities." These urban areas would logically be the first hit in an actual thermo-nuclear attack. The Target City Net Control Station, K9CLW, located in the state civil defense control center at the Museum of Science and Industry in Chicago, has been described by State Civil Defense Director General Robert M. Woodward as the "lifeline of our communications." Headed up and supervised by Jack Stanton, W9PSP, the state radio officer, and entirely manned by amateur operators, this station conducts regular Thursday night drills during which members are tuned up for performance in test exercises during the year.

A brief summary of the composition and operation of Illinois' RACES Target City Network will be of interest:

Why a RACES Network?

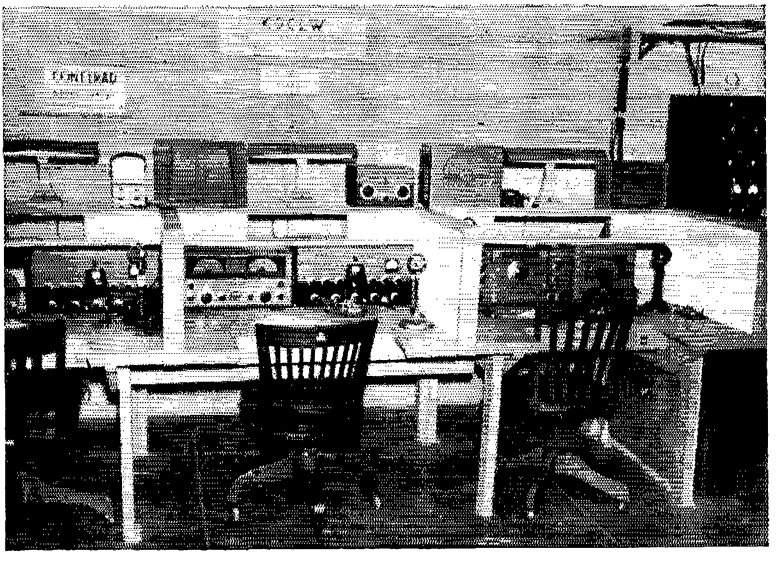
Normally, wire communications are expected to carry the major portion of message traffic. However, as insurance against possible failure or overload of wire facilities, and to supplement other emergency radio facilities of the cities and state, the Target City Net was established. This, then, is the purpose of the TCN — to provide essential supplementary communication services for civil defense during national emergencies through the use of authorized amateur radio facilities.

Presently over fifty-five approved or pending RACES nets are being operated by amateurs in Illinois. These involve teams ranging from three to fifty members per station and enlist the cooperation of nearly five hundred members in the state RACES group. Although the rate of growth has been most encouraging, a considerable number of local nets will be required to effect the ultimate traffic objectives outlined below. Considering the zestful interest demonstrated by present members, the outlook is most optimistic.

Anatomy of the Target City Net

The state has been divided into eight areas (see Fig. 1). Net Control Station K9CLW maintains regular drill contact on specific 160 and 75 meter channels with each of the target city area control stations. Each area control station contacts each county control station within its area on specific intercounty two- and six-meter channels. Each county control station handles traffic with cities within the county on specific intracounty two- and six-meter channels. In this manner, the communications web blankets the entire state.

*Deputy for Communications, Illinois Civil Defense Agency, 57th St. and Lake Shore Drive, Chicago 37, Ill.



«

This is K9CLW, the Illinois State RACES Net Control station, located at the Museum of Science and Industry in Chicago. The three operating positions have acoustic tile separators to reduce the effects of ambient noise. This, plus the use of headphones, makes simultaneous operation feasible.

Outgoing traffic from K9CLW is self-explanatory with reference to Fig. 1. Relay via Decatur, Peoria or Springfield is often employed to reach the southern target city area control stations of East St. Louis and Centralia. The area control stations also use relay as required to reach the county control stations in their area.

Incoming traffic to K9CLW is accepted only from area control stations; all county control stations must relay through their area controls to get traffic through to K9CLW. There are several cogent reasons for this procedure:

1) Although K9CLW mans three operating positions, it would be impossible to handle the volume of traffic from each county control station directly.

2) Precedences of messages are screened at the area control centers. This assures that K9CLW will receive the most important traffic first.

3) Some traffic terminates at county or area control stations; thus state control is not burdened with irrelevant traffic.

The Target City Net Control Station also maintains radio communication with W8YAN, Region IV of the Federal Civil Defense Administration in Battle Creek, Michigan, thus providing another link in addition to existing telephone and TWX circuits.

In the event that Chicago is bombed and K9CLW is knocked out, an area control station takes over as control. If an area control station is lost, an alternate area control station picks up the reins and performs the same functions as the original area control station. Thus, through flexibility of operation, vulnerability to system failure is reduced to a minimum, and continuity of system operation is maintained.

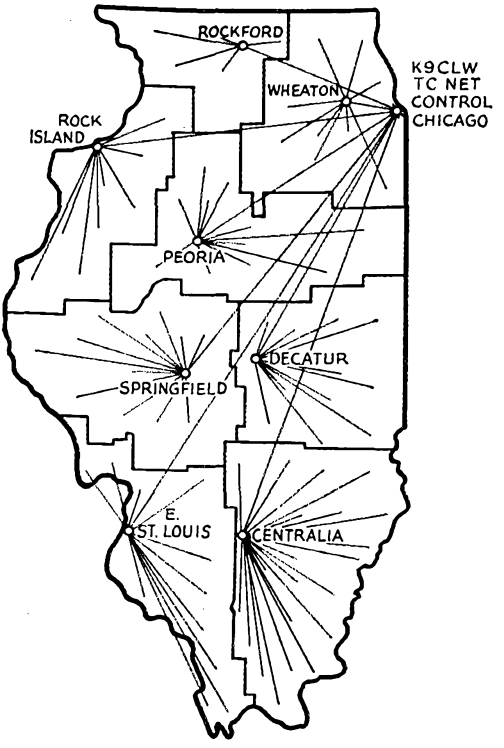


Fig. 1 — The state of Illinois is divided into eight areas for c.d. purposes, each having its own control center. Each area has its own network, on two or six meter RACES channels. The Target City Net, comprising K9CLW and the eight area control stations, operates in the RACES segments on 160 and 75 phone and 80 c.w.

Organizing an Illinois RACES Net

In order to establish a RACES net, the following steps must be complied with:

1) The local civil defense director must appoint a RACES radio officer.

2) FCC Forms 481 and 482 must be properly completed and submitted to the state director of civil defense.

3) Form ICD-101, available from the state civil defense office,[1] outlines the RACES communication plan and must be completed in quadruplicate. Copies are sent to the state director of civil defense. The complete package is then forwarded to FCDA and FCC upon approval by the state director.

* * *

Will radio amateurs fill a needed role in emergencies? In Illinois the answer is a firm, bombastic "Yes." On hand, ready and able, are the bywords of Illinois RACES personnel. They have proven their metal through three years of dedicated service to civil defense and earned their mark of recognition as an indispensable part of civil defense communications.

[1] *Editor's note:* This applies to Illinois only. Many other states have similar forms for completing the RACES communications plan. If not, the best procedure is to follow the provisions of section 12.201 (i) of the FCC RACES regulations, with the aid of the RACES Communications Plan Check List (FCDA Form 257).

Strays

K4AM has a good postoffice box number — 7388.

—···—

Wild Bill Davison, a jazz musician of some note, was 8FU back in the spark days.

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.

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

To Get Missing QSLs — Originate Messages. What active amateur is satisfied with his return on QSLs, especially if he is working for the Worked-All-States ARRL Award? The true amateur whether having an initial interest in rag-chewing, DX, or construction *should* know how to use *every* facet of his hobby to best advantage. What then more natural than to get off a few radiograms in proper form, to extend acquaintance, to contact distant members of the family, or to pursue QSLs from states not now represented in your list?

It seems from a few shacks we have visited lately that it is again becoming fashionable to display QSLs. No better wallpaper for the radio room can be found. If you want a truly hammy station with colorful testimonials to your fine results in two-way amateur radio communicating, give your QSLs good display. But first, how do we get more QSLs? K2DQD writes, "Have just selected some stations from my log books, in cases where I never received a return QSL. To these stations I have been sending amateur radiograms. Many with their replies have advised that they sent cards earlier and were sorry the first card didn't reach me . . . and I have no reason to doubt them." So here's a tip from K2DQD on a way to boost those states-confirmed lists.

Technique . . . for Starting Your Message. *How* to send a message?! The *form* for a proper effective message transmission is given in the booklet *Operating an Amateur Radio Station*, free to members on request. It's a simple matter to use the right form. Purpose in following a form indicated by experience is to insure the best accuracy and speed in handling. *Where* can you start the message . . . to take hardly any of your time and to get the routings by traffic experts? See the ARRL Net Directory (listings in Operating News Nov. '56, Jan. '57, Mar. '57 or in photolith form from Hq.) for your own state or ARRL section's phone or c.w. net frequency and time. (Such nets connect nightly with the National Traffic System.) Report in on the nightly Section Net session; as you QNI (report) tell how many messages you have (QTC . . .), and where they are for. Then stand by; when called and told to work a certain station (QNK) pass your traffic to the designated "thru" station as your NCS (Net Control Station) directs and it's on its way with no fuss; watch the mailbox for QSL-results to show if your traffic was in pursuit of that objective.

Each traffic net's welcome sign is out to all comers; with a message to start you are made doubly welcome. Join the groups on the nets — just for one night, or at intervals. Make it as often as you can. It gives a feeling of something accomplished to know how properly to put together and send a message, recording the "handling data" when it is receipted for in the course

OPERATION ALERT, 1957

The nationwide civil defense alert exercise this year will be conducted from July 8 to July 19. Note that this involves all units of civil defense, not just communications or RACES. Also note that it is sponsored by FCDA, not by ARRL. Nevertheless, it is expected that amateurs will play a large part in the communications part of the exercise, and that includes both RACES units and amateur groups participating through the medium of the AREC.

The only official information we have on Operation Alert 1957 is a news release put out by FCDA on March 20 1957, in which little is said about communications. Unofficial talks with FCDA personnel, however, have indicated that the pattern for communications will pretty much follow that of last year. Already-authorized RACES groups will of course be utilized, and so will groups that are in the planning stages. Other amateurs interested in participating (especially AREC groups where RACES is not in operation) are invited to do so in accordance with the desires of their local civil defense directors. In other words, gang, those of you in places where RACES has had a slow start can use this as an entering wedge to show your c.d. people that you *can* do a job for them. Don't wait for them to contact you. *You* take the initiative.

One principle point of difference about this year's test: the exact time and nature of the simulated attacks on various cities will not be known in advance, as they were last year. This will make the situation more realistic and, FCDA hopes, provide a better test of our facilities. The total operation is divided into three phases, as follows: July 8–12 is the preliminary stage, in which c.d. directors will obtain public participation in rehearsing evacuation plans, service actions and other readiness activities. July 12–14 is the attack stage: simulated attacks on all major target areas will take place on the 12th, followed immediately by recovery operations and determination of the amount of national assistance needed. July 14–19 is the recovery stage, during which most of the actions will be taken at federal level. RACES/amateur participation may be required during all three stages, but the most likely period is during the July 12–14 attack stage.

We would like to call attention again to FCC's Public Notice issued in 1955 which covers this operation and says, in part, that "*Amateurs who do not participate in this exercise are expected to cooperate by not operating on RACES frequencies during the period of the exercise.*"

Your civil defense radio officer will give you details of what is expected. If there is no c.d. RO in your area, contact your EC to determine the extent of your participation. Trust we amateurs will have our usual good turnout in Operation Alert 1957.

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc. 7140 kc.

of operations. Really to be considered a full-fledged communicator, every amateur needs to know how to send and service a message. You can easily use this system of starting some messages to chase down some missing QSLs. In any event you will never regret broadening your field of activities. This will be especially valuable in case you have a chance to handle emergency communications. Take a page from K2DQD's book and originate a few!

About Addressing QSLs. We weren't especially surprised to read on in DQD's letter that he had not been getting all the QSLs sent him before he started a follow-through system. Our own mailbox has recently had some strange and wonderful samples of poorly addressed cards. The mailman who directed these to our final address should be decorated in fairness! Whether originating a radio message or a letter or a QSL, it stands to reason that the chances of its reaching the addressee are almost entirely a matter of the propriety and completeness of address. Make your addresses clear and complete. Leave out foolish and facetious address titles! Use family names, *not* just nicknames, or radio calls except as coupled to the full name! Let us again quote K2DQD on this: "The way in which cards are addressed is another pet peeve. The 1- or 2-family house boys often fail to appreciate that some of us cave dwellers live in apartments of 40 to 150 families. The postman has no slightest idea who a "chief tube-popper" or "brass-pounder" can be. With these samples I can wonder if our janitor isn't getting a better QSL collection than I am!"

May we add a word for amateurs who mistakenly fancy that such titles and a call are *adequate* or perhaps complimentary, or funny. You would doubtless like to increase *your* QSL returns, too. Just consult the call book and use the complete formal name, and street address as well as city, and stop feeding your postage to the Dead Letter Office. Your returns will be rewarding and the P.O. can serve better, given a fair chance *and an address!*

Operator Suspension Confirmed. On page 72 of *QST* for last September, we reported that Joseph T. Collins (W9PYM) of Thiensville, Wis. had appealed an initial FCC suspension order affecting his amateur operator license. This matter, FCC Docket No. 11681, was reviewed at a hearing held before an FCC Examiner Dec. 3, 1956, in Milwaukee, Wis.; a 12-page FCC report covers the findings and conclusion.

FCC initially had found that in the operation of W9PYM, Collins had (a) failed to properly identify his station (Sec. 12.82), (b) transmitted an unmodulated carrier (12.134), (c) failed to keep an accurate station log (12.136), (d) failed to operate his station in accord with good engineering and good amateur practice (12.151), (e) transmitted unidentified radio communications or signals (12.159) and (f) interfered with or caused interference to radio communications or signals, transmitted to or from other stations (12.160).

In the course of the hearing, amateurs who had experienced interference with their network operations (allegedly from W9PYM) testified as to the types and duration of interferences experienced. Other amateur station logs were introduced showing entries concerning numerous communications from W9PYM that were made but not indicated in any logs of that station. The purpose of the hearing was (1) to determine if the licensee had committed the violations set forth by FCC and (2) to see if any facts would warrant a change in the operator license suspension order. The FCC report of the hearing concludes that the first issue is answered in the affirmative, and with respect to the second that the facts do not warrant modification of the initial order suspending the amateur operator license of Joseph T. Collins for one year. In a release of May 2, 1957, FCC adopts and affirms the initial decision, the suspension to be made effective immediately.

Radio Operational Notes from Examiner's Report. In the FCC-published conclusions each section of the FCC rules above noted is discussed in some detail. It appears to us helpful to the general amateur understanding if a few of these principles are quoted for general information.

"Section 12.82 . . . with respect to transmissions made for other purposes than calling a station (e.g. testing), the rule provides that identification shall be made *of the purpose for which the transmission is made* as well as identification of the station making the transmission. Sec. 12.159 flatly prohibits the transmission of unidentified signals (as cited by witnesses in this case on five occasions).

"Sec. 12.134 requires, with specified exceptions not present here, that carrier waves be emitted only if modulated *and for the purpose of communication*. Sec. 12.136 requires maintenance of an accurate station log. The log in evidence . . . was badly maintained. The rule requires maintenance of a log, not logs . . . Sec. 12.151 requires operation in accordance with good engineering and good amateur practice. To barge in on the Badger Emergency Net's meetings (as in examples of Nov. 11 and 15) was inexcusable. . . . It might be added that transmission of unmodulated and unidentified signals . . . is also offensive to the standards of 12.151.

"Sec. 12.160 prohibits willful interference with signals of other stations. The term 'willful' as thus used does not require a showing of malicious or evil purpose but only that the action which led to the creation of the interference be consciously and intentionally engaged in and not resulting from inadvertence. . . ."

— F.E.H.

A.R.R.L. ACTIVITIES CALENDAR

July 3: CP Qualifying Run — W6OWP
July 19: CP Qualifying Run — W1AW
July 20–21: CD QSO Party (c.w.)
July 27–28: CD QSO Party (phone)
Aug. 7: CP Qualifying Run — W6OWP
Aug. 19: CP Qualifying Run — W1AW
Sept. 5: CP Qualifying Run — W6OWP
Sept. 17: CP Qualifying Run — W1AW
Sept. 18: Frequency Measuring Test
Sept. 21–22: V.H.F. QSO Party
Oct. 2: CP Qualifying Run — W6OWP
Oct. 12–13: Simulated Emergency Test
Oct. 16: CP Qualifying Run — W1AW
Oct. 19–20: CD QSO Party (c.w.)
Oct. 26–27: CD QSO Party (phone)

OTHER ACTIVITIES

The following lists date, name, sponsor, and page reference of *QST* issue in which more details appear.

July 8–19: Operation Alert, FCDA (page 82 this issue).

At the USCDARA conference in May (see *RACES News* below) there was some discussion concerning the QRM situation between RACES and casual amateurs in the 3990–4000 kc. RACES segment, and the complications and confusions caused by concurrent operation by RACES and the AREC during an emergency. Observers aren't supposed to do much talking, but your observer at the conference felt called upon to comment at this time and did so. We made the following three points and then sat down: (1) RACES can operate for both wartime and peacetime disasters, but its operating frequencies are limited; (2) the AREC can operate only for peacetime emergencies, but it can utilize any amateur frequency; (3) *ergo*, best possible effectiveness for emergency communication can be brought about by the maximum of cooperation and coordination between the two.

Doesn't that make sense? In a majority of cases, it is being done just this way. In our EC Annual Report summary, we find that of the 163 ECs who indicated that a RACES plan exists, 121 of them said their AREC and RACES groups were identical. Only 33 said they are entirely separate, and only 16 indicated that there was any antagonism between them. These are good statistics, but they don't tell the whole story. What of the AREC groups who have gone completely to civil defense and RACES? What of the RACES groups who will have no truck with AREC at all? These are not shown in our statistics.

Yes, it is a complicated picture, made more so by the idiosyncrasies of human nature. Neither our ECs nor civil defense directors are entirely to blame, but both are partly to blame. It is natural for c.d. directors to want to organize amateurs under RACES for their own purposes without the influence of an already-organized amateur group. It is also natural for already-organized amateur groups to resist being "taken over" by civil defense. But what is natural is not necessarily what is most beneficial, because the whole aspect of civil defense is decidedly unnatural. When civil defense calls out RACES, they are limited to RACES frequencies in any operation under c.d. jurisdiction. In natural disasters, operation has nearly always, therefore, included participation by amateur groups, usually under the AREC. These amateur groups would serve no useful purpose in a war emergency because they could not operate; therefore, they should be signed up in RACES and be a part of their civil defense. It is completely ridiculous for each to regard the other as a competitor, a rival, a deterrent, to their success. Are we striving for the maximum efficiency in emergency communication, or aren't we? Let's get together.

We amateurs can do only half of it. Civil defense must do the rest. All right, let's make sure we do our part. Sign up in c.d., get RACES going in your area, if it is not already in process. Don't wait for civil defense to come to you, *you go to it*. Devise your plans to use non-RACES frequencies for peacetime emergency work, RACES frequencies alone in any plans for wartime communications. It takes two to cooperate. Make sure that your cooperative overtures are beyond reproach.

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Sometimes we wish that someone else had the job of coordinating all these emergency reports and making concise accounts out of them. In March and April, Old Man Weather played a number of grim pranks throughout the Midwest, inflicting tornadoes, snow and ice storms at various places here and there. In May, he moved into the northeast with a different kind of caper, drying everything up so that the tinder woods were a sucker for a fool with a match. Most of these emergencies were fairly localized, so we think they should be reported separately, although they are mostly part of an overall picture.

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The Minnesota Phone Net started a special emergency session at 1800 CST, March 14, running continuously for 43 hours. The first station on the air with emergency traffic was KØEPT of Redwood Falls, assistant EC for that county. He succeeded in getting traffic to Minneapolis for the telephone company. By 1800 on March 14 several other towns and cities in southern Minnesota were depending on amateur radio for communication, so the MPN started its emergency session. A total of 383 formal messages and many informal ones were handled. Traffic consisted of messages for CAA from Redwood City to Minneapolis, road and track conditions, personal inquiries, requests for assistance, requests for blood for transfusions, Western Union messages, highway patrol messages, death messages, funeral announcements, meeting cancellations and many others. In the Mound area, 10 AREC members under EC KØBFS monitored their ten meter frequency for over 12 hours and handled traffic there for people in the Maple Plain, Watertown, St. Bonafacious Delano and Long Lake areas who had only partial telephone and wire service, and also provided liaison for the 3820 groups.

Stations acting as NCS on 3820 were *WØs* EMZ HUX IYP JIE LUX OJG PBY QKA RVO TCK UMX WVO and KØDNM. Among the more active stations were *WØs* AAC BBY FWN FWO GOG IRD IYP KAI KFN KYG LCM OSJ QDZ QIQ TJA VEO WBH/m, *KØs* ADF CRB CUO DEF EPT HKK, W9FYS. Others participating: *WØs* BGY BUO BWM CFN CSP CWB DFP DIY DZZ EMZ FAJ FBT FBY FDY FOZ EWG FWX GTX GWJ HEO

NATIONAL CALLING AND EMERGENCY FREQUENCIES

3550	3875	7100	7250
14,050	14,225	21,050	21,400
28,100	29,640	50,550	145,350

Amateur mobiles accompanied by National Guardsmen participated in the "Miracle Mile" (Easter Seals) drive in Omaha, Nebr., on April 14, then lined up for this picture. Front row, l. to r.: WØYEV, WØNPA, KØDXS, WØYZV, WØJJK, WØAEM. Back row: KØDFQ, KNØGZJ, KØAMM, KØCQS, WØAVM, KØCHK, K9ADB/Ø. In rear: W8WVR/Ø.

Amateurs from Western Canada check reports after a mobile radio practice at the Communications Officers course held at the Canadian Civil Defense College, Arnprior, Ont. In the group are *VEs* 7IU 7AGQ 7AAJ 7AAK 4KG 6WL 6CE 6YG 6KC 5FY and 5RL.

HOB HUU IIW IRJ IRM JBT JHS JMI KLG KXW LER LUP MBD MZI MZR NGA NNG NTV OET OEU OJK OPX OSH PET PNM QQW QVR RAK SV TBR TBX TGF TOF TQQ TUS TWO TXQ UCF UKW UMX URI VMK VOA VRY VTZ VYL WAS WBF WTP WEA WVT WYS YMM YNY ZBM ZMK ZNM ZOB ZQB ZSW ZTB, *KØs* ALL AUJ BFS BKY BNU BTE BUD CAZ DAW DEC DED DIA DLZ EEO EHL ELU/Ø EWC GHH GQU, K9ENQ, *W9s* REQ SQM.

Much good publicity was afforded the amateur operations in this emergency.

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The biggest storm was a midwestern blizzard which came out of the southwest to do its dirtiest work in an area encompassing parts of Colorado, New Mexico, Texas, Oklahoma, Kansas and Nebraska, then moving eastward across the plain until it died out, affecting Iowa, Missouri and Illinois as it went, and being felt, weather-wise, in various other sections of the country. Our information comes mostly from Kansas SCM WØICV, and will be supplemented with reports from individuals and WØNIY's "Midwest Clixs," which contained a detailed summary.

WØFER of Hayes, Kans., was the first to get going with emergency traffic by contacting WØNI of Topeka to get the National Guard activated on the morning of March 23. At 0745, WØFNS ordered KPN on an emergency basis, operating until 2315 that night. From then until the emergency was over, KPN operated every day from 0600 until conditions closed in at night. NCS who were largely instrumental in keeping things going were *WØs* VZM FCE ONF VGE TNA QCL QML FNS and KØWDJ. Amateurs handled five death messages, located and handled traffic on snowbound trains for Union Pacific, Rock Island and Santa Fe railroads, obtained information for four different power companies and several telephone companies, handled traffic for National Guard and the police, handled medical information and traffic for the dispatch of snowplows. SCM WØICV says that he received reports from the Scott County Radio Club, the Ft. Hayes QSO Club and the Wheat Belt Radio Club, in addition to reports from individuals.

The Boot Hill Amateur Radio Club of Dodge City, Kans., also makes mention of traffic handled for the Santa Fe Railroad, which was without communication between Dodge City and Amarillo, Texas, through the good offices of *WØs* TYR CSV QMG and FRW of Syracuse, Kansas, and W5KZZ of Amarillo. *KØs* GCA and ATH and *WØs* QMG and CSV obtained ambulances and snowplows to remove persons injured in an LP gas explosion near Montezuma, Kans., to the hospital in Dodge City. KØEWW was the only communication out of Ingalls, reporting on the condition of 40 people stranded near there. Formal messages totaled 47, informals 251.

In Oklahoma, the only communications facilities open to Guymon were those of K5HSS, who reported snow drifted 12 feet deep around his shack. He handled traffic with Oklahoma City via W5OQT.

The Kansas e.w. nets, QKS and QKS SS, were in extended operation during the storm, helping to relieve the overload on KPN and continuing effective operation after KPN was bogged down in bad conditions. These two nets handled over 100 formal messages between March 24 and 27, maintained liaison with KPN (mostly through WØFNS, Kansas PAM), exchanging traffic with National Guard links and maintaining liaison with the Tenth Regional Net. Many operators spent long hours at the key to make this possible.

In Iowa, the southwest corner of the state was hardest hit, dozens of towns being isolated communications-wise. The Iowa 75 Meter Net, with approximately 100 stations participating, handled traffic for the Burlington and Great Western railroads, the Associated Press and Western Union. Amateurs furnished the only communications for a time from and to Hamburg, Bedford, Pacific Junction and Shenandoah, and partial service to Red Oak and Glenwood. A Burlington railroad official said, "We likely could never have turned a wheel on our line from St. Joseph to Pacific Junction if it hadn't been for the amateur radio operators." About 250 communications were handled.

The Nebraska Emergency Phone Net was in nearly continuous emergency session from 1230 March 24 to 2230 March 25, NCSed by *WØs* MAO EFK ZNI FTQ ZOU and KØBDF. About 78 stations participated. Traffic was handled for the railroads and Western Union and for many other agencies. Members of the Ak-Sar-Ben Radio Club handled emergency traffic of all types, including some outstanding six-meter work between Omaha, Fort Crook and Nebraska City by KØBWV, KØCHK and W9DEO/Ø.

A consolidation of reports reveals the following list of stations participating in this emergency, not including those already mentioned above: *WØs* AQD AQZ ATH ALD AER AXZ AFZ AXC AHW BET BJD BND BDK BUL BMV BZL BYC BLI BWP CWG CVN COK CXF CC DSM DQR DLP DOK DHR EKL EIM EIN ECD ESG FPY FDJ FON FQD FJN FDL FCP GFU GYK GIH GUO GBJ HJM HFP HCS HCH IHN INW IFR IBB IYW IYU ITM ICV IXB JEY JDX JAS JYW KKS KRZ KOK KXB KUC KUJ KSY LNW LOU LOW LEA LIX LNW LCX LJO LUS MI MXG MVG MML MCH MHS MWN MHB NVX NIO NIT NHT NRJ NIY NZ ONI OHX OFP ORB PAH PNV PHY PRI QJU QQQ QJC QXP QHF QJM QPR QGG QNI RBO ROZ RCY RIZ RME RC RKW RSX RLZ RR RND RNE SEH STC SYZ SZF SAF TSD TDG THX TMW TXP TOL UPY UTO UID UUH UFP UOL UYK UJK VGX VTT VND VWP VVE VJD VLO VDX VRZ WAY WPY WWR WWN WFP WBK WCL WDE WCO WAP YLO YIP YYW YVM YOV ZSZ ZXN ZXM; *KØs* AFZ APV ACC AQZ AMM BAJ BET BRX BYH BJO BIU BJD BYN BXF BRS CBN CVR CHP CEY CKG DKY DIW DQR DMS DNF EWS GUL HIC IBU; W4DJD/0; *W5s* AAJ BOM DVE FRB FBQ HGH KY KCG QT VJO VNC ZTU; K5BOM.

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On April 2, the whole southern section of Colorado was engulfed in a heavy snowstorm that left Canon City without power or communication, and most of Pueblo without power. Amateur radio contact was established with Canon City from Pueblo at 0900, KØEDF on emergency power making contact with WØNIT. For the next three days Canon City kept in almost constant contact with Pueblo, Colo. Springs and Denver. In Pueblo, *WØs* DML NCB and N1T worked in shifts. The Colo. Springs end was held up by *WØs* TV UFT KVD and CVG, and the Denver end by WØBWF and KØHPF. Traffic was handled for the Red Cross, telephone company, newspapers, radio stations, the railroads, commercial concerns and individuals. KØEDF

received a commendation from the governor for his outstanding work in this emergency. — *WØNIT, SEC Colo.*

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Twenty-one SECs submitted reports for March activities, representing 6307 AREC members. Nebraska and Southern Texas put the total number of sections heard from this year at 28. Thus, the trend continues to be slowly upward and is encouraging. Other sections reporting: Ala., Ga., W. N. Y., Conn., N. M., Minn., Colo., San Joaquin Valley, E. Fla., Santa Clara Valley, Santa Barbara, Ont., Wash., Ore., NYC-LI, Wis., Md.-Del.-D. C., Maritimes, Mont.

RACES News

On May 9–10 we had the privilege of attending as an observer the second annual conference of the United States Civil Defense Amateur Radio Alliance in Battle Creek, Mich. Of the 30 states who are members of this alliance, nine were represented at the conference, hosted by the Federal Civil Defense Administration. Also present were representatives from FCDA Regions 1, 3 and 4 and Canadian Civil Defense, along with a number of representatives from FCDA national headquarters who sat in on most of the discussions.

Although attendance from the member states was somewhat disappointing, this was found to be caused largely by lack of travel funds, and despite the low attendance the conference accomplished several significant things in promoting RACES as a principal instrument of civil defense communications.

As in most conferences, the real work was done outside the stilted atmosphere of the formal sessions. During the first day, Chairman Kenney, W2BGO, presented the problems and assigned them to committees. That evening the committees worked on their assignments in shirt sleeves, mostly in various members' rooms, and reports were submitted to wind up the proceedings the following day. Among other things, the conference received talks by Mr. William E. Skinner, Director of FCDA's Warning Division, on the new National Air Warning Alert System; by Mr. William E. Knott, W2QGH, on the USCDARA's quadrant frequency allocation system and the case for multi-channel RTTY; and entertained a proposal from a representative of the Department of Labor who had a communications problem. The Phil-Mont Mobile Radio Club's film "Every Single Minute" was also shown.

The salient recommendations coming out of the conference were these:

(1) Establishment of regional RACES nets sponsored by the regional Amateur Radio Alliances and the states concerned, not by FCDA.

(2) Encouragement of the use of s.s.b. for RACES.

(3) Vertical antenna polarization for local work, horizontal for long haul purposes.

(4) Modification of the amateur station licensing rules to permit the licensee of an amateur station used as a civil defense (RACES) control station to change hands without changing the call signal.

(5) RACES groups to be registered with Communications Interference Committees so that any TVI traceable to RACES operation can be referred to the proper group.

(6) Specific language for prologues to be used in opening RACES drills or tests, on both phone and c.w.

USCDARA now has before the FCC three petitions for rule making as follows: (1) To increase the RACES segments on 80 meters by 40 kc. at each end of the band and add new segments of 50 and 25 kc. at each end of the 40 and 20 meter bands respectively. (2) To authorize the use of 6F2 emission on the low RACES segment of the six meter band. (3) To provide RACES frequencies for use for remote controlled transmitters.

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 19 at 2130 Eastern Daylight Saving Time. Identical texts will be sent simultaneously by automatic transmitters on 1885, 3555, 7080, 14,100, 21,010, 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. References to texts used on several of the transmissions are given below. These make it possible to check your copy. For practice purposes, the order of words in each line of *QST* text sometimes is reversed. To improve your fist, hook up your own key and buzzer or audio oscillator and attempt to send along with W1AW.

Date	Subject of Practice Text from May *QST*
July 1:	"*Operation Smoke-Puff*," p. 11
July 9:	*Single-Side-Band Ideas* . . . , p. 16
July 12:	*Mechanical Considerations* . . . , p. 23
July 16:	*Who's Afraid of a Receiver*, p. 26
July 18:	"*Generalizing*" *the 6L6GB Novice Rig*, p. 35
July 22:	*QSL Cards*, p. 48
July 24:	*The Careless Consumer*, p. 53
July 30:	*Amateurs in the Kentucky Area Floods*, p. 56

W1AW SUMMER SCHEDULE

(All times given are Eastern Daylight Saving Time)

A printed local map showing how to get to W1AW from main highways or from the Hq. office 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 1300 July 5 in observance of Independence Day.

Official ARRL Bulletin Schedule: Bulletins containing latest information on matters of general amateur interest are transmitted on regular schedules.

Frequencies (kc.):

C.w.: 1885, 3555, 7080, 14,100, 21,010, 50,900, 145,600.

Phone: 1885, 3945, 7255, 14,280, 21,330, 50,900, 145,600.

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 page 86, 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 the above-listed frequencies. Code practice starts at 2130 each day. Approximately 10 minutes' practice is given at each speed. On July 19 and August 19, instead of the regular code practice, W1AW will transmit a certificate qualifying run.

CODE PRACTICE STATIONS

The following supplements the list of stations participating in the ARRL Code-Practice Program. A previous listing appeared on pp. 80 and 81 of last month's *QST*.

WØJDU, Ben Baxter, R. R. #2, Green, Kansas; 1885 kc.; Tues., and Fri., 0600 local time; beginners speeds.

W9QDF, Willard DuBord jr., 10247 Midland, Overland 14, Mo.; 29.6 Mc.; Mon. and Wed., 1900 local time; 5–13 w.p.m.

VE2ATL, Jon Achim, 10480 Saint-Charles Ave., Montreal 12, Quebec, Canada; 3630 kc.; Sat. and Sun., 1300 EST; 5–15 w.p.m.

VE2AVQ, Lorne Davis, 920 Saint Vallier W., Quebec City, P. Q., Canada; 3525 kc.; Wed., 1915 local time; 10–17 w.p.m.

VE6WR, James Dykes, 10902 117th St., Edmonton, Alberta, Canada; 3687 kc.; Third Fri. each month, 1930 local time; 5–15 w.p.m.

VE6ZF, John Geldart, 7707–79 Ave., Edmonton, Alberta, Canada; 3687 kc.; Mon., Wed., Fri., 1930 MST; 5–15 w.p.m.

K2IBC, Adolph Elster, W2FSL, 53 Commercial Ave., Avenel, New Jersey; 3675 kc.; Sat., Sun., and Holidays, 0730 EST; Beginner's speeds.

K2JZR, Robert Athanasiou, 8 General McLean Dr., Bellport, L. I., N. Y.; 3908 kc.; Mon. through Fri., 1700 EST; Beginner's speeds.

K2RCO, Ed Schneider, 3039 Bedford Ave., Brooklyn 10, N. Y.; 7023 kc.; Sun., Mon., and Thurs., 2100 EDST; Beginners and Advanced speeds.

K6USN, 12ND Naval Reserve Station, Building 7, Treasure Island, San Francisco, Calif.; 3590 kc., 7136 kc., and 1978 kc.; Mon. through Thurs., 1830 local time; 5-45 w.p.m.

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One of the most active on-the-air Code Practice stations is W4IYT, of Miami Springs, Florida, now starting his fourth consecutive year of successful CP work.

Using the "microphone and audio oscillator" technique of teaching, Andy makes his nightly appearance at 9:00 P.M., local time, on 28,700 kc. Announcements are made in voice explaining how the classes will be run, after which follows a full half-hour devoted entirely to the beginner. Alphabetical code characters are sent followed by a series of simple words. After the first half-hour there is a five-minute rest period "in order for both the transmitter and me to cool off," says Andy. The second period of the lesson commences at 9:35 P.M., in which the next 25 minutes are devoted to the more advanced beginner, with speeds ranging from 5 to 15 w.p.m. The proof of the puddin' is in the eatin'; 38 have passed their code tests, 16 have passed their FCC exams, at least 120 are copying W4IYT and . . . W4GGQ, Andy's XYL, has passed all three grades of licenses and is an active OBS.

1957 FIELD DAY NOTE

The time is nigh to get your Field Day report off to ARRL. Entries must be postmarked by July 20 to assure listing in the final results, scheduled for the December issue. The Communications Department also welcomes photos of your setup in action for possible use in *QST*.

TRAFFIC TOPICS

The "book" message, like the service message, is something that we seldom hear being sent in proper ARRL form. At one time, we had quite a long explanation on this subject in the Operating Booklet, but it was cut down to save space and because book messages were not an ordinary form. Let's go over the matter here as briefly as possible.

First of all, general principles. The book form message may be used whenever any parts of two or more messages are exactly identical. The proper way to do this is first to transmit those parts of the messages that are identical, then those parts that are different for each message. Obviously, the latter will include the number. What else it includes can vary somewhat; but let's take the usual for the sake of discussion.

Usually, a book message is one that has the same preamble (except number), the same text and signature for a number of different addressees. Its form of transmission is simple and logical. Instead of a number, you indicate "book of (however many)," go on with the preamble, skip the address and continue with the text and signature. After that, you transmit the message numbers and addresses to be applied to the preamble, text and signature previously sent.

Let's call that which is the same for all messages the "fixed" material and that which is different the "variable" material. In all cases, you transmit the *fixed* material first, follow with the *variable* material. Instead of a message number in the preamble, you indicate how many messages in the book.

Clear? No? Well, let's take an example. We have five messages originating at a fair which all use a standard ARRL text; the only thing different about them is the number and address. We send them, on c.w., this way: BOOK OF FIVE W1NJM ARL 2 NEWINGTON CONN 1700 MAY 20 BT ARL FIFTY BT DON BT NR 1 MR AND MRS JOHN SMITH AA 15 MAIN ST AA EAST OVERSHOE ARK BT NR 2 MR JOE BLOW AA (etc., until all five are sent) AR END BOOK AR. We follow this either with N, meaning there are no more messages, or B, meaning there is more to follow. On phone: "Book of five, W1NJM, check ARL2, Newington, Conn, seventeen hundred, May 20, the text: ARL fifty, signed: Don. Number one, to Mr. and Mrs. John Smith, fifteen Main Street, East Overshoe, Arkansas. Number two, to Mr. Joe Blow, (etc.), end of book." Indicate verbally whether or not more messages will follow.

The counting of book messages can be complicated. The principle to remember is that a message handled in book form is counted as *one* message in your traffic total, regardless of how many variables it may contain. In the above example, suppose:

(1) You are the originating station. You get one "originated."

(2) You receive the message and transmit it in the same form. You get one "received" and one "relayed."

(3) You receive the message and deliver it to all five addressees (don't forget to deliver the full text, not the ARL number). You get one "received" and five "delivered."

(4) You receive the message, relay two in book form, relay one separately, deliver one, and the other one is for you. You get one "received," two "relayed" (one for the two relayed in book form and one for the one relayed separately), and one "delivered." That part of the book message addressed to you receives no extra count, since it is part of the book message received.

In all cases of separate relay or delivery, you of course transmit or deliver as an entirely separate and complete message in standard form and order.

One common practice that is not considered a good one is use of the word "same" to indicate that a particular part of a message is the same as the same part of a previous message. This may speed up operating time a little, but it causes confusion, garble and mishandling when the receiving operator, after the transmission, tries to fill in the parts labeled as "same." It is better to use the book form if you have messages in which several parts are identical — unless, of course, your interest is only in making a high traffic total.

Any questions, class?

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Miscellaneous reports: Transcontinental Phone Net reports for April, a total of 4195, made up 1302 for the first call area, 1463 for the second call area, and 1430 for the fourth, ninth and tenth call areas. Dragg Net reports 22 sessions, 443 check-ins, 2658 traffic total. North Texas — Oklahoma Net reports 30 sessions, 802 check-ins, 399 traffic total. Early Bird Transcontinental Net reports 636 messages in 30 sessions. Interstate Side Band Net reports 321 messages with an average of 42 stations participating.

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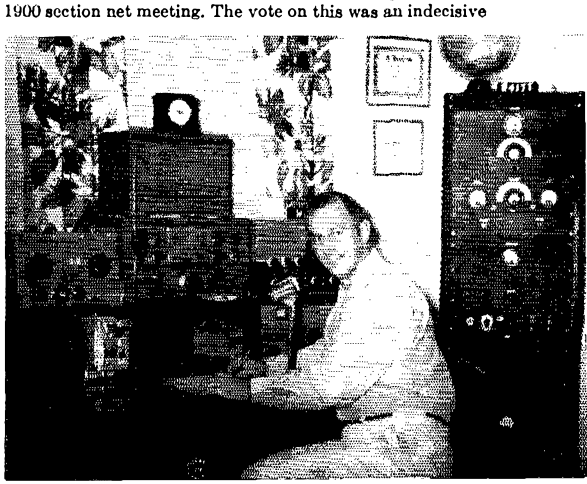
National Traffic System. Our NTS bible, CD-24, has undergone a slight revision. You may remember that some time ago we conducted a poll of opinion among regional net managers regarding the use of an extra regional net session at 1700 local standard time, or at some time prior to the 1900 section net meeting. The vote on this was an indecisive



Andy Clark, W4IYT, Eastern Florida SEC, ORS, NCS of Florida Mid-Day Traffic Net and code-practice station. Andy may be heard transmitting code practice on 28.7 Mc. Monday through Friday at 2100 EST.

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for April traffic:

Call	Orig.	Recd.	Rel.	Del.	Total
W3WIQ	43	1480	1540	65	3128
WØBDR	21	1309	1241	31	2602
W7BA	25	1227	1196	27	2475
W2KEB	122	1051	879	242	2294
W7PGY	41	923	831	92	1887
WØPZO	8	844	827	3	1682
WØLCX	40	777	760	17	1594
W4PL	10	692	589	85	1376
W9DO	23	655	614	64	1356
W9CXY	5	665	639	26	1335
WØCPI	7	661	628	33	1329
WØLGG	29	618	577	13	1237
WØBJP	8	534	527	7	1076
W7VAZ	33	521	450	71	1075
W5DRZ	28	519	467	38	1052
W9JOZ	11	517	477	11	1016
W1TYQ	50	499	451	13	1013
WØBLZ	5	488	477	5	975
W6GYH	786	81	42	21	930
W5ESB	35	433	413	16	897
W9ZYK	26	419	414	21	880
W4RLG	32	419	372	29	852
W3CUL	134	341	214	97	786
W1LDE	4	417	350	10	781
W8UPH	42	370	250	99	761
W5TMC	60	340	333	7	740
K9BBQ	22	346	339	7	714
W1FYF	11	351	343	6	711
W9TT	32	365	279	33	709
W6GQY	305	70	318	15	708
K7WAT	32	324	299	23	678
KØBCQ	2	343	332	0	677
W2MLW	14	331	300	24	669
W9MAK	32	317	252	43	644
W8ELW	17	311	308	2	638
W3UE	9	324	290	9	632
K5EGS	2	311	307	4	624
W4ZDB	59	287	262	14	622
W6EOT	7	302	273	34	616
WØYAL	3	305	305	0	613
W5QVV	2	304	303	1	610
W6QMO	51	297	185	76	609
W4PJU	71	268	240	28	607
WØKJZ	52	303	158	92	605
W6BPT	6	300	281	11	598
WØSCA	4	299	294	1	598
WØVPQ	56	267	195	72	590
K6DYX	1	298	276	4	579
WØOHJ	11	280	280	0	571
W2BXP	12	293	250	15	570
W9EQO	9	281	268	2	560
W2KFV	0	259	216	65	540
WØZWL	9	301	10	219	539
W9JYO	168	199	148	16	531
WØGXQ	99	216	192	20	527
W1EMG	4	265	216	40	525
WØGAR	4	258	256	6	524
K4EZL	33	252	222	11	518
W5UXE	49	233	221	12	515
W9EHZ	13	245	190	55	503
W1EFW	37	248	209	8	502
More-Than-One-Operator Stations					
K5WAB	106	1047	930	117	2200
K7FEA	267	924	866	12	2069
K5FFB	158	92	233	21	504

BPL for 100 or more *originations-plus-deliveries:*

K5BNH	279	K6OZJ	137	W2WOJ	105
W3EUG	255	W58MK	128	W1BDI	104
K5EMR	255	W9HXR	126	K2DEM	103
W9NZZ	227	W5EGD	120	K2MFF	101
KL7U8A	216	W5KEC	117	K5AEX	100
W9DGA	178	W4EHW	115	K5ETM	100
W9PCQ	170	W9JZK	114	K5JCX	100
W3CVE	164	WØMHS	114	W5LPL	100
W4OZG/5	164	W9MRA	111	Late Report:	
K2HPQ	163	W9SVL	110	W3CVE	127
WØNIY	148	W3ZRQ	108		
WØTOL	141	W8GFE	107		

More-Than-One Operator Stations

K3WBJ	227	W9AB	142	KØCNC	116

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: W1BPW, W2MLW, W5DRZ, W6EOT, K6MON, W7TLC, W8GBF, W8GFE, K9BBO.

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.

tie — five in favor to five opposed (one did not vote). At the present time, four regional nets are actually conducting such a session; three of these are conducting only 1945 sessions in addition to the extra early session; one is conducting both 1945 and 2130 sessions in addition.

Leaving options in the NTS structure makes any explanation of how the system works very "iffy," but in this case we endeavored to do so. The revised CD-24 therefore includes both the 1700-1900 regional nets (we put the recommended time arbitrarily at 1800) and the 2130 regional nets on an *optional* basis and puts the 2200 section net session also on an optional basis. It has to be stated something like this: *if* the region conducts no 2130 session, it *should* conduct an 1800 session the next day in order to get traffic from area to section level before the section net meets. If it does conduct a 2130 session, the section net *should* conduct a session at 2200. If not, the 2200 section net is optional.

That's probably about as clear as mud to most of you. However the revised CD-24 explains it in more lucid detail, we think.

April reports:

Net	Sessions	Traffic	Rate	Average	Representation %
1RN	26	355	0.69	13.6	94.0[1]
2RN	51	469	0.53	99.2	98.0
3RN	44	255	0.70	5.8	84.8
RN7	24	194	....	....	.....
8RN	36	198	....	5.5	87.0
9RN	60	1103	1.06	18.3	85.5
TEN	90	2543	....	28.1	74.6
EAN	22	1046	1.22	47.5	97.0
CAN	30	1586	1.10	52.8	96.7
PAN	30	1192	0.56	39.7	100.0
Sections[2]	638	6157		9.7	
TCC Eastern	56[3]	91			
TCC Central	..	2119			
TCC Pacific	963	1051			
Summary	1061	18759	EAN	14.6	PAN
Record	1061	18759	1.57	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: WSN (Wash.); QMN (Mich.); CN & CPN (Conn.); GSN (Ga.); KPN & KYN (Ky.); MPN & MSN (Minn.); VFN (Va.); OSN/PQN (Ont.-Que.); QKN (Kans.); Iowa 75 Phone; TLCN (Iowa); AENB, AENP & AENT (Ala.); ILN (Ill.); SCN (Calif.); S. D. 40 Phone & S. D. 75 Phone; NJN (N. J.).

[3] TCC schedules kept, not counted as net sessions.

Seem to be quite a few missing reports these days, and some of those we get are rather lacking in completeness. NTS net managers should complete all parts of their reporting forms, even though we don't appear to use them in the summary above. We *might* use them for a statistical analysis some time.

Perhaps a few definitions are in order concerning the significance of each of the column headings in the above tabulation. Here they are, along with information on how we compute them:

(1) Sessions. The number of directed-net sessions held in a single month.

(2) Traffic. The net traffic total for the month. This is on the basis of the total number of message *handlings* (i.e., transmissions and acknowledgments of receipt) during directed sessions of the net each month.

(3) Rate. The traffic total in that session in which the most traffic was handled during the month *divided by* the number of elapsed minutes in that session. Thus, NTS net "ratings" are at full load.

(4) Average. The month's traffic total divided by the number of sessions, to get the average traffic per session.

(5) Representation. First we multiply the number of representative units (regions in area nets, sections in regional nets) by the number of sessions held that month; this is the divisor. Then we add the number of times each representative unit was represented in the net that month; this is the dividend. The quotient is expressed as a percentage.

W1BVR has awarded hard-earned 1RN certificates to W*1s* GVK IUC ATX AUQ BPW EAE SMO FV DYE FUA GJM CZD and YKQ. W2ZRC reports that 2RN is now meeting an hour earlier on both sessions, making the present schedule 1745 and 1845 EST; he also suggests that the "rate" column be calculated on the basis of the actual average rate for the whole month, rather than on just the session during which the most traffic was handled. W3UE reports lack of stations willing to take NCS on 3RN. W4LAP is having transmitter trouble in his debut as 4RN Manager. W4COU has resigned as RN5 manager. The RN7 report was submitted by radio from W7GMC. EAN manager W8SCW points out that 4RN was 100% attendance in April, first time in a good many years. New PAN

Manager K6DYX reports Nevada has started a section net and is now represented in PAN, but much traffic is bypassing regional nets and going directly to section nets; he has put out a new bulletin which is a corker — poetry 'n everything.

Transcontinental Corps. We now have standard reporting forms for TCC directors. Now if they'll use 'em, perhaps we can get our TCC data coordinated so that everyone reports in standard fashion and we can make some summaries that mean something. In the tabulation above, only the traffic handed on TCC out-of-net schedules should be reported; we'd like to report the rest here, since, being already reported by NTS net managers, its inclusion above would be duplication. Don't let the low report for TCC-Eastern fool you. TCC-Pacific has more out-of-net functions, so naturally its traffic total will be higher. W3WG's report, the first one made on the new form (CD-133), indicates that there were 528 *in-net messages handled.* WØSCA does not appear to differentiate between in-net and out-of-net traffic. WØKQD's report, always immaculate and in great detail, shows that in addition to the 96 regular TCC schedules kept, 48 "auxiliary" schedules were kept, so actually there were 144 TCC skeds kept in the Pacific Area in April, involving 21 different stations. The complete roster: Eastern Area — W1AW, W1BDI W1EMG W1NJM W2HDW W2ZRC W3WG W4ZDB W9CXY W9DO; Central Area — *W9CXY W9DO W9IUJ WØBDR WØKJZ WØLGG* WØSCA; Pacific Area — *W6s* ADB BPT EOT GIW HC PLG RFW VPC VZT YHM, *K6s* CME DYX GZ ORT, *W7s* GMC TKB UJL ZBO, WØKQD.

RESULTS, APRIL CD PARTIES

Following are the highest scores claimed by ARRL appointees and officials during the CD Parties of April 13–14 and 20–21. Judging from the size of the tallies, they were lively spring funfests indeed! Figures after each call indicate score, number of contacts and number of sections worked. Final and complete results will appear in the July *CD Bulletin.*

C.W.

W6BIP	241,098-402-66	K4BAI	90,630-342-53
W6UED	240,438-402-66	WØEEE[2]	85,680-332-51
W6JVA	238,386-392-67	W2DMJ	88,065-302-57
W4YHD	215,800-657-65	W4WKQ	85,050-315-54
W1JYH	188,170-600-62	W4WHK	83,440-293-56
W3GRF[1]	188,100-564-66	W1AW[3]	81,200-283-56
W3VOS	184,000-570-64	W1EPE	81,125-295-55
W1EOB	180,900-533-67	W5EUQ	80,850-290-55
W3KLA	175,890-533-66	K4GEZ	79,170-273-58
K6BWD	156,038-282-61	K4ANB	77,275-276-55
WØPBH	144,640-450-63	W3YOZ	76,755-296-51
W1ASZ[2]	144,000-473-60	W4RQR	75,660-284-52
W2EEB	142,400-441-64	W1KRV	74,955-263-57
W3NF	139,810-444-62	W9YH[2]	72,800-275-52
K4HOU	133,950-464-57	W1GVK	72,650-262-55
WØMAK	127,490-412-61	W2EMW	71,340-240-58
W4KFC	122,100-400-60	WØUOL	70,500-230-60
W2BZ[4]	120,640-410-58	W2WMG	68,440-229-59
W1FUA	116,140-401-57	K4KNP	68,355-279-49
W8GBF	112,690-375-59	W8PBO	66,150-268-49
K6DYX	111,386-199-61	W5ZKT	65,490-222-59
W9LNQ	111,325-360-61	WØIA	65,175-230-55
W3TMZ	110,410-362-61	W2MDM	64,900-229-55
K6ORT	107,940-196-60	K6DDO	63,750-140-50
W1TYQ	107,085-356-59	W7WAH	62,858-129-53
K2KNV	107,055-345-61	W8SVL	62,640-228-54
W1WEF	105,735-364-57	W3EIS	61,880-208-52
K5DGI	105,560-359-58	W2KEL	60,000-233-50
W7JC	105,138-213-54	W8UPH	56,000-220-50
W8TZO	104,025-358-57	W9GDI	54,270-201-54
W1AQE	103,820-358-58	W4ZM	54,060-207-51
W9SZR/9	103,500-340-60	KØDEX	53,750-215-50
K2OMT	102,950-352-58	K5AOV	53,000-200-53
W8NOH	101,115-316-63	W4YE	51,875-268-45
VE7AC	100,630-190-58	VE2CP	51,220-190-52
K2EDH	100,130-317-62	W2AZB	51,145-193-53
W9WLY	98,310-336-58	W4JUJ	50,700-188-52
K4IXG	93,800-330-56	WØBLZ	50,220-162-62
K4DTI	92,400-305-60	W3GJY	50,120-172-56

PHONE

W3QOR	21,300-138-30	W2AYJ	9625- 70-25
W1JYH	18,910-115-31	W1GVK	9600- 80-24
W3KLA	18,600-120-31	W8GWR	9490- 73-26
K6BWD	18,480- 60-33	K2EIU	9020- 78-22
W1FZ	16,895-104-31	W3NF	8855- 70-23
W4TFX	16,385-108-29	W4JUJ	8500- 78-20
K2KNV	15,680-106-28	W8PRN	7560- 63-24
W8NYH	15,400-110-28	W3ARK	7300- 66-20
W4YE	14,040-101-26	W6JVA	7200- 30-24
W8NOH	13,650- 86-30	VE2CP	7140- 61-21
W1FYF	12,480-104-24	K4GKA	5880- 56-21
W4ZM	11,700- 85-26	W2EFU	5610- 66-17
W4NYN	11,060- 79-28	W1EOB	5460- 45-21
K2OMT	10,500- 81-25	W2FEB	5460- 48-21
W1AQE	10,080- 84-24	W3BNR	5280- 44-24

[1] W3PZW, opr. [2] Multiple operator. [3] W1ARR, opr. [4] K2EIU, opr. [5] W1QIS, opr.

DX CENTURY CLUB AWARDS

HONOR ROLL

W6AM....271	W6SYG....264	W3BES....261
W1FH....271	PY2CK....264	W2AGW....261
W8HGW...270	W6DZZ....264	W6RW....261
W6ENV...269	W6CUQ....263	ZL2GX....261
W9NDA...268	W6TT....233	W3KT....261
W6MX....267	W5ASG....232	W6SN....260
W3GHD...264	W8BRA....262	W7AMX...260
W8NBK...264	W8KIA....261	W2HUQ...260
	W3JTC....261	

Radiotelephone

PY2CK....259	ZS6BW....246	W9NDA...240
VQ4ERR...254	CN8MM...243	W8BF....239
W1FH....250	W8GZ....243	W3JNN...238
W8HGW...247	W9RBI....240	W6AM....237

From April 15, to May 15, 1957 DXCC certificates and endorsements based on postwar contacts with 100-or-more countries have been issued by the ARRL Communications Department to the amateurs listed below.

NEW MEMBERS

G3AAM	256	JA2DN	106	LA8F	102
W8QJR	216	W3QOR	105	MP4BBE	102
W6CHV	201	DL3FL	105	W1LRK/	
LU5AQ	147	YU2CE	105	VO1	102
KP4ADX	141	W1PPN	104	W1AZW	101
W8IRN	132	W5DNF	104	W2ILN	101
ZL2AHA	127	OH9ÖB	104	W6KTW	101
G3DQO	123	VE2APH	104	W9VTI	101
OH1TI	123	W4BWP	103	*WØHMM*	*101*
PY2AJK	121	G3CXM	103	W3CLP	100
W3MOT	117	G3GNM	103	W4UDZ	100
DL3WV	117	KL7PIV	103	W5VAE	100
SM6VY	117	LU5ABL	103	K6DSK	100
W3RPG	112	OH3TH	103	W7YLO	100
G3HXZ	110	W1AOQ	102	W8SWG	100
G3GGS	109	W4OMW	102	K9CLO	100
OH3RY	107	K5DGI	102	DM2ACM	100

Radiotelephone

SM5BBX	126	KV4BI	104	W2TEX	101
VP6GT	105	K2QQQ	103	*W8GLK*	*101*
W3RPG	104	OZ7BG	103	WØLIL	101
W5RHW	104	W4BWP	102	F8WE	100
		EL1H	102		

ENDORSEMENTS

W6TI	250	W3AYS	180	W7AUS	146
W6BPD	240	W3PGB	180	WØPGI	142
W6GPB	240	W5RS	180	W9BBU	142
W1AXA	231	W6CG	180	W1AW	140
W9FJB	230	K6VJQ	180	K2OEA	140
CE3DZ	230	W5OGS	175	W7CSW	140
W4LVV	226	W3FYS	174	W7WH	140
W4LZF	223	W4UXI	173	WØGUV	140
W3CGS	221	CT3AN	173	W8SDD	137
W2PRN	220	JA6AD	173	W8SUQ	136
W6CTL	220	W6SWG	172	W2UEC	135
W7AH	220	W7QGF	172	WØCKC	135
W7KTN	220	W1OJR	170	K2BSM	132
W7PHO	211	W2AEB	170	W2PZI	132
W4AAU	204	VE7VC	170	F3CT	131
W7ASG	203	W2LAX	165	SM5CCE	131
ON4NC	202	W1RB	163	W2BUI	130
W8CED	201	W5AWT	163	G3GFG	130
W8NGO	201	G3COJ	163	ZL4CK	130
W5UX	200	W4TFB	162	W1DBM	120
W6WWQ	198	VE1PQ	162	W2JVZ	120
W2BYP	194	W9WFS	161	W3EBG	120
G6BS	193	W1JMI	160	W6LTX	120
W6BIL	190	W6ULS	160	W9EVU	120
W6BYB	190	W1ZZK	158	PAØVO	113
W8TJM	190	JA6AO	157	W5OEN	111
W9JIP	190	W4AIS	153	OH1ST	111
WØIEV	188	DJ2AE	153	W1YRO	110
W3WDC	182	WØSYK	152	K2CF	110
CR6AI	182	SM3AKW	152	W2FLD	110
W2ABM	180	W3MDO	150	WØLLU	110
		W1ZDP	148		

Radiotelephone

W8QJR	213	WØIOS	151	WØSYK	128
G3HLS	211	W8MWL	150	W6TXL	124
DJ4DMG	210	I1BPW	141	W7PHO	123
W6SAL	183	W5HJA	140	G5LN	122
W1CLX	180	WØEHF	140	W4YHC	121
ZL1KG	180	KP4ADX	140	WØAGO	121
W4ANE	169	UC9D	140	EA7EM	121
WØIEV	169	W7AUS	133	EA8AX	121
G6BS	165	W2PRN	131	W3BVL	120
W1GOU	160	W6CHY	130	WØFUH	119
W2AEB	160	W4TFB	130	W1DBM	116
W6SHW	152			WØQFQ	114

W/VE/VO Call area and Continental Leaders

W4TO	254	VE3QD	210	VE8AW	191
W4TM	254	VE4XO	118	VO6EP	190
WØAIW	251	VE5QZ	140	Z86BW	250
VE1HG	164	VE5VK	164	4X4RE	222
VE2WW	192	VE7GI	224	G2PL	259

Radiotelephone

W2BXA	207	WØAIW	227	VE7ZM	178
W4HA	207	VE1CR	120	ZL2GX	226
W5BGP	222	VE2WW	122	OD5AB	180
W7HIA	188	VE3KF	163	EA2CQ	225
		VE6NX	101		

• All operating amateurs are invited to report to the SCM on the first of each month, covering station activities for the preceding month. Radio Club news is also desired by SCMs for inclusion in these columns. The addresses of all SCMs will be found on page 6.

ATLANTIC DIVISION

EASTERN PENNSYLVANIA—SCM, Clarence Snyder, W3PYF—SEC: NNT. PAM: TEJ. RM: YAZ. EPA nets: 3610, 3850 and 3997 kc. Danny Weil, of the *Yasme*, spoke in Phila. on Apr. 30 at a joint meeting of the Frankford Radio Club and Northeast Radio Club. ALB reports no 00 report this month. New officers of the Bucks County ARC are EXI, pres.; VWX, vice-pres.; KBG, secy.; WQL, treas.; and YPT, trustee. KJJ spoke to Tri-Hi-Y on ham radio while ZRQ put on a demonstration at a recent meeting. New Windsor ARC officers are WWG, pres.; KIK, vice-pres.; CXJ, secy.-treas.; QHF, act. mgr. GHY, DEH, CGD and NME, directors. DEH and NME have new SX101s. QHF has a new QTH to go with his new NC-300. WN3MAT has just received his ticket. The jr. operator here at PYF is now licensed with the call KN3AFW. You've heard about fathers and the family car? Mel is monopolizing the antennas at this QTH. DUI reports a local net on 3820 kc. every night at 1730 Mon. through Thurs. for local ragchewing in the Hazelton Area. BUR reports 4 new Novices, thanks to the North Penn ARC school. AXA reports the family now is in better shape and he is able to keep regular traffic skeds. CUL, back from Florida, received the red carpet treatment by all the Florida amateurs and newspapers. ZRQ made BPD. QLZ invites club newspaper editors to exchange with him. EPA closed May 29 for the summer. YAZ did a fine job as RM for the season and is looking forward to a bigger and better season next year. PFN continues as usual all summer. DIZ drew a fine illustration for the May copy of *BLUB*, the Philmont newspaper. SHP reports two new Novices in the Snydertown Area, WN3LXF and 'SHP's brother, KN3ADX. SMC reports that YDX now has a kw. on 20-meter c.w. to help with traffic-handling. UBO now is on 420 Mc. UQJ reports the first K call in the new issue is K3AAA, a Technician in the York Area. Traffic Hound's Morning Watch, at 0600 EST on 7080 kc., reports that some of the EPA stations participating include BFF, CUL, AFF, CCH and CXJ. AHX reports that JXI and GOQ have advanced to General Class. GOQ is the jr. operator at AHX. The Delaware-Lehigh ARC has completed a 2-meter converter project with 12 built and operating. AEQ, the Lehigh University station, is readying for next season with a new location, new rigs, plans for traffic-handling, ARRL affiliation, etc. KN3AFW will be operating portable 2 from a Boy Scout camp in Delaware Water Gap all summer, where he will be a junior leader teaching code, etc. Traffic: W3CUL 786, BFF 189, TEJ 187, ZRQ 163, WHK 118, QLZ 113, NF 105, YAZ 102, BBM 91, CXJ 80, PDJ 58, EPI 57, OGD 38, HWY 37, CMN 34, FCI 33, BUR 21, NQB 20, ZXV 18, AXA 16, BNR 14, PYF 12, ADE 11, FAW 7, AMC 6, DVB 5, BES 2, YVX 2, KN3AFW 1.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA—SCM, Louis T. Croneberger, W3UCR—SEC: PKC. Section Nets: MDD, 3650 kc, M-S 1900; MEPN, 3820 kc. MWF 1830. S Sn 1300. New appointments, TOM as PAM (v.h.f.) and AHQ as OBS (v.h.f.) for the Washington Area. Russ sends out bulletins on MCW on 2 and 6 meters at 10 w.p.m. PRL was unanimously reelected director of MEPN. OMN and CZT, picnic chairmen of the MEPN, advises the annual picnic will be held at Braddock Heights Park, near Frederick, Md., Sunday, July 7. Details will be found elsewhere in this and in June *QST*. 4ZM gave a talk on "Old Time Ham Stations," which was illustrated with many slides, at the Apr. 5 meeting of the WRC. The CSRC's Apr. 5 meeting featured WFT, who discussed the Montgomery County building and electrical codes and how they affected the amateur. Also YAV, home from Case Tech. School, Cleveland, showed the group a 6-meter hand-pack set. The PVRC and the Alexandria RC held a joint meeting on Apr. 24 to hear Danny Weil, VP2VB, tell of experiences with the *Yasme* on her trip from England to the Virgin Islands, where he was introduced to ham radio. He also related some of his subsequent adventures. The WMRC and NRLARC held a joint meeting Apr. 17 to hear Bob Dellar, 4ICC, tell of the IGY Satellite Program and how the ham could contribute. On Apr. 26 the RCARA had Jack Rabinow, a local inventor and holder of many patents in the computor field, who spoke on the automatic mail-sorting equipment under test at the Silver Spring post office and other developments in sorting mail. New officers of the Anne Arundel RC are FCD, pres.; UQS, vice-pres.; EZD, secy.; and DYH, treas. K3AKB is a new General Class license and the newest member of the WRC. By coincidence W3AKB also is a member of the WRC, ØOKI/3. Ralph, and KØHEY/3, Mildred, have left Aberdeen for Nebraska. The HCARA certainly will miss its Field Day site and first meeting place. HZT is back on the air with a DX-100 and a DZZ antenna. JZY was heard checking into the MEPN on 2 meters from the fire tower. ECP, WTVIC coordinator, did an FB job at the Arlington County Zoning Board on behalf of area amateurs. The *Washington Post* had a nice write-up on Van's demonstration. KDZ, DHQ and VDL are making week-end trips to West Virginia operating on 2 and 6 meters. EDA is installing a 60-ft. crank-up tower with 10- and 20-meter Telrex beams. EHA and OXL are on s.s.b. with CKJ building mobile s.s.b. gear. N3KPQ is on 40 and 15 meters with a DX-100 and an HQ-129. N3MUA is new in Damascus on 40 meters and also is heard on 2. TKE's jr. operator now is KN3AJA, who is heard regularly on 2 meters. Former CHOP KO4USV now is NOT at Annapolis on s.s.b. with a KWS-1 and a 75A-4. Traffic: (Apr.) W3UE 632, CVE 353, K3WBJ 313, K4DKG/3 266, W3EUG 260, TN 144, PQ 118, AHQ 105, ZGN 102, RV 96, COK 87, UCR 73, OYX 19, BUD 6, CQS 6, HKS 5, BKE 2. (Mar.) W3CVE 155, ULI 20, JZY 9, OYX 9. (Feb.) W3CVE 355.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG—SEC: YRW. PAM: ZI. With regret we report the passing of JRO, who will be greatly missed by his many friends. BAY lost his 75-meter antenna by lightning. JGU has received his TCPN certificate, also the first New Jersey certificate from the Virginia Jamestown Festival. BZJ, Pennington, is now assigned to the State C.D. Staff. HDW continues to increase his message total as a result of his activities in NJN, 2RN, EAN, TCC and UTL. K2SHT has received his General Class license. RACES personnel did a fine job in the April Alert. Reports of the activities were received from Mercer, Camden, Burlington and Gloucester Counties. K2IIA, SVV, MOM and 3VWX hold daily ragchews at lunch time. Mercer Co. RACES and AREC activities are reported monthly by K2IIW. Transistor Dxer RG has worked 20 states and several new countries. The Gloucester Co. C.D. Net meets at 7:15 P.M. each Fri. on 29 Mc. SJRA membership has reached 200. K2PTJ is doing FB combining Official Bulletins and code practice. Contact REB for National Convention reservations. TE was top SJRA scorer in the recent DX Contest. DAJ has 82 countries on his DX list. DMR has a new tower and beams and is doing FB on 10 and 15 meters. The Burlington Co. Radio Club meets the 1st Fri. in Moorestown, the SJRA the 4th Thurs. in Haddonfield. Reports of club activities are solicited. The DVRA did a fine job with another Old Timers Nite. Traffic: (Apr.) W2HDW 304, YRW 284, RG 175, K2JKA 122, JGU 121, W2ZI 77, MUE 70, BZJ 50, K2PTJ 37, SOL 17, HPV 16, KN2THX 15. (Mar.) W2YRW 196.

WESTERN NEW YORK—SCM, Charles T. Hansen, K2HUK—SEC: UTH/FRL. RMs: RUF and ZRC. PAMs: TEP and NAI. NYS C.W. meets on 3615 kc. at 1800, ESS on 3590 kc. at 1800, NYS Phone on 3925 kc. at 1800, TAR on 3570 kc. at 1700, NYS C.D. on 3509.5 kc. and 3993 kc. at 0900 Sun., TCPN 2nd call area on 3970 kc. at 1900, SRPN on 3980 kc. at 1000, LSN on

(Continued on page 94)

25,000 Linear Amplifiers

IN 1938 Hallicrafters introduced the Model HT-4 transmitter. This was a high powered unit designed to please the most discriminating amateur, and production was planned at a moderate rate which we felt would be needed to fill the demand from those who could afford such luxury items.

ON DECEMBER 7, 1941, all these plans were scrapped. The Signal Corps adopted the HT-4, gave it the Model Number BC-610 and demanded production in the thousands — right now. These transmitters were used for every military purpose on all fronts. The majority probably were installed in the SCR-299 and SCR-399 mobile radio stations, which carried their own power generators in trailers, and could communicate over tremendous distances even while traveling at high speeds. Other BC-610s were used as headquarters stations and we know of at least one that was installed complete with all accessories in an airplane, and was flown to various remote spots to supply vital communications.

ALTOGETHER somewhere around 25,000 were built; many of these of course were battle casualties and are no longer in existence, but after the end of the war when amateur radio operation was resumed a large number appeared on the surplus market and the BC-610 became one of the most popular high powered transmitters on the amateur bands. Some of these are still in use but difficulties with TVI have put many of them off the air.

TODAY THE BC-610 can once more become a highly useful piece of gear. On page 21 of the November 1955 *QST*, R. H. Mitchell, W5DWT, gives complete information for converting the BC-610 to use as a single sideband linear amplifier. Mr. Mitchell first converted only the final stage, a 250-TH, but found that his low power exciter would not drive it to full output, so it was necessary to also convert the 807 driver stage. This operation might appear to be a little complicated but if you own an HT-32 exciter it will drive the 250-TH direct and the conversion becomes a simple process.

EVEN THOUGH you may have experienced TVI troubles when operating a BC-610 on AM or CW, and have done nothing to improve the filtering or shielding, you probably will find that driving the final amplifier as Class AB_1 with an exciter, completely free from harmonics, will cure your troubles.

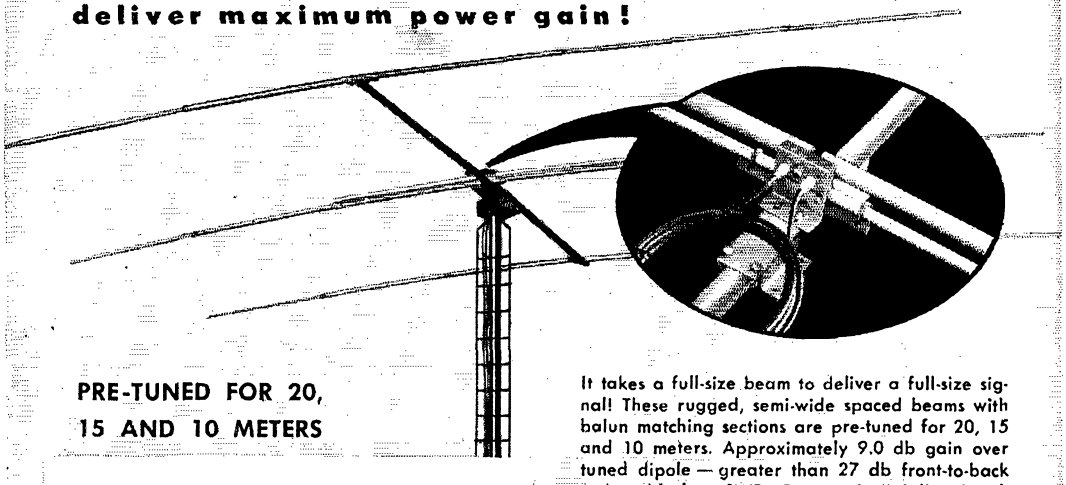
Very 73,

— CY READ, W9AA

Bud Hallgren Jr. W. J. Hallgren W9AC for hallicrafters

JOHNSON *full size* BEAMS

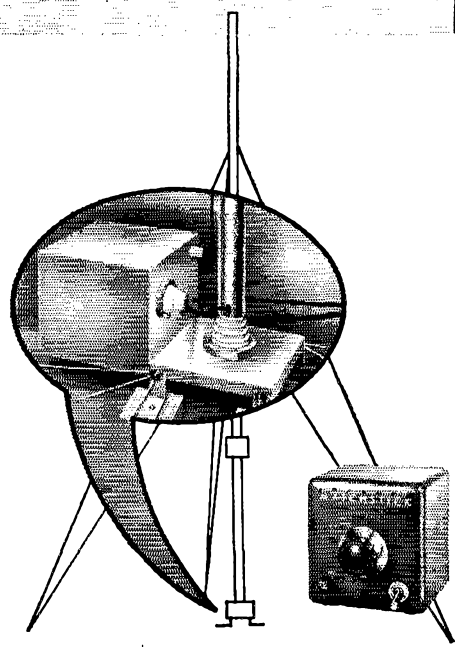
deliver maximum power gain!



PRE-TUNED FOR 20, 15 AND 10 METERS

Cat. No.	(With 3 elements, boom and balun)	Amateur Net
138-420-3	20 Meter Beam — 20' Boom...	$139.50
138-415-3	15 Meter Beam — 13'7" Boom.	110.00
138-410-3	10 Meter Beam — 10' Boom...	79.50

It takes a full-size beam to deliver a full-size signal! These rugged, semi-wide spaced beams with balun matching sections are pre-tuned for 20, 15 and 10 meters. Approximately 9.0 db gain over tuned dipole — greater than 27 db front-to-back ratio with low SWR. Pattern is uni-directional, beam width is 55°. No adjustments required. Boom assemblies are of 2" galvanized steel tubing, elements are aluminum alloy tubing. No loading devices needed for flutter dampening or corona discharge.



"MATCH-STICK"

fully automatic—

bandswitching vertical antenna

Here's the antenna system that solves limited space problems! Completely pre-tuned, this multi-band antenna system may be mounted on a roof stop or in any limited space location — automatically controlled and remotely motor driven from your transmitter location. Low SWR (less than 2 to 1) on all bands 80 through 10 meters — impedance: 52 ohms. Low vertical radiation angle for DX. Antenna tuning network is enclosed in a weatherproof aluminum cabinet located at the base of the antenna . . . effective antenna length and network selected automatically by weatherproof relays mounted directly on the mast. With 35' mast, base, tuning network, relays, control box and 6 nylon guy ropes.

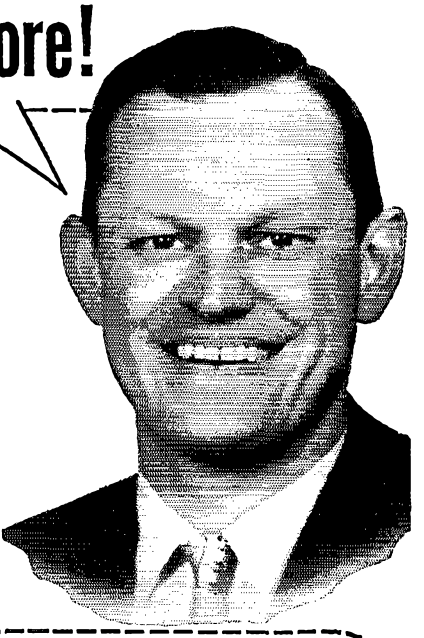
Cat. No. 137-102 — Pre-tuned.....$129.50 Amateur Net

See your distributor
Most authorized Johnson distributors offer liberal terms. Often as little as 10% down puts you on the air, and your used equipment (especially if it's Johnson) is always worth top dollar in trade.

E. F. Johnson Company

2831 SECOND AVENUE SOUTHWEST • WASECA, MINNESOTA

Check them all...you'll find a Viking transmitter gives you more!



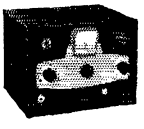
More communication power!

More operating features!

More in engineering and construction!

Yes, dollar-for-dollar and feature-for-feature, you'll find just what you've been looking for in one of these 4 Viking transmitters. Top performance isn't simply a matter of watts. Only carefully integrated equipment design can be counted on to develop effective power that punches your signal home, every time. That's what we call "communication power" . . . and your Viking transmitter delivers it in *full* measure!

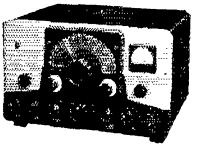
Punch your signal home...with one of these 4 Viking full-power amateur rigs!



"ADVENTURER"

This compact and completely self-contained 50 watt CW transmitter was used to earn the first novice WAC. (Worked All Continents) Effectively TVI suppressed, the "Adventurer" puts 50 watts of power into a rugged 807 transmitting tube. Instant bandswitching 80 through 10 meters... operates by crystal or external VFO control. Wide range pi-network output—no antenna tuner needed. Designed for easy assembly—with tubes, less crystals and key.

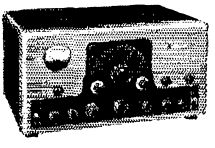
Cat. No. 240-181-1..Kit....Amateur Net $54.95



"RANGER"

This popular 75 watt CW or 65 watt phone transmitter delivers a solid signal! As an RF and audio exciter, the "Ranger" will also drive any of the popular kilowatt level tubes. Self-contained . . . effectively TVI suppressed . . . instant bandswitching 160 through 10 meters. Operates by extremely stable, built-in VFO or crystal control. Easily assembled—with tubes, less crystals, key and microphone.

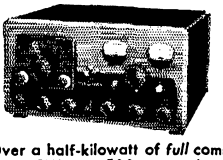
Cat. No. 240-161-1..Kit....Amateur Net $229.50
Cat. No. 240-161-2..Wired .Amateur Net $329.50



"VALIANT"

Here's power to slice through terrific QRM . . . a transmitter engineered for outstanding flexibility and performance! 275 watts input on CW and SSB*, 200 watts phone. Instant bandswitching 160 through 10 meters—operates by built-in VFO or crystal control. Final amplifier uses three 6146 tubes in parallel. TVI suppressed—timed sequence (break-in) keying —low level audio clipping—built-in low pass audio filter —self-contained power supplies. With tubes, less crystals, key and microphone.

Cat. No. 240-104-1..Kit....Amateur Net $349.50
Cat. No. 240-104- 2 Wired..Amateur Net $439.50



"FIVE HUNDRED"

Over a half-kilowatt of *full* communication power! Rated 600 watts CW . . . 500 watts phone and SSB*—conpact 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. Pi-network output will match a wide range of antenna impedances. With tubes, less crystals, key and microphone.

Cat. No. 240-500-1..Kit....Amateur Net $749.50
Cat. No. 240-500-2..Wired .Amateur Net $949.50

*P.E.P. input with auxiliary SSB exciter

Certified for matching funds by the FCDA on factory wired and tested models for crystal controlled operation. Requires use of Johnson 250-20 Low Pass Filter and on frequencies above 7 mc., the "Valiant" must be used with a Johnson "Matchbox" Antenna Coupler. (Cat. No. 250-23).

E. F. Johnson Company

2829 SECOND AVE. S.W. WASECA, MINNESOTA

(Continued from page 90)

3970 kc. at 1600. The Chautauqua County Radio Assn. held its annual hamfest in April. LXE, K2HUK and 3YA were speakers. K2IQH has 56 for his YLCC. UVF is now running 600 watts to a pair of 304THs on s.s.b. IIE has a new 1000A amplifier. K2KAQ got the Batavia Club prize for being the first to work Little America. Winner of the club DX Contest was K2MQP, who worked 57 countries and made 141 contacts in 30 days. Runner-up was CUY with 56 countries. MQP's power was 100 watts and CUY's was 50 watts. KIO has been appointed Radio Officer for Monroe County C.D., with ZZS as Net Coordinator. QYT made the ARRL Honor Roll for Class II OO. BLP, up Rochester way, was top OO in the nation. Congratulations! QYT is building a single 813 rig. The AWA held a luncheon preceding the RARA Hamfest and featured a tape-recorded interview with Hugo Gernsback. The RARA gang had its most successful hamfest to date with about 500 in attendance. Among guests and speakers were 3YA, JIL, BDS, FEU, SJV and K2HUK. ICE was chairman and PPY won the grand prize, an NC-66. OZR has been made chairman of the technical committee for USCDARA. RQF is going d.s.b. VOS spoke on s.s.b. at a recent RAWNY meeting. 1VLH spoke on v.h.f. and PRP at a recent gathering of Western New York hams and visited ORI, ALR, ZOC, LXE, K2VAW, HRB and HUK. KN2OBX is now K2OBX. LXE has a thirteen-element "Long John" under construction and test for 2 meters. QNA and K2CEH are on 220 Mc. New officers of the Syracuse V.H.F. Club are WZR, pres.; RBK, vice-pres.; IYR, treas.; K2SZM, act. KXT is the first one on RTTY in Syracuse. KCR has installed facsimile equipment for use in the "Operation Deepfreeze" setup. BDS gave a talk on beam antennas at a recent RAGS meeting. Incidentally RAGS now has about 250 members. WNJ, K2SZM, TKJ, RJU, THT, KCD and QQX are all operating on low-power 6-meter mobile. The 13th Annual Oneida Hamfest and Ladies' Night will be held Sat., Sept. 28. For details contact RXW. Recent appointments: K2s JAE, JWE, KTK, KNV and RHQ as OO Class IV; MLT as OO Class III; LXE as OES. Traffic: (Apr.) K2ILP 362, QIW 209, W2ZRC 117, RQF 52, K2DSR 39, GQU 39, W2OE 36, EMW 31, K2KIR 25, W2FEB 11, KEL 10, K2CUQ 5. (Mar.) W2RQF 23, GBX 8, K2CUQ 6.

WESTERN PENNSYLVANIA—SCM, J. F. Wojtkiewicz, W3GJY—SEC: OMA. RMs: UHN, NUG, GEG and NRE. PAMs: AER and TOC. SUK works the 50-, 220- and 420-Mc. bands. RTB, a new OO is "riding" the Key Klix gentry. TOC is spending most of his time on the Mike-Farad Traffic Net these days. Etna RC news: WN3KIQ has been elected temporary secy. KSI gave a nice talk on Radio Telescopes and Man-Made Satellites. OWJ and NYD visited TOC's shack. The club meets the 1st and 3rd Tue. of each month at the VFW Post No. 9197 and the latch key is out. The Cumberland Valley ARC conducted a hidden transmitter hunt at its last meeting. WN3IIC has dropped the "N" from his call. K3EMO and BUS were guests at the last meeting. BSN News: PJ2AX, ZS6ADS, OZ4FA and GM3BCL are new members. CGP was QRL painting the North Park Hamfest signs. KLP worked 26 countries from his car. OJW received DXCC certificate No. 883 on phone. BEX has 61 countries contacted toward DXCC. HEA made WAS by snagging Vermont. YIT, JT and UJP heard their first MARS lecture and UJP is working hard for his Mobileers certificate. PII has received his "initial" KR6 QSL. ZQC has a 65B. Erie ARC news: The 6-Meter Net meets every Sun. night on 50.52 Mc. at 9:30 P.M. A drill in preparation for the coming C.D. Operation Drive-out had JTF, ALD, JOQ, POS, CSM and UCZ participating. The regular 10-meter net meets on 29.150 Mc. at 8 P.M. Sun. ALD is now in the Air Force. MBC works 7 Mc. with a DX-35 and an S-40 receiver. KVB had a nice write-up in the *Erie Time-News* recently because of his contact with KC4USN with Eriete Dr. Paul Sipple at the mike. Dick made AT2US happy by purchasing corsages for his sweetheart and mother during Easter. MMJ also contacted AT2US for a new one. KLD has been promoted to Senior Deputy Radio Officer for the Western Area of the State Council. BFB is Alternate Radio Officer for Erie County. He will appreciate the help of all members of the various nets. HLM soon will be in the Air Force. WN3MFG is active on 80- and 40-meter c.w. KN3AAD is a new Novice licensee. RBF has DX-35 troubles. BEZ now is busy with MARS work. OFE is off the air on account of his antenna being down. YOZ plans to operate on 2 meters this summer. YA expects more activities next year from its station. VKD was made honorary member of the Frankford Radio Club. ADK, IYI, YCG and ELZ attended the Johnstown Banquet. The Western Pennsylvania DX Society still is looking for new members. For information contact RTB or RBF. BZR reports the Coke Center RC is conducting code classes each Thurs. night. NUG contacted the West Coast 3 times on 80 meters with 18 watts. After 17 years pounding brass UVD has gone to phone using grid-bias modulation and 40 watts. The Weather Bureau Net operates on 3585 kc. the first Sat. and Sun. of each month at 7:30 P.M. EDST Sat. & 9 A.M. Sun. traffic: (Apr.) W3WIQ 3128, BZR 122, UHN 89, GJY 49, YA 37, YCG 14, NUG 9. (Mar.) W3NUG 33, YCG 14, NCD 3. (Feb.) W3NUG 20.

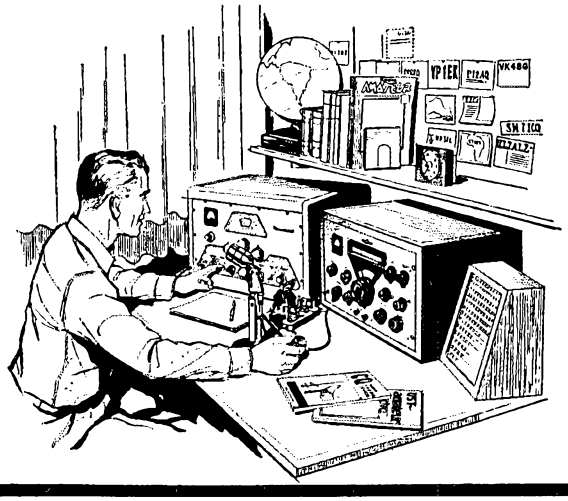
CENTRAL DIVISION

ILLINOIS—SCM, George T. Schreiber, W9YIX—Asst. SCM: Grace V. Ryden, 9GME. Section Nets: ILN, 3515 kc. Mon. through Fri. 7 P.M. daylight time; IEN, 3940 kc. RAIs: STZ and MAK. EC: HOA, Cook County EC: HPG. A new ORS is K9GJR. An error in typing gave the frequency of the Montgomery County AREC Eight-Ball Net as 2960; of course 29,600 kc. was meant. Sorry. KNP is back in the section at Wilmette and continues s.s.b. activity. K9AMD now has a WAC certificate for 10-meter phone. *Ham Gab*, the official voice of the Hamfesters Club is greatly enlarged and improved. It is edited by LNQ. BQC has a Johnson Viking on the air and reports that the Rockford 6-Meter Emergency Net now has more than 20 stations QNI Wed. and Thurs. nights at 2100. YLU vacationed in Mexico but had no time to revive his old XE5PD call. DEI sold his business interest to his partner, LSQ, and moved to W6-Land. PY6AC and VE2LI visited with the WGN gang. JCX has been off the air because of illness but by the time you read this should be back. RK moved his mobile rig into the house. VL finds 15 meters interesting for DX. PEB and PGW find their 20-meter beams make excellent arrays by merely working stations off the back. Have others found this to be true? CKU is erecting an all-band vertical hoping to QSO his brother Carl, who operates KC4USA. NSL manages to find time for some 40-meter c.w. work. NN is lighting the fire under the DX boiler for a spring and summer stab at any new ones. MAK has a new 80-meter dipole and an A-1 Operators Club certificate. GDI spent 11 hours in the CD Party and enjoyed them all. The Synton Radio Club is offering a $50 reward for arrest of the person who stole its radio equipment. SXL, McLean County EC, has as assistants VPD, QQX and K9DCW. The Central Illinois Radio Club graduated 13 Novice operators from the code class. BOC and her OM enjoyed mobile while on their Indiana vacation. K9CFQ keeps busy on the nets and has worked 189 other YLs. YJC and her OM, IN1, are headed for a new QTH in Florida. Another YL in the section is 7WAF/9, from Seattle, who is heard on 2 meters. She is now a member of the YLRL. NWL now has her General Class license and KN9GNQ is busy as a beaver studying for same. SEZ and KRK, her OM, now are located on their farm in New York State. LDK has been picked for Radio Officer for 10-meter operation and MYC for the same job on 2 meters. YBC expects to get her teacher's certificate soon. QXI is proud of her new DX-100, while YWH uses ham radio to keep in contact with her daughter in W6-Land. VWJ notes his XYL KN9GOL has had the rig in the Novice band so much lately he rarely finds time to operate. Auctions held by the Chicago Suburban Radio Assn. are much enjoyed by the membership. K9AAU should be out of the service soon. Meanwhile he offers a Maryland contact through 3PQT on 80 and 40 meters. His XYL is KN9HRH. Congrats to EWU on his recent marriage. RQR is one of the section's most active OOs. BA writes that the St. Clair AREC is going great guns with 26 fixed and 16 mobile stations active. SKR just about has the TVI cleaned up in his v.f.o.-exciter. The Greenville College Amateur Radio Club has purchased a new Globe Chief for its club station. K9BJV. Congrats to this club on its recent affiliation with ARRL. On the sick list are UQT, BLO and BUH. Good luck, fellows. MAK, RM for ILN, reports 21 sessions in April with traffic of 297. CSW reports 262 messages handled for the North Central Phone Net. Traffic: W9DO 1356, MAK 644, IDA 353, K9GJR 282, W9JZK 229, PCQ 207, FAW 199, YYG 172, MRA 119, YFO 103, OYL 96, CTZ 70, YIX 50, SXL 31, K9AMD 10, W9PHE 9, BA 8, VWJ 2.

INDIANA—SCM, Seth Lew Baker, W9NTA—Asst. SCM: George H. Graue, 9BKJ, SEC: QYQ, RMs: DGA, TQC and TT. PAMs: CMT, KOY, SWD and UXK. New appointments: K9BBO and VAY as ORSs, HXR as OPS and ORS, GJS as OO, JBQ as EC Floyd Co. and WEP as EC Elkhart County. TQC received a Traffikers 5000 certificate. At the Indiana Radio Club Council spring meeting six more clubs were admitted, the Duneland ARC, Putnam Co. RA, Circle City RA, Old Post Vincennes ARC, Kekieonga ARC (Ind. Tech.)

(Continued on page 102)

HEATHKITS®



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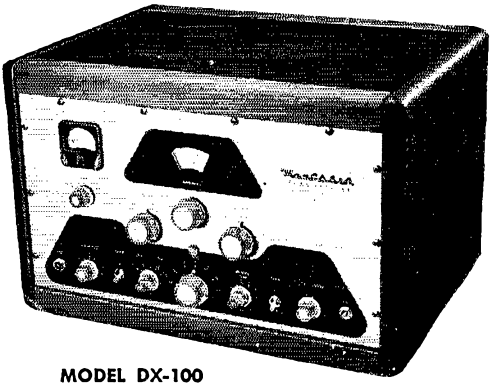
Heath amateur radio gear is designed *by* hams—*for* hams, to insure maximum "on the air" enjoyment. Good design and top-quality components guarantee reliability. Heathkits are easy to build and are easy on your budget! You save by dealing direct, and you may use the Heath Time Payment Plan on orders totaling $90.00 or more. Write for complete details.

HEATHKIT
DX-100
TRANSMITTER KIT

PHONE AND CW

- *Phone or CW—160 through 10 meters.*
- *100 watts RF on phone—120 watts CW —parallel 6146 final.*
- *Built-in VFO—pi network output circuit.*
- *Easy to build—TVI suppressed*



MODEL DX-100

$189.50

$18.95 dwn., $15.92 mo.

Shpg. Wt. 107 Lbs.

Shipped motor freight unless otherwise specified. $50.00 deposit required on c.o.d. orders.

The Heathkit DX-100 phone-CW transmitter offers features far beyond those normally received at this price level. It has a built-in VFO, built-in modulator, and built-in power supplies. It is TVI suppressed, and uses pi network interstage coupling and output coupling. Matches antenna impedances from approximately 50 to 600 ohms. Provides a clean strong signal on either phone or CW, with RF output in excess of 100 watts on phone, and 120 watts on CW. Completely bandswitching from 160 through 10 meters. A pair of 1625 tubes are used in push-pull for the modulator, and the final consists of a pair of 6146 tubes in parallel. VFO dial and meter face are illuminated. High-quality components throughout! The DX-100 is very easy to build, even for a beginner, and is a proven, trouble-free rig that will insure many hours of enjoyment in your ham shack.

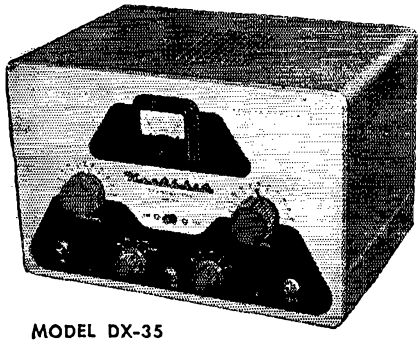
HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.

HEATHKIT DX-35
TRANSMITTER KIT

PHONE AND CW

This transmitter features a 6146 final amplifier to provide 65 watt plate power input on CW, with controlled-carrier modulation peaks up to 50 watts on phone. Modulater and power supplies are built in, and the rig covers 80, 40, 20, 15, 11 and 10 meters with a single band-change switch. Pi network output coupling provides for matching various antenna impedances. Employs 12BY7 oscillator, 12BY7 buffer and 6146 final. Speech amplifier is a 12AX7, and a 12AU7 is employed as modulater. Panel control provides switch selection of three different crystals, reached through access door at rear. Panel meter indicates final grid current or final plate current. A perfect low-power transmitter both for the novice or the more experienced amateur. A remarkable power package for the price. The price includes tubes, and all other parts necessary for construction. Comprehensive instruction manual insures successful assembly.



MODEL DX-35

$56.95

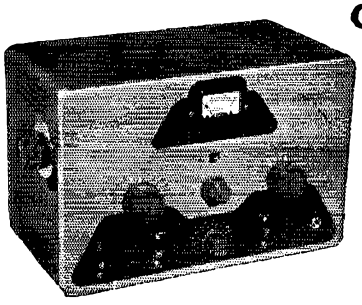
Shpg. Wt. 24 Lbs.

$5.70 dwn., $4.78 mo.

- *Phone or CW—80 through 10 meters.*
- *65 watts CW—50 watts peak on phone—6146 final amplifier.*
- *Pi network output to match various antenna impedances.*
- *Tremendous dollar value—easy to build.*

BRAND NEW

HEATHKIT DX-20
CW TRANSMITTER KIT



MODEL DX-20

$35.95

$3.60 dwn., $3.02 mo.

Shpg. Wt. 18 Lbs.

- *Designed exclusively for CW work.*
- *50 watts plate power input—80 through 10 meters.*
- *Pi network output circuit to match various antenna impedances.*
- *Attractive and functional styling—easy to build.*

Here is a straight-CW transmitter that is one of the most efficient rigs available today. It is ideal for the novice, and even for the advanced-class CW operator. This 50 watt transmitter employs a 6DQ6A final amplifier, a 6CL6 oscillator, a 5U4GB rectifier and features one-knob bandswitching to cover 80, 40, 20, 15, 11 and 10 meters. It is designed for crystal excitation, but may be excited by an external VFO. A pi network output circuit is employed to match antenna impedances between 50 and 1000 ohms. Employs top-quality parts throughout, including "potted" transformers, etc. If you appreciate a good signal on the CW bands, this is the transmitter for you!

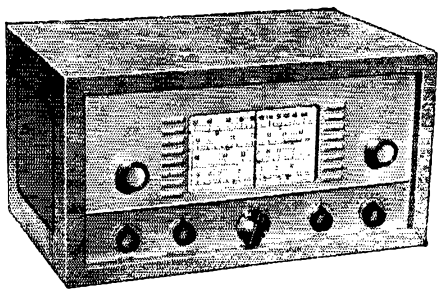
HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.

HEATHKIT

COMMUNICATIONS-TYPE, ALL BAND

RECEIVER KIT



This receiver covers 550 kc to 30 mc in four bands, and is ideal for the short wave listener or beginning amateur. It provides good sensitivity and selectivity, combined with fine image rejection. Amateur bands are clearly marked on the illuminated dial scale. Features transformer-type power supply—electrical band spread—antenna trimmer—separate RF and AF gain controls—noise limiter—headphone jack—and AGC. Has built-in BFO for CW reception. Shpg. Wt. 12 Lbs.

MODEL AR-3

$29.95

incl. excise tax (less cabinet)

$3.00 dwn., $2.52 mo.

CABINET: Fabric covered cabinet with aluminum panel as shown. Part 91-15A. Shipping Wt. 5 Lbs. $.50 dwn., $.42 mo. $4.95

Ⓐ HEATHKIT VFO KIT MODEL VF-1

Covers 160, 80, 40, 20, 15, 11 and 10 meters with three basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Requires 250 VDC at 15 to 20 ma, and 6.3 VAC at 0.45A. Incorporates regulator tube for stability and illuminated frequency dial. Shpg. wt. 7 lbs. $1.95 dwn., $1.64 mo. **$19.50**

Ⓑ HEATHKIT GRID DIP METER KIT MODEL GD-1B

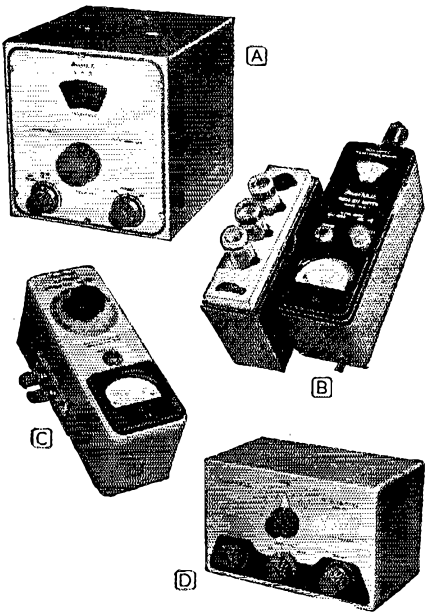
Continuous coverage from 2 mc to 250 mc with prewound coils. 500 ua panel meter for indication. Use to locate parasitics, for neutralizing, determining resonant frequencies, etc. Will double as absorption-type wavemeter. Shpg. wt. 4 lbs. $2.00 dwn., $1.68 mo. **$19.95**

Ⓒ HEATHKIT ANTENNA IMPEDANCE METER KIT MODEL AM-1

The AM-1 covers 0 to 600 ohms for RF tests. Functions up to 150 mc. Used in conjunction with a signal source, will determine antenna resistance and resonance, match transmission lines for minimum SWR, determine input impedance, etc. Shpg. wt. 2 lbs. $1.45 dwn., $1.22 mo. **$14.50**

Ⓓ HEATHKIT "Q" MULTIPLIER KIT MODEL QF-1

Functions with any receiver having IF frequency between 450 and 460 kc that is not AC DC type. Operates from receiver power supply, requiring only 6.3 volts AC at 300 ma (or 12.6 vac at 150 ma), and 150 to 250 vdc at 2 ma. Simple to connect with cable and plugs supplied. Provides extra selectivity for separating signals, or will reject one signal to eliminate heterodyne. Effective Q of approximately 4000. Shpg. wt. 3 lbs. $1.00 dwn., $.84 mo. **$9.95**



HOW TO ORDER...

It's simple—just identify the kit you desire by its model number and send your order to the address listed below. Or, if you would rather budget your purchase, send for details of the Heath Time Payment Plan for orders totaling $90.00 or more.

HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.

"I am now using the Gotham V80 vertical antenna with only 55 watts, and I am getting fantastic reports from all over the world". VP1SD

ALL-BAND VERTICAL ANTENNAS

GOTHAM'S sensational new vertical antennas give unsurpassed multi-band performance. Each antenna can be assembled in less than two minutes, and requires no special tools or electronic equipment. In the V160, resonance in the 160, 80, 75, and 40 meter bands is secured through use of the proper portion of the loading coil. Yet, when the coil is eliminated or bypassed, the V160 will operate on 20, 15, 10 and 6 meters! The same idea applies to our V80 and V40 multi-band verticals. No guy wires needed; rugged, occupies little space, proven and tested.

●

Simple design and superior materials give all-band operation, and effective, omni-directional radiation. Gotham verticals are rugged, with low initial cost and no maintenance. Guaranteed Gotham quality at low Gotham prices. Perfect for the novice with five watts or the expert with a kilowatt.

QUALITY MATERIAL

Brand new mill stock aluminum alloy tubing with Aluminite finish for protection against corrosion. Loading coils made by Barker & Williamson.

ALL-BAND OPERATION

Switch from one band to another. Operate anywhere from 6 to 160 meters. Work the DX on whatever band is open.

EASY ASSEMBLY

Less than two minutes is all you need to put your vertical together. No special tools or electronic equipment required. Full instructions given.

SIMPLE INSTALLATION

Goes almost anywhere. On the ground, on the roof, or outside your window. No trick fittings or castings needed.

AMAZING PERFORMANCE

Hundreds of reports of exceptional DX operation on both low and high power. You will work wonders with a Gotham vertical.

NO GUY WIRES

Our design eliminates unsightly guy wires. You save time, trouble, space and money by avoiding guy wires.

PROVEN DESIGN

Over a thousand Gotham verticals are on the air — working the world and proving the superiority of Gotham design.

AND THE PRICE IS RIGHT!

"I worked LU3ZS on Half Moon Island in Antarctica on Dec. 26 at 21150 Kc. I was using my Gotham V80 vertical antenna and only 35 watts." KN5GLI

Airmail Order Today — We Ship Tomorrow

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1805 PURDY AVE., MIAMI BEACH, FLA.

Enclosed find check or money-order for:

V40 vertical for 40, 20, 15, 10, 6 meters.....$14.95 ☐
V80 vertical for 80, 75, 40, 20, 15, 10, 6 meters.....$16.95 ☐
V160 vertical for 160, 80, 75, 40, 20, 15, 10, 6 meters.....$18.95 ☐

Name.....

Address.....

City.....Zone.....State.....

How to order
Send check or money order directly to *Gotham* or visit your local distributor. Immediate shipment by Railway Express, charges collect. Foreign orders accepted.

GOTHAM 1805 PURDY AVENUE MIAMI BEACH 39, FLA.

YOU COULD WORK WONDERS IF YOU HAD A GOTHAM BEAM!

Study these specifications—compare them—and you too will agree, along with thousands of hams, that GOTHAM beams are best!

TYPE OF BEAM. All Gotham beams are of the full half-wave plumber's delight type; i.e., all metal and grounded at the center. No wood, tuning stubs, baluns, coils, or any other devices are used.

MORE DX CONTACTS

GAIN. Gotham beams give the maximum gain obtainable. Our 2-element beams give a power gain of four (equivalent to 6 db.); our 3-element beams give a power gain of seven (8.1 db.); and our 4-element beams give a power gain of nine (9.6 db.)

THE DESIGN IS PROVEN

FRONT-TO-BACK RATIO. We guarantee a minimum F/B Ratio of 19 db. for any of our 2-element beams; 29 db. for any of our 3-element beams; 35 db. for 4-element beams.

THOUSANDS IN DAILY USE

MATCHING. Matching of the transmission line to the beam is extremely simple and quick. No electronic equipment or measuring devices are required.

ALCOA QUALITY ALUMINUM

ASSEMBLY AND INSTALLATION. No special tools are required for assembly and installation. Entire job can be done by one man in less than an hour. Full instructions are included with each beam.

CONSISTENT PERFORMANCE

MAST. Any Gotham beam can be mounted on a simple pipe mast. Diameter of the pipe should be between ¾" and 1⅝".

QUICK INSURED DELIVERY

STANDING WAVE RATIO. A very low SWR of approximately 1.5 to 1 will result from following the instruction sheet, depending on the height above ground and the surrounding area. If an SWR indicator is available, Gotham beams can be quickly and easily adjusted to 1.1.

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

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 terrific gain is to use a Gotham Tribander Beam.

6–10–15 TRIBANDER.....$39.95

10–15–20 TRIBANDER..... 49.95

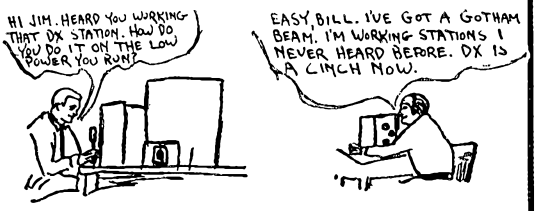
HOW TO ORDER: Send check or money order directly to GOTHAM or order from your local distributor. Immediate shipment by Railway Express, charges collect.

You could work KC4USA in the Antarctica with only 90 watts on 15 meters, as W4SK did.

You could work over 100 countries with a three element 10 meter beam, and be a top man on the frequency, like WØDEI.

You could work terrific skip and DX with reports of 20 over 9, with as little as 36 watts input on 20 meters, as W. E. Woods did.

You could work 29 states in three months on six meters, with low power, as K2LHP did.



Airmail Order Today — We Ship Tomorrow

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1805 PURDY AVE., MIAMI BEACH, FLA.

Enclosed find check or money-order for:

TRIBANDER

☐ 6-10-15	$39.95	☐ 10-15-20	$49.95

6 METER BEAMS

☐ Std. 3-El Gamma match	12.95	☐ T match	14.95
☐ Deluxe 3-El Gamma match	21.95	☐ T match	24.95
☐ Std. 4-El Gamma match	16.95	☐ T match	19.95
☐ Deluxe 4-El Gamma match	25.95	☐ T match	28.95

10 METER BEAMS

☐ Std. 2-El Gamma match	11.95	☐ T match	14.95
☐ Deluxe 2-El Gamma match	18.95	☐ T match	21.95
☐ Std. 3-El Gamma match	16.95	☐ T match	18.95
☐ Deluxe 3-El Gamma match	22.95	☐ T match	25.95
☐ Std. 4-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 4-El Gamma match	27.95	☐ T match	30.95

15 METER BEAMS

☐ Std. 2-El Gamma match	19.95	☐ T match	22.95
☐ Deluxe 2-El Gamma match	29.95	☐ T match	32.95
☐ Std. 3-El Gamma match	26.95	☐ T match	29.95
☐ Deluxe 3-El Gamma match	36.95	☐ T match	39.95

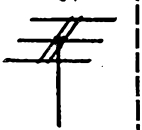
20 METER BEAMS

☐ Std. 2-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 2-El Gamma match	31.95	☐ T match	34.95
☐ Std. 3-El Gamma match	34.95	☐ T match	37.95
☐ Deluxe 3-El Gamma match	46.95	☐ T match	49.95

(Note: Gamma-match beams use 52 or 72 ohm coax. T-match beams use 300 ohm line.)

NEW! RUGGEDIZED HI-GAIN 6, 10, 15 METER BEAMS

Each has a TWIN boom, extra heavy beam mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.



☐ Beam #R6 (6 Meters, 4-El).....$38.95
☐ Beam #R10 (10 Meters, 4-El)..... 40.95
☐ Beam #R15 (15 Meters, 3-El)..... 49.95

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City.....Zone....State.....

(Continued from page 94)

and Farnsworth RC. Hoosier Courtesy Award certificates were granted to DZC, WUH, DGA, AIN, NIO, EQO, JYO, EGQ, SWD, CMT, DOK, KOY and NTA. The State paper, *The Bison*, was put on a subscription basis of $1.00 a year so if you wish to continue receiving it send in your buck. The annual IRCC Picnic will be held in Indianapolis in July. KLR has a 64-element beam on 2 meters and hears Texas and Vermont on meteor-scatter skeds. New calls in Seymour: OGO, K9GEN and KN9HTD: In South Bend: KN9HWK and KN9HAK In Elwood: KN9HAB. In Lafayette: KN9-HTV. The Ft. Wayne RC now has stations in operation at two locations. The call is RJY. TQC reports QIN traffic as 691. TT reports 110 for RFN. IFN evening sessions had 280 and morning 225, total 505, as listed by SWD. EHZ had 283 reported on CAEN. Those making BPL were JOZ, ZYK, TT, K9BBO, W9EQO, JYO, EHZ, NZZ, AB, SVL, DGA and HXR. HRH is on 20 meters with 813s and a vertical. KØGKU is now K9HVI. K9EEY has his DX-100 working on all bands with a vertical and monimatch. LIT has a 50-Mc. Gonset. The TARS also bought a panel truck to haul the trailor and 3-kw. generator. YFD has 104 confirmed for DXCC. The Connersville Club has set up the following calling frequencies: 80-meter Novice, 3727 kc.; 75-meter phone, 3845 kc.; 10-meter phone, 29.0 Mc.; 6-meter phone, 50.25 Mc.; 2-meter phone, 145.7 Mc. Congrats to UXK, EHZ and all members of the CAEN for their fine traffic record on 160 meters. RZO has a KWS-1. Terre Haute has a 3-kw. generator mounted on a trailer for emergency service. KOY reports we have at least 94 s.s.b. stations in the State. Traffic: (Apr.) W9JOZ 1016, ZYK 880, K9BBO 714, W9FT 709, EQO 560, JYO 531, EHZ 503, NZZ 327, AB 322, TQC 295, SVL 248, DGA 214, HXR 211, UXK 158, BKJ 123, DHJ 90, SWD 81, KTX 72, JBQ 67, NTA 64, EJW 52, WUH 52, SVZ 51, VAY 50, DWK 43, VNV 42, QYQ 37, ZSW 28, VQP 25, RTH 24, VPJ 23, HRW 22, KOY 20, WHL 20, NTR 19, ALL 18, PQZ 17, WBA 17, DOK 16, DZC 16, DDT 14, EJC 12, HST 12, IMU 12, CMT 11, CYZ 10, QR 10, BUQ 7, CC 7, WTY 7, CDW 5, K9CFG 5, W9EZW 5, FYM 4, KN9ELE 3, W9HUF 3, SNQ 2, WAU 2. (Mar.) W9TFS 71, EZW 26, HUF 11, AZF 4, MHP 4.

WISCONSIN—SCM, Reno W. Goetsch, W9RQM—SEC: EIZ. PAMs: NRP and AJU. RMs: KJJ and KQB. Nets: WIN, 3535 kc. 8:15 P.M. CDT daily; BEN, 3950 kc. 6 P.M. daily. Wisconsin mobile and c.d. frequency: 29,620 kc. With this final report I bring to a conclusion 10 years as your SCM. I have enjoyed our association and want to thank all of you for the splendid cooperation and help in the furtherance of all phases of activity in this section. Future correspondence and reports should be sent to KQB, your new SCM, and I know you will give him and the new SEC the same type of cooperation. Easter traffic brought CXY to the highest total ever. ILR made WAS and has a new SX-100. KJJ is QRL with school and traffic nets. New at K9AEQ is a MARS license and an 80-meter doublet. GIL hits double DXCC with 202 confirmed. FZC's 3-band bamboo beam has been up 10 months and still is like new. K9BBT is working on an s.s.b. rig. The new U. of W. Club now has 50 members, according to VAK/9, who operates from Madison with a 2E26 at 30 watts. SZR is going s.s.b./d.s.b. with a BC-458 and a Viking II. DIK is building a 750-watt amplifier. UTV has a new three-element wide-spaced beam for 21 Mc. and is chairman of the membership committee of the FLARC. JEF graduated from high school and also passed his Extra Class exam. The BARC operated a 6-meter rig at the YMCA Hobby Show in Janesville. OTX installed an AF-67 and a G-66 in the car. K9CAH is RCC. IZE/M7, in Arizona, while in QSO with ONY/M in Milwaukee relayed a message from IZQ/M4 in Alabama—all mobiles! UNY's name is C. W. Hamm! OMT is building a new Valiant. FXA is building a Viking Ranger. Good luck and best wishes to KQB, your new SCM, and EIZ, your new SEC. 73 de Reno. Traffic: W9CXY 1335, KQB 149, KJJ 98, K9AEQ 91, W9SAA 62, GIL 28, FZC 16, K9BBT 10, W9KWJ 9, VAK/9 9, UTV 8, SZR 6, RQM 5, OVO 4.

DAKOTA DIVISION

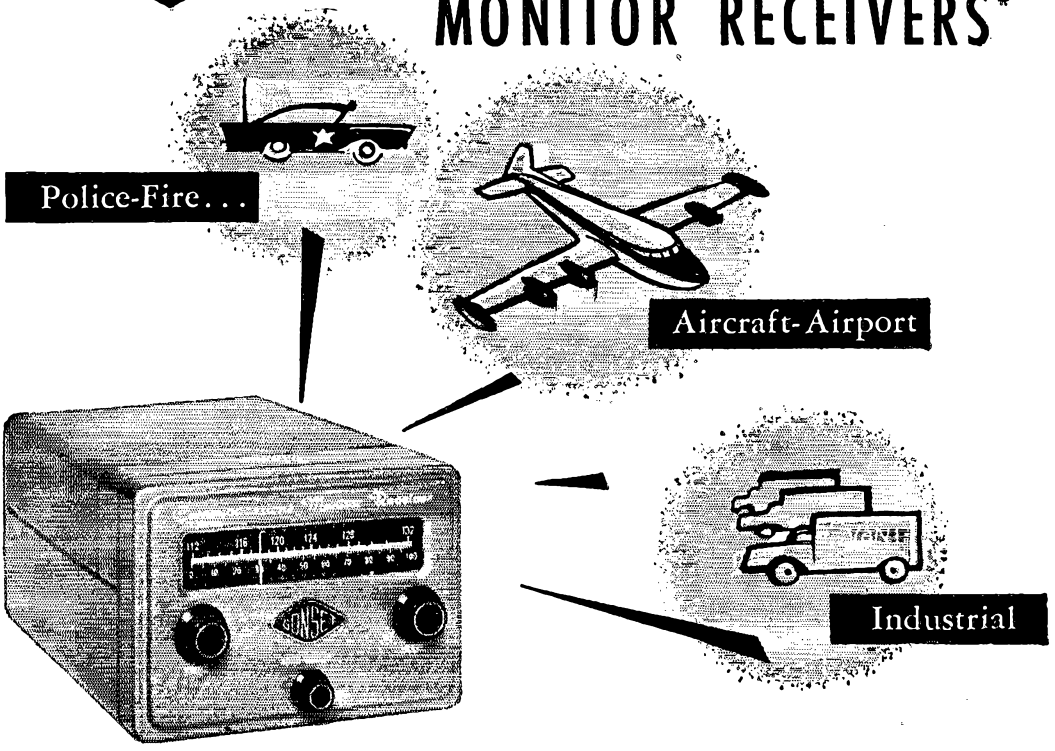
NORTH DAKOTA—SCM, Elmer J. Gabel, WØKTZ—Don't forget the free hamfest at Napoleon July 14. SEC CAQ held an EC drill Sun., Apr. 14. Conditions were very bad. ECs KØAIP, ATK and EXO reported in along with RGT and KTZ. It was decided there was no chance of a successful state-wide drill being held this summer because of conditions on 75 meters and week-end QRM on 40 meters. We all hope the old 75-meter phone band will resume its former reliable characteristics very soon. The North Dakota Phone Net held 25 sessions with 611 check-ins and handled 95

(Continued on page 104)

GONSET

announces an
entirely new series of VHF

COMMUNICATIONS MONITOR RECEIVERS*



This new series includes models for effective monitoring of FM or AM transmissions in the VHF ranges in regular use by aircraft, airports, police, fire, taxis, trucks... also municipal, commercial and military services.

Following a long established Gonset practice, each of these receivers is a complete, ready-to-operate "package". AC power supply and speaker are built in with provisions for external speaker. (Or external-internal speakers simultaneously.) Rear connector accommodates plug-in indoor antenna or supplies connection for outdoor type.

Receivers are contained in all-metal cabinets, are same general size and appearance as Gonset G-66B with Hammertone finish replacing the polished chrome of the latter. Dial is full-vision, slide rule type and has calibrated and logging scales.

All receivers have RF stages, feature excellent sensitivity, good signal-to-noise ratio. AVC systems are designed to cope effectively with strong signals from near-by mobile units. All receivers comply fully with FCC requirements for low receiver radiation.

Highlights...

SIZE: 6½"w, 4½"h, 10¾"d.

POWER: 105-125V AC, 60 cycle.

Eight tubes plus rectifier.

Adjustable squelch.

Automatic noise limiter. (AM)

Temperature compensated oscillator.

Audio output, 2 watts. (approx.)

Excellent AVC systems.

Meets FCC low radiation requirements.

Model 3155.... 30-50 mcs..... FM

Model 3156....112-132 mcs.....AM

Model 3158....152-174 mcs..... FM

all models.... **79.50**

*(to be available during September 1957)

GONSET DIVISION OF L. A. YOUNG SPRING & WIRE CORP.

BURBANK CALIFORNIA

formal messages. The c.w. net has closed down for the summer. Traffic: KØCNC 259, WØFVG 201, YCL 13, HVA 12, KTZ 4, KØATK 3.

SOUTH DAKOTA—SCM, Les Price, WØFLP—Asst. SCM, ØYKY. SCM assistants: HOH, FKE, APL, GQH, NEO, TI, MZU and GDE. SECs: YOB and GDE. PAM: ULV. RM: SMV. The 75-Meter S.D. Phone Net had 30 sessions, QNI 978, high 50, low 10, average 32.6; QTC 57, high 8, low 0, average 2. The 40-Meter S.D. Phone Net had 25 sessions, QNI 387, high 27, low 9, average 15.48; QTC 64, high 7, low 0, average 2.56. The S.D. C.W. Net had 11 sessions. QNI 51, high 7, low 3, average 4.8; QTC 25, high 5, low 1, average 2.2. The C.W. Net closed Apr. 26. NEO took over as NCS of the 75-Meter Net. The 75-Meter Weather Net closed May 4. BTD writes that he enlisted in the Army, Mar. 21 and is in basic training at Fort Chaffee, Ark. When that is completed in June he will go to Fort Monmouth, N. J., for 8 months of microwave school. Eldon hopes he can contact the South Dakota hams from Ft. Monmouth when he gets there. SDG has returned home to Redfield after a sojourn in the "South-land." RRN and his wife, Dorothy, have added a room to the back of their house for a dinette, but until the equipment comes, are using it as an office. VQC is converting the mobile to 12V to install in the '56 Plymouth. His daughters, Joyce, VHC, and Carol, VHB, drive to school. LXP has received his 3rd-class commercial phone license. EUJ (EC). LXD and KØEWH met with SCT Apr. 30 for a c.d. discussion to make some recommendations to the county c.d. director, Dr. Collins of Davis, S. D. Traffic: WØZWL 539, SCT 319, KØARF 153, WØDVB 81, NEO 41, CTZ 28, SMV 24, DKJ 12, OII 12. KØARE 8, WØBQS 7, ZLB 5, BQR 4, FJZ 2, OOZ 2.

MINNESOTA—SCM, Robert M. Nelson, WØKLG—Asst. SCM: Robert W. Schoening, ØTKX. SEC: GTX. RMs: DQL and RLQ. PAMs: JIE and LUX. The St. Paul Radio Club held its annual election. New officers are BUO, pres.; OYC, vice-pres.; WTP, treas.; THY, secy. The Triangle Radio Club (Mound Area) has a Novice code and theory class going including 2 XYLs. The Lake Region Amateur Radio Club (Fergus Falls Area) elected KØGCY, pres.; KØGCM, vice-pres.; KØBUI, treas.; KØEOW, secy. All stations, use your entire call sign, not just part, and avoid getting tickets now being issued in abundance for this offense. KØHNN made General Class after only 4 months operating as a Novice! A hint from WMA: Valiant owners troubled with "drifting" drive might try a 5U4GB as low-voltage rectifier and change the buffer cathode resistor to 2 watts instead of ½ watt. WDW has a new 813 rig ready to fire up. UIV is now at Fergus Falls working as engineer at a local BC station. TOK reports only 2 states left for WAS (Delaware and Vermont). HIN is now KL7CDL. PBI and WDW (multi-op) scored 144,000 points in the April C.W. CD Party. Daylight Saving Time has curtailed many activities in the interstate nets, both amateur and MARS. KØALL has worked 75 countries with 75 watts on 15 meters. WMA has worked 98 countries, with 87 confirmed. HUU is having good results with his 10-meter Wonderbar antenna. KØCRB visited 9SQM. TEL has a new SX-101 receiver. Stations on 6 meters in the Mankato Area are KØBLE, BYU, WØNUI, RNY, UYL and VYB: New appointments: WMA, as OPS; WVO as OO: Endorsements: LIG and VOA, as ECs; VBD as OBS; RQJ and WDW as ORSs. The Minnesota Civil Defense RACES Nets of MSU #1, 4 and 5 are activated and receiving hearty response from all the operators certified for RACES participation. The nets meet Sun. from 1 to 2 P.M. on 75-meter phone. KØBFS and KØKXV are to be congratulated on the good work they are doing in organizing AREC in their areas. NTV has completed a G4ZU 3-bander and says he never heard so much DX before and that it loads beautifully on all frequencies. Traffic: (Apr.) WØKJZ 605, KLG 268, DQL 117, ALW 113, KØDNM 100, WØUNG 84, KØCVD 77, WØKFN 45, RLQ 38, KØBUD 36, WØWMA 27, KØHNN 26, WØQDZ 23, UMX 22, EMZ 19, BUO 17, OJG 17, TCK 17, TBX 16, QVR 15, VBD 14, GTX 12, HIW 12, WDW 11, KØGKI 10, WØIRJ 10, TOK 10, ZEL 10, NGA 9, KØEPT 8, WØPBI 8, KXW 7, KØAEE 5, WØZMK 5, KØGCN 3, WØLIG 3. (Mar.) WØIRJ 29, BUO 25.

DELTA DIVISION

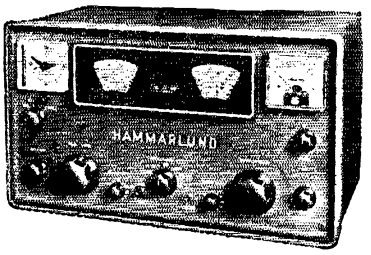
ARKANSAS—SCM, Ulmon M. Goings, W5ZZY—SEC: VKE. PAM: DYL. FPA has up a new all-band trap antenna 50 feet high. He reports fine results on 160 meters lately. The Pine Bluff Radio Club has set up a TVI committee. KN5ESZ has a new DX-35, a QE-1 and an AR-3 receiver. PYH is DXing on 10 meters with fine results. K5CIR is the proud owner of a new DX-100 transmitter. CAM has just finished building a bow-tie antenna for 10 meters. We notice a lot more of

(Continued on page 106)

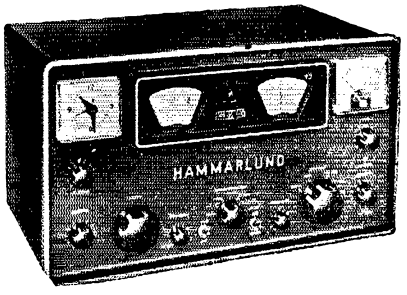
HQ-100 General-Purpose Communications Receiver — Ten tube superheterodyne with automatic noise limiter. Continuously tunable from 540 KCS to 30 MCS. Electrical bandspread tuning. Q-Multiplier. High sensitivity. Auto-Response automatically adjusts audio bandpass.

$169.00*

*Clock-timer $10.00 extra



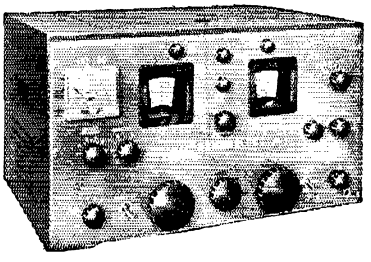
EVERY ONE... A HONEY FOR THE MONEY!



HQ-110 Amateur Communications Receiver — Dual conversion superheterodyne with automatic noise limiter. Covers 6, 10, 15, 20, 40, 80 and 160 meter amateur bands. Separate SSB linear. Q-Multiplier. Crystal calibrator. Separate stabilized BFO. Crystal control. Auto-response.

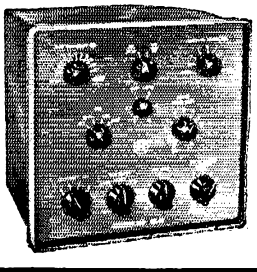
$229.00*

*Clock-Timer $10.00 extra



HQ-150 Professional-Type Communications Receiver — Continuously tunable from 540 KCS to 31 MCS. Only receiver to offer selectivity of Q-Multiplier and Crystal Filter. Electrical bandspread. Crystal calibrator. 13 tube superheterodyne with noise limiter. Extremely stable BFO. Uniformly high sensitivity. Extra-high signal-to-noise ratio.

$294.00



HC-10 SSB/CW or AM/MCW Converter — Works with any receiver having IF between 450 KCS and 500 KCS. Takes seconds to connect. Complete self-contained audio system and power supply. Tuned IF with seven selectivity positions. Vernier type tuning. Razor-sharp slot filter, adjustable over passband.

$149.00

SINCE 1910

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the Arkansas hams showing up on sideband lately—DSW, VQD and ZZY to name a few. DUV finally is back on the air after several month's absence. He reports having worked 23 countries on all continents in one week using 20 watts s.s.b. on 20 meters. K5ICI is on the air with 32 watts on 20 meters. K5HOL has a Viking II, a new tri-band beam with rotor and a 60-foot tower, and a new all-band trap antenna. It looks like Bard really means business. The Osceola Amateur Radio Club recently held its annual election. DAG was elected pres.; ZZY, vice-pres.; GWB, secy.; KRR, act. mgr.; K5HOL, treas. Glad to see ZCD back on the air after a year's absence. Traffic: W5KRO 97, DAG 20, ZZY 10, BBA 7, JVL 6, WEE 4, HEE 3.

LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—The recent high water on the Red River gave the Shreveport e.d. organization a chance to show its ability to perform. The radio net, operating under the direction of EC/C.D. Radio Office FHS/KU, Ed Nuttall, covered operations by approximately 55 amateurs with stations at C.D. Hq., East Point, Coushatta, Powhatan and other points where levees gave trouble. Authority was granted by FCC to implement the RACES plan. Operation was on 75 and 2 meters. Local TV repairmen and professional service engineers helped keep equipment on the air. About 12 ladies worked as telephone operators and did general clerical work. K5FBI operated with emergency power at Coushatta, as did K5AIR. Air Force personnel worked around the clock with the C.D. Net. A few of those participating were W5PNB, CTO, DOF, KKI, FHS/KU and K5AYI. Fifty-eight hams, plus their wives and harmonics, consumed in the neighborhood of 800 lbs. of crawfish at a hamfest held at Bayou Corne Apr. 28. ZSP, UKQ, K5AZT, BRM, 4ZXS/5 and 4WQR/5 are all active on 6 meters. CHC is screen modulating his Globe Scout 65-A. UXE has received the WACO Award for working all Cuban Districts. K5DMA reports the two-element 15-meter beam is doing an FB job. CWC still is chasing nets on 75 and 40 meters. EA is active in Monroe e.d. work. UXE was top traffic man for April. YNG is busy keeping skeds with his daughter and son-in-law in Hawaii. SRM has been giving Novice tests. MIU has been Acting NCS on MARS. Please send in your reports early. Accept a CD appointment. Traffic: W5UXE 515, NDV 172, IHI 117, EA 20, FHS 12, CWC 6, K5DMA 6.

TENNESSEE—SCM, Harry Simpson, W4SCF—SEC: RRV, PAM: PQP, RM: IV. IV worked 66 countries during the DX Contest. UVU introduces three new Athens hams, KN4s OHE, OZD and K4OCP, and also reports on the Athens ARC Spring Field Day, with operation on all bands. Five stations were kept on the air using emergency power, with 15 of the 25 members participating. OES reports were received from HHK. UVU and YRM and an OO report from PVD. K4LPW has added a product detector to his HRO. PL was host to another outstanding BPL member when 3CUL, Edison Award winner, and her OM, VR, visited him en route from a Florida vacation. ZBQ reports working LU7DDG and LU4DFN on 6 meters. K4CWS, secretary of both the Frye ARC of Chattanooga and the Chattanooga High School ARC, says KN4s KZS, NRK, ITS and Richard Buhrman are new officers of the High School Club. WQW is chasing camera shots instead of traffic. K4GFL, just returned from Ohio visit, says K4IPO is now installed in the new QTH. UWA gave 3 Novice exams during the month and plans to install 6-meter mobile gear. The Memphis Club saw a Weather Bureau film on tornadoes. The same club's mobile truck, EM, is rapidly nearing completion. Transmitters for 2, 6, and 10 meters, with appropriate receivers, have been installed, in addition to the regular Viking and Hammarlund gear. A 3-kw. generator, trailer installed, furnishes power and all equipment, including a powerful public address system, can be used while in motion. The Memphis Club also has a 6-meter walkie-talkie project going, with at least 25 units under construction. BAO and SCF, on a Cotton Carnival tour in Mississippi, demonstrated the worth of ham radio by utilizing two BC-611 units to guide the convoy through strange places. They relayed a call for assistance when one of the buses had trouble and, more important, SCF led BAO to the proper table in a crowded and unfamiliar banquet hall! JVM reports the Chattanooga Club is building twenty 6-meter converters, with transmitters as a future project. Traffic: W4PL 1376, PQP 169, IV 102, W6EVC/4 79, W4VJ 77, UVL 57, NHT 52, SCF 50, DCH 42, IFN 30, VNE 29, BQG 27, NGO 20, FLW 18, BMI 17, MXF 16, UVS 16, IGW 15, K4DSI 14, 4BMC 10, W4TIZ 10, K4EWI 8, W4PAH 8, JVM 7, WGJ 7, GFL 6, HUT 4, AOK 2, ZBQ 2, CWS 1, HHK 1, KYO 1, LPW 1, PVD 1, UWA 1, WQW 1, YRM 1.

(Continued on page 108)

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THE RME DUAL CONVERSION 4350 RECEIVER

$229

Designed *by* radio amateurs *for* radio amateurs, the RME 4350 offers you ALL the advantages, ALL the features you want and need in ham operation! It's equal to the best, much better than most, yet YOU can have it for $229, amateur net! Look at these features:

RME 4350 is laboratory-engineered for maximum performance on SSB, CW and Phone, ideal for contests, DX and ragchewing under any receiving condition.

- DUAL CONVERSION—highly desirable in areas of strong local signals. The images of all amateur bands are down 45 db or more. Crystal controlled. 1st. IF—2195KC. 2nd. IF—455KC.
- High Selectivity and Rejectivity.
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- Low Noise Factor.
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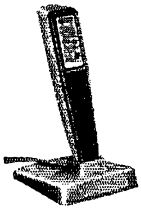
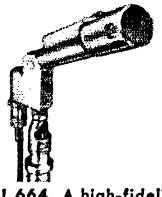
For Clarity, Choose Electro-Voice Microphones



Model 927. An omnidirectional crystal microphone—slim, trim and terrific! Professionally-accepted, precision-built. Frequency response, 60—8000 cps. Slip-in stand included. $22.50 list. Available with on-off switch.



Model 664. A high-fidelity cardioid microphone utilizing the revolutionary Variable D® principle. Stops unwanted sounds. Rugged, precision-manufactured for long service life. Indestructible Acoustalloy diaphragm. Frequency response: 40—15,000 cps. List, less stand, $85.

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GREAT LAKES DIVISION

KENTUCKY—SCM, Albert M. Barnes, W4KKW—SEC: JSH. PAMs: VJV and SUD. RM: QCD. ZDB Doc is top man again, making the BPL. FB! QCD has two Command transmitters working with pi outputs now. BZY, EC of Northern Kentucky, resigned to go to college after doing a fine job of organizing the Northern Kentucky Emergency Net. New ECs: SMU, BNP and K4GAG. CMP is a new OO class I. MGT is catching those out-of-band harmonics like mad. JGN is a very active OBS. HSI is looking for a new trailer location. JSH turned in a fine CD report to ARRL. CDA is working hard on those eight-page bulletins and now is all set with 400 watts on 80, 200 watts on 40 and 100 watts on 20 meters. CSH was active on the 147.3-Mc. c.d. drill. K4MMB is new and active in Frankfort. SZL is rebuilding an 813 transmitter. MWX is back again. JUI still is measuring 1 cycle or better on 20 meters and now is building frequency standards. BVC has a new 10-meter beam. Happy DXing! OMW is back from Grand Caymon, B.W.I., with Don, W4KVX, and Red, W8EZF using the call VP5BH for DXers. Traffic: W4ZDB 622, K4AIS 250, W4QCD 173, KKW 151, K4JGN 140, W4RPF 102, HSI 100, JSH 92, K4ECJ 70, W4CDA 63, K4KIO 59, W4KQU 46, NIZ 34, NGN 32, HJI 26, YZE 23, K4BPX 21, CSH 19, KIN 16, HBF 13, W4BZY 11, K4HOE 11, W4SZL 8, SZB 7, MWX 6, K4BVC 4, W4JUI 4.

MICHIGAN—SCM, Thomas G. Mitchell, W8RAE—Asst. SCM (c.w.): Joe Beljan, 8SCW; Asst. SCM (phone): Bob Cooper, 8AQA. Emergency Coordinator appointments were issued to the following stations for the counties indicated: PQO Allegan, K8CIS Calhoun, QQO Berrien, SUM Kent, UCG Muskegon and KOD Ionia. ORS and OPS appointments were to YAN; ORS to OCC, OO Class III and IV to QWB. NTS certificates went to the following QMN stations: AUD, DAP, DSE, ELW, FX, FWQ, GKT, HKT, IUJ, ILP, IV, IBB, NUL, NOH, NTC, OGY, OCC, QQO, QIX, RAE, RTN, RVZ, SCW, TBP, TCY, WXO, YAN and ZLK. ELW still is in the BPL class and going strong despite band conditions. Three organizations in our section recently became affiliated with ARRL, Thumb Area Radio Club, Brown City; Mason County Radio Club, Ludington; and the Chain of Lakes Radio Club, Bellaire. HSG and TBP are both back on the air after illnesses and wish to thank all of you for cards and letters while they were QRT. Contrary to the last report, HSG says that his proposed amendment to the Public Acts of 1931 was strangled by red tape. Thanks for the try, Cos. (See details in this section of *QST* for April and May 1957.) The general comments indicate a trend toward outdoor activities. Thanks to all for your cooperation in the AREC matters while I am Acting SEC. The increased interest and activity is very gratifying. Let's get our AREC house in order for the new SEC and turn over to him a solid organization. Increased activity on the 50-Mc. band with the associated TVI problems related to other sources has provided the spark for organizing TVI committees in the southwestern portion of our section. To date, the cooperation of all groups has been very good and results are looked forward to with interest. According to reports, existing committees in other localities are serving a very worthwhile purpose. Traffic: (Apr.) W8ELW 638, ILP 171, GKT 152, DAP 143, FX 127, OCC 115, YAN 108, NUL 80, FWQ 72, K8NAW 65, W8QIX 45, RVZ 39, WXO 30, NOH 26, SCW 25, RAE 24, OGY 22, DSE 14, AUD 13, OCU 9, EGI 6, TBP 5, PXA 4, K8AXL 3, DKP 2, W8FGB 2, SJF 1. (Mar.) W8GKT 260.

OHIO—SCM, Wilson E. Weckel, W8AL—Asst. SCMs: J. C. Erickson, 8DAE, and E. F. Bonnet, 8OVG. SEC: UPB. RMs: DAE and FYO. PAMs: HPP, HUX and HZJ. CSK has his WAS and 20 countries. KN8s: CAG and DEY are waiting for their General Class licenses and CAG has a new WRL 300-watter. FPA is studying for his E.E. degree at the U. of Dayton. BMC worked the South Pole Expedition on 15-meter s.s.b. PMJ is on the road to recovery from a long illness. Cleveland had over 10 inches of snow dumped on it, tying up auto traffic, with AEU, IJP, MWE, NLX, RTC, PTZ and ULN of the AREC helping to direct it. K8BNR received his General Class license. The Ohio Council of Amateur Radio Clubs' 1958 officers are EMK, chairman; FEZ, vice-chairman; VHO, secy.; and AL, treas. TND spent a week in the hospital with a heart condition. RGL is active again after two years in Newfoundland. The Greater Cincinnati ARA is 22 years old and celebrated Past-Presidents' Night by giving engraved desk-pen sets as tokens to the following past-presidents: PBX, ALW, ODF, MGR, BFB, RJD, WWG, IVE, SMQ, QBJ, EKA, GCR, PR, MGP, NCV and NDN. The Mahoning Valley ARA's station, QLY, is active on 29,500 kc. at

(Continued on page 110)

Morrow
MBR-5

GREATER SELECTIVITY

"13 tubes, and what do you get? The power and performance of a 20-tube set!"

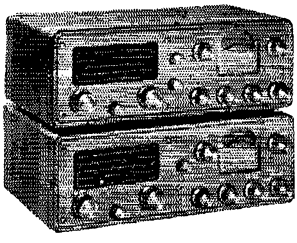
Advanced Morrow circuitry gives the MBR-5 amazing performance in a rugged, compact unit offering more features and more value for your money.

HIGHLY SENSITIVE (½ microvolt on all bands) 100 kc. Crystal Standard built in.

EXCLUSIVE SQUELCH CIRCUIT eliminates interstation noise, but opens on the weakest signal.

SSB, CW, AM RECEPTION. Separate AVC switch.

ILLUMINATED "S" METER measures incoming signals, doubles as field strength meter for tuning transmitter.



COMPACT AND HANDSOME. 4" high, 11¾" long, 6½" deep. Hammertone case matches MB-560.

MBR-5 Amateur net, $224.50
less power supply

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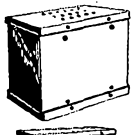
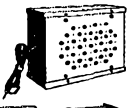
Matched Accessory Equipment

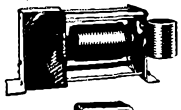
MB-560 TRANSMITTER
"More talk power" on all bands.
90-watt CW, 60-watt Phone.
Amateur net **$214.50**



RVP-250 POWER SUPPLY
Mobile vibrator pack for MBR-5 and exciter of MB-560.
Amateur net **$39.50**



SH-7 SPEAKER
5"x7" speaker in sturdy hammertone case. Amateur net. **$11.50**



MLV-50 INDUCTOR
Motor driven for remote control tuning of whip. Amateur net. . . . **$24.95**

FS-1 FIELD STRENGTH METER
Measures field intensity.
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7 P.M. Mon. and its emergency net is open for traffic for Trumbull, Mahoning and Columbiana Counties at that time. The club station has two 75A-2s, one HQ-129X and two Globe Kings. GJO received his General Class license. OYL has a Johnson Pacemaker and is now s.s.b. K8ANX has made WAS. GKQ made WAC on phone, also IBX made WAC. LPD worked a VQ2 and a ZE on 50 Mc. for the first contact between Africa and the Western Hemisphere. Fort Hamilton ARA's member of the month is STL. PNM is now mobile with a PMR-7 receiver and an Elmac AF57. Lightning struck IZT's beam. ULS is now at the U. of Kansas. IIVH was the main speaker at the Columbus ARA's meeting. EMX has a new tower and beam. WFL moved to a new home with an antenna farm. MGC installed a new W3DZZ tri-band beam for 10, 15 and 20 meters. The Seneca RC meets on the 1st and 3rd Mon. in the Tiffin Municipal Bldg. at 8 P.M. KN8s: DBW and DOW are on 2 meters with Communicators IIs. The big show (Dayton Hamvention) has come and gone. About 2000 registered and 1000 attended the banquet. The FCC gave 100 Novice and 139 General and Extra Class examinations. W2YI was the keynote speaker at the banquet. A large cup was given to VHO, who was selected the outstanding amateur of the surrounding five-state area. Those who won the four big prizes were: JRB the HT-32, Ruth Wice the GPR-90 and K9GEX and KN9HKG each a National 109. Your SEC and SCM attended the Springfield ARC's annual dinner with 26 members and visitors present. Color slides were shown of the last Field Day. Our Director, SPF, has been on a tour of duty with the Navy and was not able to be at the Dayton Hamvention. EQN, Ohio Intrastate QSO Party Contest manager, reports the top five scores were as follows: AJW 11,968, HPP 8201, VZ 7503, UHW 6625, LPU 2508. Those following in order were LVH, NXF, UON, RCJ, SZF, IBX, EMK, FMJ, AL, K8BPX, BDO, K8DFN, KMF, CSK, YPT, QLJ and EQN. Toledo RC's *Ham Shack Gossip* reports its man-of-the-month is SPU, who comes from a ham family. Her OM is QOV, son is KGL, daughter is OSD and three nephews are hams. HWX is recuperating after surgery. MNR took unto himself a wife. OFG and vjo were married and spent their honeymoon at the Hamvention. UPH has worked 21 countries on 15 meters. STF is active on the Ohio Fone Net. Our deepest sympathies to the family of ROQ, who has joined the Silent Keys. ZS2HX was a visitor of BIQ's. K8BJL has his General Class license. GFE and UPH made BPL in April. GQD plugged the hole on Youngstown and all the BN boys thank him for joining us. New appointments are SZU as ORS, CSK, SVL and K8BPX as OOs and GJO as OES. 1957 officers of the Marietta ARC are KYZ, pres.; PBA, vice-pres.; K8-AWS, secy.; and LSE, treas. Traffic: (Apr.) W8UPH 761, GFE 212, VTP 188, DAE 187, HXB 154, VDA 107, VYU 87, K8BPX 79, W8AL 77, CTZ 66, HHK 64, CSK 61, ARO 48, SYD 45, K8DDG 32, W8VWX 25, HZJ 22, IIR 22, PZS 19, W9VBV/8 18, K8AAY/8 14, W8PLQ 13, HPP 12, WAV 10, WE 9, PBX 8, RO 8, GBH 6, MGC 6, QIE 6, SLB 4, SLF 4, AUW 2, EEQ 2, SLR 2, YBX 2, AJZ 1, DIH 1, GDQ 1. (Mar.) W8UPB 353, VDA 87, SVL 30, WE 13, K8BEW 12, W8PLQ 10, ZAU 7, MXO 2.

HUDSON DIVISION

EASTERN NEW YORK—SCM, George W. Tracy, W2EFU—SEC: KGC. RM: BXP. PAMs: IJG and NOC. Section Nets: NYS on 3615 kc. at 1900, NYSPTEN on 3925 kc. at 1800, SRPN on 3980 kc. at 1030, IPN on 3970 kc. at 1530, MHT on 3716 kc. Sat. at 1300. Congratulations are in order to BXP and K2HPQ for making BPL in April. Dave handled 150 messages during the Boy Scout Exposition in Albany Apr. 27-28. His many friends were saddened to hear of the death of PV Apr. 15. Herb, an active v.h.f. man, had been on the air from about 1912. The NYS Net is glad to welcome back K2BJS, a former RM, after an absence of more than a year. The Albany Club featured speakers from Eddystone Radio and Collins at its two April meetings. New officres of the RPI Club include K2SPR, pres.; IHUO, vice-pres.; KN8DXO, secy.-treas. and K2PXF, equipment supervisor. Upon recommendation of the Putnam County Club, K2EHI is its new EC. If your city or county has no EC, suggest a good candidate to the SCM. Radio and Radioactivity was the April topic of the Schenectady Club. A new kw. rig is under construction at the Union College Club, GSB. The Fourth Anniversary Dinner of the Harmonic Hill club was celebrated recently. K2HPQ spoke to the Lions Club in Albany on ham radio Apr. 9. No luck with a beam prompted AAD to try a ground-plane on 20 meters with good results. K2PRB reports track practice curtailed his traffic plans. Congrats to Dutchess County on its high score in the October S.E.T. KN2UWY has worked 12 countries, 5 confirmed, on 15 meters. Glad to hear HZZ back on the air with a new DX-35 and VFO. Auroral

(Continued on page 112)

This key does everything but memorize the code for you!

Too many hams think that c.w. operating means laboriously pounding out the code on "brass" and generally not sounding very good in contrast to the boys whose bread-and-butter operating is c.w. Well it it isn't so any more . . . and whether you want to work c.w. at an odd moment (excellent when TVI keeps your AM shut down) or you spend all your operating time "talking with your hands," you owe it to yourself to try ELDICO's extraordinary new electronic key, model EE-3. Whatever adjective we use to describe the EE-3 pales in comparison to the fact that after a very few minutes operating time most hams sound like the handful of 200,000-pointers in the SS!

Bold claims? Sure, but the ELDICO EE-3 has been engineered to take advantage of entirely new concepts in electronic keying. It incorporates operating features gleaned after talking to hundreds of the most knowledgeable and most relaxed c.w. ops on all the bands. In operation, the EE-3 is self-completing; once the key is actuated to either dot or dash position, a complete character and the space following is completed, perfectly proportioned, before the next command can be obeyed. This guarantees ideally formed characters. The self-completing feature makes it unnecessary to wait for a character to be completed before starting the next one, avoiding entirely poorly spaced or formed code.

You monitor your sending at all times through an integral audio oscillator that has a separate level control and equally important a separate tone control to vary the pitch to please your own ear. Speed control, naturally from 5 to 50 wpm. And fully automatic control of your receiver . . . press the key and your receiver is silenced, you hear the monitor tone, either through headphones or a loudspeaker built into the key. Installation with any receiver and any transmitter is simple, requires no rewiring, alters no circuits and takes but several minutes to accomplish. With features like these its no wonder we call it the c.w. control center!

The price, amateur net $79.95. Let the ELDICO EE-3 open a new dimension of pleasure in your amateur operating, and if you've sworn off of brass pounding, this is the way to find out what you have been missing. You memorize the code (or re-familiarize yourself with it). . . let the EE-3 do the rest.

PS: For the man who likes and has mastered his present bug, the EE-3 is such a revelation in operating ease that even if you can't improve your fist you'll enjoy operating as never before. Try it for yourself, but be patient, those dashes are automatic too!

SPECIFICATIONS

1. **Characters complete before next command can be obeyed.**
2. **Small modern cabinet; 4"x4½"x 7½".**
3. **Receiver muting and audio transfer to headphones.**
4. **Separate tone, volume and speed controls for 5 to 50 words per minute located on front panel. Weight, ratio and receiver muting threshold controls — located on rear of unit.**
5. **Self contained with transformer, Selenium Rectifier, 2 dual tubes, 2 extremely quiet relays and miniature speaker.**

NET PRICE TO THE AMATEUR **$79.95**

ELDICO ELECTRONICS

29-01 BORDEN AVENUE
LONG ISLAND CITY, NEW YORK

A Division of Dynamics Corporation of America

skip gathered EGH for LWI using a 20-element beam on 2 meters. K2DNR is now signing K1APP from Danbury, Conn. Traffic: (Apr.) W2BXP 570, EFU 324, K2HPQ 192, W2PHX 181, K2BJS 132, W2ATA 111, VNJ 61, K2LKU 41, MBF 22, BE 21, CKG 17, QIX 16, UNN 13, HNW 11, KN2YTD 8, K2HJX 6, EDH 4, BAB 1.

NEW YORK CITY AND LONG ISLAND—SCM, Harry J. Dannals, W2TUK—SEC: ADO. PAM: OBW. RM: WFL. Section Nets: NLI, 3630 kc. nightly at 1930 EDST and Sat. at 1915 EDST; NYC-LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 EDST; NYC-LI AREC, 3908 kc. Sun. at 1400 EDST. Despite some early summer static our traffic nets continue their fine work. Vacationers away from home are invited to check into the nets and send traffic back home. OBW reports a message total of 400 on the NYC-LIPN. BPL cards go to KEB, KFV and K2DEM. The latter received his radiotelephone 1st-class license and completed his WAC with a card from JA6MW. KN2ZUZ is a new call in Amityville. A new antenna at K2ECY has improved his 3.5-Mc. signal. The Nassau County 10-meter AREC Net equipped and manned the Boy Scout Jamboree ham radio booth at Mitchel Field. AEE added RTTY on 2 meters. BO vacationed in Florida. K2LUM worked VK-Land for his fifth continent. K2CRK moved to W3 territory. K2OPJ raised his country total to 118 with FF8BL and hopes to improve this performance with a new WRL tri-band beam. K2KSP installed a Super-6 converter in his car. In seven months as a Novice K2TSE contacted 3 continents, 7 countries and 39 states. He is now interested in traffic. K2ITZ ran 10 watts in the CD Phone Party. K2s AZT and EQO are using VOX on 6 meters. Forced to remove his outdoor antenna, K2CMV added 4 new countries with an indoor attic antenna! ELK has a new final running 150 watts to a pair of 6146s. HQL received the Flag of the Radio Club of Argentina for his recent mercy message work. K2s IOC and MMQ are building 813 linears. Thirteen-and-a-half-year-old KN2ZUX joins dad, K2JYM, mom, K2JYZ and brother, KN2UNO. K2JYZ received her YLCC and WAC phone certificates. K2QDD worked 7 states and VE3 in his first 15 contacts. A new Globe Chief is on the air at KN2ZYB. KN2ZGB dropped the "N." The Larkfield ARC is a newly-formed club in East Northport. KN2VDJ passed his Tech. Class exam. K2PYY sports a new HQ-140X. The Bronx HS of Science RC held an assembly program to explain amateur radio. K2OEG built a 2/6-meter rig and 6-meter converter. KN2VTX received his RCC certificate. New members of the NYRC are K2s IZU, QPG and VAK. IHN is a new member of the Levittown ARC. KN2UDZ dropped the "N." K2s UJI and UJJ, XYL and OM, moved to La'l Rhode Island. YBT's XYL is awaiting her KN call. K2TMJ dropped the "N" and became president of the Bonac ARC. The Polytechnic Institute of Brooklyn RC, BXK, your SCM's alma mater, is active on all bands 10 through 40 meters. Club officers are K2DNL, pres.; K2HYS, vice-pres.; K2IVB, treas.; and K2YUX, secy. AYJ and HAQ are new members of the Order of Boiled Owls. K2PTS is joined on the air by his mother, KN2ZDE. K2LUR is now mobile on 10 meters. K2BVY is looking forward to DXCC with his kw. rig. KN2ZIA is on the air with a DX-35. K2s OWF and RUR have formed the Middle Atlantic Phone Net, operating on 7280 kc. at 1615 EDST. Traffic or not, all are invited to report in. All appointees are advised to check their appointment expiration dates. Please remember that regular reports and appointment activity are required for renewal. Traffic: (Apr.) W2KEB 2294, KFV 540, K2DEM 400, AMP 325, PHF 210, ECY 114, W2AEE 101, KH6BPZ/2 83, W2EO 80, K2PGP 66, W2TUK 59, K2PSE 48, LUM 41, BH 37, CRK 31, W2UGF 30, HAC 28, LPJ 26, K2GLP 21, OPJ 20, W2PF 17, K2KQG 14, SEK 14, RJO 13, KSP 12, W2DUS 11, GP 11, K2JZR 11, W2YBT 5, K2TSE 4, ITZ 3, AZT 2, CMV 2, W2MDM 2, OBW 2. (Mar.) K2KQG 25, W2LGK 21, HAC 5.

NORTHERN NEW JERSEY—SCM, Lloyd H. Manamon, W2VQR—SEC: IIN. PAM: VDE. RMs: BRC, NKD and CGG. VJN is moving to a new QTH in Cranford. Plans currently are being made by VDE and ZI for the annual NJFN 2nd Annual Picnic. K2QYI is a new ORS. Joe is finding out that regular participation in the FNJ Net boosts the traffic count considerably higher each month. Our sympathy to K2GBP on the death of his dad. K2DOX was home for the Easter holidays. K2MMM has a BC-459 on 40 meters. K2SKK is hard at work installing an RTTY system at his home station. IZXA. K2JTU is active in the NJ Fone Net. VDE, our PAM, was a recent speaker at a meeting of the Raritan Bay Radio Amateur Club. K2MFX received a Section Net certificate. The NJ Fone Net was well represented at Old Timers Nite with 28 members present. K2HHH is working liaison for

(Continued on page 116)

NEW SPORTSMAN SENIOR POWERCON

supplies 110 volts AC from self-contained 12-volt car battery

$79.50

Amateur Net
Less Battery

Now 110 V.A-C...

Packaged Portable Power

For Mobile Rigs...Field Day...Civil Defense...Emergency Standby

The Sportsman Senior Powercon Inverter is a completely self-contained source of 110-volt AC power that may be used with any AC-operated equipment that draws up to 140 watts continuous, or 175 watts for not more than 15 minutes out of one hour. The unit includes a rapid charger, a heavy-duty vibrator inverter, and a compartment that will accommodate a standard 12-volt car battery. Battery can be recharged overnight from any 110-volt AC outlet. Overall size: 14" x 9½" x 9½".

With a fully charged battery, the "Sportsman" will provide the following services without battery recharge:

Intermittent: 4½ hours of operation (transmit 175 watts, 25% duty; receive 60 watts, 75% duty). *Continuous:* 3 hours, 140-watt load; 4 hours, 110-watt load; 7 hours, 60-watt load.

The following bulletins on the "Sportsman" and Standard Powercons are available from your local electronic distributor, or from Cornell-Dubilier Electric Corp., South Plainfield, N. J.: *Sportsman*, EB-3015; *Standard Powercons*, EB-3006; *Accessories*, EB-3013.

STANDARD POWERCONS: 6VDC - 110VAC, 20-150 WATTS; 12VDC - 110VAC, 20 - 250 WATTS. SELF - REGULATING SINE - WAVE MODELS AVAILABLE

CORNELL-DUBILIER POWERCONS

Is a Degree Essential for an Electronic Engineering Career?

"Student" Fred Gunther in the IBM school

Fred Gunther has no degree. Yet, today, at IBM, Fred is a Technical Engineer working on America's biggest electronics project. His story is significant to every technician who feels that lack of formal training is blocking his road to the top.

Let's go back to 1950 and watch Fred Gunther, at 18, as he goes about the business of determining his life's work. Fred spent almost a year trying his hand at various jobs. None of these turned out to be the one that Fred wanted to devote his life to. So, still undecided about his career, Fred entered the Navy for a four-year hitch.

Fred learned something very valuable in the Service, as have many other men who eventually discover the electronics field. His aptitude tests revealed him as an excellent electronics prospect, and he received ten months' training in electronics fundamentals and radar. Upon his discharge in 1955, he was an Electronics Technician, First Class.

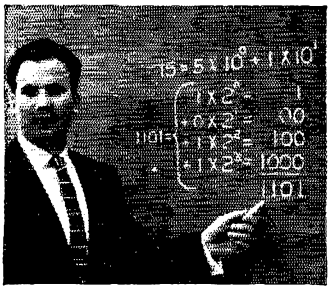
Something even more important to Fred's career occurred during his Service hitch. He began to hear such terms as "automation" . . . "data processing" . . . "electronic computer." "Then, one evening, while glancing through the paper," he recalls, "I spotted a story about *Project SAGE*."

What is Project SAGE?

SAGE means Semi-Automatic Ground Environment. It is part of America's radar warning system —a chain of defense that will ultimately ring our country's entire perimeter. At the heart of this system are giant electronic computers, which digest data filtered in from Texas towers, picket ships, reconnaissance planes, ground observers. The computers analyze this information for action by the Strategic Air Command and other defense units. Largest in the world, each contains perhaps a million parts—occupies a city block. They are built for the Project by IBM.

Fred joins IBM

SAGE fascinated Fred, for it embodies the most advanced electronic concepts. And, when he learned that IBM would train him for six months, at full salary, plus a living allowance, to become a Computer *Units* Field Engineer, he seized the opportunity. Fred started his new electronics career in the IBM school, with twenty other technicians. He attended classes 8 hours a day. Courses consisted of some 20 subjects—computer circuitry and units, maintenance techniques—everything he would need to become a full-fledged Computer *Units* Field Engineer.



Answering instructor's questions

At the operating console of the computer

Home to the family, Pemberton, N. J.

Assigned to McGuire AFB

His six months' training completed, Fred was assigned in May, 1956, to McGuire Field, where the first of the giant SAGE computers is located. Here he assisted in the cable installation for this vastly complicated electronic giant. He helped to set up the computer, interconnect its many sections, check it out and make it ready.

Becoming a Computer Systems Engineer

"I like to think it was due to my interest and grade of work," Fred says, "but at any rate, last October I was invited to return to Kingston for further training—to become, in fact, a Computer *Systems* Engineer. Naturally, I was pleased, for this training would give me a chance to assume actual engineering responsibility." Fred completed the Computer Systems course. After several months of outstanding work in his new capacity, he received a *third* promotion—to Technical Engineer—*in a* field engineering liaison group.

What does the future hold?

What does the future hold for Fred Gunther, now that he has become a Technical Engineer? Fred says, "With my IBM training back of me, the future sure looks good. I've advanced from Radar Technician to Computer *Units* Field Engineer to Computer *Systems* Engineer to Technical Engineer *in two years*—and received a valuable electronics education besides!"

How about YOU?

If you have 2 years' technical schooling—or equivalent experience—IBM will train you for 6 months as a *Computer Units Field Engineer.*

If IBM finds your experience equivalent to an E.E., M.E., or Physics degree, you receive 8 months' training as a *Computer Systems Engineer.*

After training, you will be assigned to an area of your choice within the United States. You receive *salary*, not wages, plus overtime pay. In addition, every channel of advancement in the entire company is open, and IBM is a leader in a field that is sky-rocketing in growth. And, of course, you receive the famous IBM company-paid benefits that set standards for industry.

• • •

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You'll receive a prompt reply. Personal interviews arranged in all areas of the United States if your résumé of experience and education indicates you have the qualifications.

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MILITARY PRODUCTS • SPECIAL ENGINEERING PRODUCTS
TIME EQUIPMENT

IBM MILITARY PRODUCTS

NJFN for traffic to RTTY nets. K2AOM is doing a fine job as NCS of TCPN. CVW has made WAS and WAC after hooking Idaho and Asia. GVU is installing audio bandpass filter in his 10A. K2BWQ was away on a Caribbean Island cruise for two weeks with his XYL. K2MFF made BPL for the first time this month. Sparks operated from a youth conference setup at Bayonne Naval Base for two days. K2GIF is building an ultra modulated unit for his phone rig. Hank is MARS Director for New Jersey and is looking for more MARS members in Southern N. J. How about some help from that direction? K2IBF finds that v.t.o. with no antenna attached works out better than when he has the full flattop hooked up. 8BPO gives him a better report less the antenna. KFR is going 10-meter mobile. K2TWK now is on all bands with the new rig. K2VCT is a new League member. The April meeting of the Ridgewood Amateur Radio Club featured a talk on TVI by GNQ. VCZ is Field Day chairman for the Ridgewood Club. COT is trying to get ZS stations to QSL. RBRA has the following new members: CVW, ILF, K2QBH and KN2YSR. BRC, our RM, finds that changing his QTH was a real chore. The NJN report for April is as follows: Sessions 30, attendance 443, traffic 445. BRC is NCS on 2RN early sessions on Fri. CFB is overhauling the rig. A new net has just been formed called the Forty New Jersey Net, which operates on 7105 kc. at 1715 EDST daily. The net now has 11 members and is growing every day. It has liaison with ESN, MW, UTL and NJN but needs more members in New Jersey. Please call into the net any evening at the time specified and give these fellows a hand. We think it is a fine idea, and it is desired that every effort be made by New Jersey traffic men to make it a success. A very fine net newspaper is presently being published and circulated by this group under the guidance of K2AJV. K2ICE is on 220 Mc. looking for new contacts. K2DHE is the proud father of a new son, MLW made BPL for the fourth straight time. Traffic: (Apr.) W2MLW 669, VDE 237, BRC 199, K2EQP 172, AJV 170, MFF 132, W2WOJ 107, K2BHQ 103, OAM 86, RGS 70, W2RXL 60. K2GIF 43, MMM 41, PYL 39, W2KFR 30, K2GIQ 25, W2VMX 17, K2BWQ 14, EMJ 10, OYJ 8, W2VJN 7, NIY 5, CJX 4, CVW 2, K2QYI 2, SKK 2. (Mar.) W2CFB 3.

MIDWEST DIVISION

IOWA—SCM, Russell B. Marquis, WØBDR—New officers of the 75-Meter Phone Net are NGS as NCS, LGG, 1st alternate; SJU, 2nd; KØAPL, 3rd; and DBW, 4th; Board of Directors: District 1, TTT; 2, CGL; 3, ELM; 4, KØDBW; 5, MEL; 6, BSG; WLY, secy. VWF received an OPS appointment and KØBXO an EC appointment. New Conditional Class licensees at Independence are KØEGP and EMR. A new Novice at Shambaugh is KNØJDJ. KNØJJF, JJG and JJH are father and sons at Burlington. UCE is on furlough from the Navy and will leave for Guam next. GQ gave a nice talk on RACES at the Central Iowa Club. EFL is wiring a Johnson 500 for SLC. PZO has a new Valiant. The Cedar Rapids RACES gang furnished communications for a practice evacuation of children from a local school. GXQ received a 1000 Club Traffikers certificate. ERP is back from Florida. ROW gave a demonstration of the new Collins KWM-1 transceiver at the Burlington Club. KRU won the 2nd Annual Linn County QSO Contest with 75 contacts. KØCLS has reactivated the IDM Net. DIP gave a talk on amateur radio to the 8th grade at Mitchellville. BGQ checked into the Sioux City Emergency Net from a boat on the Missouri River. Traffic: (Apr.) WØBDR 2602, PZO 1682, LCX 1594, LGG 1237, BJP 1076, YAL 613, SCA 598, GXQ 527, CZ 433, QVA 165, KVJ 151, BLH 119, LJW 64, UTD 51, KØWAD 41, WØVWF 37, KØCLS 30, WØNGS 29, EHH 19, YI 19, KØBWN 16, WØCGL 15, FMZ 15, KØCYF 14, WØFDM 12, PTL 7, REM 6, SLC 4, KØAAH 3, KNØJDJ 2. (Mar.) WØBJP 300.

KANSAS—SCM, Earl N. Johnston, WØICV—SEC: PAH. RM: QGG. PAM: FNS. The Larned Amateur Radio Club has set up a communications center in the Gleason Hospital at Larned operating under the call KØDWV. The hospital has a 35-kw. stand-by power plant in case of power failures. LXA, of Salina, has formed the Kansas Weather Net operating on 3920 Tue., Thurs. and Sat. at 1930 regularly or anytime the WX Bureau advises of adverse conditions. Red states that 37 stations are reporting in to date and the list is growing. UOL has the big rig de-TVIed and now running 300 watts to his 813. ITO, of KCK, is building a kw. using 4-400As. BLI, OHJ, TOL and NIY made BPL this month. Traffic: WØBLI 975, OHJ 571, TOL 450, FNS 393, NIY 308, QGG 261, KØBXF 200, WØIFR 157, QQQ 86, KNØHSF 75, WØUOL 62, ABJ 60, QNI 35, FDJ 24, KNØHVG 24, WØIHN 23, FCE/Ø 22, KØBIX 20, WØSYZ 19, TNA 18, KNØJAE/Ø 17, KØAHW

(Continued on page 118)

12, WØLIX 11, MXG 9, DEL 8, VFP 7, WWR 7, SKW 5, UAT 5, UTO 5, ICV 4, ASY 3, LOW 3, MEF 3, WMV 3, AOQ 2, ITO 1.

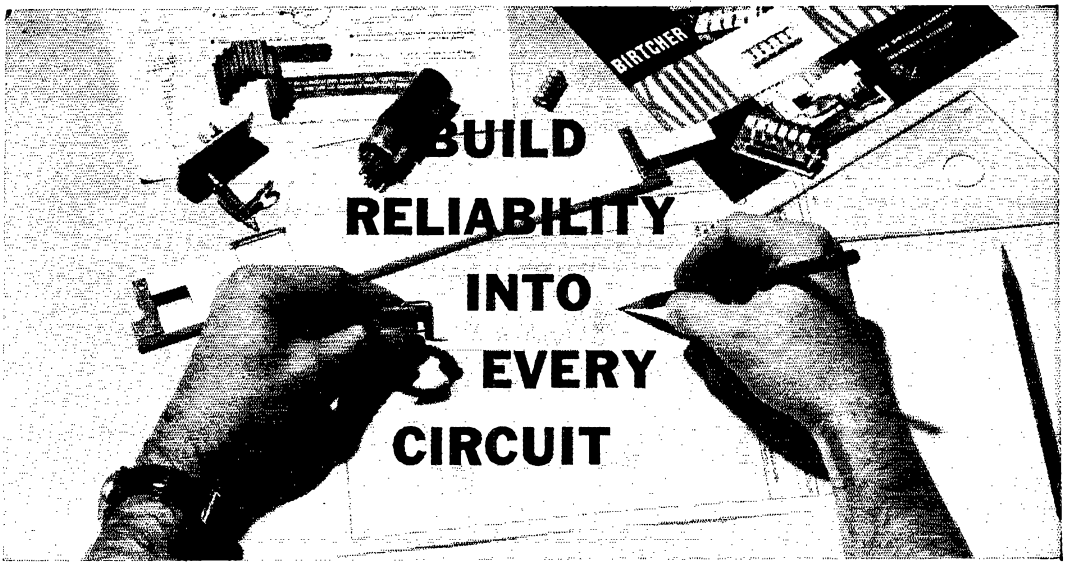
MISSOURI—SCM, James W. Hoover, WØGEP—SEC: BUL. PAM: BVL. RMs: OUD and QNO. KØDAY will be on 6 and 2 meters from Kansas City during vacation from school in August. The Rolla Amateur Radio Association has drawn up a local plan of emergency operations with the Missouri School of Mines Radio Club cooperating. KØACK was off the air temporarily while overhauling the antenna and rearranging the shack. Two new hams in Marshall are KØBWQ and KNØJGK. DE is building a stand-by transmitter for OUD before the present rig is robbed of some parts for the new transmitter. SSG has a new Viking Ranger. The Heart of America Radio Club, Kansas City, is open to new members. The Bandhoppers Radio Club, Ferguson, has acquired a trailer which will accommodate tents, antenna poles, generators and other emergency equipment. The Midwest Teenage Fone Net is meeting on 3860 kc. at 1700 CST on Tue. and Thurs. Net control stations are VZB and DLS. GEP was strictly c.w. for a few days while obtaining replacement for a gassy modulator tube. The St. Louis RACES group provided communications for the Civil Defense Auxiliary Police encampment on April 27 and 28. Traffic: (Apr.) WØCPI 1329, VPQ 590, GAR 524, UXT 204, BVL 194, OUD 187, GBJ 172, MHS 148, RTW 81, YVM 70, HR 68, WYJ 59, BUL 52, KØHQQ 44, WØCKQ 36, KA 34, WFF 32, YKC 32, KIK 31, EBE 21, EPI 17, KØAQO 16, DEX 11, IHY 11, WØOVV 8, KØDEY 2. (Mar.) WØZHR 10, KØACK 8.

NEBRASKA—SCM, Charles E. McNeel, WØEXP—Asst. SCM: Thomas S. Boydston, ØVYX, SEC: JDJ, RM/PAM/NCS: MAO. This being my first report I wish to thank CBH for all the help he has given me in getting this SCM report in to the League. OVW is the proud owner of a new Hallicrafters HT-32. The Nebraska 75-Meter Phone Net has 26 stations on roll call. KØBJA, KØBSG and UJK have rejoined the net. ZWG was really busy with traffic during the recent tornado at Milford. ERM has been off the air rebuilding. EGQ has been filling in as net manager for SPK while she was having transmitter trouble. The Nebraska 75-Meter Noon Net has 46 members. EXJ and VAS are back on the net. NSS has 12 members on roll call. KNØJBT is a new member. MAO has been reelected as NSS manager. ZJF has received his Ten Thousand Traffikers certificate. Don't miss the Chadron Picnic June 2 and Scottsbluff July 7. The Western Nebraska Net was two years old May 5. The boys at Hastings, Kearney, Grand Island, North Platte, McCook and KHOL-TV deserve congratulations for the work they did in the recent all-night Telethon over KHOL-TV and KHPL-TV. They relayed the reports from the different phone centers to Kearney and Kearney relayed to the TV station via 10 meters. The clubs should be getting their certificates in the very near future. Traffic: KØDGW 199, WØZJF 173, MAO 148, KØCDG 74, WØUJK 32, SPK 27, TIP 22, ZOU 21, EGQ 20, KNØHUF 15, WØPDJ 14, KØBRQ 12, WØKLB 10, HOP 9, BOQ 7, KØFBD 6, WØNHT 6, DDT 4, VZJ 4, NHS 2.

NEW ENGLAND DIVISION

CONNECTICUT—SCM, Victor L. Crawford, W1TYQ—SEC: EOR. RM: KYQ. PAM: YBH. Traffic Nets: MCN, Mon.-Fri. 0645 on 3640 kc.; CPN, Mon.-Sat. 1800, Sun. 1000 on 3880 kc.; CN, Mon.-Sat. 1845 and 2200 on 3640 kc.; CTN, Sun. 0900 on 3640 kc. The following made BPL: BDI, EFW, FYF and TYQ. The 13th Annual Hamfest at New London put on by the Tri-City Radio Council was a big success again this year. EFW reports a big month for MCN. In 22 sessions 203 pieces of traffic were handled with high QNI to RFJ and IBE, 21; BVB, 20; EFW 17. The Meriden Amateur Radio Club recently elected ZJF, pres.; WHR, vice-pres., and act. mgr.; Whitney Collington, secy.; IFQ, treas. YBH advises CPN met 30 times handling 291 messages for an average of 10 per session. Total QNI was 885, with high station QNI going to FYF, 30; VQH and YBH, 29; TVU, 28; DHP 27; HID, 25. We learn from KYQ that CN totals show 26 sessions for both the early and late nets. The early net handled 350 messages for an average of 13.4 per session. Late session handled 84 messages for an average of 3.2 per meeting. High QNI honors went to GVK and RGB. DHP is receiving favorable reports on his Official Bulletin schedule. KN1BML and KN1BMM comprise a father-and-son combination in Bethlehem. KN1BKL is a new Novice in Bridgeport. New Novices in Meriden are KN1BOE, KN1BOI and KN1BOK. Connecticut Section Net certificates were awarded to DND, FYF, QV, VSH and HID for activity on CPN. RAN is busy between classes putting up beams on 7 and 14 Mc. HYF vacationed in Florida. FYF

(Continued on page 120)



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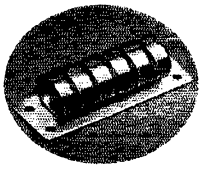

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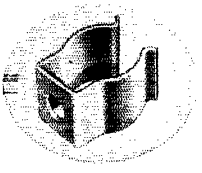

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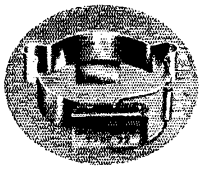

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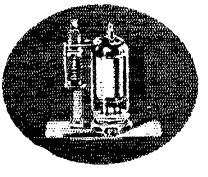

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received an NYS Net certificate and a Worked-All Delaware Award. ECH received WNH and WANE certificates. AMY enjoyed Florida during his spring vacation. BVB, who makes MCN a habit, has been handling traffic on 10 meters while mobile. New appointments: AMY as ORS; YNP as OBS; FGF as EC. Renewals: NQO, RPX, MHF and OAX as ECs; KYQ, LV and TYQ as ORSs. KYQ as RM; YBH as PAM. During the past four years KYQ has spent a great deal of time and effort in making CN the smooth running net it is today. YBH certainly is to be complimented for the excellent job he is doing with CPN. OO reports were received from AMY, BVB and DHP and an OES report from FVV. Traffic: W1TYQ 1013, FYF 711, EFW 502, AW 376, YBH 259, KYQ 168, BDI 159, GVK 134, HID 97, DHP 87, RGB 87, MQT 78, CUH 75, AMY 51, BVB 36, IUC 35, LXV 35, RFJ 32, FHP 29, VIY 27, EKJ 24, ULY 21, EBW 19, EJV 10, YOG 10, GEA 9, ECH 8, GVJ 7, ACR 5.

MAINE—SCM, Allan D. Duntley, W1VYA/BPI—Asst. SCM: Oliver R. Hamlin, 1WRZ, SEC: TVB. PAM: FNT. RM: EFR. OOs: WRZ, CBU and TVB. The Barn Yard Net meets Mon. through Sat. at 0800-0930 on 3960 kc; the Sea Gull Net meets Mon. through Sat. at 1700-1800 on 3940 kc; the Pine Tree Net meets Mon. through Sat. at 1900 on 3596 kc; the Horse Traders Net meets Sun. from 1700 to 1800 on 3940 kc. Well, it is close to the end of my term as your SCM. Again thanks a million for all your assistance. UTQ has at last made the grade and is on the air with a very good signal. There are a couple of new hams in the Searsport Area, one of them a police officer. ZE has made his spring visit to Garbage Hill. FVJ is now running higher power. SRW has a new Globe Scout. FHG has more power in a B&W 5100B. GEE also has upped his power to 400 watts. Hope some of you guys and gals will give ZEN a lift on the Barn Yard Net. JIS is going into photography on a large scale. Ex-FCC Commissioner George Sterling, AE, now is net control on the Barn Yard Net. Sorry to hear of NAQ's illness. SIN is on with a new rig. Welcome to HEZ, a newcomer to Springvale. TJQ has a new mobile. K1AEZ is summering in Casco. There is quite a lot of QRM when we all try to operate on the same frequency. TGW is back from 40 meters. TWR is building a new kilowatt rig. TVB still is working on a new rig. Traffic: W1LKP 191, FZK 31, UDD 28, HYD 22, GYJ 19, KFY 11, BX 8, HGI 6, NRE 5, OTQ 5, FNU 4.

EASTERN MASSACHUSETTS—SCM, Frank L. Baker, jr., W1ALP—New appointments: LSA No. Attleboro, HLQ Stow as ECs; HZ as OO. Appointments endorsed: QHC as OBS; IPA, QGJ and VYI as OPSs; IPA Boston Chapter Red Cross, MD Hingham, MOJ Millis, QGJ Woburn, YHY Fall River, DPO Chatham, WNP Concord as ECs; PXH as OES. KN1BIO is on 2 meters in Sharon. SFO, ex-K4DUN, Saugus, got his old call back. The Federation of Eastern Mass. Amateur Radio Associations held a meeting in Lynn with 8 clubs represented and elected the following officers: JLN, chairman; QVK, vice-chairman; VRK, secy.-treas. Other clubs are invited to join. The dues are $5.00 for the first year, including initiation, and $2.00 per year after that. By organizing and having a strong group many things can be accomplished. Why not inquire about it? AOG has a new 2-meter rig, also one for 6. The Wellesley Amateur Radio Society had Mr. Hauser of WBZ-TV speak on its new tower. The GBARS held a regular meeting. UIR is net manager for the Braintree Net and gets on the Barnyard Net. ETH has a new house in Brookline, but will be in Hull for the summer. New officers of the Brookline High School ARC are ETH, pres.; IEF, vice-pres.; KN1ACJ SECY.; WN1MMW, treas. AAO, BWN and DFS are on 75 meters. AGA is mobile with an Elmac AF-67. The Yankee Radio Club had an auction. COL, Cambridge EC, has a net going on 10 meters. The Satuit Amateur Radio Club had AFN give an RTTY demonstration and talk. The club's officers are MB, pres.; LVR, vice-pres.; YTA, secy.; ZUC, treas. MB broke his arm. JSM got into 3 aurora sessions and worked Michigan and Ohio on 2 meters. EMG made BPL. New Novices in Easton: KN1BNF, BCR and BGH. TZ will have new tower and beams for 2 and 6 meters. AGX is on a few nets. Wellfleet has a 2-meter rig in the Town Hall on 145 meters. FJJ has a 15-meter dipole up. The following took part in the Feb. F.M.T.: BW, JOT, WPG, WK, TZ, THO, LQQ, GDJ, BGW and AYG. IBE will have a station in the Town Hall for his e.d. New officers of the Hingham Radio Club are: ONV, pres.; VM, vice-pres.; GRX, secy.-treas. CTW spoke at the QRA. IZY has a Gonset on 2 meters at the hospital, thanks to UBF, and an electronic key made up by IWC. The Norfolk County Radio Assn. held its annual banquet and elected HTR, pres.; ALK, vice-pres.; AYI, secy.; WTF, treas. CTZ is now the R.O. for 2A. LAV, ex-2DYP, and EL8A has his old

(Continued on page 122)

call again and now is in Sudbury with a DX-100 and an NC-240D. The Braintree Radio Club held a meeting and a talk on transmission lines. LSA is R.O. for No. Attleboro, which has its RACES license and drills on 2 meters. The Malden Amateur Radio Assn. held another auction with HKG doing his stuff. PXH is very busy at work. The T-9 Radio Club held its Ladies Night and a meeting at WNK's. ZSM has an AF-67 on 10 and 15 meters. KN1AQI, in Burlington, is on 15 meters with a three-element beam and 80-meter c.w. and is getting out well. KCR has a quad for 6 meters and is working on an AT-1 for 6 meters. On 6 meters: GKE, UIQ, GYQ, JWH, OOP, AGD, ION, HMT, VAG and FGS. ZQO is building a tower. DJK has a mobile rig. MQG has a new rig on 2 and 6 meters. MKW has an element beam for 2 meters. EUE has a three-element team for 20 meters and is handling phone patches from Goose Bay. Heard on 80 meters: AKN, BCN, DJK, DVS, JOE, MKW, PSS and DY. Heard on 75 meters: AKN, NPU, GOO, KPX, BCN, OQT, WHC, EYK, SGL, LYV, DVS, QLT, VDF, IBA, VDB, DJK and ZQO. On 2 meters: AKN, BCN, CMT, NPR, WHC, TYZ, OQT, ZSJ, KFF, PSS, EUE, YAN, FZH, DPO and MKW. AKN is fishing again. GRC was off while moving. The Barnstable Radio Club had a demonstration of spark gear. Sector 2C holds drills each month on 2 meters with 20 to 30 stations on. Winthrop drills are held each week. AHE worked quite a lot of DX during the aurora. WN1NJL, 11 years old, is active on 7.1 Mc. HHC is on 75 meters and is building a v.f.o. SMO has a Regional Net certificate. CXJ worked an LU with an inside antenna. SXD has a beam for 10 and 15 meters. PIW got rid of TVI. JOW has an outboard. AGR is going mobile. LMU is building mobile for 12 volts. Traffic: (Apr.) W1EMG 525, EPE 214, GNX 113, EAE 74, TZ 39, IBE 22, TY 22, ZEN 17, ATX 16, UE 15, AGX 9, KBS 8, QLT 6, AKN 4, BY 4, AHP 2, AUQ 2, BPW 2, SMO 2, HHC 1. (Mar.) W1MME 101, QGJ/1 38, ATX 25, AOG 9.

WESTERN MASSACHUSETTS—SCM, Osborne R. McKeraghan, W1HRV—SEC: RRX, RM: BVR, PAM: MNG. The WMCW Net meets on 3560 kc. Mon. through Sat. at 1900 EST. The WM Phone Net meets on 3870 kc. Wed. at 1800 EST. ZEO has been appointed OO Class II because of his fine score in the recent F.M.T. TAY, Amherst EC, has appointed two Assistant ECs, NVQ at the University of Mass. and IZI for Pelham. The BCARA held its annual business meeting June 8 in the form of a dinner meeting at Rosa's in Pittsfield. A large group of v.h.f. men from the Hampden County vicinity attended the annual payoff dinner at the Marco Polo in East Hartford on May 16 in honor of the Hampden County Club victory in the January V.H.F. Contest. The Hoosac Valley Radio Club, FTS, has a kilowatt linear about completed and expects to have it on the air soon. This report is being made up at the c.d. headquarters while your SCM is standing watch during the State-wide alert caused by the very dangerous forest fire situation in New England. Many of our section operators are on duty to man the radio network. DPY is expecting to get his new s.s.b. rig on the air after returning from a vacation in KH6-Land. AJX built a Heathkit 20-watt hi-fi amplifier and is using it with very good results as a modulator for 75-meter phone. He still is looking for Nevada for WAS. New Novices are KN1s AYK in Cheshire, BKD in Chicopee and BDI in Pittsfield. KFO is moving to W2-Land in June. UBD has a new 5-over-5 6-meter beam in operation atop a 60-ft. tower. JJO reports that his OM has taken his Novice test and is waiting for his ticket. UEQ has been heard on 2 meters, another convert to the all-time-high v.h.f. activity in West Mass. LIW held a solid-hour QSO with G8TD with his mobile rig in Holyoke. AZW worked CT2BO for No. 113. Traffic: (Apr.) W1LDE 781, UEQ 161, BVR 119, DZV 50, AJX 12, DGL 12, AGM 7, DPY 3, ZEO 2. (Feb.) W1ZEO 2. (Jan.) W1UEQ 113.

NEW HAMPSHIRE—SCM, John A. Knapp, W1AIJ —SEC: BXU. RMs: CRW and COC. PAM: CDX. NHN Traffic Net is on 3685 kc., Mon. through Sat. at 1900. The Granite State Phone Net meets at 1900 Mon. through Fri. on 3842 kc., and on Sun. at 0900. NHEN (RACES) meeting time is Sun. at 1300 on 3850 kc. New Hampshire QSO Party top scorers: phone, CNX; c.w., GSC; combined phone-c.w. GSC. Out-of-state: phone, AQE; c.w., EFN; combined phone-c.w., a tie between AQE and EFN. NPY/JTB, atop Mt. Washington, is a new ORS, OPS, OO and OES. KKT is conducting code classes on 10 meters. FZ has received BERTA and WASM. The Concord Brasspounders held its first New Hampshire "Bean-Hamfest" and auction on Apr. 13 with AOQ and CNX in the auctioneering dept. Initiation of ten new members of the Concord Brasspounders was held on May 2 at the club hq. Preceding the ceremonies, a chicken pie supper was enjoyed by all. (The "initiatees" ate a hearty meal!) WBM is

(Continued on page 124)

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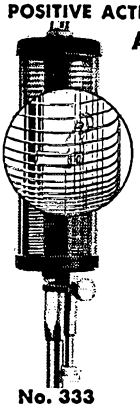

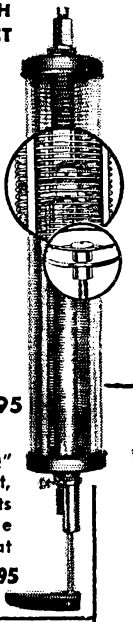

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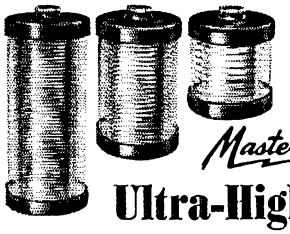

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For 80-40-20 & 15 Meters

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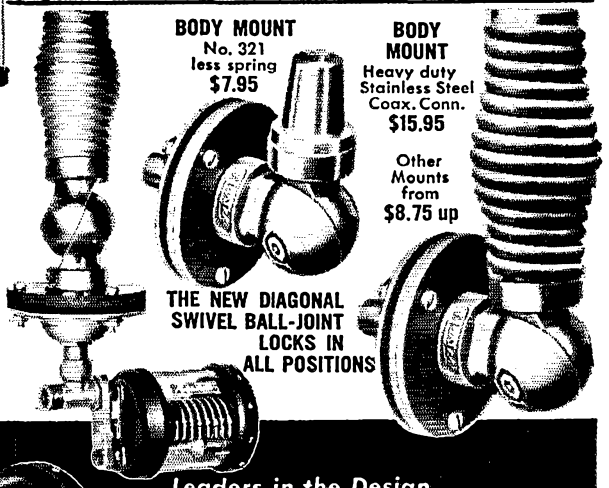

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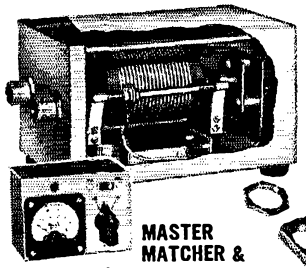

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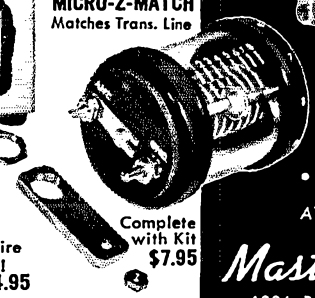

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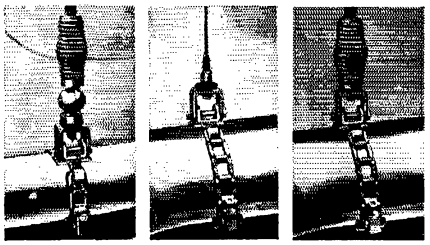

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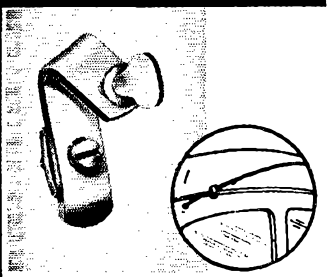

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Protects antenna, prevents whipping. Easily attaches to car. **$1.00**

planning a European trip in July. His itinerary includes England, Wales, Ireland and Belgium. GJM is the new EC of Rockingham Co. Welcome to new hams: KN1s AQS, AQY, AQX and ARR. SEC BXU called a meeting of ECs at e.d. hq. in Concord, Apr. 7. All counties were represented. Traffic: W1DYE 29, CDX 21, PFU 21, KN1BAW 2.

RHODE ISLAND—SCM, Mrs. June R. Burkett, W1VXC—SEC: PAZ. PAM: YNE. RMs: BBN and BTV. The Southern New England Net (Wed. on 50.7 Mc. at 2000) will have a picnic at Lincoln Woods on July 14 starting at 1000. For further details contact VWR. New appointments: VWR as OO Class I; HKN as OO Class III and IV; and OGT as EC. BIS was endorsed as ORS. HIJ is now on 20-meter c.w. and recently worked WAC in 4 hours. HKN is active on 160-meter phone and will be on 6 and 2 meters with high power soon. UHE now runs 40 watts on 220 Mc. and has worked 8 states on this band. UOP is now on the engineering staff of WHDH. MUZ is working on surplus gear for a BCRA club station. TGD reports that his quad is up again after repair of the damage done during the winter's winds, etc. YRC and ZFV might be signing FP8 this summer. GR has been experimenting with 3-band three-element beams. MYV and KN1AQA are new members of the BCRA. CEZ operates 10-meter mobile regularly and is building an all-band rig for the home station. NDM is back on 10 meters after being away from Rhode Island for the past few years. TOH is running a DX-100. Appointees are reminded that annual endorsements as well as monthly reports are necessary to keep appointments in effect. Your SCM receives club papers from the BCRA and PRA regularly. Any other clubs have publications? Traffic: W1BBN 85, HIJ 62, VXC 37, TGD 34, VWR 19, HLY 11, YRC 9, HKN 8, KDS 8, ZXA 8.

VERMONT—SCM, Mrs. Ann L. Chandler, **W1OAK**—SEC: SIO. RM: BNV. PAM: SEO. Nets: VTN, Mon.-Sat. at 6:30 P.M. on 3520 kc.; VTPN, Sun. mornings at 9 on 3860 kc. GMN is now operating Mon.-Sat. at 5 P.M. on 3860 kc. instead of at 12 noon. During April 73 different stations reported in, clearing 34 messages. VTN handled 59 messages with 24 reported sessions. Top QNIs go to ELJ and JLZ who reported in 17 times each. JXO now has a General Class license and is active on VTN. BNV is moving to Vergennes. ZJL has installed a 75-meter mobile rig. KN1AUE is on 2 meters with an ARC-4 and 10-element beam. ZPB/1 is heard on 80 and 40 meters from Mt. Hermon School in Mass., where he is teaching. Your SCM urges that more stations operate 40, 20 and 10 meters (in fact all bands) in order to meet the demand of many outside stations looking for Vermont! AOX is readying for the Army. New OO appointees are MH and UGW. TFB enjoyed a pleasant visit at BXT's. On 6 meters in Brattleboro activity on the "6 by 6" Net is thicker than fleas on a dog's back with AZV, DAQ, FMK, FPS, MH, SDG, TDG, TRZ and TXN and AD, PTB and RYL as out-of-towners. WN1NXB operates all Novice bands with a Johnson Viking Adventurer with a 6146 final and a Heath AR-3 receiver. BXT now is on 80, 40 and 20 meters with a Viking II. WN1NOB is attending school at Bethany, W. Va., and is building a Heathkit Signal Generator. He was elected secy.-treas. of the Bethany Amateur Radio Club. MH attended the RACES meeting in N.Y.C. representing Vermont as Communications Officer. GAE is back at WCAX transmitter after his recent illness. Congrats to AVP on making WAC! YYU and her OM are back from California and operating a gasoline station in Rutland. ZJL and ZNM are working on antennas. KJG cleaned out his stock of QSL cards twice on the Vermont QSO Party! ELJ is tickled over his Viking transmitter. JMI and OHL from Connecticut, visited MMN and OAK over Easter. The Mike and Key Club meeting in May featured a discussion on log books by TFB. WOD is making fine contacts on phone—the latest being Greenland. EIB has a new antenna up cut for 3.9 Mc. 40 feet high. TLP/MM is making 21-Mc. contacts with 12 watts aboard ship. His latest stops were Japan, England and Iceland. UGW operated from 3VOS in the Vermont QSO Party. MMN worked 9KLR in Indiana during meteor scatter bursts on 2 meters, making 15 states. Congratulations to the following new calls: K1APF, K1APX, K1APO, W1EQR and Novices KN1s AQU, ARB and ASB. Traffic: (Apr.) W1JLZ 83, AVP 76, BXT 61, OAK 57, ELJ 47, KJG 6, VMC 6, ZJL 2. (Mar.) W1VMC 11.

NORTHWESTERN DIVISION

ALASKA—SCM, Dave A. Fulton, KL7AGU—BTU received his General Class license recently and is on the air with a DX-100 using a ninety-foot-long wire for an antenna. The receiver is an SX-100. BTU is at the Naval Station at Kodiak. KØILD is the current operator at USA. W9KLD/KL7 made 90 QSOs in the April

(Continued on page 126)

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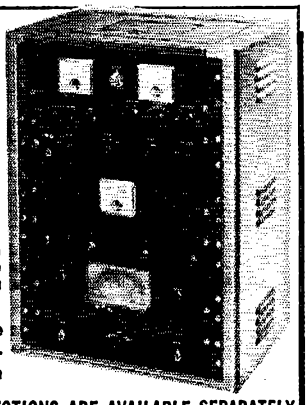

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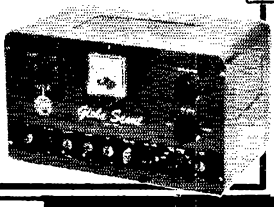

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CD Party and would like to make contact with Fairbanks. He reports 75 meters has been very poor of late. KLD/KL7 made 1019 contacts in the ARRL DX Test. The beams are out of commission and a long wire is being used at present. The following stations are on from the Arctic Coast: K2AQD, W9NUQ, W5MPV, W9PBX, W9KLD, W7QPV, KL7s CCF, CAV and CBZ. It looks like an Arctic Coast contact for ADXC ought to be getting easier every day now. Traffic: KL7USA 354, W9KLD/KL7 14, KL7BTU 2.

IDAHO—SCM, Rev. Francis A. Peterson, W7RKI—Plan ahead to be at the annual Big Springs Hamfest Aug. 2-3-4. We regret to announce the death of the wife of ex-SCM EMT. GMC returned from 2 weeks training duty in the Navy. There are now 7 mobiles near Lewiston. VQC soon will have a Viking 500 on the air. ACD is getting 500 watts on 6 meters and reports hearing scatterings of W6s nearly every morning. ROY, of Idaho Falls, now is at the South Pole. SCM RKI gave a talk to a large group at Pocatello on ARRL and affiliation. OIQ is now KL7CDG on 15 meters at 2030 looking for Idaho. SON is now in Nevada; NGU has gone to California. CDA and GCO are racing to build the smallest converters. Capt. John Reinartz gave a talk to a large group at Boise on SWR of Antennas. IY is back at Grandview with a new antenna. HBS is a new ham at Shelley. Traffic: W7GMC 198, VQC 46, EMT 12, IY 4.

MONTANA—SCM, Vernon L. Phillips, W7NPV/WXI—SEC: KUH. PAM: EOI. RM: KGJ. Montana Phone Net: Mon.-Wed.-Fri. at 1800 MST on 3910 kc. Montana Breakfast Club: Every morning at 0600 MST on 3910 kc. TVY got married. SPH moved from Billings to Buffalo, Wyo. TKB is keeping schedules with KC4USB at the South Pole. CPY returned from spending the winter in Mesa, Ariz. ZCO, VZN and YZQ helped provide communications during a fire in Billings. Nine members of the Yellowstone Radio Club's code classes have taken their Novice examinations and six more expect to take their tests soon. JRG completed his new kilowatt rig for 6 meters. IWW and FTV have a kilowatt rig about ready to go on the lower frequencies. TGL and TGM have a new 15-meter beam. BJV has new homemade beams for 10 and 15 meters. OOY holds schedules with her cousin, UAN, in Seattle. The Flathead Valley Radio Club purchased a 1-kw. power plant for emergency and Field Day use. WN7IAC is a new call in Kalispell. DKF has a new DX-100. UDB returned from an extended vacation. Traffic: (Apr.) W7TKB 111, SFK 26, BPG 21, CQC 20, OOG 18, TYN 13, WRK 13, YPN 12, TNJ 11, YUB 10, YCQ 9, NPV 7, ARJ 5, OIQ 5, EEO 4, FTD 4, BKB 3. (Mar.) W7TKB 31, TVX 27.

OREGON—SCM, Edward F. Conyngham, W7ESJ—ZXC hasn't chased much DX lately but has 29 countries racked up, using a Heathkit AT-1 and spent time building the "li'l eleven" recently published. LT mentions that phone stations in the recent CD Phone Contest were hard to find. JCJ advises that the editor, VGI, expects to have the new Oregon Call Book out soon. YUY has a new antenna-tuner in front of his Ranger, which has done lots for the signal (and the operator's peace, too). RGS reports a net going on 51,000 kc., with DCU as NCS and CIO as ANCS, weekly on Tue. at 7 P.M. PST. DIC just received her new ticket in time for the convention. New officers of the OARS are DXJ, pres.; DWO, vice-pres.; QWE, secy.; DGA, treas.; YQJ, act. mgr.; JCJ, Field Day mgr.; QWE, OARS net mgr.; DOK, asst. net mgr.; YQJ, net director; WNV, asst. net dir. Oregon stations participating in the recent Frequency Measuring Test were. PQJ, FU, GPP, KCK, FNS and EJO. On MARS some frequency measuring has been done by SMR, TCT, TYT and ESJ. The Oregon State Net now has ABJ, AJN, BVH, BZD, FCO, KAB, OMO, QNI, QPS, WAA, YKT, YUY, ZBO, ZFH and CZX, with OMO acting as net mgr. WHE and VIL have had colds. Traffic: (Apr.) W7ENU 121, LT 74, OMO 41, BVH 35, YUY 30, HJU 26, QWE 10, PTO 4, JCJ 2, KTG 1, ZXC 1. (Mar.) W7ENU 43, PTO 10, QYS 4.

WASHINGTON—SCM, V. S. Gish, W7FIX—QJC reports from Valley ARC (Puyallup) as follows: SWA is back from California in a new job as field engineer for Hughes Aircraft; the VARC had very satisfactory results in its code and theory classes at Puyallup High School with many new Novice and General Class licensees; JJK is in New York on Boeing business; SLB is at Fort Monmouth; PUA is working on 1296-Mc. gear; Field Day plans are cruising right along and enthusiasm is running high; OIV has booked movies for every club meeting for the year. The Walla Walla Valley ARC appointed YEM as its EC. The Skagit ARC had a banquet Apr. 6 with 67 OMs and XYLs attending. LVB reports trout fishing is excellent. ULK received a gold cup from the Spokane ARC for her teaching of

(Continued on page 128)

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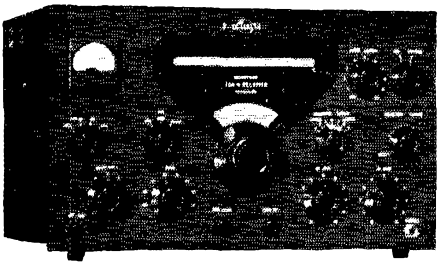

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code and theory in spare time to her 6th-grade pupils—20 got their tickets. Recent visitors at BA: Jim Hayes and Dave Wheaton from KL7AIR; Ted Klages, W6IPE, and his Collins s.s.b. trailer; Switty and his family from KA2FC. Visitors at FIX included AIB, CPY and K6EPC. The noon meetings of the Fish and Chowder Club were enlivened by a visit from Mr. and Mrs. John Reinartz of Eimac. CO is becoming interested in s.s.b. after talking from Kodiak to Seattle via s.s.b. patch. ZCZ, chief operator at K7FEA, is being transferred to KL7-Land. AIB is busy with a new shack and new antennas (ham and TV), and is waiting for a new receiver. AMC still bewails the fact that garden work infringes on hamming. EHH is busy fishing.—DST knocks out his American Legion Net skeds. BXH is QRL dentistry and has been thinking of putting an "X" in front of a certain "YL." YFJ is QRL school. GN, with operators YFJ, VGQ, WPR, WLK and WJP, worked 47 states and 36 countries during school study periods. CWN is QRL MARS and bowling and various projects. HDT reports the Asotin County RACES plan has been approved and two licenses cleared. POZ is back in Clarkston. Thanks to the clubs for their news. There is room for more if others care to submit any. There still is a lot of territory in the section not covered by an EC. ARRL appointments are available to those desiring same. Traffic: (Apr.) W7BA 2475, K7FEA 2069, W7PGY 1887, VAZ 1075, K7WAT 678, W7JC 109, APS 91, AIB 66, ER 64, WQD 59, USO 34, AMC 30, EHH 26, BXH 24, JEY 22, LVB 9, YFJ 2. (Feb.) W7GAT 2.

PACIFIC DIVISION

SANTA CLARA VALLEY—SCM, G. Donald Everlein, W6YHM—Asst. SCM: Roy E. Pinkham, 6BPT. SEC: NVO. RM: ZRJ. PAMs: OFJ and WGO. The PAARA toured the United Airlines Maintenance Base at San Francisco Airport at its May meeting. The Palo Alto C.D. Net meets at 2000 every Mon. on 144 Mc. Menlo Park C.D. has been assigned the call K6YQT. Welcome to LU2AX, who now is located in San Carlos on a permanent basis. The following from this section were present at the dinner held by NCN in Berkeley: HC, ZRJ, K6BGM, GZ, GID, W6MMG, BMP, JCG and YHM. SHT has returned to the air in Watsonville working 144-Mc. phone. UCS, the c.d. station in Salinas, has a new Gonset Communicator for 144 Mc. GJZ spent time trolling for salmon in Monterey Bay. KN6VAC took first place in the Washington Junior High School Science Contest with his exhibit of ultra-sonic energy. KDA has a new QTH in Seaside. PLG has a sked with EVC/4, handling traffic for George's wife, who still is in California. YHM made a trip to Alaska. BMP is attending night school studying for his 2nd-class telegraph operator's license. K6GID built a monitor using a printed circuit and transistor. ZRJ and K6BGM returned from a trip to Salt Lake City. While there Doc made arrangements for 7CTI to check into RN6. RLB reports E openings to Arizona and Seattle during March with contact with ØCMN in Grand Junction, Colo., on 6 meters via scatter and meteor burst. VDG has worked ØCMN on sked for 14 weeks straight. GUY is building a final for 6 meters using a p.p. 4-400A. 7KFV/6, ex-SCM of Wyoming, now is in San Jose with the CAA. AIT is adding a 200-watt final to the rig. Traffic: W6BPT 598, K6DYX 579, W6PLG 299, YHM 278, VZT 172, JCG 166, YBV 130, K6GZ 124, QCI 107, W6ZRJ 55, OII 52, ZLO 47, FON 40, K6GID 40, W6AIT 30, BMP 17, MMG 4.

EAST BAY—SCM, Roger L. Wixson, W6FDJ—Asst. SCMs: Harry T. Cameron, 6RVC, and Oliver Nelson, jr., 6MXQ. SEC: CAN. PAM: LL. RMs: EFD, JOH and IPW. CAN's move to Arizona didn't materialize so Wayne still is with us as SEC. The SARO held its meeting at the Shadows in San Mateo. Feature of the evening was a very successful do-it-yourself type of program where each member gave a brief talk on a piece of gear that he had brought with him. The April 5 meeting of the Oakland Radio Club included a talk by Ralph Bykerk, from Telebeam, on his midget portable 6-meter transmitter-receiver. The East Bay Radio Club had as its guest speaker LSB, from Hood, who spoke on 2-meter propagation work which he is conducting via s.s.b., c.w., and a.m. with NLZ and others in the Los Angeles Area. Jack also had a fine collection of tapes which he played, demonstrating the type of work he is doing. The 2-meter MARS RTTY Net meets every Tue. at 7 P.M. on 148.01 Mc. with ASJ as net control. Traffic: K6GK 383, W6VPC 52.

SAN FRANCISCO—SCM, Walter Buckley, W6GGC—The boys in the Marin Amateur Radio Club discussed "New Code Classes" and urged more members to join the ARRL at its April club member meeting. K6CKG, W6BCM, K6JGX, W6KUF, K6LCF and K6BAQ were appointed to office, with IFO as trustee of the club station. Ex-G2IN was guest speaker at the

(Continued on page 130)

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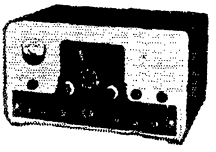

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Model 240-104-2 Valiant Wired..Net 439.50

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monthly San Francisco Radio Club meeting. He spoke on Arctic Scatter Propagation Installations and had colored slides to demonstrate. The club's dues are now $2.50 per year. YC has made DXCC and also is the first W6 to receive a "Worked Delaware Award." CBE has built a new heterodyne exciter and has taken most of his antennas down as he is trying to sell his QTH. GQA had an average error of 3.7 parts per million in the recent F.M.T. QMO does not check in on MCAN/7 as there is too much QRM and conditions are too poor. President K6HIW is trying to get all the San Francisco Ladies Club members to join ARRL. OST had quite a nice set-up at the San Francisco Scout-a-rama Show. It is reported that amateurs all over the country and even a couple of foreign countries gave full cooperation in handling traffic from the show and that the "Radio Amateur Booth" at the affair was highly successful. K6USN has code practice nightly on 1978, 3590 and 7128 kc. at 1830 PST from Treasure Island, from 5 words per minute up to 40 words per minute. K6DKU, K4HHS, G2AOW, KG6NAA and K2DXV were among the visitors at a recent meeting of the San Francisco Radio Club. BIP is back home after a four-month assignment in Southern California. WD was first to find the 29ers hidden transmitter. K6GYA has been in the hospital with a stomach ailment. Best wishes for a speedy recovery, OM. The 6-meter gang holds a c.d. drill every Tue. at 8 P.M. SDN was hidden transmitter for the 6-meter hunt. K6OES was first, with K6HYM and W6GGC second. BIP made 420 contacts during the April 14-15 CD Party. John Reinartz was guest speaker at the Eureka Radio Club meeting of May 4. KZF is the new SEC. K6BHG is the local FCC man in charge of Conelrad. OPL and his XYL, Gertrude Reinartz, GGC and his XYL all enjoyed a dinner held at the Eureka Inn. After dinner the ladies visited SLX's XYL and had a pleasant time playing cards with some of the Eureka Club's XYLs while the men attended a special meeting at the club house. John spoke over the Eureka Radio Network and also on TV prior to the dinner and meeting. K6BHG spoke to club members at a meeting on Conelrad. KZF talked on c.d. and GGC thanked club members for the fine cooperation shown him by members during his four years as their SCM. Four years is long enough for any man to have the honor of being SCM, so soon a new SCM will take over the office. Your SCM dropped in to visit GQY while in his vicinity and had the pleasure of a long visit with ANR and his XYL while in Eureka. Traffic: W6GQY 708, QMO 609, GGC 28, JWF 12, GHI 10, YC 3.

SACRAMENTO VALLEY—SCM, LeVaughn Shipley, K6CFF—Thanks to 9th-grade-student Peter Freeman, K6RFT, for an FB report on activities in and around Red Bluff. SBH made a trip to Hawaii and PYE and SIA worked him through a phone patch on 20 meters. Congratulations to the Golden Empire Radio Society in Chico. So far as your SCM knows this is the only club in the section that is officially affiliated with ARRL. Have your club secretary write for the details—there are many advantages. K6QIF is the new EC for Sacramento. We are looking for an EC in Chico. Our new EC in Truckee is K6AET. Also, we need a new SEC. Our hats are off to HIR, the only station thus far to qualify as Class I Official Observer in our section. Don't be led astray by that new call you hear so much; K6YJL is the official club station of the Radio Amateur Mobile Society of Sacramento. You should see the engraved gold cup K6EWH won at the RAMS annual transmitter hunt. K6ER has been reported the leader of the section in Official Observer cooperative notices for 1956. Thanks to the Sacramento, RAMS, Aerojet, Yuba-Sutter and Golden Empire Clubs for their hospitality during your SCM's recent attempts at speech-making. 1HX is a new OBS and CMA is back in the fold as ORS. Most appointments are available. We are in particular need of traffic men. Why not write the SCM? Traffic: W6CMA 166, K6EHT 39, KN6YBV 30, W6ZF 6.

SAN JOAQUIN VALLEY—SCM, Ralph Saroyan, W6JPU—ADB received his 35-w.p.m. certificate. GIW is working on a Pack Transceiver for 2 meters. QOK is building a final using a pair of 1625 tubes. K6IFL is leaving for Wyoming territory. 7BVZ, ex-6BVZ, was a recent visitor in Fresno, hunting up old friends. KN6ZCU has a new SX-100 receiver. KTW has a new Johnson Valiant. SMS is chasing transmitter troubles. ERE has a double sideband mobile rig. CF has a Model 26 RTTY. PXP traded his NC-300 for a 75A-4. JPS had charge of the Fresno Radio Club's Field Day activities. PPO finally got the bugs ironed out of his 813s for s.s.b. QOS has a new QTH; his hamshack was the last thing to be moved. OUX is building a 10-meter beam. JXY has his Model 15 RTTY receiving. K6GTI is building 4 1625s in a grounded-grid amplifier to go with his 20A. The RACES plan for Fresno County is in the mill and should be approved very soon. WYT is

(Continued on page 132)

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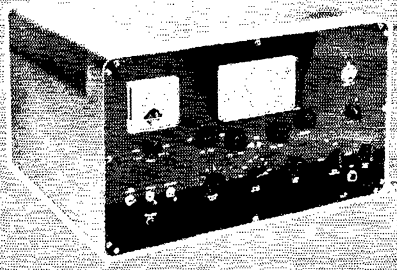

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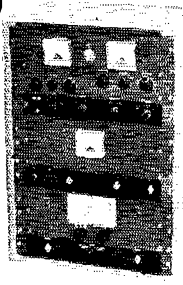

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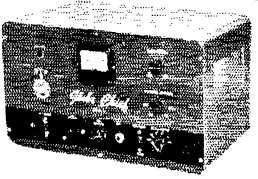

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Fresno County Radio Officer. JPU has a Gonset 10- and 20-meter beam. The Fresno Radio Club's code and theory classes still are going great at Chandler Field every Mon. night. Fellows, it only takes a few minutes out of your week's operating to check into your local c.d. nets. If we didn't think they were important, we wouldn't have them. Don't forget the news, my column depends on it. See you at the next Fresno Club meeting, 2nd Fri. of each month at the Power Building, tenth floor. Traffic: W6ADB 142, EBL 27.

ROANOKE DIVISION

NORTH CAROLINA—SCM, B. Riley Fowler, W4RRH—SEC: ZG. PAM: DRC. K4HHM announces that a teen-age net called the Atlantic Teenage Net meets Mon. through Fri. on 3910 kc. at 0700 EST and covers North Carolina and Virginia. It is reported as having good coverage in the two states. Members are invited. RACES in the State still is growing. At the moment we have twenty-three county plans filed. I sincerely urge each amateur to investigate and make your station available for this important service. If your county does not have a RACES plan, please communicate with CVQ, ZG or RRH. They will supply you with the necessary information. SWC is a new Asst. EC for District Ten. Congratulations, YQX, AEH and VZW are new ECs for ARRL Districts Ten, Thirteen and Twenty-four respectively. The State Command and Information Net (RACES) meets each Thurs. at 0700 EST. All members of the net are urged to be present. AREC is growing in a satisfactory manner in the State. At the last report there were 549 members. Enroll your station. Traffic: W4GXR 105, DSO 87, DRC 31, RRH 31, K4HHM 20, W4ZW 12, ZWF 12, ZW 12, K4GKA 11.

SOUTH CAROLINA—SCM, Bryson L. McGraw, W4HMG—A spaghetti dinner by UUB for the Spartanburg Club members marked the departure of K4LKS. UUB also is giving line lectures on transistors. Get him to visit your club. HDX, with an FB new rig, is sporting a pair of 6DQ6s in the final. Congrats to FFH, COA, AKC and others on the fine NCS work on both phone and c.w. during the Apr. 8 tornado. Approval of the c.d. plan for Columbia is expected at any moment via K4AII, Asst. State C.D. Officer. VJI now is s.s.b. with good signals from 200 watts. YLT is a proud papa, an 8-lb. YL. MWP and GHT are busy organizing a radio club in the Conway Area with 20 members. We are glad OAK is out of the hospital and back on 75-meter phone. K4GBH is getting good signals with a vertical Vee antenna. COA, now an ardent golfer, hopes to break 100 soon. EGI, GAT and AVU are getting FB publicity from an article on the Scatter Propagation station at Congaree Air Base. HOD will QSP traffic for Parris Island. Thanks to ZRH, GQE, CTX, AWY, FFH and others for their help in locating the unmodulated carrier in the v.h.f. region which was non-amateur. Columbia's newest Novices: KN4s OUF and OUG. DXK, Batesburg, is doing FB on 80-meter c.w. with slow code and help to the Novices. K4CKZ is now an AREC member who works all bands with a nice 304TH final. EFP reports new Aiken Club officers are KAC, pres.; JUN, secy.; EFP, asst. secy.; VYC, director; ABF, custodian of JIY, the club station. Congrats to Aiken on its fine emergency test of Apr. 27 with nice planning by AIB, KYN and KN4JNU. Traffic: K4BVX 259, W4HDR 154, K4JFN 122, EJR 100, W4YAA/4 47. K4EKG 22, W4FM 15, K4GHT 13, IOE 8.

VIRGINIA—SCM, John Carl Morgan, W4KX—SEC: PAK. Richmond ARC's Spring "Tune Up" brought out 54 participants. JHK was high scorer with 42 contacts. KN4LJF topped the Novices with 20. Fairfax HS's new club call is K2OQI. The Old Dominion ARC now is officially recognized by Halifax Co. C.D. and has a meeting room in the So. Boston Municipal Bldg. The VON held a big farewell dinner honoring departing Mgr. K4DVX. VSN Mgr. LW strongly protests official, semi-official and otherwise IMPORTANT traffic, as well as third-party messages from countries not on the approved list getting into the ham bands from MARS. CXQ is well occupied with V.P.I. studies. Whit says he spent an entire leave erecting an antenna for YL K4EUU. MZR reports about 10 VA-JF certificates are being issued weekly. S.s.b. stalwart IYC piled up 100 countries in the DX Contest, with JHK doing most of the brasspounding. BIJ is putting grounded grid linear "shoes" on the Pacemaker. K4s AET, DPX and DWP are using their spare time "constructing." KN4MBL is keeping the Yorktown Club station, YTA, warm on the 40-meter Novice band. YVG sends a report of mobiling to California. KFC played host to a string of DXers from all over. JUJ will need more wall space for awards, the latest is W-Del after taking 2nd in the Delaware QSO Party. YHD is back in the swing scoring plenty in the April CD Party. K4OQR participated with 30 watts to a hunk of wire hanging out of his

(Continued on page 134)

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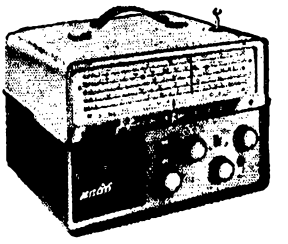

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apartment window. FKP is in a new QTH in Arlington. Virginia AREC is really rolling, but SEC PAK still is open for EC volunteers in a number of sections of the State. If you'd like such an appointment, let him know you're available. In the 1957 Virginia QSO Party announcement (p. 164, May *QST*), the last sentence of the first paragraph should have read: "All bands and modes may be used but a given station may be counted only once regardless of band or mode (except for mobiles)." Traffic: (Apr.) K4EZL 518, W4QDY 428, IA 407, K4KNP 208, AET 139, GWO 109, ELG 81, W4KX 81, BZE 41, SVG 36, AAD 35, K4JLO 32, W4PVA 16, LW 15, K4BFW 13, W4THM 12, JUJ 10, K4BYS 6, BUI 5, W4KFC 5. (Mar.) W4CFV 35, K4EAS 12, W4THM 10.

WEST VIRGINIA—SCM, Albert H. HIX, W8PQQ Asst. SCM: Festus R. Greathouse, 8PZT. SEC: GEP. PAM: FGL. RMs: DFC, GBF, HZA and PBO. RKV moved to California. KN8ELB is a new Novice in St. Albans. The c.d. station was activated by HZA during the Monsanto explosion at Nitro. PBO was QRT for one month because of moving to a new QTH. PZT visited HZA recently. TGL is building 2-meter gear and is very active handling traffic. FNI is quite active in Huntington. We need more activity in Huntington on the nets. NYH made 15,400 points during the CD Contest. PQQ visited 5ADZ and 5JUF while in Houston recently. MLX is working good DX on 14 Mc. It is nice to hear KWI back on after a long layoff. IRN submitted QSLs for DXCC. Bob is increasing his country total rapidly. DIE is very active and is working lots of good DX. GCN gave a very interesting and informative talk on s.s.b. at the last Kanawha Radio Club meeting. The club meets at 7:30 the 1st Fri. of the month at the Naval Reserve Armory. All hams and those interested in radio are cordially invited to attend the meetings. VMM and OQC are quite active on 75 meters. 6JDO/8 is very active in Charleston on 28-Mc. mobile. He is a Philco Tech. Rep. at the radar installation. Traffic: W8PBO 84, KXD 71, BWK 47, HZA 50, FNI 31, SNP 30, NYH 15, DFC 11, K8CNB 9, W8TGL 7, CCR 6.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, B. Eugene Spoonemore, WØDML—SEC: NIT. RM: KQD. PAM: IUF. OBS: KØBTU. OO: OTR. We continue to get reports from many sources of the good work of amateurs during the spring blizzards. Active clubs about the State: The Boulder Amateur Radio Club—CHM, IA, RRV and KØCEZ, officers and correspondents. The Larimer County Amateur Radio Club—UPS and ZFM, pen-scratchers; KØHFB, inkspiller. The Western Slope Radio Club—CNM, editor; IQV, composer and printer; INT, news hound. We would appreciate hearing from others with club officers' names and calls. Recently affiliated: The Northern Colorado Amateur Radio Club, KØAOY, secy.; and the Montrose County Amateur Radio Club, KØBWI, pres.; KØEGJ, secy., with 26 voting members. We welcome Jerry Caduff, KØIQZ, and his XYL, Marilyn, KNØIMM, as amateurs. We have 199 AREC members, 165 full ARRL members, 35 mobile units registered, 9 emergency units and 14 emergency nets. Let's all join the AREC and back up the boys who helped get the call letter license plate bill through. When the chips are down is when reliability counts. Let's be prepared. Contact your EC, register your equipment and participate in drills. Traffic: KØBCQ 677, WØKQD 479, KØDXF 253, WØTVI 106, KØDCC 99, WØNIT 58, SGG 41, KØDCW 40, DMW 38, WØJHI 28, BWJ 25, ENA 22, QOT/Ø 4.

UTAH—SCM, James L. Dixon, W7LQE—A new call is WN7ICK, with 15 states toward WAS the first month on 40 meters, with a Globe Chief, NC-98 and folded dipole. GPN has a new Gonset G-77 transmitter. PJ2ME reports he is badly in need of Utah for WAS and is looking on 14 Mc. A-1. SM6ID will publish calls of any Utah station for skeds with Swedish hams if you will write him. The v.h.f. group of the Ogden club elected YDZ, pres.; FYC, vice-pres.; CVX, treas.; and LLH, secy. LQE is resigning as Ogden club president, WIMU president and Utah SCM because of his transfer to California. OCX received a new RCA oscilloscope via MARS. LYC is building a combination radio control for model plane and 6-meter transceiver. Traffic: W7OCX 12, CCP 6.

WYOMING—SCM, James A. Masterson, W7PSO—The Pony Express Net meets Sun. at 0830 on 7240 kc. with PSO and AIWS alternating as NCS. The YO C.W. Net meets on Mon., Wed. and Fri. at 1830 on 3610 kc., BHH, DXV and NMW alternating as NCS. YO Net certificates have been issued to ORM, UZR and ØARE. DXV is working liaison between the YO and PAN Nets and ØARE between the YO and South Dakota Nets. ACG is now DW. BHH has received his 35-w.p.m. Code Proficiency certificate. BKI has a new DX-100. NUT/7 is active in Laramie. BXS has a new 15-meter beam and

(Continued on page 136)

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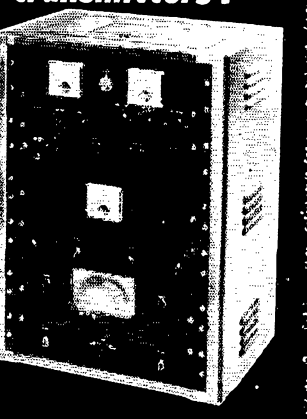
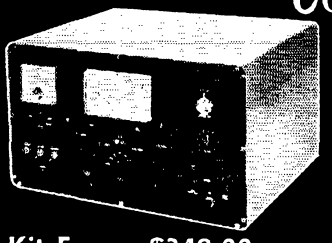


Globe Champion 300



Kit Form: $349.00

Completely bandswitching, 160-10 Meters;- 350 watts on CW, 275 watts on fone and 300 watts SSB (P.E.P.), with external exciter. Built-in VFO, push-to-talk, antenna changeover relay, provisions for crystal operation. Improved time-sequence keying. Pi-Net output circuit, 48-700 ohms. Extensively TVI-shielded, filtered and by-passed. High level Class B Modulation with splatter suppression; new audio compression circuit holds modulation at high level without usual clipping distortion. Ready to go on SSB with any external exciter. Two Amperex 9909 Final tubes (1000 V on plates) allow 33⅓% safety factor.

Only $449.00

$45.00 down
$19.58 a month

Globe Scout 680

KIT FORM: $84.95

Compact, completely bandswitching transmitter for 6-80 Meters; allows operation of 6 M band by technicians, novice CW bands, or use by advanced ham without becoming obsolete. Completely self-contained with built-in power supply, for 65 watts CW, 50 watts phone. High level modulation. TVI-shielded cabinet. Pi-Net output on 10-80M; link-coupled output on 6 M, matching into low impedance beams. New-type shielded, full-range plastic meter for better readability. Adaptable for Mobile Operation.

Only $99.95

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Handsome 90 watt Xmttr. with meter indication at 75 watts, allowing the Novice all the power he can legally use. Self contained, completely bandswitching, 160-10M. Combination Pi-Net, with provisions for antenna changeover relay, speech modulator input, VFO input and operation. Modified Grid-Block Keying for max. safety. Has complete, well-filtered power supply. Kit contains pre-punched chassis, all parts and detailed assembly instructions.

KIT FORM: $49.95

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tower. HX is back on the air. UFB has changed his QTH. KFV has moved to San Jose, Calif., and is waiting for his W6 call. He has a new KWS-1 and is looking for the Wyoming gang. HYW, PSO, UFB and VTB participated in the recent ARRL Frequency Measuring Test. Traffic: W7DXV 74, BHH 26, NMW 24, PSO 7, CQL 6, ORM 5.

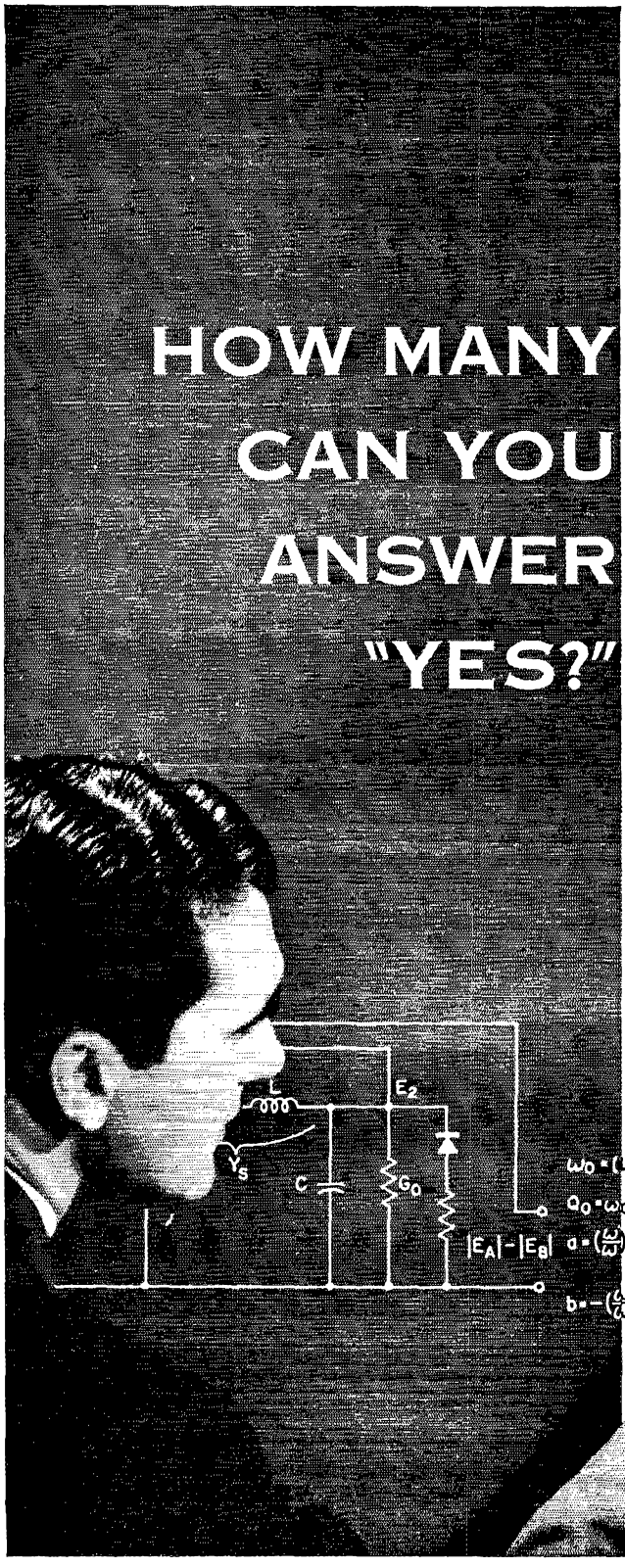
SOUTHEASTERN DIVISION

ALABAMA—SCM, Joe A. Shannon, W4MI—K4EOG has been elected net manager of AENT (Teenage Net) and K4BTO is new assistant net manager for AENP. AENT also has elected K4HMI its activities manager. Tuscaloosa reports six stations now active on 6 meters are K4HQS, K4DSR, K4IPQ, MI, K4GRA and YDU. MI is active in AENO, the section 6-Meter Net. AENO meets Mon., Wed. and Fri. at 1915 on 50,550 kc. with AZC as net manager. AENP had another record traffic month in April handling a total of 580. AENB totalled 241 and AENT 114. WOG is active again but confined to 80 meters only. HON is an old man of 20 now and has lost his standing on AENT! K4ANB received a 25-w.p.m. CP sticker. K4CXC is checking into UTL occasionally and is a new ORS. Other new appointees: CEF as POS, K4EOG as OPS and K4GOW as OO Class IV. MI chopped off the end of a finger but there were no complications! K4KZQ is active in AENI, AENP and AENT with a DX-35. TKL is moving from one mountain to another—Green Mountain this time! The API Club has announced its annual picnic co-sponsored by the Valley Club. The date set is Oct. 6 at Chewacla State Park and a T-90 will be the main prize. OZG now is operating K5WAB at Ft. Hood, Tex. Traffic: (Apr.) W4RLG 852, K4AOZ 263, EOG 138, W4KIX 133, WOG 116, ZSQ 112, ZSH 79, HON 73, K4ANB 65, CXC 63, BFL 51, BTO 46, KZQ 45, BWR 31, W4CIU 29, CNU 29, RTQ 26, WHW 25, CEF 21, GZM 19, HGF 15, MI 14, CRY 12, GUV 12, YFN 11, K4AAQ 10, W4DGH 10, DEQ 8, UHA 8, TKL 7, K4DDC 5, IUL 4, W4ZUP 2. (Mar.) W4CNU 31, ZUP 13, K4HAL 11.

EASTERN FLORIDA—SCM, John F. Porter, W4KGJ—SEC: IYT, RM; LAP, PAMs: TAS and JQ. Section Nets: FPTN, 3945 kc. 0700 Mon. through Sat.; FMTN, 7225 kc. 12 noon Mon. through Sat.; TPTN, 3945 kc. 1730 daily; FSN 3675 kc. 1830 Mon. through Sat.; FN, 3675 kc. 1900 Mon. through Sat.; FEPN, 3910 kc. 1815 Tue. We regret to report the passing of K4GSO, Ocala; AQJ Key West; and QBR of Leesburg: The Orlando Hamfest was a big success with over 600 in attendance. Thanks for a swell time, fellows, and we hope to see you again next year. The Florida YLs organized Apr. 28 with the following officers: BIL, pres.; BWR, vice-pres.; GXZ, secy.-treas. FRP is now K4-MTP. K4GOZ hit the 100 mark on 15-meter c.w. DX. The LARS is sponsoring code classes with over 50 regulars attending. New officers of the SPARC are WME, pres.; BNE, vice-pres.; K4ENW, secy.-treas.; GUH, WPD and BIL, directors. WPF is new Asst. Director for the St. Pete Area. COW reports that the winters are fine in Alaska but cold. His new call is KL7CBZ. New OPS appointees are K4AHA and HCQ, Dade County: The MSRC's new call is K4OSQ. KN4OPH has a new Gonset on 2 meters; also ZXL/ZXK. K4CEJ completed the new shack. EC K4AHW has appointed 6 new assistants, SJZ, ZXL, EHW, K4CEJ, BLM and ENN. DTV is the new station manager at c.d. headquarters. The DEN annual dinner and get-together was a big success with over 30 members attending. The new *Florida Bulletin* is well under way. Let's all support this first all-State project. AZK is editor and K4LQS is publisher. Send all donations to IYT and write-ups to AZK. Traffic: W4PJU 607, EHW 279, PZT 178, K4KDN 142, W4WS 139, TAS 109, HCQ 86, BNM 72, IYT 67, BNE 60, K4ABV 57, W4YJE 53, K4AEE 45, W4LMT 38, KGJ 36, K4ANJ 33, AHW 32, HNC 27, W4ZXK 23, AZK 19, K4GOZ 17, CJE 16, HAQ 16, W4QCP 16, BWR 8, HTH 6, K4LPS 6, MTP 5, CXW 4.

WESTERN FLORIDA—SCM, Edward J. Collins, W4MS/RE—SEC: HIZ. EC: MFY. RMs: AXP Escambia, BVE Okaloosa. We are glad to welcome newcomers K4OXB, K4OWW and K4MBD. K1BDI/4 also is a newcomer but leaves for Maine. K4KIF is awaiting a 6N2 transmitter. K4IYQ is building a bigger rig. EQR and MS are trying for Louisiana and Georgia on 6 meters. K4AGM and HBK are QRL school. GMS knocks off DX on 15 meters and is conducting beam experiments. OOW has a big signal on 10 meters from a 6AQ5. K4DDD meets the 10-meter nets. K4HYL is punching out an FB signal with the DX-100. FHQ is getting ready for a big summer of ham radio. K4ECP/M, on 6 meters, is planning a home transmitter. K4IVD, mobile on 6 meters, is working the gang from all over the county. K4EHI has a DX-35 on 6 meters. K4LQC is twirling a mean dial on the NC-300. PAA had an FB write-up in the paper. VR still swears by 7 Mc. ZPN

(Continued on page 138)



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has a new receiver and transmitter. ZFL is QRL graduation from high school. BGG plans to enter F.S.U. There are nearly a dozen fellows studying for their tickets at NAS. UUF seems to be the lone 2-meter man while we hear talk of 144-Mc. activity over Crestview way. PQW still is king of the hidden transmitter finders. IJK turns in a nice traffic report. JPD is the proud owner of an SX-101. ODO is enjoying the B&W 5100 and talking about a kw. final for it. HIZ keeps things humming in civil defense units. RDL divides time between s.s.b. and his boat. K1BDI/4 shows the way with a 15-meter ground plane. MUX enjoys 40-meter phone best. QK is considering a rebuilding job with a commercial exciter. K4OXB is after a beam to replace the 6-meter ground plane. K4KOT puts out a nice signal with the Viking II. K4KOS is QRL club business. DAO/DEF is installed in the new shack and planning antennas. CCY is getting the high-power final ready to show the gang a big signal. UCY enjoys 10 meters on net nights. ACB is building up 6-meter gear for the West Fla. Six-Meter Net. K4APE is doing an FB job as OO. CMJ, from Crestview, sends in a traffic report. UUF reports QSOs with Marianna on 2 meters. RKH sends in a nice traffic report and reports EARS furnished communications for the Eglin Field Auto Club Races and for a boat cruise from Panama City to Pensacola. KN4LQY, W4IJK K4KOS, K4EGD, W4YES, SPP and PQW put up monitor signs for 29,560 kc. on all highways leading into Pensacola. FDL has a new Globe King. K4JFL ordered a DX-100. K4EWG takes part in transmitter hunts. RDC is building new v.h.f. gear. WKQ enjoys contests and recently worked 315 stations in 54 sections but didn't get W. Fla! Traffic: W4IJK 72. RKH 28, CMJ 11.

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. and at 0800 EST Sun.; ATLCW on 7150 kc. at 2100 EST Sun.; GSN on 3595 kc. Mon. through Fri. at 1900 EST with PIM as NC.; the 75-Meter Mobile Phone Net on 3995 kc. each Sun. at 1330 EST with UUH as NC.; Atlanta 10-Meter Phone Net on 29.6 Mc. each Sun. at 2200 EST with VHW as NC. K4CFN is having trouble again with wind blowing down his 20-meter beam. FGH injured his back but recovered in time to operate Field Day. K4HOV got his antenna back up in time for c.w. in the CD Party. The Albany Radio Club has been reorganized and incorporated. New officers are K4ICW, pres.; AUI, vice-pres.; ATO, secy.-treas.; PGK, act. mgr. The Georgia Tech. Radio Club elected Bob Sacker, pres.; Gene Andrews, vice-pres.; Ben Hutchinson, vice-pres. in charge of maintenance; Henry Rivere, secy.; Van Hudson, treas. LQQ is in Germany operating as DL4AFD on 21,280 kc. The Thomasville Radio Club and the South Georgia Rag Chewers Club held their Annual Picnic at Thomasville, Ga., on May 5. On Apr. 28 the Dublin Amateur Radio Club held its picnic to renew old and make new acquaintances. The DX-35 was won by LDS. K4KLQ's latest QRM is his XYL, KN4PBM. Atlanta Metropolitan School Evacuation for 1957 was held Apr. 30 with 48 hams and 21 mobiles participating. YEK, EC for Fulton and Dekalb Counties, did an excellent job in organizing the mobiles and fixed station for this evacuation. PMJ is now EC for Richmond County. FWP is EC for Early, Miller, Baker and Mitchell Counties. Check your certificates for renewal dates. Traffic: K4LVE 186, W4PIM 139, K4BAI 71, W4BXV 37, K4CSL 32, W4ETD 32, DDY 31, K4HOV 17, W4ZD 17, K4CZQ 9, CFO 6, W4PDP 2, MVZ 1.

WEST INDIES—SCM, William Werner, KP4DJ—CO3RC/CO2UG is NCS of the Cuban Emergency Net and reports into the Fla. Phone Traffic Net, Tropical Phone Net (Fla.), Fla. Emergency Net and the Coastal Emergency Net. Equipment is a Super-Pro, a 75A-2, a BC-348, an HT-9 and a 32V-1 and 1500-watt and 4000-watt emergency power plants. KP4AGG has reopened KP4USA, the MARS station at Fort Buchanan, using 10 and 15 meters for phone patches. KP4AGG's photograph and a view of MARS station KP4USA appeared in the *Island Times*. The Air Force ROTC Radio Club at UPR is extremely active under the leadership of Lt. Hill and KP4AAM. Several DX-35 transmitters are on the 15-meter Novice band. Recently thirty college students took their Novice exams after listening to talks by AAM and W4HZ/KP4. Alicia, KP4CL, has organized a purely social Old Timers Club for those who have held an amateur license for twenty years or more. The Annual Hamtest of the P.R. Amateur Radio Club was held at the seaside estate of KP4BI, Villa Sea-cue, near Ponce. BI celebrated his twentieth anniversary as a licensed amateur. CL was unanimously elected permanent president of the club. ORS KD is encouraging his son in Washington, D. C., to get his amateur license by frequent phone-patch conversations

(Continued on page 140)

New 'Skillman' Speed-Master semi-automatic key special

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The *first truly professional* semi-automatic key priced below $20.00. Has all of the deluxe features wanted by professional operators as well as amateur CW men. Easily adjusts from 10 WPM to any speed you desire. Has 8 separate tension and speed adjustment knobs to personalize it for your own "fist". All operating parts are precision-tooled brass with oil-tempered steel springs. Base is heavily weighted and has plastic suction cups. Transparent plastic dustcover. Imported! With cord, and alligator clips. Ship. 5½ lbs. *Order No. Q-7902.*

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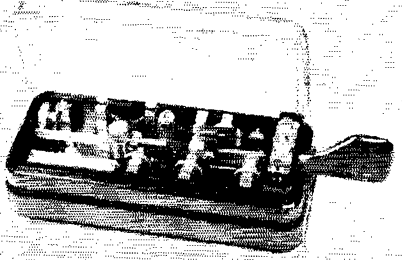

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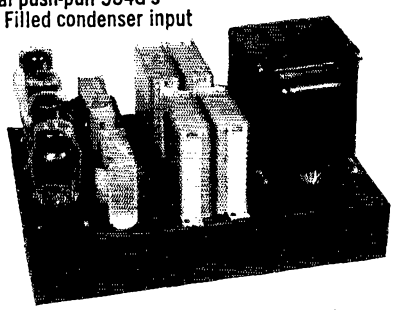
The magnificent shielded transformer alone nets for over $20! It is rated to deliver 426 VDC @ 265 mils DC and simultaneously will deliver 326 VDC @ 340 mils DC. The filament windings will deliver 6.4 V. @ 11 amps, 5.0 V. @ 6.0 amps and 6.4 V. @ .6 amps. Each section of the dual-high voltage power supply utilizes parallel 5U4G's, 2,-8 mmf. @ 600 volt oil-filled condensers and a 3 henry @ 300 mil. choke. A 20K 100W bleeder resistor is also used. All components mount on a heavy gauge 10" x 14" x 3" black ripple finish chassis with adequate "breathing room" for each component. Complete with all necessary parts. Money back guarantee. Ship. 40 lbs. *Order No. Q-10016.*



400 VDC @ 250 Ma.
350 VDC @ 150 Ma.
6.3 V. @ 11 Amps.
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EXCLUSIVE! This fully adjustable headset may be used in place of conventional (and cumbersome) high-impedance phones — for tape recorder monitor, private listening via shortwave and ham radios. Beside its fatigue-free weight factor, this fine new Archer audio product offers a CRYSTAL wide-range far beyond the reach of good magnetics. Complete with super-fine 40" cord. Imported. Note: ear-tubes hinged to spread for custom fit, wear "under chin" like Telex-type headsets! Ship. ¾ lb. *Order No. Q-8241*

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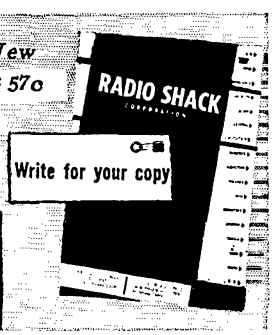

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on 10 meters. ORS ZW and his XYL, ZV, left on the USNS *Johnson* May 19 and will become W4LDM and W4KZT at 408 South Dillard St., Winter Garden, Fla. For those still needing a ZW or ZV card, write to their Winter Garden address. ZW has faithfully sent his monthly ORS report since his appointment three years ago. Captain DV, in charge of communications for the C.A.P., advises they are in need of radiotelephone operators as well as qualified persons as training officers and technicians. OPS KP4WT, Dña Maria Luisa, continues as the mainstay of the P.R. Amateur Emergency Net on 3925 kc. WT has been appointed an Assistant Director by Director Born. DJ put up a Workshop three-element 10-meter beam and rebuilt the power supply for an 813 final and exciter. UY continues participation in the ARRL F.M.T.s for the third year. ADX also took part in the Feb. F.M.T. using an LM meter and a 75A-4. AZ has a new speaker to match his 75A-4 and a vernier knob. New officers of the P.R. Amateur Radio Club are SZ, pres.; EK, vice-pres.; CA, secy.; ABN, treas.; HZ, MS, RM, JZ and ACH, dir. AAA built a two-element 20-meter beam. A new station heard frequently on 3925 kc. is ACG. HZ changed the mobile rig from 10 to 75 meters. W5NTR/KP4 transferred to the CAA in Washington, D. C. AHV is on 10 meters with his Viking II. KV4BQ, ex-KP4WN, has returned to KP4-Land and St. Johns Episcopal Church. BU, c.w. forever, has been heard operating 75-meter mobile and 10-meter phone from the home QTH. LK has been giving code practice to Novice aspirants at his QTH for several months. MV has taken down his three-element 20-meter beam to rebuild and readjust. CA has joined the 50-Mc. gang using a TBS-50. SZ, PRARC president, has gone mobile on 75 meters to keep up with the doings of the KP4s. RD is in New York on business. AED is on 10 meters with a Globe King 500A and is building a three-element 20-meter beam. RM was hospitalized recently but is now recuperating at home and would like to have some visitors. W5PAL/KP4 is transmitter engineer at WKAQ-TV. W5UGO/KP4, with the U. S. Marines at Vieques Island since Apr. 2, worked 42 states and 53 countries using a KWS-1 and 75A-4 mounted in a truck. More than 500 phone patches were concluded through W4LEV at Camp Lejeune, N. C., on 21,440 kc. in the five weeks the station was on the air. W5UGO/KP4 returned to Camp Lejeune May 16 to operate W4LEV and W4LEV came to Vieques Island as W4LEV/KP4. KP4TP and his XYL, KP4YS, have transferred back to KP4 with the USN. TP brought a GPR-90 and 20-A while the XYL, YS, has a Viking II. KP4AHL is a Baptist missionary on Vieques Island using a Supreme 100 transmitter. KP4AEQ, a physicist, is on 15 meters. KP4RC built a grounded-grid linear amplifier using four 1625s at 200 to 250 watts driven by a 20-A. RC has ordered an SX-101, as has KV4BB. Traffic: (Apr.) KP4WT 67, CO2UG 11. (Mar.) KP4WT 90, CO2UG 26. (Feb.) KP4WT 99, CO2UG 4. (Jan.) CO2UG 4.

CANAL ZONE—SCM, P. A. White, KZ5WA—The Canal Zone amateurs were shocked by the sudden passing of NM on May 3, 1957. He came to the Isthmus in 1916, built roads, streets, drainage and water systems, and became a leading light among local amateurs. Old Nels will be missed a lot on the Isthmus, not only for his ham activities but for his participation in community affairs as well. AU has a brand-new KWS-1, 75A-4 and W3DZZ beam. RM's brother Charlie is putting up a 15-meter beam in Gamboa and getting ready to pass his General Class license. DH put up a new 10-meter beam in May. The CZARA gave a farewell party to DG and GD on May 18 in the Fern Room of the Hotel Tivoli. They will fire back at the Zone from La Feria, Tex., in July as W5s. KA and her OM, RM, have left for the U. S. JS is on 6 meters; KZ5WZ has 5 watts on s.s.b. W4HKR, from Jacksonville, is here and likes it so well at the QTH of VR and RV that he may extend his stay. WU, who works 40 and 80 meters a lot, made a trip to KP4-Land in May. EL is on at last with a DX-100 and new WRL tri-bander and the same old receiver he had as KP4ML. New hams: CW, Traffic: KZ5HA 138, VR 75, JS 56, RM 40, WA 32, LJ 30, RV 20.

SOUTHWESTERN DIVISION

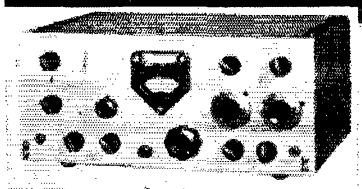
LOS ANGELES—SCM, A. F. Hill, Jr., W6JQB—SEC: LIP. RMs: BHG and GJP. PAMs: K6BWD and ORS. Many thanks for your wonderful cooperation. Keep the reports coming. GYH and K6OZJ made BPL. ORS is the new PAM for 2 meters. AM is floating around the country and made the s.s.b. meeting in N.Y.C. K6GTG has RTTY now. The Traffic Meeting held in Alhambra was a big success with a nice crowd present. The next traffic meeting will be held at the Convention. See you all there. All you Novices are urged to join your traffic net, the Frugie Net, on 3711

(Continued on page 142)

New Collins KWM-1 Transceiver ...uses RCA-6146's

Final rf power amplifier of the Collins KWM-1 using 2 RCA-6146 Beam Power Tubes

Two RCA-6146 beam power tubes in the KWM-1 deliver 100 watts of rf power output, 14-30 megacycles!



The remarkable new Collins KWM-1 Transceiver for fixed-station and mobile operation on SSB and CW

You are looking at the transmitter section of the new Collins KWM-1 Transceiver. Two beam power RCA-6146's in the final produce a 100-watt signal punch on CW and SSB (PEP).

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(1)—RCA-6146 delivers rated power at relatively low plate voltages. (2)—The tube is especially well-suited for compact equipment designs and band-switching circuits. (3)—It has proved itself in practical operation—in hundreds of commercial designs around the world. (4)—The RCA-6146 is readily available—and it's economical.

Elmar Electronics stocks RCA-6146's in quantity, carries the complete line of RCA beam power tubes, triodes and rectifier tubes. Look to Elmar also for RCA Transistors, including the models popular in amateur equipment applications, 2N301 and 2N301A for example.

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kc. at 2300 PST nightly. New officers of the Citrus Belt Amateur Radio Club are K6JMX, pres.; K6GGS, vice-pres.; K6JSN, secy.; K6COK, treas. New appointees this month: ORS as PAM, K6IYJ and K6KII as OOs, KN6UUH as OES. HJY is working hard on traffic. K6HXX now is at Keesler AFB in Mississippi and is looking for the Los Angeles gang. INH is putting an 813 on 40 meters. K6OQD is QRL on the YL Nets and ALN. The San Fernando Valley C.D. Net is on 50.36 Mc. OLZ is having trouble getting up a decent 2-meter antenna. The completion date of K6BTJ's microwave gear has been moved up to September. SDW finally has gotten parts for a power supply (3 kv. at 800 ma) to be used for contest kws. Make your plans now to attend the Southwestern Division Convention to be held in Long Beach, Aug. 16, 17, 18. Support your section net, SCN, 3600 kc., 1930 PDT. Traffic: (Apr.) W6GYH 930, K6OZJ 320, W6BHG 213, K6QZZ 184, W6ZJB 172, HJY 167, INH 156, K6LVL 138, COP 109, EA 93, W6YSK 88, ORS 85, K6GTG 70, HOV 70, W6VSH 52, K6GUZ 45, OQD 31, W6USY 26, BUK 17, CK 14, K6PLW 10, ICS 8, W6QLM 8, AM 6, SRE 4, K6BEQ 3. (Mar.) W6GJP 22.

ARIZONA—SCM, Cameron A. Allen, W7OIF—SEC: YWF. The Grand Canyon Net meets on 7210 kc. Sun. at 9 A.M., with LUJ as PAM. The Arizona Emergency Net meets on 3865 kc. at 7:30 P.M. Mon. through Fri. with ASI as PAM. FKK, in Phoenix, is on RN6 and RTTY and will handle traffic going out of the State. Send it to him on AEN. MPQ, Tucson, has built a 10-meter transistor transmitter with 50 milliwatts input. He has had over 100 QSOs with it. SUI is active on 20-meter c.w. again. He has received word from L.M.R.E. in Mexico on how to operate mobile there and have an XE call. If interested, see him or LVR or myself. The Arizona Amateur Radio Club held a picnic at Seven Springs. There was a very good turnout for one in so remote a spot. Part of the gang came home via Bloddy Basin and over the Verde Rim to take a look at some real wild-west country. Traffic: W7FKK 88, OIF 16.

SAN DIEGO—SCM, Don Stansifer, W6LRU—San Diego Section appointees as of July, follow: Asst. SCM: Thomas H. Wells, 6EWU. SEC: KUU. ECs: BAO, FVA, HFQ, HRI, KBT, KSI, UGM and WYA. RM: EOT. PAM: none. OBSs: JVA, LRU, MUJ, UGM, WYA and K6BPI. OESs: LWT, WNN, K6BTO and K6OWV. OOs: SK, BKZ, CAE, CRT, LRU, MCY, MUR, UGM, WNN, ZVQ, K6s EC, GHM and IPV. OPS: CHV. ORSs: BAM, CRT, EOT, K6HU. VFT, able SEC for the San Diego section the past 4 years, has resigned because of an extremely heavy schedule of teaching, c.d. work and reserve meetings. A personal thanks to Ben from all those in this area who have had the pleasure of working with him the past four years. KUU, in El Cajon, is his successor and we hope all AREC members will give Hall the cooperation they have given their former SECs. We welcome MUR as a Class I OO in Orange County. Another new OO is ZVQ, and K6OWV is now an OES. ZSC again is active as a club station, with 3 positions, many receivers, transmitters and fine antennas. The president is HFX. Officers of the Orange County Club are K6BGX, pres.; K6KLB, vice-pres.; and QAT, secy.-treas. The Division Director and Vice-Director were present at the San Diego Council of Amateur Radio Organizations meeting in May. The Helix Club now meets at Gillispie Field near El Cajon. K6AXV, who was EC for the 6-meter group, has moved to Stockton. K6LJS is now heard on all bands since passing his General Class exam. The Annual Upper-Ten Picnic will be held Aug. 4 at Glenn County Park in Cardiff. KN6OHO is the proud mother of a son. KBT and YDK were featured in stories in the local papers when three persons were lost in the wilds of Lower California, and KBT provided communications from the search scene into San Diego with special permission of the Mexican authorities. Chairman of the United Cancer Crusade, utilizing 75- and 2-meter mobiles, was a high school senior, K6DVF. Over $20,000 was raised. Graduating from Pt. Loma High School in June were four members of the Silvergate Club, K6DVF, K6EFF, KN6TLP and TDF. KN6TLP joined the Air Force and left for active duty the day after Field Day. With Field Day now history and summer here, your SCM again requests all readers to furnish him with news for this column. Traffic: W6EOT 616, LYF 26, FVA 2.

SANTA BARBARA—SCM, Mrs. Dorothy E. Wilson, W6REF—Acting SCM, Bill Farwell, W6QIW. MSG has a new teletype setup. Those attending the Fresno Hamfest were MSG, IHD, HUT, NGJ, YCF, ENR and JFP. ZRR has recovered from his recent illness. JPP set up a complete ham station including s.s. at the Scout Jambori at Catchuma Lake. Over 600 Scouts saw ham radio at its best. The San Luis Obispo Club is undergoing incorporation. 3TSU,

(Continued on page 144)

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from Oklahoma, has moved to Casidas Springs, near Ventura. The Ventura Club has a new ham shack at Red Cross Headquarters and is building a DX-100 rig for club and emergency use. QIW was given a life membership in the Ventura Club at its last meeting. Dale and Maria Wallace have passed the Novice Class test and are awaiting their licenses. K6QOE has received his Tech. Class ticket. K6GV and HIC were visitors at QKO's recently. Bob Worthely, in the Navy, is stationed at Nome, Alaska. HXP is building a new final. Traffic: W6QIW 84, K6ELR 33, LXW 4, W6OWN 4.

WEST GULF DIVISION

NORTHERN TEXAS—SCM, Ray A. Thacker, W5TFP—Asst. SCM: J. Bruce Craig, 5JQD. SEC: BNG. PAMs: K5AEX and IWQ. RM: AHC. If you will but glance at the traffic listings below you will see that many of our fellow hams failed to send in a report. This was a month of tornados and floods. Six BPL certificates were issued. If you will send me your traffic report for April, I will send in a delayed report next month. Thanks from all of us to KPB for the good, solid job as RM and we are sorry he had to resign. AHC has been appointed to act in his stead. I enjoyed a wonderful time at the Lubbock Hamfest and welcomed the opportunity to meet so many of you fellows and gals. Director Payne, BNG, and I are grateful for the courtesies shown us and for the attention that was given us when we "spoke our little piece." In answer to many kind inquiries, the little siege that hit the XYL while we were in Lubbock was not of a serious nature and she was very sorry to have missed out on the Sunday activities. Remember, NTX, 1845 on 3770 kc. This is a fine chance to get back in c.w. operation. The South Plains Amateur Radio Club had a great turnout Apr. 13-14: there were 320 registered with as many others not registered in attendance. In closing, I wish to thank JQD for consenting to accept appointment as Asst. SCM. As you know, he was formerly SCM of this section and it is our hope that he can act our contact for the far reaches of the West Texas-Panhandle Area of the section, which is many miles from here. Any of you desiring information re the League or with problems where we can assist should contact JQD in Lubbock for quick action. Traffic: K5WAB 2200, W5TMC 740, K5FFB 504, BNH 445, EMR 416, W4OZG/5 361, W5OWV 226, SMK 192, K5AEX 190, W5KEC 182, TFP 115, FCX 100, K5BKH 89, W5BOO 76, KPB 60, LGY 58, ZKT 56, OCV 28, BKH 12, IHT 4, AWT 2.

OKLAHOMA—SCM, Ewing Canaday, W5GIQ—Asst. SCM: James R. Booker, 5ADC. SEC: LXH. PAMs: KY and MFX. RM: JXM, LXH, NUT, LHY and ADC were on hand to help in the recent emergency created by a tornado at Holdenville. Although communications were not a problem they set up emergency power equipment for the city hall and police radio. Information furnished by other hams on the progress of the storm enabled the Weather Bureau to give ample warning and not a person was injured. LTD earned a vote of thanks from BC listeners when he tore down his rig to provide a power transformer when that of the local station was burned out. Storm conditions made traffic-handling difficult from the Wichita Mountains Easter Pageant this year but the gang from Lawton and Duncan did a good job despite the weather. The Oklahoma Tax Commission is preparing to issue call letter license plates to mobile hams in 1958 in compliance with a bill passed by the legislature. New OPSs are VNC and K5DLH. RRM, former North Texas SCM, is a new Class I OO. New Novices include KN5s JTI, JTG and JJE. K5EVD is a new General Class. NOR is back in Oklahoma. Ham activity is on the boom at Tonkawa. Traffic: (Apr.) W5DRZ 1052, ESB 897, K5EGS 624, W5QVV 610, FEC 367, MRK 154, K5CAY 109, ETM 100, JCX 100, W5LPL 100, K5DVE 74, W5EJK 69, VNC 60, K5DLH 53, W5MGK 47, CCK 44, VAX 42, K5HZF 41, W5ADC 32, GIQ 31, PNG 29, MFX 26, KY 23, K5DJA 19, HIV 19, W5EHC 18, BBA 12, GOL 11, K5BNQ 10, EQX 10, W5IER 10, K5CBA 8, AUX 6, W5FKL 6. (Mar.) K5EGS 29, W5MGK 19.

SOUTHERN TEXAS—SCM, Roy K. Eggleston, W5QEM—SEC: QKF. The new officers of the Kingsville NAAS Amateur Radio Club are K5IQK, pres.; 4BVX-5, vice-pres.; K5DNH, secy.-treas.; ZMK, act. mgr. They soon will be on with a Collins Kilowatt. K5ILG has a new 10-meter beam. KOK is mobile with a DX-35. K5ECQ is on 2 meters. There are 13 El Paso stations on 2 meters. ETA, the new West Gulf Division Director, visited the Corpus Christi Amateur Radio Club on Apr. 25. ENT, of Houston, also was a visitor. QKF and RPH attended the Dental Convention in Houston. AQK, BKG and GMT visited in Lake Charles for the hamfest and fish fry. AQN is constructing a 15-meter beam, as is KN5IXH. DKK has a new kw. on s.s.b. The Houston Amateur Radio Club participated in

(Continued on page 146)

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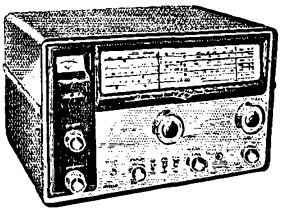

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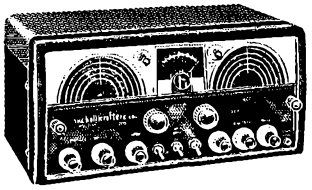

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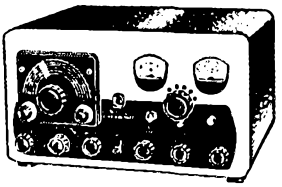

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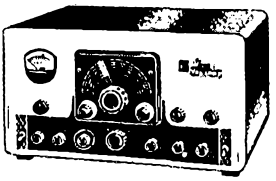

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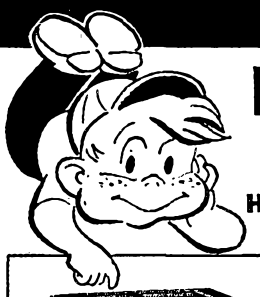

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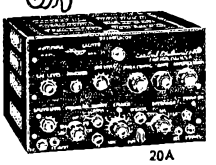

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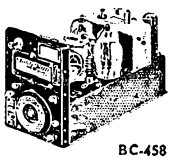

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the mass polio inoculation program. EGD is ORS and OBS in Houston. DIW visited in Corpus Christi. BRZ has a new HQ-150. The Corpus Christi Amateur Radio Club furnished communications for the Buccaneer Days Celebration and Parade. There are 10 stations in Corpus Christi on 6 meters, and they are forming the 6-Meter Bluebonnet Net. QKF, has a new HT-32. The Houston Amateur Radio Clubs' officers are EYM, pres.; RIH, vice-pres.; GVW, parliamentarian; JHL, membership chairman; ZPD, secy.; AIR, treas. K5GBU has a new 20-A and v.f.o. The Houston amateurs enjoyed the Hallicrafters Demonstration. CCT is the new EC at Groves. LKG is EC at Port Lavaca. FGA is EC at San Antonio. Traffic: W5EGD 238, K5GJX 11.

NEW MEXICO—SCM, Einar H. Morterud, W5FPB —SEC: K5DAA. PAM: DVA. The NMEPN meets on 3838 kc. (Alt. 7272 kc.) Tue. and Thur. at 1800 MST, Sun. at 0730; NM Breakfast Club meets on 3838 kc. (Alt. 7272 kc.) daily except Sun. at 0700. We regret to announce the passing of TOU, in Georgia, where he was a senior at Georgia Tech., and of VLZ. LEF worked three new countries. WNU installed 100-kc. crystal calibrator in the HQ-129X. GRI spent a week in Phoenix on business; his territory includes all of U. S. and Alaska! The Albuquerque Chapter of the ARCCNM had a picnic at Pine Flats. 7UCF/5 is the new EC for Dona Ana Co., and KKW is a new OO at State College. GEM worked Japan on 40-meter phone. WKW has moved to Gallup. SBJ and UNB visited CIN. FED is teaching a code class. ZLF has been transferred to KR6-Land. NSV attended a convention in New York. K5INQ is on 40-meter c.w. The Emergency Coordinator Net meets on 3980 kc. Sun. at 1830 MST. Traffic: K5FHU 379, IPK 23, W5UAR 19, TBP 13, ZU 13, GEM 11, K5CWH 6, DAA 6, GLJ 6, W5CIN 5, FPB 1.

CANADIAN DIVISION

MARITIME—SCM, D. E. Weeks, VE1WB—Asst. SCM: Aaron Solomon, OC. SEC: FH. GA reports the formation of "Land Search," a combined communications effort (RCAF, RCMP, Fire Dept. and amateur radio) in the Kingston-Greenwood Area. OC reports that requests for QSLs from VE9ND (HMCS *Magnificent*) should be sent to VE3PY. SI made WAC on a recent two-hour s.s.b. round table. KW has moved to the VE7 district. LZ and his XYL recently returned from a holiday in Bermuda. VC reports that the North Shore Club has a new club room provided by civil defense. VO2NA reports that the VO amateurs are recovering from the confusion resulting from the reassignment of VO calls. Winners in the recent Goose Bay QSO Party are (c.w.) VO2AB, (phone) VO2UA, (c.w. and phone) VO2NA. Goose Bay Club officials are VO2AA, pres.; VO2NA, vice-pres.; VO2AQ, secy.-treas.; VO2AB, awards mgr.; VO2UA, public relations. Traffic: (Apr.) VE1OM 19, DB 11, BN 2, VU 1.

ONTARIO—SCM, Richard W. Roberts, VE3NG—The Windsor Radio Club is promoting a large-scale training program for would-be amateurs. The c.w. nets are going great guns. AIB, DNE, DQN and DUU are contemplating going on 220 Mc. soon. TM is alternate for the ECN Net Wed. and Fri. Publicity for the North Bay Hamfest, to be held Fri., June 8, is around. The Gateway Amateur Radio Club is to be congratulated on its fine program. The Quinte Club will sponsor a beginner's class in September. GJ is now installed at Orillia and is heard on 75 meters. The London Radio Club has a snappy paper under Editor AJQ. BHX is new to Belleville. DVT has a new DX-35, BWH a new Viking mobile, DSJ a new TA-12G mobile and DSX a new jr. operator. The Northshore Radio Club held a successful hamfest in Oshawa. Seen there among the large crowd were the SCM, the SEC, DZA, YD, DEX, GH, NO, AML, QO, IB, EX, ADD, OR, BIK, BBH, DFA, DFC, DQJ and SZ. A good time was had by all. ADD won the Paul Zavitsky Memorial Award for his outstanding club contribution. DUU is OES. TL is active on 75 meters, BUT, DSM, ADD, BLQ, CO, NG and DQJ are on in the early A.M. on 75 meters, most of them mobile. CO is visiting the West Coast. The Hamilton ARC is putting together seventeen 2-meter walkie-talkies. KM and WT report lots of activities in their groups. The Muskeg Net is on 3755 kc. The YL operators in southern Ontario may get together for a ragchew net. The Metro RC has four new hams, Gowan Smith, Doug Stickles, R. Rae and J. Foster. Traffic: VE3BUR 156, NO 89, AUU 63, NG 46, AML 44, DPO 40, EAU 26, KM 26, DBA 22, DH 16, AJR 15, DEX 15, CJM 10, DT 7, APL 6, SG 6, IU 4, RW 4, AVS 3.

QUEBEC—SCM, Gordon A. Lynn, VE2GL—AGN reports daily skeds for traffic-handling, also activity in the New Hampshire and Vermont QSO Parties. TA has returned to the air after an absence of two years and is on 7080 kc. at 1730 EDT. BK also is back on again, this time with s.s.b., a.m. and c.w. with a trap antenna and a 20 plus 4 837s in GG linear. ATL is trans-

(Continued on page 148)

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mitting code practice on 3630 kc. each Sat. and Sun. at 1000 and 1300 EDT. JN and YU took part in the Frequency Measuring Test with gratifying results. AJM, as EC for Megantic County, rounded up some of his AREC members during the CD Phone Party. AGI now has a walkie-talkie on 10 meters. ED is the former JZ. ABN and AFJ are brothers, newcomers in St. Tite. Laviolette County. ACS and ANL are recent graduates from Laval U. AUM is a newcomer in Three Rivers. TC reports the formation of a new radio club in Riviere du Loup; also that several local stations have signed up in the AREC. Traffic: (Apr.) VE2DR 119, ATL 60, AGN 47, EC 35, TA 23, ATQ 12. (Mar.) VE2DR 183, CP 60, ATQ 24, EC 23.

ALBERTA—SCM, Sydney T. Jones, VE6MJ—Word has been received that the annual hamfest will be held in Calgary this year on Aug. 3 and 4. Sponsored by the Calgary Amateur Radio Association, this is an event that all amateurs should support. It is suggested that arrangements for accommodation be placed as early as possible with the Calgary Club by writing to the secretary at P. O. Box 196. Let's get behind the boys and show them that we appreciate their efforts. The deadline for this report has come and other than one report from our old reliable HM and a few traffic totals no news has been received. As I have pointed out in this column several times, it is impossible to write an Alberta report without news. The rest is up to you. Traffic: VE6HM 97, OD 30, SP 10, TT 9, MJ 6, HA 5, YE 4, MQ 2, PV 2, SS 2.

Ham-Band Receiver

(Continued from page 17)

be used with this receiver. This will tend to improve the high-frequency audio response of the over-all setup, and help to compensate for some of the side-band clipping always present in a sharp receiver.

The unusually small .05-μf. by-pass capacitors specified in the audio cathodes is not an error. Instead, they provide some low-frequency degenerative feedback, which is a left-handed approach to improving the high-frequency response of these stages.

For c.w. it is very important that the b.f.o. be set somewhere between 700 and 1000 cycles either side of the center frequency of the i.f. amplifier, and then left alone. Do all the tuning with the tuning dial alone. Continuous changing of the pitch control during the tuning process will serve only to upset the single-signal properties of the receiver. By tuning in the signal from the calibrating oscillator and peaking it on the S meter, the receiver's center frequency is determined precisely. The b.f.o. should then be turned on and tuned to zero beat by adjusting C8. Provided the 50-$\mu\mu$f. trimmer in the b.f.o. has previously been set at a half-scale value, the pitch control now can be used to move the b.f.o. either side of zero beat, stopping at that point which sounds best to your ear.

Use a.v.c. on a.m. phone, advancing the i.f. gain-control only to that point required for proper operation of the S meter. Relatively little audio gain will then be required. Do not use a.v.c. on s.s.b. Use plenty of audio gain, and a minimum of i.f. gain.

All these things add up to a receiver of good signal-to-noise ratio, excellent stability, adequate selectivity, and exceptional gain, all of which contribute the over-all performance required for some honest-to-goodness DX chasing. As an all-around receiver, for both phone and c.w., it will

(Continued on page 150)

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give an excellent account of itself; in any situation and in any company. Charter members of the "You-can't-work-'em-when-you-can't-hear-'em" club can turn in their membership cards.

To forestall some of you "inquisitive characters" who may have access to a low-frequency signal generator, I might add I had no way of checking the actual frequencies of the two i.f. strips. I have made only what I consider to be a "good guess." In any case, the exact intermediate-frequencies used are of little consequence provided the final results are satisfactory. I believe it is quite evident I am not too displeased with those final results.

Test Meters

(Continued from page 21)

the most common trouble encountered is short circuits. This can be due to bits of solder or wire getting into spots they shouldn't be in, and it sometimes takes considerable searching to find them. It is a good idea to make a few resistance checks before applying power to a newly built piece of gear. The power supply B + line is usually above chassis ground by the value of the bleeder resistor. A quick check is to switch your test meter to the high resistance scale and connect one lead to the B + line and the other to chassis ground. The ohmmeter will quickly show the presence of any shorts.

Once you have the piece of equipment working it is an excellent idea to make a record of voltage readings at different test points.
Suitable points would be:

1) Output of power supply.

2) Plate voltage of amplifier and oscillator stages.

3) Screen voltage of amplifier and oscillator stages.

4) Grid voltage.

These checks should be made with the transmitter operating into a load. The next time the rig acts up you'll have a record to refer to which will probably make your job easier.

It would be impossible to completely cover the subject of trouble shooting in the space permitted here. Such things as self-oscillation, parasitics, etc., are treated in *The Radio Amateur's Handbook*.

Wireless Shacks

(Continued from page 48)

In my case all antenna leads were made using RG-8/U. All outer conductors are permanently bonded with large straps to the nearest solid ground as a permanent lightning and safety ground. Similarly, *all* equipment is permanently grounded for better operation and safety.

Similarly, a separate transmitter a.c. service was installed directly to the electrical service distribution box, with lower-rated fuses and a safety switch conveniently located in the shack. Three-wire twist-lock connectors are used so that the transmitting gear is automatically grounded

(Continued on page 152)

A bullet for Charlemagne

THE Caco general got slowly to his feet. Behind him, in the darkness, stood a hundred Haitian outlaws. At his feet was a small fire.

Confronting him, the tattered young man in blackface disguise saw the firegleam on his white silk shirt and pearl handled pistol and knew this was the murderous chieftain, Charlemagne Masena Peralte. The man he'd come for, through a jungle and a 1200-man encampment, past six hostile outposts, risking detection and certain death.

Charlemagne squinted across the fire. "Who is it?" he challenged in Creole.

There was no alternative; Marine Sergeant Herman Hanneken drew an automatic and fired.

The night exploded into gunflame, most of it from Hanneken's second-in-command, Marine Corporal Button, and his handful of disguised Haitian gendarmes. But the shot that killed Charlemagne was the one which would finally end Caco terror and bring peace to Haiti.

Sergeant Hanneken is retired now—as Brigadier General Hanneken, USMC, with a Silver Star, a Legion of Merit, a Bronze Star, a Gold Star, and a Navy Cross. And, for his expedition against Charlemagne, November 1, 1919, the Medal of Honor.

The Herman Hannekens are a rare breed, it is true. Yet in all Americans there is much of the courage and character which they possess in such abundance. Richer than gold, it is the *living* wealth behind one of the world's soundest investments—United States Savings Bonds. It backs our country's guarantee: safety of principal up to any amount, and an assured rate of return. For real security, buy Bonds regularly, through your bank or the Payroll Savings Plan.

Now Savings Bonds are better than ever! Every Series E Bond purchased since February 1, 1957, pays 3¼% interest when held to maturity. It earns higher interest in the early years than ever before, and matures in only 8 years and 11 months. Hold your *old* E Bonds, too. They earn more as they get older.

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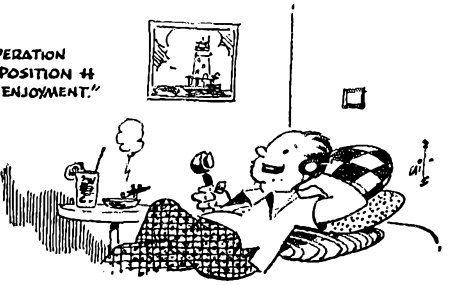
to the house water system when plugged in for operation. The receiver and small equipment are on a separate room outlet with the electric clock. The lighting was modified for general and local lighting in such a way that it can readily be restored to non-radio service.

It was found that aluminum strip, readily available at hardware stores carrying do-it-yourself supplies, could be used to support the wires and cables. Two forms were used here as shown in Fig. 1. The ¾ × ⅛-inch stock seems best. I chose ½-inch No. 4 brass round head wood screws to hold these cleats. Unfortunately, pictures are a bit difficult to take in my shack — so Fig. 2 covers the general layout used at W1DFS. A change of wires is accomplished with minimum difficulty. In some places it may be



necessary to serve the wires in place with regular serving cord or ½-inch paper masking tape — both of which are not hard to remove. While 500 watts input is normally used on 75, no interaction has been noted even with microphone leads, control leads and antenna leads running together. Similarly, there has been no trouble on 144 Mc.

As a further luxury, a remote control position was made to the shack couch, which allows operation from Position H (horizontal), which adds lots of enjoyment to my amateur operation. And the shack is easily cleaned, more efficient, allows changes and makes a reasonable attractive installation.

YL News and Views

(Continued from page 60)

OM W5MTQ, handled 540 messages. Iva was working the Texas 7290 kc. net when the tornado struck. As station KLIF broadcast the path of the tornado from a mobile unit, Iva relayed the information to the net and then for forty-eight hours operated her station without a break.

A highly creditable operation all around."

OOTC

Do you qualify for membership in the Old Old Timer's Club? W1CPI, president of the club, wonders if there are any YLs who do. Of 172 members, Mrs. Degna Marconi Paresce, an honorary member, is the only woman on the roster. Quoting from the membership application: "Any amateur wireless operator who holds a valid amateur license and who held a two-way contact over his or her own transmitter and did so make such transmission with some other wireless station, whether amateur, commercial, or Naval, at least forty years prior to the date of his or her application, shall be eligible for consideration for membership. Applicant need not have been continuously active in the art during the intervening years." Write W1CPI, care of the Old Old Timer's Club, Wakefield, Rhode Island, for details.

—•••—

What say, girls? More than one OM has proposed that all

(Continued on page 164)

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YLs be listed by age and marital status in the Call Book. Shall we shatter daydreams or prolong innocuous illusions?

Keeping Up With The Girls

CLUBS:

Floridora YLs — a new statewide YL club in Florida, organized April 28 with 30 charter members. Officers are Pres. W4BIL; Vice Pres. W4BWR; Secy-Treas. W4GXZ. The Floridora Net meets Monday at 0900 EST on 7230 kc.

Washington YLRC entertained members of the Penn-Jersey YLRC during cherry blossom week in the capital, the first of what is planned to be an annual social meeting of the two clubs. Seventeen YLs enjoyed luncheon and an inspection of the MARS station at the Pentagon.

Los Angeles YLRC — To assist those wishing to earn their Lads and Lassies Certificate, club members will listen on 20 meters, c.w. and phone, each Wednesday during July. Call "CQ LAYL" at 1500 Pacific Daylight Time on 14,095 kc. or at 1600 on 14,250 kc.

OPERATING:

WØKJZ, Lydia, now has six BPL medallions to her credit, and W4RLG, Frances, is the first YL to receive a medallion in Alabama. . . . Opal, W6PCA, has YLCC with ten endorsements, all on c.w. . . . The Loaded Clothes Line Net is a new Colorado YL net which meets at 1000 on 7275 kc. . . . WØs IRD and JMI, Lil and Clara, are alternate net controls for the Minn. SN . . . Ernie, W4KOH, and her OM were in continuous contact with Havana stations for four days during the St. Petersburg-Havana Yacht Race. . . . After finally succeeding to get a permit from the County Board of Arlington, Va., Ethel, K4LMB, YLRL Treasurer, is back on 80 from her new QTH. . . . Three active YLs in Alberta, all on twenty, are VE6HM, Hilda; VE6YE, Mae; and VE6YG, Nancy. . . . KZ5LM, Lois, works s.s.b. on the high end of fifteen. . . . After a year's absence W4LKM is back on the air again. Annette always uses her OM's call, W4CWV. . . . KØJAS is the new Minnesota call of ex-W7KEU. Laura had local electricians help her raise a wire for 80 and 20 c.w.

MISCELLANY:

W4BIL, Fran, was chosen Woman of the Week (March 6) in a St. Petersburg newspaper contest. Some nice publicity for ham radio resulted. . . . W4RLG, Frances, has been appointed asst. Director of the Southeastern division of the ARRL. . . . W1VIIN, Alice, is radio officer for Worcester, Mass. . . . OM WØBUO reports two secretaries were elected for the Minneapolis RC — twins Janice and Janet, WØs QXA and QXF. . . . KZ5VR, Virginia, is the new president of the Canal Zone ARA. . . . KØBTV, Kay (ex-W3LSX) mobiled East for the Frequency Control Symposium at Asbury Park and the Quartz Symposium at Pittsburg, as representative for the Radio Laboratory of the National Bureau of Standards. . . . W1EXE, Hazel, is now W2LZJ; W1IRP, Nancy, is now K2VCD. . . . W5LGY, Helen, is building herself a Wonder-Bar antenna for ten. . . . W6NZP, Evelyn, is YL Activities chairman for the Southwestern Division Convention, slated for Long Beach, Aug. 16–18.

Novice Round-Up Results

(Continued from page 47)

WN1JIC.....32– 8– 4– 9

Maine

WN1LCX...2475– 79–25–26
KN1ABX....348– 19–12– 9

Eastern Massachusetts

WN1IUU..11,950–224–50–40
WN1KYM..4290–115–33–39
WN1JFL....2552– 73–29– 9
WN1NOS...2400– 85–24–26
WN1KSW...1750– 70–25–18
WN1NYE...1292– 61–17–20
WN1KXD...1144– 37–22– 9
KN1ACM...1104– 92–12–40
WN1NJL....976– 51–16–10
WN1LGO....896– 41–16–18
WN1LDK....574– 31–14– 4
KN1ACL....351– 27–13–10
WN1KSI....319– 29–11–30

New Hampshire

WN1MTX...1632– 53–29–14
WN1OQG.....6– 3– 2– 1

Rhode Island

WN1MUL...3185– 71–35–12
KN1AEW...1276– 58–22–13
WN1JWZ...1125– 45–25–19

Vermont

WN1KCI....1113– 53–21–18
WN1LMI....209– 19–11– 5

NORTHWESTERN DIVISION

Alaska

WL7BWY...4797–117–41–25

Idaho

WN7FSH....1586– 61–26–14

Oregon

WN7DRG...3096– 86–36–19
WN7DMR...792– 34–18–21

Washington

WN7CNL..17,141–256–61–40
WN7FQD...5880–125–42–36
WN7EPJ.....738– 26–18– 9
WN7FHE....176– 22– 8–12

PACIFIC DIVISION

Sacramento Valley

KN6SXA..21,318–303–66–39

(Continued on page 156)

KN6URM . 14,893-266-53-33
KN6RGO 640- 25-16-10

San Francisco

KN6ZXS 6125-125-49-31

ROANOKE DIVISION

North Carolina

KN4IEX . . 11,760-190-56-18
KN4JFZ/4 . . 1176- 49-24-14

South Carolina

KN4LDB 989- 43-23-18

Virginia

KN4IYK 4158-106-33-27
KN4IED 2640- 95-24-36
KN4IQQ . . . . . 656- 41-16- -
KN4IOJ . . . . . 518- 27-14- -

West Virginia

KN8DIZ 1260- 63-20-40
KN8COQ 336- 13-12- 3
KN8BQF 1- 1- 1- 1

ROCKY MOUNTAIN DIVISION

Colorado

KN0GAS 1708- 61-28-25

Utah

WN7EHX . . . 2418- 68-31-29
WN7EII 25- 5- 5- 2

SOUTHEASTERN DIVISION

Alabama

KN4KID 1370-100-38-39

Eastern Florida

KN4KXX . . 14,280-265-51-26
KN4KKQ . . 11,408-238-46-18
KN4KQU 1800- 72-25-16
KN4HRS 1596- 47-28-21

SOUTHWESTERN DIVISION

Los Angeles

KN6RMS . . . 8460-180-47-16
KN6RZQ 2516- 59-24-14

Santa Barbara

KN6TFU 351- 17-13- 6

WEST GULF DIVISION

Northern Texas

KN5HTM . . . 6960-145-48-18
KN5HTH . . . 5740-140-41-21
KN5IID 4224- 96-44-21
KN5HWY . . . 3141- 86-41-22
KN5IOC 1400- 50-28-29

Oklahoma

KN5GLH . . 11,040-184-60-29

Southern Texas

KN5IFT 132- 22- 6-21

New Mexico

KN5GFC 130- 13-10- 6

[1] W1WPR, opr.

Wavemeters

(Continued from page 32)

directly from the dial. The units are extremely sensitive. It was possible to obtain meter deflections with the high-frequency unit five feet away from the tuned lines of a 955 acorn tube oscillator.

One use for these wavemeters, aside from simple frequency checking, is tracking down u.h.f. parasitics. Often these are beyond the range of most absorption-type wavemeters. Being able to look for energy at frequencies above 200 Mc. or so may be very helpful in stabilizing amplifiers designed for the h.f. or v.h.f. bands.

How's DX?

(Continued from page 66)

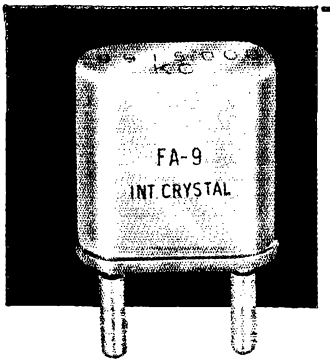
. . . . . Mitz of KC6SP headed Statesward but W7PHO hears that other personnel have applied for tickets to keep this Western Carolines outlet available . . . . . Old salt W7FNK (KH6CHC-FO8AI) is scheduling IGY activity and hamming in the Line Islands later this year. Jack expects to sign a VR3 or KP6 call from Malden or Starbuck with additional stops at Palmyra, Jarvis, Fanning and Penrhyn. "Our purpose is to study the earth's magnetism at the magnetic equator." . . . . . Wls BDI and HZ report sailing-raft *Tahiti-Nui*, FO8AP/MM, workable on 21,042 kc. around 0200 GMT. This floating 1-watter is especially anxious to tie in with Chilean amateurs as she wends eastward. W1HZ supplies FO8AP/MM's tentative operational agenda: 7030 or 7150 kc., 0300-0400 GMT; 14,042, 14,103 or 14,333, 2200-2330; and 21,042 or 21,152, 0100-0300. W1HZ QSOd the craft at 34°06'S and 105°20'W, then noted their position the following day as 34°42'S and 104°30'W — slow progress but sure, we trust. On May 19th *Tahiti-Nui* reached the Juan Fernandez Islands, completing all but 400 miles of its epic Tahiti-to-Chile voyage which began last November . . . . . NCDXC reports Papua's VK9OQ closing shop in favor of VK2.

Hereabouts — KG1DT, W7YJP operating, put Fletcher's Ice Island back on the ham map with a 20-meter W8IUA QSO. Several IGY observers attend . . . . . From W1TS: "K2CPR just phoned to say that he expects to be operating FP8AA from July 5th to 19th on all bands 10 through 160, phone and c.w. Will probably use a Ranger and NC-300." . . . . . W9CFT calls attention to an ARAC sheepskin based on QSOs with 20 CM7/CO7s. Check facts with CM7HQ . . . . . K6OHJ informs that K6s ANP and LRN contemplate DXpeditionary doings in the Guatemala theatre late next month . . . . . K2GMF mentions FY7YE's June visit to New York where he delivered several QSLs personally . . . . . "I am planning an 'expedition' to Vermont during the week starting July 15th. Operation will be on 7 and 14 Mc., mainly c.w. W1OIIF and myself will be portable in Orange, running 300 watts and receiving with a 75A-3." That's from W1JMI . . . . . Ws 1RCQ

(Continued on page 158)

1VG and 2DGW describe special five-band-QSO QSLs dispensed by PJ2ME, the first four certifications going to Ws 1FEA 1VG 2QHH and 8JIN. PJ2ME still hunts Utah each evening on 20 or 40 meters . . . . . W1BDI reports FG7XE planning a 21-Mc. spree . . . . . W2s FXA and PDB, brothers who live a block apart in Buffalo, have DX totals of 123/107 and 129/107, respectively, and received their DXCC credentials on the same day. They're members of the Niagara Frontier DX Association . . . . . W8NBK takes pen in hand, plus the complete DXCC roster presented in last December's *QST*, and comes up with interesting statistics: Of the top 100 free-style DXCC members listed there are, by U. S. call areas, eleven Ones, Twelve Twos, twelve Threes, five Fours, eight Fives, *twenty-five* Sixes, four Sevens, eleven Eights, eight Nines, and four Zeroes. "I have always thought that a good DX man can work DX regardless of his location. I can remember when it was said that DX work was impossible from Arizona. This was probably true until W6GAL/7 and W7AH showed up there and proved otherwise. The same was said of the Minnesota area but take a look at W9YXO's score. . . . I don't believe anyone in the U. S. A. has the terrific advantage over his fellow DXers that some of the gang would have you believe." . . . . . K6IUL practices his student Spanish on 15 phone to good effect but wishes that more Central and South American stations would scrutinize the U. S. phone subband after their *say-coon* . . . . . Lines from HP1JF to W2JBL confirm HP1EH's move to Haiti as HH2FH . . . . . KC4USK joins the Yank IGY antarctic gang with 21-Mc. a.m. and s.s.b.; W6ONK has the location as Wilke's Station, Indian Ocean side . . . . . W8NYG, formerly active from Greece and Okinawa, hopes for another DX assignment soon . . . . . DXCC YL KZ5KA opines, "Fifteen-meter DX doesn't seem so good this year, especially in the mornings between 7 and 9. I used to work Europeans at this time but now we very seldom hear anything but W/Ks." And *that's* bad . . . . . "Up to 125/62 now," writes VP2LU. "One gripe: Heard UP2AS calling CQ on 14-Mc. c.w. the other night, first UP2 I ever heard, and I was quite excited. Gave him a short call and listened. There were *nine* W stations calling me on the frequency! I'll never know if UP2AS came back or not and I was about ready to take up basket-weaving and drop ham radio entirely." . . . . . K2BSM arranged to replace VP7NM's outmoded inhaler with a brand new NC-300 . . . . . OT W8KX finally caught the DX bug last December and now has an 82/44 score, all on 28 Mc. "I took 31 years to make WAC, and then almost did it in one week end!" . . . . . W7DJU torpedoes our recent recommendation of W7TTM for Utah WAS QSOs. Dale says the fellow left the state for a two-year stretch . . . . . The Anchorage Amateur Radio Club, officiated by KL7s DZ CP BVC BDG and AUV in that ranking, issues a jivy monthly titled *Northern Lights Carrier*. W7DJU submits samples of editorial cleverness by YL KL7s BLL and BHE . . . . . W6RZS desires QTH data on former JZØDN and VP6KL . . . . . Note from HI8BE: "My monopoly is broken! Being the only active ham in the D.R. for two months was quite something but now there are HI7s GB LNQ LS and TB at Sabana de la Mar. Also, we have a new M/Sgt. who applied for a ticket and will probably have an HI8 call before long. In two months I've had 1160 QSOs with 92 countries and 43 states, sending out some 600 QSLs." . . . . . OVARA declares its VP5BH ARRL DX Test DXcursion an unqualified success . . . . . VP8BY briefed W3LEZ on the current 14-Mc. activities of Falkland VP8s AQ BU and SO. Georgia's VP8BK. Nothing doing on So. Sandwich, though . . . . . VP3AD, needing eight more states for his WAS, worked VP7NG on January 27, 1956. Then this January 27th, exactly one year later, he just happened to hook KP4AGR. So what? Well, that former VP7NG and the present KP4AGR are the same guy. VP3AD still needs eight more states for WAS.

Ten Years Ago in "How's DX?" — It's July, 1947, and W/VE DX devotees settle down for the long summer pull. *QST*'s DX pages record an increasing variety of rarities catchable on OM Twenty: **AR8MO, CIZC, EK1s** AA AS TF, **EP2XZ, ET1IR, FB3AC, FT4AN, HI8MAF, I6US**A, **KA1s** ABT ABU RP, **LI2JC, MD5AA, ME5AA, MX2AG, NY4s** CM AE FB, **OI2s** KAB KAL, **PKs** 1RX 1SS 2RK 4IP 5LK 6BY 6HA 6VR, **SU1US, TA3SO, UA9s** CB DP, **UA0s** KFC UA, **UD6s** AA BM, **UG6DW, UH8AF, UI8AA, UN1AA, UO5AD, VR5PL, VS7IT, W2WMV/C9, XAMC, XU8RJ, YU7LX** and **ZC6DD** on c.w.; **Cs** 1CH 4AK 6RA 7TY 7WY 9YC, **CR10CB, FK8NW, J2s** AHA AAO EAR EUG ROC, **J3GNX, KA1s** AQ CB JM, **PK1GN, VS9AB, W6VTO/C1, W9FEZ/J5** and **YJ1AB** via phone . . . . . Poor eighty lies dormant but feverish forty is good for **HK3P3** of Colombia's military, **J2AHI, KP6AB, OX3AB, PK6AC, TG9JK, W3EKK/J2, W6NQG/KM6 W6VDG/KG6, YR5V** and **ZK1AH** . . . . . Ten phone rolls along on DX momentum derived from that recent period when 28 Mc. was our one and only long-haul band. **EK1AA, HZ1AB, Js** 2CDJ 2FOX 2LPG 2MAX 9AAK 9KC 9LG, **KP6AA, PK1MJ, RAEM, VS7RF, VU2s** AJ CQ GB, **XZ2s** AF DN YT, **YI2AT, ZC6s** FP and JF are available. Gee, it seems like only yesterday, not a whole *year* ago, that 20 and 40 meters were reopened to amateurs!



ONE DAY Processing!

FOR AMATEURS — EXPERIMENTERS 1500 KC to 90 MC

Wire mounted, plated crystals for use by amateurs and experimenters where tolerances of .01% are permissible and wide range temperatures are not encountered.

CIRCUIT: Designed to operate into a load capacitance of 32 mmf on the fundamental between 1500 KC and 15 MC. Designed to operate at anti-resonance on 3rd overtone modes into grid circuit without additional capacitance load. 5th overtone crystals designed to operate at series resonance. *(Write for recommended circuits.)*

Prices Pin Diameter .093
Pin Spacing .486 (FA-9 Fits Same Socket as FT-243)

Frequency Range	Tolerance	Price
1500-1799 KC	.01%	$4.50
1800-1999 KC	.01%	4.00
2000-9999 KC	.01%	3.00
10000-15000 KC	.01%	4.00

Frequency Range	Tolerance	Price
Overtone Crystals — 3rd Overtone Operation		
15 MC-29.99 MC	.01%	$3.00
30 MC-54 MC	.01%	4.00
Overtone Crystals — 5th Overtone Operation		
55 MC-75	.01%	4.50
76 MC-90 MC	.01%	6.50

ONE DAY SERVICE! Crystals are sold direct, for fastest possible service. When cash accompanies order, International prepays Airmail postage; otherwise, shipment made C.O.D. Specify exact frequency and crystal will be calibrated to .01% or better of this frequency.

COMMERCIAL
Precision Crystals
F-6 Series
1500 KC - 50 MC

NOTE: The FA units will not necessarily have the correct correlation for Commercial use.

For Commercial applications, the F-6 type unit should be used. Write for details!

FREE CATALOG!
Ask for your copy of New 1957 Catalog showing the International complete line. Crystals available from 100 KC to 100 MC.

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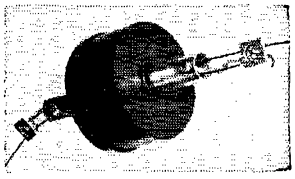
Now In Stock In DENVER, COLORADO

THE HY-GAIN "Wonder Doublet"

The only tunable, weatherproof trap circuit in existance!

$12.50 per pair



Complete doublet, with instructions: $24.50

Tunable, 10-80M. Resonant on the five most popular bands, complete with 88 ft. of KW amphenol Twin-Lead. Capacity can be varied for resonating trap circuit on any tone or CW frequency. Constructed of No. 14 copper clad steel antenna wire. End insulators 7" porcelain, coils Hi-Q; will withstand 1 KW. Special pressure clamp construction eliminates messy solder joints. Complete instructions.

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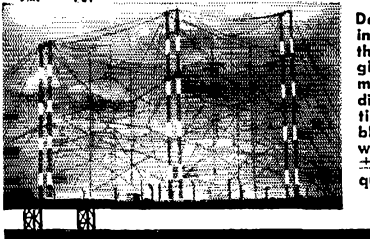
From the unique broadband curtain antenna shown below and difficult microwave and television installations involving rigid sway and twist limits, to lightweight towers for amateur beams —Trylon's sound engineering approach to every phase of antenna design pays important performance dividends.

FIRST SUCCESSFUL Broadband CURTAIN ANTENNA



Designed, built and installed by Trylon, these two broadsides give 5% to 10% more reliable long-distance communications than comparable rhombics — and with a bandwidth of ±15% of center frequency at 1.5 VSWR.

WIND TURBINE COMPANY, West Chester, Pa.
In Canada: The Wind Turbine Company of Canada, Ltd., Toronto 9.

Quad Antennas

(Continued from page 26)

Each bamboo spreader is fastened inside the crossbar angle with two 1½-inch adjustable hose clamps. One of these clamps should wrap around one of the "dog ears." The other should be placed near the outer end of the crossbar.

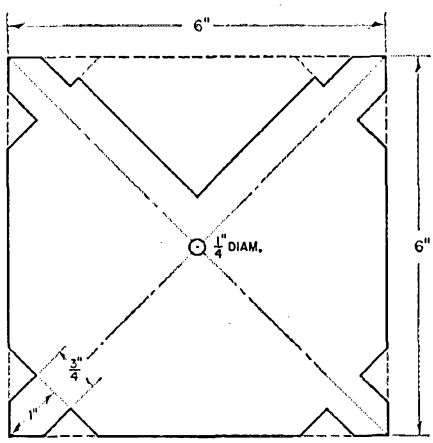


Fig. 1 — Sketch showing the dimensions of the aluminum plate that supports the crossbars. The large notch should not be cut until the crossbars are in place.

To resist corrosion, all hardware should be galvanized or cadmium plated. To protect bamboo, paint with Val Oil or a similar preparation.

If it is desired to feed the quad at a corner, rather than at the center of one side, the crossbars, or the boom itself, can be turned 45 degrees from the position shown. This type of frame is adaptable, of course, to quads of the multiband type.[2, 3] If the offset in adjacent spreaders that results from this type of construction, is objectionable, it can be eliminated by attaching the quad loop to the inside of the outermost spreader and the outside of the adjacent one.

Technical Correspondence

(Continued from page 45)

SERVICING RECEIVERS

Neshanik Station, N. J.

Technical Editor, *QST*:

I've been meaning to write to *QST* for quite some time but with travel to Japan and all that I never did get around to punching it out. Your most recent item in May *QST* re the receiver prompted me to add my little two cents' worth.

About a year ago I had a buddy, W2KD, bring me his old HRO with the complaint that it had no sock. He had just received it back from an alignment outfit in N. Y. C. that charged him a few dollars to align the circuits, but without much improvement. I checked it through and it was tuned O.K. Sounded like it was running on a 22½-volt battery for a B supply. To make a long story short, I checked the little fixed capacitors, mostly .01- and .005-μf. paper type. They all checked on the Heathkit v.t.v.m. as though they were resistors; some 100,000 ohms and less. One checked out as a battery and put out a considerable current, too. It was corroded on the inside and acted like a battery.

I replaced *all* the paper capacitors and now the HRO is hot. Best way to check them is on the highest range resistance scale of the v.t.v.m. They should show almost infinite resistance if good.

Been around since the 47-46-210 rigs, but this is the first time this condition has come up. Been using this technique on TV sets, too, with good results.

— *Ed Kirchhuber, W2KJY*

Happenings of the Month

(Continued from page 72)

closed. Whereupon, ORDERED by the Chair, that the Secretary cast one ballot declaring Mr. Handy elected as a member of the Executive Committee.

61) On motion of Mr. Reid, unanimously VOTED that, pursuant to Article VII of the Articles of Association, George V. Cooke, Jr., Francis E. Handy, and David H. Houghton are hereby appointed members of the Executive Committee, to serve as such until the next annual meeting of the Board of Directors

62) The Board recessed for dinner at 5:48 P.M., reconvening at 8:11 P.M. with all directors and other persons hereinbefore mentioned in attendance.

63) On motion of Mr. Noble, unanimously VOTED to discontinue annual cash awards for the articles judged to be first, second and third best in *QST*.

64) Moved, by Mr. Brabb, that the headquarters elim-

(Continued on page 164)

inate information to directors concerning club affiliations. But there was no second, so the motion was lost.

65) Moved, by Mr. Brabb, that *QST* publish more articles concerning the use of 160 meters and technical advice in connection therewith. But, after discussion, the motion was rejected.

66) Moved, by Mr. Brabb, that directors, vice-directors, section communications managers, section emergency coordinators, and QSL managers, provided they be fully licensed, be granted Full Membership in the League without cost during their term of office. But, after discussion, the motion was rejected.

67) On motion of Mr. Brabb, unanimously VOTED that the League publish in its official organ, *QST*, more articles on radioteletype and that technical information on radioteletype be included in the Handbook.

68) On motion of Mr. Brabb, the following Resolution was unanimously ADOPTED:

WHEREAS, the Board of Directors has given studied consideration to extent of authority of the Executive Committee, it is therefore resolved that it is the sense of this Board that the Executive Committee continue to exercise its functions as a ministerial body.

69) On motion of Mr. Doyle, unanimously VOTED that the Board goes on record as complimenting the committee for the 1957 ARRL National Convention to be held in Chicago later this year for the work done so far and expresses its best wishes for a fine and outstanding affair.

70) On motion of Mr. Born, unanimously VOTED that the matter of discussion of frequency allocations be now lifted from the table. On further motion of Mr. Born, VOTED that the Board now resolve itself into a Committee of the Whole for the purpose of discussion of frequency-allocations matters.

71) Whereupon, at 8:52 P.M., the Chairman appointed himself Chairman of the Committee of the Whole. The Committee arose at 9:27 P.M.; Mr. Dosland, as Chairman of the Committee of the Whole, reported to the Board that the Committee arose without recommendations.

72) On motion of Mr. Crossley, unanimously VOTED to take from the table his Resolution regarding the responsibilities of the Board of Directors and also the Executive Committee. After discussion, the question being the adoption of the Resolution, the same was rejected.

73) On motion of Mr. Crossley, unanimously VOTED to take from the table his motion that the Board endorse the petition of USCDARA for more RACES frequencies. After discussion, on motion of Mr. Maer, unanimously VOTED to amend the motion by striking the text and substituting therefor the following: "That it is the sense of this Board that amateur radio continue to cooperate with all governmental authorities in emergency, disaster, civil defense and military matters." Whereupon, the question being on the motion as amended, the same was unanimously ADOPTED.

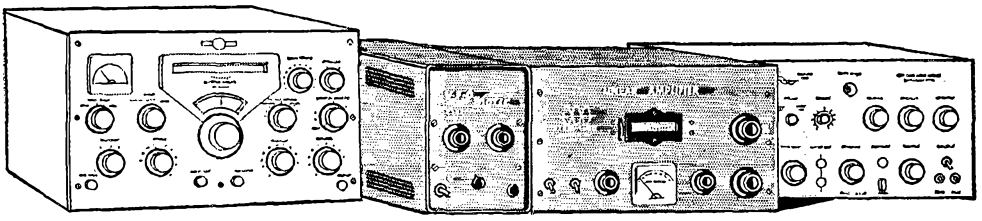
74) On motion of Mr. Crossley, unanimously VOTED that the Secretary-General Manager be directed to inform all directors by letter at least two weeks before the formal call for the Board meeting, that such call will be made, giving the date, so that directors have sufficient time to file notice to changes in the Articles of Association and By-Laws before the formal meeting notice is mailed.

75) Moved, by Mr. Crossley, that the Board authorize the attendance of all directors to the 1957 ARRL National Convention in Chicago, and pay one-half their expenses of travel, hotel, etc., while attending. The yeas and nays being ordered upon request, the question was decided in the negative. Whole number of votes cast, 16; necessary for adoption, 9; yeas, 2; nays, 14. All the directors voted in the negative except Messrs. Crossley and Doyle. So, the motion was rejected.

76) Moved, by Mr. Crossley, that the proper Board

(Continued on page 166)

Now... transmitter tracks automatically with receiver



Plug new V-F-O-Matic into Collins receiver... automatically keeps Xmtr zeroed to receiver frequency

NEW V-F-O-MATIC... plugs into 75A-2, -3, -4 Collins receivers; requires no rewiring or changes; does not affect calibration, sensitivity or adjustments. Collins precision VFO furnishes freq. control for both send and receive. For all SSB phasing type exciters (10A, 10B, 20A, Phasemaster, Hallicrafter HT-32, etc.) using 9mc mixer frequencies. Automatically zeros in Xmtr to exact freq. received. Operates both upper and lower SB on 75 and 20 meters. Complete with power supply. (Model 80-10 all-band unit for KWS-1 also available.) Immediate delivery.

PRICE $124.50
($14.50 down; $10.50 per month)

SATISFACTION GUARANTEED

LA-400-B LINEAR AMPLIFIER... simplified multiband operation on 75 thru 10 meters. Improved TVI suppression. New metering circuit reads RF voltage input, plate current and RF amps output. Low Z, untuned, 400-watt P.E.P. input with more stability, better linearity, only 20 watts drive. Pi-net output. Designed around four Modified 1625 Tetrodes. Especially effective for SSB; also delivers high quality signal on AM, PM, CW. Ideal for portable use. Complete with power supply and tubes. Teams well with V-F-O-Matic.

PRICE $199.95
($19.95 down; $16.50 per month)
ALSO AVAILABLE
Modified 1625 Tetrodes $3.75 each

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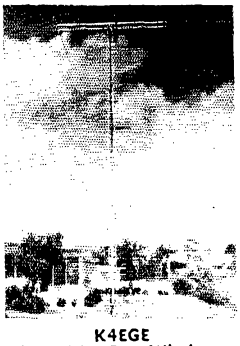
P & H ELECTRONICS • 424 Columbia, Lafayette, Ind.



K4EGE
Owned by Ben Wimberley, 39 N. Pine Circle, Clearwater, Florida. Ben says, "Greatest thing that ever happened to Ham radio."

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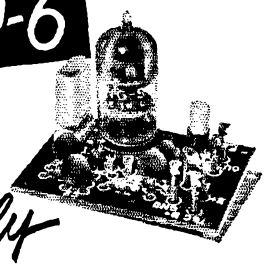
the NEW FO-6

6 Meter or 2 Meter

Oscillator Assembly



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6U8 Tube
Crystal Oscillator Range, 48MC to 54 MC. **Output** 50-54MC or 144-148 MC. (Specify When Ordering)
Crystal Required—3rd Overtone Type FA-5
Plate Voltage—250 volts @ 20 ma
Filament Voltage—6.3 volts @ 450 ma
Size—2" x 2¾" x 2¾"

Kit (less tube & crystal)	**5.95**
Complete wired & tested (with tube, less crystal)	**9.95**
Crystal Type FA-5 48-54MC	**3.90**

HOW TO ORDER: For fastest possible service, crystals and oscillator assemblies are sold direct. When cash accompanies order, International prepays postage. Otherwise, shipment made C. O. D.

International
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committee be instructed to give consideration in providing for an executive secretary, public relations secretary, or whatever name is suitable. Also, submit to the Board an amendment or amendments to the By-Laws and/or articles outlining the duties, etc. RULED, by the Chair, that the motion is out of order inasmuch as the same question had been previously rejected by the Board. Moved, by Mr. Brabb, that the motion be reconsidered. But there was no second, so the motion to reconsider was lost.

77) 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.

78) 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.

79) On motion of Mr. Born, the following Resolution was unanimously ADOPTED:

WHEREAS, on April 10, 1957, David H. Houghton had served faithfully The American Radio Relay League, Inc., and all radio amateurs, for 35 years;

BE IT RESOLVED that the Board of Directors, meeting in Hartford, Conn., on May 17, 1957, cognizant of such exemplary service, does hereby express its deep appreciation of his devotion, loyalty and sacrifices for the welfare and success of amateur radio and the ARRL.

(Applause)

80) On motion of Mr. Canfield, unanimously VOTED that a committee of five, at least three of whom shall be directors, shall be appointed by the President, which committee shall investigate and analyze present and probable future housing needs of League headquarters office, laboratory, and radio station operating activities and make a report with recommendations to the Board at its 1958 annual meeting.

81) On motion of Mr. Canfield, unanimously VOTED that the General Manager is hereby authorized to pay expenses for the operation of the Housing Committee for the year 1957, in an amount not to exceed $2500.

82) On motion of Mr. Joos, affiliation was unanimously GRANTED the following societies:

Huachuca Amateur Radio Club . . . Fort Huachuca, Arizona
Indian Wells Valley Amateur Radio Club
. . . . . China Lake, Calif.
Santa Fe Radio Club . . . . . Santa Fe, New Mexico
Sydney Amateur Radio Club . . . . Sydney, N. S., Canada
The Marathon Amateur Radio Club
. . . . . Marathon, New York

83) On motion of Mr. Engwicht, VOTED that it is the sense of the Board that on the invitation of their division director, SCMs and SECs be authorized to attend an ARRL meeting called by their director up to two such meetings in each calendar year, their travel and incidental expenses reimbursable from their authorization in lieu of an equal number of their section meetings as trips.

84) Moved, by Mr. Engwicht, that the Board requests that the General Manager petition the FCC to permit both f.s.k. as well as a.f.s.k. in the 6-meter band. But, it being pointed out that such operation is already permitted in the frequencies 52.5-54.0 Mc., Mr. Engwicht, with the permission of his second, withdrew the motion.

85) Moved, by Mr. Roberts, that the Board discontinue the custom of meeting for informal discussion on Thursday evenings preceding the first day of the annual meeting of the Board. But there was no second, so the motion was lost.

86) On motion of Mr. Denniston, unanimously VOTED that the Board of Directors of the ARRL conveys its fraternal greetings to other member-societies of the IARU.

(Continued on page 168)

87) On motion of Mr. Brabb, after discussion, unanimously VOTED that the General Manager is directed to study FCC proposals in Docket 12018 and file such comment on behalf of the League as may be appropriate to protect the amateur service against harmful interference from radio and television receivers.

88) At this point, the Chair announced the following committee appointments for the coming year:

Finance Committee:
Mr. Roberts, Chairman
Mr. Anderson
Mr. Canfield

Planning Committee:
Mr. Doyle, Chairman
Mr. Born
Mr. Joos

Membership & Publications Committee:
Mr. Brabb, Chairman
Mr. Denniston
Mr. Engwicht

Housing Committee:
Mr. Canfield, Chairman
Mr. Anderson
Mr. Chaffee
Mr. Roberts
Mr. Budlong

89) Mr. Cook, as Chairman of the Merit & Awards Committee, stated his Committee would have no report.

90) Whereupon, on motion of Mr. Reid, the Board adjourned *sine die*, at 10:27 P.M. EDST.

91) (Time in session as a Board, 8 hours, 3 minutes; as a Committee of the Whole, 35 minutes; total time in session, 8 hours, 38 minutes; total authorizations, $35,750.)

A. L. BUDLONG
Secretary

Making WAS is Easy

(Continued from page 73)

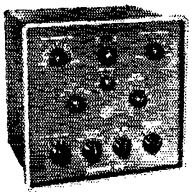
to sneak up on an unsuspecting Delaware ham and engage him in QSO. We swapped QSL cards . . . within the next two weeks, three Delaware hams were contacted, and two of them QSL'd without being asked to do so . . . don't ask me why.

By this time I had managed to snag 47 states and all of them had promised to QSL or else they had already mailed their cards. Wyoming remained the lone standout. So . . . I laid my plans with care; contacted friend Marvin in WØ-land, figuring that Denver would have about the same skip distance and other conditions as Wyoming, a hundred or so miles to the north. Marv gave me plenty of dope, and put me on the trail of a buddy in Wyoming. I wrote his pal a letter requesting a sked, but I'm still waiting for a reply. But, as luck would have it, around 12 midnight a few evenings later, I heard good ole Doc, W7GGG calling CQ on the low end of 40 . . . I called with trembling hand, he answered, we QSO'd and he QSL'd to become my 48th state . . . as Webster would put it: "the thrill that comes once in a lifetime."

OUR COVER

Our cover this month is the top view of another of W1JEQ's neat creations — a mobile transmitter. It isn't ready for *QST* yet, a'though Vern has had it working O.K., because our draftsman is still working on the wiring diagram and Vern is still writing the deathless prose that will tell you how to built it. Look for it in next month's *QST*.

Every One . . . a Honey for the Money!

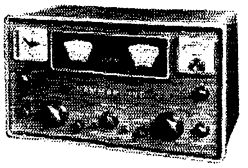


$149.00 Amateur Net

HC-10 SSB/CW OR AM/MCW CONVERTER

Works with any receiver having IF between 450 KCS and 500 KCS. Takes seconds to connect. Complete self-contained audio system and power supply. Tuned IF with seven selectivity positions. Vernier type tuning. Razor-sharp slot filter, adjustable over passband.

$14.90 down . . . . . **$8.12** per month for **18** months

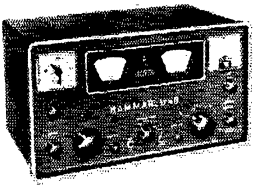


$169.00* Amateur Net
*Clock-Timer $10.00 extra

HQ-100 GENERAL-PURPOSE COMMUNICATIONS RECEIVER

Ten tube superheterodyne with automatic noise limiter. Continuously tunable from 540 KCS to 30 MCS. Electrical bandspread tuning. Q-Multiplier. High sensitivity. Auto-Response automatically adjusts audio bandpass.

$16.90 down . . . . . **$9.21** per month for **18** months



$229.00* Amateur Net
*Clock-Timer $10.00 Extra

HQ-110 AMATEUR COMMUNICATIONS RECEIVER

Dual conversion superheterodyne with automatic noise limiter. Covers 6, 10, 15, 20, 40, 80 and 160 meter amateur bands. Separate SSB linear. Q-Multiplier. Crystal calibrator. Separate stabilized BFO. Crystal control. Auto-Response.

$22.90 down . . . . . **$12.48** per month for **18** months

HQ-150 PROFESSIONAL-TYPE COMMUNICATIONS RECEIVER

Continuously tunable from 540 KCS to 31 MCS. Only receiver to offer selectivity of Q-Multiplier and Crystal Filter. Electrical band-spread. Crystal calibrator. 13 tube superheterodyne with noise limiter. Extremely stable BFO. Uniformly high sensitivity. Extra-high signal-to-noise ratio.

$29.40 down . . . . . **$16.02** per month for **18** months

- **Terrific Trade-Ins**
- **10% Down—Easy Terms**
- **Speedy Delivery—Personal Attention**

BIG NEW CATALOG!—Here it is! 40 pages packed with amateur gear and accessories. Write for your free copy today!

TOP TRADE-INS—We have hundreds of standard brand pieces of equipment in our trade-in department and prices are realistic! Write for current bulletin.

Burghardt RADIO SUPPLY

Satisfaction Guaranteed or your money refunded after 10 day trial.

P. O. Box 746, Watertown, So. Dakota • Phone 5749

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. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising so classified takes the 30¢ rate. Provisions of paragraphs (1), (2) and (5), apply to all advertising in this column regardless of which rate may apply.

(7) **Because error is more easily avoided, it is requested signature and address be printed plainly. Typewritten copy preferred but handwritten signature must accompany all authorized insertions.**

(8) No advertiser may use more than 100 words in any one issue nor more than one ad in one issue.

Having made no investigation of the advertisers in the classified columns except those obviously commercial in character, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

QUARTZ — Direct importers from Brazil of best quality pure quartz suitable for making piezo-electric crystals. Diamond Drill Carbon Co., 248 Madison Ave., New York City 16.

MOTOROLA used FM communication equipment bought and sold. W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

WANTED: Cash or trade, fixed frequency receivers 28/42 Mc. W9YIY, Troy, Ill.

MICHIGAN Hams! Amateur supplies, standard brands. Store hours 0830 to 1730 Monday through Saturday. Roy J. Purchase, W8RP, Purchase Radio Supply, 327 E. Hoover St., Ann Arbor, Michigan. Tel. NOrmandy 8-8262.

WANTED: Early wireless gear, books, magazines, catalogs before 1922. Send description and prices. W6GH, 1010 Monte Dr., Santa Barbara, Calif.

WANTED: All types aircraft & ground transmitters, receivers ART-13, RT18/ARC1, R5/ARN7, BC610E, ARN6, BC788C, ARC3, BC342. Highest prices possible paid. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

ATTENTION Mobileers! Leece-Neville 6 volt 100 amp. system alternator, regulator & rectifier, $45.00. Also Leece-Neville 12-volt 100 amp. system, alternator, regulator & rectifier, $85.00. Good condition. H. A. Zimmerman Jr., K2PAT, 115 Willow St., Brooklyn 1, N. Y. Ulster 2-3472.

CASH for your gear. We buy as well as sell. Write for cash offer or trade. We stock Elmac, Gonset, Hallicrafters, Hammarlund, Johnson, Lysco Master Mobile, Morrow, National and other ham gear. H & H Electronic Supply, Inc., 506 Kishwaukee St., Rockford, Ill.

WANTED: Receiver R5/ARN-7, MN-62A transceivers, RT187 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., 15 East 40th St., New York City. Tel. LExington 2-6254.

DX'ERS Notice! Save money? Save Time? Free info. DX QSL Coop, Box 5938, Kansas City 11, Mo.

MULTI-BRAND Antenna, 80-40-20-15-10, $19.95. Patented. Send stamp for information. Lattin Radio Laboratories, Owensboro, Ky.

SAN FRANCISCO and vicinity. Communication receivers repaired and realigned. Guaranteed work. Factory methods. Special problems invited any equipment. Associated Electronics, 107 So. Livermore, 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.

VACATIONS. Ham with my equipment, modern housekeeping cabins, American plan. Big McKenzie Lake, Spooner, Wis. Tony Martorano, W9HZC.

SCHEMATIC diagrams ARC-5 80-40 meter revrs and xmitters, 25¢ each or trade. S. Consalvo, 4905 Roanne Drive, Washington 21, D. C.

RADIO magazines. Buy, sell or trade. Bob Farmer, Plainview, Texas.

QSLS? SWLS? Finest and largest variety samples, 25¢ (refunded). Callbooks (Summer), $4.50. "Rus" Sakkers, W8DED, P.O. Box 218, Holland, Mich.

QSLS-SWLS. Meade W0KXL, 1507 Central Avenue, Kansas City, Kans.

QSLS-SWLS. 100, $2.85 up. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

QSLS-SWLS. Samples free. Bartinoski, W2CVE Press, Williamstown, N. J.

DELUXE QSLS — Petty, W2HAZ, Box 27, Trenton, N. J. Samples 10¢.

QSLS "Brownie," W3CJI, 3110 Lehigh, Allentown, Penna. Samples 10¢; with catalogue, 25¢.

QSLS-SWLS. Now printing for a third generation YL ham! Samples 10¢. C. Fritz, 1213 Briargate, Joliet, Ill.

QSLS-SWLS. Samples 10¢. Malgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

QSLS. Twenty exclusive designs in 3 colors. Rush $3 for 100 or $5 for 200 and get surprise of your life. 48 hour service. Satisfaction guaranteed. Constantine Press, Bladensburg, Md.

QSLS — All kinds and prices, samples 10¢ fast service. DX Card Co., Kulik St., Clifton, N. J. GR 3-4779.

QSL Samples. Dime, refundable. Roy Gale, W1BD, Box 154, Waterford, Conn.

QSLS. Neat. Attractive. Samples 10¢. Woody's. Box 164, Asher Sta., Little Rock, Ark.

QSLS, Taprint, Union, Miss.

QSLS. Samples 10¢. H. J. Snyder, 398 Washington, Peru, Ind.

QSLS. Reasonable. 3 weeks delivery. Samples 10 cents (coin) Dick, K6GJM, 10558 E. Olive, Temple City, Calif.

QSLS, Sharp! 200 one color, glossy, $4.75; Multi-color sunples dime. K9DAS QSL Factory, Edward Green & Sons, Box 197, Frankfort, Ind.

QSLS Glossy, two colors, samples 10¢ (refunded). 200 cards $3.75. W1GKH Press, Candleview Ridge, Danbury 18, Conn.

INDIVIDUALLY Designed QSLS. Send idea. Sketches, prices, returned for approval. Also stock samples, dime. St. Louis Amateur Radio Club, 1123 Washington Ave., St. Louis, Mo.

QSLS of distinction, three colors and up. 10¢ brings you samples of distinction. Note new address: Uncle Fred, Meshoppen, Pa.

QSLS. Reasonable. 3 Week Delivery. Samples dime (coin). Dick, K6GJM, Box 294, Temple City, Calif.

QSLS. Samples, dime. Printer, Corwith, Iowa.

QSLS, California only. Dauph, K6JCN, Box 66009, Mar Vista 66, Calif.

QSLS. Glossy. Samples 10¢. W1OLU Press. 30 Magoun, Medford, Mass.

SEND $1.00 for 50 QSLS-SWLS. Glossy cards. Samples free. Bolles, Box 9007, Austin 17, Texas.

QSLS samples, dime. Gay Krenz, Fall Creek, Wis.

QSLS. Reasonable. Nice designs. Samples free. Stan, W2DJH, 19 Elm St., Warrensburg, N. Y.

QSLS, SWLS, VHF's, XYL-OM's. Samples approximately .093¢ plus tax covering designing, planning, printing, arranging, mailing, eye-catching, comic, sedate, DX-attracting, prototypal, snazzy, unparagoned cards. Rogers, KØAAB, 737 Lincoln Ave., Saint Paul 5, Minn. P.S.: also glamorous, pulsating, super-deluxe (wow!).

CREATIVE QSL and SWL Cards. Are you proud of your card? If not, let us print your next order. Write for free booklet and samples. Personal attention given to all requests. Bob Wilkins, Jr., KN6ZMT, Creative Printing, P.O. Box 1064-C, Atascadero, Calif.

QSLS. Samples, dime. Printer, Corwith, Iowa.

QSLS, SWLS. Samples free. Backus, 703 Cumberland St., Richmond, Va.

QSLS, Samples. Eddie Scott, W3CSX, Fairplay, Maryland.

QSLS. Ham's "Super-Speed Specials", extra special July August offer. Hundred free on 200 order. Details, samples, dime. Robinson, W9AVH, 12811 Sacramento, Blue Island 15, Ill.

QSLS: Cartoons, colors, something different. Samples 15¢. Chris, W9PPA, 365 Terra Cotta, Crystal Lake, Ill.

RUSPRINT QSLS-SWLS. 1¢ each. Samples 10¢. Box 7507, Kansas City 16, Mo.

RUBBER Stamps for hams. Sample impression. W9UNY, C. W. Hamm, 542 North 93rd St., Milwaukee, Wis.

QSLS! Engravings! WAT, Box 128, Brecksville, Ohio.

"PLASTICOLOR" QSLS, $1.95! Dollar-saving samples, dime. O'Print, Ojai, Calif.

QSLS-SWLS. Samples dime. Refundable. Bob Cushing, W1HOU, 43 Ashland St., Manchester, N. H.

QSLS-SWLS. High quality. Reasonable prices. Samples. Bob Teachout, W1FSV, 204 Adams St., Rutland, Vt.

CASH Paid! Sell your surplus electronic tubes. Want unused, clean transmitting, special purpose, receiving, TV types, magnetrons, klystrons, broadcast, etc. Also want military, and commercial lab test and communications gear. We swap, too, for tubes or choice equipment. Send specific details in first letter. For a fair deal write, wire or telephone: Barry Electronics, 512 Broadway, New York 12, N. Y. Tel. WAlker 5-7000.

WANTED: Used receivers and transmitters. Will pay cash or trade. 10% down with up to 24 months to pay. In stock: New 75A4's KWS-1s, KWM-1 SSB mobile transceiver, Johnson, B&W, National, Hallicrafters, Elmac, Hammarlund, Gonset, Central Electronics, Mosley, Hi-Gain and Gotham Beams. Write for list of bargains in reconditioned receivers and transmitters with new guarantee. Shipped on approval. Write Ken, WØZCN, or Glen, WØZKD for your best deal. Ken-ElsRadio Supply Co., 428 Central Ave., Ft. Dodge, Iowa.

AMATEUR Paradise Vacation Spot! Livingstone Lodge and log cabins, Mascoma Lake, Enfield, N. H. 100 acres, eleven buildings, Main Dining Lodge, swimming, boats, sports, skiing, Dartmouth Golf, churches, LaSallette shrine, fishing, 28th year. Family groups, 75 & 40 meter rig in lobby. American Plan, $40 per week. Children half price. Booklet on request. Al Livingston, W2QPN.

WANTED: Highest prices paid for ART-13, ARC-1, BC788, BC610, BC348, ARC-3, BC312, BC342 and other military or aeronautical surplus. Name your price. We pay freight and C.O.D. James S. Spivey, Inc., 4908 Hampden Lane, Bethesda, Md.

COLLINS 30K-1, complete, in new condx. Manual for SSB conversion, $800 F.o.b. Pittsfield, N. H. W1THM, RFC #1, A. J. Brizzolari.

SEND for this month's standout listings of Reconditioned Equipment. Also request our new "1957" Amateur Catalog. We feature all leading brands and promise you an attractive deal always regardless of your needs or budget. Check our offer first. We deal quickly, easily and always on a personal basis. Stan Burghardt, W0BJV, Burghardt Radio Supply, Watertown, S. Dak.

MEDICAL Hams! Trade Beck-Lee Model E electrocardiograph for a good Collins receiver. T. R. Jacobson, M.D., W0SLG, Hot Springs, S. Dak.

TECHNICAL Manuals TM11-273, 120 pages covering BC-312 receivers and BC-191 transmitters, $2.50. ID-60/APA-10 Panadaptor manuals, $2.75. Both postpaid in U.S.A. Electronicraft, Bronxville, N. Y.

TO 75% discount. Brand name parts, new. Meters, switches, relays, tubes, resistors, condensers, others. For complete listing send 50¢ coin, refundable. Ensall, 1134 Bingham Ave., Warren, Ohio.

HALLICRAFTERS, Central Electronics ham gear — others. Swartzlander Radio Limited. Fremont, Ohio. Call Jerry, W8EPI or write.

"PIG-In-A-Poke"? Not if you visit Ham Headquarters, USA, and take your choice from the hundreds of "Like New" bargains in the world-famous Harrison Trade-In Center! (SS photographs, pp 137, March *QST* and p. 133 April *QST*). Greater values, because tremendous turnover means lower overhead! Terms. Trades BCNU. Bill Harrison, W2AVA, 225 Greenwich St., New York City.

WANTED: BC-221, BC-348, BC-312, BC-342, BC-610-E, ARN-7, BC-788, ARN-6, APR-4, ARC-1, ARC-3, ART-13. All types surplus or amateur transmitters, receivers, test equipment taken in trade for New Johnson Viking Ranger, Pacemaker, Valiant, Hallicrafters, Hammarlund, National B&W, Gonset, Elmac, Telrex, Fisher Hi-Fi, etc. Write Tom, W1AFN, Alltronics-Howard Co., Box 19, Boston 1, Mass. Tel. Richmond 2-0048. Stores: 60 Spring St., Newport, R. I.; 44 Canal, Boston, Mass.

WANTED: Gonset "Monitone", perfect condx. Rowles, W1UDA, R.F.D. 2, Pittsfield, N. H.

SSB transformers, newly manufactured for 10A, 10B, 20A and W2EWL exciters $12.45 per set of three, postpaid USA. Electronics Associated, P. O. Box 206, Montclair, N. J.

SALE: QSL metal file boxes with State and DX index. Initialed with call letters. $3.00 each. Gerald Kaminski, W8OQR, 2814 Albion St., Toledo, Ohio.

CASH for RA-63, BC-939, JB-70, BC-610-E, BC-614, BC-221, BC-312, BC-342 and late type test equipment, receivers, etc. Amber Industrial Corporation, 75 Varick St., N. Y. 13, N. Y. We pay freight charges. Write.

FOR Sale: following new items: 1.87 Kw and 9.3 Ka 120V 60 cycle 1800 rpm generator with exciter; 6 tube farm radio less battery, six 5VCT 30A 20 KC insulation fil. xfrmr; also: prop pitch motor 50 ft. 8 PC 1¼" alum. masts, miscellaneous smittg tubes and meters, BC-458, 6V dual Vibrapack, 500V DC. W2PUK, Glen Ridge, N. J.

WANTED: Collins KW-1, 30K, Johnson Kilowatt. Write W9PTN, 3020 Taylor Ave., Racine, Wis.

RUBBER Stamps of all kinds. Special, Nickel-plated self-inking pocket stamp, $1.40. Name QTH and Call. Howard Rapple, W0VRB, 401 N. 2nd St., Humboldt, Iowa.

COLLINS KWS1, one month old, in factory condition. Will not ship. W1FVX, Tel. JA 8-6625. East Hartford, Conn.

GONSET G-66B receiver, complete with Universal pwr supply/spkr, mounting brackets, etc. Used less than five hours. XYL sez no mobile in new chariot. $180. Also: Hallicrafters SP44 Panoramic like new, $35. W3DCV, Nicktown, Pa.

SALE: New DX-100, wired, no bugs; perfect condx, $170; S-85 rcvr, also exc. condx, $80. F.o.b. Chesaning, Mich. Daren Kettler, 812 S. Front St.

MOBILE Communications installation and service personnel: Write for catalog covering complete line of base station and mobile antennas for the 30 to 50, 160 and 460 Mc. ranges. Mark Products Co., 6412 West Lincoln Ave., Morton Grove, Ill.

KW Power supply components. 2000 volts, 500 Ma. cont. duty; four UTC commercial grade items (plate, rect. fil., swinging & smoothing chokes); G-E oil filter conds., 872A tubes and sockets. Total weight, 180 lbs. $85 for the lot. J. W. Wilson, W2GUR, 41 Homestead Ave., Garden City, L. I., N. Y. Phone FL 2-8612.

K2LDN is now K4OVG. Nathan J. Schulman, 790 Highland Ave., Eau Gallie, Fla.

SELL Pair 4X150A's, new, $12 each; five 4E27, used, $8 each; two 815 used, $4 each; six 829-B surplus, $5; Gonset Commander with Gonset VFO and tubes, Harvey-Wells matching power supply, easy 75 watts, $100; BC659 FM rcvr-xmittr, surplus, in exc. condx, $35. Will ship prepaid over $35. Want: 75A1. K5JGV, U. C. Nolte, 150 A Luna Lp., Holloman AFB, N.M.

TRADE Pair Devry 35 mm motion picture projectors complete with arc lamps and rectifiers in first class condition, original cost: $5000.00 for Collins or Johnson Kilowatt. W4AKG, J. S. Yerby, 1621 S. Parkway East, Memphis, Tenn.

TV Camera. Surplus CRV-59 μfd by RCA includes camera unit adapted for 110 V. operation, power supply, top mounted monitor with 5" CRT, tripod. $365. Picture sent on request. T.V. Labs, 111 Main St., Waterville, N. Y.

FOR Sale: BC-348 converted A-1 condx. M. Johnson, KN9GNS, 1829 McVicker Ave., Chicago, Ill.

500A Globe King for sale. Best offer. Used only ten hours one year ago in Atlanta before moving to Peoria. A. D. Ragan, K9EQM, 832 Main St., Peoria, Ill.

COLLINS 75A-3 for sale, w/spkr, 800 and 3.1 Kc filters, $375; Viking II co-ax relay lo-pass filter, $175; HT-18, $37; ARC-5, 19-55 Mc. rec., $10. All in perf. condx. J. Votocek, W9KDG, 2511 S. Harding A., Chicago 23, Ill.

HEATH R.F. signal generator, used one hour only. In excellent condx: $15. A. Schweiard, R.D. #1, Westwood, N. J.

FOR Sale: General Electric plate voltage supply transformer; 2400 volts each side of center tap; 1000 milliamps. 120 volts primary, mounted in fine metal case with insulators, ample size for KW. Boxed for shippg. $25. E. H. Brockway, 524 E. Third St., Flint, Mich. W8AGG.

WANTED: Your new, used and unused equipment! Get the most cash when you sell to Alvaradio! We pay most for BC-348, BC-224, R-5/ARN-7, ART-13, BC-788C, APN-9 all types of test and communication equipment. Alvaradio Industries, Box 151-QS, No. Hollywood, Calif.

SWAP: I want H.O. electric trains and accessories for my son. Must be in perf. condx. Will trade electronic and ham equipment. No junk. W2IID, 117 Hicks Lane, Great Neck, L. I., N. Y.

JOHNSON Viking Ranger. Used very little. Push-to-talk. Reasonable. W2BAA, Flushing, N. Y. Tel. 9-4009.

CLEANING House! Write for list. H. F. Southwick, 316 Bank, Fall River, Mass.

FOR Sale: New Harvey-Wells APS-90 power supply, T-90 xmitter, R9A rcvr, $250. J. Shrage, 25 Eastern Pkwy, Brooklyn, N. Y.

FOR Sale: BC-348 converted to AC, $60; SP-44 panoramic adaptor, $50. Col. Chatfield, Ord. Corps, Redstone Arsenal, Huntsville, Ala.

WANTED: 250 or 300 watt multi-match modulation xfrmr. Robert Ruffer, W9WUO, 2035 So. 24th Ave., Broadview, Ill.

VIKING Valiant for sale. Factory-wired. Never used. Price: $330. Gomer Roberts, K9EDD, 25 Harding St., Madison, Wis.

CONTAX IIA, 50mm f1.5 Sonnar, Nikkor 135mm, f3.5, Weston Master II, cases, trade for xmitter. All replies to this ad answered. Don Miner, K6ZIR, 1142 East 75th St., Los Angeles 1, Calif.

SALE: Complete station, late Cari Seydel, W3BVC. Separately or complete deal, best offer: 75A4 w/spkr; Johnson Valiant, factory-wired; Astatic T-3 mike, stand; Gonset Monotone; Heath AT-1, AC-1; new Simpson VOM, all in original cartons. Manuals, Mosely 10-15 meter beam, Kreco 10-meter ground plane; 20 ft. tower; TR-4 rotator; 2 meter converter; supply, coax relay, BW coax switch; Instructograph, osc., tapes. Bound *QST*s: 1931, 1932, binder *QST*s, 1926, 1954, 1955, 1956; Binder CQ's 1955, 1956. Miscellaneous Handbooks, xtals, etc. Send for complete list. Dom Garofano, W3VMJ, 4332 Germantown Ave., Phila., Pa.

NEW Factory sealed carton: G66 receiver, $229. Includes speaker/power supply, 12V.; G77 transmitter, $264.50. Save $25 off list on each. Both go for $485. New Shure 101C mike, p/talk, Koiled Kord, $13.95. Conner, W5UIJ.

SERVICES: Transmitters, receivers, test equipment and other commercial kits wired and tested. Reasonable prices. Al Wilder, W1PCV, Hillside Ave., Billerica, Mass.

NC-98 Rcvr, $90. Still in carton. Xmittr 25 watts w/xtals, $25; code practice machine. Speeds from 5 wpm to 25 wpm: $15. VTOM EV-10 precision, $50. Gilbert Rice, 3043 Voorhies Ave., Brooklyn 35, N. Y. Tel. NI 8-5900.

WANTED: Collins 75A receiver, in gud condx. Bob Knox, W5ZSS/8, 124 Farragut Road, Cincinnati 18, Ohio.

CONCERTONE 20/20 tape recorder with cases, in like new condx. Cost over $500 in November 1955. Will sell for best offer or trade for fine condition ham xmittr. Arthur Riegelhaupt, K2UBN, 228 Stephen St., Levittown, L. I., N. Y. WE 5-2667.

TRADE or cash: Gud working Gonset II Communicator and 2 Gonset 2 meter converter, brand new, and a punched tape code Instructograph. All this for a Gonset 6 meter Communicator or cash equivalent. W1DSD, 17 Hiawatha Rd., Woburn, Mass.

WANTED: Collins KW1 xmittr. Quote lowest price. Orville Wood, W8VYE, 225 S. Lafayette St., Camden, Ohio. Phone 243 Camden.

SHAW Electronic Supply has new and used ham gear. Clyde, W9KLF, Darling at Gale, Angola, Ind.

FOR Sale: Elmac AF67 transmitter, instruction manual, 475 volt 200 Ma. 6 or 12 volt Vibrapack; PMR6A receiver, instruction manual, PSR6 Vibrapack, Master Mobile Mounts allbander, 80 thru 10 coil, stainless top whip, base whip, heavy duty spring (less mount); 6 volt coaxial antenna relay, horn relay and auxiliary relay: $275 F.o.b. Cheswick, Pa. Complete gud condx. Hans Tuche, W3WTZ, Inwood Trailer Village, RD #2.

COLLINS, KWS1, one month old, factory condx. Will not ship. W1FVX, Tel. JA 8-6625. East Hartford, Conn.

SELL: Five 3BQ300's, ruggedized; exact version of 4-125A's. New, never used. $20 each or all five for $85. Write: John Neier, K9GJM, 1113 Laurel St., Highland, Ill.

SELL: Power transformer, used. Rated 1500 watt; 7200V CT at 110 or 220 3600V CT at 110. .5 amp. easily: $30. Bargain. W9FMD. Wayland C. Blecha, Cochrane, Wis.

FOR Sale: Gonset Commander II with matching VFO and coils for 160 thru 10. A-1 condx: $98. Clyde Seavey, W1VYP, Windham, Me.

WANTED: One or two Gordon Koto-Beam rotators with Synchro Anten-A-Cator control boxes. No broken units wanted. Must be in working order and very reasonable. L. K. Rush, Box 1418, Jackson, Tenn.

FOR Sale: Carter 6V Dynamotor, like new condx, 420V at 280 mils, $10; Motorola commercial fixed freq. rcvr., 110V AC 30-40 Mc.-AM, rack mount, 14 tube, easily modified for 10 meter net, squelch circuit, $45; pair BC-611 Handie-Talkies, 3885 Kc, $40; pair 5F and 5G selsyns, 110V AC, $10; set of 5 BC610 plate coils, $10; 3 new 75TL tubes, $6. W6PHL, 2040 "T" St., Merced, Calif.

SELL: B&W 5100B/51SB-B, $575, in excellent condition. Priced F.O.B. New Orleans, Wayne Cooper, HR2WC, La Lima, Honduras. c/o Tropical Radio Telegraph Co.

SALE: Tecraft 2-meter conv., new, $30. FRA conv., $30, 522 xmittr unconverted, $15. Local on FRA. Diz, K2DFP, Box 161, Hazlet, N. J.

FOR Sale: Factory-wired Central Electronics, "B" slicer, $60; 250 watt Johnson Matchbox, $35; both in excellent condition. W4KQW, 827 Ridgeland Dr., West Palm Beach, Fla.

WANTED: HRO60T, must be like new condx. State price, age, accessories, etc. K6DUU.

NATIONAL NC-125, in perfect condx, with Heathkit Q multiplier, $130. W5DTE, 3821 Weyburn Dr., Ft. Worth, Texas.

SPECIAL non-inductive resistor, Globar "CX", 600 ohm 118 watts. Ideal for T2FD antennas, dummy loads, etc. New, $1.10 ea. Postpaid in U.S.A. Arkay Electronics, P. O. Box 23, Ft. George Station, N. Y. C. 40.

KILOWATT plate transformers, any voltage, $42.50. Write for details. Delaware Electronics, 220 West 4th St., Wilmington, Delaware.

SELL: PE-103 with extra brushes, $20; RBG rcvr (military HQ120), $90; RCA Voltohmyst, Jr., $18; Elmac PMR6 12 volts, $70; pair new 829B's and recessed socket (make an offer); K&E log duplex decitrig slide-rule, $20; UTC LS-57, $6. F.o.b. K4DUZ, 803 Ninth St., Virginia Beach, Va.

FOR Sale: Collins 32V1 TVI suppressed, leads by-passed, completely shielded, lowpass filter, 110 volt co-ax ant. relay, ant. tuner with R.F. meter plus spare RK 4D32, $275; HRO-60 like new condx, $375. Both for only $595. Bill Mueller, W1WQN, 10 Dover St., Pittsfield, Mass.

FOR Sale: Super Pro SP400X, complete with power supply and speaker; 100 KC oscillator included. In excellent condx. Coax antenna input. Cash sale only: $225. Will ship express collect. J. W. Schroh, W2UPT, 33 Delaware, Sidney, N. Y.

FOR Sale or trade: Link 10 meter UPS 25X fixed freq. station, transmitter receiver, power supply, line amplifier, speaker, meters, in cabinet. Want: Model 14 typing reperforator and tape transmitter distributor. W4EAS, Box 2138 University Station, Gainesville, Fla.

FL8 Filters, two for $2.00, prepaid in U.S.A. BC779 Super Pro; BC221 freq. meter; BC1031A Panadaptor. Will sell or trade for Hi-Fi or mobile equipment. M. D. Haines, W5QCB, 1316 S.W. Military Dr., San Antonio 21, Texas.

FOR Sale: 10A/w VFO in deluxe case, $125; PA400 linear, $100. K2HPX, Pomona, N. J.

FOR Sale: NC300 with XCU-300 crystal calibrator, $350; RAK7 commercial longwave receiver, $80; VF 1 Heathkit VFO, $12. All F.o.b. San Francisco, Calif., and in gud condx. QSTs from 1940 to 1949. Others. K6DH, P. O. Box 517, Belvedere, Calif.

SELL: New, perfectly wired AR-3, less cabinet, $27.50. John Bradley, General Delivery, Montclair, N. J.

SALE: Viking Adventurer with Triplett meter, $40; Viking VFO, $33; linear amplifier as per June, 1955; complete with modified 1625's and 1000V power supply, $50; 25 watt homebrew modulator as per Nov. 1954 QST with power supply, $25; 60 ft. Alprodco steel and aluminum tower reinforced for heavy beams, only $50; about 180 ft. RG/8U coax in 3 sections with connectors, $16; Heath Q-Multiplier, $7. K2HPC, Robert Goldstein, 38 Forest Ave., Saratoga Springs, N. Y.

SELL: AT-1 modified per *QST* Oct. 1955, Class B 6F6's modulator cabinet mounted self-contained power supply, VF-1, AC-1, and S-38B receiver, all in excellent working condx, $90 plus shipping. A. R. Marcy, W4ID, 108A No. A-1A Dr., Patrick AFB, Fla.

ELMAC A54-H with xtal and carbon mikes, $75; Gonset Super Six conv., $35; Millen R9er 10 and 20 M. coils, $10; NC-81X converted to miniature tube, $38; Sky Buddy comm. rcvr, $25; Jackson Mod. 645 VTVM, $25; Merit P-3159 and two P-3158s, $8 each; Trav-Elec. Super 6V DC in 110V AC 60 watts, outp. $15. C. L'Esperance, 826 Lane Blvd., Kalamazoo, Mich.

COLLINS KWS-1 transmitter with 4X250B Eimacs. Perfect condition. Original case, available for shipping, $1600. F.o.b. W1RMS, 198 Euclid Ave., Waterbury, Conn.

ATTENTION Novices! Sacrifice Gonset Communicator 2 complete two meter phone station, perfect electrical condition, $145. W0TWL, Box 97, Republic, Mo.

MOBILE Bargain! Elmac PMR6A, 12 volt rcvr, $80; Babcock MT5B xmittr with xtals, Dow-Key relay, $70; PE103, $10; mike, body mount, whip. Complete rig including wiring, $200. W1YKE, 12 Earle Rd., Wellesley, Mass. Phone WEllesley 5-6281.

SELL: Two meter transmitter, Lettine Model 242, condition excellent, $45; also Bud FCC-90 frequency calibrator, $10. Fred Bailey, W2KUZ, 10 Midwood St., Brooklyn, N. Y.

BARGAINS: RME Preamplifier, $15; Webster wire-recorder (4 wire rolls, needs mike), $25; 1500 VAC 300 MA power supply, mounted, $15; NC88 receiver with Heath Q Multiplier, all like new, $65; KW choke, $10. K2KGU, 420 Riverside Drive, New York 25, N. Y.

FOR Sale: Complete station, NC-300, Viking Ranger, Matchbox, best offer, or will trade for Ampex type stereo tape-recorder. John Rheinstein, W9KAL, 6007 Woodlawn Ave., Chicago 37, Ill.

WANTED: To correspond with radio amateur aquarists, foreign or domestic. W. W. Syaats, W8QWW, Ripley, West Virginia.

PLATE Transformers: 3600-0-3600v. 1 amp, 120/240V, 60 cy. primary, $20 F.o.b. Phoenix, Ariz. Charles Fenwick, W7VMP, 3127 North 17th Drive.

75A3, excellent, $365 w/slicer, $399.50; Central Electronics 600L, like new, $400. W0BNF, Box 105, Kearney, Nebr.

IS Code your trouble? It doesn't have to be. We teach the association method, approved the world over, and otherwise unequalled. Novice course, basic instruction and practice material to 8 WPM, $5.95. Advanced course, practice material 9 to 18 WPM, $4.95. Both tapes, $9.95. Magnetic recording tape, 7" dual track, 3¾ IPS. Tapedcode, Box 31-E, Langhorne, Pa.

FOR Trade: Wilcox 960 trans. In perf. condx, operating from 2000 KC to 10,000 Kc. Has pair 450TL driven by 813. Would like to trade for a 75A2 or 75A3 or an HRO. Will give some cash besides. Picture sent on request. Jake Mirigian, W6JXY, 5415 E. Mono, Fresno, Calif.

HIGH Voltage filter capacitors, 4 μfd 5000 VDC, never used. Only four left. $12 each. Best offer for all. F.o.b. Wilmette, Ill. W9IZ, 1638 Washington.

WESTON Microammeter 0-100, 4" rectangular, $8.75; 0-3 R.F. ammeter, 3" square, $4.50; Westinghouse DB meter, —10 to 2½" round, $4.75; 0-10 R.F. ammeter, 3" round, $3.75. Miniature 0-1 milliammeter, 1" round, $3.95. Baldwin "C" headphones, $7.50; Trimm 600 ohm headset with plug, $6.75; UTC LS-12, low Z to grid, $9.75. Overtone xtal, 30 Mcs., $7.5. Tubes, unused, 829B, $6.95, 5763, $1.25, 809, $2.75. Johnson 20" white porcelain antenna strain insulators, $1.15. 50' RG/9U, $9.75. W2BE.

SALE: VHF Climaster, Model 62T10, 2, 6 and 10 meter xmitter, 200W. A1 and 160W. A3; 4X150X final, p. 135, Nov. 1956 *QST*; Gonset Communicator, 2 meter, Eldico electronic key, Mod. EE 2. Tom Moody, W4HJQ, Glendale, Ky.

MUST Sell, urgently need money. HQ-129X, like new, $150; DX-20, new, wired and tested, $40. Complete station with modulator and many extras. Best offer over $200. F.o.b. W3CDE, Jerry, Masontown Pa.

VIKING Valiant transmitter, $329.50; like new condx, sold on ten-day approval. Viking Valiant, new, kit, $349.50. Wired $439.50; Viking Ranger used, $179.50; Viking II, $199.50; Matchbox, like new condx, $42.50. We need your used equipment. Write for your best trade-in allowances. Ladd Electronics, 111 North 41st, Omaha, Nebraska.

32V2, in excellent condx, many extras, spare 4D32, $360; 75A3, mechanical filter, speaker, very clean, $360. Both have instruction manuals and shipping cartons. Many miscellaneous parts including high power components. W2GSS, Don Gardner, 209 Knapp Rd., Syracuse 4, N. Y.

CENTRAL "A" Slicer — "special" — $49.95, "B"-Slicer $74.95. Collins 32V2 $450.00, 32V3 $550.00, Eldico TR75TV $49.95, VFO-2 $19.95, VFO 10/20A $38.95, Elmac AF67 $139.95, A54 $99.95, A54H $110.00, Gonset 3008-2 mtr converter $24.95, 3-30 $29.95, Hallicrafters-SX24 $69.95, SX43 $99.95, Hammarlund BC-779 $119.95, Johnson VFO $49.95; Lettine 240 $59.95, Lysco 600 $79.95; Hammarlund 420 $44.95, 411 $29.95; Millen 90810-VHF $89.50; Morrow MBR5 $194.95; National HRO-9 set coils — 50KC to 30MC-Rack mount $139.95, HRO50T1 — 6 coils & spk $325.00; PE-103 $19.95, BC-348N $59.95; RME 45 with spk $99.95; Collins 310-B-1 $195.00. Evans Radio, Box 312, Concord, N. H.

FOR Sale: HQ-129X with speaker; AT-1, AC-1 used, but in excellent condx. First $125 takes it. Also Bell & Howell TDC tape-recorder, used, but in exc. condx: $100. KN5HLS, Don Phillips, Arkadelphia, Ark.

SELL Code practice keyer, TG-10D. Make an offer. W2MZN.

FOR Sale: 3 new 6C21's (450TH), $5.00 per. F.o.b. W1RB.

FOR Sale: Telrex beams 20M, 5-el., $75, fair condx; 15M 3-el., $45, gud condx; 10M 3-el., $30, fair condx. All are complete with baluns 4-250-A Eimac tube, $20. Pair 810's, $12; pair 872-A, $8. All tubes in perf. condx. W8EWS, Box 6121, Flint 6, Mich.

NOW Hear This! Buy surplus electronic equipment and other gear direct from the government. Send $1.00 for complete procedure. Combs, W4VUE, Bluff City, Tenn.

40 Watt c.w. Lysco 600 xmitter, VFO and xtal-controlled, TVI suppressed, $50. Peter Lovelock, K2ICF, 21 Oak Hill Road, Chappaqua, N. Y.

FOR Sale: Morrow 5BR mobile converter with noise limiter, like new; Viking mobile transmitter with improved speech amp.; Viking mobile V.F.O.; Master Mobile micro-Z match; Webster Bandspanner antenna; BD97 dynamotor, never used. Best offer over $200. Also Gardner 3200 V.C.T. 500 Ma. trans., $25; Millen 90800 exciter, $10; BC453A, never used, $8; pair 35TG, $15; BC458 like new, $10; BC459 with NBFM adaptor chassis, $15; PE101C, $7; Wincharger 9 volt dynamotor, $5; Eico 221 VTVM $15. Will trade above pieces of equipment for equivalent value camera. Arnold Ettinger, 280 Crown St., Brooklyn 25, N. Y.

WANTED: Used Collins 75A4 receiver with matching speaker. S. R. Holmquist, 1616 First St., Menominee, Mich.

JUMP At the offer: Two BC-654-A's with PE-103-A or generator, including cables and manual. $50 each. TBS-50D, power supply, VFO, $110; BC-348-E converted to 115 volts, $50; BC-221 with charts, also converted, $50. W9RQK.

SELL: SX-71 gud condx, $120. W2MNR, 80 Birch Lane, Woodmere, L. I., N. Y. Tel. CE 9-2342.

MOBILE Transceiver, 40 watts, Bendix, 75/80 meters, power supply, all cables, instruction book, $65; 24 volts (use your car battery and auxiliary battery) or may be converted to 6 or 12 volts. Van Merritt, W0VKC, Campbell, Mo.

FOR Sale: Millen 90881 RF amplifier, $50 and Lysco 600, $60, perf. condx. R. Sykes, 206 West 9th St., Elmira, N. Y.

STUDY at home for Commercial radio licenses. Very reasonable fee. Free sample lesson. Write Radio License Aids, Box 159, Buzzards Bay, Mass.

BARGAINS: With New Guarantee: HT-9 $99.00; HT-20 xmtr. $275.00; Collins 32V1 $275.00; Collins 32V3 $495.00; Collins 32RA8 $79.00; Elmac PMR-6A $79.00; Morrow FTR & PS. $49.00; Morrow 5BR $24.95; Morrow 5BR $49.50; Lysco 600 $69.00; Eldico TR-75TV $25.00; S & W Mobileeiver $59.00; Elmac A54 $99.00; Gonset Tri-band $24.50; Gonset 3024 VFO $45.00; Sonar SRT-120 $99.00; Globe Trotter $34.50; Globe Champ 165 $149.00; Globe King 275 $199.00; Globe King 400B $275.00; new HRO coils $16.00; and many others. Free trial. Terms financed by Leo, W0GFQ. Write for best deals to World Radio Laboratories, 3415 West Broadway, Council Bluffs, Iowa.

FOR Sale: B & W 5100 transmitter and spare final tubes, $330. Less than 150 hours of operation. Contact K6PGE, 111 Paseo de La Playa, Redondo Beach, Calif.

FOR Sale: Heathkit HE1 and AC-1 coupler, $45; receiver NC-44, $20, both for $50. Don Rowan, K2PCL, 101 Noel Dr., Centereach, L. I., N. Y. Tel. RO 9-3766.

COLLINS 32V3 for sale. In perfect condx, including Dow-Key antenna relay. Price: $460. Gonset Communicator I, 110V. and 6V operation including carbon mike. Price $135.00. Both pieces of equipment used very little and in perfect shape. Will pay shipping charges on both rigs. W9SBD, Syd Rodin, 2524 Allison Ct., Glenview, Ill.

TRANSMITTER Operating Technician. Experienced medium and high powered radio transmitters. 2nd Class telegraph license required. Long Island area. Press Wireless, Inc., 660 First Ave., New York 16, N. Y.

FOR Sale: HQ-129X with speaker, $135. R. L. Meyer, W2UJJ, 6015 5th Ave., Brooklyn, N. Y.

FOR Sale: Viking II plus Viking VFO, $200; slightly used; Hallicrafters S-77, $45. Bart Hebble, KN8CUA, Terrace Park, Ohio.

WANTED: Johnson Kilowatt, desk, Ranger or Pacemaker. Would consider complete station. Give details and cash price delivered to Lewis West, W0AIO, 3414 West St. Louis, Wichita 12, Kans.

PASSED General examination. Will pay cash for 100 to 200 watt xmitter, factory-made or kit type, assembled or unassembled. Also accessories. What have you? Make best offer. Will answer all offers. S. W. Dearing, 996 Galloway, Memphis, Tenn.

RCA 3" scope w/spare tube, $35; National NBFM Adapter, New, $15. K4LOS, 424 Valparaiso Drive, Oak Ridge, Tenn.

SELL or trade: BC-221 AK freq. meter, modulated type, like new condx, regulate A.C. power supply. Original calibration chart, manual. $99 or want mobile receiver, VHF-152 or Heath Q-meter, or make offer. Will ship. Don Frahm, K6ECA, 714 San Miguel, Sunnyvale, Calif.

FOR Sale: Elmac AF-67, $125; RME DB22A allband preamp., $25; Heathkit, GD-1B, $15; Gonset Super Six 6V., $35; Stancor ST-203A 10-meter mobile kit, new, w/instructions, all major and special assemblies. Missing a few standard components, $25. Above all in A-1 condx. BC-348, good, $35. All F.o.b. Inquiries answered. K9CTZ, 2757 South 130th, Milwaukee 19, Wis.

32V-1, $250, 75A-1, $175; 75A-3, $300. Clean and untampered with. D-104 mike, antenna coupler, relays, coax, etc. available. W1REV, 1113 Versailles Ave., Alameda, Calif.

FOR Sale: Lettine Model 240 Xmitter with coils, gud shape. N. R. Thornton, Madison, Ind. Rte. #4.

PASS Amateur theory exams. Check yourself with sample FCC-type questions & Novice and General Class examinations. All for only 50¢. Ameco Electronics, 1203 Bryant Ave., New York 59, N. Y.

FOR Sale: Viking II, VFO, Matchbox, SWR/Bridge, low pass filter, dispatcher, mike, NC125. W1WXB, Jeffrey McKenzie, Old Greenwich, Conn.

FOR Sale: NC-240D, $130; Heath VFO, w/pwr supp., $15. Knight VTVM, $20. Bill Dow (K8ATM), Mulliken, Mich.

FOR Sale: Tubes, brand new 813's, $7.50; 810's, $7.50; 832'As, $4.00; 811's, $2.00; 811A's, $3.50; 829B's, $7.60; 4-250A's, $15; 5654/6AK5, $1; RU-17 rcvr, covers 524 Kc.-844 Kc. and 2960 Kc.-4620 Kc. Wired for 6 volt mobile op., $18; home built mobile rig, transmitter, uses 6L6 modulators, 6146 final. Receiver, converted ARC-5, covers 3-6 Mc., 6 volt Dynamotor supply; ideal for C.A.P. or 75–80 meter mobile, $85; power supply for SCR-522, $12. Lear aircraft rcvr, 108-127 Mc., $85; AN/PDR 8 c. Navy Geiger counter. Original cost $700. Sell for $150 or will trade for commercial built gear. All guaranteed. Can ship C.o.d. Bill Slep, W4FHY, Ellenton, Fla.

FAMOUS VHF "Lunenburg" antennas, 6 meter 5 element, $14.95; 2 meter 6 element, $6.95; 6 meter horizontally polarized mobile antenna. Wholesale Supply Co., Lunenburg, Mass.

VIKING II, $250; SX-71, $140; both guaranteed perfect. Gone to college, must sell. E. M. Underwood III, W4WNB, 301 N. Vance St., Sanford, N. C.

COLLINS 75A2 receiver, latest model, Serial 2056, in perf. condx: $300 F.o.b. Madison, Wis. W9DOO, Staber W. Reese, 2325 W. Lawn Ave., Madison 5, Wis.

NATIONAL NPW-O gear-drive unit with 6 gang, 225 $\mu\mu$fd per section condenser, insulated sections, in gud condx, special dial. FB for VFO, rcvr, etc. $4.50. New GF-11 xmitter with tubes, $7.95 (see Jan. CQ). Guaranteed 4-125A, $8; UTC S45, $7; S61, $2.75. F.o.b. Plaistow, N. H. Joe Harms, W1GET.

SELL: Heath ant. coupler $8; WRL modulator, $8; Knight 50 watt xmitter, $27; Knight VFO, $19; Superior sig. tracer, CA11, $7; fil. xfrmr, 28V. heavy, $8; 24V blower, new, $5; Pop. Elec. preselector, $22; Shure carbon hand mike, 109, $4. Watthour meter, $4. Chas. Kunde, K9CRD, RFD #1, Roselle, Ill.

FOR Sale: "Bug", $10; Mallory 6RSD power supply, 6VDC, $15; UTC LS-72 power transformer, $25; Precise 635 sine-square pulse generator, $25. All in exc. condx. Priced F.o.b. Rockford, Ill. V. R. Hein, 418 Gregory St., Rockford, Ill.

SELL: Viking Valiant, $350; HQ-129X with 100 Kc xtal and spkr, $160; Heath QF-1, $9.95, B&W balun coils, #3975, $5; 2 el. 20 meter beam, $25; O-1 Ma. Marion, 3" sq., $5; mod. tr. 811's to 813, $12.50. W1ERX.

FOR Sale: Gonset Super Six converter, Johnson Signal Sentry, Janes C-1050 Vibrator power supply, all for $70. WØEUQ, Edgeley, N. Dakota.

FOR Sale: Cheap to the man who can carry it away: 1.4 Kw power supply on casters, powerstat control to 3.5 Kv. Robert Ellsworth, 2637 Dana St., Berkeley, Calif.

WØANU forced to sell out: 32V3, HRO-60, 100 logged hours; Model A slicer, 10A generator unused. Bound *QST*s from 1945. Write WØANU, Francis L. Ahrens, Hutchinson, Minn.

NEW Collinear Type VHF Beams. Write for information. .051 perforated Aluminum Sheet, 9/64" OD holes, 1/8" centers. $1.20 sq. ft. Radcliff's, Fostoria, Ohio.

COLLINS 32V2 xmitter, in new condx. Has less wear and tear than most demonstrators; boxed ready to ship, $360 F.o.b. Columbus, Ohio. L. M. Blum, 396 E. Whitter St., Columbus 6, Ohio.

QST, 1951 thru 1956; CQ, May 1949 thru 1956. Miscellaneous *QST*s, broken run, 1928 thru 1941; Electrical Experimenter, October 1915; Wireless Age, March 1918; May 1919, February 1920; Pacific Radio News, January 1920, Victory Edition, February 1920; April 1920, August 1920. *QST*: November 1919 "Lid Off" number; January 1920; "Ban Off" pink sheet 1919; ARRL Directory Amateur Calls 1919. All perfect. Best offers. Felstead, 2440 Kalakaua, Honolulu, Hawaii.

WANTED: ARC-3, ARC-1, ART-13, BC-312, BC-342, BC-610, BC-788 and other surplus. Advise what you have and price. W4VHG, Box 5878, Bethesda, Md.

ATTENTION Communicator owners! Illuminated "S" meters that just plug in to attach. No disassembly of communicator required. Also new and used Communicators, Linear Amplifiers, V.F.O.'s, and all types of mobile gear. Graham Company Bob, W1KTJ, Stoneham, Mass.

DX-35, factory wired, with 3 crystals. New condx, $50; VF-1, factory wired, works well with DX-35, $20. Units are crated, ready to ship immediately upon receipt of check to Phil Kantz, WN3JLD, 7336 Woodbine Ave., Philadelphia 31, Pa.

ATTENTION Rocky Mountain Hams! NC-125 with 8" speaker, used very little, like new condx: $120. Paul Schankerman, 9310 Arvada, N.E., Albuquerque, N. M.

WANT RBB-1 Navy surplus receiver and/or CRV-20130 power supply and connectors for both. Also Supreme 546 Audolyzer. Donald Cameron, W8YAE, 1619 Milburn St., Toledo, Ohio.

SALE: AT-1 In gud condx. Will sell to the highest bidder. K5IAO, Wayne Wash, Box 411, Roscoe, Texas.

FOR Sale: AT-1 in excellent condx: $30: KN8EBD, 225 Chestnut St., Wadsworth, Ohio.

3 Element Ellncor 10-meter beam, rotator (unused), Wincharter 10 Ft. tower with mast, local only, reasonable. Want coil for HRO-5 for 15 meter bandspread. Stanley Stein, 3948 Lee Road, Cleveland 28, Ohio, W8VMV.

ATLANTIC City vacation. Kilowatt accommodations at low power prices. Hotel Commodore, 715 Pacific Ave., Atlantic City, N. J. Ben Robin, W2BIG, Mgr. Write for free color brochure.

HAM Register. A "must" for everyone interested in ham radio. Art, W3VKD, 37 South Sixth, Indiana, Penna.

BARGAINS: Reconditioned with new guarantee. Shipped on approval. Hallicrafters S38 $29.00; S40A $69.00; SX99 $119.00; SX71 $149.00; SX96 $189.00; SX100 $229.00; Viking Adventurer $39.00; Viking II $199.00; S40B; S85; SX88; SW54; NC98; NC183D; HRO5; NC300; HQ129X; HQ140X; HQ140XA; GPR90; A54; AF67; PMR6; PMR7; HT9; Collins 75A2; 75A3; 75A4; 32V3; many other items. Easy terms. Write for list. Henry Radio, Butler, Missouri.

WE Will pay you $$$¢¢ cash for an AN/ARN-6 or AN/ARC-3 or any of their components. Also need AS-313 Loops. Phone us collect STanley 7-0406 for these items. Similar fabulous prices paid for: APR-9, ARC-1, ARN-7, ART-13 parts; BC-788-C, I-152-C, LP-21-AM, -LM or MQ-18A or MC-507 from these loops, R-65/APN-9, test sets I-100, TS-117, -125, -147, -148, 488. What other electronics do you have? Arrow Sales, Inc., Dept. QST, 7460 Varna Ave., No. Hollywood, Calif.

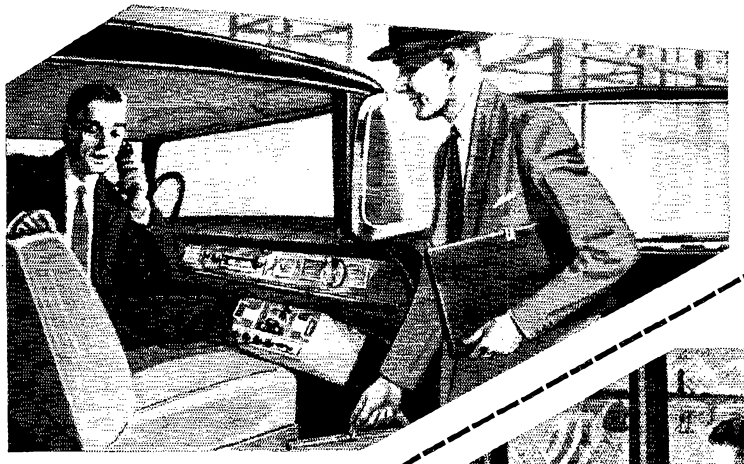
SELL: Viking Ranger, grid block keying, $200. Cash. Gud shape. VE5VL, Sub #1, Saskatoon, Sask., Can.

FOR Sale: RME-45 receiver, $65; SX-71 receiver with Heathkit Q multiplier and speaker, $150; used only few hours: NC-300 with xtal calibrator, $295 and B&W 5100B with 51SB sideband, $475. Cecil White, Jr., Phone RI 7-1852, 3209 Canton, Dallas, Texas.

FOR Sale: Viking II with 4D32 final, in excellent condx: $185; SX-100, in exc. condx, $205; Viking I, exc., $145; SX-71, vy gud, $125; NC-240D, exc., $135; also have Johnson Matchbox, VFO, RME 100 speech clipper, mikes, bug, xtals, relay and speakers for NC-240D and either Hallicrafters receiver. Am interested in mobile equipment. W1ADX, P. O. Box 442, Provincetown, Mass.

Index of Advertisers

Miniaturization



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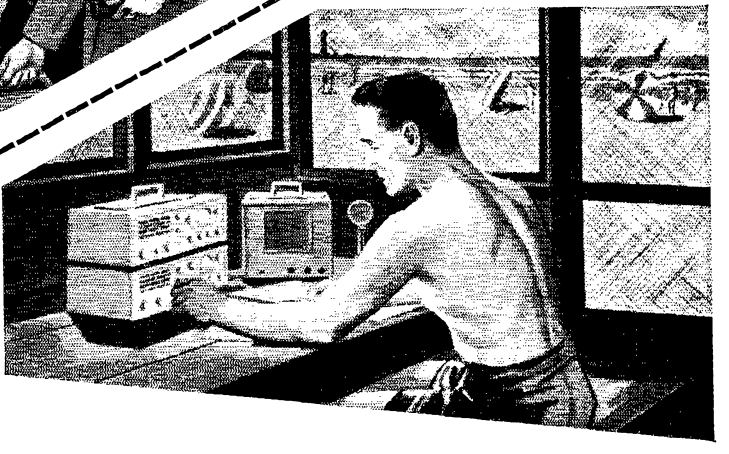

Electronic engineering and research have made possible totally new techniques in miniaturization—the art of getting the most into the least amount of space. Mallory has helped pioneer this field.

With miniaturization comes the necessity of getting maximum reliability into compact assemblies—not only for dependable performance, but because these compact assemblies don't always lend themselves to easy maintenance.

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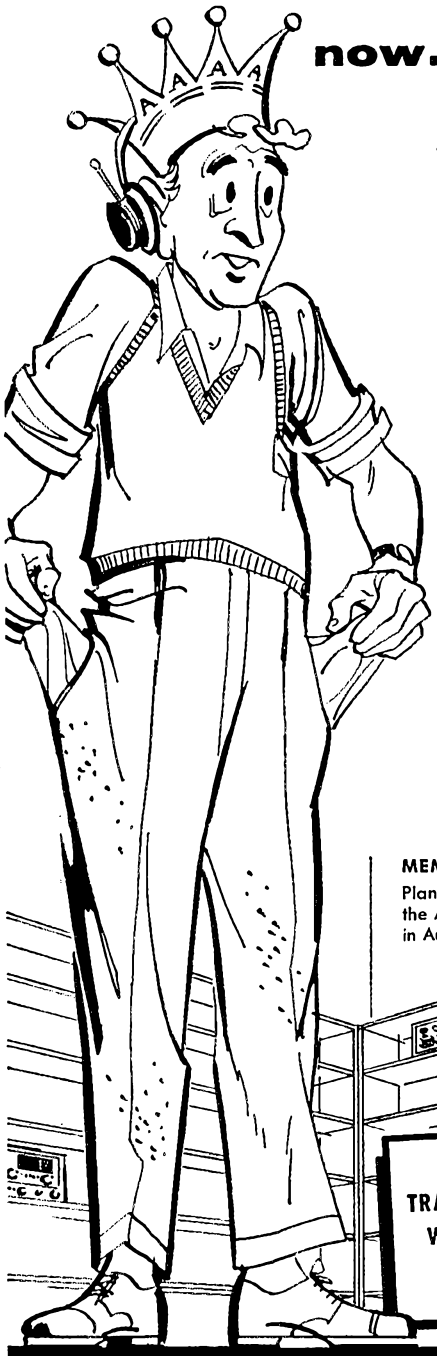

We need used equipment so badly, we'll go all-out to give you absolutely the biggest-and-best trade-in allowances on your old equipment. We've been trading BIGGER than ever—yet we've been literally cleaned out of reconditioned gear.

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- ★ Calibrated bandspread for 10, 11, 15, 20, 40 and 80 meter amateur bands. Separate tuning capacitors, knobs, and scales for general coverage and bandspread.
- ★ Large 12 inch indirectly-lighted lucite slide rule dial.
- ★ Adequate over-all selectivity with eleven miniature tubes including rectifier and voltage regulator.
- ★ Has exclusive "microtome" crystal filter providing five degrees of sharp selectivity in addition to normal bandwidth for voice, has sharp phasing notch over 60 db deep for interference rejection.
- ★ Separate product detector for excellent reception of CW and SSB Signals.
- ★ Has "S" meter on front panel for signal strength indication and more accurate tuning.
- ★ Accessory socket for external adaptors, and other accessory devices including phono input or crystal calibrator.
- ★ Has gang-tuned RF amplifier stage, two IF and two AF stages.
- ★ Has separate antenna trimmer and tone control on front panel.
- ★ Separate high frequency oscillator tube increases stability. Has ceramic oscillator coil forms and is temperature compensated for exceptional stability.
- ★ Separate RF and AF gain controls.
- ★ Series type automatic noise limiter.
- ★ Conelrad (CD) frequencies clearly marked on dial.
- ★ Mode selector switch for ANL, AM, CW, SSB and accessories.
- ★ Smartly designed two-tone cabinet.

COVERAGE:

BAND	GENERAL COVERAGE	BANDSPREAD
A	.54-1.6 mc	——
B	1.6-4.7 mc	3.5-4.0 mc (80 meters)
C	4.7-15.0 mc	6.9-7.3 mc (40 meters)
D	14.0-40 mc	14-14.35 mc (20 meters)
		20.4-21.5 mc (15 meters)
		27-30 mc (10/11 meters)

TUNING SYSTEM: Separate general coverage and bandspread tuning capacitors connected in parallel on all bands. Bandspread, used primarily for tuning the amateur bands, can be used as a vernier for general coverage use. Antenna trimmer is on the front panel.

AUDIO SYSTEM: Two-stage audio amplifier with single 6AQ5 output tube provides 1.5 watts at less than 10% distortion. A handsomely styled accessory speaker is available. Output impedance 3.2 ohms. Has phone jack.

DRIFT: .01% or less.

SENSITIVITY: Under 1-2 microvolts (10 db signal/noise ratio).

SELECTIVITY: 6 Positions. Constant Gain.

	NORMAL	SHARP
6 db	5.2 kc	200 cycles
60 db	29.5 kc	10 kc

plus four additional intermediate degrees of sharpness.

CONTROLS: Main tuning; bandspread tuning; antenna trimmer; band selector switch; RF gain control; AC ON/OFF and AF gain control; stand-by switch; mode selector switch for ANL, AM, CW, SSB and ACC; tone control switch; BFO pitch control; selectivity control; phasing control.

TUBE COMPLEMENT:

RF Amp.	6BA6	AF Output	6AQ5
Freq. Conv.	6BE6	Rectifier	5Y3GT
HF Osc.	6C4	Voltage Regulator	0B2
1st IF Amp.	6BA6	Product detector	6BE6
2nd IF Amp.	6BA6	Det, AVC and ANL	6AL5

1st AF and BFO/S meter amp. 12AT7

OTHER SPECIFICATIONS:

Antenna Input: 50-300 ohms, balanced or unbalanced.
Size: 16 13/16" Wide x 10" High x 10⅞" Deep.
Finish: Handsome Two-tone gray wrinkle finish.
Shipping Weight: Approx. 35 lbs.
Optional Accessories: Matching Speaker, XTAL calibrator.

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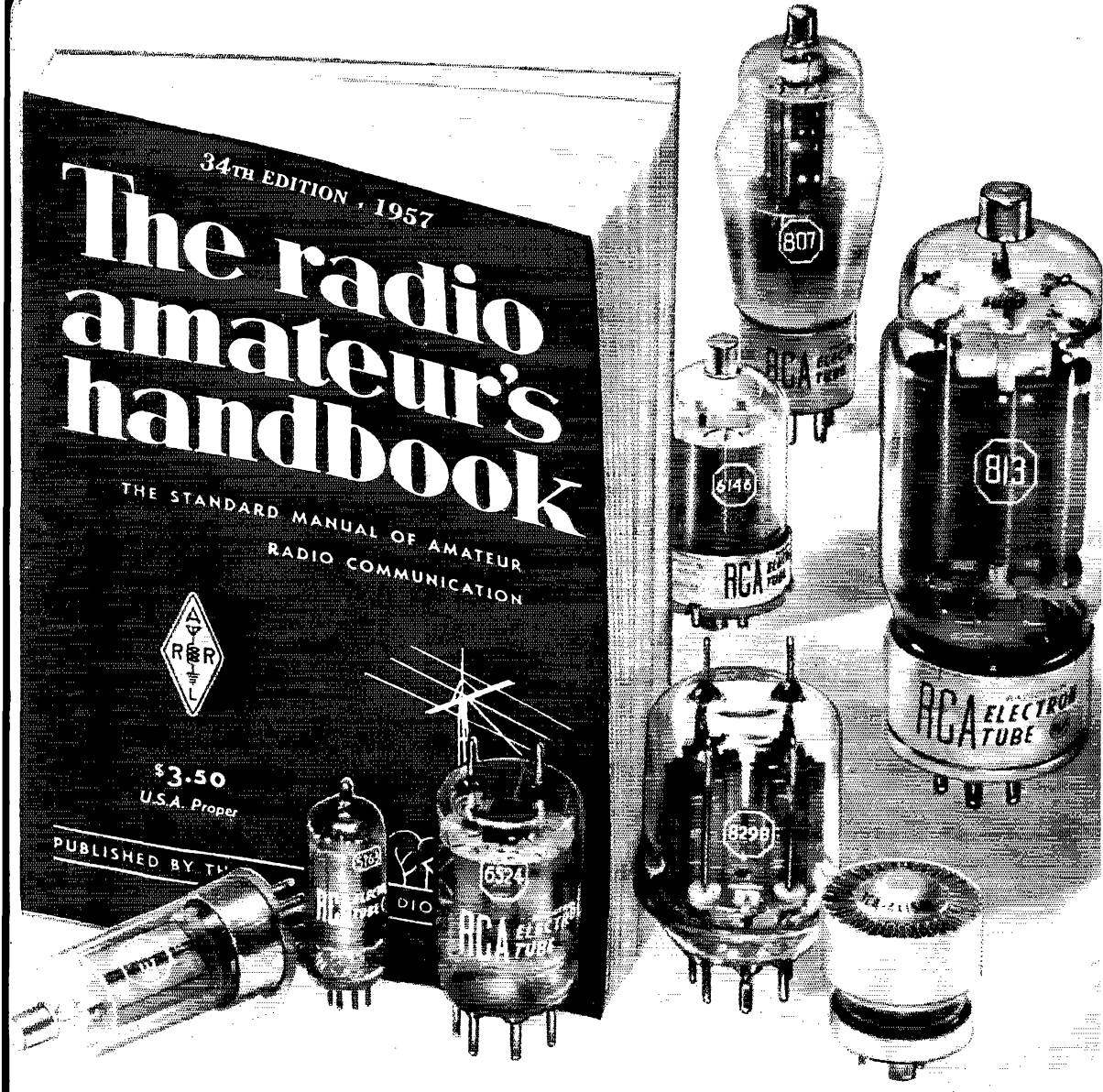

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