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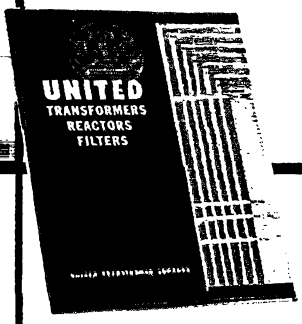

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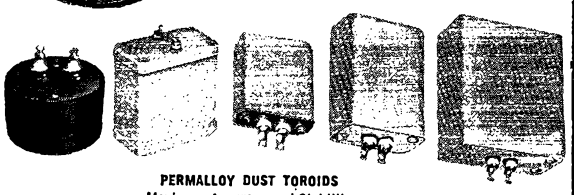

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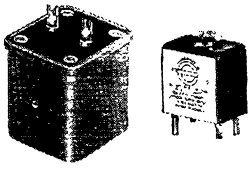

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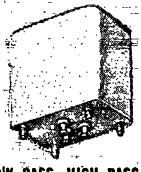

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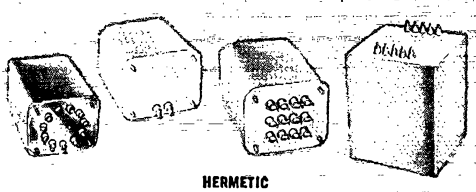

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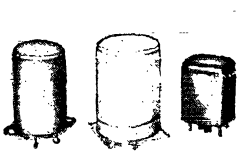

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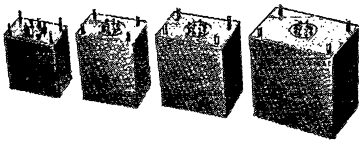

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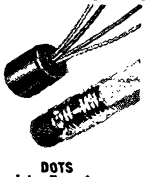

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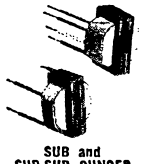
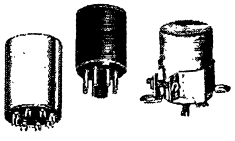


SUB and SUB-SUB OUNCER TRANSFORMERS
Audio Miniatures



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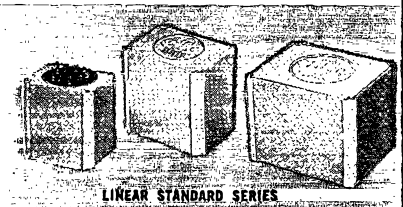
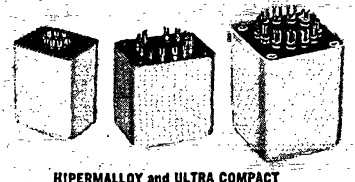


LINEAR STANDARD SERIES
Tops in Fidelity



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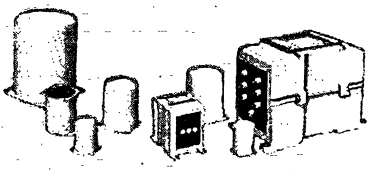
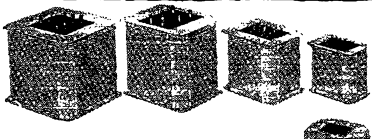


COMMERCIAL GRADE AUDIO and POWER COMPONENTS
for Industrial Use



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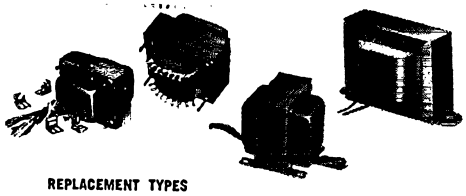
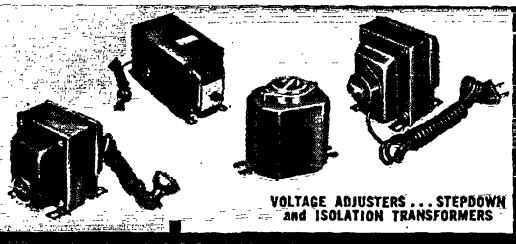


REPLACEMENT TYPES



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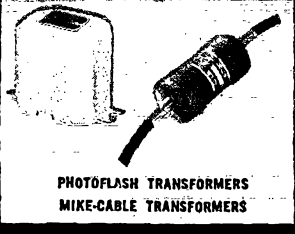

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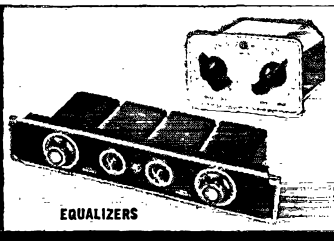

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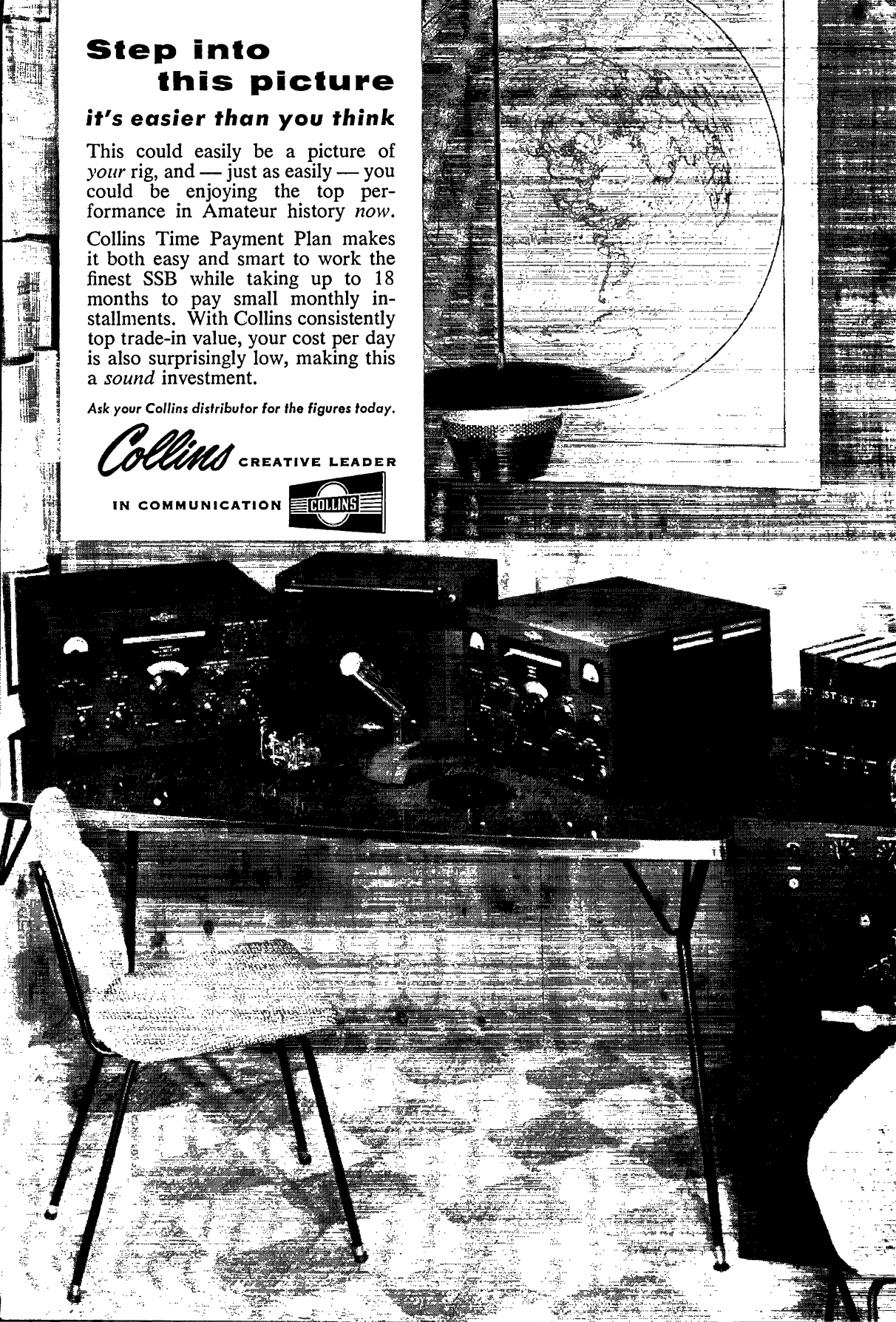

QST

JUNE 1956

VOLUME XL • NUMBER 6

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

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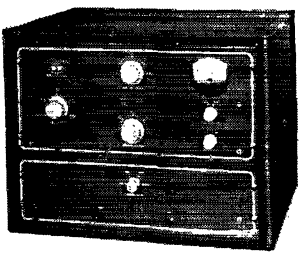
NEW

table-top kilowatt amplifier



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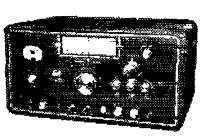
MODEL 5100-B A SUPERLATIVE AM-CW TRANSMITTER



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• normal operation of your receiver is not disturbed in any way.

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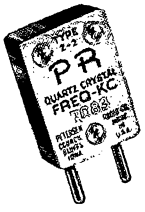

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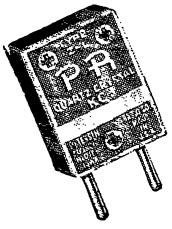
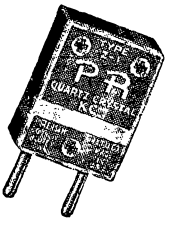


COMMERCIAL



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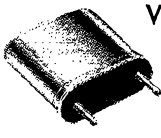

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It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors.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

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

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

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

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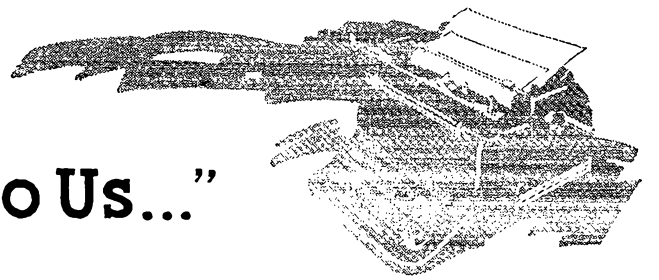


"It Seems to Us..."

FIELD DAY

Once again, with the warm fresh air blowing in the office window giving us license to be a bit poetic, it's time to mention Field Day, that glorious mixture of picnic, hamfest, contest and emergency drill. This year we're not going to point out that the club needs to make up its operating roster, or get permission to use Old Man Smith's orchard, or line up the reporter from the *Daily Blast*, or check the antenna masts. In fact, we're not even going to mention that this is *the* event of the year for radio clubs, because we've said plenty about that in the past.

This time we're going to talk to the ham who lives 100 miles from the nearest club, or has just moved to town, or for some other reason just doesn't have a group to go with on Field Day.

You don't need forty fellows, a 10-kw. generator, five operating positions and fifteen acres of antennas. All you need is a small rig, preferably one which can operate from batteries, some antenna wire or a simple (on v.h.f.) antenna and a few hours time. You'll find it isn't essential to run up a big score, or even to keep your rig on the air constantly to have fun and gain emergency experience — and an enthusiastic determination to do better next year.

If your pal down the street can be talked into going, fine. But whether he can go or not, this might be the chance for you to take the wife and kids on that picnic you've been promising them. While the XYL knits, the boys look for turtles and the girls chase butterflies, you can pound out "CQ FD."

Your mobile rig can be used either of two ways. If you use it as normally set up, you can enter Class C competition with it. If you prefer, you can park the car, string up an efficient sky-wire and enter the contest as a portable, in Class B. Either way, you'll be competing only with others using the same kind of station, in the one-or-two-operator class.

But operating fun, not just competition, is our theme. Whether you're on for one or twenty-four hours, with a big rig or flea-power, with a bug, mike or hand key, you'll find plenty of stations waiting to come back whenever you stand by — including us!

CALLS IN ROUNDTABLES

As every amateur knows, our rules require that a station identify itself at least once every ten minutes during an extended period of communication. But just what is required seems to be less clear to many. Recently, a number of participants in various informal round tables were cited by FCC for failure to identify properly. Inquiry showed that the amateurs concerned were identifying as "This is W8XXX" without mentioning any other stations. The rules require that a transmitting station or phone state the name of the station or the generally-accepted designation of the net with whom he is in contact, followed by the words "this is" or "from" and his own call. The citations were for failure to so identify the stations at the other end.

In a roundtable of twenty or thirty stations, it is obvious that if, every ten minutes, each participant named each other station in the group and then signed his own call, the entire time on the channel would be occupied with nothing but signatures. This problem has become more acute with perhaps larger groups participating in s.s.b. sessions, but it has existed to a smaller extent in net-type operations for many years. Recognizing this factor as far as regular nets go, FCC included the provision for the net call, mentioned above, in its regulations. Carrying the matter one step further, we long ago ascertained that members of informal nets and groups that just grow are covered if they name one particular station, indicate the group nature of the activity, and announce the call sign of the station transmitting. For example, if you are a participant in a group operation, you might sign "W3XXX and the Nighthawk Net, this is W8XXX." "W4XXX and the gang" or "W4XXX and the group" would be equally acceptable. The call you'd use would be either the call of the fellow transmitting before you, or that of the station to which you were directing your comments when the need to identify arose.

If you're in a regular net with an NCS, of course, you should simply use his call, as with individual stations. If you're the NCS, it's perfectly proper to use the net call followed by your own when opening the net or giving general instructions.

Hamfest Calendar

Arizona — Arizona annual hamfest — Montezuma Well near Cottonwood, June 15, 16, 17. $1.00 per person. Camping facilities available. For hotel and motel reservations, contact George Olsen, W7OAS, Phoenix, Arizona. Food, pot luck. Free refreshments. Pre-registration by June 1, 1956.

Georgia — The Atlanta Radio Club's annual hamfest will be held June 3 at Robinson's Tropical Gardens on Pacesferry Road on the banks of the Chattahoochee River. For reservations, contact Mrs. A. J. Farr, W4YEK, 572 Wells Avenue, Hapeville, Ga., and for tickets contact Mrs. W. E. Coogler, K4DNL, 286 Howard Street, S.E., Atlanta 17, Ga.

Iowa — The Iowa 160-Meter Net will hold its annual hamfest in Webster City, June 10, with all interested amateurs invited to attend.

The day's program will include entertainment, free refreshments, and talks on amateur radio.

Mississippi — Cleveland Amateur Radio Club, Third Annual Picnic, Idlewood Picnic Grounds 3 miles north of Indianola, Mississippi, on Mississippi Highway 49W, Sunday, June 10.

Missouri — The Missouri hamfest will be held in Sedalia, June 10, at the Missouri State Fair Grounds. Admission $1.00 per person. Basket lunch. Free hot coffee and cold soft drinks. Swap shop. Events for the OMs and XYLs or YLs.

Ohio — Ohio Valley Amateur Radio Association's annual picnic will be held Sunday, June 10, at the Cincinnati Police Firing Range, Evendale. Bring a basket lunch and the family. Many events and games. Admission $1.00 for adults, 25¢ for the children.

Ontario — The Gateway Amateur Radio Club is again sponsoring Canada's biggest hamfest, the 9th Northern Ontario Hamfest to be held again this year at North Bay. This year's affair will take place on June 30, July 1 and 2, and the club hopes that everyone who can attend will be there. Many are planning to take their vacations in the cool of northern Ontario. For details write Jerry Halliday, VE3EAW, 880 Burke Street, North Bay, Ontario.

Pennsylvania — The Seventh Annual Gabfest of the Uniontown Amateur Radio Club will be held Saturday, June 30 at the clubhouse on the Old Pittsburgh Road, 2 miles north of Uniontown. The program will include an auction of radio gear, movies of interest to all, horseshoes, and card games. W3PIE will operate phone on 80, 40, and 10 meters. Refreshments at nominal cost. Free coffee, baked beans, potato salad, potato chips and pretzels. The clubhouse will be open at noon, so come early and stay late. Auction will begin at 7 P.M. and will end with movies. This is a stag affair. Registration fee $1.50. For additional information, write Uniontown Amateur Radio Club, P. O. Box 849, Uniontown, Penna., or phone GE 8-8146.

Saskatchewan — The Regina Amateur Radio Association are hosts for the 1956 Hamfest to be held in Regina, June 30, July 1, and July 2. Entertainment and something of interest has been planned for everyone. Registrations in advance, details and information may be obtained by writing J. S. Whetherly, VE5JW, 20 Elizabeth Crescent, Regina, Saskatchewan, Canada.

Vermont — The Montreal Amateur Radio Club and the Burlington Amateur Radio Club are co-sponsoring the 5th Annual International Field Day, Sunday June 12, at Bay Side, Malletts Bay, 7 miles north of Burlington.

There will be roller skating; picnic; bathing; and, a softball game between VEs and W/Ks. Also planned are 10- and 75-meter transmitter hunts, and contests for Jr. ops. Bring the whole family. Registration fee, 75¢. For further info, VEs contact VE2BB; W/Ks contact W1NLO.

Wyoming — The Annual Wyoming Hamfest, sponsored this year by the Casper Amateur Radio Club, Inc., will be held at the Lions Camp, Casper Mountain Park, 14 miles south of and 3,000 feet above Casper, on July 6, 7, and 8. Registration will be at the club's Clubhouse, 301 E. 15th Street, Casper, Friday evening, July 6, and Saturday morning, July 7. The registration fee is $1.00, and the banquet Saturday evening will be $2.25 for adults, with children's plates available at $1.00. Plenty of activities and contests. So come and see us; especially you vacationers who will be in the area. For additional information, write Robert W. Lane, W7UFB. 2233 E. Yellowstone, Casper, Wyo.

COMING A.R.R.L. CONVENTIONS

June 9–10 — Rocky Mountain Division, Estes Park, Colorado
June 15–16–17 — West Gulf Division, Galveston, Texas
July 6–7–8 — ARRL National Convention, San Francisco, Calif.
July 20–21–22 — Northwestern Division (Alaskan Territorial), Anchorage, Alaska
July 28–29 — Alberta Province, Edmonton, Alberta

Travel Notes

From time to time we plan to call to your attention the travel itineraries of headquarters staff members who are out on field trips visiting clubs, hamfests and division conventions. Full details are not always available at press time, and so if you live in the vicinity of any of the places listed below, we urge you to contact the local affiliated club for further details.

Communications Manager Handy, W1BDI, will attend the s.s.b. dinner in Peoria, Ill., on June 2nd, and the Starved Rock Hamfest on June 3rd, and then plans club meetings for the following dates and places: June 4, Rock Island, Ill.; June 5, Des Moines, Iowa; June 6, Omaha, Nebr., June 7, Lincoln, Nebr. W1BDI will wind up his trip with attendance at the Rocky Mountain Division Convention in Estes Park, Colo., June 9–10.

V.h.f. Editor Tilton, W1HDQ, will attend the West Gulf Division Convention in Galveston on June 15–17, and will then swing through the southwest on his way to the National Convention. His club meeting had not been scheduled at press time.

Speaking of the National Convention (full story on p. 59 this issue) the following will be attending from headquarters: General Manager Budlong, W1BUD; Communications Manager Handy, W1BDI; Assistant Technical Editor Goodman, W1DX; V.h.f. Editor Tilton, W1HDQ; Managing Editor Baldwin, W1IKE; and Circulation Manager Houghton.

National Emergency Coordinator Hart, W1NJM, will visit the Northern Ontario Hamfest on June 30–July 2, and is also planning club meetings in Binghamton, Toronto and Hamilton.

Technical Assistant McCoy, W1ICP, will give his TVI talk in Warren, R. I., on June 5.

Strays

Perhaps it is time to call a halt to the saga of the beer can antennas. But at least let's wind it up in the following vein. First, a minister has written to ask just how *he* could respectably accumulate the necessary 82 cans. This was topped only by a 13-year old who wanted to know whether the antenna would work just as well with frozen orange juice cans!

A 50-Mc. Transmitter-Receiver for C.D. Use

Fixed-Frequency for Operation from Battery or A.C. Power

BY MAURICE P. JOHNSON,* W3TRR AND ROBERT L. HANKEY,* W3OBC

• As we accumulate experience in c.d. work the 6-meter band is getting more attention all the time. It comes close to the ideal for local emergency network activity, providing consistent interference-free coverage with equipment that is simple to build and economical to operate. The transmitter-receiver combination described here is the result of a careful study of c.d. communications problems. It provides fixed-frequency communication for either base-station or portable operation, and can be run from either battery or a.c. power.

THE transmitter-receiver unit shown herewith was designed as part of a complete amateur 6-meter communications system for emergency work. Included were low-powered hand-carried transceivers, mobile or portable rigs and base-station outfits. Several specialized designs were evolved. General-purpose equipment for the 50-Mc. band can be used in c.d. work, of course, but greater over-all effectiveness can be realized if the gear is designed especially for the job at hand.

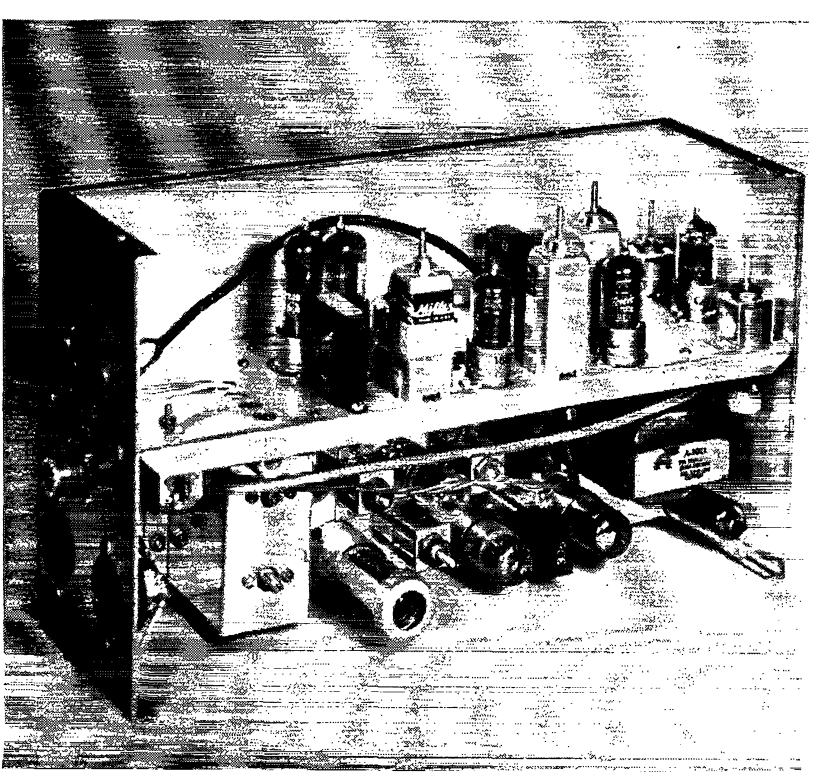
*WAAM Engineering Department, Television Station WAAM, Baltimore 11, Md.

This equipment was designed for fixed-frequency net-style operation. This eliminates the need for operational tuning controls, resulting in a more efficient and compact design. Operation becomes extremely simple and controls are at a minimum. Fixed-frequency operation results in a smoothly functioning communications net, as witnessed by the utilities and other service organizations making use of such techniques.

In the co-ordination of emergency traffic and operations, particularly at base station levels, equipment must be capable of withstanding sustained operation with the receiver monitoring the net frequency. Special attention has been given to such operation.

Design Considerations

To keep the assembly small, miniature tubes and components have been used. Only parts which are readily obtainable were employed so the outfit may be easily duplicated. Compactness was achieved by care in layout, integrated chassis assemblies, and efficient circuitry. The result is a five-tube transmitter, an eight-tube superhet receiver, and an antenna changeover relay housed *within* a 4 × 7 × 12-inch Minibox. This type of housing contributes much to the neat finished appearance, while enclosing all components, in-



Interior view of the 50-Mc. transmitter-receiver, with enclosure cover removed. Receiver is upper portion. Transmitter mounts at right angles below.

cluding tubes and transformers, inside the box serves to protect the equipment from damage in its everyday use.

Tube line-ups were chosen with attention to the filament and plate current requirements, so that effective use could be made of a small power pack. The receiver draws approximately 75 ma., and the transmitter 100 ma., at 300 volts. Plate power is transferred by means of the send-receive relay from a supply capable of 300 volts at 100 ma. output. The supply is simple and compact, operating from 6-volt d.c. as well as 110-volt a.c. power sources. Such a dual purpose power supply is a valuable feature for equipment intended for emergency operations.

Transmitter

The transmitter design makes efficient use of the 30 watts available from the power pack. The first half of a 12AT7 is the crystal oscillator, utilizing crystals in the 6-Mc. range. Its slug-tuned plate coil tunes to the second harmonic of the crystal. The second half of the 12AT7 is a doubler stage, again with a slug-tuned tank coil, this time tuned to the fourth harmonic of the crystal frequency.

A 6AK6 doubler follows, producing more than ample grid drive for the final. Its plate tank is slug-tuned to 50 Mc. with only the tube and stray circuit capacitances added. It will be noted that this coil is tapped to provide for neutralization of the final.

The 5763 tube selected for the final amplifier was specifically designed for r.f. service, and as such is to be preferred to the less expensive audio tubes. Particularly because of the more stringent requirements demanded by the stand-by uses of the equipment, the type 5763 was deemed the wiser choice.

The final stage is neutralized to insure stable, dependable operation. The output circuit is a pi-network tank for ease of loading into various antennas. A switch in the screen allows a single meter to be used for tuning. Opening the screen lead allows only grid current to flow through the meter. In this construction a metering jack is used rather than a permanently mounted meter. This choice is optional with the constructor.

A 6AQ5 is the modulator, with a 12AT7 speech amplifier. A dropping resistor reduces the 6AQ5 screen voltage slightly to increase tube life. The carbon microphone is cathode-coupled to the input triode. The interstage coupling produces a degree of speech clipping. A replacement-type output transformer is connected as an autotransformer to act as the modulation transformer.

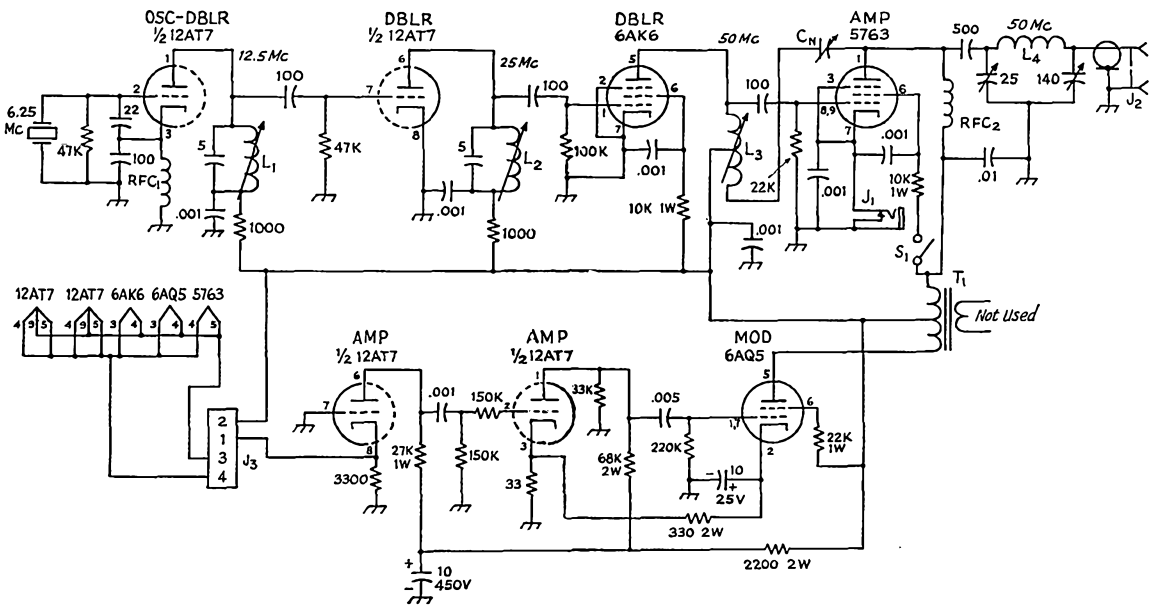
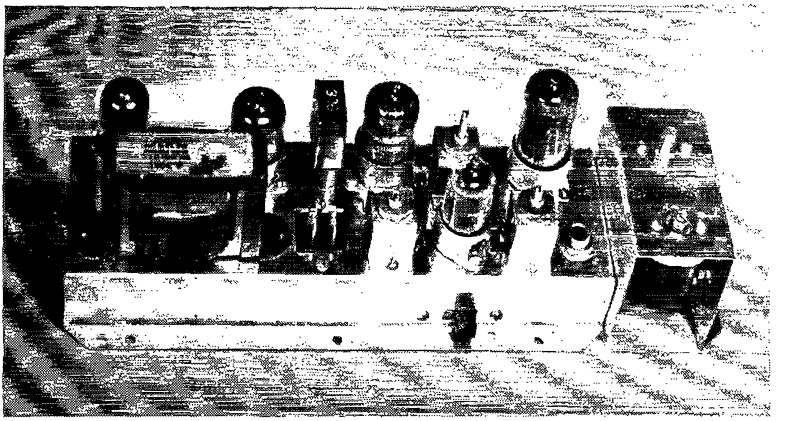


Fig. 1 — Schematic diagram and parts information for the transmitter portion of the 50-Mc. portable station. Capacitors are ceramic, except where noted. Values above 500 are in μf. Resistors ½ watt unless marked otherwise.

C_n — 1–5-μμf. tubular trimmer.
L_1 — 27 t. No. 24 enam.
L_2 — 12 t. No. 20 enam., 1 1/16 inch long.
L_3 — 7 t. No. 16 enam., 1 1/16 inch long, tap at 1½ t. from bottom.
L_1, L_2, L_3 on ½-inch diam. slug-tuned forms (National XR50).
L_4 — 6 t. No. 18, ½-inch diam., ¾ inch long (B & W No. 3002).
J_1 — Closed circuit jack.
J_2 — Phono-type coaxial fitting.
J_3 — 4-pin chassis fitting (Jones P-304-AB).
RFC_1 — 2.5-mh. 100-ma. r.f. choke.
RFC_2 — 7-μh. single-layer r.f. choke (Ohmite Z-50).
T_1 — Push-pull pentode output trans. (Merit A-3021).

Receiver

The receiver portion of this equipment is the final result of considerable search for a com-



Top view of the 50-Mc. transmitter assembly. Pi-network output circuit is at the far right; audio components at the left. Note method of mounting the slug-tuned coil forms. Slide switch opens final amplifier screen circuit.

pletely satisfactory circuit. It is, in fact, the third receiver constructed during the design stages of the project. This effort seems to have been well expended, however, as the final design has proven to be a sensitive, stable circuit, well adapted to stand-by operation.

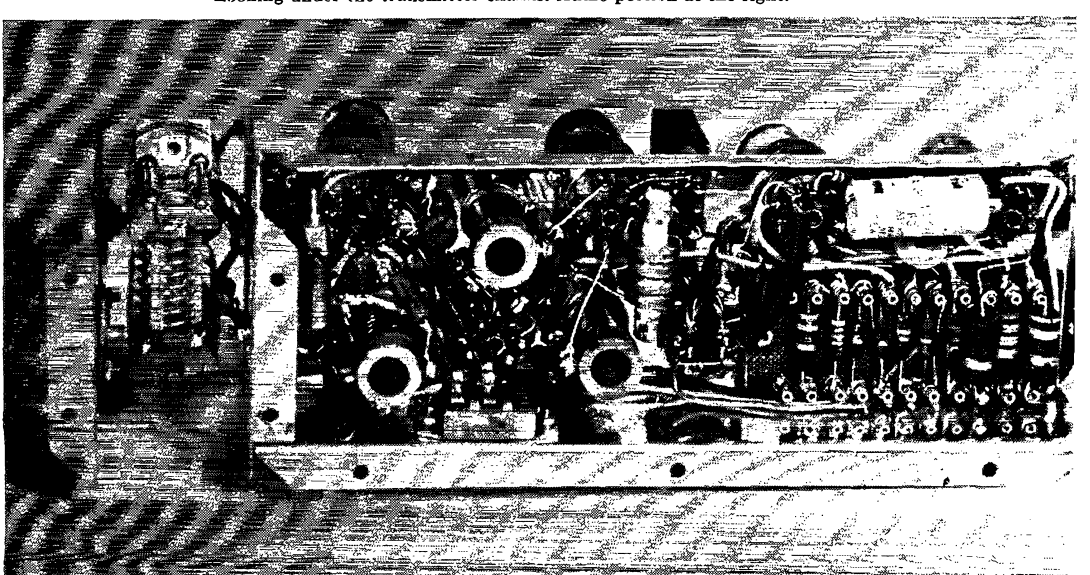
Fixed-frequency design makes possible increased gain and stability as compared to circuits which must cover a band. The front end and the tuned circuits are greatly simplified, and the local oscillator may be crystal controlled. This results in drift-free, dependable operation, and eliminates the need for any adjustment during normal operation.

The operating frequency, the intermediate frequency and the crystal-controlled oscillator frequency are interrelated. The intermediate frequency was chosen to fit available standard miniature i.f. units, rather than resort to winding special i.f. coils. These are J. W. Miller Co., Series 12, covering 1.4 – 1.6 Mc. A higher frequency would result in inadequate selectivity, and lower frequencies require double conversion, which would unjustifiably complicate the set. A three-stage i.f. amplifier was tried, but it was found that two stages gave sufficient gain. Remote cut-off type 6BJ6 tubes were used for the i.f. amplifiers.

The front end makes use of three 6BH6 tubes as r.f. amplifier, mixer and local oscillator. All coils in this section are wound on slug-tuned National XR-50 forms. The input coil is tapped to match the antenna. The r.f. and mixer circuits are conventional, but the local oscillator may require further discussion. This pentode oscillator is crystal controlled, with the plate tank tuned to a harmonic of the crystal frequency. A regenerative cathode winding insures adequate harmonic output. Several combinations of crystal and harmonic frequency are possible to produce an i.f. between 1.4 and 1.6 Mc. It is quite practical to use the sixth, seventh, eighth or even ninth harmonic of the crystal, to take advantage of the multitude of surplus crystals still available in the range from 5 to 9 Mc.

As an example, an operating frequency of 52.6 Mc. was wanted in one location. With the local oscillator operating below the signal frequency, an i.f. of 1.6 Mc. requires an oscillator harmonic of 51 Mc. By using the eighth harmonic of a crystal at 6381 kc., which happened to be available, an eighth harmonic was produced at 51.05 Mc. This then resulted in an i.f. of 1.55 Mc., which worked out nicely. Actually, crystals from 6375 to 6400 kc. give suitable harmonics to beat with the 52.6-Mc. carrier to produce intermediate

Looking under the transmitter chassis. Audio portion at the right.



frequencies between 1.4 and 1.6 Mc. This illustrates only the use of the eighth harmonic, so it is seen that there are many possible combinations. The signal frequency is fixed by net requirements, so the i.f. can be shifted in order to use a crystal which may not be exactly a calculated frequency. This must be considered when aligning the receiver, as will be discussed below.

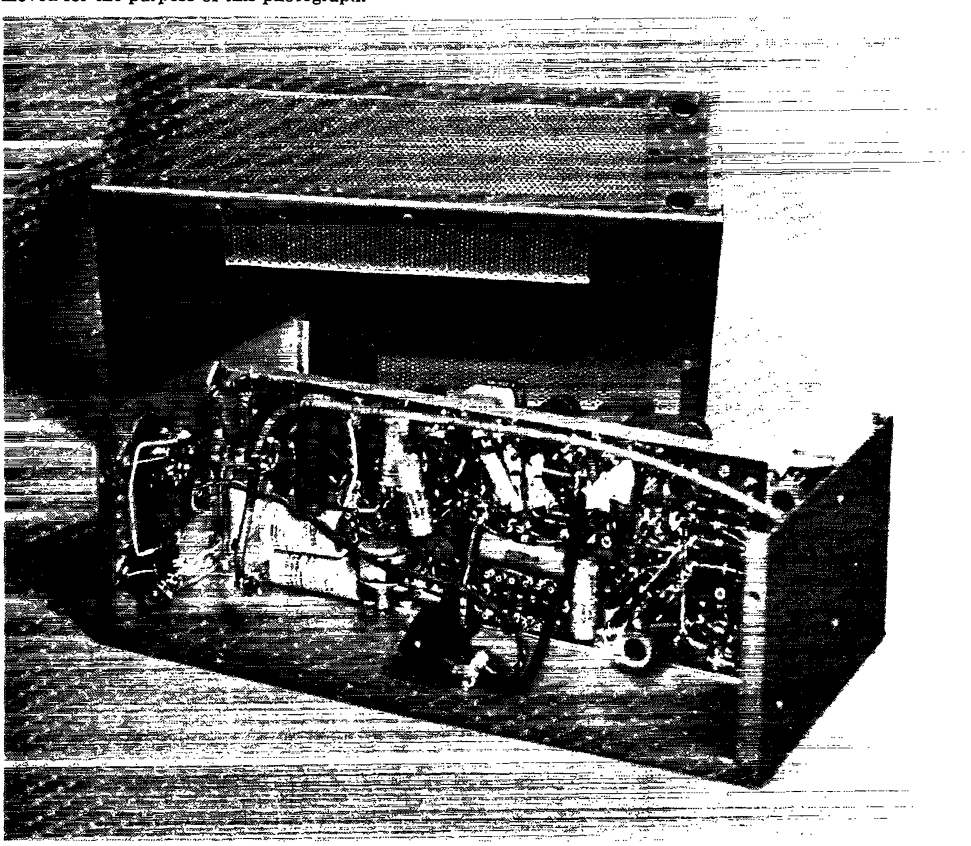
A 6AL5 is used as half-wave detector and automatic noise limiter. The latter is the self-adjusting series-valve type, and is in the circuit at all times. A.v.c. control voltage is fed back to the two remote cutoff i.f. stages. Half of a 12AX7 operates as an audio amplifier, while the second half is the audio squelch tube. The audio output stage is a 6AQ5, but a 6AK6 can be inserted if desired.

The audio squelch is a very attractive feature in a receiver intended for stand-by use, and such circuits are standard practice in commercial communications equipment. The variable squelch control determines the threshold level at which the squelch opens. Squelch is particularly appreciated during long operational sessions, when background noise in the receiver can be extremely irritating. A switch in the cathode, Fig. 4, disables the squelch when desired.

A remote-control head is provided for the operational controls. A box 3 by 5 by 6 inches in size houses a small speaker and the controls. It can be located remotely from the main unit to reduce clutter at the operating position. It might be possible to dispense with the control head if desired, as there is room within the enclosure to house a small speaker and controls, but it would then be necessary to keep the rig within arm's reach while operating. This was thought to be a restriction on the versatility, but such construction would eliminate the interconnecting cable now involved.

The power pack, assembled on a 3 × 5 × 7-inch Minibox, uses a commercially-available dual-primary transformer, with provision for operation on 6 volts d.c. or 110 volts a.c. A separate power cord is used for each, wired to the appropriate two prongs of the four-prong Jones 400-series input connector. An eight-wire shielded cable fitted with nine-pin connectors at each end connects to the transmitter. The majority of the cable leads are for control circuits. The power supply has a tube rectifier and filters for ripple and hash. A heavy-duty nonsynchronous vibrator is used, with an economical auto headlight relay for d.c. control. A double-pole, double-throw switch selects a.c. or d.c. sources for the filaments, depending upon the type of operation.

Bottom of receiver, as it appears mounted in the case. Cables in foreground connect to transmitter chassis, removed for the purpose of this photograph.



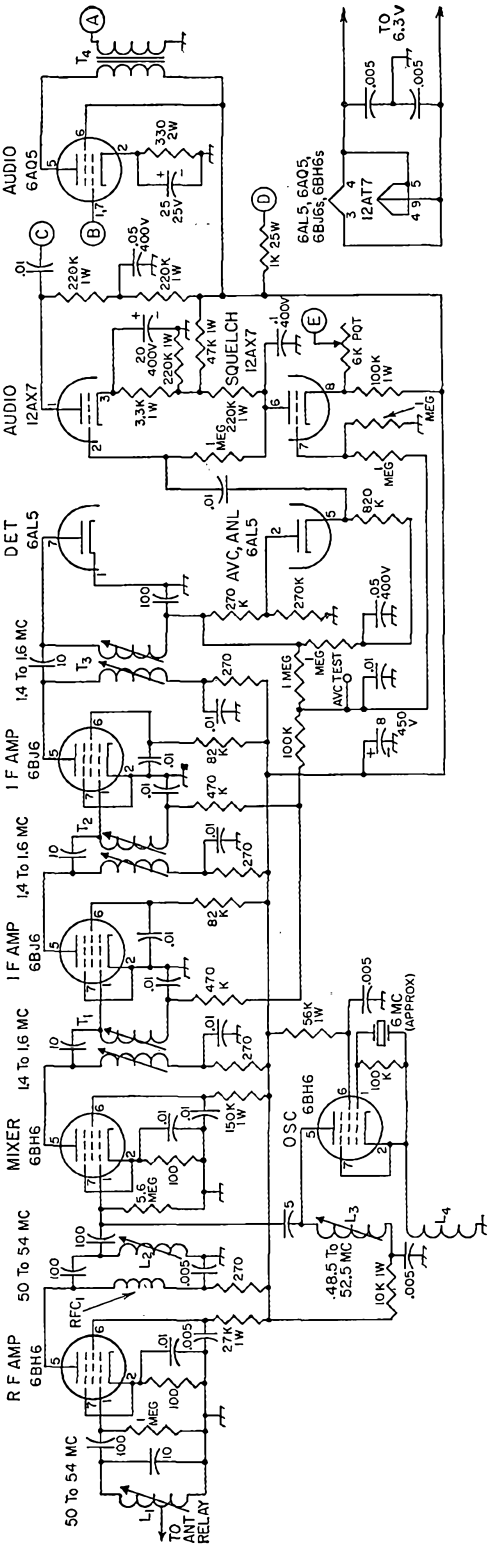


Fig. 2 — Diagram and parts information for the receiver used in the 50-Mc. portable station. Circled letters indicate connection points shown in composite diagram, Fig. 4.

L_1 — 7 t. No. 16 enam., tapped 1½ turns up.
L_2 — Same as L_1, but no tap.
L_3 — 10 t. No. 16 enam. Cover with layer of insulating tape.
L_4 — 21 t. No. 24 enam. wound over L_3 in same direction. All coils close-wound on ½-inch diam. slug-tuned forms (National XR-50).
RFC_1 — 7-μh. v.h.f. choke (Ohmite Z-50).
T_1, T_2 — 1.5-Mc. interstage i.f. transformer (Miller 12W1).
T_3 — 1.5-Mc. output i.f. transformer (Miller 12W2).
T_4 — Miniature output transformer (Merit A-3026).

Construction

Although the remark may sound somewhat facetious, the primary concern in the construction was to fit all components within the Minibox cabinet. To conserve space, regular chassis construction was discarded and specially designed subassemblies substituted. Thin sheet aluminum salvaged from old transcriptions made an ideal material for this use.

The receiver was assembled on a flat plate with ⅜-inch mounting lips folded down on all sides. To fit snugly against the Minibox interior, this plate should measure 11⅞ by 3⅞ inches over-all. Reference to the accompanying photographs will show the layout far better than words. The circuit progresses from one end of the plate to the other in the same sequence as the diagram. The National XR-50 coil forms were submounted on the plate with brackets in order to reduce projections under the chassis to a minimum. The i.f. cans, oscillator crystal, output transformer and tubes mount to the top and all other parts are attached beneath the plate. The entire assembly projects only one inch below the mounting plate. One end of the Minibox is utilized to mount an antenna connector and interconnecting cable sockets. The change-over relay is attached near the coax antenna connection.

Two assemblies are used for the transmitter. The main chassis measures 8 by 22¼ inches on top, with a 1⅛-inch side folded down along one 8-inch edge. All four edges of this L-shaped plate have ⅜-inch lips for mounting. A bracket shaped as an inverted U accommodates the pi-tank components, and is attached to one end of the main transmitter chassis. This bracket measures 2¾ by 1½ inches at the top, stands 2¼ inches high, and also includes two ⅜-inch lips.

The transmitter is laid out with the audio section at one end, and the r.f. portion filling the remaining space on the chassis adjacent to the pi-tank bracket. Submounting is again used for the coils, and a four-prong connector on the chassis connects the filament, B plus and hot

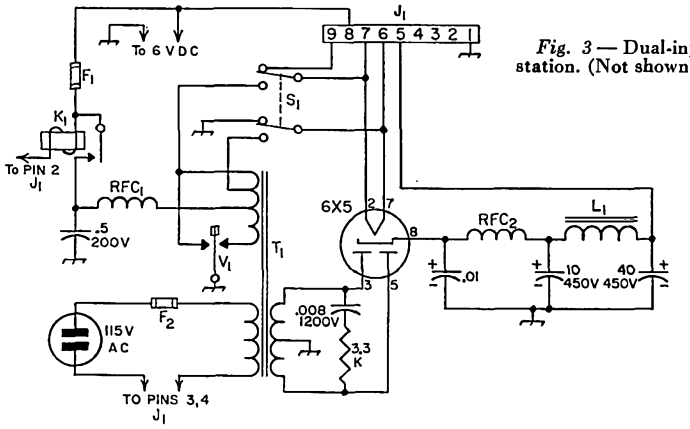


Fig. 3 — Dual-input power supply for the 50-Mc. station. (Not shown in photographs.)

L_1 — Filter choke, 8 to 10 hy., 100 ma.
F_1 — 15-amp. fuse
F_2 — 3-amp. fuse,
J_1 — 9-contact female chassis fitting.
K_1 — Auto headlight relay, with fuse holder, 6-volt.
RFC_1 — Hash suppression choke (Miller 5221).
RFC_2 — 2.5-mh. single-pi r.f. choke (Bud CH-1212).
S_1 — Toggle switch, d.p.d.t.
T_1 — A.c.-d.c. vibrator transformer (Merit P-3075).
V_1 — Nonsynchronous vibrator, 6 volts (Radiart 5515).

mike leads to the transmitter. B negative is carried by the chassis.

Examination of the photographs will show the wiring technique used in the construction of the gear. Wherever possible, small parts are mounted between solder lugs and associated tube socket pins. Point-to-point wiring is used, except for such plate, series or dropping resistors as are arranged on miniature terminal boards which were made up for the equipment. One such board is shown under the transmitter, while two boards were utilized in wiring the receiver.

To install the receiver and transmitter within the Minibox housing, the receiver is attached exactly 2¾ inches below the top edge of the enclosure. This provides sufficient space to clear the i.f. cans and the tubes. The transmitter is then secured at right angles to the receiver in the space below. Connections to the transmitter for the antenna and power leads are fitted with plugs, so that the transmitter assembly may be removed easily should service of the equipment be required.

Construction of a compact five-tube transmitter and an eight-tube receiver in such a restricted space is admittedly not exactly a task to delight the Novice. It involves a degree of neat, fastidious work with a small soldering iron, but it should not be beyond the scope of constructors with reasonable patience and dexterity.

Operation and Adjustment

The receiver is aligned in the conventional superhet manner, bearing in mind that the os-

(Continued on page 138)

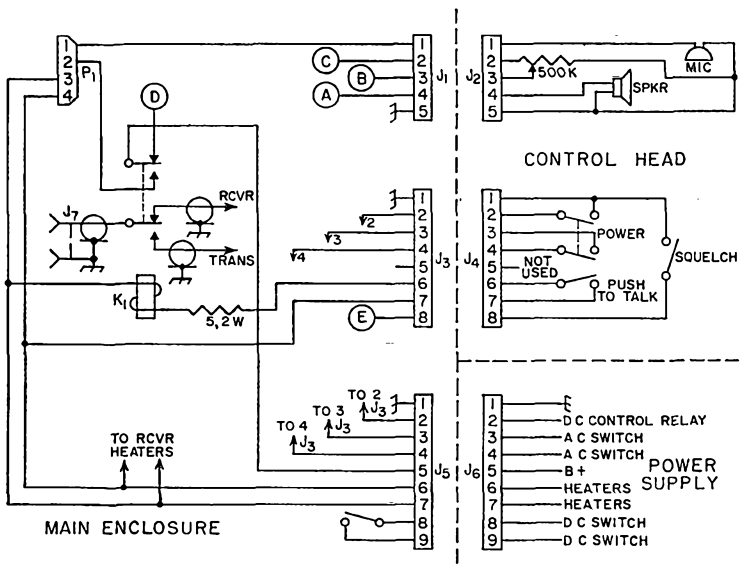


Fig. 4 — Interconnecting cabling and control system for the 50-Mc. transmitter-receiver. Separate units are indicated by dashed lines.

J_1 — Chassis fitting, 5-pin, female.
J_2 — Chassis fitting, 5-pin, male.
J_3 — Chassis fitting, 8-pin, female.
J_4 — Chassis fitting, 8-pin, male.
J_5 — Chassis fitting, 9-pin, female.
J_6 — Chassis fitting, 9-pin, male.
J_7 — Coaxial antenna fitting, female.
K_1 — 6-volt a.c. relay, d.p.d.t. (Potter-Brumfield KR series).
P_1 — Cable plug, 4-pin, female (Jones S-304-FHT).

Conelrad Alarm Circuits

A Symposium of Radio-Alert Ideas

• Here is a collection of circuits and ideas for Conelrad observance. Any of them may be put into practice without a great deal of effort or expense. They deserve consideration by those who have not yet started to prepare for compliance with the Conelrad rules, which go into effect in January, 1957.

A RECENT ARTICLE concerned with Conelrad compliance [1] concluded with the following: "work up one of your own — and if it seems as though it might interest others, let us hear about it."

The response to that request indicates that amateurs are giving serious thought to the new Conelrad rules.[2] Shortly after *QST* for January had reached its readers we began to receive Conelrad alarm circuits. Some of the more practical arrangements — along with one or two circuits that were already in hand — are shown here. Although several of the circuits have a basic similarity, each offers features which make it a little different from the rest.

An Inexpensive Visual Alarm

The circuit of an extremely simple alarm is shown in Fig. 1. This circuit uses the audio

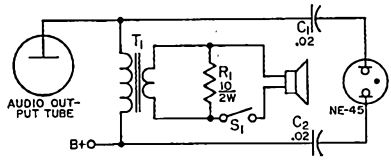


Fig. 1 — Schematic diagram of Conelrad alarm circuit used by W2EBG. S_1 is a s.p.s.t. toggle switch. Values for C_1 and C_2 are in μf. T_1 is the output transformer.

peaks from the output stage of a small broadcast receiver to ignite a type NE-45 neon bulb. The bulb will flash on modulation peaks transmitted by a broadcast station, thereby giving visual indication that all is well. When the flashing stops, it is a warning that the station has left the air for one reason or another. If this occurs during regular broadcast hours, it is time to check another broadcast channel or to listen for Conelrad transmissions at either 640 or 1240 kc. After installation and initial adjustment of the circuit, the speaker may be made inactive so that there will be no distracting audio background to interfere with ham operation. Components for the circuit may be of junk-box variety. On the other hand, the cost of brand-new parts will be something less than $1.75.

C_1, C_2 and S_1 may be mounted in a small box that sits on top of the receiver and R_1 may be mounted at the speaker terminals. The NE-45 can be conveniently located at the operating position.

To adjust the monitor, close S_1 and tune to a broadcast signal. Then open S_1 and advance the volume control to maximum. The monitor is now working properly so long as the bulb flashes repeatedly. It is not necessary to disconnect R_1 when the receiver is used for normal broadcast reception.

— Gene Johnson, W2EBG

A.V.C.-Operated Alarm

The circuit shown in Fig. 2 receives a control signal from the a.v.c. line of a receiver tuned to a broadcast carrier. The unit may be built into the control receiver if a small amount of spare space is available.

Referring to the schematic, the lead to the a.v.c. line is first left disconnected while the tap

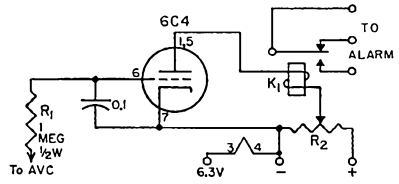


Fig. 2 — Circuit diagram of W6JPA's Conelrad alarm. R_2 is a 50,000-ohm 10-watt slider-type resistor. K_1 is a s.p.d.t. relay, 5000 ohms, 6.3 ma. (Potter & Brumfield LS-5).

on R_2 is adjusted until the relay, K_1, closes. For the tube and relay specified, this should occur (with zero bias) with approximately 75 volts at the plate of the 6C4. Then, with the a.v.c. line connected to R_1, the receiver should be tuned to a broadcast station. This applies a negative voltage to the grid of the control tube, reducing or cutting off its plate current and causing K_1 to open. When the broadcast station leaves the air the tube, again operating without bias, conducts and causes the relay to close. The volume of the receiver can be lowered to the point of inaudibility.

The type of alarm operated by the relay is limited only by imagination — anything from a doorbell to a device for electrocuting one's mother-in-law may be used.

One section of a twin triode could be used as the control tube. The other half of the tube

[1] Grammer, "Conelrad Compliance," *QST*, January, 1956.

[2] Docket No. 11488, August 31, 1955. See "Happenings," *QST*, October, 1955, page 47.

could be used as an audio oscillator, keyed by the relay, with its output coupled to an audio stage in the receiver.

— *John I. Wright, W6JPA*

A Complete A.V.C.-Operated Setup

A complete alarm system, including an auditory warning device and a power supply, is

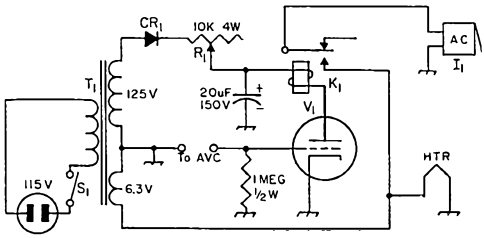


Fig. 3 — Circuit diagram of alarm used by W4OHM. See text for component values.

shown in Fig. 3. The control tube, V_1, the alarm relay, K_1, and the a.v.c. system of the receiver all perform the same functions as do those of Fig. 2.

The alarm unit in this case is a 6-volt a.c. buzzer, I_1, which receives power from the heater winding of T_1 whenever V_1 conducts heavily enough (when the broadcast carrier goes off) to actuate K_1. R_1 is a wire-wound potentiometer used to adjust the plate current of V_1 to a value adequate for closing K_1 under zero-bias conditions. T_1 is a replacement-type television-booster transformer. CR_1 must be rated to withstand the maximum current drawn by the control tube. V_1 may be a miniature triode or a triode-connected pentode.

— *Warren Rudolph, W4OHM*

Fail-Proof Alarm

The Conelrad monitoring circuit used at WØNPW is shown in Fig. 4. This arrangement has one advantage over some of the simpler systems in that it gives a warning not only when Conelrad operation is taking place, but also in the event of tube or power failure within the monitor.

A *positive* control voltage is used with this circuit. It is obtained from a broadcast receiver by connecting an r.f. probe to the plate and the cathode of the diode detector, and is applied to the control grid of V_1. The rectified voltage opposes the cathode voltage developed across the sensitivity control, R_1, causing V_1 to conduct sufficiently for closing K_1. The reason for using positive control voltage, rather than hooking into the negative a.v.c. line, is that it causes the relay to remain *open* (as seen by the alarm unit) during periods of normal broadcast operation. However, should the broadcast carrier go off, or should there be component failure within the receiver or the monitor, the relay will close automatically and sound the alarm.

Adjustment of the circuit is quite simple. First adjust the sensitivity control, R_1, until the relay is just about to close. Do this without control voltage applied. Now, if control voltage is coupled in from a receiver tuned to a broadcast signal, the relay should close. Next, tune away from the broadcast carrier and decrease the sensitivity by means of R_1 until K_1 no longer closes when the receiver is tuned back to the broadcast signal. Retune to the broadcast station that is to be monitored and close S_1 momentarily; the relay will close and hold. The monitor is now adjusted for most satisfactory operation. Even a vacuum cleaner running from the same a.c. outlet at the receiver will not hold the relay closed in the event that the station goes off the air. Turn down the receiver volume and you may monitor the desired signal and operate without distraction. Incidentally, the reason for decreasing sensitivity and then closing S_1 is that the relay requires a larger closing current than is required

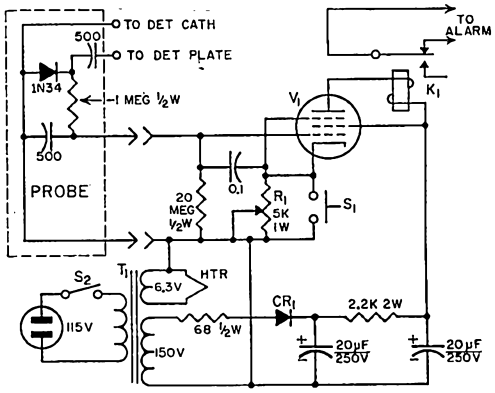


Fig. 4 — Schematic diagram of the WØNPW/6 Conelrad alarm. Capacitances below 0.001 µf. are in µµf.
CR_1 — 20-ma. selenium rectifier.
K_1 — S.p.d.t. sensitive relay, 2500 to 5000 ohms.
S_1 — Momentary-contact switch.
T_1 — Replacement-type television transformer (Merit P-3046).
V_1 — 6AH6, 6AG5, 6AU6, 6BA6, 6SJ7, 6SK7, etc.

for holding. The adjustments suggested set the plate current for V_1 at the minimum value which assures reliable and sensitive relay operation.

It should be noted that the circuit ground is not connected to the chassis, thereby eliminating shock hazards when used with a.c.-d.c. types of receivers.

— *Ralph P. Ulrich, WØNPW/6*

Audio-Visual Fail-Proof Alarm

An alarm circuit that provides both aural and visual warning, including warning in the event of failure of the device itself, is shown in Fig. 5. The arrangement, which has been in use here for the past four years, normally is actuated by a.v.c. voltage from a Hammarlund HQ-120 receiver. Other types of receivers may be used to control the circuit.

In operation, V_{1A} is held at plate-current

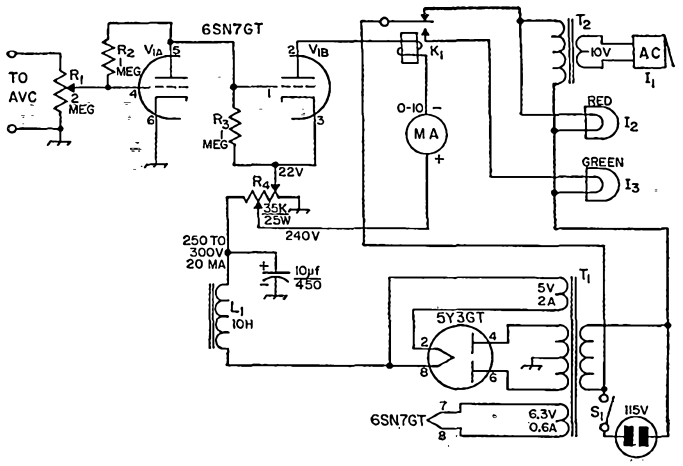


Fig. 5 — Circuit diagram of the W7FQG Conelrad alarm system. All resistors ½ watt unless otherwise specified. See text for ratings of components not listed below.
I_1 — 10-volt buzzer.
I_2, I_3 — 115-volt 6-watt type S6 lamps.
T_2 — 10-volt filament transformer.

cutoff by a.v.c. voltage obtained from a receiver that is tuned to a broadcast signal. R_1 is a sensitivity control for adjusting the bias to the optimum value. With V_{1A} operating at cutoff there is negligible voltage drop across R_3 and the grid of V_{1B} operates with essentially zero bias. This causes enough plate current flow to close the alarm relay, K_1. With K_1 in the closed position the green or "safe" pilot lamp will light.

When a.v.c. bias is removed from the circuit (when the broadcast signal goes off) the grid of V_{1A} will go positive, the tube will conduct through R_3 and the bias for V_{1B} will become negative. This chain of events reduces the plate current of V_{1B}, opens the relay, lights the red warning lamp and sounds the buzzer.

Use of a type 6SN7GT with its rated plate current of 9 ma. eliminates need for a sensitive control relay. K_1 in the original alarm is a surplus item, purchased for less than a dollar, requiring a closing current of 8 ma. Power supply components are rated to deliver approximately 250 to 300 volts at 20 ma. at the output of the choke-input filter. The taps on the voltage divider, R_4, should be adjusted to give the voltages indicated in Fig. 5 with a.v.c. voltage applied to the input terminals (with V_{1A} at cutoff). The alarm requires a rather strong input signal for complete cutoff of V_{1A}, but this can usually be obtained from a local broadcast station. When using the circuit with an HQ-120 it is advisable to insert a 50K isolation resistor in the input lead to the control grid of V_{1A}. The isolation resistor does not appear to be necessary with other types of receivers that have been tried.

— Ray L. Groff, W7FQG

Using an Antenna Bridge

If you have a Heathkit Model AM-1 antenna impedance meter, it can be put to work nearly full time by using it as a Conelrad monitor whenever it is not doing the job for which it is designed. A minor modification to the AM-1 and the use of a long antenna and a good ground connection make the unit sensitive enough for radio-alert work.

The circuit diagram of the impedance meter is shown in Fig. 6. A s.p.s.t. switch, S_1, has been added to the original circuit so the 10K resistor may be shorted in the interests of increased meter deflection; that is, the meter reading for a given input signal is higher with the switch closed. There is plenty of spare room inside the impedance meter for mounting the switch, and the modification has no effect on the normal functioning of the circuit. The 0-100 microammeter and the headphone jack of the AM-1 provide means for both auditory and visual monitoring of a broadcast station.

The red jack at the right-hand side of the unit is used as the antenna terminal. Either one of the black jacks may be used for the ground

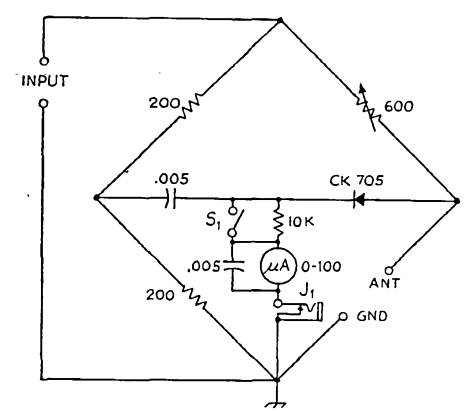


Fig. 6 — Schematic diagram of the Heathkit antenna impedance meter as modified by W8TGH. S_1 is a s.p.s.t. switch, used to increase the sensitivity of the meter during Conelrad monitoring by short-circuiting the 10K resistor in series with the microammeter.

connection. It is most important that the circuit be made inactive while the adjacent *ham* transmitter is on the air. Otherwise, the sensitive microammeter will be damaged by the intense radiation field. Protection can be provided by

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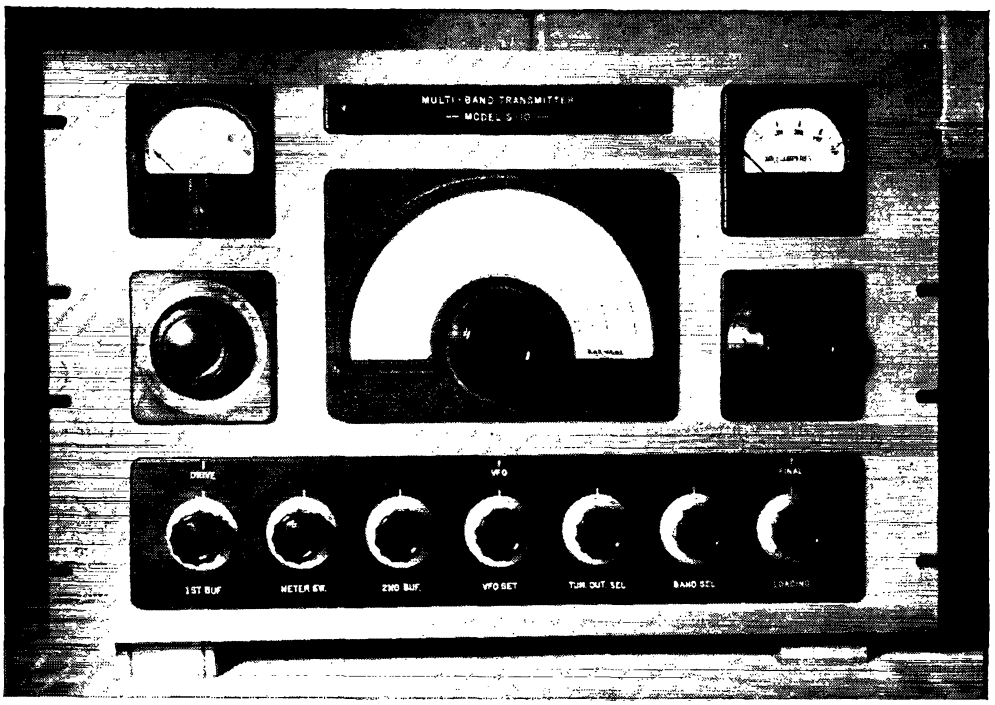
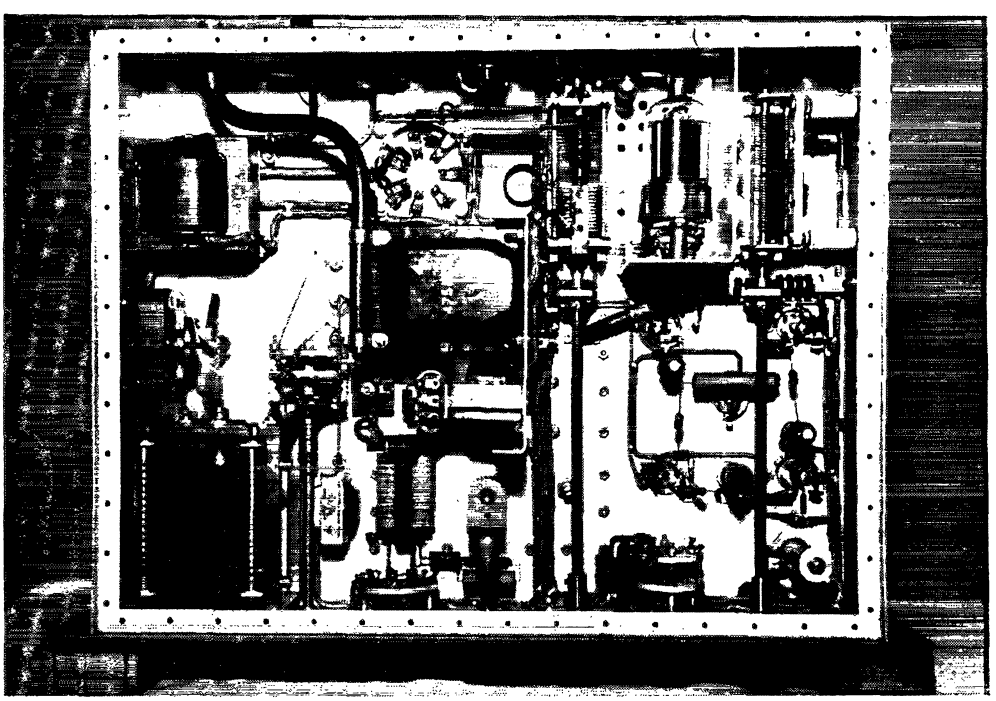
W2TJX Builds the 813 Transmitter



Anyone who appreciates superb workmanship will enjoy these views of W2TJX's rig. A dressed-up panel plus beautiful layout and wiring should cause Steve to be exceptionally proud of *his* "Three-Control 813 Rig" (copied from *QST*, Jan., June, 1954). — *C. V. C.*



Some Hints on Relay Operation

Factors Affecting Relay Speed and Adjustment

BY LAURENCE B. STEIN, JR.,* W1BIY

• On the premise that there must be a high percentage of amateurs who do not appreciate some of the basic considerations in the adjustment and the speed of operation of relays, W1BIY has prepared an interesting article that explains some of these factors. It is "must" reading for anyone who has ever used, or plans to use, a relay.

As a broad generalization, it may be said that all relays have one thing in common: the ability to control relatively large power at the command of a small signal. Such a definition allows the inclusion of a wide variety of devices, both electrical and non-electrical. Since the amateur has the greatest interest in the electromagnetic relay, we will limit ourselves to this type. Thus for our purposes, we will define a relay as an electromagnetically operated switch.

Such relays have two essential electrical parts: the "motor" and the "switch." These parts correspond respectively to the input and output circuits of an amplifier, with the obvious difference that the "output" from a relay is not usually proportional to the "input." The "motor" serves to accept the small signal and actuate the switch at predetermined signal levels. An important aspect of the relay is that its input and output circuits may be electrically isolated from each other.

Relays may be divided into two broad classifications: d.c. and a.c. The d.c. relays may be further classified as non-polar and polar. Two possible divisions for a.c. relays are (1) shaded-pole relays and (2) d.c. relays provided with built-in rectifiers.

*Sigma Instruments, Inc., South Braintree, Mass.

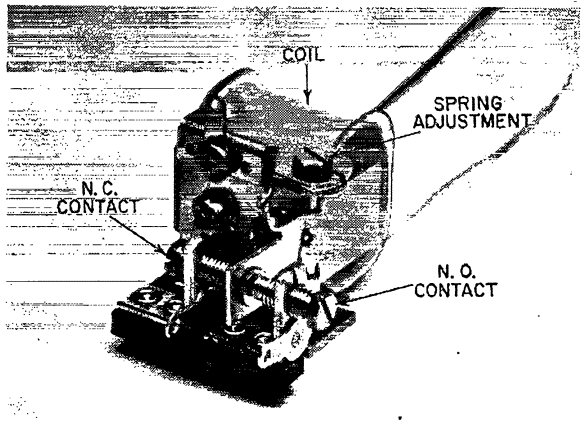
D.C. Relays

Let us consider d.c. relays. The non-polar (or neutral) relay consists usually of a fixed soft-iron vane, or armature, hinged so that it can move when the coil is energized. Contacts are either attached to or moved by the armature. This type of relay will respond to current flow through the coil in either direction, provided that sufficient magnetic flux is produced to overcome restraining forces on the armature.

The polar relay is more complex and may assume a wide variety of forms. It retains the coil and moving armature of a non-polar relay, but usually contains a permanent magnet to enable it to distinguish between the two possible directions of current flow through the coil.

A thorough look at some of the principles of non-polar d.c. relays will be most useful, since many of the ideas apply to the other types. A typical single-pole double-throw sensitive d.c. relay is shown in the photograph. The armature is pivoted at the center. Contacts are mounted directly on the armature on one side of the pivot. The portion of the armature on the other side of the pivot is directly in front of the soft-iron core on which the coil is mounted. A spiral spring holds one armature contact against the normally-closed (n.c.) contact when the coil is not energized.

If the coil current is gradually increased from zero, a value is reached where the armature will suddenly move toward the pole-piece until its motion is stopped either by the normally-open (n.o.) contact or by the armature striking the pole-piece. This value of current is known as



A typical non-polar d.c. relay. This is a s.p.d.t. unit, but relays are often made with a multiplicity of poles so that a number of different circuits can be controlled simultaneously. The contacts are "normally open" and "normally closed."

"pull-on." The pull-on current for a given relay depends largely on the force exerted by the spiral spring and the air gap between the coil pole-piece and the armature itself. This air gap may be adjusted by turning the screw on which the n.c. contact is mounted.

If the current is reduced gradually from above pull-on, a value is reached where the armature returns suddenly to its first position. This is the "drop-out" value, determined largely by the force exerted by the spiral spring and the air gap (if any) after pull-on. This air gap can be adjusted by turning the n.o. contact screw.

Thus we see that the pull-on current can be adjusted by means of the spring and the n.c. contact, while the drop-out can be adjusted by means of the spring and the n.o. contact. Since both operating values of current are dependent on spring adjustment, a compromise must be made. For general purpose use, it is common to adjust the spring so that the force on the n.c. contact when the coil is not energized equals the force on the n.o. contact when the coil is energized with normal current. For many special applications these conditions are modified.

Facts About Coils

The amateur is frequently confronted with the problem of using a relay of unknown characteristics (and origin) for a specific job. Usually the circuit constants are given, and the ham must modify the relay to make it do the job. Without going into design details at great length, a discussion of some simple principles regarding the "motor" or coil circuit is useful for this purpose.

For any given manufacturer's type or style of relay, the dimensions of the coil bobbin (or bobbins) are fixed, regardless of the coil resistance. Since it is good engineering practice to fill the bobbin with wire, various resistances are obtained by using various wire sizes. Therefore, the volume of wire (cubic inches) and the cross-sectional winding area parallel to the axis (square inches) are constant.

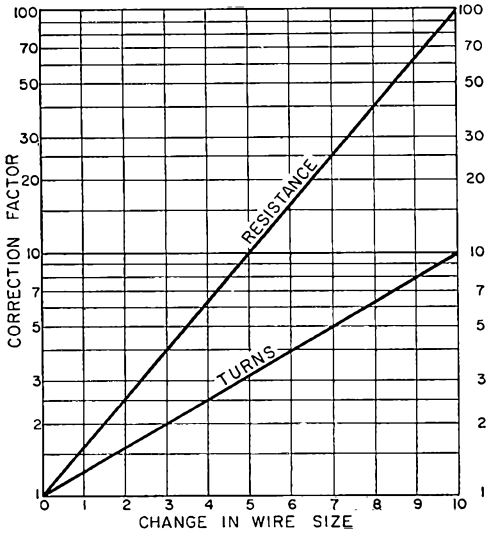


Fig. 1. — The change in resistance and turns vs. the change in wire size, for a full bobbin. For an increase in resistance and turns, add to the wire size and multiply by the corresponding correction factors. For a decrease in resistance and turns, subtract from the original wire size and divide by the corresponding correction factors.

Examination of any standard magnet wire table indicates that, theoretically, the turns per square inch change by a factor of $10^{0.1}$, or 1.26 for a change of one wire size. Therefore, on a given bobbin, the *turns* change by this factor for a change of one wire size. Likewise the ohms per cubic inch theoretically change by a factor of $10^{0.2}$, or 1.59 for a change of one wire size. Consequently, the *ohms* on a given bobbin change by this factor for a change of one wire size.

This theoretical relationship is shown in Fig. 1. Note carefully that these curves only indicate the *changes* that will occur in turns and resistance when the wire size is changed on any given coil bobbin. Since the curves are theoretical, actual values may differ by as much as ± 15 per cent on turns and ± 30 per cent on resistance, depending on wire tolerances, space factor, and the like.

If, as we have seen above, the turns change by a factor of $10^{0.1}$ for each wire size, then the turns-squared (N^2) must change by a factor of $(10^{0.1})^2$ or $10^{0.2}$. Since this factor is identical to the factor for resistance change, it is apparent that for a given bobbin, the ratio of turns-squared to resistance is a constant, regardless of wire size. This gives rise to

$$\frac{N^2}{R} = k \qquad (1)$$

where k depends on the dimensions of the bobbin.

It is well known that the magnetizing force in an electromagnetic device like a relay is produced by the ampere-turns (the product of the current and the number of turns through which it flows). To make (1) really useful, we multiply $\frac{N^2}{R}$ by $\frac{I^2}{I^2}$, giving

$$\frac{I^2N^2}{I^2R} = k.$$

Writing it differently

$$\frac{(NI)^2}{I^2R} = k \qquad (2)$$

We recognize immediately that $(NI)^2$ is ampere-turns squared, and I^2R is the familiar expression for watts. Thus we have proved that, for a given relay with its coil fully wound, the square of the ampere-turns is proportional to the power used by the coil. This relationship is useful because we know that if it requires a certain power (watts) to cause a relay to operate, we may change its coil resistance by changing the size of the wire and be certain that the same power will produce the same ampere-turns, and still operate the relay.

Here is an example: We require a relay to operate our mobile rig from a nominal 6-volt source.

In the junk box we find a likely looking prospect, but its coil resistance measures 8000 ohms, obviously too high. It looks like the kind of relay that is easily rewound, so we proceed to test it, bearing in mind that we want to know how much *power* it takes to make it operate. With a source of variable d.c. voltage, we find that it requires either 3.3 ma. or 26.4 volts (depending on whether we use a milliammeter or a voltmeter) to make the relay just pull on. Calculating the power, $I^2R = (.0033)^2 \times 8000 = .087$ watts (remember to put the current into amperes), or

$$\frac{E^2}{R} = \frac{(26.4)^2}{8000} = .087 \text{ watts.}$$

To inject a little factor of safety into the calculation, let us now decide that the rewound coil should draw 0.10 watts at 4.5 volts, the lowest voltage that might be encountered in the rig. The new coil resistance can be calculated by the formula

$$\frac{E^2}{R} = P$$

where E is 4.5 and P is 0.10, hence

$$R = \frac{(4.5)^2}{0.1} = 200 \text{ ohms.}$$

The problem now boils down to finding the correct wire size to give 200 ohms. Since the old resistance is 8000, we must divide it by 40 to obtain the desired 200 ohms. Using the Resistance line in Fig. 1, we see that if we wish to divide by 40, we must subtract 8 from the wire size on the existing coil. Measuring the wire on the 8000 winding shows it to be, say, No. 42 AWG (B&S). Therefore, if we rewind with No. 34 wire (42–8 = 34), we should come out with about 200 ohms. As a matter of interest, we note on the turns line of Fig. 1 that the new coil will have between 1/6 and 1/4 the turns of the old coil. The practical approach is simply to fill the bobbin with No. 34 wire without bothering to count turns. This works. It is important, of course, that the new wire have the same insulation (enam., d.c.c., etc.) as the original wire.

Inductance

It must be remembered that a relay coil circuit is highly inductive. Let us have a look into this matter. Refer back to our formula (1), which says that for a given bobbin, the ratio of turns-squared to resistance is a constant, or

$$\frac{N^2}{R} = k.$$

Our "fundamentals" tell us that, all other things being equal (dimensions of parts, quality of iron, length of air gap, etc.), the inductance of a coil is proportional to the turns squared. Substituting pL for N^2 (where p is an arbitrary constant), we come out with

$$\frac{pL}{R} = k, \qquad \text{or } \frac{L}{R} = \frac{k}{p}, \qquad \text{where } \frac{k}{p} \text{ is a}$$

new constant which we will call c. Thus

$$\frac{L}{R} = c \qquad (3)$$

We see that for any particular manufacturer's style of relay, the inductance is proportional to the resistance. Inductances typical of small relays measured at low frequencies are of the order of .001 to .020 henries per ohm. These values will vary considerably with armature position, frequency, and coil current.

The ratio $\frac{L}{R}$ should be recognized as an electrical "time constant." When L is in henrys and R is in ohms, the time constant is in seconds. The typical values may be expressed as time constants of .001 to .020 second.

Keying and Timing

Although recognizing the obvious advantages, many amateurs are reluctant to key their c.w. transmitters with relays. Some have tried, and have failed to make the relay follow their bugs

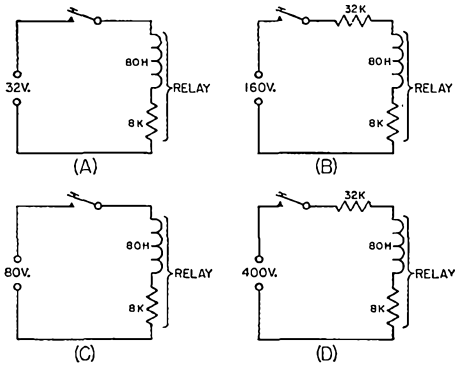


Fig. 2 — **Relay circuits discussed in the text. The relay's inductance and resistance are shown, as well as different series resistances and source voltages.**

at 35 w.p.m. Others have not tried but are certain that no relay is capable of such speed. Rest assured that it can be done, easily, for there are relays all over the world repeating teleprinter signals at 60, 75, and 100 w.p.m. There are even relays capable of 600 w.p.m. To be sure, most of these high-speed relays are polar, but the well-made high-speed neutral relay can operate up to 60 w.p.m. if properly driven. Phone men too should note that the principles apply nicely to voice-operated relays, even though operated from a vacuum tube.

We have seen in our discussion of inductance that a relay coil may have an electrical time constant of, say, .010 second. How then can we make it operate faster than .010 second? Let's take our previous example, the 8000-ohm relay that pulls on at 3.3 ma. If we assume .010-second as its time constant, its inductance must be 80 henries, surprisingly high! Consider the relay connected in each of the circuits of Fig. 2.

Circuits A and C have time constants equal to

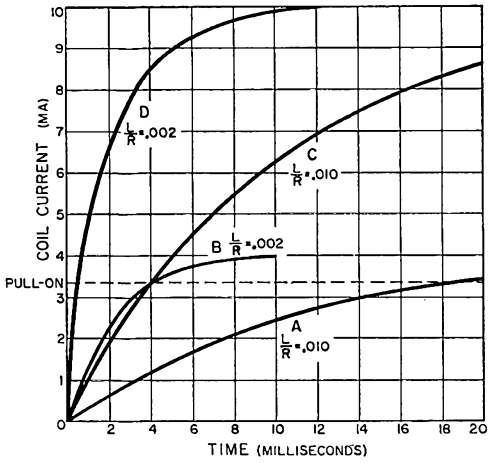


Fig. 3 — Curves of the rate of rise of current through the coil for the various circuits of Fig. 2.

that of the relay alone;

$$\frac{L}{R} = .010 \text{ sec.}$$

In circuits B and D, series resistance has been added so as to reduce the time constant to:

$$\frac{L}{R} = \frac{80}{32000 + 8000} = .002 \text{ sec.}$$

Fig. 3 shows the rate at which the current increases after the key is closed for each of the above circuits.

The curves of Fig. 3 have been idealized by assuming constant inductance in the coil circuit. Actually the inductance changes due to motion of the armature, saturation of the iron, etc., putting various kinks in the current curve.

It must be remembered that the interval between the time the coil is first energized and the time the current has reached the pull-on value is *not* the operating time of the relay. This interval is, however, a comparative measure of the effectiveness of coil circuit "drive," since the armature should *just start* its travel when the current reaches pull-on. The true "operate" time is this time plus the transfer time of the relay.

Let us see how the circuit modifications have affected this time interval. Comparing circuits Fig. 2A and 2B, we see that the steady-state currents are identical, but the time constants and the voltage *sources* are different. We have decreased the time from .018 second to .004 second by increasing the battery voltage (and incidentally burning up some power in a resistor).

Comparing circuits Fig. 2A and 2C, we note that the time constants are the same, but the steady-state current of 2C is considerably greater. Here we have decreased the time from .018 second to .004 second by increasing the steady-state current, but not changing the time constant (and incidentally burning up more power in the relay coil than actually required to pull it on).

In the circuit of Fig. 2D, we have combined all of the previous effects: decreased the time constant, increased the source voltage, and increased the steady-state current. The corresponding curve in Fig. 3 shows clearly the benefit of these changes. We have shortened the time to less than .001 second.

If we designate the ratio of steady-state current to pull-on current as *current overdrive*, and the ratio of effective source voltage to pull-on voltage (pull-on current times coil resistance) as *voltage overdrive*, we may generalize by stating that increasing both the "current overdrive" and the "voltage overdrive" speeds up relay operation.

Typical small single-pole sensitive relays have timing characteristics similar to those shown in Fig. 4. Numbers, of course, are relative, as they could not apply to all of the great many excellent relays available.

These curves indicate that for fast operation, the current supplied to the coil of a relay should be several times the required pull-on current, and the voltage of the source of current should be high compared to the required pull-on voltage. Let us take the circuit of Fig. 2A as an example. The pull-on current of the relay (Io) is 3.3 ma and the pull-on voltage (Vo) is 26.4 volts. The actual circuit is

$$I = \frac{32}{8} \text{ or 4 ma.,}$$

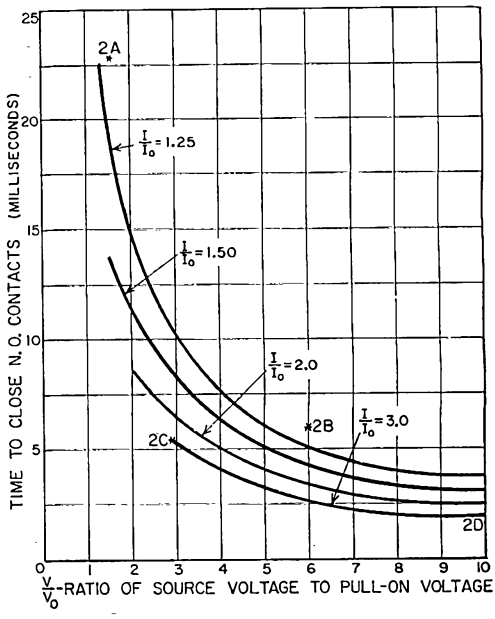


Fig. 4 — Typical relay timing curves. These show the approximate time required to close the n.o. contacts after closing the switch in the coil circuit. I/Io is the ratio of steady-state current to pull-on current of the relay.

The small crosses show where the circuits of Fig. 2 fall on the curves — 2D is off scale to the right.

and the source voltage V is 32 volts. Hence,

$$\frac{I}{Io} = \frac{4}{3.3} \text{ or } 1.2, \quad \text{and } \frac{V}{Vo} = \frac{32}{26.4} \text{ or } 1.2.$$

Entering the curves of Fig. 4, we see the point marked "2A" represents an operate time of about .023 second. Following the same analysis, circuit 2B gives us

$$\frac{I}{Io} = 1.2 \quad \text{and } \frac{V}{Vo} = 6;$$

circuit 2C gives us

$$\frac{I}{Io} = 3 \quad \text{and } \frac{V}{Vo} = 3;$$

and circuit 2D gives us

$$\frac{I}{Io} = 3 \quad \text{and } \frac{V}{Vo} = 15.$$

These points are marked on Fig. 4, except that $\frac{V}{Vo} = 15$ for circuit 2D is off scale.

It is important to note that if there are any resistors connected directly across the relay coil, the battery voltage can no longer be considered as the "source voltage." In this case, the "source voltage" is the voltage that would appear at the terminals to which the coil is connected after disconnecting the coil. The curves do not apply if either a capacitor or inductance is connected across the relay coil or elsewhere in the circuit.

Summary

Summing up, we set down the following principles:

1. The pull-on and drop-out points of a relay can be adjusted, within the limits of its design, by adjustment of the normally-closed and normally-open contacts and the spring.
2. Both the turns and the resistance of a full relay coil are determined by the size of the wire used in the winding, but the ratio of turns squared to resistance is essentially a constant for a given design.
3. Corollary to the above, the ratios of ampere-turns squared to watts, and inductance to resistance, are likewise constant for a given design.
4. The speed of operation of a relay can be increased by reducing the time-constant of the circuit in which it is used, and by driving the relay with a current several times that required to just operate the relay.

While the above principles were explained with reference to non-polar d.c. relays, they will be found to apply equally well to polar relays.

Strays

The London (England) Members Luncheon Club, an informal gathering of RSGB members, would like the opportunity of entertaining visiting amateurs. The club meets regularly the third Friday of each month, at 12:30, in the Bedford Corner Hotel. Hams may call G2FUX (Ruislip 2763) or RSGB Hq. (Holburn 7373) and be assured of a warm welcome.

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The tenth anniversary edition of the *World Radio Handbook for Listeners* is now available from Gilfer Associates, P. O. Box 239, Grand Central Station, New York 17, N. Y., for $2. This well-known publication contains information on domestic and international short wave broadcasting stations throughout the world, including frequencies, schedules and program notes.

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Hey, you Field Day men! The latest dope is that balloons tied to the ground are regulated by the Civil Aeronautics Authority. To set up a moored balloon over six feet in diameter with a capacity greater than 115 cubic feet, you gotta have CAA permission. And don't let it get unmoored, or you'll create an international incident.

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What are the odds for initial calls? KN9BTF has been issued to Bill T. Ford, of Springfield, Illinois.

Many of our readers probably interrupted their hamming to watch a 10-year-old boy win $100,000 on the *Big Surprise* by answering questions on the stock market. A few may have recognized young Leonard Ross as W6SJR, who obtained his Novice license at the age of seven, and soon qualified for General Class. Here W6SJR is ready to go for the $50,000 question, with M. C. Mike Wallace. (*NBC photo*)

A Simple 14-Mc. Ground-Plane Antenna

Effective Antenna from Inexpensive Components

BY KARL THURBER, JR.,* K2IKZ

• Here are the constructional details of a simple ground-plane antenna that may solve some readers' problems as they did those of the author and designer. The article is presented as it was received, except that the title was changed to its present form from "The Twenty-Meter Miracle." We considered "miracle" to be a little misleading, although it was probably considered quite descriptive and accurate by the justifiably-enthusiastic 14-year-old author.

BEING AN AMATEUR who is interested in a bit of DX here and there, it was decided that some sort of efficient radiator was needed at K2IKZ to make our 100 watts sound like a gallon. (Some order!) After studying many articles on 20-meter skywires and consulting numerous textbooks, it was decided that, not having the space for a rhombic nor the oversized pocketbook for a beam, the ground-plane vertical was best suited to our location.

In this article, the constructional details have been worked out so that the antenna can be put up without any fuss or "cut-and-try" methods and with the simplest of tools.

First, the vertical element should be ¼-wavelength; this would make it 16 feet 6 inches high. The radials are 2.5 per cent longer, or 16 feet 10 inches; however, these lengths are not extremely critical, so don't worry about it!

To get your antenna started, visit the local lumber supply and secure a wooden dowel 1⅜ inches in diameter and 16 feet long. A pole of the "closet-rod" variety is just right. This should cost about $1.00. At the local radio store, purchase enough lengths of 1¼-inch diameter aluminum tubing TV mast material. (I used 5-foot lengths that had crimped ends for telescoping.) Congratulations! You now have the vertical element.

In addition, the following miscellaneous items will be necessary:

Birnbach No. 866 stand-off insulators (half dozen or more)
About 70 feet of copper wire for the radials
Four small insulators (glass or porcelain)
One SO-239 coax chassis receptacle
Three PL-259 coax connectors
One PL-258 junction adaptor
11 feet of 50-ohm coax (RG-8/U)
70-ohm coax (RG-11/U) to rig (any length)
Mount for the assembly (see text)

It was desired to feed the antenna with 70-ohm line. Since the impedance of the vertical antenna is appreciably less than this, a matching section is necessary. This can be easily accomplished without any "cut-and-try" methods if you insert a piece of 50-ohm coax with a length of ¼ wavelength between the 70-ohm coax and the base of the antenna. Considering the velocity factor of coax, which is .66, you will need only about 11 feet for the matching section. This should give a good impedance match to the 70-ohm cable. Of course, you could feed the antenna directly with 50-ohm coax and eliminate the matching section.

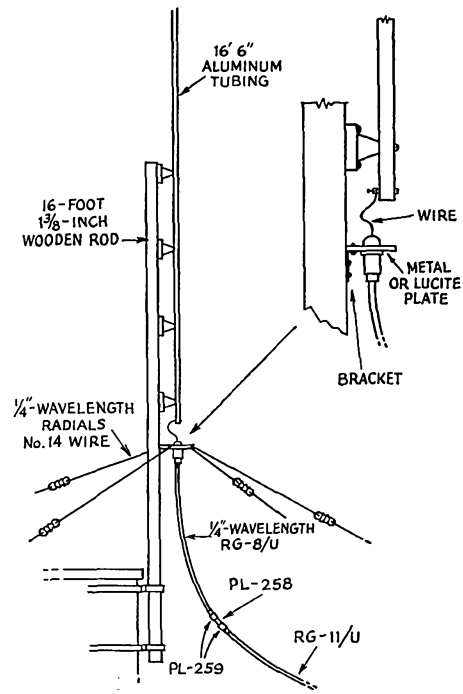


Fig. 1 — An over-all sketch of the 14-Mc. ground-plane antenna, and details of the cable connection and radials junction. The 16-foot wooden pole is fastened to the chimney with regular TV-mast support brackets, and the cable-connection mounting plate is located 6 feet from the bottom of the pole.

At our QTH, the chimney of the house is directly in the center and offered an ideal place for mounting the vertical. Therefore, a small TV-type chimney mount was purchased to support the assembly. The radials, as can be seen in Fig. 1, are mounted some distance from the bottom of the pole, and this strengthens the pole somewhat. Don't worry about it falling through the ceiling! This antenna has admirably with-

(*Continued on page 142*)

* 247 Hamilton Road, West Englewood, N. J.

• Recent Equipment —

Gonset G-66 Receiver

FOR MANY YEARS the time-honored approach to mobile ham reception was to add a single-band or band-switching converter ahead of the regular BC car receiver and take what you got in the way of selectivity and no beat-note reception. Times are definitely changing, and the modern approach seems to be to use a compact ham-band-plus-BC car radio that takes up no more room than an ordinary BC radio but has the desirable features of larger home-station communications receivers.

The Gonset G-66 is a good example of the current trend. It is a double-conversion superheterodyne that covers the BC band and the amateur bands through 10 meters. The power supply, a separate unit, also houses the loudspeaker, and merely by changing the power-plug connections the power pack can supply the receiver power from 6 or 12 volts d.c. or from 115 volts a.c. Consequently, the receiver can be removed from the car to serve as the home or summer-camp receiver at a moment's notice. The power supply can be bolted to the rear of the receiver to form an integral unit, or it can be mounted up to 4 feet away and connected with the power cable supplied with the unit.

A block diagram of the receiver is shown in Fig. 1. The front end uses a 6DC6 r.f. amplifier and the pentode section of a 6U8 for the mixer. A 6C4 is used in the high-frequency oscillator circuit, and the G-66 is unusual in that a buffer stage is used between oscillator and mixer. (The triode section of the 6U8 is used for this purpose.)

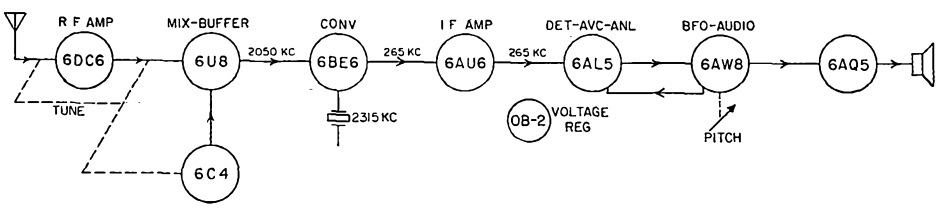
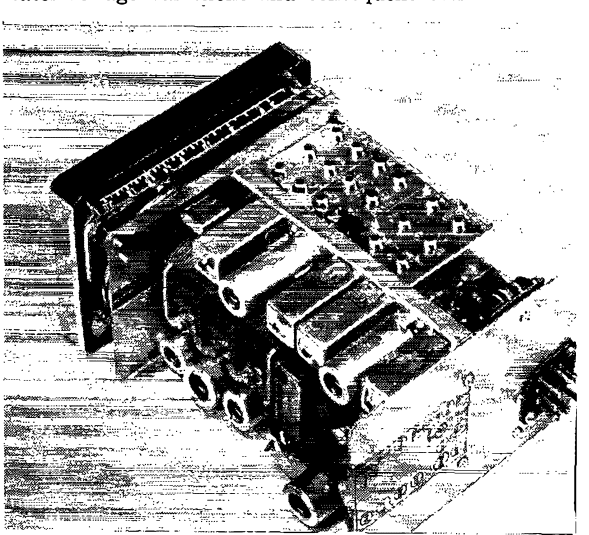


Fig. 1 — Block diagram of the Gonset G-66 receiver. The power supply and speaker is a separate unit that can be used with 115 volts a.c. or 6 or 12 volts d.c.

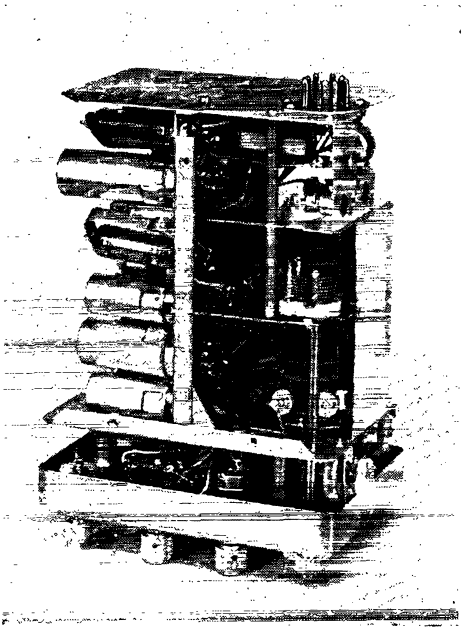
The mixer output is at 2050 kc., and a double-tuned transformer is used between the mixer and a 6BE6 converter stage. To minimize images of the second i.f., a trap tuned to 2580 kc. is included in the mixer plate circuit.

The oscillator section of the 6BE6 converter is crystal-controlled, and the output of the 6BE6 is coupled to the 265-kc. 6AU6 i.f. amplifier stage through two i.f. transformers (four tuned circuits). Two i.f. transformers are also used to couple between the i.f. amplifier and the 6AL5 detector, and consequently there are eight tuned circuits in the 265-kc. i.f. amplifier. The instruction book we had was a temporary one, with no performance figures included, so we don't know what the manufacturer claims for i.f. bandwidth with these eight tuned circuits.

The pentode section of a 6AW8 is used in the b.f.o. stage, and the triode section of the 6AW8 serves as the first audio stage, furnishing headphone output or driving the 6AQ5 audio output stage. A 0B2 regulator tube stablizes the h.f. oscillator and buffer plate voltages, the r.f. and mixer screen voltages, and the b.f.o. plate and screen voltages. For maximum stability in mobile s.s.b. or code operation, the manufacturer suggests a separate "hot" heater lead directly from the receiver to the battery, to minimize heater-voltage variations and consequent oscil-



This view of the G-66 shows the high-capacity tuning gang and the top of the coil compartment.



Another view of the G-66. The knob on the side is the oscillator trim control. Note that two antenna input jacks are used, for BC or transmitting antenna.

lator instability at the higher frequencies.

The gain control system of the G-66 is akin to the method used in some of the war-surplus receivers. A variable cathode bias is applied to the 6DC6 r.f. stage and the 6AU6 i.f. stage for r.f. gain control. When used, a.v.c. is applied to these two stages and the 6BE6 converter. The audio volume control is connected in the usual spot, at the output of the 6AL5 detector. The audio volume control and the r.f. gain control are ganged on the same shaft. A 4-position switch on the panel is marked STANDBY, PHONE ANL OFF, PHONE ANL ON, and CW SSB. In the two PHONE positions the r.f. gain control is shorted out, the a.v.c. is cut in, and the audio volume control is operative. In the CW SSB position the audio volume is wide open all of the time, the a.v.c. is shorted out, and the r.f. gain control is operative.

There isn't much room on a 6½-inch wide by 4½-inch high panel for very many controls, and the G-66 has what appears to be a nice compromise in this department. The 4-position "function" switch just mentioned is balanced by the VOLUME control knob, and there are two smaller knobs for antenna trim and b.f.o. pitch. Two 1-inch diameter knobs control the bandswitch and the tuning. The tuning scale is the slide-rule type, and the scale for the band in use comes into view as the bands are switched. The tuning knob requires 18 turns to cover the BC + 160 range and never less than about 16 turns on the other ranges. The tuning drive is a combination of a planetary drive and spring-loaded gears, with string drive for the tuning-scale pointer. A 1½-inch diameter S meter completes the front panel.

An oscillator trimmer control is provided at the front left-hand side of the receiver for bringing the dial into exact calibration with a known frequency, and a headphone jack is provided at the rear left-hand side.

The G-66 has a tuning range in the first band of .55 to 2.0 Mc., to cover the BC and the 160-meter band, while the other ranges are just the ham bands with a little extra at the ends. Covering a wide range at the BC band and a small range in the ham bands presents a band-spreading problem that faces many amateurs in the home construction of receivers, so we thought you might be interested to see how Gonset solves the problem. Fig. 2 shows a simplified circuit diagram of the receiver front end on one of the ham bands. The large tuning capacitors (12 to 464 $\mu\mu$f.) are padded (C_2) and connected in series with small capacitors (C_1) instead of using a tapped-coil system that might introduce complex multiple circuits. In a typical case C_1 might be 33 $\mu\mu$f. and C_2 would be 270 $\mu\mu$f. Fig. 2 also shows the double-tuned input circuit used between the antenna and the grid of the r.f. stage. The first tuned circuit is inductively coupled through a low-impedance winding and tuned by the antenna trimmer. This circuit is in turn inductively coupled to the grid circuit which is tuned by one section of the three-section variable capacitor. The small neon bulb across the antenna coil serves to protect the receiver against transmitter r.f. Another interesting circuit trick is also shown in Fig. 2, in the mixer section. The high-frequency oscillator has a buffer stage between it and the mixer, as mentioned earlier. This buffer is the triode section of a 6U8 and the mixer is the pentode section of the same tube. The plate circuit of the buffer is coupled to the mixer cathode through a network that gives improved injection at 28 Mc. —*B. G.*

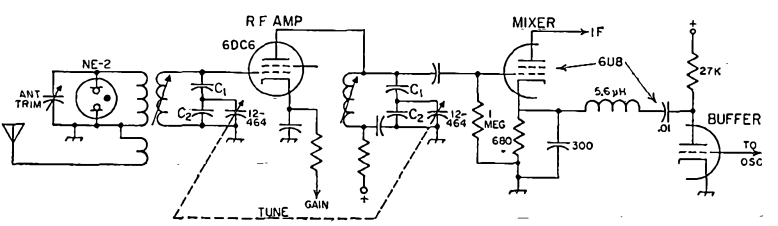
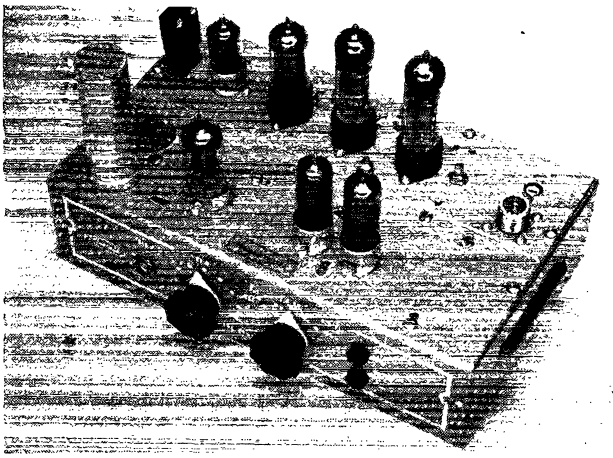


Fig. 2 — Simplified circuit of the "front end," showing how bandspread is obtained with large tuning capacitors. Similar circuitry is used in the oscillator section.



The Tecraft Type TR-20 220-Mc. transmitter. R.f. sections of similar design are also available for 50 and 144 Mc. Tubes in r.f. portion (rear, left to right) are 6AU6, 5763 and two 6360s. The modulator lineup includes a 12AX7 and two 6AQ5s.

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Tecraft TR-20 V.H.F. Transmitters

THOUGH complete transmitters, ready to go on the air, have been available for the frequencies below 30 Mc. for some time, the v.h.f. man has had to build his own or convert surplus until very recently. Now, with occupancy on the v.h.f. bands growing rapidly, newcomers to the world above 50 Mc. are getting some attention from the equipment manufacturers.

Most of the new gear is for 50 or 144 Mc., but The Equipment Crafters, River Edge, N. J., now supply transmitters for all three v.h.f. bands.

TUBES AND STAGE FUNCTIONS IN THE TECRAFT V. H. F. TRANSMITTERS

	50 Mc.	*144 Mc.*	*220 Mc.*
Oscillator	6AU6, 8.4–25 Mc.	6AU6, 8–24 Mc.	6AU6, 8.15–24.45 Mc.
Multiplier	5763, 25–50 Mc.	5763, 24–72 Mc.	5763, 24.45–73.35 Mc.
Multiplier	None	5763, 72–144 Mc.	6360, 73.35–220 Mc.
Amplifier	6360, parallel	6360, pushpull	6360, pushpull
Modulator: 12AX7, p.p. 6AQ5s			

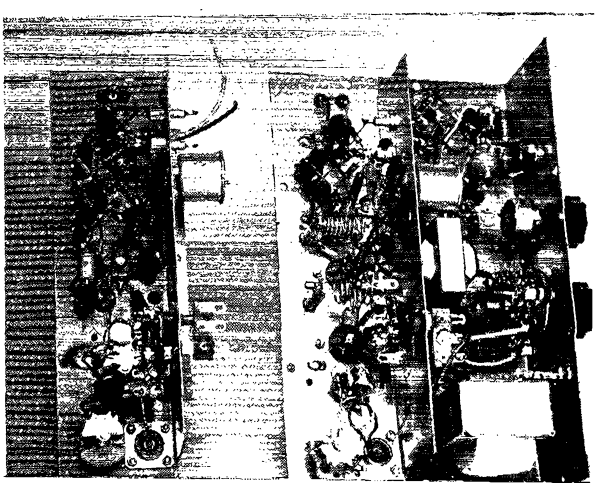
Designed for mobile or home-station service, the rigs may be run at up to 20 watts input, though 15 to 18 watts is recommended for long tube life. The transmitter shown in the first photograph is the 220-Mc. model. From the top the 144-Mc. rig looks the same, there being only slight circuit differences between it and the 220-Mc. job. The 50-Mc. r.f. section, the under side of which is shown adjacent to the 220-Mc. unit in the bottom views, uses one less tube. Power supply equipment especially designed for these transmitters is also available.

Tube lineups and stage functions in the Tecraft v.h.f. transmitters are shown in table form. The oscillator is the same in all three units, except for the slight difference in crystal frequency. It uses the simple Pierce oscillator circuit, with the plate circuit of the pentode tripling the crystal frequency. The oscillator runs at low input, for good stability. The following stage doubles in the 50-Mc. unit and triples in the other two. The third stage is the final in the 50-Mc. unit, a dual tetrode with its elements in parallel. A tetrode doubler to 144 Mc. drives the final amplifier in the 2-meter r.f. section. A push-pull tripler and an amplifier, both dual tetrodes, complete the 220-Mc. lineup.

Output is taken off through a coaxial fitting, and a capacitor is provided for tuning out the reactance of the output coupling link. A meter may be plugged into tip jacks on the front wall of the chassis, and a switching system is provided for metering all essential functions during the tune-up process.

The modulator is the same for all units. A 12AX7 two-stage speech amplifier works into a pair of 6AQ5s. High-impedance crystal or dynamic microphones are used.

The power supply may be purchased from the manufacturer, or built by the owner. Recommended output voltage is 250, and the drain runs up to 250 ma., depending on the band. Power supply components capable of delivering high current at low voltage are now common in the television receiver field, and replacement parts designed for TV service work are usable for the Tecraft rigs. The equipment may also be operated from vibrator or generator supply. A possible solution for this service would be two small vibrator supplies, dividing the load. —*E. P. T.*



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Bottom view of the Tecraft 220-Mc. transmitter and modulator, with a 50-Mc. r.f. section at the left.

The 10-10 Antenna

Good 10-Meter DX with a 10-Dollar Vertical

BY VICTOR DAMORA,* K2HKM

• Here is a simple 10-meter vertical coax antenna that you can attach to your TV mast. It has given a good account of itself at the author's station.

A SHORTAGE of space for antennas was responsible for the birth of the "10-10" (10 meters — 10 dollars) antenna shown in the sketches on the next page. It will be recognized as a vertical of the coaxial type. It is of light weight and rugged and your TV mast will serve as a support. The total cost should be less than $10.00.

The completed assembly is shown in Fig. 1. The TV mast extension may be a piece of pipe or tubing 2 or 3 feet long and of sufficiently small diameter to drop inside the top of the TV mast, or it may be fastened to the top of the TV mast with standard TV U-bolt clamps.

Figs. 2 and 3 show the details of construction. The top section is an 8-ft. length of ⅜-inch aluminum rod. A ⅛-inch hole was drilled an inch or so deep in the top end of the rod, and a lateral hole was drilled a half inch or so from the end, and tapped for a set-screw. This was done so that various short pieces of ⅛-inch rod might be inserted for adjustment of length. The other end of the ⅜-inch rod was drilled and tapped for an 8-32 machine screw for fastening the inner conductor of a 72-ohm coax feedline.

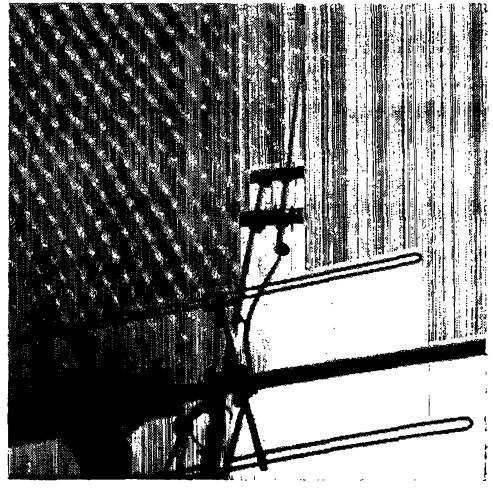
The lower section or skirt is an 8-ft. section of aluminum tubing, 1½ inches o.d., with 0.058-inch wall. Two bakelite disks were used for the insulator at the center. These were cut from ¾-inch sheet stock. The top piece, or cap, is 1¾ inches in diameter. The lower piece was cut to fit inside the skirt as snugly as possible. Circles were scribed on the bakelite, and ⅜-inch holes were drilled at the centers. Then the disks were cut out with a coping saw and trimmed smooth with a file. If more convenient, the cap need not be ¾ inch thick; ¼ inch should be adequate. The edge of the piece that fits inside the skirt was drilled and tapped for a machine screw which fastens the disk to the skirt and also serves as the terminal for the outer conductor of the coax line. Notches were filed in both disks to provide passage for this lead. After the disks were slid over the lower end of the ⅜-inch rod, they were clamped together with a pair of brass collars fitted with set screws.

The coax line should be fitted with four or five spacers that will easily fit into the skirt. These will hold the line reasonably well spaced inside the skirt. The spacers can be cut from plastic bottle tops, etc., and held in place with friction tape.

The bottom end of the antenna is insulated from the TV mast extension by a pair of 2 × 7 × ¾-inch bakelite blocks, as shown in the sketch. The bottom of the antenna and the top of the mast extension are fastened to opposite ends of the blocks by means of U bolts.

The performance of this antenna has far surpassed expectations. With only 65 watts input, we're often reported the loudest signal on the band. It's possible that the ground-plane effect of the TV antennas below help to keep the vertical pattern at a low angle. Try it, and you'll be surprised.

The 10–10 antenna mounted on a TV mast. The mounting blocks are spaced about 2 feet apart.



* 56–21 206 St., Bayside 64, N. Y.

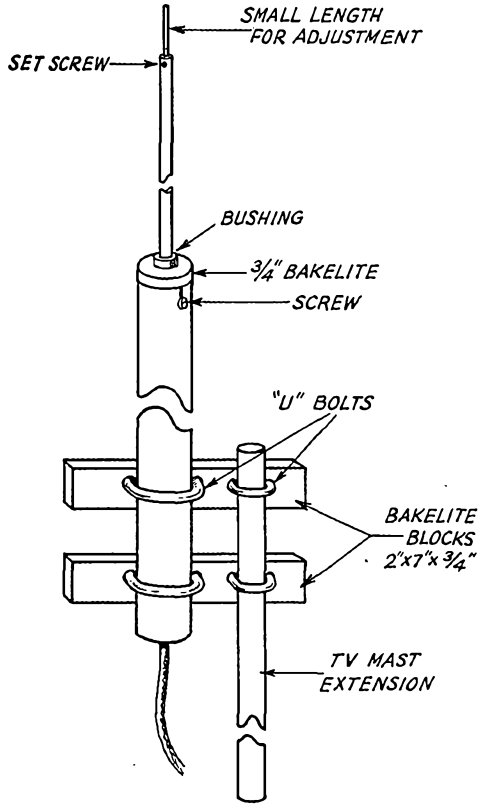


Fig. 1 — Sketch showing the completed antenna and mounting assembly.

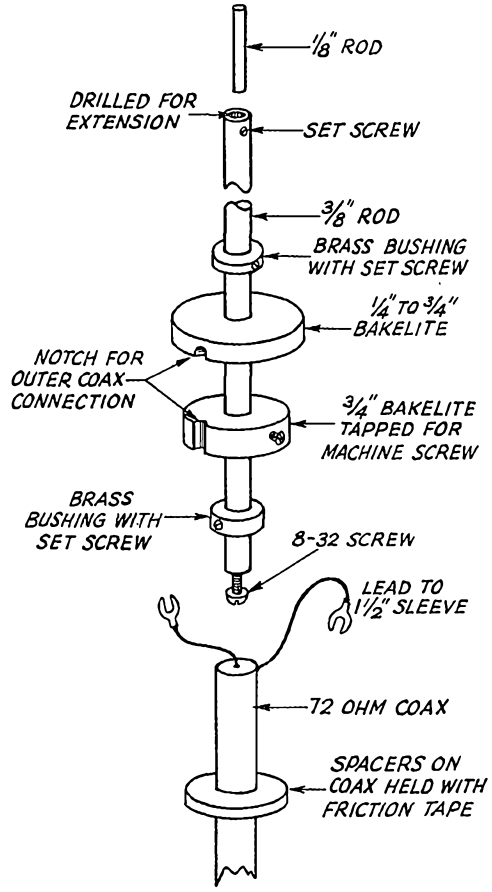


Fig. 2 — Exploded view showing the 3/8-inch rod and method of assembling the pieces.

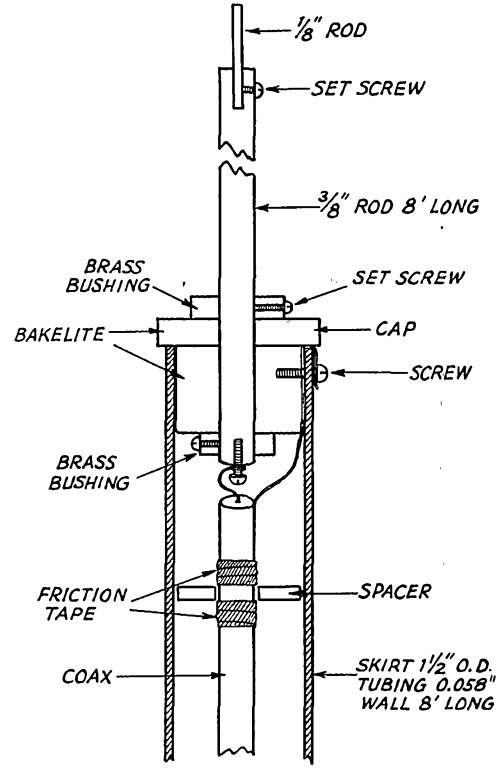


Fig. 3 — Cutaway view showing the center insulator in place in the skirt and the method of connecting the coax line.

Happenings of the Month

INCIDENTAL AND RESTRICTED RADIATION DEVICES

Part 15 of the Federal Communications Commission's Rules and Regulations was set up many years ago to control devices such as phonograph oscillators and carrier-current systems. Earlier this year, FCC put into effect an entirely-new "Part 15 — Incidental and Restricted Radiation Devices," covering (with the exception of diathermy and induction heating apparatus, which have their own set of rules) nearly every kind of gadget which generates radio-frequency energy with no intention to radiate it. The purpose is, of course, to control unwanted radiation from such devices, which might otherwise cause harmful interference to established radio services. "Incidental" radiation devices are such things as faulty power lines, electric motors, heating pads. "Restricted" radiation devices are such things as wireless record players, sweep and h.f. oscillators in TV receivers.

The Commission now says that such apparatus may not cause harmful interference to authorized radio services. Harmful interference is defined as "any radiation or induction which endangers the functioning of a radio navigation service or of a safety service, or obstructs or repeatedly interrupts a radio service operating in accordance with the regulations . . ."

This is certainly forthright language on the part of the Commission. It is so much so, in fact, that if every user of a radio service experiencing such interference were to call on the Commission for help, the staff would be hopelessly swamped. In general, the Commission will have to look to users of the radio services it licenses to deal with most of the problems of interference of this nature, as it has in the past, taking action itself only in severe cases. From the practical standpoint, therefore, these new rules are not so much a remedy for existing problems as, rather, a notice on the part of the Commission of what performance it expects of industry's production in the future. In other words, it points the way to a gradual alleviation of such interference problems.

Nonetheless, the Commission is prepared to enforce the rules to the limit of its ability in personnel, time, and funds. In practice, this will undoubtedly mean giving preference to complaints where real injury is involved. If an amateur finds communication on any band is impossible because of a bad insulator on a near-by power line, for example, of course he should use every means possible to settle the problem locally — by cooperative requests of the power company, and even negotiations with the city electrical inspector or other authority if that becomes necessary. This FCC expects of him. But, if these approaches fail, the amateur can turn to the Commission for assistance which in really severe cases will be forthcoming.

MOBILE LAWS

In several states and municipalities, there are laws which deal in one way or another with mobile radio communications. While they affect normal amateur operation but little, it is well at least to know about their existence. We present herewith a summary of such laws on which we have been able to obtain information, with no guarantee of its completeness:

California: Los Angeles has a city ordinance prohibiting the installation in a motor vehicle of receiving equipment which can tune to municipal (fire and police) frequencies.

Connecticut: The law prohibits the operator of a motor vehicle from using two-way radio while such vehicle is in motion, but is intended primarily to cover subscribers to the telephone company's mobile service, and specifically exempts amateurs, RACES, and most other mobile services.

(Continued on page 162)

♦

Retiring after 34 years service in charge of the New York FCC office, Arthur Batcheller (left) is tendered warm good wishes by FCC Commissioner Edward M. Webster, on behalf of several-hundred friends and associates in the electronics field who attended a dinner in his honor. At far left is Miss Ann Brennan, for many years his secretary, and at right is Emery H. Lee, K2FZ, FCC Regional Manager.

♦

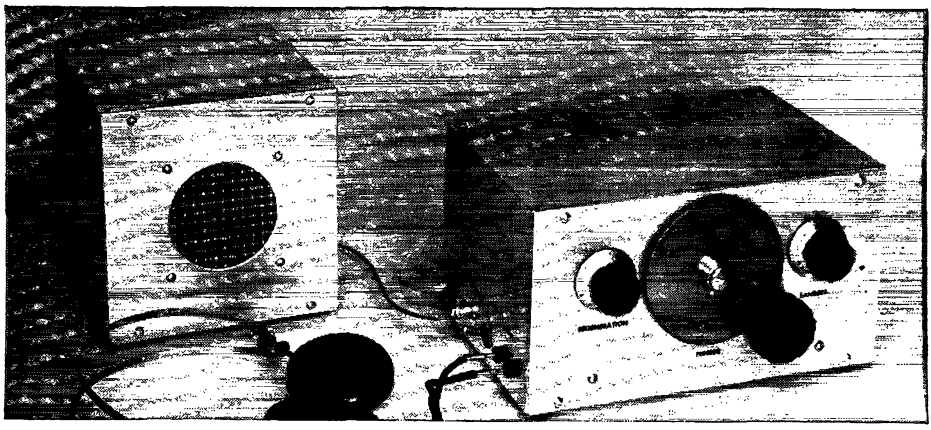
I.A.R.U. News

QSL BUREAUS OF THE WORLD

For delivery of your QSLs to foreign amateurs, simply mail cards direct to the bureau of the proper country, as listed below. (**Bold-face** type indicates a recent change from previous listings.) *W, K, and VE amateurs may send foreign cards to A.R.R.L. Headquarters for which no bureau is listed.*

For service on incoming foreign cards, see list of domestic bureaus in most *QST*s under "A.R.R.L. QSL Bureau."

Algeria: **G. Deville, FA9RW, Box 21, Maison-Carree, Alger**
Angola: L.A.R.A., P.O. Box 484, Luanda
Argentina: R.C.A., Avenida Libertador General San Martin 1850, Buenos Aires
Australia: W.I.A., Box 2611 W, G.P.O., Melbourne
Austria: **Oe.V.S.V. P.O. Box 15, Klosterneuberg, 2**
Azores: Via Portugal
Bahamas: C. N. Albury, Telecommunications Dept., Nassau
Barbados: **Geoffrey Scholey, VP6AM, 24 Highgate Gardens, Collymore Rock, St. Michael**
Belgian Congo: **P.O. Box 2696, Elisabethville**
Belgium: U.B.A., Postbox 634, Brussels
Bermuda: VP9D, James A. Mann, The Cut, St. Georges
Bolivia: R.C.B., Casilla, 2111, La Paz
Brazil: L.A.B.R.E., Caixa Postal 2353, Rio de Janciro
British Guiana: D. E. Yong, VP3YG, Box 325, Georgetown
British Honduras: D. Hunter, Box 178, Belize
Bulgaria: Box 830, Sofia
Burma: **XZ2OM, P.O. Box 1490, Rangoon**
Canton Island: H. B. Johnson, KB6BA, U.S.P.O. 06-50000, Canton Island, South Pacific
Ceylon: P.O. Box 907, Colombo
Chile: Radio Club de Chile, Box 761, Santiago
China: M. T. Young, P.O. Box 16, Taichung, Formosa
Colombia: L.C.R.A., P.O. Box 584, Bogotá
Cook Islands: Ray Holloway, P.O. Box 65, Rarotonga
Costa Rica: Radio Club of Costa Rica, Box 535, San Jose
Cuba: Radio Club de Cuba, QSL Bureau, Lealtad No. 660, Havana
Cyprus: Mrs. E. Barrett, P.O. Box 219, Limassol
Czechoslovakia; C.A.V., P.O. Box 69, Prague I
Denmark: P. Heinemann, OZ4H, Vanlose Alle 100, Copenhagen
Dominica: VP2DA, Box 64 Roseau, Dominica, Windward Islands
Dominican Republic: Calle Duarte #76, C. Trujillo
East Africa: (VQ1, VQ3, VQ4, VQ5): P.O. Box 1313, Nairobi, Kenya Colony
Ecuador: Guayaquil Radio Club, Casilla 784, Guayaquil
EIRE: **J. Corcoran, EI5M, 194 Collins Ave., Whitehall Co. Dublin**
Fiji: S. H. Mayne, VE2AS, Victoria Paraed, Suva
Finland: SRAL, Box 306, Helsinki
France: R.E.F., BP 26, Versailles (S & O);
France (F7 calls only):
A/1C Thomas J. Shytle, F7EZ, Hq., US Eucom Mars Radio, APO 128, % P.M., New York, New York
Germany (DL2 calls only): Via Great Britain
Germany (DL4 calls only): DL4 QSL Bureau, APO 633, W Postmaster, New York, N. Y.
Germany (DL5 calls only) Via France
Germany (other than above): D.A.R.C., Box 99, Munich 27
Gibraltar: E. D. Wills, ZB2I, 9 Naval Hospital Road
Gold Coast: **E. L. Lloyd, ZD4BL, P.O. Box 565, Kumasi, Ashanti**
Great Britain (and British Empire): A. Milne, 29 Kechill Gardens, Hayes, Bromley, Kent
Greece: **George Zarifis, 10 Saint Fanouris St., Panagrati, Athens**
Greenland: APO 858, % Postmaster, New York, N. Y.
Grenada: VP2GE, St. Georges
Guam: G.R.A.L., Box 145, Agana, Guam, Marianas Islands
Guantanamo Bay: **Art Babine, KG4AV, Box 55, NAS, Navy 115, F.P.O., New York, N. Y.**
Guatemala: Manuel Gomez de Leon, P.O. Box 12, Guatemala City
Haiti: Radio Club d'Haiti, Box 943, Port-au-Prince
Hong Kong: Hong Kong Amateur Radio Transmitting Society, P.O. Box 541, Hong Kong
Hungary: H.S.R.L., Postbox 185, Budapest 4
Iceland: Islenzkir Radio Amatorar, Box 1080, Reykjavik
India: Box 1, Munnar, Travancore, S. India
Indonesia: P.A.R.I., P.O. Box 222, Surabaja, Java
Israel: I.A.R.C., P.O. Box 4099, Tel-Aviv
Italy: A.R.I., Via San Tomaso 3, Milano
Jamaica: Thomas Meyers, 122 Tower St., Kingston
Japan (JA): J.A.R.L., Box 377, Tokyo
Japan (KA): F.E.A.R.L., P.O. Box 111, APO 500, % Postmaster, San Francisco, Calif.
Kuwait: Doug Taylor, MP4KAA, Box 54, Kuwait, Persian Gulf
Lebanon: R.A.L. B.P. 3245, Beyrouth
Libya: See Tripolitania
Luxembourg: G. Berger, 40 Rue Trevires, Luxembourg
Macao: Via Hong Kong
Madeira Island: **P.O. Box 257, Funchal**
Malaya: QSL Manager, P.O. Box 600, Penang
Malta: R. F. Galea, **ZB1E, "Casa Galea," Railway Road, Birkirkara**
Mauritius: V. de Robillard, Box 155, Port Louis
Mexico: L.M.R.E., Liverpool 195-A, Mexico, D.F.
Montserrat: VP2MY, Plymouth
Morocco: A.A.E.M., P.O. Box 2060, Casablanca
Morocco: (Tangier International Zone only): Box 150, Tangier
Mozambique: Liga dos Radio-Emissores, P.O. Box 812, Lourenco Marques
Netherlands: V.E.R.O.N., Postbox 400, Rotterdam
Netherlands Antilles (Aruba): Postbox 80, San Nicolas, Aruba
Netherlands Antilles (Curacao): Postbox 383, Willemstad, Curacao
Netherlands East Indies: Hr. C. Loze, PK1LZ, Burg. Kuhrweg, 47 Bandoeng, Java
New Zealand: N.Z.A.R.T., P.O. Box 489, Wellington C1
Nicaragua: YN1RA, Apartado Ø926, Managua
Northern Rhodesia: N.R.A.R.S., P.O. Box 332, Kitwe
Norway: N.R.R.L., P.O. Box 898, Oslo
Okinawa: O.A.R.C., **P.O. Box 739,** APO 331, % Postmaster, San Francisco, Calif.
Pakistan: Box 2002, Karachi
Panama, Republic of: L.P.R.A., P.O. Box 1622, Panama
Paraguay: R.C.P., P.O. Box 512, Asuncion
Papua: P.O. Box 107, Port Moresby
Peru: R.C.P., Box 538, Lima
Philippine Islands: Elpidio G. DeCastro, Philippine Amateur Radio Assn., 2046 Taft Ave., Pasay City
Poland: Polski Zwizek Krotkofalowcow, Box 320, Warsaw
Portugal: **Rua de D. Pedro V., 7-40, Lisbon**
Roumania: A.R.E.R., P.O. Box 95, Bucharest
Saar: **P.O. Box 310, Saarbrucken**
Salvador: YS1O, Apartado 329, San Salvador
Singapore: P.O. Box 176, Singapore, Malaya
South Africa: S.A.R.L., P.O. Box 3037, Capetown
Southern Rhodesia: R.S.S.R., Box 2377, Salisbury
Spain: U.R.E., P.O. Box 220, Madrid
St. Vincent: VP2SA, Kingstown
Sweden: S.S.A., Stockholm 4
Switzerland: U.S.K.A., **Knutwil**
Syria: P.O. Box 35, Damascus
Trieste: P.O. Box 301, Trieste, F.T.T.
Trinidad: John A. Hoford, VP4TT, Box 554, Port-of-Spain
Tripolitania: 5A2TZ, Box 372, Tripoli
Uganda: P.O. Box 1803, Kampala
Uruguay: R.C.U., P.O. Box 37, Montevideo
U.S.S.R.: Central Radio Club, Postbox N-88, Moscow
Venezuela: R.C.V., P.O. Box 2285, Caracas
Virgin Islands: Richard Spenceley, Box 403, St. Thomas
Yugoslavia: S.R.J., Postbox 48, Belgrade



The two-tube Novice Special receiver is built into a standard 5 × 6 × 9-inch aluminum box. Panel controls from left to right are for regeneration, bandspread tuning and band-set adjustment. The large dial is National type K. The two smaller dials are Johnson, type 116-222-2 to the left, and type 116-222-1 to the right. The original vernier knob has been replaced with the larger Johnson type 116-260. Along the side of the box from front to rear are insulated phone-tip jacks (Johnson 105-603), speaker toggle switch, speaker connector (a phono jack) and a grommet-lined hole for power leads. The antenna connector is another phono jack set in the lower rear corner of the opposite end of the box. The 3-inch speaker is enclosed in a 6 × 6 × 6-inch aluminum box fitted with a grille of "hardware cloth."

The Novice Special

Simple Two-Tube Receiver with Good Sock

BY DONALD MIX, W1TS

IN SPITE OF THE FACT that it is possible to go down to the corner radio store and buy a receiver to fit almost any pocketbook, our correspondence indicates that there is still a surprising number of beginners who are interested in building their own first receivers. Perhaps the reason for this is that today's beginners are basically the same sort as those who were attracted to the ham game back in the days when the only way to get a receiver was to build one. They are the people who get a bigger kick out of hearing their first signals on something they have built with their own hands than the old timer might get out of hearing Mars on his five-hundred-dollar Super XX-A5. There is still no better nor more interesting way for the beginner to take an active part in the game before he has the qualifications to pass his license exam than to try his hand at building a simple receiver. In the process, he learns the basics of the arts of reading diagrams, working metal, and handling the soldering iron. It also helps to give him a far better understanding of how radio circuits work.

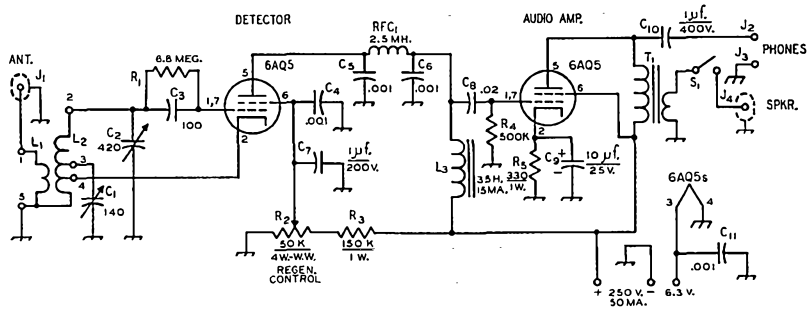


Fig. 1 — Circuit of the Novice Special regenerative receiver. All capacitances less than 0.001 µf. are in µµf. All fixed resistors are ½ watt unless otherwise specified.

C_1 — Johnson 140R12 or similar.
C_2 — Philmore 1945T.
C_3 — Mica.
C_4, C_5, C_6, C_{11} — Disk ceramic.
C_7, C_8, C_{10} — Aerovox P92ZN.
C_9 — Electrolytic.
J_1, J_4 — Phono jack.
J_2, J_3 — Johnson 105-603.
L_1, L_2 — See text.
L_3 — Thordarson 20C51.
R_2 — Mallory M50MPK.
RFC_1 — National R-50.
S_1 — Toggle switch, ¼-inch stem.
T_1 — Thordarson 24S51.

• Most regenerative receivers offered to the beginner are lacking in signal output. With this one you won't have to strain your ears. In fact, the stronger signals will work a small loudspeaker at good volume. Designed for good stability and bandspread on the 80- and 40-meter bands, coils are also described covering the 20-, 15- and 10-meter bands and all frequencies in between as well. A special coil connection is included that spreads the Novice portion of the 80-meter band out over the entire dial.

Although all of the present-day manufactured communications receivers are superheterodynes, the old regenerative receiver is still to be recommended as the beginner's teething ring, because good sensitivity is obtained with simple circuit and construction. While no one in his right mind would say that such a receiver can compete with the better examples of the superhet, the regenerative can be made to do a very creditable job on 80 and 40 meters. Properly executed, it can compare quite favorably on these bands with the cheaper superhets on the market.

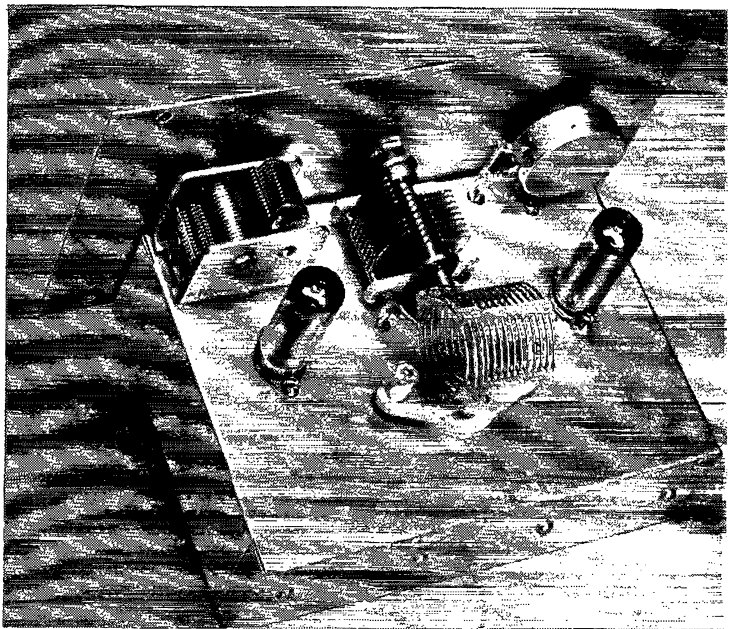
The trouble with many of the regenerative receivers that have been offered the beginner in recent years is that there has been a tendency to overdo the matter of simplification to the point where the finished product is hardly worth the effort. Only a dollar or two more for components and a few more hours of work can spell the difference between a receiver that you can hear almost nothing on unless you hold your breath, and one that will work a small speaker on the stronger signals.

The receiver shown in the photographs will do a good job on 80 and 40 meters. You won't have to strain your ears to hear plenty of signals. Although designed primarily for use on these lower frequencies, coils have been made to permit listening on the 20-, 15- and 10-meter bands as well. While the frequency stability on these higher-frequency bands is nothing to brag about, the performance, otherwise, is still there. A few hours of listening during the recent ARRL DX contest brought in over 200 stations in 74 countries. At one point, all continents were heard on 20 meters within a space of about 20 minutes, and amateurs in Europe, Africa and South America were heard on 80 meters.

The circuit is shown in Fig. 1. Regeneration is controlled by varying the screen voltage of the detector by means of R_2.

The simple regenerative receiver's greatest weakness is its poor frequency stability compared to that of a superhet. The reason for this is the lack of isolation between the antenna and the single tuned circuit. Movement of the antenna as it swings in the wind has a tendency to shift the frequency of the tuned circuit. It is also difficult to maintain the chassis at ground potential. As a result, movement of the operator's hands or the headphones around the receiver will have the same effect as movement of the antenna. These effects have been minimized in this receiver by the use of as much capacitance as practicable in the tuned circuit. Changes in antenna capacitance thus become a smaller percentage of the total capacitance in the circuit. Antenna effects are negligible on 80 meters, and within satisfactory limits on 40.

The large amount of variable capacitance also provides a very flexible tuning arrangement. Basically, the circuit is designed for simple parallel-capacitor bandspread on 80 meters, using almost the full capacitance of the band-set capacitor C_2. For bandspreading the higher-frequency bands, the tuning capacitor, C_1, is connected across only a portion of the coil. By proper setting of the band-set capacitor, all frequencies in between the amateur bands may be covered. All kinds of government and commercial c.w. stations as well as the shortwave broadcast signals can be heard, many of them with good loudspeaker volume.



Rear view of the beginner's receiver with the 80-meter coil in place. The detector socket to the left and the amplifier socket to the right are Eby 9064. They are centered 1¼ inches from the sides of the chassis, and 2¼ inches from the front. The Millen 33005 coil socket is centered 3¼ inches from the front. Leads for the stator connections to C_1 and C_2, and to R_2 are brought up through holes in the chassis.

As other examples of the flexibility of the tuning system, a Novice who may be interested for the time being in only the Novice portion of the 80-meter band can tap the 80-meter coil for C_1 to spread that portion of the band out over most of the dial. Then, by simply changing the setting of C_2, the 40-meter band, also well spread out on the dial, can be heard on the same coil. Later on, the entire 80-meter band can be covered, merely by shifting the connection of C_1 to the top end of the coil — a minute's work with the soldering iron.

With the 15-meter coil plugged in, and C_2 set for this band, the band is spread out over most of the dial. However, by resetting C_2, the 20-meter band can be heard, with either the c.w. portion or the phone section spread out, depending on the setting of C_2. Another setting of C_2 with the same coil will bring in the 10-meter band likewise spread out over most of the dial.

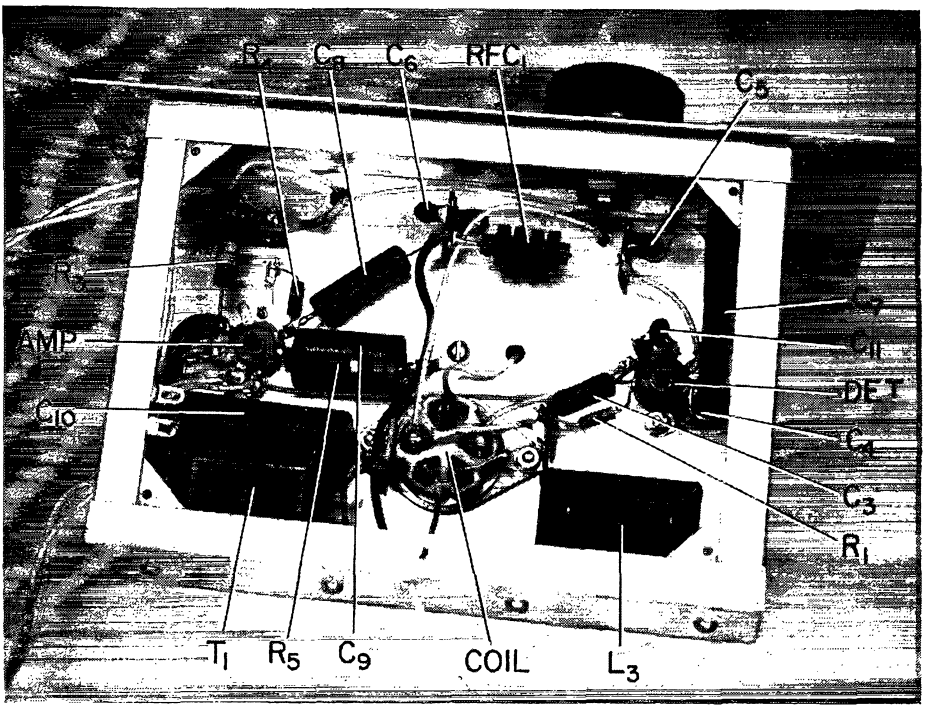
A more-experienced amateur may question the use of a power tetrode as the detector. Several of the "hot" r.f. pentodes, such as the 6AK5, 6CB6 and 6BJ6, were tried. It was found that tubes of this type were highly critical as to feedback. It was practically impossible to control regeneration satisfactorily (at least by the screen-voltage method) over any appreciable frequency range, and the detector was prone to jump into v.h.f. parasitic oscillation. An even more disappointing development was that the signal output was pitifully small, and even less than a moderate signal would tend to block the detector. The 6AQ5 solved all of these difficulties.

Another 6AQ5 is used in the audio stage. With a plate supply voltage of 250, it was felt best to keep the d.c. off the headphones. The primary of an inexpensive output transformer provides parallel plate-voltage feed, and the transformer may be used to feed a small loudspeaker. The speaker may be cut in or out by the toggle switch, S_1.

Construction

The receiver is assembled on a 5 × 7 × 2-inch aluminum chassis. The enclosure is a standard 5 × 6 × 9-inch aluminum box. One of the removable covers is used as the panel. Most of the constructional details are shown in the photographs and their captions. The bandspread capacitor, C_1, has its shaft central on the chassis, and is placed forward just far enough so that the outside shaft-mounting nut can be threaded on at the front of the panel. C_2 should be mounted with the side and front of its frame flush with the right and front edges of the chassis. R_2 is mounted on the left side of the panel so that its shaft and the shaft of C_2 will be symmetrical in respect to the shaft of C_1.

The socket of V_1 should be mounted with



Bottom view of the two-tube regenerative receiver. Insulated tie points fastened under socket and variable-capacitor mounting screws are used where convenient to support the smaller components. The one at the left provides an anchorage for the ungrounded side of the voice-coil winding of T_1. Leads to the left toward the front go to switch and jack connections inside the box. Those toward the rear are power leads. The lead to the antenna jack emerges from the rear.

its No. 1 pin toward the rear; Pin No. 1 on V_2 should be toward the front. The coil socket should be turned so that its Pins 1 and 5 are toward the rear.

Before mounting the components permanently on the chassis, the panel should be drilled. The panel is fastened to the chassis by two screws 1 inch from the bottom of the panel, and 1½ inches from each end. A ½-inch clearance hole should be drilled for the shaft of C_2 so that the shaft will not make contact with the panel.

In using the template that comes with the National type K dial, it should be noted that the radius marked 2 inches is actually about 1/16 inch short — enough to make the vernier work more stiffly than desirable. This radius should be measured accurately. If the center for the vernier-shaft bearing is moved about ½ inch more to the left, along the 2-inch arc, more room will be provided between the vernier control and the dial of C_2.

The panel must be spaced 1/16 inch from the chassis to allow room for the bottom lip of the box to slide up in between the two. This can be done with washers at the two mounting screws and a large one around the vernier-shaft bearing, or a strip of aluminum 1⅜ inches wide, running the length of the chassis, top edge flush with the top of the chassis, and having holes corresponding to those in the panel, may be used as the spacer. The panel should be clamped to the front edge of the chassis, *with its bottom edge 1/16 inch below the bottom edge of the chassis*, while duplicate holes are marked on the front edge of the chassis, and on the spacing strip if one is used.

After C_2 and the panel are in place, a hole should be drilled in the panel with a No. 33 drill, and then carefully through into the upper left-hand corner of the frame of C_2. Make sure that the rotor plates of the capacitor are turned so that they will not be damaged. Enlarge the hole in the panel with a No. 24 drill. Fill the space between the capacitor frame and the panel with small washers as needed, and fasten the frame to the panel with a ⅜-inch No. 6 sheet-metal screw. This additional bracing is quite desirable for best frequency stability.

In wiring the receiver, the coil socket should be wired according to the pin numbering in Fig. 1. The leads connecting to the components mounted on the left end of the box should be extended 6 or 8 inches from the chassis so that they may be connected before the receiver is placed in the box.

The receiver (minus tubes and coil, and with the plates of C_2 fully meshed) is placed in the box by keeping it high enough to clear the bottom lip of the box until the receiver is all the way in. Then the panel should be pushed downward as the lip goes up into the space between the chassis and panel. The panel is fastened in place with No. 6 sheet-metal screws.

Rubber feet are fastened on the bottom of the box by drilling No. 33 holes in the corners and using sheet-metal screws. While the rear of the chassis is pressed firmly against the bottom of the box, a No. 33 hole should be drilled through the bottom of the box into the rear lip of the chassis. Then a No. 6 sheet-metal screw should be used to hold down the rear of the chassis securely.

Making the Coils

B&W (Barker & Williamson) types 20-MEL and 10-MEL are used respectively for 80 and 40 meters. The bases of these coils have 5 pins, one of which (No. 3) is not in use. This is used for the bandspread-tap connection. A pin connection for the feedback tap is provided by cutting the end of the main coil going to Pin 4 off close to the ceramic base and soldering the end of the coil to the link wire going to Pin 2.

The 20-MEL coil used for 80 meters has 14 turns No. 18, 1⅜ inches diameter, 1⅜ inches long, and a 2-turn link 1⅝ inches diameter. Carefully bring a wire from Pin 4 under the coil, bending it so that it does not make contact with either the link coil or the leads going to Pin 5, and solder it to the main coil a little less than one turn from the outer end of the coil. This will be the outer turn, about ¼ inch to the right of the bottom plastic supporting strip as viewed from the link end.

The connection to Pin 3 will depend on how much of the 80-meter band you want to cover. If you want to cover the entire band, simply solder the wire from Pin 3 to the end of the main coil connected to Pin 2. However, if you are interested for the time being in only the Novice band, this band can be spread out over most of the dial, thereby making tuning much easier for a beginner. This can be done by connecting the wire from Pin 3 to the main coil at a point a little over four turns from the Pin 5 end of the coil. The tap should be placed on the fourth turn, about halfway between the bottom and side plastic strips. Be sure to do the job carefully so that the solder does not short from one turn to another. The 40-meter band will also be spread out over most of the dial with this tap.

Coils for Other Bands

The 10-MEL coil, used for 40 meters, has 8 turns No. 16 wire, 1⅜ inches diameter, 1⅜ inches long, and a 2-turn link 1⅝ inches diameter. It is altered exactly as described for the 80-meter coil. The lead from Pin 4 is connected to the outer turn in the same manner, except that it is placed at about ¾ turn from the end — just below the right-hand plastic support strip. In other words, it is about ¼ inch farther up on the end turn than the 80-meter tap. The tap from Pin 3 should be placed a little over four turns from the Pin 5 end of the main coil, again about halfway between the bottom and side plastic support strips.

Attemps to use the MEL coils for 20 and 15 meters were not very successful. The placement of the taps was too critical. The best way to make coils for these bands is to buy a couple of extra 10 MEL or 20 MEL coils and use the mounting base to support smaller coils of B&W

Miniductor. If the original coil is stripped from the mounting carefully, the job can be done quite easily.

Hold the coil upright with Pin 3 facing you. You will see that the wire coming out of Pin 4 doubles back to start the first turn of the main coil. Follow this turn up on the coil and cut it just before it reaches the *top* supporting strip.

Now turn the coil so that Pins 1 and 5 face you. You will see the wire from Pin 2 starts the first turn at the opposite end of the main coil. Clip this turn just under the side supporting strip. At the other end, you will see that the wire from Pin 5 starts the outer turn of the link coil. Turn the coil over so that Pin 3 faces you and cut this turn about halfway between the bottom and side supporting strips. Cut the wire from Pin 1 off close to the point where it enters the bottom supporting bar.

Bend the stubs of the cut wires out where you will be less likely to cut them off accidentally, then cut off all other turns as close to the bottom supporting strip as possible, removing both the main coil and the link coil. Be sure that you do not cut off the wire from Pin 4 at the base. Free this half turn after the others have been cut.

For the 20-meter coil, make a coil of exactly 7 turns of No. 3006 Miniductor (5/8-inch diameter, 8 turns per inch). Place it on the plug-in base with the supporting strip at which the coil turns end against the supporting strip on the base. Cement it centrally on the base strip with Duco cement. After the cement has dried, bend the lead from Pin 2 toward the nearest end of the coil, and solder it to the end turn, close to the bottom supporting strip. Bend the wire from Pin 5 and solder it to the other end turn of the coil. Keep the wire from Pin 5 in as close to the bottom supporting strip as possible. The lead from Pin 4 should be bent into such a position that it can be soldered to a point two turns from the nearest end of the coil without shorting on the wire from Pin 5. The soldering point should be about halfway between the bottom and side supporting strips. A wire soldered to Pin 3 should be brought out and soldered to the same point on the coil.

Two turns of insulated hook-up wire should be wound over the coil, as close as possible to the Pin-5 end, for L_1. These turns will pass between the bottom supporting strip and the ceramic base. Solder the outer end of this coil to the end of the main coil going to Pin 5. Solder the other end of the link coil to the wire going to Pin 1.

The 15-meter coil is made in the same way. It consists of 7 turns of No. 3002 Miniductor (1/2-inch diameter, 8 turns per inch). The tap from Pin 4 is soldered on the coil at 2 turns from the nearest end. A wire from Pin 3 should be soldered to the coil at one turn from the same end. Make sure that each lead is clear of all others. The link coil, L_1, is the same as for the 20-meter coil.

Antenna and Power Supply

The receiver was tested on a 75-foot length of wire, almost half of which was indoors. Shorter lengths may be used. In fact, the shorter the antenna the more stable the receiver will be, and good signals should be obtained with a 10-foot indoor wire. In any event, the antenna should be suspended as rigidly as possible to minimize swaying. A phono plug to fit the antenna jack should be soldered to the inside end of the antenna. The antenna lead should be kept as much as possible to the rear of the receiver, away from the operator.

The receiver requires a well-filtered power supply delivering 250 volts at about 50 ma. A suitable circuit is shown in Fig. 2.

The Band-Set Capacitor

The centering of the amateur bands on the dial of C_1 will depend upon a rather critical setting of C_2. However, once the correct setting has been found and recorded, it can be returned to with reasonable accuracy. Since it is anticipated that the receiver's principal use will be on 80 or 40 meters, there will be little occasion for frequent hopping from band to band. Approximate settings for C_2 will be given. The dials of both C_1 and C_2 should be set to read 0 when the capacitors are at maximum capacitance (plates fully meshed). Individual copies of the receiver may require slight readjustment, in one direction or the other, in order to center the band on the dial. These readjustments should be made in very small steps — perhaps not much more than the width of a pencil line on the dial at the higher frequencies. The amateur bands can be most easily recognized by the phone signals, and the bands can be centered in reference to them.

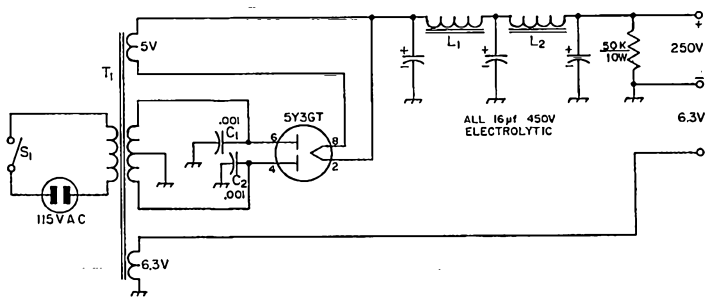
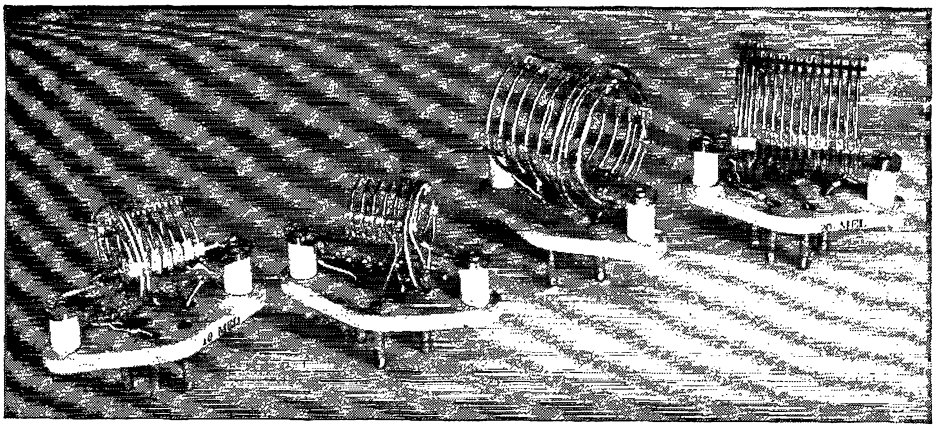


Fig. 2 — Circuit of a suitable power supply for the regenerative receiver. C_1 and C_2 are disk ceramics and should be connected directly from rectifier socket terminals to chassis. All capacitances are in μf.

L_1, L_2 — 16-h. 50-ma. filter choke, 580 ohms (Stancor C-1003).
S_1 — Toggle.
T_1 — 480 volts c.t., 55 ma., 5 volts, 2 amps., 6.3 volts, 2 amps. (Stancor PC-8402).



A complete set of plug-in coil for the regencrative receiver. From left to right they are for the 20-, 15/10-, 40- and 80-meter bands.

Coil Coverages

The 80-meter coil can be used with the bandspread tap at either of two points. In either case, the total frequency range (from maximum on both C_1 and C_2 to minimum on both) will be approximately 3.2 to 11.5 Mc. When the tap is connected to the extreme end of the coil, the entire 80-meter band will be covered by C_1 when C_2 is set at approximately 14.5. (Remember that each calibration mark on the small Johnson dial is 2 points, so that 14.5 means 14 plus one quarter of the way to the next dial mark.) When C_2 is set at approximately 57.5, the 40-meter band will occupy about 10 per cent of the dial.

If the bandspread tap is set as described earlier for the Novice band only, C_2 should be set at about 4.5. When C_2 is set at about 57.5 with the Novice bandspread tap, the 40-meter band will occupy about 50 per cent of the dial of C_1.

40-Meter Coil

Better stability and greater bandspread will be obtained on 40 meters by using the coil designed for 40 meters, rather than the 80-meter coil as described above. The total frequency range with this coil is approximately 6 to 23 Mc. With C_2 set at about 22, the 40-meter band should occupy about 80 per cent of the dial of C_1. If C_2 is set to approximately 74, 20-meter signals may be heard, but the entire band will occupy only about 10 per cent of the dial.

20-Meter Coil

The total range with this coil is about 10 to 39 Mc. When C_2 is set at about 47.5, the 20-meter band should occupy approximately 70 per cent of the dial of C_1. By setting C_2 to about 72.5, signals in the 15-meter band can be heard, but the band will be spread out over only about 20 per cent of the dial of C_2.

15-Meter Coil

The total frequency range covered with the 15-meter coil plugged in is about 11 Mc. to 40 Mc., but the regeneration control will be rather critical and not too reliable at the high-frequency end of the range. With C_2 set at 56.5, the 15-meter band will occupy about 80 per cent of the dial of C_1. With C_2 set at approximately 74.5, the 10-meter band will occupy about 70 per cent of the dial of C_1. With C_2 set at 30, the c.w. portion of the 20-meter band will occupy practically the whole dial of C_1. By resetting C_2 to a slightly higher reading, the phone portion of the band will be likewise spread out over most of the bandspread dial.

The Regeneration Control

With the power supply, antenna and headphones connected, plug in the 80-meter coil. Turn the regeneration control, R_2, all the way counterclockwise, and set C_2 as indicated previously, depending on whether or not the Novice bandspread tap is used. A minute or two after the power supply has been turned on, advance the regeneration control slowly until the detector goes into a soft hiss as it starts to oscillate. Reverse rotation of the regeneration control, and the hissing should stop. Go back and forth over this point several times so that you may familiarize yourself with the sound. See how close you can come, in advancing the control clockwise, to the point where the hissing starts without actually making the hiss start. If you listen carefully, you will hear the background noise come up (in the absence of a signal). This is the most sensitive adjustment for modulated (phone) signals. Now turn the control clockwise past the point where the hissing starts. Reverse the direction and slowly approach the point where the hissing stops. See how close you can get to this point without making the hissing stop. This is the point for greatest sensitivity on c.w. signals. Strong c.w. signals may block the detector when it is adjusted for this most sensitive condition. In this case, turn the control clockwise as far as necessary to prevent blocking. On some of the higher frequencies, advancing the control too far may result in a high-pitched squeal. If this should occur, the control should be retarded.

(Continued from page 140)

Simple V.F.O. For Mobile or Fixed Stations

A Clapp Circuit for 7 Mc. and Higher

BY R. J. GUNDERMAN,* W8INO

• A handful of parts and a few hours of spare time will produce this 7-Mc. v.f.o. designed primarily for mobile work. Provision is made for switching to receiver plate supply for setting the v.f.o. to frequency.

RECENT OPENINGS FOR DX in the 10-meter band have greatly increased activity and attendant QRM in that band. This author has been enjoying many pleasant short-skip contacts, in addition to multitudinous local contacts, from a low-power crystal-controlled mobile rig. Now, however, fixed-frequency operation with low power is becoming increasingly difficult. Local stations frequently return calls to distant stations, and those operating on their own frequency, rather than tune for the rock-bound local.

For the mobile operator there are two things which can improve conditions: namely increased power and v.f.o. in place of crystal control.

Increased power for the mobile transmitter requires special generating equipment which can be added to an automobile, or obtained on special order already installed in a new automobile. Normally, power inputs up to 15 or 20 watts operate quite satisfactorily from existing generating systems. However, experience has shown that low-power rigs are capable of working DX if the signal is placed on the right frequency at the right time. It would then appear that the most economical and practical approach to the problem is in employing a variable-frequency oscillator.

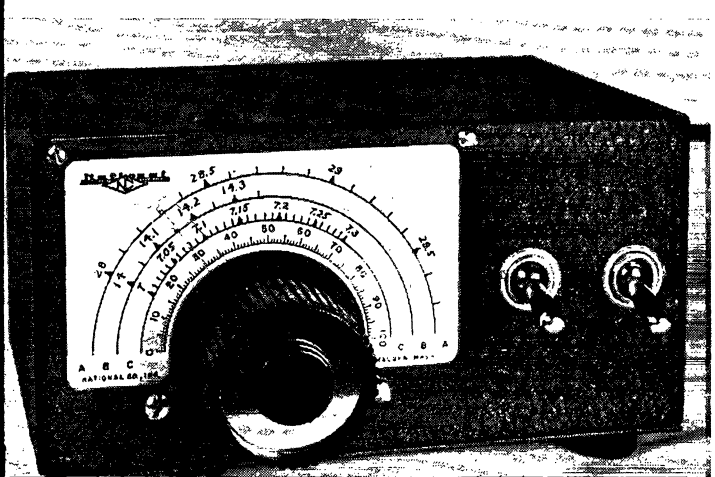
In line with mobile considerations, the physical size and power drain of a mobile v.f.o. must be kept to a minimum. Also, it must have output at the same frequency as that of those crystals which are normally employed. In the circuit described here, the resonant oscillator tank operates from 7 to 7.425 megacycles. The plate is broadly tuned to the same range of frequencies by maintaining a high LC ratio. This allows for greater output without loading the oscillator circuit too heavily. Most v.f.o. circuits are designed to operate at lower frequencies for stability reasons, but such a circuit would require frequency multipliers.

The circuit shown is a conventional Clapp oscillator employing the screen grid as the oscillator plate. The signal is amplified in the plate circuit which utilizes a slug-tuned coil in parallel with the tube-interelectrode and the shunt wiring capacitances. A type 6AU6 tube yields an output from the plate circuit of 40 to 65 volts r.f. across the band. A 12AU6 may be directly substituted for 12-volt systems. The main tuning capacitor is a type APC air trimmer with a maximum capacitance of 8 $\mu\mu$f. This is shunted with an 18-$\mu\mu$f., zero-temperature-coefficient, tubular ceramic capacitor, and a 1.5- to 7-$\mu\mu$f., zero-temperature-coefficient, ceramic trimmer capacitor.

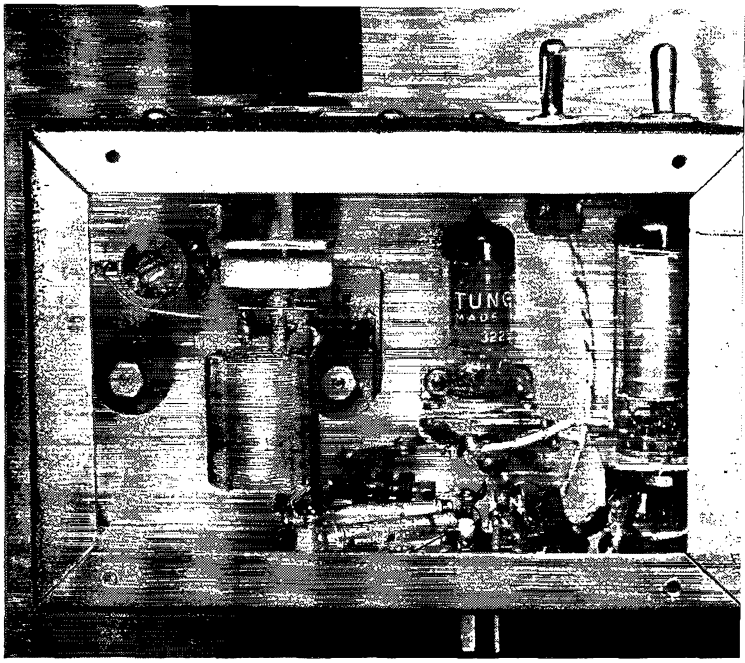
The inductor is cut from a piece of "Miniductor" with a ratio of length to diameter of approximate unity, so as to achieve a high value of coil Q. The coil is cemented to a piece of Plexiglas with coil cement so that it may be rigidly mounted. It is especially important that these tuned-circuit components be securely mounted in an automobile, since vibration and shock are usually severe.

Plate power for the v.f.o. is controlled by S_2 which selects voltage either from the receiver or from the transmitter. Plate power in the transmitter is normally available only when the transmitter is keyed, and hence is not usable for zero-beating a station. S_2 is normally left in a position so that it will connect transmitter plate power to the v.f.o. When it is desired to zero-beat a station, simply flip S_2 into position so that it accepts receiver plate power, adjust for zero beat, and return the switch to the normal position. For this

* c/o Designers for Industry Inc., 4241 Fulton Parkway, Cleveland 8, Ohio.



A 7-Mc. v.f.o. for mobile or fixed-station use. A 3 × 4 × 6-inch aluminum chassis may be used as the enclosure.



Bottom view of the simple 7-Mc. v.f.o. The voltage-regulator tube is at the right and the oscillator tube in the center. The components for the series-tuned circuits are to the left.

purpose, a voltage of approximately 200 to 225 is needed at Pin 1 of J_1.

The value of R_1 connected to Pin 3 of J_1 may be determined by:

$$R = \frac{available\ plate\ voltage - 200}{0.015}$$

If the transmitter voltage is 350 volts, the resistor required would be 10,000 ohms, 5 watts. S_1 turns the heater voltage on or off.

Construction

The unit is constructed in an aluminum chassis 3 × 6 × 4 inches. The main tuning capacitor is mounted on a simple aluminum angle bracket, spaced approximately ¾ inch behind the front panel to allow for the vernier and coupling mechanisms of the National type MCN dial. The coil is cemented to a piece of ⅛-inch Plexiglas which is securely bolted to the top with ¾-inch spacers. The coil should be kept a minimum distance of 1 inch from the metal sides.

The 6AU6 and 0A2 tubes are also mounted on simple angle brackets. C_5 and C_6 are mounted on small, stand-off insulated terminals bolted to the back wall. A bottom cover plate and four rubber feet are bolted to the bottom with four sheet-metal screws. The output cable is type RG-62/U, with a plug at the end to mate with the crystal socket.

The dial may be calibrated in accordance with the desired bands of operation, since the v.f.o. output is in the 7-Mc. range. In the unit pictured, the dial is marked for 40, 20, and 10 meters although the 15-meter band is also used. Trimmer capacitor C_1 is adjusted to center the range of 7 to 7.425 Mc. on the dial prior to calibration. L_2 is peaked at approximately 7.2 Mc. The stability of this unit warrants close calibration, whether it is used for mobile or fixed-station operation. The unit, when cold, was zero-beated against a warmed-up LM frequency meter and it was noted to have drifted less than 400 cycles after one hour of continuous operation.

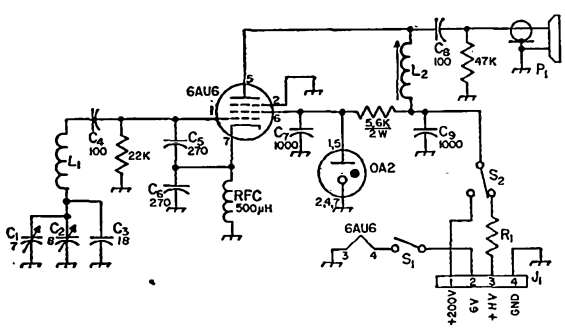
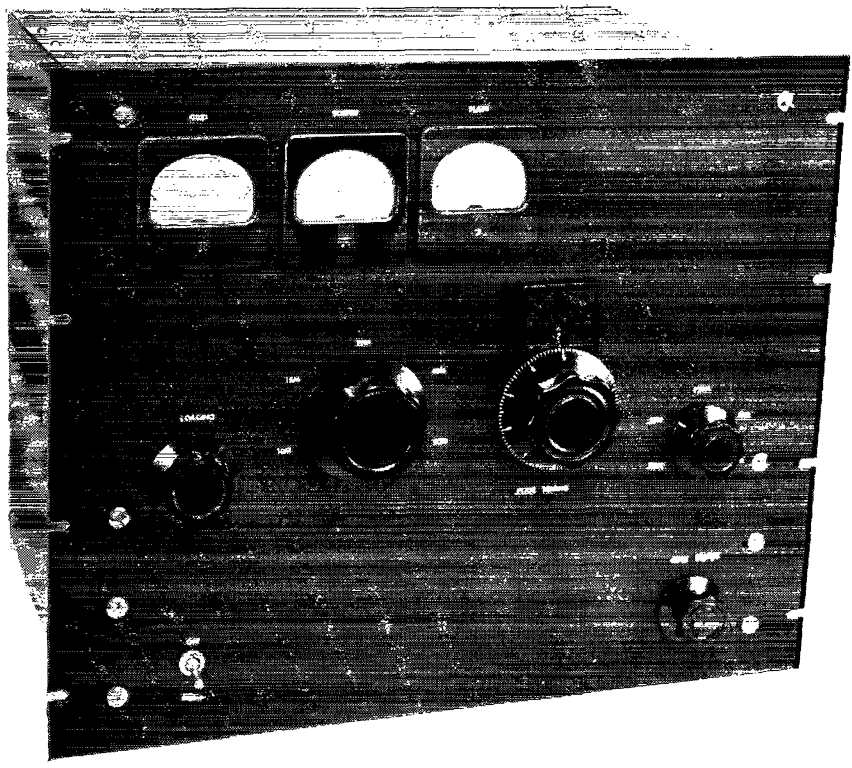


Fig. 1 — Circuit of the simple v.f.o. for mobile or fixed-station use.

All capacitances are in μμf. All resistors are ½ watt, unless otherwise specified.

C_1 — 1.5 — 7-μμf. NP0 ceramic trimmer (Erie TS2A-1.5).
C_2 — Approx. 8μμf. (Hammarlund APC-25B with all plates except 1 rotor and 2 stators removed).
C_3, C_4, C_5, C_6 — Zero-temp. ceramic (Centralab TCZ).
C_7, C_9 — Disk ceramic.
C_8 — Tubular ceramic or mica.
J_1 — Cinch-Jones P-304-AB.
L_1 — 32 turns 1 inch diam., 1 inch long (B&W Miniductor 3016).
L_2 — Approx. 15μh. — 33 turns No. 26 enam., close-wound one ½-inch iron-core form (CTC LS4 form).
P_1 — 300-ohm-line plug (Mosley 301).
R_1 — See text.
RFC_1 — National R-50
S_1, S_2 — Toggle switch.



Modern Design of a High-Power Final

Featuring 4-250As

BY LEWIS G. McCOY, W1ICP

THE AMPLIFIER shown in the accompanying photographs uses two 4-250As in parallel and covers 3.5 to 28 Mc. with complete band-switching. The output circuit is a pi network designed for working into reasonably well-matched 52- to 75-ohm coaxial lines. The amplifier can handle a kilowatt input in Class C operation on either phone or c.w. without pushing the tubes to their limits. It can also be operated as a linear amplifier for single sideband.

The various components are mounted on a 17 × 13 × 4-inch aluminum chassis attached to a standard 19-inch relay rack panel 15¾-inches high. The above-chassis section is enclosed in a 11½-inch high shield made from 1/16-inch sheet aluminum. An aluminum bottom plate completes the below-chassis shielding. Enclosing the amplifier in this way, plus the use of shielded wire and filters in the supply leads, takes care of the harmonic TVI question.

The 4-250As are cooled by forcing air into the chassis and thence up past the tubes by means of a 21 cu. ft. per minute blower.[1] The air is exhausted through two 3-inch diameter circular openings over the tubes in the top cover. To maintain the shielding intact, these are covered by perforated aluminum.

A Barker and Williamson Model 850 band-switching pi-tank inductor is used in the output circuit. It is tuned by a vacuum variable capacitor operated through the counter dial (Groth TC-3) shown in the panel view.

Circuit Features

The circuit, Fig. 1, is electrically the more-or-less standard arrangement of a parallel-tuned grid circuit and a pi-network output circuit. The amplifier is neutralized by the capacitive bridge method. A filament transformer is included, but all other voltages come from external supplies.

The grid input circuit of the amplifier uses a slightly modified B&W turret assembly. Tests made with an s.w.r. bridge inserted in the coax line between the driver and amplifier showed

[1] See "Care and Feeding of Power Tetrodes" published by Eitel-McCullough, Inc. The chassis in this unit is not tightly sealed for pressurizing, but the tubes are adequately cooled at a kilowatt input with the blower unit used.

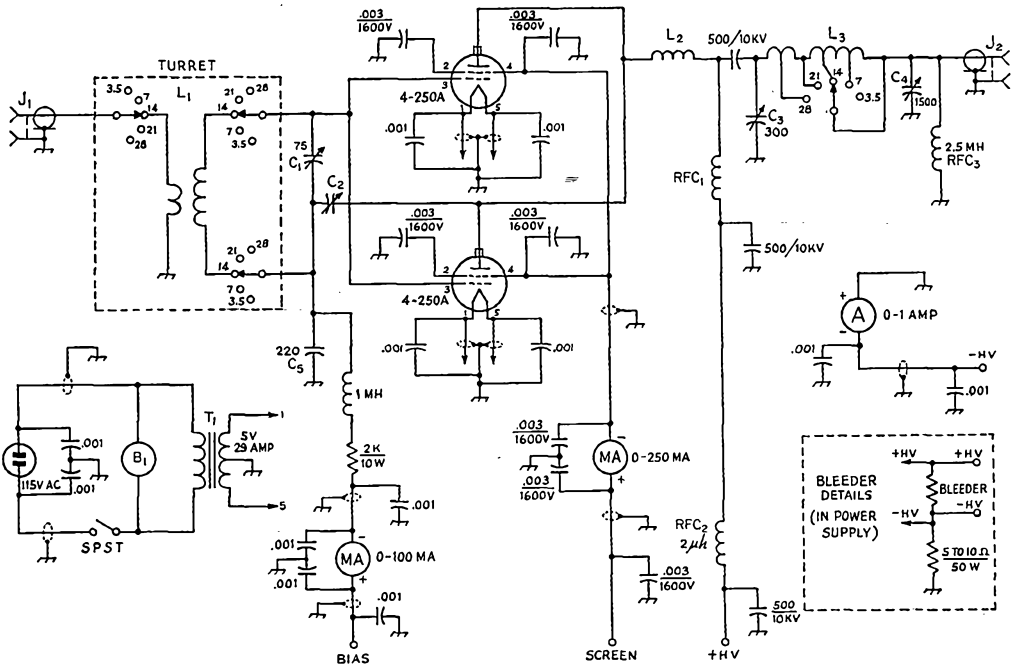


Fig. 1 — Circuit diagram of the 4-250A amplifier.

B_1 — Blower-motor assembly, 21 c.f.m. (Ripley model 8433).

C_1 — 75-$\mu\mu$f. variable, receiving spacing (Millen 19075).

C_2 — 7-$\mu\mu$f. neutralizing capacitor (Cardwell type ADN).

C_3 — 300-$\mu\mu$f. vacuum variable (Jennings type UCS).

C_4 — 1500-$\mu\mu$f. variable (Cardwell type 8013).

C_5 — 220-$\mu\mu$f. mica or NP0 ceramic.

J_1, J_2 — Coax receptacle, chassis mounting.

L_1 — Turret assembly (B&W BTEL with 14-, 21-, and 28-Mc. coils modified by removing turns).
3.5 Mc.: 48 turns No. 22, 1¼-inch dia., 1⅜ inches long; link, 7 turns No. 18.
7 Mc.: 26 turns No. 20, 1-inch dia., 1¼ inches long; link, 4 turns No. 18.
14 Mc.: 13 turns No. 18, 1-inch dia., 1¼ inches long; link, 2 turns No. 18.
21 Mc.: 5 turns No. 18, 1-inch dia., 1 inch long; link, 2 turns No. 18.
28 Mc.: 4 turns No. 16, 1-inch dia., ¾ inch long; link, 2 turns No. 18.

L_2 — V.h.f. parasitic suppressor, 4 turns No. 12, ¼ inch dia., turns spaced wire diameter.

L_3 — Pi-tank inductor (B&W Model 850). Inductances as follows: 3.5 Mc., 13.5 μh.; 7 Mc., 6.5 μh.; 14 Mc. 1.75 μh.; 21 Mc., 1 μh.; 28 Mc., 0.8 μh.

RFC_1 — National type R175A r.f. choke.

RFC_2 — 2-μh. 500-ma. r.f. choke (National type R-60)

RFC_3 — 2.5-mh. r.f. choke.

T_1 — Filament transformer, 5 volts, 29 amp. (Thordarson T-21F07-A).

that the links in the turret offered a satisfactory match for 52- or 75-ohm line. The grid coils are tuned by a 75-$\mu\mu$f. variable. The 20-, 15-, and 10-meter coils each had to have a few turns removed for proper grid tuning on these bands.

The circuit includes a 2000-ohm grid leak and has provisions for external bias, which should be used in combination with the leak. The by-pass capacitors on the screen leads all carry a rating of 1600 volts. This rating is necessary to avoid capacitor breakdowns when operating the amplifier screens at their rated voltages for AB_1 operation, and also with plate-modulated Class C operation where the 600-volt rating of the smaller ceramic capacitors would be exceeded on modulation peaks. All of the 0.001- and 0.003-μf. capacitors are the disk type, and aside from the screen by-passes are used mainly for filtering TV harmonics from the supply leads.

The by-pass capacitors in the high-voltage lead are the TV high-voltage ceramic type, as is also the blocking capacitor in the tank circuit. The loading capacitor, C_4, in the output circuit of the amplifier is a variable having enough range (1500 $\mu\mu$f. total capacitance) to give adequate loading on 80 through 10 meters when working into a 52- or 75-ohm resistive load.

Plate current is metered by a 0–1 ammeter shunted across a resistor in the negative high-voltage lead. As shown in Fig. 1, this resistor is incorporated in the power supply, not in the amplifier unit. The use of a shunted meter, a safety precaution, will introduce a small error in the plate-current reading, the difference between actual plate current and what the meter shows depending on the relative resistances of the meter and the shunt. In this setup a 10-ohm resistor was used to shunt a meter having a resistance of 0.05 ohm, giving an error of about 1 part in 200, or 0.5 per cent. A 50-watt rating represents an ample safety factor, since the power dissipated would not exceed a few watts should the ammeter open up.

Separate milliammeters are provided for the grid and screen circuits. The screen meter is practically a "must," since the screen current, and hence screen dissipation, is very sensitive to grid driving voltage and plate tuning.

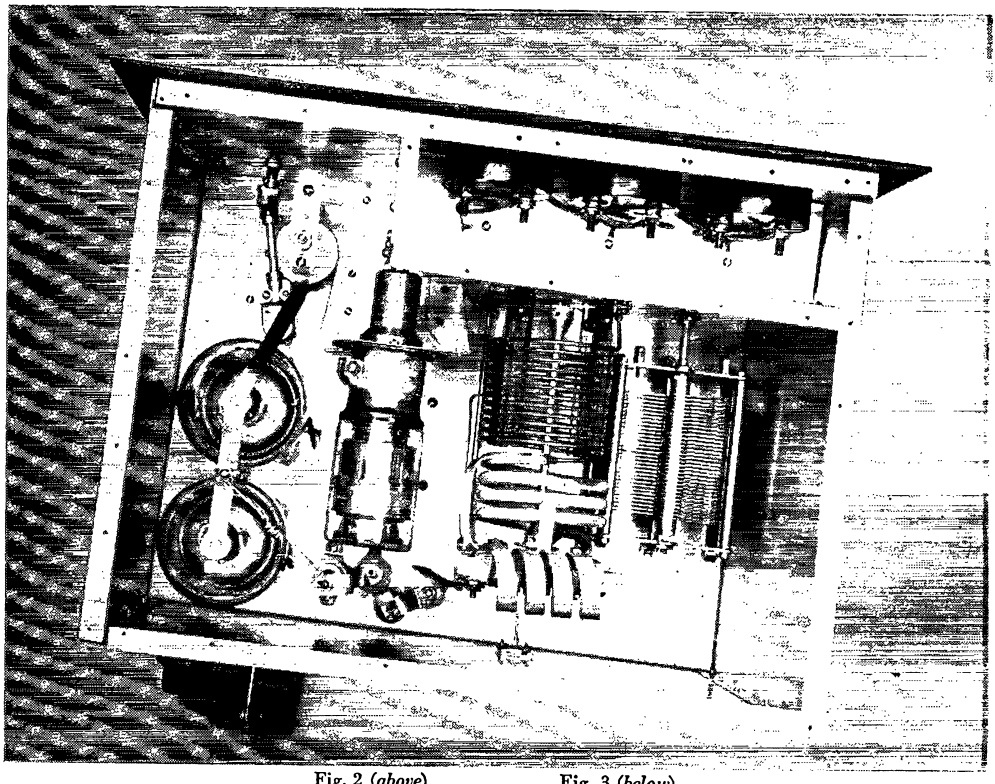


Fig. 2 (*above*)

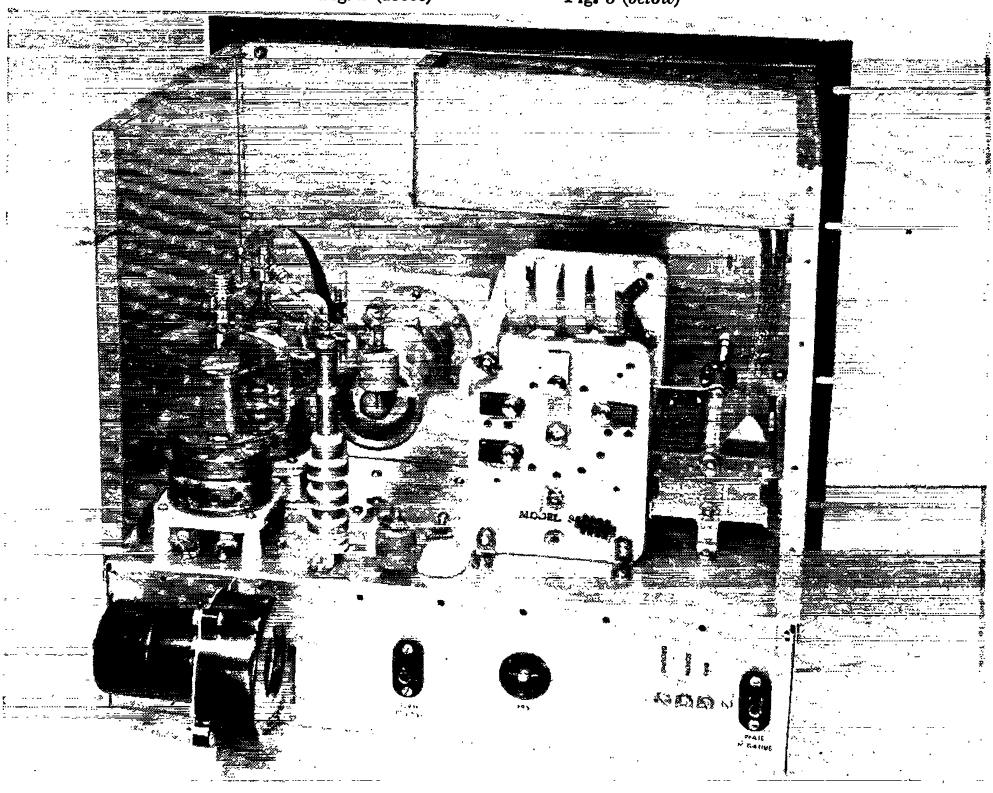


Fig. 3 (*below*)

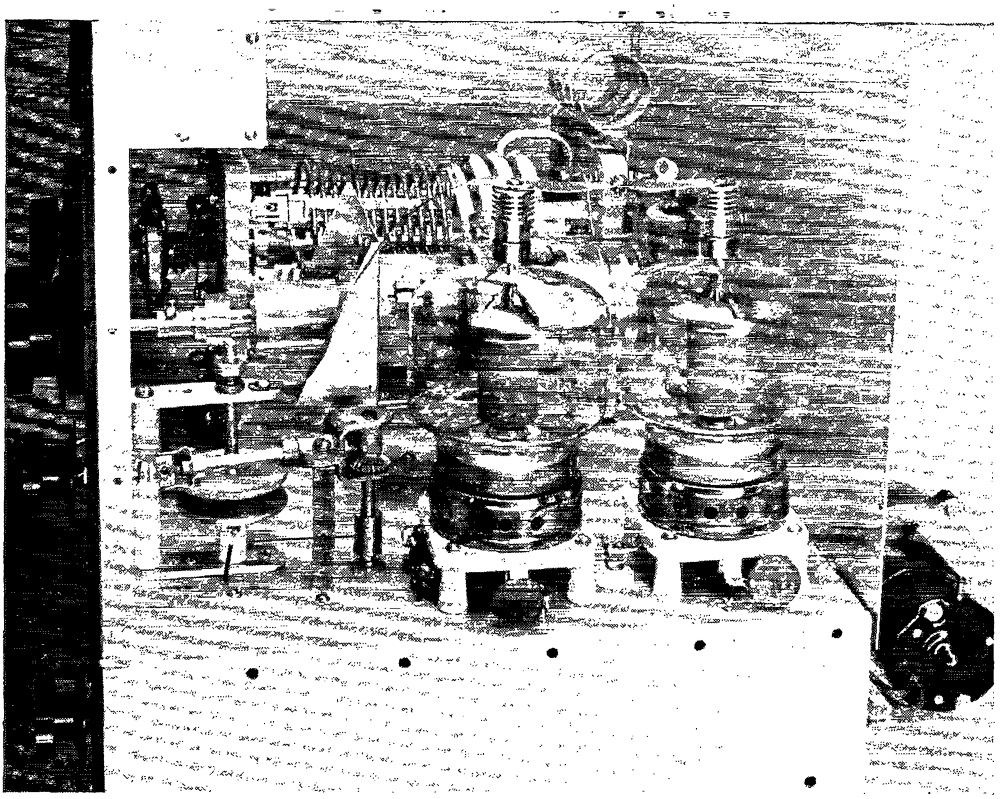


Fig. 4

Layout Details

Fig. 2 is a view looking into the amplifier with the top cover removed. The variable capacitor at the right is the output loading control, C_4. To the left of C_4 is the Model 850 inductor unit. Immediately to the rear (below, in the photograph) of the inductor is the output lead, connected to a coaxial receptacle mounted on the rear cover. The vacuum variable, C_3, is mounted between the inductor and the 4-250As. It is supported by an aluminum bracket 6 inches high and 4 inches wide. The neutralizing capacitor C_2 is between the 4-250As and the front panel.

The grid turret and tuning capacitor are mounted underneath the chassis to take advantage of the shielding afforded thereby. To fit under the chassis the turret has to be mounted with the switch shaft vertical, necessitating a right-angle drive to the panel control. The shaft approaches the panel at an angle, so a flexible coupling of the ball type (Millen 39001) is used between the shaft and panel bearing.

The meters are in a separate enclosure measuring 11 × 3 × 3-inches. It is mounted to the front of the box by countersunk flat-head screws. The top lips of the meter box are drilled to take self-tapping screws when the lid is in place.

Connections to the tube plates and neutralizing capacitor are made from flexible brass strip ½ inch wide. A piece of ¾-inch wide brass strip is used for the connection between the stator terminal of the vacuum variable and the tank inductor. The blocking capacitor is mounted on this strip.

Fig. 3 shows the amplifier with the top and back panels removed. The blower assembly is mounted on the rear chassis wall. To the right of the motor is the high-voltage terminal, the 115-volt connector, the grid and screen terminals, and the high-voltage negative connector. Leads from these last three terminals run below chassis in shielded wire and then up to the meter box. These leads are visible in front of the loading capacitor. Belden 8885 shielded wire is used for the leads. The inner conductor is by-passed to the shield braid at each end. The 2.5-mh. "safety" choke, RFC_3, shunting the output end of the pi network is mounted on the back of the tank coil between the output lead and chassis ground.

The isolantite feed-through insulator to the left of the inductor is used to bring the high voltage through the chassis. Adjacent to it is the by-pass at the bottom of the plate choke, RFC_1.

Mounting details of the right-angle drive assembly for switching the grid circuit are clearly visible in Fig. 4. A ½-inch square rod 2¾ inches long is drilled and tapped at both ends to support the drive. Although the photograph is somewhat deceptive, there is plenty of clearance between this assembly and the neutralizing capacitor.

The sockets for the 4-250As are mounted on one-inch isolantite pillars. The screen and fila-

ment terminals are by-passed directly at the socket terminals. The grid terminals on the sockets face each other, and a small feed-through is used to bring the grid lead up through the chassis.

Fig. 5 is a bottom view of the amplifier and Fig. 6 a close-up view of the grid circuit. A short length of RG-58/U is used to connect J_1 on the rear chassis wall to the link terminals on the turret assembly. The high-voltage lead is filtered by the 500-$\mu\mu$f. ceramic by-pass and RFC_2. These two components are visible on the inside of the rear wall above the blower assembly. Two-terminal tie-points are used for the a.c. connections to the filament transformer and blower motor. Shielded leads are used between the tie-points and the 115-volt connector.

Fig. 6 shows the grid-circuit wiring in a bit more detail, particularly the grid choke, grid resistor and C_5 clustered just above the tuning capacitor. The modifications to the 10- and 15-meter coils also are somewhat more easily seen in this photograph.

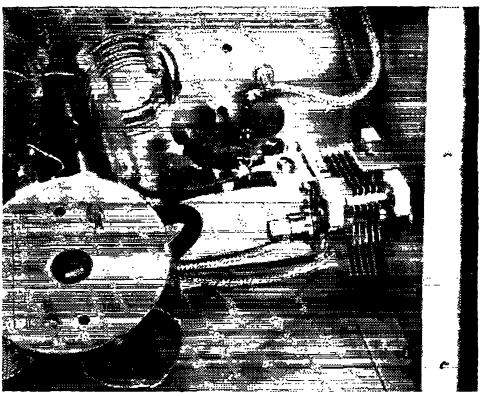


FIG. 6

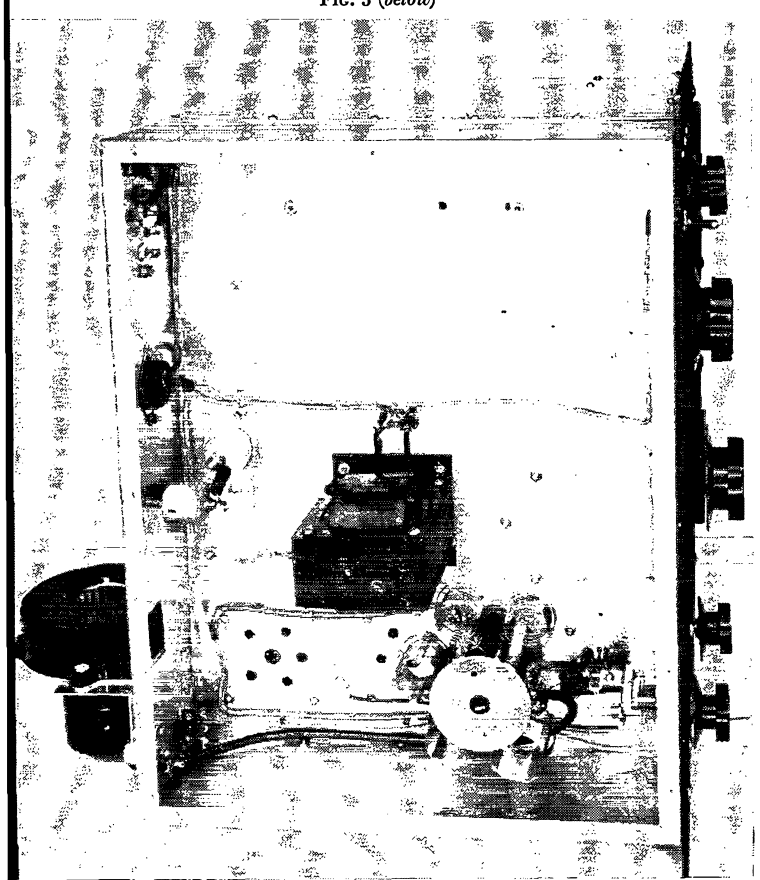
Adjustment and Operating Data

Although some "bugs" usually show up when a new unit is first tried, we were fortunate in this project — there were no troubles of any kind. Possibly this is because neutralizing and parasitic suppression were included in the original design and not left to be installed "if necessary."

The amplifier should be neutralized with the plate and screen supply leads disconnected and the bandswitch set to 28 Mc. An indicating wavemeter should be coupled to the tank circuit and drive applied to the amplifier. Resonate the grid and plate tanks and adjust the neutralizing capacitor for minimum r.f. in the tank circuit as indicated by the wavemeter. The same neutralizing adjustment should hold for all bands. Don't attempt to neutralize with the plate and screen supply leads connected — i.e., with a complete circuit for d.c. — because even with the power turned off this permits electrons to flow from the cathode to the plate and screen, and r.f. will be present that cannot be neutralized out.

The parasitic choke will, in general, resonate the plate lead in one of the low v.h.f. TV channels, and will tend to increase harmonic output in that channel. Measure the resonant frequency of the plate lead at L_2 with a grid-dip meter, and if it is in one of the channels received in your locality, either pull the turns apart or squeeze them together to move the frequency to an unused channel. Any frequency from 70 to 100 Mc. should be satisfactory.

FIG. 5 *(below)*



A kilowatt input may be obtained readily with any plate voltage from 2000 up. The writer uses a 2500-volt plate supply with a separate screen voltage supply adjustable from zero to 800 volts by means of a variable autotransformer. For Class C operation, external grid bias of −150 volts regulated by VR tubes is used. With this plate voltage and bias, a screen voltage of 400 volts is enough for a plate current of 400 ma. The excitation is adjusted to give a grid current of 25 ma. through the 2000-ohm grid leak and fixed bias. The screen current is approximately 60 ma. under these conditions.

Some sort of r.f. output indicator, such as a crystal-rectifier voltmeter or r.f. ammeter in the

(Continued on page 158)

V.H.F. QSO Party

June 9th–10th

Another ARRL V.H.F. QSO Party, open to amateurs who can work any band or bands above 50 Mc., will be held from 2:00 P.M. Local Standard Time, Saturday, June 9th, to 11:00 P.M. Local Standard Time, June 10th.

Call "CQ Contest" or "CQ V.H.F. QSO Party" to get in touch with other contestants. During contact, operators must exchange names of their ARRL sections for full credit.

Work as many stations on as many v.h.f. bands as you can. Count *1* point for successfully confirmed exchanges of section information on 2 or 6 meters, *2* points for such QSOs on 220 or 420 Mc., and *3* points on 1215 Mc. or higher bands. To determine your final score, multiply this sum of contact points by your section multiplier, which increases by one when the same section is reworked on another band. A station may also be reworked for credit on additional v.h.f. bands.

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

Submit your results as soon as the competition is over. A simple tabulation of stations and sections worked, as shown on page 60 of June, 1953, *QST*, is all that is required. Convenient reporting forms are now available from ARRL.

Rules

1) The contest starts at 2:00 P.M. Local Standard Time, Saturday, June 9th, and ends at 11:00 P.M. Local Standard Time, Sunday, June 10th. All claimed contacts must fall within this period and must be on authorized amateur frequencies above 50 Mc., using permitted modes of operation.

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

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

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

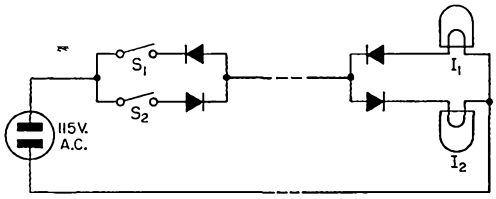
5) A contact *per band* may be counted for each station worked. Example: W2TBD (S.N.J.) works W1DBM (Conn.) on 50, 144 and 220 Mc. for complete exchanges. This gives W2TBD 4 points (1 + 1 + 2) and also 3 section-multiplier credits. (If W2TBD contacts other Connecticut stations on these bands, they do not add to his section multiplier but they do pay off in additional contact points.)

6) Each section multiplier requires completed exchanges with *at least* one station. The same section can provide another multiplier point only when contacted on a new v.h.f. band.

(*Continued on page 150*)

Quist Quiz

Did you get the answer to the Quist Quiz last month? As you may recall, the problem involved controlling two lamps independently with two switches with only two wires between the switches and the lamps. In case you didn't figure it out, the answer is shown here. The solution hinges



on the use of rectifiers to convert the a.c. into pulsating d.c. As you can see, the path to lamp I_1 is controlled by switch S_1, and the current to lamp I_2 is controlled by switch S_2. These two functions are independent and non-interlocking. In the unit pictured last month, small selenium rectifiers were used with small 7-watt 115-volt lamps. The fact that the lamps don't burn at full brilliance wasn't noticed by anyone we showed the unit to.

There are a few variations of the circuit, but they all use the same basic principle: pulsating d.c. and rectifiers at the lamps.

Strays

The Voice of America has resumed its program on amateur radio, beamed to overseas listeners. The current schedule calls for transmission each Saturday at 1845 GMT (1:45 p.m., EST) beamed to Europe on 21,650, 21,540 17,830, 17,795 and 15,270 kc. It is simultaneously relayed from Munich on 7250 kc., and from Tangier on 15,130 and 9,505 kc. Tangier repeats the broadcast on 2145 GMT on 9505 kc. All transmitters in the U. S. run at least 200 kw., while the relay transmitters are in the megawatt class!

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

Galveston, Texas — June 15–16–17

The Galveston County Amateur Radio Club will be host to the 26th Annual West Gulf Division Convention to be held in Galveston on June 15, 16, and 17.

One thousand amateurs and their families are expected to be registered from Texas, New Mexico, Oklahoma, and Louisiana.

Starting with a Friday-night beach party with shrimp and other sea food, the activities will end Sunday with a banquet on the million-dollar Pleasure Pier on the Gulf of Mexico.

Luncheons, transmitter hunts, and a dance, along with special ladies activities and other events, will be featured.

The registration fee of $9.00 ($9.50 after June 3) includes cost of luncheon, dance, banquet, prizes, and all other activities. The beach party will be $2.00.

Hank Freiberger, W5ULN, P. O. Box 956, Galveston, Texas, can furnish any information and will accept reservations from anyone.

22nd ARRL Sweepstakes Results

Part II — Phone and Club Totals

BY ELLEN WHITE, W1YYM

THE ROLLICKING RESULTS of the c.w. portion of the 22nd SS, as reported this *QST* past, are still food for much discussion. But now's the time for phone fanciers with a penchant for SSing to take their turn at demonstrating big doings in the 1955 Sweepstakes.

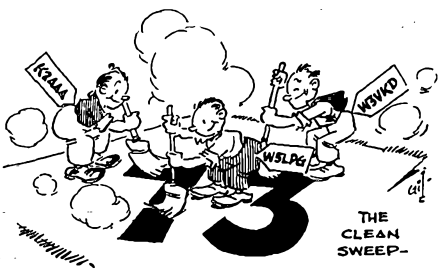
A six per cent increase in activity is noted in the 425 logs from 67 sections. Conspicuous by their absence were entrants from Alaska, Hawaii, the West Indies, Nevada, Canal Zone and British Columbia. Nevertheless, K2AAA W3VKD and W5LPG made two-ways with all 73.

K2AAA brought down the house with a new phone scoring record of 184,398 points, almost 3000 points greater than W6AM's 1954 dazzler. Leading their respective call areas pointwise are: W1YWU K2AAA W3VKD W4ODR W5LPG W6NJU W7ESK W8AJW W9OMM WØNPR VO6AM VE2JR VE3AML VE4EF VE5VZ VE6MJ and VE8NT.

Evidence of increased activity is indicated by the number of stations achieving 50,000 or more points. There were 32 such in 1954, as compared to 17 in 1953. Orchids to the following **49** who made this grade in '55: W1s FZ GKJ JEL TRX YWU ZKE[1], W2ICE, K2AAA, W3s DHM VKD YRK, K3BWJ, W4s BAN CBQ FGH GUV ODR PJU YTO, W5s, DQK HQR KC KNA/5 LPG ZED[1], W6s CBE NJU QEU VVZ[1], K6s BWD DAC EVR, W7s ESK OVA UZR ZZA, W8s AJW DUS KZH MNY[1], W9s OMM TJP, WØs BCF EIB LXA MPH NPR PRZ VKI.

By dint of fast and fancy phone work, four hardy hams acquired 100,000 or better points. Step up and meet K2AAA, W6NJU, W7ESK and W8AJW!

QST researcher WØIUB reveals other interesting facts of an SS turn. For instance, those stations making 500 or more contacts these past six years include the following. Calls in boldface



indicate participation in and results of last year's SS vocalizing: W6QEU 854, W6OGZ 853, **K2AAA** 848, W6AM 835, W6QEU 807, W6QEU 805, W6ITH 780, W6OGZ 703, W4HQN 655, **W6QEU** 616, W3VKD 612, W7PUM 569, **W8AJW** 544, W9NDA 530, W4HQN 520, **W7ESK** 512, W3JNN 511, WØEDX 505, K2AAA 504, **W6NJU** 504.

Particular attention to operation on 75, 40 and 20 continues to be part of the section winner's formula. However, 15 meters is a new popular choice for "far-away sections."

The Potomac Valley Radio Club earned its sixth Sweepstakes gavel, barely easing out Frankford Radio Club competition. An approximate

[1] Multioperator station.

Working DX, collecting antique wireless gear, producing top-notch slides recording the history and development of amateur radio, appointments as OO OBS OPS, etc., haven't kept W2ICE from winning a W. N. Y. certificate these past five years. Kelley's big signal is a part of most oral operating events.

Georgia's W4FGH "on the banks of the Okapilco creek in the heart of the Okapilco swamp" garnered Ga. glory with gear galore, namely: KW a.m. rig with 250THs, KW s.s.s.c. transmitter, 300-watt 813 amplifier, 144-Mc. equipment; 70′ high ground plane, 40-meter reversible fixed beam, 510′ long wire, etc.

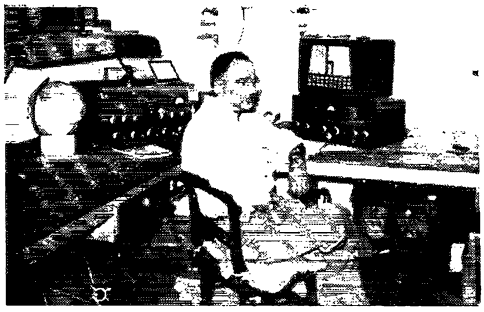
PHONE WINNERS, 22ND A.R.R.L. SWEEPSTAKES CONTEST

Section	*Call*	*Score*	*Transmitting Equipment*	*Receiving Equipment*	*Bands Used*
E. Penna.	W3DHM	71,208	DX100	HRO50T1	10, 15, 20, 40, 75
Md.-Del.-D. C.	K3WBJ	68,352	Viking I	HRO60	10, 15, 20, 40, 75
S.N.J.	K2CSC	41,553	Viking VFO–Viking II	HQ140X	15, 20, 40, 75
W.N.Y.	W2ICE	54,400	810s p.a.	HQ120X	2, 20, 40, 75
W. Penna.	W3VKD	89,352	KW1; 32V2	75A3, 75A4	10, 15, 20, 40, 75
Illinois	W9TJP	55,428	Viking II–810s	Homebuilt	10, 15, 40
Indiana	W9HYM/9	46,532	Ranger	75A1	10, 15, 40, 75
Wisconsin	W9OMM	62,209	Viking VFO–Viking II	SX71	15, 20, 40, 75
No. Dakota	WØNPR	91,494	Viking VFO–Viking II	S76	10, 15, 20, 40, 75
So. Dakota	WØPRZ	94,924	32V1	75A2	10, 15, 20, 40, 75
Minnesota	WØTJH	30,690	Viking II	NC88, Q Multiplier	10, 15, 20, 40, 75
Arkansas	W5ZCC	24,012	813s p.a.	75A2	10, 40, 75
Louisiana	W5KC	65,340	32V3	HRO7	10, 15, 20, 40, 75
Mississippi	W5LPG	99,645	Ranger-813	HQ140X	10, 15, 20, 40, 75
Tennessee	W4ODR	77,418	DX100	SX100	10, 15, 20, 40, 75
Kentucky	W4KZF	20,280	Ranger	BC342N	20, 40, 75
Michigan	W8DUS	89,280	KW1	75A4	15, 20, 40, 75
Ohio	W8AJW	114,822	32V1	HQ120X	10, 11, 15, 20, 40, 75
E.N.Y.	K2PIC	30,915	Ranger, Communicator	75A1, Communicator	2, 10, 15, 40, 75
N.Y.C.-L.I.	K2AAA	184,398	Eldico FT30, SSB100	Eldico MT2, 75A3, 75A4	2, 10, 15, 20, 40, 75
N.N.J.	W2VCZ	12,300	Viking VFO–Viking I	HRO50T1	15, 40, 75
Iowa	WØAXE	13,500	Ranger	NC173, VHF152A, R9er	10, 15, 20, 40, 75
Kansas	WØLXA	65,423	5100	SX28	15, 20, 40
Missouri	WØBCF	59,040	810s p.a.	SP400X	15, 20, 40, 75
Nebraska	WØVKI	58,194	Ranger	HRO60	20, 40
Connecticut	W1YWU	87,255	Viking I	75A2	10, 15, 20, 40, 75
Maine	W1GKJ	52,731	Viking VFO–Viking II	HRO60	10, 15, 20, 40, 75
E. Mass.	W1JEL	64,470	Ranger; 829B p.a.	NC300	10, 15, 20, 40, 75
W. Mass.	W1NGE	7265	Sig. Shifter–814	SX25	40, 75
N.H.	W1FZ	77,622	Viking I	75A2	10, 15, 20, 40, 75
R.I.	W1TRX	52,338	Globe King	HQ140X, DB23	10, 15, 20, 40, 75, 160
Vermont	W1SEO	30,336	5100	75A2	10, 15, 20, 40, 75
Idaho	W7VNO	23,427	Globe Scout	RME69	10, 15, 20, 40, 75
Montana	W7NPV	43,005	32V1	SX28	10, 15, 20, 10, 75
Oregon	W7OVA	57,855	Viking I	75A1	15, 20, 75
Washington	W7ESK	103,836	32V3	75A1	10, 15, 20, 40, 75
Santa Clara V.	K6CLV	17,292	DX100	SX28	10, 15, 20, 40, 75
East Bay	W6BXE	41,138	4-250As p.a.; 813s p.a.	SX28, 75A2	15, 20, 40, 75
San Francisco	W6CBE	67,184	5763-2E26-4-125As	HRO60	10, 15, 20, 40, 75
Sacramento V.	W6QEU	87,401	Ranger-304TLs	SX71	10, 15, 20, 40, 75, 160
San Joaquin V.	W6TZN	43,280	Viking I	SX71	10, 15, 20, 40, 75
No. Carolina	K6MUG/4	31,806	Viking II	S76	10, 15, 20, 40, 75
So. Carolina	W4BAN	60,180	Viking II	S40B	10, 15, 40, 75
Virginia	W4CBQ	54,860	837–1625–1625–1625–4-400A	SP400X	15, 20, 40, 75
W. Virginia	W8WHR	32,704	Ranger–RK36s	Super Pro	10, 15, 20, 40, 75
Colorado	WØMPH	79,380	5100	NC183D	10, 15, 20, 40, 75
Utah	W7QWH	15,045	3OK1	75A3	15, 20, 40, 75
Wyoming	W7UZR	93,660	Viking II	SX88	10, 15, 20, 40, 75
Alabama	W4GUV	54,441	Ranger	NC98	10, 15, 20, 40, 75
E. Florida	W4PJU	58,149	32V1	75A3	10, 20, 75
W. Florida	W4KWM	10,906	4-400As p.a.	NC200	20
Georgia	W4FGH	55,476	250THs p.a.	SX28, HQ129X	40
Los Angeles	W6NJU	107,246	6146 p.a.	75A2	2, 10, 15, 20, 40, 75
Arizona	W7ZZA	62,928	6AG7–6AG7–1614–812As	HRO60	10, 15, 20, 40, 75
San Diego	W6IQD	39,744	BC610E	75A3	10, 20, 40, 75
Santa Barbara	W6ERB	12,144	Viking II	75A4	15, 20, 40, 75
No. Texas	W5COF	31,929	Viking II	HRO50T	10, 15, 20, 40, 75
Oklahoma	W5IWL	45,423	5763-5763-5763-2E26-813	SX28A	15, 20, 40, 75
So. Texas	W5HQR	60,786	Viking II	HRO50T1	10, 15, 20, 40, 75
New Mexico	W5MYI	31,500	6AG7–6AG7–6N7–6N7–829B	SX28	10, 20, 40
Maritime	VO6AM	2541	Viking I	HQ129X	15, 20
Quebec	VE2JR	33,260	Viking II	SX71	10, 15, 20, 40, 75
Ontario	VE3AML	6534	Viking II	AR88D	10, 20, 75
Manitoba	VE4EF	9950	805s p.a.	British Commander	20, 75
Sask.	VE5VZ	14,307	TR1TV	HQ129X, DB23	15, 20, 40, 75
Alberta	VE6MJ	5360	6L6-807s-812As	HQ129X, DB20	15, 20, 75
Yukon	VE8NT	4293	Viking I	S40B	15, 20, 75

105,000 point separation made the difference. FRC boys really banded together to show serious intent by boosting their club aggregate score over 500 thousand points since the last SS. But, over 50 clubs failed to make club-box listing due to an insufficient number of entries.

Sidelights

Five who came close but couldn't quite pin that 73rd include W7ZZA W8DUS WØs BCF MPH PRZ. . . . Snagging Arizona honors once again while sporting a new call, ex-VE1LL (now W7ZZA) more than doubled his '54 QSO total with 443 contacts in 72 sections. . . . In the 6th SS, two decades past, the highest phone scorer (VE3ER) talked to 67 ops in 23 sections. In striking contrast is the record-breaking 184,398 points neatly summed up by the Hudson Division champ K2AAA. This *fait accompli* resulted from 848 conversations with all sections. . . . All Mississippi entrants topped the 50,000 mark. . . . Technician W1ULU exploited 6-meter territory and came up with 42 contacts in 5 sections. Nice going! . . . VE8NT provided 53 happy hams with a Yukon multiplier. . . . A Novice c.w. winner last year, K6EVR of the Pacifico Radio Club returned this year



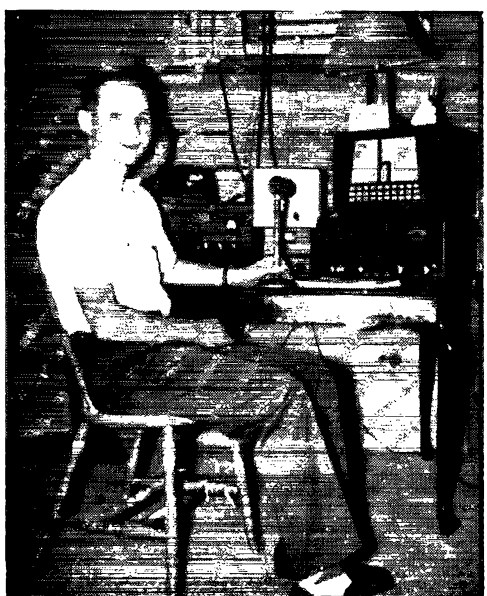
Representative of equipment used by a phone section leader, W9OMM's Viking II and SX-71 aided in his computation of 62,209 points out Wisconsin way. Dell keeps things perking between Novembers by working for YL award-endorsements.

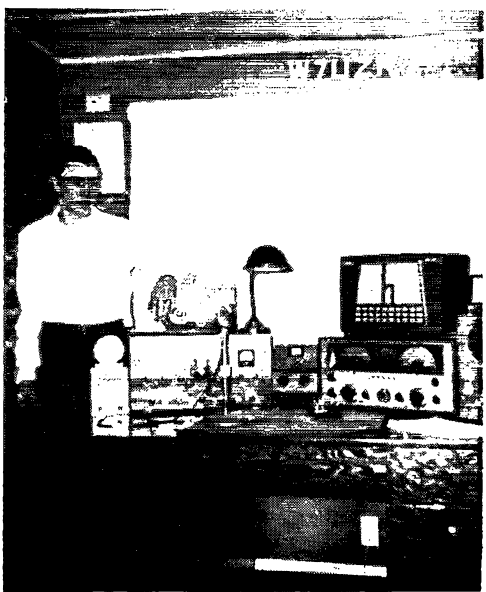
on phone to demonstrate ability galore in a 96,822-point tally. . . . W4FGH QSOd 414 the hard way, all on 7.2 Mc! . . . VE4EF's 50th and last new section resulted from a QSO with VE4XP. . . . The 68 section winners represent a total of 20,359 QSOs. . . . W6QEU's 1950 QSO record of 854 contacts holds firm. . . . Heard by many were W8DOG and K2ELK. . . . K2AAA's r.f. was radiated by a long wire on 40 and 75, rotaries on 10, 15 and 20 and a ground plane on 2. . . . On the other hand, some of the robust radiators at W3VKD included an H-array on 40, a 6-element beam for 20, 3 elements on 10 and 15 and two half-waves on 75. . . . Illinois and Ohio phone fanciers accounted for 19% of all A-3 logs. . . . Section winners for four consecutive years are W2ICE W6CBE W7NPV and W8AJW. Special plaudits to W2ICE; Kelley has been the recipient of a W. N. Y. award for five consecutive years. . . . Honest man K6JKQ only claimed B power while running 101 watts. . . . Though 10th down in the club box, the York Radio Club of Illinois shows a blistering 111,798 points as the average entrants score. . . . 75 clubs had the required 3-or-more members submit logs in competition, representing a total of 651 logs. Certificate awards to go to 94 club contestants. . . . According to *Raytheon News*, members of the El-Ray Club plan to give the top three clubs a real run for the gavel in future SS events. . . . The 73rd section worked by W5LPG was Utah; By W3VKD, Maritime; by K2AAA, Canal Zone. . . . W7PEG worked 101 on 15. . . . KN2ODE and WN1FMW made 144-Mc. come through. . . . An average of the section leader's scores figures out to be 51,892 points; 304 QSOs in 60 sections in 29 hours, using low power. . . . Breathing hot and heavy on PVRC and FRC, the OVARA lads topped the two-million mark, thanks to 41 clannish contestants. . . . XYL W1TRE watched OM W1JEL operate and take his turn at winning the E. Mass. award. . . . Among the 32 operators at Penn. State (W3YA), was YL W3USR.

Contest Quotes

"My oh my, didn't even work my own section Kentucky." — W4KZF. . . . "All SS widows deserve awards." — W8AJW. . . . "Short skip on 20 the second weekend meant the east coast could only copy very strong west coast signals through the W9 WØ and W5 QRM. Needless to say it was rough particularly since I flew to Los Angeles on the 13th and didn't get back to Seattle till just before the contest on the 19th. It all goes to prove you have to be a little crazy to enjoy contests." — W7ESK. . . . "I recruited Walt, W3WPY, to operate my rig in contests because at my age I can't bear up under the strain of long hours. W3LMM will handle the rig in c.w. contests. I'm housekeeper." — W3VKD. . . . "Where were the VEs?" — W9OMM. . . . "My son, K4DIX, and I worked in shifts. It was nerve wracking hearing him snag Utah and Idaho. On the other hand he drooled when I worked Maine and Vermont." — K4AWQ. . . . "It's good to hear the regulars such as W2ICE, K2AAA, W3VKD and W6CBE in there running up their usual good scores." — WØBWJ. . . . "This was my 3rd SS and I enjoy it more each year. Conditions were perfect the first weekend." — WØNPR. . . . "You'll note that I didn't come near my all-time high score of 1950. My explanation of this is poor band conditions during the 2nd weekend and the fact that I couldn't operate on 1.8 or 4 Mc. during the time the TV transmitter was in operation. I moved my gear to the TV transmitter building of KBET and 1.8 or 4 Mc. energy would work into the video circuits. Here's a case of a ham station interfering with a TV broadcast station!" — W6QEU. . . . "Missed W2s HJR SKE W3JNN W4HQN and W6AM, but more enjoyable than last year." — Walt, W3WPY (opr. of W3VKD). . . . "Wish my score had been better but lost time during the 1st weekend with rig failure. I was sure lucky to get all 73." — W5LPG. . . . "This is the first contest I've entered in 13 years as an ARRL member and I sure enjoyed it!" — W2UMS. . . . "Finished my WAS by working Vermont and Utah." — W5ZAK. . . . "Where were VE7 VE8 and KL7?" — W1YWU. . . . "Final results sure prove the superiority of SSB for an SS. In fact, I'll even predict that next year, when the SSB population will be 3 or 4 times larger, the phone scores will rival the c.w. scores." — — K2AAA. . . . "This was my first contest and a lot of fun." — W7UZR (Note: 449 QSOs in 70 sections is a mighty fine first try for high-school senior W7UZR!). . . . "Wait till next year." — K2GIC.

High scores aren't exclusive with the older ham. As witness, observe the superlative performance of the lads shown below. On the left is North Dakota's 16-year old WØNPR. Jon's modest station, 20-meter beam plus 120′ doublet brought him 91,494 points. On the right, meet high-school senior W7UZR who clobbered 'em out Wyoming way. Jim averaged 13 QSOs an hour during a 33-hour operating period. A point total upwards of 90,000 makes W7UZR's first contest endeavor something to be proud of, regardless of age.





That "next year" referred to by K2GIC is and has been here for some time. In fact, November is just a stone's throw away from Field Day. What with 10 and 15 meters showing their stuff and even 6 promising points, it looks to be a record-shattering all-section affair. Polish up the push-to-talk, sharpen up that selectivity; club prexies start your pep talks and reserve those 2 weekends preceding Turkey Day 'cause we'll be listening for *you* in the 23rd SS!

PHONE SCORES

Twenty-Second Sweepstakes Contest

Scores are grouped by Divisions and Sections. . . . The operator of the station first-listed in each Section is award winner for that Section unless otherwise indicated. . . . Likewise the "power factor" used in computing points in each score is indicated by the letter A or B. . . . A indicates power up to and including 100 watts (multiplier of 1.5, phone), B over 100 watts (multiplier of 1). . . . The total operating time to the nearest hour, when given for each station, is the last figure following the score. . . . Example of listings: W3DHM. . . . 71,208-344-69-A-32, or, final score 71,208, number of stations 344, number of sections 69, power factor of 1.5, total operating time 32 hours. . . . Multioperator stations, with calls of participants in parentheses, are grouped in order of score following single-operator station listings in each section tabulation.

ATLANTIC DIVISION

Eastern Pennsylvania

W3DHM...71,208-344-69-A-32
W3YBI.....23,312-248-47-B-30
W3SMC.....6047- 72-29-A-14
W3BNR.....3616- 59-32-B-11
W3TKB.....900- 26-12-A- 6
W3LJT.....594- 18-11-A- 5
W3BES.....23- 3- 3-A- –
W3YHX.....12- 2- 2-A- 1
W3LEZ.....3- 1- 1-A- 1
W3YUO (W3YUO, WN3s CPN DGV)....13,158-154-43-B-26

Md.-Del.-D. C.

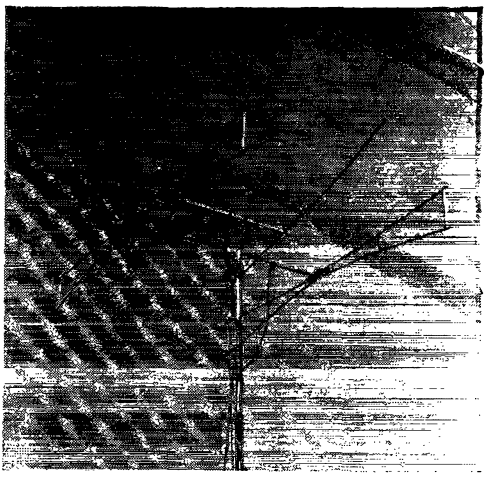
K3WBJ[1]...68,352-357-64-A-35
W3YRK....62,210-311-67-A-38
W3AYS....49,896-264-63-A-26
W3YYD....42,818-260-55-A-40
W3VAM....40,698-243-57-A-29
W3UKO....40,260-222-61-A-29
W3YVU.....7650- 86-30-A- 9
W3PKC.....3348- 54-31-B-14
W3YGN.....1908- 53-18-B- 8
W3RRT.....336- 16- 7-A- 4
W3MSK.....153- 9- 6-A- –
W3WON.....27- 3- 3-A- 1
W3DRD.....3- 1- 1-A- 1
W3OXY.....3- 1- 1-A- 1

CLUB SCORES

Club	*Score*	*Entries*	*C.W. Winner*	*Phone Winner*
Potomac Valley Radio Club	3,178,487	40	W4KFC	W4CBQ
Frankford Radio Club	3,073,240	45	W3DGM	W3DHM
Ohio Valley Amateur Radio Assn.	2,196,228	41	W8PBU	W8PLQ
El-Ray Amateur Radio Club (Mass.)	935,679	26	W1YMA/1	W1JNX
Chicago Suburban Radio Asnn.	769,470	19	W9WBL	W9FVU
Milwaukee Radio Amateurs' Club	533,761	14	W9UDK	W9HCX
Nassau Radio Club (N. Y.)	523,713	11	W2TUK	K2AAA
Order of Boiled Owls (N. Y.)	491,019	6	W2PRN	.....
Garden State Amateur Radio Assn. (N. J.)	469,146	11	W2CQB	.....
York Radio Club (Ill.)	447,163	4	W9YFV	.....
Buckeye Short Wave Radio Assn. (Ohio)	424,092	10	W8OYI	W8BHF
South Jersey Radio Assn.	407,310	15	K2HZR	W2BLV
Minneapolis Radio Club	404,180	7	WØTKX	.....
Westpark Radiops (Ohio)	400,694	31	W8FDC	W8AJW
Cleveland Brasspounders Assn.	363,023	5	W8VTF	.....
Hamfesters Radio Club (Ill.)	360,053	14	W9LNQ	W9TJP
Tri-County Radio Assn. (N. J.)	351,651	11	K2BHQ	K2CSC
Tri-State Amateur Radio Society (Ind.)	346,036	9	W9PNE	W9MCN
Pacifico Radio Club (Calif.)	345,701	4	.....	.....
Detroit Amateur Radio Assn.	291,767	12	W8IXJ	.....
Baltimore Amateur Radio Club	291,582	5	W3HEC	.....
Niagara Radio Club (N. Y.)	289,107	10	W2VJO	.....
Long Beach Wireless Operators (Calif.)	276,444	7	W6BJU[1]	.....
Richmond Amateur Radio Club (Va.)	274,876	7	W4BZE	.....
Connecticut Wireless Assn.	266,565	6	W1BIH	.....
Sioux City Amateur Radio Club (Iowa)	253,135	5	WØCXN	.....
Central High Radio Club (Iowa)	221,866	9	WØKYI	.....
Mid-Island Radio Club (N. Y.)	219,075	4	W2KTF	.....
Rochester Amateur Radio Assn.	217,967	14	W2QJM	W2ICE
Dayton Amateur Radio Assn.	215,504	5	W8ZJM	.....
Philadpelhia Wireless Assn.	213,368	5	W3HHK	.....
Northern California DX Club	207,534	3	W6TT	.....
Clarksville Amateur Radio Club (Tenn.)	202,526	3	W4WQT	.....
Canton Amateur Radio Club (Ohio)	194,860	14	K8NRG[2]	W8IKM
Amateur Transmitters Assn. of W. Penna.	194,095	4	W3GJY	.....
Coronado Radio Club (Calif.)	191,697	9	W6JVA	K6EDA
Columbus Amateur Radio Assn.	188,268	7	W8QDH	W8OMY
Tri-State Radio Club of So. Sioux City, Nebr.	180,726	8	WØCIO	.....
Turkey River Amateur Radio Club (N. H.)	175,375	6	W1BFT	W1RVQ
Somerset Hills Radio Club (N. J.)	172,807	5	W2GND	.....
Lake Success Radio Club (N. Y.)	158,247	8	W2CWD	.....
Johnson County Radio Amateur Club (Kans.)	153,282	6	WØBCI	WØMEF
Morristown High School Radio Club (N. J.)	152,720	5	K2CBB	.....
Springfield Amateur Radio Club (Ohio)	150,260	5	W8SWZ	.....
South Lyme Beer, Chowder & Propagation Soc. (Conn.)	145,778	3	W1IKE	.....
Radio Amateurs of Greater Syracuse	137,343	8	W2FMW	.....
Nortown Amateur Radio Club (Ont.)	128,994	6	VE3DRD	VE3HE
Northwest Amateur Radio Club (Ill.)	125,670	3	W9GVZ	.....
Beachwood Amateur Radio Club (Calif.)	125,591	6	K6ELX	.....
Middlesex Amateur Radio Club (Mass.)	116,662	15	W1SAD	W1FQG
Kankakee Amateur Radio Society (Ill.)	114,155	4	.....	W9VQC
York Amateur Radio Club (Penna.)	111,566	4	W3VDV	.....
Lake County Amateur Radio Club (Ill.)	111,277	4	.....	.....
Antietam Radio Assn. (Md.)	106,796	4	.....	W3YRK
Denver Radio Club	102,698	7	.....	WØMPH
Queens Radio Amateurs (N. Y.)	101,755	4	W2GXC	.....
Bethesda-Chevy Chase High School Electronics Club	95,258	3	W3UZS	.....
Pottstown Amateur Radio Assn. (Penna.)	94,815	6	W3ARK	.....
Rio Hondo Radio Club (Calif.)	93,297	3	K6GUZ	.....
Anne Arundel Radio Club (Md.)	90,728	3	.....	W3YYD
Hartford County Amateur Radio Assn.	87,917	5	W1UFW	.....
Joliet Amateur Radio Society (Ill.)	85,616	7	W9YYG	.....
Lawrence Amateur Radio Club (Kans.)	73,164	3	WØUNT[3]	.....
Stockton Amateur Radio Club (Calif.)	65,987	7	W6KIG	W6GQZ
Schenectady Amateur Radio Club	58,424	4	.....	.....
Point Radio Amateurs (Wis.)	50,857	7	W9BCC	.....
Harmonic Hill Radio League (N. Y.)	50,365	3	K2DRN	.....
Northeast Radio Club (Penna.)	49,827	3	W3HTR	.....
Levittown Amateur Radio Club (N. Y.)	38,092	8	W2RZH	.....
Aero Amateur Radio Club (Md.)	33,537	6	W3VCD	.....
Goose Bay Amateur Radio Club (Labrador)	31,830	6	W2BRA/VO6	VO6AM
Radio Electronics Club of Central H. S. (Pa.)	15,885	3	W3WHJ	.....
Cascade Radio Club (Wash.)	14,148	3	W7QLH	.....
St. Louis University Amateur Radio Club	12,146	5	WØWRB	.....
Fall River Amateur Radio Club (Mass.)	8,882	3	.....	.....

[1] W6CUF, opr. [2] W8JIA, opr. [3] WØFCL, opr.

W3WPY stayed awake at the W3VKD helm to net 612 QSOs in all the 73. Voice operation par excellence, 5-band versatility, *and* a husky KW-1 added up to acquisition of the W. Penna. award [and top W3 score.



Stacked 2-element beams for 15 and 20 were 70 feet high over Los Angeles as W6NJU vocalized for his section's sheepskin. A 40-meter vertical and 144-Mc. ground plane 60′ above ground are further embellishments on Gary's "vertical antenna acreage."

Southern New Jersey

K2CSC....41,553-243-57-A-33
K2BWR....22,632-246-46-B-33
W2BLV....16,200-100-54-A-17
K2EYZ....13,392-124-54-B-19
K2GCD....7347- 80-31-A-14
K2AQL....7079- 72-33-A-19
K2AIM....3213- 51-21-A-12
K2JKA....2718- 76-12-A- 9
W2VUM....2838- 43-22-A 9

Western New York

W2ICE....54,400-400-68-B-33
K2BHP....47,192-355-68-B-36
W2CZT....40,200-300-67-B-38
W2PUN....33,600-175-64-A-23
W2PDB....32,405-190-57-A-34
W2UMS....19,944-139-48-A-32
K2DGM....11,100-102-37-A-21
K2EEC....10,692- 81-44-A- –
W2SNI....8920-114-40-B-12
K2ELK....7134- 82-29-A- 6
W2SYT....6732- 68-34-A-12
W2RLN....5520- 70-40-B-12
K2IJT....2712- 90-24-B-16
K2KNW....1500- 25-20-A- 6
W2BYJ....1482- 26-19-A- 9
W2YRH....1045- 28-19-B- –
W4ZYV/2....924- 28-11-A- 7

Western Pennsylvania

W3VKD[2]...89,352-612-73-B-40
W3VWJ....9320-118-40-B-10
W3VEJ....9030- 86-35-A- –
W3YA (32 oprs.)
11,466-138-28-A- 8

CENTRAL DIVISION

Illinois

W9TJP....55,428-461-62-B-38
W9FVU....41,760-233-60-A- –
W9HKE....40,824-324-63-B-37
W9VOB....37,037-235-53-A-32
W9AVJ[3]...28,980-244-60-B-15
W9NDN....25,679-164-53-A-31
W9MHC....25,410-154-55-A-29
W9NLF....22,680-158-48-A-37
W9LQF....21,000-176-40-A-35
W9PBM....20,874-142-49-A- –
W9ITM....17,901-155-39-A-26
W9TMG....15,420-130-40-A-26
W9RFR....8514-129-33-B- 7
W9WFS....8004- 93-29-A- 6
W9PBJ....5850- 75-26-A-13
K9AHO....4554- 68-23-A-15
W9DBU....3741- 67-29-B-10
W9UYZ....3132- 36-29-A-10
W9VQC....2187- 41-18-A- 7
W9HKA....1968- 41-24-B- 4
W9GPV....1827- 29-21-A- 6
W9ZFM....1554- 37-14-A-15
W9TRI....1404- 29-18-A-10
W9YAC....1080- 24-15-A- 8
W9AOI....693- 21-11-A- –
K9ARN....473- 18- 9-A- 2
W9GBC....450- 15-10-A- 2
W9OUH....396- 18-11-B- –
W9UMF....297- 11- 9-A- 3
W9PNY....287- 22- 7-B-10
W9QMJ....147- 7- 7-A- 4
W9AVH....108- 10- 4-A- 9
W9NIU....108- 9- 4-A- 2
W9KLD....32- 4- 3-A- 1
W9RVX....12- 2- 2-A- –
W9IDO....9- 3- 1-A- 1

Indiana

W9HYM/9..46,532-232-67-A-29
W9UTL....32,922-181-62-A-26
W9PQA....29,970-185-54-A-25
W9HSK....15,080-147-52-B-30
W9MCN....10,669-114-47-B-15
W9AQR....2126- 55-13-A-11
W9MZE....12- 2- 2-A- 1

Wisconsin

W9OMM....62,209-302-69-A-37
W9LHR....37,170-207-60-A-25
W9LXY....34,770-190-61-A-39
W9HCX....34,365-202-58-A-33
W9PTN....34,020-204-56-A-29
W9RHU....29,232-168-58-A-35
W9VBZ....21,120-128-55-A- 8
W9VZP....20,445-145-47-A-17
W9ZDU....19,388-139-47-A-20
W9YOX....10,530- 90-39-A- 9
W9GIL....9546- 87-37-A- –
W9EFX....9360- 78-40-A-17
W9VZK....8778- 77-38-A-11
W9OLJ....4278- 69-31-B-15
W9QGR....3672- 72-17-A- 5
W9QJW....2109- 39-19-A- 6
W9DYO....1080- 20-18-A- 7
W9RZD....765- 23-17-B-13
W9VOD....18- 3- 3-B- 1

DAKOTA DIVISION

North Dakota

WØNPR....91,494-449-68-A-38
WØKZZ....28,215-165-57-A-23
WØWFO....25,290-143-60-A-11
WØNGO....18,944-151-64-B-12
WØWRK....162- 15- 4-A- 4

South Dakota

WØPRZ....94,924-445-72-A-30
WØVQC....40,890-235-58-A-24
WØGDE....33,792-257-66-B-16

Minnesota

WØTJH....30,690-186-55-A-29
WØWVO....18,744-142-44-A-17
WØTPO....16,119-101-54-A-19
WØTCF/Ø....8940- 76-40-A-26
WØAJS....5209- 62-28-A-18
WØQZR....4134- 54-26-A-17

DELTA DIVISION

Arkansas

W5ZCC....24,012-209-58-B-18
W5DYL....5822- 71-41-B-12

Louisiana

W5KC....65,340-330-66-A-27
W5SQI....33,600-201-56-A-20
W5ZAK....8892- 80-38-A-11

Mississippi

W5LPG....99,645-460-73-A-33
W5DQK....69,300-355-66-A-27
W5KNA/5..58,806-302-66-A-32

Tennessee

W4ODR[4]...77,418-397-66-A-39
W4TDZ....11,319-119-49-B-10
W4YGI....3480- 40-29-A- 5
W4IGW....1932- 35-28-B-10
W2MQB/4....690- 23-15-B- 5

GREAT LAKES DIVISION

Kentucky

W4KZF....20,280-130-52-A-12
W4CDO....11,970-133-45-B-20

Michigan

W8DUS....89,280-625-72-B-39
W8LOX....12,669-104-41-A-18
W8ZXC....8468-147-29-B-23
W8JQR....2200- 50-22-B- 9
W8QGP....2136- 45-24-B-12
W8TBZ....1593- 32-27-B-13
W8TWA....1380- 23-20-A-10
W8FGB....3- 1- 1-A- 1
W8MNY (W8s MNY MNZ VFQ) 55,377-294-63-A-37

Ohio

W8AJW...114,822-544-71-A-40
W8KZH....72,633-396-62-A-40
W8LAX....41,220-230-60-A-24
W8PLQ....39,648-236-56-A-35
W8OMY....29,040-177-55-A-35
W8AGZ....28,784-257-56-B-29
W8HQK....27,028-237-58-B-34
W8QIU....21,330-158-45-A- –
W8GKQ....20,025-223-45-B-27
W8BHF....19,944-140-48-A-24
W8SRF....19,404-154-42-A-19
W8MKD....18,900-127-50-A-20
W8QAD....18,792-162-58-B-26
W8FBZ....15,120-126-40-A-20
W8JSW....13,800-100-46-A-18
W8IKM....12,426-109-38-A-18
W8OAC....9512-164-29-B-17
W8DOG....7623- 77-33-A-10
W8JRB....7560- 72-35-A- 4
W8QYT....5508- 68-27-A-13
W8GHT....4446- 57-26-A- 8
W8QIZ....3996- 74-18-A-13
W8HTQ....3225- 43-25-A-10
W8AJH....2205- 49-15-A- 5
W8IMH....1710- 31-19-A-14
W8FDN....1598- 36-15-A- 8
W8MYV....1536- 32-16-A- 4
W8JIN....1520- 38-20-B- 1
W8FNX....1496- 34-22-B- 6
W8ZQX....1281- 31-14-A- 7
W8VUV....570- 19-10-A- 5
W8UDN....567- 27- 7-A- 6
W8WIB....540- 20- 9-A- 4
W8AEU....480- 20- 8-A- 6
W8SJU....459- 17- 9-A- 7
W8RCJ....348- 16- 8-A- 3
W8INO....156- 13- 4-A- 4
W8YHU....112- 8- 7-B- 1
W8ZEU....66- 11- 2-A- 2
W8FND....64- 8- 4-B- 1
W8NZC....45- 15- 1-A- 3
W8ET....24- 8- 1-A- 1
W8HFE....21- 7- 1-A- 1
W8RNL....18- 6- 1-A- 5
W8USU....6- 2- 1-A- 1

HUDSON DIVISION

Eastern New York

K2PIC....30,915-231-45-A-31
K2JMY....18,585-177-35-A-29
K2PPB....13,965-123-38-A-20
W8AVT/2....648- 18-12-A- 2
K2BDJ....126- 7- 6-A- 4
W2SZ (W2MFN, K2BWB, W9NFR) 10,788-176-31-B-23

N. Y. C.-L. I.

K2AAA...184,398-848-73-A-40
W2OXG....21,291-151-47-A-23
W2EEN....17,280-120-48-A-13
W2MCO....12,240-102-40-A-21
K2DZE....11,628-114-34-A-23
K2KXZ....11,286-115-33-A-20
K2KMA....10,716-141-38-B- –
W2MUL....9486- 93-34-A-23
K2DEM....8652-103-28-A- –
K2GZN....7280-110-23-A-24
K2HEA....4536- 57-27-A- 9
K2GIC....3300- 50-22-A-15
K2HTO....1392- 29-16-A- 6
W2KZE....966- 23-14-A-11
W2NNB....528- 16-11-A- 5
W2DLO....186- 16- 6-B- 1
K2GKU....133- 10- 7-B- 2
K2MDB....108- 6- 6-A- 7
KN2ODE....27- 9- 1-A- 1
K2KTT....11- 4- 1-A- 2
K2IEG (W2EZJ, K2IEG) 8610-104-28-A- –

Northern New Jersey

W2VCZ....12,300-100-41-A- 7
K2MMF....8694- 97-46-B-19
W2GNW....2632- 48-28-B- 5
K2EZR....2244- 66-17-B- 7
K2BZT....1575- 25-21-A- 2
W2SJU....1512- 56-14-B- 7

MIDWEST DIVISION

Iowa

WØAXE....13,500-103-45-A-19
WØSVS....9912-120-42-B-10
WØTWD/Ø....285- 10-10-A- 4

Kansas

WØLXA....65,423-337-65-A-35
WØEIB....55,120-425-65-B-28
WØZSZ....45,012-365-62-B-40
WØMEF....36,639-210-59-A-24
WØIFR....1980- 30-22-A- 3
WØQMS....1892- 49-13-A- 7
WØGUP....390- 13-10-A- 3

Missouri

WØBCF....59,040-419-72-B-30
WØJAH....34,029-200-57-A-27

W0EPI.....9870-107-47-B-27
W0RVF.....4978- 66-38-B-11
W0UVD.....112- 8- 7-B- 5
W0QON (W9EYB, W0MUM) 38,480-308-65-B-37
W0FLN (W9SBW, W0s TGI WRB) 8400- 88-32-A-23

Nebraska

W0VKI....58,194-321-61-A-26
W0BTG....17,213-128-45-A-19
W0GYM....16,642-157-53-B-19
W0WSN....16,298-134-41-A-23

NEW ENGLAND DIVISION

Connecticut

W1YWU...87,255-416-70-A-37
W1YBH....28,512-176-54-A-24
W1MRP....21,024-219-48-B-28
W1VOK.....9260-113-41-B-12
W1ZNK.....6975- 75-31-A- –
W1AW[5,6].....4830- 69-35-B- 5
W1WHL.....2574- 39-22-A- 4
W1UFV.....2002- 46-22-B-10
W1RWS.....975- 25-13-A- 3
W1ANU.....192- 8- 8-A- 1
W1ZMB.....2- 1- 1-B- 1
W1ZKE (Wls HGE ZKE) 51,972-285-61-A-39

Maine

W1GKJ....52,731-285-62-A-40
W1WTG....26,367-187-47-A-20
W1BBB.....2574- 39-22-A- 5

Eastern Massachusetts

W1JEL.....64,470-310-70-A-38
W1JNX....32,088-191-56-A-29
W1WMZ...12,390-121-35-A-14
W1IFR.....4716- 67-36-B- 8
W1WIR.....1680- 40-21-B-16
W1UKO.....903- 22-14-A- 3
W1YNI.....243- 9- 9-A- 1
W1AQE.....189- 9- 7-A- 1
W1FQG.....105- 7- 5-A- 1
W1ZHA.....21- 7- 1-A- 1
WN1FMW.....12- 4- 1-A- 1
W1ZFS.....2- 1- 1-B- 1
W1MX (Wls EDQ UJX YFM YSW, W6WZD) 43,097-239-61-A-31

Western Massachusetts

W1NGE.....7265- 85-29-A-15
W1BKG.....6396- 82-39-B- 6
W1YK[7].....340- 17-10-B- 2
W1TTL.....83- 6- 5-A- 4

New Hampshire

W1FZ.....77,622-384-68-A-33
W1RVQ....29,232-168-58-A-24
W1CVK.....3276- 52-21-A- 5
W1JNC.....2304- 64-18-B- 7
W1ULU.....630- 42- 5-A-24
W1AIJ.....120- 12- 5-B- 1
W1ELW (W1ELW, WN1HCC) 13,020-112-40-A-23

Rhode Island

W1TRX....52,338-399-66-B-38
W1CVF....16,560-120-46-A-28
W1AQ.....1170- 30-13-A- –

Vermont

W1SEO.....30,336-240-64-B-36

NORTHWESTERN DIVISION

Idaho

W7VNO....23,427-142-57-A-25
W7BMS....13,865-149-47-B-28
W7VHD.....8547- 78-37-A-11

Montana

W7NPV....43,005-235-61-A-38
W7EWR.....1950- 33-20-A- 4

Oregon

W7OVA....57,855-276-70-A-35
W7RVM....32,319-173-63-A-25
W7TMF....31,262-271-58-B-25
W7VYG.....1710- 38-15-A- –
W7YOZ.....905- 34- 9-A-13

Washington

W7ESK...103,836-512-68-A-38
W7BLX.....9996-121-42-B-21
W5GRV/7...4238- 59-25-A-17

PACIFIC DIVISION

Santa Clara Valley

K6CLV....17,292-131-44-A-25
K6BAM....11,970- 95-42-A-15
W6JFV.....9975- 95-35-A-13
K6BTX.....2415- 59-14-A-13

East Bay

W6BXE....41,138-311-67-B-27
W6BSY....27,710-190-49-A-32
W6VVZ (W6s CNC JLQ NGE QEF VVZ YGG) 67,827-504-69-B-40

San Francisco

W6CBE....67,184-494-68-B-40
W6SIJ.....20,550-138-50-A-22
K6JKQ.....6314- 79-41-B-13
W6ATO.....4212- 54-39-B- 8

Sacramento Valley

W6QEU....87,401-616-71-B-35
W6VBI....28,148-228-62-B-26

San Joaquin Valley

W6TZN....43,280-239-61-A-38
W6GQZ.....5612-122-23-B-16
W6MYP.....2496- 48-26-B- 6
K6GTT.....150- 10- 5-A-11
W6KIG.....8- 2- 2-B- 1

ROANOKE DIVISION

North Carolina

K6MUG/4..31,806-187-57-A-20
W4HUW...29,315-226-65-B- –

South Carolina

W4BAN....60,180-295-68-A-31
K4AWG....11,280- 94-40-A-10

Virginia

W4CBQ....54,860-427-65-B-32
W4KMS....18,720-130-48-A-23
K4AWQ....14,400-100-48-A-23
K4DIX.....8918- 74-41-A-17
W4ABE.....4375- 64-35-B- 9
W4WSF.....576- 16-12-A- 2
W4KUJ.....572- 22-13-P- 3
W4ZV.....462- 14-11-A- 2
W4QWV.....168- 8- 7-A- 2
W4BXI.....18- 3- 3-F- 1
K4CUD (K4CUD, KN4DHS) 12,600-157-42-E-31

West Virginia

W8WHR...32,704-293-56-B-36

ROCKY MOUNTAIN DIVISION

Colorado

W0MPH...79,380-368-72-A-32
W0SIN/0....8100- 69-40-A- 0
W0CYT.....7548- 74-34-A- 7
W0BWJ.....4158- 50-28-A- 9
W0ECY.....2628- 37-24-A-12
W0OMN.....396- 18-11-B- 6
W0VBF.....378- 21- 6-A-11

Utah

W7QWH...15,045-148-51-B-12

Wyoming

W7UZR....93,660-449-70-A-33
W7PSO.....12- 2- 2-A- 1

SOUTHEASTERN DIVISION

Alabama

W4GUV....54,441-273-69-A-35
K4BDJ.....6324- 94-34-B-27
K4APF.....972- 28-18-B- 3

Eastern Florida

W4PJU....58,149-273-71-A-22
W4GFQ....31,037-183-57-A-21
W4HKJ.....7783- 91-43-B-16
W4HBM.....270- 10- 9-A-10
K4BCN.....147- 7- 7-A- 1

Western Florida

W4KWM...10,906-133-41-B-11

Georgia

W4FGH....55,476-414-67-B-39
W4YTO....51,870-272-65-A-31
W1ZVG/4..24,975-174-50-A-14
K4BAI....10,878-130-42-B-14
K4DMY.....6231- 67-31-A-18

SOUTHWESTERN DIVISION

Los Angeles

W6NJU...107,246-504-71-A-38
K6EVR....96,822-491-66-A-40
K6DAC....74,003-382-65-A-40
K6BWD....65,130-335-65-A-31
K6DAS....20,357-167-41-A-21
K6DDO....13,284-125-36-A-16
K6IGZ.....6300- 75-42-B-13
K6HDO.....5760- 64-30-A- 8
K6IUL.....1152- 24-16-A- 3
K6DNH.....3- 1- 1-A- 1
K6IDA.....3- 1- 1-A- 1

Arizona

W7ZZA....62,928-443-72-B-36
W7ENA....36,809-234-53-A-24
W7WUC...34,542-202-57-A-33
W7PEG.....8484-102-42-B- 9
W7UXS.....3564- 54-22-A-29

San Diego

W6IQD[8]....39,744-311-64-B-30
K6AKS....22,658-143-53-A-26
K6EDA....14,544-101-48-A-19
K6AZW.....8424- 80-36-A-21
W6JVA.....180- 10- 6-A- 2
K6IHF (K6s DWH IHF) 14,504-151-33-A-19

Santa Barbara

W6ERB....12,144- 92-44-A-12
K6ELR.....8910- 91-33-A-21
W6BHZ (13 oprs.) 12,710-155-41-B-24

WEST GULF DIVISION

Northern Texas

W5COF....31,929-188-58-A-29
W5FIT.....21,221-167-42-A-13
K5BWK....15,929-133-41-A-17
W5ZOY.....6528- 68-32-A-11
W8GZF/5.....324- 12- 9-A- 3
W5FIP.....48- 4- 4-A- 1

Oklahoma

W5IWL....45,423-364-63-B-38

Southern Texas

W5HQR....60,786-308-66-A-32
W5ZED (W5s KLW ZED) 96,579-511-63-A-38

New Mexico

W5MYI....31,500-212-50-A-20
W5FHL.....8775- 75-39-A-31

CANADIAN DIVISION

Maritime

VO6AM.....2541- 39-22-A-13
VO6U.....663- 17-13-A- 4
VO6N.....2- 1- 1-B- –

Quebec

VE2JR.....33,260-198-57-A-34

Ontario

VE3AML....6534- 66-33-A-17
VE3HE.....1404- 36-13-A- 9
VE3NG.....378- 21- 6-A- 6
VE3WA.....12- 4- 1-A- 1

Manitoba

VE4EF.....9950-100-50-B-14

Saskatchewan

VE5VZ.....14,307-127-57-B-22

Alberta

VE6MJ.....5360- 67-40-B-12

Yukon

VE8NT.....4293- 53-27-A-27

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[1] W1SDO, opr.[2] W3WPY, opr.[3] W9NZM, opr.[4] K4ARU, opr. [5] W1WPR, opr. [6] Hq. staff, not eligible for award. [7] W1YFY, opr. [8] W9NMK, opr.

ARRL thanks the following amateurs for submitting their logs for checking purposes: W2s HAK JF, W3DKN, W4ZHB, W5s MCF MHT VVE, W8s HFR ZHB, VE5JK.

W1SDO manned the Walter Reed Army Medical Center station K3WBJ to a leading position over 14 other single-operator entrants from Md.-Del.-D. C. A Viking I (not shown) and HRO-60 turned the trick. Looking on is station director W3WVI.

Procuring Funds for RACES Gear

How to Convince Town or City Fathers That Money Expended for the Radio Amateur Civil Emergency Service is a Sound Investment

BY GEORGE A. WILSON,* W1OLP

• Financial assistance from local government is not necessarily a condition of our participation in RACES — and it should not be. But it sure helps. This article may give you some ideas for cutting RACES in on your local civil defense budget, written by someone with a great deal of experience along those lines.

MANY times we hear the complaint that the town or city fathers turn a deaf ear toward the proposition of buying radio gear for emergency use by the local amateur group. If the refusal is not complete, the funds authorized are inadequate to provide a worthwhile setup.

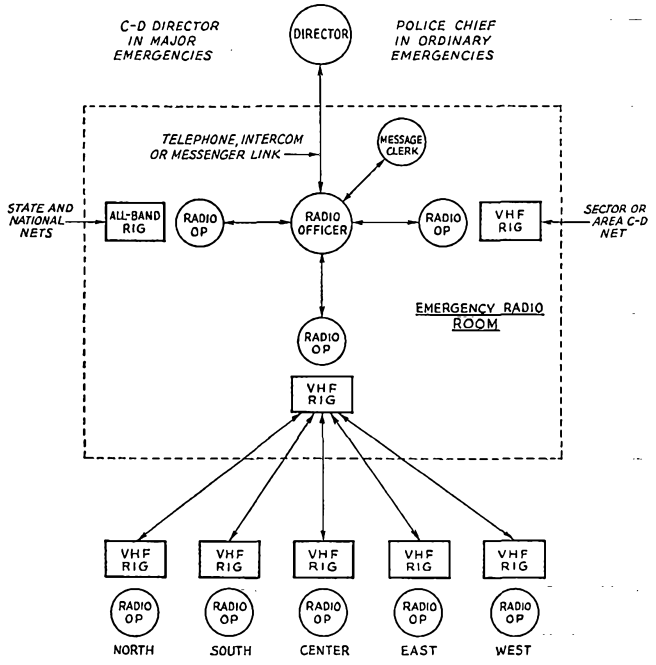


FIGURE 1 – EMERGENCY RADIO COMMUNICATIONS DIAGRAM FOR A COMMUNITY OF 10,000 TO 20,000 POPULATION

We amateurs know that emergency radio provisions are both necessary and justifiable in terms of dollars and cents. The problem then seems to be to convince the town fathers. In most cases the approach used tends to become awkward or embarrassing when the town fathers ask "How much?" and "What do we get for it?"

It must be remembered that town officials hold the tax rate in high esteem, and that most of them would like to be reelected on a platform of lower taxes. Their first approach is that anything that results in a higher tax rate is bad unless proved otherwise. The burden of proof thus falls right into the amateurs' laps.

In most unsuccessful cases we have heard of, the amateurs have initially requested funds for only a small portion of their total needs. This sometimes leads to considerable confusion when they are asked if this is the total amount required; or, after the first amount has been granted, the second request is turned down as a result of misunderstanding that the first grant was not the total amount required.

Many amateur groups approach the town fathers without first convincing the police chief, c.d. director, or any other influential person of the worth of their plan. Remember that most people think of radio in terms of the BC set and figure that the police radio system is quite adequate to handle all emergencies. The typical interview with city or town bodies considering such matters may last twenty minutes — there are usually several others waiting to be heard — and this is hardly enough time to present a convincing argument to a group that has little knowledge of the problem and a reticence to spend the taxpayer's money.

Choose a Practical Plan

Then how can the argument be successfully presented? Here are some suggestions which are based on the experience of towns which have reached the goal of a properly outfitted emergency radio setup.

First, develop a communications plan that is geared to ordinary emergencies — flood, windstorm, ice storm, fire, explosion, and any other situation to which your town may be susceptible. A plan based on these needs fits naturally into the c.d. picture when and if it is needed. It is much easier and makes more sense to sell a plan which can have immediate use than one which

* ARRL Emergency Coordinator and C.D. Radio Officer, 318 Fisher St., Walpole, Mass.

may never see any practical uses. Figure 1 illustrates an emergency communications setup which is about right for communities having 10,000 to 20,000 people in an area within a 4 or 5 mile radius. The setup can be scaled larger or smaller or adapted to the needs of most communities.[1] Your plan should foresee as many of the needs as possible for about a ten-year period. Procurement of the total amount of equipment required, however, can be spread over a period of several years. The actual purchase of equipment should be geared to the rate at which you can secure adequate station facilities, install equipment and train operators.

Estimating the Cost

The cost of implementing your plan can be estimated with the aid of your favorite radio catalog. Let's assume that the installation of equipment and the other muscle work involved in setting up a station is done without charge by the amateurs. For a town of 10,000 to 20,000 population, the estimate might be as follows:

1 — All-band receiver and transmitter with antenna and microphone for the main control station	$ 700
2 — V.h.f. transmitters and receivers with antennas, microphones and crystals for control station	550
3 — V.h.f. transmitter and receivers with antennas, microphones and crystals for portable use	1250
4 — Miscellaneous station equipment, spare parts, tools, emergency generator, etc.	1000
TOTAL	$3500

About half of this amount can be redeemed by applying for reimbursement under the Federal Contributions Program ("Matching Funds"). Complete information on how this is done can be obtained from the Federal Civil Defense Administration, Battle Creek, Mich. However, to quote from their Communications Manual (M25-1): ". . . such equipment may be placed in a privately owned installation or vehicle on a custody receipt, when such placement and use is part of an approved Civil Defense Communications Plan. However, title to the equipment must remain with the state or political subdivisions. Such equipment shall be factory built, of good commercial type, and must meet FCDA Specifications No. I-100, where applicable."

Thus, with matching funds, the effective expenditure mentioned above may be reduced to as little as $2000 if care is used in selecting equipment approvable under FCDA specs.

The Selling Job

With your plan well in mind and the cost of it established, it is now time to do some preliminary selling. The police chief and other persons whose judgments are respected by the town fathers will make worthwhile allies. The more people "pre-sold," the easier the eventual selling task becomes.

One excellent way to obtain allies is to demonstrate that service *can* be rendered during emergencies. In Walpole, Mass., during the August 1955 flood, the radio officer offered the amateurs' services to the police department without a previous plan having been set up for this particular type of emergency. A little reluctant at first, police officials assigned amateur cars the duty of inspecting conditions over certain pre-set routes and relaying information from police on duty. This saved the police sergeant the labor of making continuous personal rounds to check on conditions. The setup worked, and we had an ally!

The real trick, however, is selling the communications plan and its cost to the main governing body (finance committees and others may be directly concerned). Present the plan, using large charts if possible. Point out clearly the service that can be rendered to the police department, fire department, town engineer, and others. It would be well to enlist the aid of an accountant to develop the figures for your particular case, so the cost problem can be treated in a businesslike manner. In a residential town having 5000 taxpayers and requiring the radio equipment previously listed, the average amount of tax increase for that year will amount to about 70 cents per taxpayer ($3500 divided by 5000). If the average assessed value per taxpayer is $5000, the increase in tax rate will be 14¢ per thousand dollars. Or, looked at another way, if the tax rate is 40¢ per thousand dollars, the average taxpayer will be paying $200.70 instead of $200.00 for that year. Prorated over the ten year life expectance of the equipment, if the cost is divided over a ten year period, the cost per year per taxpayer will be seven cents.

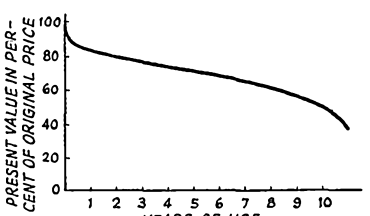


FIG. 2 AN ESTIMATED DEPRECIATION CURVE FOR WELL-CARED-FOR COMMERCIAL AMATEUR RADIO EQUIPMENT

This figure is very conservative. A review of used equipment prices over the past few years indicates that standard brands of manufactured radio equipment depreciates to only about 50% of its original value over a ten year period (see Figure 2). Thus, the town still has one-half of its original investment if the equipment is well-cared for, and the cost per year per taxpayer is almost negligible. This is a strong argument for purchasing manufactured equipment for your emergency radio setup, plus the fact that servic-

(*Continued on page 144*)

[1] The plans required for communities in excess of 50,000 population or for communities with geographical problems such as considerable distance between highly populated sections, may require special consideration.

1956 Novice Round-up Results

As predicted, the 1956 Novice Round-up was the biggest and most successful ever recorded. Brass-pounding technique seemed to improve with every CQ. Good use was made of the 40-hour time limit as the boys plugged away well into the wee hours. The spirit was there, the skill was there, and *certainly* the Novices were there!

The statistics show 207 Novice entrants from 54 ARRL sections. Of these, 25% hit 5,000 points or better. The band most used was 40 meters, with 80 running a close second. Fifteen was "hot" and resulted in a trickle of DX in many of the logs. Two meters perked-up toward the close of the contest, with 5% of the competitors making v.h.f. appearances. Some 104 non-Novices were in there pitching too, and did a great job in feeding multipliers to the hoard of hungry young'uns. Look at some of the comments:

"Judging by the operating procedure of many of the stations, there are going to be some top-notch operators joining the ranks of the five-year men." — *K2DSW*. . . . "Amazed to find so many crack operators." — *W3ZSR*. . . . "Great contest. KN4CQJ even took time out to handle a message for me." — *W3ZXP*. . . . "That KN8ACD can really operate!" — *W3ZKB*. . . . "WN7AOZ is definitely a comer, and KN9ALU a real smart gal." — *KV4BK*. . . . "Strongest signals here were from KN9AMC, WN8CZN, WN7AKT, WN7AMY, KN2PTZ, KN4GPI and KN2QDO." — *W1AMY*.

The Novice Speaks

"The NR is one of the high spots in a new ham's career and should not be missed." — *WN3CXJ*. . . . "The contest was great! I contacted 15 new states and a VO6." — *KN9ANI*. . . . "During the contest I was known as the sleeping beauty of the Latin Class." — *KN9ALP*. . . . "When OM K2HEA wasn't shoving me away to take his turn at the rig, I worked a very enjoyable NR!" — *KN2MGE*. . . . "Much of the credit goes to the non-Novices who were giving us a break. They composed 45% of all my contacts." — *KNØCHE*. . . . "Contacted my 48th state, WN1FNI, Maine. Tnx OB." — *WN7AMY*.

Scores went shooting sky-high this year as is evidenced by the call-area highs. If you should feel a little ambitious, compare these scores with those of last year (May 1955 *QST*, p. 50) and *see* the difference! The following is a listing of the 1956 NR's call-area leader's. Full details may be found in the complete tabulation.

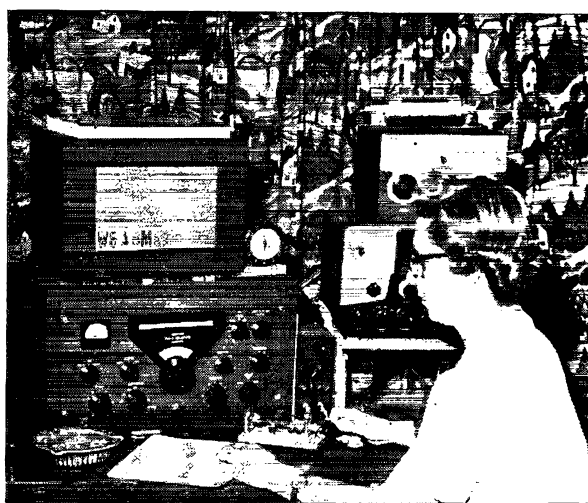
WN1EWS	11,130–250	KN6LIV	5076–108
KN2LGN	11,484–246	WN7AMY	16,958–253
WN3EBG	23,499-373	WN8ABM	10,830–175
KN4CHE	18,998–302	KN9ABH	16,271–307
KN5DGI	11,376–223	KNØCHE	12,243–221

We extend our thanks to all the non-Novice fellows who this year came through with a helping hand. Following are their calls and scores: W1AMQ 90, W1AMY 1775, W1AW[1] 6075, W1AXD 676, W1BDI 288, W1CFF 864, W1DHP 4, W1FEA 1121, W1FGF 1701, W1GF 10,062, W1JYH 14,535, W1MEG 170, W1SSZ 4795, W1WEE 2, W1WVV 328, W1ZDP 7360, W2CPA 708, W2DMJ 7134, W2DSC[1] 80, W2EMW 5130, K2CPR 4455, K2DEM 585, K2DSW 9540, K2GJZ 175, K2HVN 11,954, K2ITZ 832, K2JVN/5 156, K2KDW 10,019, K2KTK 1173, K2OPJ 2664, K2OSY 350, W3ADE 2187, W3AWV 2, W3BFW 312, W3BOA 372, W3EAN 2940, W3EIS 5256, W3FY 3724, W3MDO 2340, W3NRE 6342, W3SEB 1350, W3UTR 16, W3WZL 5320, W3ZKB 9460, W3ZSR 10,416, W3ZSX 2112, W3ZXP 893, W4BXV 350, W4CHK 3456, W4EJP 330, W4HTD 2592, W4IA 3465, W4KFC 1610, W4TFX 150, W4WBC 2158, W4WRM 3100, W4YMG 742, K4APN 8, W5FTD 266, W5LPL 252, W6PCA 2624, K6CLK 528, K6DDO 840, K6HVV 336, K6ICS 108, K6OHM 2268, K6PBX 56, W7FZB 168, W7UJL 1672, W7VIU 658, W7VRO 1410, W7WPR 48, W7YAQ 5250, W8AXX 1602, W8BDO 1562, W8BMX 2220, W8JDN 468, W8LQG 189, W8RGF 210, W8SVL/6 3367, W8SYV 308, W8TTN 2673,

[1] Multiple-operator station. [2] WØHAW, opr.

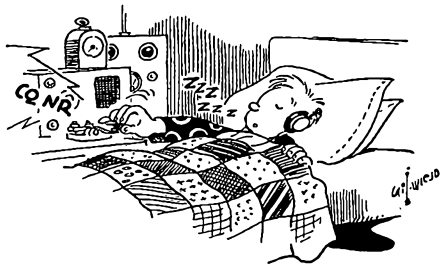
Top honors for the Northern New Jersey section go to KN2LGN. Bowley's 75A-4, Heath AT-1 and long-wire antennas aided his fine operating ability in racking up 246 contacts in 44 sections. A 14-year-old freshman, Bowley has worked 43 states and several European countries.

High among the YLs is Ohio's WN8ABM. Ruth's equipment consists of a 75A-2, a Johnson Ranger, Matchbox and Signal Sentry, a Coax Ratiometer and a 3-element beam 55 feet high. With her 175 contacts in 57 sections, and operating 36 hours, she had a lot of dishwashing to catch up on.



W8TWA 3332, W8UPH 12, W8UVZ 7065, W8YHE 5542, W9GOC[1] 7480, W9KLD 7568, W9OUS 598, W9WAN 795, W9YYG 990, K9BJV[1] 224, K9BXJ 4017, WØCFH 135, WØGAX 748, WØIOJ 3219, WØJFG 2059, WØVBS 370, WØWDW 6174, WØWRK 60 KØASR[2] 115, KV4BK 280, VE3BXF 760.

—R. G.



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:* WN3EBG 23,499-373-63-39, or, final score 23,499, number of stations 373, number of sections 63, total operating time 39 hours.

ATLANTIC DIVISION

Eastern Division

WN3EBG...23,499-373-63-39
WN3DUQ...11,184-233-48-22
WN3CSG....5348-171-28-36
WN3CXJ....2552-101-22-32
WN3EEK....2156- 98-22- 7
WN3ELJ.....806- 47-13- –
WN3CMN....440- 25-11-10
WN3CMD....120- 15- 8- 5
WN3DVK.....32- 6- 2- 1

Md.-Del.-D. C.

WN3EUU....4964-146-34-16
WNEDA.....3737-101-37-33
WN3EQB....2492- 69-28-24
WN3DEK....2139- 69-31-26
WN3DHY....1008- 46-18-22
WN3CMX....952- 46-17-16
WN3DSA.....221- 17-13-14
WN3CXM.....84- 14- 6- 1

Southern New Jersey

KN2MUJ....2660-125-19-24
KN2MIQ.....135- 15- 9- 8

Western New York

KN2PMC....8892-228-39-23
KN2MWK....8364-184-41-40
WN3BST/2..7257-177-41-34
KN2MLF....3836-137-28-36
KN2ORV....1342- 61-22-28
KN2QIW.....920- 46-20-17
KN2POR.....645- 33-15- 8
KN2PPO.....40- 8- 5- 2

Western Pennsylvania

WN3CKX....5746-154-34-29
WN3EDM....3842-103-34-17
WN3EKV....3815-109-35-36
WN3EPM....3565-100-31-17
WN3CJW.....396- 36-11- 7
WN3FCE.....16- 4- 4- –

CENTRAL DIVISION

Illinois

WN9VAR....7332-141-47-40
WN9YRH....6627-141-47-37
WN9VYL....6510-140 42-25
KN9BZJ.....4077-151-27- –
KN9AMC....3168- 86-33-40
KN9AJW....2670- 74-30-25
KN9BCV....2576- 72-28-21
KN9ANI....2565- 85-27-17
KN9BGN....2520- 72-35-23
KN9BBA....2436- 84-29-32
KN9AQO....2236- 86-26-18
KN9ATY....2162- 84-23-31
WN9ZFB....1782- 71-22-22
KN9BBD....1628- 64-22-24
WN9UNW...1300- 50-26-20
WN9STR.....731- 43-17-22
WN9UJB.....650- 35-13-24
WN1ENV/9...533- 26-13- 5
KN9BMH.....248- 21- 8-14

Indiana

KN9BBO....6192-157-36-34
KN9AUE....2978- 81-31-35
KN9AED....1150- 40-23-17
KN9ADT....1071- 48-17-17

Wisconsin

KN9ABH...16,271-307-53-27
KN9CAN....9240-220-42-40
KN9ALP....6048-144-42-28
WN9YZG....4148-107-34-21
W9ODD[1].....720- 45-16-16
KN9AYK.....186- 16- 6- 5

DAKOTA DIVISION

North Dakota

KNØCNC....4305-123-35-20
KNØCND....1392- 58-24- –
KNØCMX.....910- 35-26-12
KNØADI.....75- 15- 5- –

South Dakota

WNØBMM...5220-116-45-39

Minnesota

KNØBFU.....3200-100-32-15
KNØBMN....2387- 77-31-29
KNØBNU....1575-105-15-40
KNØCVD.....728- 52-14-25
KNØCBZ.....180- 20- 9-10
KNØBFT.....98- 14- 7- 4

DELTA DIVISION

Arkansas

KN5DET....7965-177-45-35
KN5BQV.....902- 41-22-20

Louisiana

KN5DGI...11,376-223-48-37
KN5ARH....5762-134-43-25
KN5BWN....1404- 52-27-11
KN5DWL.....25- 5- 5- 1

Tennessee

KN4HED....4214- 98-43-39

KN4EJQ.....2990-115-26-31
KN4EAI.....1350- 50-27- 3
KN4CTG....1209- 93-13-11

GREAT LAKES DIVISION

Kentucky

KN4CHE...18,998-302-59 40

Michigan

KN8ACD...17,442 306 57-39
WN8EEZ...10,856-221-46-36
WN8CPJ...10,166-206-46-40
WN8GIM....5134-141 34 31
WN8ENA.....60- 10- 6- 9

Ohio

WN8ABM...10,830 175-57-36
WN8ATP...10,384-221-44-40
WN8WHF....8883-174-47-26
WN8CZN....8208-201-38-37
WN8WNV....8064-224-36-38
WN8IBX.....7654-163-43-32
WN8DSZ.....6600-150-44-21
WN8CAN....4386-114-34-25
WN8CCD....3683-112-29-29
WN8GQX....3660-107-30-32
WN8GEL....2720- 75-32-19
WN8GKB....2590- 74-35-13
WN8APE....1260- 63-20- 8
WN8CGF.....416- 52- 8-40

HUDSON DIVISION

Eastern New York

KN2MSL.....7008-209-32-25
KN2OTT.....1326- 68-17-23
KN2QIX.....644- 36-14-23
KN2PRJ.....492- 31-12-15
KN2MBU.....230- 23-10-19

N.Y.C.-L.I.

KN2LTC.....9900-225-44-28
KN2OIL.....6160-161-35-30
KN2MGE....4176-124-29-27
KN2PTZ....2937- 89-33-23
KN2MEM....2496-104-24-34
KN2LYV.....1029- 39-21- 7
KN2LVP.....832- 37-16-10
KN2MDL.....168- 9- 7- 4

Northern New Jersey

KN2LGN...11,484-246-44-38
KN2MMK...8077-197-41-22
KN2PSL.....4544-122-32-14
KN2QZR.....2288- 89-22-17
KN2PHP.....1566- 72-18-16
KN2QYE.....24- 8- 3- 3

MIDWEST DIVISION

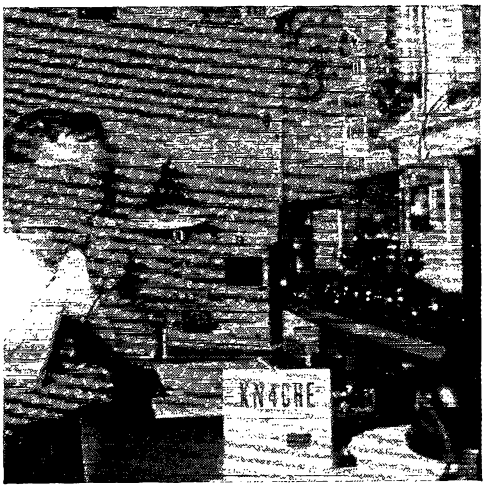
Iowa

KNØCER....9310-180-49-21
KNØCSD.....5920-150-37-30
KNØARB.....570- 28-15-15
KNØBPE.....304- 19-16 2
KNØCIN.....1 1- 1- 1

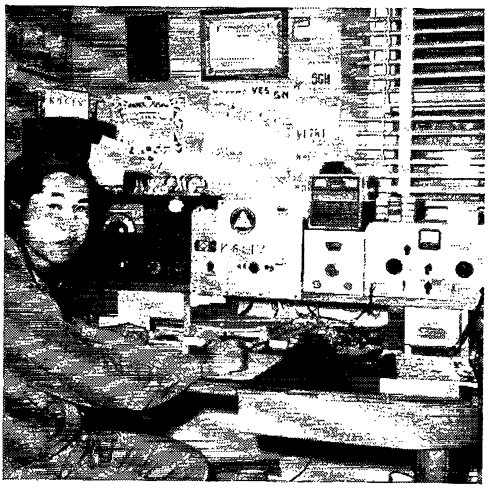
Kansas

KNØBJQ.....5891-122-43-33

(*Continued on page* 142)



Working all four Novice bands, KN4CHE (Ky.) ran up a whopping 18,998 points. With his Viking Ranger running the 75 watt limit, and an S40-A receiver, Breck made 303 contacts in 59 sections, placed second nationally, and had better be well stocked with QSL cards.



Perseverance and plain "know-how" brought home the bacon for KN6LIV. 108 contacts were made in 47 sections with the NC-100 and Heath AT-1. A real DXer, Vic has worked countries from Alaska to the Philippines. The 17-year-old Californian also sports a membership in ROWH.

Preview — DX Contest High Phone Scores

The figures below, based on logs received at ARRL through late April, tell the story of the leading voice performers in this year's International DX Competition. Scores from all quarters seem loftier than ever before — indeed many a DXer doubled or tripled his 1955 results. Of course all tallies are *claimed* and hence subject to change. Here's how they look at this stage of the game, with scores, multipliers and QSO totals shown in that order:

Single Operator

W2SKE/2	671,463	253	891
W3MSK	461,616	236	652
K2AAA	415,296	224	618
W6YY	369,570	194	635
W3DHM	354,123	219	539
W3ECR	349,830	230	507
W4OM	345,423	221	521
W6ITA	287,924	182	528
W3GHS	245,148	186	442
W8BKP	241,056	186	432
W9EWC	240,660	210	382
W8NXF	217,710	205	354
W4DQH	214,375	175	409
W8NWO	165,120	172	320
W1ONK	159,579	149	357
VE4RO	150,780	140	359
W5DJH	135,441	149	303
W3CUB	135,420	148	305
W4NHF	126,360	156	270
W9DUB	124,605	135	309
W4EEE	117,576	142	276
W9JIP	113,832	153	248
W8ZOK	100,710	135	250
W1DLC	96,096	132	244
W8AGZ	95,489	137	233
W8BF	94,360	140	226
W4CBQ	81,432	117	232
W3GKM	79,080	120	220
W6IDY	75,684	106	238
W8JIN	68,796	126	182
W9EZD	67,260	118	190
W1FZ	67,122	113	199
W5NMA	59,730	110	181
W6CHV	50,232	104	161
VE2JR	46,035	99	155
W8PUD	46,023	87	181
VE5VL	45,009	79	195
W7HRH	43,560	90	163
W9JYU	40,317	89	151
W9WKU	39,762	94	144
W5KC	37,113	89	139
W1YQC	36,920	65	190
W2GLF	35,742	74	161

Multiple Operator

W6AM	345,114	198	581
W8NGO	146,700	150	326
W3GHM	114,759	123	311
K6EVR	84,537	101	279
W3KT	81,213	107	253
W3EQA	57,661	109	175

Single Operator

TG9AD	441,618	89	1673
VP6WR	289,014	87	1131
KH6PM	265,881	77	1151
PJ2AF	142,801	61	788
VP7NG	136,240	65	706
VP3HAG	89,320	58	516
KZ5VO	82,137	57	481
YN4CB	77,592	61	427
G2PU	62,463	47	443
DL4AJ	60,912	47	432
ZS9G	58,609	43	455
PJ2AB	56,784	42	456
VP5DC	52,256	32	549
ON4OC	45,855	45	341
ZS5MP	38,916	46	282
HC2OM[1]	37,350	30	415
DL4ZL	35,040	40	294
ZE2KR	24,444	36	267
GM3EMY	23,985	39	205
G3HJJ	18,202	38	160
KZ5MW	14,490	46	107
DL4ZC	13,494	26	173
VQ4FK	12,915	35	123
LU8DB	12,712	28	152
DL1UX	12,090	31	130
OZ7G	11,808	32	123
FM7WQ[1]	11,151	21	177
KV4BI	10,300	25	138
HC2BH	9348	19	164
EA8AX	9280	20	164
PZ1RM[2]	9087	13	233
DJ2YL	9034	19	162
CT1PK	8820	28	105
XE1QB	8075	19	142
OZ3TH	7176	24	101
PAØALO	7026	19	185
KL7BSR	6578	16	138
ZK1BL	5760	15	129
HK3PC	5100	25	68

Multiple Operator

KH6AYG	178,872	58	1041
OA5G	152,460	66	772
KA2KS	41,148	36	381
IIAIJ	40,500	45	300

[1] W3VKD, opr. [2] K2CJN, opr.

The c.w. men likewise permitted no grass to grow underfoot, as evidenced by stupendous totals claimed by *W2s* HJR WZ, *W3s* BVN DGM ECR JTK LOE, *W4s* CEN KVX, *W6s* AM DFY EEK RW, W9IOP, CE3AG, DL4ZC, HB9NL, HK3PC, *KH6s* AYG MG PM, *KP4s* DH DV JE KD ZW, KT1UX, KV4AA, PAØUN, PJ2AV, VP1SD, VP9BM, XE1A, XE2OK.

Provided that we can make rhyme or reason out of the veritable mountain of A1 entries on hand, we'll tell you more about some of them next month.

25 Years Ago this month

June, 1931

. . . Howard Allen Chinn, W1AXV-W1XP, one of *QST*'s best known contributors, supplies the lead article this month with his "High Frequency Converter with Single-Dial Control." Describing ganged tuning for the short-wave superheterodyne, he tells of the manifold advantages to be derived from the use of a modern broadcast amplifier, second detector, and audio amplifier of a superheterodyne system for the reception of high-frequency signals.

. . . "Putting the Pentode to Work" — details on the construction of a small receiver of high sensitivity — is cited as an ideal example of a high-frequency receiver in which the incorporation of a pentode audio tube is definitely justifiable. Although the set described is unusually small, light and economical to operate, the pentode gives it the "biggest pair of lungs ever." "It is a veritable squawk-box," the comments say. The article itself is by Ross A. Hull, Associate Editor.

. . . Knowledge gained from experience with the transmitter aboard the ill-fated Carnegie is relayed by S. L. Seaton, W3BWL, in his article on "A Self-Contained 200-Watt Transmitter" in which he says that frequency stability is of primary importance and power is next.

. . . In the "Correspondence" section is a letter from a Wayland M. Groves, W5NW, writing from Sumatra. He says, "As I now have time to think of ham radio in the past I am pleased to note many pleasant changes, such as the splendid cooperation between the code man and the phone man. In the old days the code man regarded the phone man as just a little better than a BCL. One need not investigate far now to see that this is no longer true. . . ."

. . . Ross A. Hull is the author of a second article in this issue as he tells "About the Pentode" in which he sketches its characteristics and possible applications. The chief justification for existence of the tube, he says, is its ability to provide a given undistorted power output with a much lower signal input voltage required for the three-electrode output amplifier.

. . . More data about using pentode tubes in the low-powered transmitter is given in an article by Richard S. Briggs, W1BVL, who describes operation of the tube as an r.f. power amplifier and frequency doubler. "With the pentode operating as a radio frequency amplifier or buffer tube," he says, "different operating conditions must be met." His article is centered about the explanation of some of these.

. . . Army Amateur Red Cross Contest Results listed show that 335 stations copied and delivered a given message inside of 18 minutes. The contest, described by Capt. Norman Lee Baldwin, was the first nation-wide mobilization of the Army Amateur Radio System for the Red Cross. Capt. Baldwin states that results were "most gratifying."

FEEDBACK

With reference to the all-transistor receiver described last month, change figure 1 to show R_1 going to minus 6 volts instead of to ground. This will remove TR_2 from a cutoff condition and permit it to oscillate.

In the article in the April issue, "Directional Antenna for the Transmitter Hunter," by Harold J. Braschwitz, W8YPT, the 30-$\mu\mu$f. trimmer in the loop of Fig. 1 was incorrectly referred to in the text as C_1, while the similar capacitor in Fig. 2 (labeled C_1) was referred to as C_2.

The 8th National ARRL Convention

San Francisco, California — July 6, 7 and 8

BY CLAYTON F. BANE,* W6WB

BY THE TIME this resumé appears, all plans for California's first National ARRL Convention will be complete, the package — a big one — tied with a neat, secure knot.

The adjective "big" has long been used in convention publicity. It is used here not so much in its record-shattering attendance connotation but in a broader sense — an implication of importance and bigness of program, bigness of underlying spirit. This 8th National is of, by and for the radio amateur. The convention committee responsible for the conception and planning of the overall program are, for the most part, long-time amateurs who sincerely feel that a gathering of this type can make worthwhile contributions to the general good of amateur radio. Fun, good fellowship, certainly. However, the committee slogan, "Something for Everybody" also takes on added meaning when consideration is given to the fact that even the last few years have brought significant changes to amateur radio. Consider: The Novice and Technician have now joined our ranks. TVI presents problems, challenges. A new sunspot cycle, promising unprecedented DX, nears its peak. The higher frequencies have come anew to life, bringing renewed interest in shortened beams, in three-band beams. Mobile operation soars to new, unprecedented heights. Single sideband makes steady advances. V.h.f. extends its range greatly by meteorite and scatter DX. Teletype for amateurs becomes commonplace. All in all, the committee feels that 1956 is a particularly important year for a national convention which, by bringing together people from all over the country, can offer unusual opportunity for fullest exchange of information.

Programwise, the 8th National will adhere closely to its slogan, "Something for Everybody." San Francisco rates high on the list of desirable convention cities. Friendly, in the true spirit of the far west, cosmopolitan as only a city traditionally known as, "the gateway to the Pacific" can be. Its picturesque and scenic reputation is well attested. The story-book cable cars sedately moving up and down those steep, steep hills. Those amazing bridges, the East Bay and the famous Golden Gate. Chinatown, Coit Tower, "Top of the Mark," Twin Peaks. Supper clubs and restaurants known the world over. Indeed, San Francisco and the adjacent Bay Area offers interesting and almost unlimited possibilities for the convention visitor. Important, too, is the fact that in July, when many other cities are sweltering in summer heat, the ever-present Pacific breezes provide San Francisco with natural air conditioning. The weather is fresh and invigorating even in mid-summer. Bring a top-coat, though, and leave the Palm Beach suit home. It's cool in the evening.

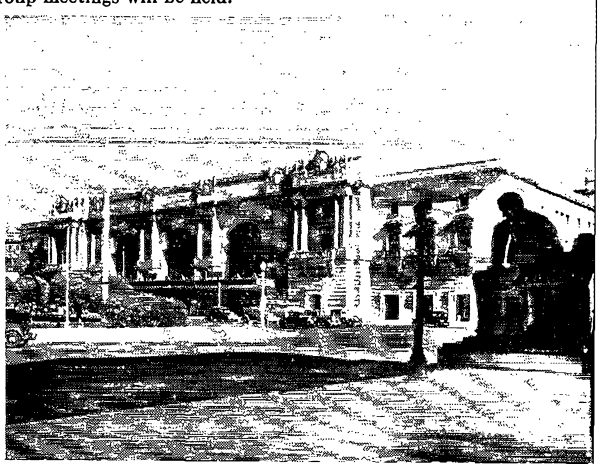
Convention headquarters will be at the Whitcomb Hotel located on Market Street between 8th and 9th, accessible readily from the 9th Street approach of the main Bayshore Highway. Convention activities will be divided between this hotel and the San Francisco Civic Auditorium located virtually across the street. This combination makes an ideal convention arrangement.

Many things are possible at a national convention, held at only two- or three-year intervals, that would be quite impossible for any of the many regional conventions which occur during each year. Manufacturers and suppliers cannot possibly cooperate with and participate in all these worthwhile but all-too-frequent affairs. It becomes a simple matter of economics. However, the big 8th National has been most fortunate in receiving an almost unprecedented degree of cooperation from their local and regional jobbers as well as many of the well-known national manufacturers.

An equipment exhibit of high interest will be a part of the convention program. This will be held

* General Chairman, Convention Committee of the Central California Radio Clubs, Inc., 391 Monterey Blvd., San Francisco 12, Calif.

Main convention headquarters will be at the Hotel Whitcomb, on famous Market Street. Near-by is the huge Civic Auditorium, where general assemblies and special group meetings will be held.



in Larkin Hall of the main auditorium and will not be open to the general public. Many surprises in the way of new equipment, "first showings" and dynamic displays are expected. For example, several of the most modern tetrode final amplifiers loaned for the occasion by individual builders will be on display. Included will be the granddaddy, "final final." Here is opportunity to actually see how some of these beautiful units have been put together. The exhibitors include many well-known manufacturers of amateur equipment. In addition, the Army, Navy and Air Force will each have a booth.

The slogan, "Something for Everybody" will be applied aptly in the technical parts of the convention program. Two big meetings are scheduled, both having to do with antennas and propagation. There will be an antenna "symposium" at which all the antenna "brains" attending the convention will be present. It is inevitable that many controversial antenna issues will be fully resolved to the satisfaction of everyone. By Goodman, W1DX, Assistant Technical Editor of *QST*, promises active participation and an interesting talk of his own. Look for several surprise elements in this meeting as well as possible explosion of some pet theories.

A real scoop will be evident in a "first time" presentation on the subject of rebound reflections. This will be conducted by Mike Villard, W6QYT, and the group from Stanford University, and will be graphically illustrated by slides. The subject savors a bit of black magic and hits at the heart of multi-bounce DX transmission. It's another, entire-convention "must."

The Civic Auditorium has plenty of smaller halls which permit continuous and uninterrupted meetings covering a wide variety of specialized subjects. Scheduled, with excellent speakers, are the following: Single sideband, with Norm McLaughlin, W6GEG, as principal speaker. A big v.h.f. meeting with a number of well-known authorities present including, Ed Tilton, W1HDQ, from *QST*, Frank C. Jones, W6AJF, Woody Smith, W6BCX, Herb Johnson and Sam Lewis. A mobile meeting treating technical aspects of antennas and equipment, under the chairmanship of Mario Chirone, W6DUB. A special meeting for Novices and Technicians with experts in attendance who can and will answer all possible questions in a simple, non-technical manner. Special contests and awards are to be a part of this meeting. Remember, Novice and Technicians *only* here. DX men will have their innings with a big special meeting planned and directed by W6GPB and W6BYB of the Northern California DX Club. Ed Handy, W1BDI, of ARRL, will be present to shed light on the "country" situation. Other things (some surprises, too) uniquely dear to the hearts of DX men will be a part of this meeting.

Radioteletype will be given a complete and full treatment. An RTTY link will be in operation during the convention and an excellent informative talk and program is under the chairmanship of W6FDJ. TVI, a highly pertinent subject, will serve as the basis for still another meeting. W6ATO, who has done such an outstanding job on the San Francisco TVI Committee is expected to head up this meeting. The subject will be treated thoroughly with several experts in various phases present. Do you plan on operating on 21 Mc.? If so, better take in this meeting. Nets, traffic, civil defense, MARS will all have opportunity to hold special meetings of their own.

This 8th National will have an excellent program for the ladies under the competent chairmanship of Peggy Detsch, W6PCN. Special meetings and activities for the licensed YL and XYL contingent present have been arranged. However (tell the wife), a completely non-radio program is guaranteed to keep the ladies interested and entertained during a fast moving show where most of the OMs will be deeply engrossed in the many convention activities. Let us know with your advance registrations whether you will bring the teen-agers along. Supervised activities can be arranged for them.

Tentative convention timetable: Friday noon, July 6th marks the start of registrations. Exhibits

(Continued on page 148)

♦

This time it's not a radio circuit Clayton F. "Bud" Bane, W6WB, is drawing on the blackboard, but the start of a working diagram of committee organization. Here at an early committee meeting are: (standing) W6DOT, WB, CBE; (seated) W6PCN (ladies chairman), W6GGC's XYL (housing chairman), W6GGC, TT, DUB, SR, BYB, GPB.

♦

QST for

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

How:

QSLs. Yes, that's what we said — *QSLs.*

Does the word evoke mixed emotions? Does your mind's eye visualize the few rare cards you do have, romping rampant on a ghostly field of all those QSLs you *should* have?

Well, W2HSZ's "not yets" were far too numerous to suit him and, besides, he hates ghosts. So he ripped out his empty mailbox, tucked his DX log under an arm and took the evidence over to Kount U. R. Kuntries, a brain already famed for direct and scientific approaches to other DX perplexities.[1] The Kount accepted the problem in stride, scribbled a few sets of determinants on his cuff, and disappeared into his padded laboratory. In less time than you'll take to say Archipelago of San Andres and Provedencia he had issued another paper. Here it is, one more W2HSZ exclusive, couched in the Kount's usual unusual vernacular:

Der QSL Geddemupper

Der QSL Geddemupper machinen ist ein devisen was ist gemachen der obtainen auf der QSL wallenpapen vom rären DX was ist gemissen, und gemissen — und gemissen.

Das devisen ist ein compütaren gimmich was alles geklobbers der signallen ausgaben bei ein dolt rären DXer nicht gut mit der QSL senden. Iffen ein, zwei und drei monaten gepassen mit nein QSL schoenüppen, das bankenmemorem auf der compütaren machinen ist gefeeden mit der pipsers was indikaten der QSL ist gemissen.

Ein inhälen ist bandskännen fuer das dolt DXer mit der grosser QSL habitten gestünken. Inhälen der signallen — *achtung!* — der compütaren flipfloppen ist geflippen und gefloppen, das limitarens is gelimitten, und der kleine pipsers (was ist gut und squaren) gemachenuppen ein keyenpulsen was ist 180° outtenfasen mit das signallen auf der grosser idioten DXer.

Das keyenpulsen ist gekeyen ein ekonomy-sizer exhalen, und das signallen auf der dumbkopf — hah! — das signallen auf der non-QSLen DXer ist *gewiped oudt* und sounden asiffen nicht existen.

"Was ist lös?" wondert der rären DXer, gelissenen.

"*DUMBKOPF!*" geroarens der signallen auf der Geddemupper gadgeten. "*Phäntastistischen schweinhund! Geddemup und senden der QSL!*"

Ach, ja, der tag ist hier. Mit astounden shpeeden das wallenpapern ist *gesendt!*

Gesundheit, Kount — how about borrowing that pilot model for a week end or two?

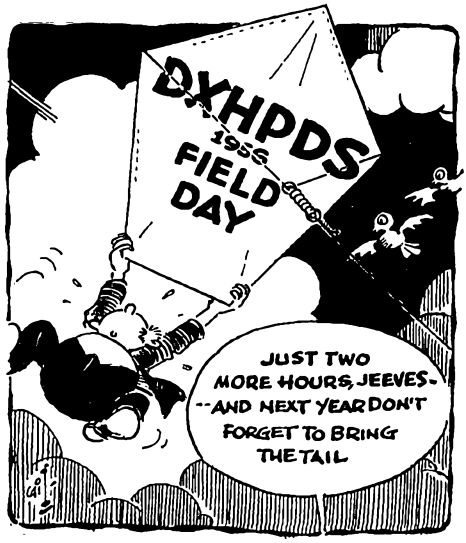
What:

You'll hear a few of the country-collecting gentry gently moaning because the next ARRL DX Test is *so* far away. "How will we ever wait till 1957?" News, guys: We have a DX contest running right now, running day and night on every band. The official outcome will be recorded in DXCC Honor Roll listings in the Operating News pages of subsequent *QST*s. And following in these pages is a preview of claimed results. Shall we glance?

75 phone starts things off in jivy offbeat tempo. Or would you hold that 3.8-Mc. phone is strictly for the local birds? If so, let go, for W6ICG worked *all ten* Japan call areas within 30 days: **JAs** 1QM 2AN 3GS 4FZ 5FG 6FM 7GA 8ED 9EA and ØFI, all 3555-3570 kc. and 3-9 PST. A pair of 700-watt 813s can take a bow . _ . _ . _ K6IKT hit 75 phone for **KM6AX** (3850) and **ZL1ACG** (3838). John needed only 25 watts to get through.

80 code now, while we have the bandswitch set low, and DL7AH sets the theme by announcing DL7AA's claim to joining the over-100-confirmed-on-eighty magic circle. Rudi now boasts at least a hundred confirmations on each of *five* bands — 3.5, 7, 14, 21 and 28 Mc., all QSOs dating after 1948 . _ . _ . _ W3EIS dug really deep for **CT3AB, PJ2AV, VPs 1SD** and **3YG** . _ . _ . _ **FG7XB** and **VP9CR** came back to W8YIN and K2GMF, respectively, while **WP4AEA** instilled the seeds of DXitus into WN8COA and other 3.5-Mc. Novice nighthawks.

20 code, a most profitable mode, has its present mood ably reflected by W2AIW's 42-minute noncontest WAC effort with **CR1ØAA, W2TQC, JA3BG, ZS6KK, FY7YE** and **HB9SC** in that order. **CR1ØAA's** T7 14,095-kc. signal is making many early risers miss their breakfasts . _ . _ . _ K4GSU doesn't let Denison U.'s heavy curriculum keep him from catching **AP2RH** (14,026 kc.) 14 GMT, **CN2AY** (47) 19, **CT2BO** (77) 0, **EA8BP** (36) 21, **FB8BR** (6) 13, **FO8AO** (87) 3, **GD3UB** (63) 2, **HI8FR** (95) 3, **I5RAM** (60) 23, **KB6BA** (82) 5, **KC6AL** (65) 13 on Ponape, **KJ6BM** (70) 11, **KR6QW** (55) 12, **KX6BU** (87) 13, **LUs** 6**ZS** 7**ZS** (37) 4, **LZ1KSA** (7) 21, **OD5s LJ** (74) 3, **LX** (45) 23, **OY2Z** (77) 22, **PZ1AM** (7) 3, **SU1IC** (75) 23, Crete's **SVØWN** (40) 2, **VS1HC** (84) 84, **VK9RM** (68) 12, **VP2LH** (72) 23, **VP3AD** (23) 3, four **VU2s, ZB2Q** (60) 16, **ZD4CC** (43) 0, **4S7s BW** (84) 12-13 and **MR** (57) 13 . _ . _ . _ **FO8AB** (160) 3, **VR2BA** 3, **VS9AS** (100) 19, **VU2JG** (40) 2 and **ZS9O** 19 tickled W8KAK . _ . _ . _ W4GUV reached 113 in 13 months via **DU7SV** (90) 12-13, **EA9DF** (91) 5, **FK8AO** (80) 5-6, **HA5KBA** 6, **I1BNU/Trieste** (70) 7, **KG1CG** (81) 4, **KG6AGC** (32) 13, VK9, VR2 and **YO3GY** 5 . _ . _ . _ Specifying QSOs with many of the preceding, K6ENX adds the word on **CE7ZV** (30) 4, **ET3LF** (15) 15, **FB8BX** (35) 17, **HA8KWA** (60) 15, **JZØPS** (60) 15 at Hollandia, N.N.G., **KC4USA** (85) 16 in the Deep South, **KT1UX** (70) 1, **MP4BBE** (80) 15-16, **SVØWT** (15) 5, **TF2WBG** (55) 1, **VQ2JN** (70) 15, **VR2CV** (70) 5, **VS1HB** (55) 14, **VS2DZ** (20) 15, **VU2s** BK JK KM all 15-16, **ZEs** 1JA 1JD 3JO, 4S7s and **9S4AL** (10) 16 . _ . _ . _ We hear from K6DNH about **CE7ZY** (47) 3, **CRs** 7AG (74) 16, **9AI** (85) 17, **FK8AC** (55) 7, **HA5BL** (15) 12, K2HGU/**KW6** (59) 8, **KG1BO** (17) 3, **LUs** 5ZY 7ZK, **PZ1BS** (48) 3, **UAØs** KJA (83) 16, KJF (84) 7, **VP8BR** (21) 1, **VQ4EO**



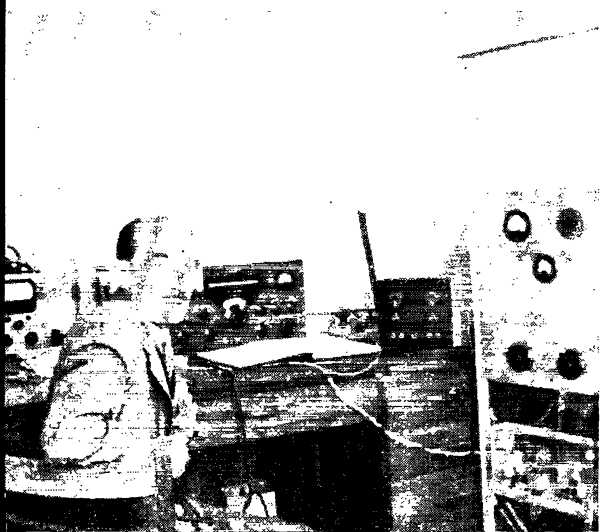
*4822 West Berteau Avenue, Chicago 41, Illinois.

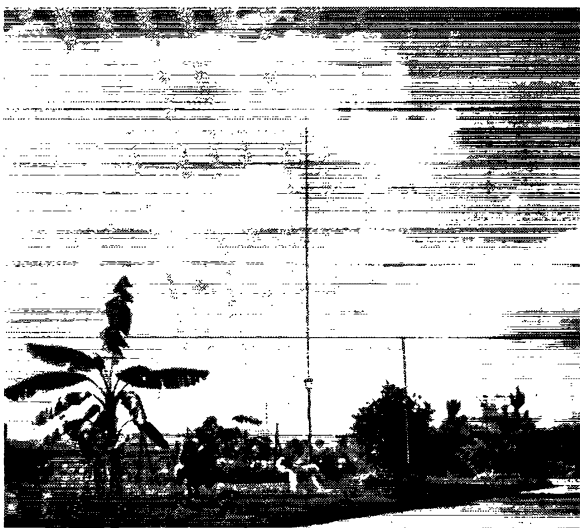
[1] "Der DX-Gedder Systemer" and "Der Channelmeister," of course.

(85) 15, VU2AL (52) 1, ZDs 2HAH (36) 14, 6BX (74) 14 and ZS3P (31) 15 . _ . _ . _ KC4USV at McMurdo Sound (90) 10, CP3CA (52) 2, KJ6, VR2CZ (72) 9, VS6CG (4) 16, a VU2 and 9S4BX (34) 1-2 pushed W6SUQ to 86/53 . _ . _ . _ K2QQO did well with CR6DA (59) 21, DU1CV (54) 13, DU6IV (47) 13, a Rio de Oro EA9, an ET3, OY5S (60) 13, VQ4EF (58) 13, ZC4IP 23, 4S7s and 4X4DF (28) 1 . _ . _ . _ K2EQD was among the first to nab the wandering Mr. Roberts, G2RO, as VS9RO. Hal also accounts for GC3KWM (44) 22, an HI8, KX6AF (28) 7, VP1AA (1) 4 and a ZC4 to reach 110/83 . _ . _ . _ K6CJQ picked up HA5BW (45) 6, KC6KU (45) 5, W3UIF/KG6 (65) 6 and CR9 CT2 FB8 HI8 KC4 VK9 ZD4 items already mentioned . _ . _ . _ CT3AB (35) 18, EA8BF (73) 2, FM7WP (12) 1, I1BLF/Trieste (25) 20, SVØWL (60) 23, VPs 5RR (10) 4 of Turks, 7BC, ZB1AY (94) 0 and numerous others hooked K2KDW . _ . _ . _ W7PHO's successes are topped by AC5PN (92) 16 and ZS7H (29) 16 . _ . _ . _ It's the 88th rung for W1YNP; HC1SR, HP1AW, HR1JZ, JAs, LZ1KDP, TG9AD, VP1SD (98) 14, YS1O (62) 9 and ZD3A 22 helped . _ . _ . _ CR7s CI CK, GM3SL in the Hebrides for WAE-seekers, KM6AX (96) 5, LU6ZI, LZ1KPZ (73) 14, OD5BS (85), VQ8CB and VS1GX (90) 9 are listed by W8KPI . _ . _ . _ W5WZQ's peewee beam passed 155 on CR6s CH CW, EL9B, FB8BR/FB8, HH3L (12) 15-16, JAs, KA2s EC OZ, KX6AF (80) 7, LU4s ZD ZS, OX3KW, PZ1s, TF3s AB (75) 5, MB (80) 19, VK9DB (70) 14, VQs 2GW (26) 22, 4BRM, YJ1AA (75) 9, ZEs and 4X4CJ . _ . _ . _ A neat 120/94 tally at W6YBR resulted from CR9, FB8, KC6KU (15) 15, Moldavian UO5KBR (30) 5-6, VQ2IM (15) 15 and others . _ . _ . _ Quickly, now, a substantial sample of 14-Mc. code success here and there, at *W1ODW:* KJ6, VK9CS (58) 11-12 of T.N.G. *W1TYQ:* CR1Ø, KC6. *W2GVZ:* VU2RC (10) 14. *K2DSW:* VK6AF's potent 10-watter. *K2GMF:* HC1LE (10) 1, VP3YG. *K2KIR:* VP9CR. *W3ABT* of U. of Penna., W8FTD keying: JA8AA, VR2CG. *W3EIS:* CR6AI, F9QV/FC (61) 5, FP8AP, KR6LJ (14) 17, SVØWL. *W3WPG:* ET2AB (4) 3-4, OD5, PZ1, SVØ, VP1. *W3UXX:* FY7YF (40), KG1JB, MP4QAL going QRT, ST2NG (20) 5, TF6WAK. *W3YCH:* FY7, LU6ZI, YJ1. *W3YUW:* HA5AD (50) 22, OD5. *K4ABE:* JA3BB. *W5FDL:* FK8AE, JAs, KAs, VKs 1GA (90) 15, 9XK (95) 8. *K6OIZ:* a dozen JAs to complete AJD award effort, KA2KA, KG6AFT (55) 15, VSs 1GP 6AE (14) 12. *W7YAQ:* KA9TB, two KX6s. *W8YIN:* LU3ZY, MP4 Qatar-style, UAs 1KAQ 9VA (87) 14, VS9, 4S7MG (12) 13. *W9FNX:* SP1KAA, VP1. *DL4ZC:* GM3GZA over in the Hebrides, AP2, FY7, JA2AT, VS9, VU2 . _ . _ . _ Putting the shoe on the other foot VQ5GC (50) 15 worked Ws 5WZQ 6SUQ 8KPL 9PNE, Ks 2CJQ 4GSU 6DNH. VQ6LQ (70) 9 caught Ws 3WPG 6SUQ 8YIN 9PNE, Ks 2GMF 6DNH. VR1B (80) 13 worked Ws 2GVZ 5GUV 5WZQ 6NJU 6SUQ 8KAK 8KPL 8YIN 9PNE, Ks 2EQD 2QQO 4GSU 6CJQ 6DNH 6ENX 6OIZ. VR3B (34) 3: Ws 1ZDP 4GUV 5WZQ 6SUQ 8KPL, Ks 4GSU 6DNH. YA1AM (46) 14: W8s KPL YIN, Ks 2QQO 6ENX. YI2AM (90) 14: Ks 4GSU 8KAK . _ . _ . _ Supplementary 20-c.w. candidates AC4s LP (23) 14, NC (39) 16, BV1US (52) 15, CRs 4AG (50-95) 1, 8CI (51) 5, DU1s CE (82) 8, JFD (80) 15, EA8BP (40) 2, EL12P (1) 20, F9SC/FC (70) 7, FB8s BP (30) 14, ZZ (30) 13, FK8AD (85) 7, FO8AH (8) 14-15, FQ8AY 21, FU8AA (20) 14, I5REX (91) 4, KG6AFY (11) 13, KJ6BN (23) 0, KR6s CS (65) 9, SE (5) 14, KV4AA (80), KX6NC (58) 13, LX1AQ (40) 13, MP4BAU (40) 2, ÓD5AV (14) 21, OQ5s CP (10) 16, QS (10) 16, OY4XX (11) 11, TA3US, TG9MR (55) 5, VK1s IJ (100) 14, 1PA (90) 10, sixteen VU2s 12-14, VP5DC (33) 6, VP8s BK (50) 2, BL (52) 3, VQs 3CF (78) 15, 3EX (60) 21, 3JI (68) 16, 4FM (34), 8AF (72) 14, 8AG (15) 13, VSs 1GE (23), 1GY (28), 1HA, 2CB (53), 4NW (100), 6AR 6CO 6DI (32) all 12-14, KR6RI (40) 13, XZ2SS (115) 9, YI2DX (72) 13-14, ZA1KAA (65) 22, ZBs 1C (75) 18, 2I (25) 8, ZC4s BX (115) 16, RX (39) 4, ZDs 3BFC (95) 22, 6RM (10) 4, ZK1s BL (100) 5, BS (80) 13, ZP6BZ (70) 9, ZSs 3Q (50) 9, 7D (9) 15, 3V8s AB (60), AN (5) 15, FA (6) 4, 4X4s FC FE FK GS and 5A2TG (9) 8 are extracted from publications of the West Gulf DX Club, Northern California DX Club, Willamette Valley DX Club and anonymous sources . _ . _ . _ Responding to calls with occasional quick QSOs, these Russian numbers show up in the 14-Mc. code compartment of the "How's" mailbag for this month: UAs 1KAE 1KBB 1XE 2AO 3CR 4KNA 6UI 6UR 9KAB 9KBA 9DN 9OC ØAF ØCE ØKAB ØKBB ØKCA ØKCH ØKFC, UB5s AB CA KAA KAB UB, UC2s KAB KAC KAK, UF6KAF, UH8KAA, UI8KAA, UN1KAA and UQ2AN, all mostly between 14,050 and 14,090 kc., and mostly between 14 and 17 GMT.

20 phone, making a strong summer comeback after a spotty spring, presented EL2D, ET2MZ (138) 22, F9RY/FC (113) 22, FF8BP, I1YAK/Trieste, ZD4BF, 4X4DR and 9S4AD to W2GBC for an even 100 . _ . _ . _ W8KAK's Viking hit upon HB1OP/HE (105) 1, HKC45 (185) 22 (!), HH2X (24) 20, OA5G (190) 7, PJ2CL (188) 19, VPs 1HA (180) 0, 2DN (160) 0, 3YG (185) 14 and 5DC (200) 7 . _ . _ . _ Concentrating on *rarae aves*, W7PHO racked up CR9AI (180) 19, FB8ZZ (215) 16, KC4USA (294) 7-8, VR1B (150) 5, ZD9AD (127) 15-16, ZSs 8I (157) 16 and 9G (162) 16 . _ . _ . _ KC4USA's s.s.b. will be a summer fixture on 20 phone and W1APA reports Red and Chet consistently S9 around sun-up . _ . _ . _ K2CJN returned home from Caribbean travels in time to reach 140/130 via CR5AC, FG7XB (119) 3, FO8AB, HA5KBK, MP4BF, YI2AM (94) 4, ZD4BZ and ZK1BL (185) 5-6 . _ . _ . _ Hither and yon, at *W3ABT:* VP5DX. *W3YCH:* VPs 5MS 7NG. *W4GUV:* CN8JH 23, DU7SV (180) 14, KG1FR (204) 22-0. *W6SUQ:* K6KNY/KW6 (273) 12, VP5BE (244) 8. *W7YAQ:* KM6AX (260) 5 . _ . _ . _ Milwaukee Radio Amateur Club's scoopsheet has ET2US (180) 22, FB8BC (130) 22 and ZP5EC (130) 22 underlined . _ . _ . _ OD5s BO TO, Ukrainian phones UB5s KAA, KBR, YO3GM and ZD3BFC still are stalked by W2GBC . _ . _ . _ The *Newark News* Radio Club, NCDXC, WGDXC and WVDXC combine to fill your 20-phone hope chests with BV1US (250) 12, CE7ZZ, CRs 5SP (127), 7, 6AG, 7AF, CT2s 2AG 3AN (125) 3, DUs 1AQ (185) 9, 1AL (150) 14, 1CE (140) 15, 7VL (183) 13-14, EA8s AI AX BB (230) 9, BC (158) 6, BQ, EA9s AP (108) 3, AR BC (128) 1, ETs 2PA 3LF 23, FF8BN, FK8s AC (122) 16, AO (75) 7, FM7s WN WP WQ, FO8s AD AG AK (125) 22, FP8AP, FY7YF (40) 18, FU8AC (111) 7, HA5KBA (46) 2, HC8GI (145) 14, HI6EC, HZ1AB, I5NR (134) 1, IS1ANU (170) 4, IT1s BXX ZGY (105) 0, JAs 1AZR (220) 8, 3HD (190) 8, 6HK (180) 13-14, KAs 2AK 2IM 2KS 2QA 3JC 3KB 5CL 7HH, KGs 1AB 6IG (230) 12 of Chichi Jima, 6NAA (265) 12-13, KJ6BN 11, KR6s AF (222) 10, PR, KX6s AF (146) 12, BU (240) 14, W2SPP/KG6

FB8BR, already rare enough when using the Madagascar layout shown here, recently inaugurated a series of Comoros Islands "field days" as FB8BR/FB8. At home Hub employs a 51J receiver and the 807s-final rig at right. The ground-plane antenna, here guarded by FB8BR's DX hound, has a clear view in all directions from a 4000-ft.-high plateau. That small transmitter just to the right of the receiver is the job with which FB8BR/FB8 scored 225 contacts, 174 with W/Ks, during his initial Comoros hamming trip in late February. It's patterned after W1JEQ's October 1954 *QST* rig with an 829B substituting for the specified 6146. Be on the alert for more FB8BR/-FB8 Comoros activity from time to time! (*Photos via W8NBK*)





(23) 12, W7VMD/KG6 (205) 13, LZ1KPZ (130) 8, MP4s BBW KDS (196) 2, QAL, OD5s AB (188) 4, AV (60) 8, BA (140) 3, OX3s CP KW 23, PZ1s, ST2DB (168) 13, SP5CC (126) 6, SV5AA, SVØs WE of Rhodes (195), WJ WN of Crete, WO WS WT, TFs 3AC 5SV, VK1IJ (110) 8, VK9s BS (139) 13, RH (148) 4 of Norfolk Isle, RM 12, VP1s AA EK JH VR, VP2s KM KN, VP3LF, VP5s BE MS RR SH, VP7s BD MI NK, VP8s BS BQ, VQ4s AA/P AC EO FK RF, VQ5FS (140) 5, VQ6LQ (135) 14, VRs 2BC (107) 8, 6AC, VS1s FE GP, VS2s DO DS (195) 16, DY (112), UW (145) 16, VS4NW (100) 9, VS6s AK (135), CG (110) 17, VU2s ES RC (180) 2, XZ2SS (115) 9, YU1AD ZB1BG, ZD4s BR (120) 17, BT 21, ZEs 2KR 4JU (125) 5, ZK1s BC BS (195) 5, ZM6s AR (160) 8, AT (160) 4, ZP5CF, ZSs 3AH 3S (150) 17, 7C, 3V8BA (135) 4, 4S7s JB 8, YL, 4X4s BD (126) 5, DK (140) 4, FR (135) 3, 5As 1TA 1TZ (180), 2TG 2TP and 4TX. Friend Jeeves, among whose offices is included that of Vice-President in Charge of Trends, reports the phone fraternity, DX variety, gradually slipping farther and farther down into the 14-Mc. c.w. segment. A check of listed phone frequencies in *QST*s of a few years back will confirm the old boy's observations, b'gosh.

15 phone, though headquarters of less diverse DX species than 20, continues to merit the greater all-around play. W4NZM bagged close to the limit, it would appear: DU7SV (194) 9, EA8AX (170) 23, F9RY/FC (105) 22, FU8AC (135) 6, HB1OP/HE (112) 3, KG1FR (27) 23, KR6LJ (180) 14, KX6BU (225) 12, OD5AT (140) 4, TA3US (160) 3, VR2BC (154) 6, YI2AM (23) 8, YU1AA (170) 6, ZE6JJ (125) 5, 4X4s DK (145) 5 and GS (130) 4 . . . . In Indiana there doesn't appear to be a 21-Mc. phone limit, for W9WHM knocked down CT2PA (260), FB8s BC (170), BZ (170), FO8AD (245), IT1ZGY (220), LX1DU (245), MP4s BBW (246), KAC (240), OD5AV (200), ST2DB (240), SV1AD (250), UB5KAA (170) who wouldn't quite come back, VK9DB (250), VP8BT (300), VSs 2DB (190), 6AE (245), VR1B (310), VU2RC (110), YO3GM (245), ZDs 2JDB (220), 6RM (200), 9AC (230), ZM6AR (105), ZSs 7C 8I (200), 9G, 9S4AX (250) and Formosan BV1US (220) . . . . W6ZZ, growing impatient for his overdue WAA diploma, scored with DU, JA1ANG, KAs 2EC 5CN, KB6BA, KR6, KX6ZB, KR6, KX6ZB, KR6, OD5, SVØWO, VQs 4EO and 5EK to reach 110 on fifteen, 80 on A3 . . . . FM7WN, KX6NC/KC6 (now KC6AL), KX6AF, VK9BS, VP2DL and ZS3S came back to W6IIM . . . . Down the list, at *K2CJN:* CR9AH (190) 15, DU6IV, VQ5, ZS9. *W4GUV:* EA8BO. *W4YOK:* KG6FAE, ZD4BV. *W8YIN:* KG6GX, VP2SI, ZD1DR, VQ5, ZS9. *WØMHS:* HR1FM. Heard by *W9WHM:* CR5SP (230), IS1CP (245), FK8AU (105), MP4QAL (170), OYs 2A (200), 2X (200), LX1JW (245), SVØWE of Rhodes (150), VP3s HAG LF YG, VU2JP (120), ZB1s AJX (170), EB (170) and Ascension Islander ZD8SC (ex-VP5SC) on 21,240 kc. . . . . The aforementioned club groups fill us in on 15-meter phone doings of CP5EK, CRs 4AO (218), 6AG (125) 0, 6AJ (230) 21, 6BX 6CS, CT3AI, EA8s AS AV BF, EA9s AZ BH EE, ELs 2D 5A 9A 12A, FF8s AK AR (265) 2, AP (265), GP, FM7s WF (195) 0, WN, FO8AK, FQ8AK, FP8AP (214) 2, HA5KBA 19, HC8GI, KR6PR, KT1s EXO WX, LX1s RU SI, OD5AJ, OQ5s AO BE GM GY (200) 18, GT, OX3KW, PZ1RM, SP5AH, TFs 3MB 5TP, VP8AO, VQs 2DT (260) 22, 2RH 3DQ 4DS, VR2CS (200) 5, YU3IB (240) 18, ZDs 3BFC 6RD, ZK1BS, ZP5HX (95) 0, ZS3s F G W, ZS9F, 3V8AP, 4X4IE and 5A2TZ.

15 code reports really sag the sack this month. It's CR7AD (95) 20, F9QV/FC 19, GC3EML (40) 18, six JAs, KA2EC, KR6LJ (10) 2, OD5AV (65) 17, OQ5s BT (73) 30, CP 19, QS (69) 21, VQs 2AS (79) 20, 4GF 20, 5GC (16) 20, VU2MD (30) 14, W4IKC/KW6 (19) 20, ZD3A (60) 20, 3V8AN (79) 16 and 4X4FA (21) 19 at K2QQO (ex-W4YHD) . . . . W1CTW made it 103/80 on 21-Mc. code with a Corsican F9, I5REX, KX6AF, VP1SD and a ZD3 . . . . Quickly, now, at *W2GJD:* JAs, KA2MA (30) 12, KG6AFY (20) 12, KX6, OQ5, UC2KAB (50) 12. *K2CJS:* KV4AA. *K2DSW:* HA5BI, KT1UX, HA. *K2EQD:* GC3EML (38) 23, VP3YG (20) 22. *K2GMF:* PJ2AV. *K2KDW:* CR6AI. *K2KHZ:* HC1ES, ZB1CN (35) 23. *K2PIC:* F9YP/FC, FM7WF, ET3AB, ZP9AY. *W3AYS:* KR6, KW6, VX6CO 11-12. *W3EIS:* I1BLF/Trieste, YO3RF, ZB1EB. *W3WPG:* KA2KI, ZD3, ZP5HX and Bornholm Islander OZ4IM for WAE credit. *W4GUV:* DU7SV, EA8BF, OD5, ZB1E 21. *W4YOK:* HK3s AB PC, KG6FAE, KW6, TF3MB, ZD1DR (93) 12. *W6FDL:* ZP5, I5. *W6RZS:* HA5BW, KG1CG, MP4s BBL QAL, VS6AE. *W6SUQ:* VP2DL. *W6WLY/Ø:* CT3AB, FF8GP, SPs, VP7NS, VQ2GW, KW6, ZB1, 9S4AX. *W6ZZ:* JA1VX, KX6, VP3, ZP *K6ENX:* FA9RZ' (85) 20. *W8YIN:* CR4AG, OD5, ZB2I. *W9PNE:* JA3BB. *DL4ZC:* JA1CO, VU2HF 12 . . . . Club 21-Mc. c.w. addenda feature one AP2N (28) 15, DU6IV (75) 0, FK8AO (85) 4, OQ5RT (75) 20, SVØWZ (41) 19, VK9DB (31) 21, VP8BL (40) 16-17, VQ4KPB (90) 21 and ZK1BG (56) 0.

15 Novice frequencies brought KN5BGB 38 countries, PZ1RM, VQ4s BRM FK and curious VU5BC . . . . At KN2MFY we find 87 DX QSOs with 34 countries including CT3AB, DM2AEK, HA5KBA, HC1EP (150) 23, SPs, I1BLF/Trieste and YU1KA. An Adventurer and S-38C do the job . . . . WN3DJW, with 75 watts and an HQ-140X, collected CN8s AF GL, EA6AF, FA8RJ, JA1RL, OQ5QS, PI1LS, VQs 2HH and 4FJ to reach the 28th plateau . . . . Netted by Novices there and here, at Vermonter *WN1ETV:* KV4BL, WP4ACS, YU3LT. *KN2OGG:* VP4TM (120) 16, WP4AEP. *WN8CGF:* VP7NN, YV3BH. *WN8CNX:* HC4MK (225), HK3PC (150). *WN8COA:* WN1EVR/WH6. *WN8GQX:* LU8MAH, WP4ACS. *WN8IBX:* HK, XE1A, ZL. *KNØCRV:* JA1ACA (120), HK3AR, WL7BSS. WN1GDB, KNs 2LYI 4EYV 5EAW ØCER and others report cutting swaths into Europe and/or the Caribbean areas on 21 Mc.

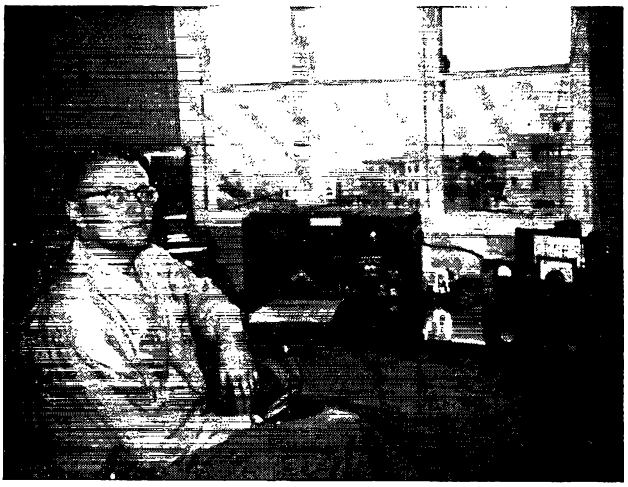
10 phone may be heading for summer doldrums but the 28-Mc. A3 gang doesn't seem to care. They go right on working DX! In Indiana, where 10 and 15 appear to focus these days, W9JSM contacted CR6BH, GC3EML, HA5KBA, HB1OP/HE, IT1ZDA, KA2KS, SP5CC, SVØWX, UQ2AN, VQ4s AC FK, YUs, ZB1EB, ZE2JE, ZS3B, ZLs, VKs and 9S4AR. Bob uses a quad . . . . CR5AC, KA9MF, VQs 2RH 4DS 5GC, one VU6EJ 17, ZB1AJX, ZE, 4X4s DK and FK responded to W1YKD's mike manipulations . . . . CN8DS, HP1EH, OQ5GM, VP1s EE HA SD, YN4HA and hordes of Europeans worked WØTGG's Viking and homespun beam . . . . Scanning results around the continent, *W1DFY:* CN8FN, ZL2BE, 4X4. *W1EKU:* EA9AZ, FY7YE (350) 20, KR6CR 1, VE7ASL/VR3 (412) on Fanning Isle, VU2MQ 17. *W1RDV:* CN8GF, 4X4. *K2HYE:* GC3KAV, I1YAK/Trieste, VP1MA. *W3ONP:* KA2EB. *W3QMG:* GC3EBK, FG7KB, ZP5IT, UQ2. *W6ITH:* KB6BC (625), VR3. *W8YIN:* CR7BB, GD3GMH, SVØWT, KW6. *KL7BPK:* KX6NC . . . . Set your traps for CP1AY, CR4AT (425), FF8AQ, FO8AD, GC3ERO (234) 18, GD3s ENK (322) 17, FXN, IBQ (297) 17, IYS, GD6IA (240) 18, HI6EC (300) 17, KR6RB, KT1UX, KX6AF, W6RQF/KW6 (780), LX1s DC VP, MP4KAC, SP5AM, VR2CS (307) 2, VU2EJ (490) 16, ZB2P (170) 17, ZDs 3BFC 6RM, ZP9AX, ZSs 3B 3S (450) 12-13, 9G 12-13, 3V8s AP (290), AX, 4X4s FM and FV, 10-meter phones found active by WGDXC *DX Bulletin* and NNRC contributors.

10 code, which will see zooming activity as 28-Mc. voice frequencies saturate, provided CN8GF, GC3HFE, HA5BU, KG1JB, W4IKC/KW6 and ZB1HKO for W3ZWA's 30 watts . . . . CN8AF, KT1UX, UC2KAB, ZE5JI and ZP5ID clicked with W3QMG . . . . W4LDD tried KA2EC, PJ2AW, YS1O, YV4AU, ZD6RM and ZP9AY, recommending more listening and less "CQ DX" by W/Ks . . . . CT3AB, KW6, LZ1KDP, VPs 1SD 3YG, VQ2GW, YO3GY, ZD3A and EA8BF cheered K2DSW . . . . Speeding up, at *W1DFY:* DM2ACM. *K2ENO:* GC3. *W4GUV:* CR6AI, ZE5JA. *W4UWA:* PJ2AJ, VP1. *W6ZOL:* JA3AB, KW6, VS6CO. *W7YAQ:* KA9TB (100) 2. *W9FNX:* ZE3JO. *WØUWD:* GC3, HB1OP/HE, LZ1, YO3RA, ZB1AY.

40 code rates the dubious distinction of serving as caboose for this month's "How's" Bandwagon. KC4USA, whose QSO with W6WLY/Ø was a 7-Mc. first, creates 40-meter DXcitement during the wee hours. West coast transpacific hops to Asia are among the best DX reported; W7YAQ cashed in on CR9AI (40) 15 and a half dozen JA brethren . . . . K6DNX adds DU7SV and more JAs to the pot . . . . CE3AG, KX6AF and VP3YG highlight K6OIZ's ledger excerpts . . . . HI8FR (40) 5 and ZS3HX (10) are goodies at W3YUW . . . . K2EQD managed EA8BF (8) 7, VP2s AD (28) 3 and SH (17) 4 despite the static . . . . Briefly, we note at *K2KIR:* VP9CR. YL *K2MGE:* OKs, YU1DGH. *K2PGP:* Europeans, KV4AA, on 10 watts. *WØVBS:* five KH6s, KL7s, VP6LS. *DL4ZC:* 3A2AG . . . . Novice DXers aren't *all* up on 15 meters. WN8GEL nailed WH6BTI 12, while WN8CNX worked KV4BK (147), WH6BTH (155) and ZL3GQ (147) . . . . Lantern for the tail end of our caboose is forty phone, where SWL S. Terry hears antarctican LU5ZK (70) 9 quite clearly. Other NNRCers report 7-Mc. A3 signals from HR3HH, JA1MQ, KX6AF, VK9DB, VPs 2DA 3HAG and 4TI.

Where:

YN1PM reports that Club de Radio Experimentadores de Nicaragua has a new bureau in operation for distribution of incoming cards: Apartado Postal 555, Managua. Some 40 YNs now are licensed. "An official reallocation of call-numeral areas has just taken place here," Paul advises. "Most of the shuffle involved areas in which there are no active amateurs. Several here are making preliminary plans for DXpeditions to previously unworked districts of Nicaragua." YN1PM also emphasizes that surface mail between YN and W/K can take up to two months one way; airmail,



♦

OD5BS looks out over a picturesque panorama of Beirut from shack windows in the U. S. Embassy in Lebanon. George also looks over 20 meters regularly with that Hallicrafters receiver, working the boys back home with a doublet fed by the p.p.-6L6s 50-watter shown at right. (*Photo via W4KFC*)

♦

two or three days . . . . . An unpleasant note from the same vicinity, this from VP1JH. Buck had to bounce a stack of QSLs destined for VP1KT, a call never authorized by the Telecom Department at Belize . . . . . W6LDD has YJ1DL's logs for the period April 11, 1955, through October 21st. "I am sending out cards for him for these contacts. . . I do *not* want replies (cards) for YJ1DL to be sent to me at the moment as I have no forwarding address for him and have made no arrangements to handle cards directed to him. If anyone doesn't get a QSL for a contact made during this period I will be pleased to check and send another if the QSO is logged." Ed is using the bureaus almost exclusively . . . . . K2GFQ, visiting Port-au-Prince recently, found that HH3L isn't fond of the QSL angle, to put it mildly . . . . . W6FHR finds ex-VK9OK banging away at ZL1AJU and relays the latter's offer to consult with those still shy deserved Norfolk VK9OK pasteboards . . . . . W5ICJ still files logs for 1948–1952 operation at I6DD and MI3SC. He QSLd thoroughly but invites inquiries concerning cards which may have strayed . . . . . One must be chary regarding the activity status of multioperator DX stations. Now and then we receive reports such as "KAØIJ has returned to the States," doubtless referring to just one of the KAØIJ staff. Many such stations — KC6CG, HZ1AB, ET2US, some VP8s, etc. — are permanent installations, however, and have a steady turnover of operator personnel . . . . . W1s APU CTW IKE ODW RDV TYQ UED ZDP, W2DMJ, K2s ENO KDW PIC QQO, KN2MFY, W4s HKJ NZM, K4GSU, W6ITH, K6ENX, W8s BMX GZ KAK YIN, WØs QGI VBS, V. Brener, S. Terry, NNRC, NCDXC, WGDXC, WVDXC and DL4ZC pitched in to provide this collection of individual items:

Ex-**AP2N**, N. P. Henry, c/o Bombay Co., Ltd., 9 Wallace St., Fort, Bombay, India . . . . **AP2Q**, M. A. Qureshi, 203 The Mall, Rawalpindi, W. Pakistan . . . . **CN8DS**, Box 9, APO 118, New York, N. Y. . . . . **EL2C** (QSL via W9QHR) . . . . **FB8BX**, P. O. Box 587, Tananarive, Madagascar . . . . **FK8AU** (QSL via FK8AO) . . . . ex-**FQ8AE** (QSL to FK8AU) . . . . **G3FPI**, W. B. Hopkins, c/o 121 Elmdale Crescent, Northfield, Birmingham 31, England . . . . **I1BRN/M1** (QSL to I1BRN) . . . . **I5RAM**, Box 179, Mogadiscio, It. Somaliland . . . . **K4CUB/KL7**, Capt. C. M. Preston, 745th TCS, FPO 230, Seattle, Wash. . . . . **K5CTN/VE8**, Nolan, APO 863, New York, N. Y. . . . . **K6KNY/KW6**, c/o CAA, Wake Island . . . . **KB6BC**, c/o CAA, Canton Island . . . . **KC6AL** (QSL via KC6UZ) . . . . **KH6BSK**, D. V. Kettlewell, Box 6496, Honolulu 18, Hawaii, T. H. . . . . **KL7BSR**, Box 219, Anchorage, Alaska . . . . **KL7BVE**, T/Sgt W. Rogers, Hq. Sqdn., 5001st ABG, Box 358, APO 731, Seattle, Wash. . . . . **KL7PI**, J. Paquette, c/o CAA, Annette Island, Alaska . . . . **LZ1KAA**, Central Radio Club, Rakovska 155, Sofia, Bulgaria . . . . **LZ1KPR** (QSL via LZ1KAA) . . . . ex-**MI3SC** (QSL to W5ICJ) . . . . **MP4KDS** (QSL via MP4KAC) . . . . **MP4QAB**, J. Tierney, Decca Navigator, c/o Shell Survey, Dohah, Qatar . . . . **OA5AAT**, A. Contrero, Box 84, Trujillo, Peru . . . . **OH1ST/Ø** (QSL to OH1ST) . . . . **OH1SY/Ø** (QSL via OH1SY) . . . . **OQ5QS**, School Farm of Lulu, Box 39, Stanleyville, Belgian Congo . . . . **PY2BQI**, J. Tachian, P. O. Box 22, São Paulo, Brazil . . . . **PZ1AH** (via W2HQL) . . . . **PZ1AM**, A. A. Meubelman, Orchidestr. 19, Paramaribo, Surinam . . . . **SVØWN**, Gen. Del., Iraklion, Crete . . . . ex-**TA3US** (via W3WZS) . . . . ex-**TG9PB** (via W6ICG) . . . . **VE4AR/VE8** (via VE8NK) . . . . **VE7ASL/VR3**, C. H. Freeman, % So. Pac. Airways, Honolulu Intl. Airport, Honolulu, Hawaii, T. H. . . . . **VP3AD**, 208 Almond St., Georgetown, Br. Guiana . . . . **VP5MS** (via WØBTX) . . . . **VP5RR** (via W5HVV) . . . . **VP5SH**, S. F. Hodson (W6HNX), % RCA, M.T.P., Grand Turks Is., via Patrick AFB, Cocoa, Fla. . . . . **VP6GC**. G. Corbin, Brittons Hill, St. Michael, Barbados . . . . **VQ2AS**, J. A. Smith, 369 Dawson St., Broken Hill, No. Rhodesia . . . . **VQ6RO** (via RSGB) . . . . **VR1B** (via KV4AA) . . . . **VS1HB**. C. M. Kempson, Tyersdale Park, Singapore . . . . ex-**VS6AC**-VS6CE-VQ4GC (via VQ5GC) . . . . **VS9RO** (via RSGB) . . . . **W3ZZW/KL7**, E. E. Burkholder, Navy 127, Box 8, FPO, Seattle . . . . **W4IKC/KW6**, I. Lundblom, % CAA, Wake Island . . . . **W7VMD/KG6**, R. S. Hall, USNAVCOM Stn., Box 149, Navy 926, FPO, San Francisco . . . . **XE2NF** (via K6DGB) . . . . **XE3AR**, N. Correa, 1s Ave. Norte No. 5, Apartado 57, Tapachula, Chiapas, Mexico . . . . ex-**ZB1PP**, R. J. Ezra, G3KOJ, 38 Salcombe Gardens, Mill Hill, London N.W. 7, England . . . . ex-**ZB2D**, H. Smith, G3HOP, 97 Stone Rd., Stafford, Staffs., England . . . . **ZB2Q** (via ZB21) . . . **ZS1AB** (via ZS3AB) . . . . **3A2AN** (via ARI).

Whence:

Asia — W5LAK did make it to Pakistan, all right, as the recent popularity of AP2M's signal will attest. *That's* not John's own call, incidentally — he's been visiting Razak. "Quite a change from W5 DXing. Believe me, it's something. QRM is *awful* — every time we try to work the States there are 20 Europeans calling." W5LAK finds much red tape obscuring the procurement of his own call but he's yanking promising strings . . . . . AP2RH already has shipped out over 300 confirmations and expects arrival of 1000 more blanks. Ray reports little response from the scads of rare "U" stations regularly heard on the ham bands in Lahore . . . . . K6DGB, who once helped push JA2KW around the kilocycles, looks forward to possible KR6 work in the near future. A Ranger will assist . . . . . W8YIN finds that VS6CG is hot after both Dakotas to finish WAS . . . . . Ever work a KG6 in Asia? Well, K6DNH and others did — KG6IG of Chichi Jima, W1VRW keying. The Bonins and Volcanoes, by the way, are one and the same on the ARRL DXCC Countries List . . . . . W4HKJ reports TA3US QRT as of May 1st unless W3WZS, who is mustering out, is replaced by an amateur at Izmir . . . . . BV1US hamming activities are held down because of heavy 15-meter MARS traffic commitments. Operator K2CLA stresses that BV1US no longer is authorized to push QTC on amateur frequencies.

Africa — VQ5GC, who has stretches of VQ4, VS6 and G3 DXing under his belt, writes: "Active on all bands 3.5 through 28 Mc., phone and c.w., and am having some swell QSOs with the States. I always enjoy working W/Ks because, in my estimation, they are among the finest, snappiest ops in the world. I am planning a trip to OQØ and OQ5 upon getting portable equipment and will run about 50 watts, phone and c.w. My present rig is far too heavy to shift about. Would like to make a trip to VQ1 but it is expensive to fly to Zanzibar and I am afraid that trip must wait a while." Neville's sturdy signal takes off from a long-wire and 150-watter . . . . . The Radio Society of

East Africa announces availability of WAVQA diplomas (Worked All VQ Areas) and the requirements sound worthy of any certificate-collector's mettle: one QSL from each of VQ1, VQ6, VQ8A, VQ8C, VQ9; five from each of VQ3, VQ5; ten from VQ2; and twenty (20) from VQ4 — 45 cards in all, for QSOs dating after November 1, 1945. Five extra confirmations from any VQ areas may be submitted in lieu of any one missing card, according to Rule 3. As we've often stated, requirements and rules for many overseas awards are subject to change without notice, so write RSEA c/o VQ4RF, Box 264, Nakuru, Kenya, E. Africa, for full up-to-date details on WAVQA before you lose any sleep over it . . . . . SU1IC is harassed by bleeding-heart QSLs received from birds he never QSOd. Either a clandestine SU1IC is radiating or spivs are after DXCC the cagy way. Charmy, still gunning for a WAS sheepskin, has 36 States worked and 34 confirmed with that famous 10 watts.

Oceania — Ex-KW6AR (W4IKC/KW6), according to W8YIN, will be supplying Wake Island contacts for the next year or so . . . . . W6YY has it that VK6MK means to put his TBS-50 to work on a ZC3 call before long . . . . . ZM6AS has been hard at work on a Ranger kit and hopes to be back in the pile-ups with his NC-98 by the time this is scanned . . . . . Stationed out Eniwetok way, W6UFS seeks details on early postwar KX6 operation from that atoll. Anyone with information can write Bill at H&N Box 3116, APO 435, San Francisco, Calif. . . . . From KB6BA: "One KB6AA is a bootlegger; the legit KB6AA left over five years ago. . . . I will be on Canton for six to eighteen more months and will QSL 100 per cent via bureaus, or direct if self-addressed airmail envelopes are enclosed. Layout is a Viking I, HQ-140X, DB-23, long-wire for 14 Mc., and 3-el. beam for 21 Mc., phone and c.w. both bands. KB6BA frequents 14,080 kc. (c.w.) and 14,200 kc. (phone) but you'll never work him by messing up his schedules . . . . . KX6-land report via KC6UZ: "On Kwajalein KX6AF is heard occasionally, while KX6BU activity has dropped off because of transfers. KX6ZB, formerly KC6ZB, spearheads island construction on Majuro and is not heard as frequently as when he was on Yap. KX6ZC holds the only currently valid Trust Territory Novice ticket. KX6s ZB, NA and NB all operate from Majuro which is less than 200 yards wide at the greatest span, and all stations are within a few hundred yards of each other. Through close cooperation they divide the band on 20" . . . . . W2CWK gets a bang from the activities of KH6UK who is none other than famed DX contestant W2UK . . . . . W6OVO's Navy hitch allowed him visits with KC6UZ, KG6NAB, KA2NY, VS6s AE, CG and also permitted him to pound contest brass at KH6SP during 1955. Join the Navy and see the (DX) world! . . . . . Antenna difficulties and family illnesses have kept ZC3AC quite inactive but he hopes to be more available DXwise before the year is out.

Europe — Everybody's getting into the act in Monaco. At latest count at least a half dozen 3A2 DXpeditions will have wound up in the record books by the time 1957 rolls around . . . . . F7ER writes of the high popularity of SVØWE on Rhodes and SVØWN, Crete . . . . . There will be LX activity on June 9/10, all bands phone and c.w. Calls to be used include ON4QX/LUX, ON4TQ/LUX, etc. . . . . K2BZT hears that G2RO has accepted a BBC position in the United Kingdom, so "RO" DX treks could be suspended indefinitely . . . . . The suffix "/P" on Norwegian call signs now indicates specifically that such stations are operating in Norwegian Arctic areas — Jan Mayen, Hope Island, Svalbard, etc. Similarly, the suffix "/G" is to be used to designate installations operated in Norwegian Antarctic areas — Peter Island, Bouvet Island, etc. The suffix "/M" indicates shipboard operation but all others merely stand for portable operation in Norway-proper. Incidentally, new Norwegian hams no longer need work a year of c.w. before applying for radiotelephone permits . . . . . W1RAN, with the forces in Europe, has been sight-seeing and ham-visiting all the way from LX to OH2 . . . . . ON4UF protests an influx of spurious QSLs which began in February of this year, so some uncredentialed crumb evidently likes his rhythmic call . . . . . ZB1AY, a big gun in this year's ARRL DX Test, hopes to squeeze in eight more months of Maltese DXing before returning to G3IBS . . . . . Gibraltar's RAF Amateur Radio Club, lightly staffed and almost inactive since last year, will run a heavier schedule from ZB2A henceforth. They're clearing up the QSL backlog now and W8NGO just received his confirmation for a QSO made two years ago . . . . . Sagging G phone activity should be stimulated by new regs which do away with the traditional year of c.w.-only operation following initial licensing . . . . . High c.w. scorers by continents in Germany's 1955 WAE DX contest are HB9NL, W2WZ, PY7AN, FA8DA, 4X4FS and KC6CG. DL1DX took homeland code honors. In the radiotelephone section continental highs were rolled up by G3FPQ, W2SKE, PY2CK, VQ4RF, 4X4CK and KC6CG, with DL1KB the German topper . . . . . SWL-PY2 J. A. Rocha calls attention to Poland's geographical prefix divisions, SP1 through SP9. SP6BZ lists two SP1s, fourteen SP2s, fourteen SP3s, two SP4s, eleven SP5s, eleven SP6s, three SP7s, four SP8s and twelve SP9s as regularly active. SPØ is a prefix reserved for maritime use.

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.

French Indo-China (Cambodia and Viet-Nam), *Republic of Indonesia, Iran, Korea.*

Prefixes to be avoided: *FI8-3W8, PK, EP-EQ, HL.*

No, so far as we know, Poland's PZK society issues no DX certifications of world-wide availability . . . . . W1APA's nextdoor neighbor, W1QAU, pounds the 20-meter key at DL4SS. W7VHH does likewise at DL4EZ . . . . . Fancy four-color QSL designs now are being circulated by ON4 DXers in promoting the 1958 Universal and International Exhibition to be held in Brussels.

Hereabouts — PZ1RM, with gadabout K2CJN at the mike, rattled off about 200 QSOs on 15 phone during this year's ARRL DXtravaganza. Writes Steve: "My five-week business jaunt to the Caribbean in February was a real success. . . . I had the pleasure of meeting more than 25 amateurs in 12 countries." On Trinidad Steve collided with fellow rover W3VKD who managed to man the operating positions of FM7s, PZ1RM, HC2OM and VP1SD during the Test. This guest-operating approach really seems to be catching on! . . . . . Wanderlusting W6NJU is laying plans for a future Navassa Island DXpedition and would like to hear from others interested in joining forces for the venture . . . . . By combining the lengthiest prefix, numeral, and suffix found in the *Call Book* W1ARR comes out with the longest ham call sign of all time: FKS12ARCI/FKS12. A beaut for Field Day, eh? . . . . . And speaking of *rare* DX, K6DDO tells W1ARR that Vladivostok, Siberia, has a nice subharmonic TV signal on 28,100 kc. . . . . An April issue of *Life* carried "Odyssey of a Daft Raft" but mentioned no calls of stations involved in the rescue of the *Kantuta*. SWL S. Hanisch overheard the episode, however, and identifies CM9AA, XE1A, TI2AU and KH6BSO as among those 14-Mc. phones participating in the weird affair. Also prominent in the rescue work were W3QPQ and W6SEG, who were issued special 48-hour temporary authority to use phone on the low end of 14 Mc. Likewise, K2JCK, radio officer on the *Greenville Victory*, played an important role. The operator on the Daft Raft was not a ham . . . . . OVARA's annual picnic invariably attracts a flock of enthusiastic DXers. Check with W4OMW reference your attendance at this event which is to be held at the Evandale, Ohio, police firing range on June 10th. (It's okay, Jeeves. The law won't be using it that day.) . . . . . The simple life *can* pay off in DX, says W6SN. "Crossed the golden rubicon of 250 countries confirmed with no assists from modulators, presclectors, Q5-ers, R9-ers, multiband flop-overs or super-QRO. All 250 were worked on 20 c.w.-to-c.w. while running 800-900 watts, using a 3-element spinner and a 20-year-old NC-101X in the original factory state." Along the same line, K2GFQ has never experienced a phone QSO in 23 years of hamming . . . . . W6NJU received QSLs from LUs 1VV and 8VV on the same day, after working them on the same day previously . . . . . Those PZ1A-calls aren't all new Surinam hams. W2HQL reports a shuffling and reassignment of PZ1 labels.

JA1CV, whose back yard Zepp appeared in our antennas vignette of last month, keeps busy as DX editor of Japan's *Radio Experimenter*. Kazu piles 200 watts onto two 807s and, like most JAs, is adept at brewing his own equipment from miscellaneous parts. Twenty and forty meters are JA1CV's favorites. (*Photo via K6DI*)

The Nite That Skip Was Rite

BY J. P. JESSUP,* W2GVZ

Crazy-On-The-Hudson, N. J.

Dear Joe:

Well, I'm cooped up here and Doc sez I'm crazy as a bedbug. I have no rig, of course, and it's just as well becuz now that I have the shakes, I can't hold onto the bug. Incidentally, last time I heard ur fist it sounded like you had 'em too.

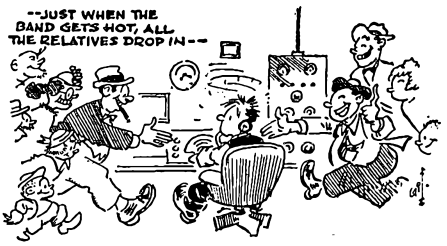
Just becuz I gotta live another thousand years, the Doc sez I'm loony. But there's nuthin else I can do. You'll see. I wuz once as normal as anibody, or at least as sane as ani DXer can be. That is, until that nite in June. That done it!

'Course there were other things that started to make my roof leak and crack my plaster. Like the time those F9s set up shop in Andorra, rite smack in the middle of our hurricane and I cudn't turn the beam against the 110 m.p.h. wind. I just sat there and banged my head in frustration every time they worked another one.

Remember Clipperton? They were always working their home folks until the morning I cut the grass. That's when they worked everybody else. That weakened my foundation a bit more.

My job didn't help any, neither. Two years in a row the company got in a big wing-ding just in time to make me work in the office over the DX Contest week end. A thing like that can really warp a guy. It ain't all debit tho, becuz I got two new ones on the half day off they gave on mi 30th anniversary. Hmmmmmmm — two countries every 30 years is a bit on the slow side.

I'm not alone here. Remember Mike? He lived for 25 years in the same block with one kw. fone and a half kw. c.w. for company. Between splatter, clicks and overload, he averaged mebbe one 100% QSO per week. So Mike finally took his life's savings and bought a place way the heck and gone out in the country. The very first day there, he sees a guy pacing off the lot next door and it turns out to be W2 —, a powerhouse boy who is moving in. They say its the first case in history where a man ever plucked a tree out by the roots and killed another guy with one blow.



Being married has its hazards too. You know, just when the band gets hot, all the relatives drop in for a four-hour ragchew. Or just when the newest Dxpedition lands, ya gotta take the XYL to visit Aunt Minnie. Even when she goes to see the girl friend, it's no gud. Just as YA came thru, the cops called up and sed she had parked the car with the headlites on hours ago, the battery was dead and how about getting the crate out of the restricted parking zone pronto. They ought to have fuses for high blood pressure.

Like Johnny's case, too. He waited until his XYL wuz out of town before putting a beam on top of his roof. She didn't even notice it for three weeks and then Johnny's fast talking managed to save it temporarily. That is, until the November storm slammed an element rite thru the roof into the attic. Yeah, Johnny ain't got it anymore, but he does have a twitch.

Sometimes, it's ur own fault, like in Bob's case. He climbs his telescoping steel tower, steps on the wrong thing and gets a hand and a foot badly jammed when the inner section drops down a bit. There he is, 20 feet up, pinned like a butterfly, yelling his head off from the pain. His brother up in the shower hears the frantic SOS (or rather, QRRR), figgers Bob is across the a.c. lines, and runs three flights down to turn off the juice in the cellar. Wrong diagnosis. So he races back up three flights for a pair of pants and then goes outside. Meantime, a neighbor hears Bob yowling and runs out and looks under the car in the driveway, thinking Bob is under there. By the time they all get together, and get Bob loose, his mental state ain't so gud, neither.

Gess wot really started one-way conversations wid miself was no juice for five days after the big blow last year, just when that guy was giving Zanzibar to everybody else.

But until that nite in June, my shaky mental state wuzn't too evident. It started off natural enuf that nite. I wuz trying to locate an intermittant in my big rig. Just a little thing like the main line fuse going *boom*. Not just a *boom* and that's it, but *boom* now and *boom* then and *boom* some more later on wid no rime or reason. Tracing it down was no gud becuz after you isolated it and fixed it (?), *boom* again ten minutes later.

Fourteen fuses and four hours later I finally

* 337 Hamilton Ave., Glen Rock, N. J.

gave up, put her on QRP, tested and signed once. The band wud be utterly dead by now, but let's look anihow. Jeepers, an S7 sig calling me — signs VQ9. Haw, who's he kidding. So I tell him off, the big phoney. Before I got my beam, I cudn't work the phoneys. Now I don't miss a one. Now an S9 sig calls and signs VR6. The phoneys are really playful tonite. So I bawl him out. Then the roof really falls in. Wot a pile-up. The dopes shud know he is ng. Hey, hold it, it's me they are after. Migosh, 25 S9 plusity plus sigs — a solid wall of sound. QRZ — wot goes on here aniway. *Great Smoking Gridleaks*, they are all new countries, mostly Asians, chasing me. In 35 years, no new country ever called me first before. Mebbe I better work 'em first and recriminate later. These guys are good, too. I always thot that the lousiest operators went to the rarest countries.

Wot reports I'm getting. S9 ain't enuf. They measure it by the number of inches their speakers bounce on the table. Here's one guy that's mad. Just before his speaker shattered, I broke his window. OK, bud, I'll send you a piece of glass air freight in return for your card. Here's a guy squawking about him touching his fones and getting an r.f. burn from mi sigs. OK, buster, I'll pay ur doctors bill if you QSL. Wot's this, please listen for QRP AC5. The pleasure's all mine, kiddo. Hello, here's an S6 report. Wot's wrong? Oh, yes, he *is* using a crystal detector. Golly, wot a workout. And how they fight over me, a real dogfight. I thot only Ws were cutthroats. They act like I wuz the sole remaining W. Ws can't be that scarce. Mebbe the H-bomb blew after all.

Listen, gang, hold it a minute. I gotta go. QWC (remember wot Grandpa called it). I better sober up a minute and let the log cool off. So I go out and look at the beam. Yipes, ya can see the r.f. coming down in glowing arcs, piling up six inches deep on the elements and dripping off on the ground. Skip is really rite tonite. Wow! Better get back at it again.

It took all nite to take care of the howling mass of exotic DX from all corners of the globe. Finally it stopped. Am I beat! Lessee, I already had 200 countries when this thing started and I got 85 new ones tonite. That should make me a top dog. Let's check the Honor Roll. Yep, by a good margin. Hmmmm, it says here not to ferget to renew ur ticket. Mine has a year to go, I think. Let's see, it will run out on . . . OMI GOSH, it expired last week! I am a pirate — a phoney and my new ones won't count. Well, mebbe I can do it again, soon. Wazzat the BC radio is saying. . . . "Scientists said that the phenomenally good radio condx, just ended, will not recur for 1000 years." Aged 52, all I wanted wuz to last thru one more DX cycle and now I gotta make like Methuselah. I GOTTA LIVE ANOTHER THOUSAND YEARS.

Well, Joe, that's wot did it. See ya soon, sooner than ya think becuz ur name is on the waiting list up here. — *Pat, W2GVZ*

A.R.R.L. QSL BUREAU

The function of the ARRL QSL Bureau system is to facilitate delivery to amateurs in the United States, its possessions, and Canada of those QSL cards which arrive from amateur stations in other parts of the world. Its operation is made possible by volunteer managers in each W, K and VE call area. All *you* have to do is send your QSL manager (see list below) a stamped-self-address envelope about 4¼ by 9½ inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner.

W1, K1 — D. W. Waterman, W1IPQ, 99 Flat Rock Rd., Easton, Conn.
W2, K2 — E. F. Huberman, W2JIL, **Box 746, GPO, Brooklyn 1, New York.**
W3, K3 — Jesse Bieberman, W3KT, P.O. Box 400, Bala-Cynwyd, Penna.
W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.
W5, K5 — **Robert Stark, W5OLG, P.O. Box 261, Grapevine, Texas**
W6, K6 — Horace R. Greer, W6TI, 414 Fairmount St., Oakland, Calif.
W7, K7 — Mary Ann Tatro, W7FWR, 513 N. Central, Olympia, Wash.
W8, K8 — Walter E. Musgrave, W8NGW, 1294 E. 188th St., Cleveland 10, Ohio.
W9, K9 — John F. Schneider, W9CFT, 311 W. Ross Ave., Wausau, Wisc.
WØ, KØ — Alva A. Smith, WØDMA, 238 East Main St., Caledonia, Minn.
VE1 — L. J. Fader, VE1FQ, 125 Henry St., Halifax, N. S.
VE2 — Harry J. Mabson, VE2APH, 122 Regent Ave., Beaconsfield West, Que.
VE3 — Leslie A. Whetham, VE3QE, 32 Sylvia Crescent, Hamilton, Ont.
VE4 — Len Cuff, VE4LC, 286 Rutland St., St. James, Man.
VE5 — Fred Ward, VE5OP, 899 Connaught Ave., Moose Jaw, Sask.
VE6 — W. R. Savage, VE6EO, 883 10th St. N., North Lethbridge, Alta.
VE7 — H. R. Hough, VE7HR, 2316 Trent St., Victoria, B. C.
VE8 — W. L. Geary, VE8AW, Box 534, Whitehorse, Y. T.
VO — Ernest Ash, VO1A, P.O. Box 8, St. John's, Newfoundland.
KP4 — E. W. Mayer, KP4KD, 1061, San Juan, P. R.
KH6 — Andy H. Fuchikami, KH6BA, 2543 Namauu Dr. Honolulu, T. H.
KL7 — Box 73, Douglas, Alaska.
KZ5 — **Catherine Howe, KZ5KA**, Box 407, Balboa, C. Z.

1956 ARRL Field Day Rules

Annual Test for Emergency-Powered Stations, June 23rd–24th

FIELD DAY TIME is upon us again! Just about every amateur in the 73 ARRL sections is already aware that June is Field Day month, and that FD packs more fun into one week end than any other operating event. Clubs and other organized groups, functioning under conditions which might be encountered in an actual emergency, will set up and operate multi-transmitter stations independently of normal power facilities. If unable to take part with a group, you can go into action with your mobile rig or at a one- or two-man station afield. Emergency-powered fixed stations, such as civil defense, Red Cross and amateur club stations, are invited to participate in the Class D category (see rule 4).

Clubs should get every member-owned mobile unit on the air and report their aggregate scores to ARRL. Our increased showing by way of individual mobile listings and Club Aggregate Mobile scores is important since such units are deemed indispensable in time of disaster.

The rules and entry classifications, following the pattern that has assured the greatest success and enjoyment in past years, are unchanged. Once on the air call "CQ FD" on c.w. or "CQ Field Day" on phone. Then give the station you work a signal report and your ARRL section or specific location and stand by to receive similar information.

After reading the rules, study these examples designed to assist club secretaries and others in tallying scores.

Example 1

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

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

Example 2

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

65 points (40 QSOs + 25 points for FD message)
× 9 (3 × 3 — power multiplier multiplied by independence-of-mains multiplier)
585
× 1.5 (everything on batteries)
877.5 claimed score

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

Example 3

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

257 points (230 QSOs + 25 + 2)
× 2 (power input over 30 and under 100 watts)
514
× 3 (all gear independent of mains)
1542 claimed score

(*No battery multiplier for either clubs or groups.*)

1956 Field Day

Starts 4:00 P.M. Local Standard Time,* June 23rd
Ends 4:00 P.M. Local Standard Time,* June 24th
* *Not* Daylight Time
(If in Hawaii or Alaska, see Rule 5)

Convenient reporting forms are now available from League headquarters upon request. You may make up your own forms, but please don't forget to include bands used, dates and contact times, calls of stations worked, signal reports sent and received, and sections or locations of stations worked. Reports must also show power inputs and power sources, location and call of station, number of transmitters in simultaneous operation, number of persons participating, club name (if any), and score computations. Mail your logs and summary by July 21st to have your results in *QST*.

It is hoped that all amateurs will support the 1956 Field Day and make it the greatest amateur emergency exercise of all time.

Rules

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

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

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

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

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

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

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

Mobile stations are complete installations including power source and antenna, mounted in or on vehicles and capable

(*Continued on page 146*)

South Sandwich DXpedition

BY J. M. AHUMADA, LU8CW/LU2ZY

I AM A DX MAN. I know that among radio amateurs there are many different varieties, such as those who like mobile work, v.h.f., ragchewing, experimenting, etc. But what I like best are contests and DX operation. So, every time there was a DXpedition, I tried to work them. But always I had the hope that someday *I* would be on the expedition end of the adventure.

Some time ago I realized that there had never been any activity on the South Sandwich Islands, so commencing in 1951 I made attempts to go there. It was not difficult to get call letters for that QTH, but what was really difficult was to actually get over there. Finally, through the cooperation of the Radio Club Argentino and the Argentine Navy, we succeeded in arrangements to set up in the South Sandwich Islands, with transportation to be provided on a Navy icebreaker. Together with Mike Villafane, LU1DZJ/LU3ZY, and Dick Hermelo, LU4ZY, we left Buenos Aires November 23, 1955, and after much stormy weather we arrived at Thule Island on December 13th.

Our first QSO upon setting up our equipment at Thule Island was ZP5AY, and the first W QSO was with W1FH. All told, we worked 771 W stations, 140 on phone and 631 on c.w. Our total QSOs were 1664, with 910 on phone and 754 on c.w. We used a 3-element rotary on 14 Mc., and a long wire on the other bands. The transmitter was a 32V-2, and receivers were a 75A-2 and an SX-71. For power we had a 2-kw. generator. Most of our contacts were on 14 Mc., with a few on 7, 21 and 28 Mc. We had hoped to make more use of 21 and 28 Mc., but conditions on those bands were erratic.

The cold weather didn't bother us particularly, for we had been well fitted out by the Navy, but what was really bad was the wind, which sometimes blew 100 m.p.h. On Christmas Day, during a QSO with PY2CK, a terrible blizzard blew down our tents and antennas. Our operations finally came to a sudden and complete end when a volcano quite near our island began to erupt. It was a Dantesque spectacle to see the lava strike the sea. We sent out an SOS, and in a few hours a Navy helicopter rescued us, on January 13, putting an end to our adventure.

Some people on DXpeditions travel to romantic South Sea islands or exotic Caribbean resorts, but not these boys. In the photo at the left we see LU2ZY and LU4ZY all bundled up for an evening of operating the rig. Despite the cold, it looks as though they were enjoying themselves. At the right is a picture of the "shack", with the off-duty operator clearing out the drifts from the doorway. Obviously, the shack was well supplied with refrigeration. Anyone need a good Field Day location?

Strays

Have you heard the excuse offered by a certain well-known ham for getting a traffic ticket while operating mobile? He says, "I was waiting for the red light to change when the chap on the other end of the QSO said 'Go ahead' — and I did!"

—...—

Skipper Kurt Carlsen, W2ZXM/MM of "Flying Enterprise" fame, reports what he believes to be the first QSL delivered by helicopter. Stanley Butryn, KP4AAO, USN attached to the San Juan Naval Station, P. R. had been working W2ZXM in the bay area recently and immediately took off in a helicopter to deliver the QSL card. Carlsen's ship was making the San Juan landfall when sighted by KP4AAO. He flew the 'copter right over the vessel, pinpointing the topside of the navigating bridge with the streamer and float containing the card inside. Carlsen swears the QSL landed right at his feet . . .

BY ELEANOR WILSON,* W1QON

• For four years we've been reporting amateur liaison with the AWTAR, but perhaps some are hearing about this outstanding annual event for the first time. The following paragraphs are by our good friend Viola Grossman, W2JZX, Amateur Radio Chairman for the third year, who tells us what the AWTAR is all about — she's recruiting for communications help too.

1956 marks the tenth anniversary of the All Woman Transcontinental Air Race, popularly known as the Powder Puff Derby. For the fifth consecutive year, amateur radio has been called on to give an added measure of safety to the race and a feeling of security to all contestants.

Women who enter the race are among the finest pilots in the country. Many are professional pilots whose everyday job is flight instruction, charter flying, crop dusting, etc. A number were members of the famous WASP during World War II and hold commissions in the United States Air Force Reserve.

The race is sponsored by the Ninety-Nines. In 1929, in a hangar at the old Curtiss airfield in Valley Stream, Long Island, twenty-six licensed women pilots met to organize a women's flying club. Their main object was to provide a closer relationship among women pilots and to assist them in aeronautical matters. This nucleus group contacted every licensed woman flyer in the United States — all 117 of them. Ninety-nine responded with enthusiasm. Amelia Earhart became the first president. At her suggestion, the name Ninety-Nines was adopted. Today there are some 1200 Ninety-Niners the world over, and fourteen official national and international aviation records are held by members.

This year the race starts at San Mateo County Airport, near San Carlos, California, on July 7th at 0800 A.M. PST. The race route is a 2300 mile course via Arizona, New Mexico, Texas, Kansas, Missouri, Illinois, and Indiana. Contestants should finish at Bishop Airport, Flint, Michigan, before sundown on July 10th.

Regulations require that a contestant may not fly at night and instrument flying is not permitted. When a contestant reaches a stop-over city by sundown, she must remain there over night and take off at sun-up the following morning. Handicaps are placed on each type of aircraft, and the first plane in is not necessarily the winner. A par speed handicap in m.p.h. has been established for each make and model of aircraft raced. The winner will be that aircraft which averages highest ground speed in relation to its par speed.

Only stock model aircraft single or multi-engine with 350 HP or less may be entered. Entrants must hold at least a private pilot's rating. Prize money of more than $2000 will be apportioned among the first five places. In addition, there will be a number of special awards. The Awards Dinner will be held at Flint, Michigan on the evening of July 11th.

How Amateur Radio Serves

In January each year amateurs are assigned to handle communications in the race stop-over cities. Each year the race takes a different route which means that a different group of amateurs must be contacted. Correspondence is carried on from January thru March among the Race chairman, General Radio Chairman, city radio chairmen, and city race officials. The city radio chairman contacts race officials in his or her city, appoints amateurs to assist and begins the job of setting up communications for the three-day activity.

It has proved most satisfactory to have a fixed and mobile station on two meters right at the airport. The fixed station is usually set up at the airport building and the mobile station on the field to check arrival and take-off of contestants. The two meter fixed station ties in with a fixed station that has both 2 meter and 75 meter equipment. This station is usually high powered and is the key station for that city in the cross-country radio net. The key station keeps three or four schedules a day with other key stations in adjoining cities along the race route. Relay stations between race cities insure reliable communications from West to East and from East to West. During the race headquarters at both the start and finish cities must be kept apprised of the location of all of the planes. Usually about fifty planes are entered in the race. Information exchanged in amateur nets includes:

a) Name of pilot and co-pilot
b) Assigned race number
c) Type of plane (Cessna, Bonanza, etc.)
d) Place of arrival
e) Time of arrival
f) Predicted local weather report for next morning's take-off. The net also handles personal messages for contestants, when requested.

A number of radio clubs have shown a great deal of interest in the derby. There are several along this year's route who have accepted the assignment to assist and have made this a club project.

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

Chairmen for this year's stop-over cities are:
San Carlos, Calif. — *Gertrude Cassady, W6FEA*
Bakersfield, Calif. — *Harryette Barker, W6QGX*
Needles, Calif. — *Louis Taulmun, K6JZD*
Prescott, Ariz. — *Arlo N. Fee, W7BFA*
Winslow, Ariz. — *Roy Edwards, W7REO*
Albuquerque, N. M. — *William Dickson, W5LFT*
Amarillo, Texas — *L. E. Gibbons, W5PCN* (*Jessie Harton, W5HWK*, assisting)
Columbia, Missouri — *Donna Hosey, W0OMM*
Urbana, Illinois — *Grace Lawson, W9RGK*
Ft. Wayne, Ind. — *Jack Miller, W9AB*, and *George Grove, W9BKS*
Flint, Michigan — *F. E. Gary, W8GJH* (*Esther Stuewe, W8ATB*, assisting)

The Girls Need You!

What You Can Do To Help

If you are interested, follow the Race on the air July 7th thru the 10th on 3900 kcs. Skeds will take place at 9:00 A.M. EST; 5:00 P.M. EST; and 9:00 P.M. EST. If you are in or near a stop-over city and can help, contact Viola Grossman, W2JZX, General Radio Chairman, 316 West 84th St., New York 24, N. Y.

The flyers are appreciative of the special type of help we can give them. Let's do what we can to make their flight a safer, smoother one.

—*Viola Grossman, W2JZX*

Coming YL Get-Togethers

Chicago — The Chicago YLRL will have its Third Anniversary Party and Open House Saturday, June 2nd, at the club's rooms at Gompers Park Field House, 4222 Foster Avenue, Chicago. Club station W9DEQ will be on the air from 1:00 P.M. throughout the afternoon.

Rhode Island YLs are invited to attend a luncheon on June 16th at the Grist Mill, Seekonk, Massachusetts. W1VXC, June Burkett, President of the R. I. YL Club, 24 Roger Williams Avenue, Rumford, R. I., will furnish details.

Texas — 26th Annual Convention of the West Gulf Division of the ARRL June 15th, 16th, and 17th, Galveston. Bettye Freiberger, W5VNI, P.O. Box 532, Texas City, Texas, is Ladies Chairman. A variety of special YL and XYL activities include a beach party, meetings, a breakfast for licensed YLs, Ladies Luncheon, semi-formal dance, and banquet.

ARRL National Convention, San Francisco, California

From the Chairman of Women's Activities, Peggy Detsch, W6PCN, comes an outline of the program for YLs and XYLs who attend the Eighth National ARRL Convention. Peggy and her hard-working committee hope that you are making your plans now to be with them for the year's big affair.

The theme of the convention is Something for Everyone, and the YLs and XYLs certainly have not been neglected.

The crowd will gather early Friday at the Civic Auditorium for registration. A special YL booth will assist the girls in finding friends and signing up for YL events. A hospitality room at the Hotel Whitcomb will be open throughout the convention to offer a rendezvous and spot for rag-chewing and relaxation. Manufacturers exhibits will be open by noon Friday, with many first showings of gear promised.

There will be an informal get-acquainted party Friday afternoon, or the afternoon can be spent browsing around beautiful San Francisco. Local hostesses will guide small groups to special places of interest. We'll resist the temptation to do a "Chamber of Commerce" on the attractions of San Francisco — come see for yourself.

The official Convention opening, followed by the ARRL meeting, will take place Friday night at the Auditorium. The same evening there will also be a get-together of YLs and XYLs, and XYLs will witness the first formal initiation ceremonies of SWOOP. (You will have to be an attending XYL to find out what SWOOP is all about.) Informal dancing will follow the meetings, and at the "witching hour" the Royal Order of the Wouff Hong initiation will be held for eligible candidates.

The Saturday program will get off to an early start with top technical talks and demonstrations on various phases of amateur radio. The list of speakers is impressive. If you are willing to forego part of the technical program, buses will load early Saturday morning for the twenty-five mile trip to San Carlos to watch the start of the AWTAR (see story by W2JZX in this column). The group will return to San Francisco for a late luncheon and informal YL meeting, presided over by Vada Letcher, W6CEE. Among the guest speakers will be W6NZP, Evelyn Scott; W5RZJ, Louisa Sando; and your conductor W1QON. Meanwhile the XYLs will be sight-seeing and enjoying lunch at one of the city's famous restaurants.

Saturday night, of course, the banquet and grand ball predominates.

There is so much left for Sunday that we haven't started to timetable the events as this is being written (early April), but group breakfasts and meetings, and mobile contests are definitely on the program, with other attractions sure to come.

Regular pre-registration information can be found under "Coming ARRL Conventions" elsewhere in this issue, but if you are coming and would like to attend the AWTAR take-off, please send a card to Peggy Detsch, W6PCN, 123 Robinhood Drive, San Francisco, California, so transportation arrangements can be made.

Peggy Detsch, W6PCN, Chairman of Women's Activities, ARRL National Convention at San Francisco.

We hope you will be with us July 6th, 7th, and 8th. A memorable time for all is promised.

FD

All set to join in Field Day doings? You'll be in the good company of thousands who wouldn't miss it for anything.

The Los Angeles YLRC, for one YL group, has a hill reserved near Corona "with cabin but without electricity."

It's the Ladies Amateur Radio Klub the girls are waving the banner about. Twenty-one of the 40 members got together at W9SJR's Chicago QTHfto discuss plans for attending the Sixth Midwest YL Convention in Minnesota (May 25th–27th) in a group. W9UON was announced winner of the annual LARK contest, with KN9BUS high novice scorer. Left to right, front row: W9s LDK, SYX, BCA (LARK President), WN9TDC and W9LAS; second row: Evelyn Cudio, W9s AYX, KQC, SJR, UON, Pat Clemens, KN9BUS, and WN9KFC; standing; W9s IFT, IWP, BCB, LOY, IKS, QXI, YXK, and RUJ.

♦

The girls will use club call W6MWO on all bands, two thru eighty. But details come later.

The big dates are June 23rd and 24th. Let us know how you make out.

— ··· —

WAC-YL Custodian W6PCA, Opal, announces that certificates Nos. 5, 6, and 7 have been issued to VK3CX, JA1AA, and G3DO respectively. W2QHH, ZL1BY, G4ZU, and CE5AW were the first four to receive the award, in that order. All are OMs — YLs, please note.

First YL Novice WAC

Now a YL has done it too! Following closely on the heels of OM KN6JQJ, the first novice amateur to come up with the Worked All Continents certificate (see How's DX, March, 1956), Ruth S. Cowgill, WN8ABM, has become the first YL to earn the award. From her Columbus, Ohio QTH Ruth worked LU8EE, DU7SV, WL7BKZ, ZS6AJO, SM7BPO, JA3BB within a six-month period. Congratulations, Ruth, you've pioneered for the rest of our YL novices.

Keeping Up With the Girls

The net of the SPARCYLs (St. Petersburg) meets Monday at 8:00 A.M. EST on 3850 kc. W4BIL, founder of the net, is NCS, with W5WPD alternate. . . . Meeting time of the Southern Belle net is now Thursday at 0830 CST on 3920 kc. . . . Installed as new officers of the N. Y. C. YLRL at the annual luncheon were W2IGA, President; W2QWL, Vice President; and W2EEO, Treasurer. . . . New officers of the Texas YL Round-Up Net are W5EGD, President; W5HCE, Vice President; W5LGY, Secretary-Treasurer; W5YRT, Publicity Chairman; W5EGD is also NCS of the club net, with K5BNQ alternate. . . . OO W1RLQ, Chata, participated in three of the ARRL's four official Frequency Measuring Tests in 1955. . . . W4BLR, Kay, is conducting code and theory classes for eight women and one OM. . . . SCM W1ALP tells us that WN1s FEY, Melva, and EVS, Phyllis, are active in the Mass. State Mobile net on 145.5 at 9:00 P.M. daily. . . . There are

(Continued on page 154)

In between out-of-season snow-storms sixty-one W1 YLs met on April 7th at Domine Manse in Bedford, Mass., for the second meeting of the newly-organized Women Radio Operators of New England. Seated at the table are W1s UFM, BBS, WOS, BFC, and YPG. (*upper right*) — Congratulating W1CEW, Mary (*center*) upon becoming the first amateur to receive the Rhode Island YL Certificate are W1VXC, June, President of the R. I. YL Club, and W1WED, Ruth, certificate custodian. (*lower left*) — The two YLs from Nantucket Island, W1ZEJ, Mary, and WN1IBA, Ruth, flew over to the mainland for the occasion. Gathered around pianist W1NUO are W1sYNI, YAN, HOY, MWI, and FOF. Other YLs who attended were W1sAQJ, BBS, CAX, DBX, EDU, FEY, FOF, FTJ, HOY, HUH, MWI, NAD, NHN, OME, PRF, QON, RLQ, RYJ, SCS, SVN, TRE, UHV, UPK, VBT, VFK, VYH, YHL, YPH, YPW, YQL, ZEN, ZJS, ZOK, and WN1sEIT, EVS, EYS, GIE, and GRL.

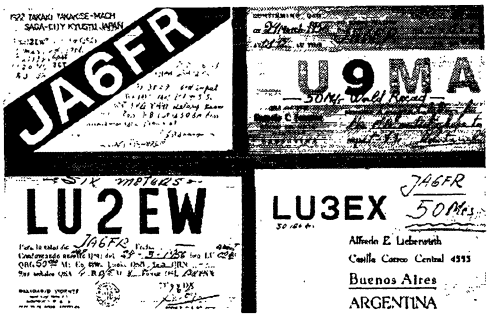
♦

The World Above 50 Mc.

CONDUCTED BY EDWARD P. TILTON, W1HDQ

WHEN CE1AH, Chuquicamata, Chile, and J9AAO on Okinawa made their 10,500-mile contact on 50 Mc. back in 1947, everyone figured that here was a record that would never be broken. A fabulously long shot had paid off; probably never again would two 6-meter operators so far apart be on the air at the right time, and aiming in the right direction. And where on earth could we find 6-meter activity at two more widely-separated points?

But the impossible happened. As reported briefly last month, the record was broken by a substantial margin March 24th, when LU9MA, Mendoza, Argentina, worked JA6FR, Kyushu Island, Japan, an estimated distance of 11,200 miles. Within an hour the record was extended still further, when JA6FR worked LU3EX and LU2EW, in the Buenos Aires area, some 200 miles beyond LU9MA. A fact worth noting about



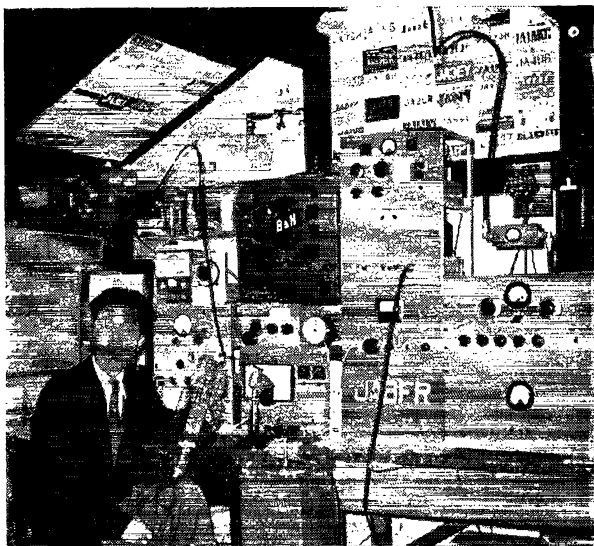
The evidence and . . . .

these QSOs is that they were the result of 6-meter operation only. No preparatory work was done on any lower frequency.

That they were no fluke has been demonstrated since. LU9MA worked JA3JJ and had partial contact with JA2IF on April 3rd, at 2325 and 2340 LU time (2 hours earlier than EST). JA2AQ was heard briefly on the 4th at 2345. Both stations were worked with good signals in the first few minutes of April 7th.

JA1AN, V.h.f. Manager for JARL, sends us the following summary of 50-Mc. DX worked in 1956 by the very active and alert JAs, who now number some 600 on the v.h.f. bands. 1/22: VK4NG — JA1AHS, 1236 JCT. 3/24: CE1?? heard by JA6FR intermittently for about an hour, beginning at 1058. LU9MA, LU2EW, LU3EX — JA6FR, 1315–1443. 4/1: VK2RU — JA1ANO, JA1ID, JA1GP, JA3JJ, JA2GJ, JA-2QR, 1317–1415. 4/2: VK2RU — JA1NF, JA1ID, JA1GP, JA2AQ, 1330–1345. LU9MA — JA3JJ, JA2IF, 1120–1150. Also heard by JA2AQ. 4/5: VK4KK — JA1GP, 1308. Also heard by JA2IF at this time, and again on the 6th. 4/7: LU9MA — JA3JJ, JA2AQ, 1135 — 1217. Also heard by JA1GP. 4/9: LU3EX — JA1IF, 1043. All this work was on voice, and on frequencies as high as 50.7 Mc. JA1AN reports that Japanese amateurs do their local work on 51 Mc., plus or minus 500 kc., leaving the first 500 kc. open for DX work. Not a bad idea for Ws!

As phenomenal as this globe-circling DX is, probably of even greater interest to Ws is the news that 50-Mc. DX between this country and South America has once again broken loose. The first contact of the current cycle between the United States and South America was made on March 28th, as reported last month. The band was open on the 31st again, and up to April 9th it was open almost daily thereafter, mostly from Southern California to Argentina. The biggest day thus far was April 7th, when LU9MA worked, in addition to JA3JJ and JA2AQ, K6EDX, Fresno, Cal., W6UOV, San Mateo, W6JKN, San Francisco, W6OCU/6, K6CRE/6, K6GTG, Arlington, W6UPS, Reedley, W6BJI, Fresno, K6CGT/6, W6AMD, Santa Barbara, K6GYK, Bellflower, K6LFK, N. Hollywood, W6NSW, Norwalk, K6HYY, Los Angeles, K6JBW, Fontana, K6PCM, K6POE and W6BWY, locations unknown, W6ANN, San Pedro, K6HHJ, Azuza, W6ABN/6, K6KSV, Edwards, K6GAS, San Diego, W6NAW, Los Angeles, K6OBO, Pacoima, and W7VMP, Phoenix, Ariz. We print this imposing list in detail, in the order in which



» . . . the station »

the contacts were made, to show the considerable extent of the opening. The session lasted from 1535 to 1930 Argentine time, or 1035 to 1430 PST.

Several other countries have been worked. W6OJF says that K6HYY worked ZP2BO, Paraguay, and some W6s are reported to have worked into Australia. W6ABN, W6ANN and W7VMP worked CE3CC on the 7th. LU9MA heard or worked W6s on April 3rd and 6th, and on the 4th he worked W5FXN and K5ABW, Austin, Texas, and W5EXZ and W5GL, San Antonio, in an evening session that ran from 2220 to 2250 LU time. About a dozen LU calls are listed as worked by the various California stations. LU9MA says that in addition to many of his countrymen, other Latin American 50-Mc. stations include XE1GE, XE1FU, TG9JW, PZ1AE, VP6PV, OA4AE, OA4C, PYs 1RK 1MK 2AXX 3BW 6FI, CP5EK, CE1AH and CE3CC.

Other forms of v.h.f. DX were not lacking during April. Aurora was frequent for v.h.f. men of the Northeast, and Sunday the 15th produced one of the most widespread sporadic-*E* openings ever experienced so early in the spring season. Usually *E*s DX is confined to small areas and the openings are of short duration, until the latter part of May. On April 15th, however, early birds report that skip contacts were possible as early as 0830 EST, and the last DX was heard around 2200. For nearly 14 hours the band was jumping with signals, the skip being as short as 400 miles, and as long as 1400.

To report contacts made in detail would fill an issue of *QST*, but a wonderful time was had by 50-Mc. men old and new. Examples of what it was like: W2COT, Maplewood, N. J., logged 57 DX stations in 17 states. W4GJO, Ft. Myers, Fla., worked 95 stations in 14 states. K2ITP and K2ITQ, respectively freshman and junior in high school in Riverton, N. J., getting on for their first 6-meter opening, worked 10 states. Equipment: modified Heathkit AT-1 and a converted f.m. receiver, hitched to a 2-element quad antenna, nonrotatable! Scores of operators throughout the eastern half of the country reported hearing all call areas except 6 and 7. In June or July this would not be extraordinary, but coming in April it seems to indicate that we have a tremendous 50-Mc. DX season coming up.

Two-meter men were not left out of the April treat. Aurora DX was frequent, a high point being what was perhaps the longest aurora session on record April 21st and 22nd. This was observed as early as 1400 EST, lasting until 2100 on the first phase. It picked up again late Saturday night and carried through to at least 0500 Sunday morning. A contact made between W1REZ, Fairfield, Conn., and W9EGH, Goshen, Ind., at 1456 is the earliest we've ever heard of such DX being worked on 144 Mc. via the aurora. The opening was widespread geographically, too. It's not often that auroral propagation reaches as far south as Georgia, but on this one W4IKK, Rome, Ga., began hearing aurora signals on 50 Mc. at 1655. He worked WØUSQ, Davenport, Iowa, for his first aurora contact at 1704. He raised W9BRN, Decatur, Ind., at 0203 Sunday morning. The 49.8-Mc. signal could be heard by either ionospheric scatter or aurora, depending on beam direction, and it provided a fine indication of aurora DX possibilities.

This aurora break gave tremendous impetus to the CQ V.H.F. Contest, resulting in county multipliers that may be hard to equal in any future affair of that nature. Who arranged the propagation for that party?

50 Mc. WAS

WØZJB	48	W4OXC	41	W8LPD	44
WØBJV	48	W4MS	40	W8OJN	43
WØCJS	48	W4FNR	39	W8LPD	42
W5AJG	48	W4IUJ	38	W8YLS	41
W9ZHL	48	W4RFR	37		
W9OCA	48	W4BEN	35	W9ZHB	48
W6OB	48	W4IKK	31	W9QUV	48
WØINI	48	W		W9HGE	47
W1HDQ	48	5VY	48	W9VZP	47
W5MJD	48	W5SFW	47	W9RQM	47
W2IDZ	48	W5GNQ	46	W9ALU	47
W1LLL	48	W5ONS	45	W9QKM	47
WØDZM	48	W5JTI	44	W9UIA	45
WØHVW	48	W5ML	44	W9UNS	45
WØWKB	48	W5FSC	44	W9MFH	40
		W5JLY	43		
W1CLS	46	W5JME	43	WØQIN	47
W1CGY	46	W5VV	42	WØNFM	47
W1LSN	45	W5FAL	41	WØTKX	47
W1DJ	41	W5HEZ	41	WØKYF	47
W1RFU	41	W5HLD	40	WØJOL	46
W1SPX	36	W5FXN	38	WØMVG	46
W1IFOS	32	W5NSJ	24	WØTJF	44
W1WAS	23	W5ZVF	23	WØURQ	44
				WØJHS	43
W2MEU	47	W6WNN	48	WØPKD	41
W2AMJ	46	W6ANN	45	WØIPI	43
W2BYM	46	W6TMI	45	WØORE	37
W2RLV	45	W6IWS	41	WØUSQ	36
W2FHJ	45	W6CAN	40	WØZTW	36
W2GYV	40	W6ABN	35	WØVIK	34
W2QVH	38	W6GCG	35	WØFKY	32
W2ZUW	36	W6BWG	33		
W2ORA	34	W6OJF	31	VE3AET	44
K2AXQ	32			VE3AIB	35
K2JNS	30	W7HEA	47	VE1QZ	34
		W7ERA	47	VE1QY	32
W3OJU	46	W7BQX	47	VE3DER	31
W3TIF	42	W7FDJ	46	VE1EF	28
W3NKM	41	W7DYD	45	XE1GE	25
W3MQU	41	W7JRG	44	CO6WW	21
W3OTC	40	W7AQD	44	LU9MA	11
W3KMV	39	W7BOC	42		
W3RUE	38	W7JPA	42	Calls in **bold** face are holders of special 50-Mc. WAS certificates listed in order of award numbers. Others are based on unverified reports.	
W3MXW	38	W7FIV	41		
W3LFC	37	W7CAM	40		
W3FPH	35				
		W8NSS	46		
W4FBH	46	W8CMS	46		
W4CPZ	45	W8NQD	45		
W4EQM	44	W8UZ	45		
W4QN	44	W8RFW	45		
W4FLW	43	W8SQU	45		

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

Long-distance relaying is a tried and proven method of promoting interest in the v.h.f. bands. In the years before World War II, the ARRL v.h.f. parties were built around relaying of messages, as well as the running up of large contact totals. They provided both good fun and helpful practice in message handling for participants. Their only weakness was that they were difficult to score properly, and the checking and reporting of them was too time-consuming to be practical when v.h.f. contest activity began to develop on anything like today's nationwide scale.

This had nothing to do with the basic appeal of the message-relay idea, and there have been frequent attempts to promote v.h.f. relays over the years. The most successful

were the 1954 and 1955 relays organized by the Two Meter & Down Radio Club of Southern California. As a result of prodigious effort by this group, the Albuquerque V.H.F. Club, and individual amateurs and clubs across the country, Memorial Day week end, 1954, saw messages handled both ways across the United States, entirely on 144 Mc. (Details in *QST* for August, 1954, page 62.) A Canada-to-Mexico relay was pulled off by the same methods in 1955, using the week end of the June V.H.F. Party to assure plenty of portable stations in strategic high spots.

This year the Two Meter & Down Club proposes to combine both relays, crossing the country four ways in a single day. The plan: At 0600 PST W6EMM (the Club station) will originate a message for W1AW. At 0700 PST K6AM, at the Mexican Border, will start one for VE7FJ, and VE7FJ will originate one for K6AM. At 0900 EST an East Coast station will dispatch a message to W6EMM. The rest is up to 2-meter men along the way. Experience in previous relays showed clearly that advance arrangements are necessary to complete success. The date is June 9th, the first day of the June V.H.F. Party. Messages will be well on their way before the Contest starting time, but the portables in the field for the party will be important in forging solid chains of 2-meter stations across the country along both north-south and east-west routes. Prospective participants are urged to contact Donald K. Goshay, W6MMU, Chairman (for the Two Meter & Down Club) of the Third Annual Relay, 8352 Westlawn, Los Angeles 45, Calif.

High-powered c.w., big antennas and regular schedules on 144 Mc. have paid off for W7LHL, Seattle, Wash., W6AJF, Sonoma, Calif., and W6NLZ, Los Angeles. W6AJF and W6NLZ have been working regularly, though with very weak signals, over the mountainous path of some 370 miles. Meteor-scatter skeds between W7LHL and W6AJF produced burst signals regularly, and a two-way contact was made on April 21st, during a meteor shower.

The elevation at W6AJF is 60 feet above sea level, and there are 2000-foot mountains less than a mile from Frank's location, in the direction of Seattle. Best results are obtained with the beam tilted up about 5 degrees, for the 640-mile hop over the mountains to W7LHL. The beam is levelled for the Los Angeles skeds. W6AJF runs a kilowatt input to a pair of 4X250Bs. W7LHL has a pair of 826s, taking several times their rated input. W6NLZ runs a pair of 4X500As. Horizontal polarization is used for the skeds, though vertical has been used with W6NLZ at times. Noise level is lower on horizontal, but there is more trouble with Navy and commercial harmonics when it is used at W6AJF.

Use of s.s.b. on 144 Mc. by W2JJC, New Market, N. J., and W3HWN, Mechanicsburg, Pa., is making converts among the 2-meter fraternity. In addition to his 2100 sked with W1DXE and other W1s, W2JJC now works W3HWN at 2130 and W3YHI at 2200. This sked, kept Sunday through Wednesday, has netted contacts with W4s JCJ DWU and AO. The s.s.b. at W2JJC continues to provide a degree of readability on voice that amazes the users of a.m. W3HWN's low-power s.s.b. also does a fine job with the D.C. area W3s and 4s.

W3YHI is trying for W1 and W2 contacts on c.w. nightly at 2100. He hears quite a few stations out to 350 miles or so more or less regularly, but is having little luck raising them. Look for him on 144.312 Mc.

The 50-Mc. s.s.b. signal of W1CLS, Weston, Mass., has stirred up a bit of a rumpus among inhabitants of the low end of the band in W1, a reaction that makes very little sense when we remember that there is at least 3000 kc. of practically unused space left. Even if we refuse to recognize that the "splatter" of a properly operated s.s.b. station is generated *in the receiver*, and that such interference is avoidable with the employment of suitable receiving techniques, we still have little reason to complain of interference while so much of the band remains vacant.

The widespread opening of April 15th gave us a taste of what the band will be like through the early summer. There were hundreds of signals in evidence, with at least two thirds of them stations that have come on the air in the past few months. There was considerable talk of QRM, and of the need for higher power to do the job under today's "crowded" conditions. But how crowded was the band, actually?

A quick run across the first megacycle of the band would give the impression of bad QRM. There were plenty of heterodynes, and lots of overlapping of strong signals. But when the band was scanned carefully with a receiver having good skirt selectivity it could be seen that the QRM was in a few well-defined batches. There were wide-open spaces, even in the first 500 kc. of the band. Reason: surplus crystals. The first 100 kc. is loaded, naturally, but above that the worst spots are 50.1, 50.25, 50.4, 50.55, 50.7, etc. These are the 8350, 8375-, 8400-, 8425- and 8450-kc. bargain crystals. Lesser pile ups occur on other popular surplus-rock frequencies.

Crystals at 25 to 75 cents each are attractive buys, but they are generating needless QRM for both 50- and 144-Mc. men. Save the surplus crystals for net operation, and either order some in-between rocks for general use or doctor up the surplus ones to shift their frequencies a bit. *QST* for February, page 44, shows one simple way to vary the crystal frequency and still retain the obvious advantages of crystal control.

And let's use the band to better advantage. In a good sporadic-*E* opening the low edge has no propagation ad-

(*Continued on page 160*)

2-METER STANDINGS

States	Call Areas		Miles
W1FZJ	21	6	1120
W1REZ	20	6	875
W1RFU	19	7	1150
W1HDQ	19	6	1020
W1UIZ	17	5	680
W1CCH	17	5	670
W1IZY	16		750
W1KCS	16	5	600
W1CLH	16	5	565
W1IEO	16	5	475
W1AJR	15	5	600
W1AZK	14	5	650
W1MNF	14	5	600
W1BCN	14	5	650
W1DJK	13	5	520
W1MMN	13	5	520
W2ORI	26	8	1000
W2NLY	23	7	1050
W2BLV	22	7	1020
W2AZL	21	7	1050
W2UTH	19	7	880
W2AZP	19	7	650
W2AMJ	19	6	780
W2OPQ	19	6	—
W2DWJ	19	6	630
K2CEH	18	7	910
W2AOC	18	6	660
W2KIR	18	6	—
K2IXJ	17	6	925
W2WFB	17	6	900
K2IEJ	17	6	620
W2PAU	16	6	740
W2PCQ	16	5	650
W2LHI	16	5	550
W2RXG	16	6	675
W2CFT	15	5	525
W2BRV	15	5	590
W2FHJ	15	5	435
W3BGT	28	8	740
W3RUE	25	8	950
W3KCA	21	7	—
W3GKP	20	6	800
W3KWL	19	7	740
W3NKM	19	8	660
W3IBH	19	7	650
W3TDF	19	6	720
W3BNC	18	7	750
W3FPH	18	7	—
W3LNA	16	7	720
W4HHK	28	9	1280
W4AO	23	7	950
W4MKJ	20	8	725
W4PCT	20	8	—
W4JCJ	19	6	660
W4JFV	18	7	830
W4OLK	18	6	720
W4VLA	17	7	825
W4UMF	17	7	600
W4TLV	16	7	1000
W4HJQ	15	7	650
W4CLY	15	5	720
W4ZBU	14	5	800
W4OXC	14	5	500
W4JHC	14	5	720
W4WCB	14	5	740
W4TCR	14	5	720
W4UBY	14	5	435
W4WNH	13	7	650
W4IKZ	13	6	720
W4JFU	13	5	720
W4SOP	13	5	680
W4CPZ	12	5	650
W4UDQ	11	5	850
W4MDA	10	4	680
W5RCI	21	7	925
W5JTI	19	7	1000
W5AJG	13	5	1260
W5HEH	12	7	830
W5ABN	11	3	780
W5QNL	10	5	1400
W5CVW	10	5	1180
W5MWW	9	4	570
W5ML	9	3	700
W5SWV	8	3	600
W5ERD	8	3	570
W5FEK	8	2	580
W5VX	7	4	—
W5VY	7	3	1200
W5ONS	7	2	950
W5FSC	7	2	500
W6WSQ	5	3	1380
W6NLZ	4	2	400
W6DNG	4	2	350
W6ZL	3	2	1400
W6BAZ	3	2	320
W6MMU	3	2	240
W6ORS	3	2	200
W6LSB	2	2	360
W7VMP	6	4	1280
W7LEE	5	3	1020
W7JU	4	2	353
W7YZU	3	2	240
W7JUO	3	2	140
W8WXV	28	8	1200
W8LPD	25	8	750
W8SFG	24	8	850
W8RMH	24	8	800
W8DX	24	8	720
W8SRW	23	8	850
W8SVI	22	8	725
W8JWV	21	8	710
W8BAX	21	8	685
W8WRN	20	8	670
W8EP	18	7	800
W8ZCV	17	7	970
W8RWW	17	7	630
W8WSE	16	7	800
W9KLR	25	8	850
W9EQC	24	8	920
W9EHX	24	7	725
W9FVJ	23	8	850
W9BPV	23	7	1000
W9ZHL	28	7	690
W9WOK	22	8	860
W9UCH	22	8	750
W9UED	22	7	960
W9KPS	21	7	660
W9GAB	20	7	750
W9MUD	19	7	640
W9MAL	19	7	600
W9REM	19	6	—
W9LF	19	6	—
W9ALU	18	7	800
W9JGA	18	6	720
W9MBI	16	7	660
W9JIY	15	7	560
W9BOV	15	6	—
W9LEE	15	6	780
W9DSP	15	6	760
W9DDG	15	6	700
W9FAN	14	7	680
W9QKM	14	6	206
WØEMS	27	8	1175
WØGUD	25	7	1065
WØIHD	24	5	870
WØUOP	18	6	—
WØONQ	17	6	1000
WØINI	15	5	830
WØOAC	14	5	725
WØTJF	13	4	—
VE3DIR	26	8	915
VE3AIB	24	8	910
VE3DER	16	7	820
VE3BQN	15	7	790
VE3BPB	13	6	715
VE2AOK	12	5	550
VE3AQG	11	7	800
VE1QY	11	4	900
VE7FJ	2	1	365

Hints and Kinks For the Experimenter

CRYSTAL-CONTROLLED 28-MC. OPERATION WITH THE 10A, 10B and 20A SSB EXCITERS

THE SIMPLE circuit shown in Fig. 1 provides crystal control for the 28-Mc. output of Central Electronics SSB exciters. The circuit can be built into the v.f.o. cabinet and coupled to the

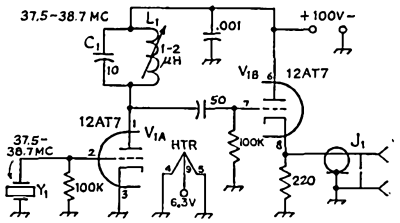


Fig. 1 — Circuit of DL4YU's crystal-controlled SSB unit. All capacitors less than 0.001 μμf. are in μf. All resistors are ½ watt.
J_1 — Coaxial receptacle.
L_1 — 1–2 μh. slug-tuned (North Hills 120-A or CTC 10-Mc. type. Turns removed experimentally from either type).
Y_1 — Overtone crystal. See text.

v.f.o. input terminal of the exciter via coaxial cable.

One half of a type 12AT7, V_{1A}, is used in a conventional triode oscillator circuit. The crystal used with the oscillator is a relatively inexpensive third overtone type manufactured by International Crystal Mfg. Co., Inc. The frequency of the crystal should be in the 37.5- to 38.7-Mc. range, and the tuned plate tank for the circuit, C_1L_1, must resonate at the crystal frequency. A small trimmer capacitor and a 1-μh. inductor may be used in place of the fixed capacitor and the slug-tuned coil.

Output from the oscillator is capacitance coupled to the grid of V_{1B}. This half of the tube works in a cathode follower circuit and provides low-impedance output for feeding directly into the coaxial cable. J_1 is the output connector.

To determine the frequency of a crystal for the oscillator, first select the 28-Mc. frequency that will be used. The crystal frequency will be found by adding the 28-Mc. frequency to 9 Mc., the latter being the frequency supplied by the SSB generator.

— *Jim Freund, DL4YU/W5QMI*

HOT TUBE EXTRACTOR

IF YOU need or want a practical gadget for removing hot tubes, find an old vibrator and then remove the rubber lining from its case. This rubber cup will be nearly a perfect fit for octal-based tubes of the GT type and can be compressed to provide a good grip on any of the popular miniatures.

[Editor's Note: This handy hint was suggested by Laurence Geis, W9OKF, Felix W. Mullings, W5BVF, and John Goshert, SWL/W6.]

USING A CLAMP TUBE WITH PLATE-MODULATED R.F. AMPLIFIERS

THE PROBLEM of clamp-tube conduction on positive modulation peaks, described by W9DTC in *QST* for December, 1955, finds a ready solution. A clue is contained in the words "whenever the plate-screen potential is raised to approximately 350 volts."

If the tube is pentode-connected, using the plate alone to provide the clamping load, while feeding the screen from a separate voltage source, advantage may be taken of the characteristic of screen-grid tubes which makes their plate-current roughly dependent upon screen voltage rather than plate voltage.

In the circuit shown as Fig. 2, the plate of the clamp tube is connected to the screen of the protected stage and the screen of the clamp tube

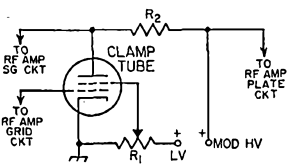


Fig. 2 — Screen clamper circuit for protecting plate-modulated screen-grid power tubes. R_1 is referred to in the text. R_2 is the screen-dropping resistor for the r.f. power tube.

is tied to a bleeder tap providing approximately 100 volts. If this tap is properly selected, screen dissipation may be kept within rating under key-up conditions, while the protected stage actually has lower key-up screen voltage and therefore lower idling plate current. Since the bleeder tap does not change in voltage with modulation, the clamp tube will not conduct on modulation peaks. Key-up, however, the stiff voltage on the clamper screen allows its plate to draw a heavier current than can be drawn if triode connected.

This clamp-tube circuit was not originated at W2KTF. It is used in several commercially-designed amateur transmitters.

— *Charles Baker, W2KTF*

[Editor's Note: See page 56, *QST*, January, 1953 for tetrode clamp-tube data originally presented by W2FBA and W4HCV.]

NOTES ON THE HEATHKIT DX-100 TRANSMITTER

THE FOLLOWING suggestions are offered to anyone who owns or contemplates purchase of a DX-100 transmitter. Although the unit is a popular rig as it stands, it can be made more convenient to handle, operate and service by the addition of several minor modifications.

First of all, the four crystal sockets for the transmitter are mounted on the *inside* of the cabinet. Therefore, crystal changing requires the removal of a dozen or more screws and some wrestling with a chassis weighing approximately 100 pounds. This problem can be easily and quickly solved by mounting a crystal socket on the front panel just above the power switch. A short length of 300-ohm cable and a Twin-Lead plug may be used for connection between the new socket and one of the internal sockets.

A pair of utility handles mounted on the top edges of the cabinet will permit more convenient handling of the rig. Mounting of the handles on the sides of the cabinet is not recommended because it prevents a receiver or other piece of equipment being placed directly next to the transmitter. A second pair of handles, mounted on the front panel, will facilitate more convenient removal of the chassis for crystal changing, tube replacement, etc.

The type 1625s in the modulator are the only tubes in the transmitter that may, in the case of failure, create a local procurement problem. Should this situation arise, it may be solved by adapting the modulator circuit to use 807s. This is accomplished by replacing the existing 7-pin sockets with a pair of 5-pin medium sockets, and by wiring the latter as indicated in Fig. 3. Except for the sockets and tubes, no other substitution of components is necessary.

Finally, it is recommended that the "Plate" switch be replaced with one of the compact

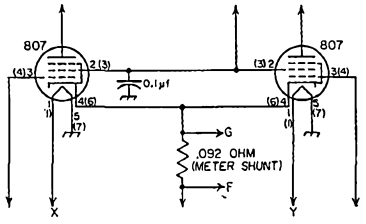


Fig. 3 — Wiring of the 807 tube sockets for the DX-100 transmitter. Pin numbers in parentheses apply to the 7-pin sockets for the 1625s. Arrows marked F, G, X and Y are designations found on the Heathkit circuit diagram. All other arrows point to original circuit wiring.

heavy-duty types. Considerable sparking occurs within the original switch whenever it is thrown from the transmit to the receive position, thereby indicating the possibility of breakdown at some inopportune moment.

— *Paul B. Boivin, Jr., W1ZXA/2*

—•••—

While investigating the cause of a gradual dropping off of drive to the final amplifier of a DX-100 transmitter, it was determined that the 27K ½-watt grid resistor in the 5763 driver stage was changing resistance due to overheating. Replacement of the ½-watt job with one of larger wattage rating cured the trouble.

Incidentally, a small electric fan was used to locate the overheated resistor. The beam of air from the fan was shot around various components until the culprit was located. Naturally, once the overheated resistor was cooled, operation of the transmitter returned to normal. This little hint is passed along because it may prove useful in many other cases of trouble shooting.

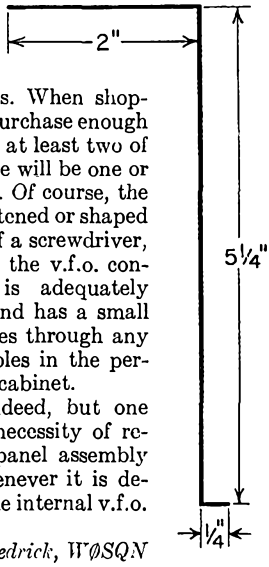
— *Charles M. Kugel, W4KOS*

[Editor's Note: Capt. Gilbert L. Countryman, USN, W3HH, reports that drive difficulties encountered with his DX-100 were also cured by substituting a 2-watt resistor for the ½-watt unit referred to by W4KOS.]

[Editor's Aside: The scheme used by W4KOS is just the reverse of an old Navy system, where we let it run and watched for smoke!]

—•••—

The little gimmick shown below is used for the alignment of the v.f.o. when the transmitter is enclosed in its cabinet. The stiff piano wire used in making the tool is available at most hobby shops. When shopping for piano wire, purchase enough for the fabrication of at least two of the tools so that there will be one or more spares on hand. Of course, the ¼-inch section is flattened or shaped to resemble the tip of a screwdriver, and fits the slots on the v.f.o. controls. Piano wire is adequately rugged for the job and has a small diameter which passes through any of the ventilation holes in the perforated cover of the cabinet.



A simple tool, indeed, but one that eliminates the necessity of removing the chassis-panel assembly from the cabinet whenever it is desirable to touch up the internal v.f.o. controls.

— *T. G. Pedrick, WØSQN*

MODIFYING THE HEATHKIT AT-1 TRANSMITTER FOR OPERATION ON 160 METERS

ALTHOUGH the Heathkit Model VF-1 v.f.o. delivers output at 160 meters, the popular AT-1 transmitter is not designed for operation at frequencies below 3.5 Mc. Those wishing to use the combination at 160 meters may do so after making a very simple modification to the power amplifier of the transmitter.

The existing plate tank for the r.f. amplifier will tune the 160-meter band if an additional 350 μμf. of capacitance is connected in parallel with the 3.5-Mc. coil and its associated padder capacitor (68 μμf). The required capacitance may be obtained by connecting a combination of mica capacitors in parallel. A switch of good quality

(Continued on page 156)

Correspondence From Members-

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

IT SEEMS. . . .

4537 Jefferson St.
Apt. 303
Kansas City, Missouri

Editor, *QST:*

The League is to be congratulated for the editorial in the April issue of *QST*, concerning the growing trend in our avocation of amateur radio to equip our stations with "store-boughten" gear as the editorial puts it, and to deviate from the traditional role of ham radio in planning, designing and building the equipment we use. Certainly, the commercial gear offered the radio amateur is an amazing and wonderful thing — a tribute to the manufacturers who make it and, too, for the lucky amateur who can afford to acquire and use it.

But wonderful as is most of this highly-developed equipment available to the amateur, to the curious and those eager for knowledge and the insatiable desire to experiment and to build, mere operation of an assembled unit is a most passive approach to an otherwise stimulating pursuit. And, incidentally, if by some dire chance something starts sizzling or popping within those beautiful innards — that's when the fun begins!

We recently had to make a move and couldn't take the big, bulky BC610E which was our pride and joy into our new apartment. We traded the rig for one of the popular 150-watt kits — we could have made the same trade on the completely-wired, tested (and guaranteed) units, but honestly we've had a tremendous time putting that thing together and the glow of satisfaction gained with a feeling of accomplishment — and knowing what was inside that box!

— *Harry S. Belove, WØERD*

110-38 216th Street
Queens Village 29, L. I., N. Y.

Editor, *QST:*

Your editorial in April *QST* sure hits the nail on the head. . . .

— *W. C. Uzzell, W2BNX*

15 Church Street
Fair Haven, New Jersey

Editor, *QST:*

Congratulations on your splendid editorial in the April, 1956 issue of *QST*.

I agree with you 100%. This idea of store-bought stations, whatever else it is, is *not* amateur radio. . . .

— *Fr. Charles L. Wood, W2VMX*

106 South 5th Ave.
Ilion, New York

Editor, *QST:*

Amen to "It Seems to Us" in April issue just out . . . A look at the ads of radio houses in *QST* will always show a list of equipment for sale second-hand that the original purchaser became dissatisfied with, and dared not alter or tamper with lest the resale value become lost. Amateur radio needs more Solder-Slingers. . . .

— *Ken Hanson, W2RKU*

Vermillion, South Dakota

Editor, *QST:*

May I commend your editorial in the April issue of *QST*, relative to those radio amateurs who don't know (and don't care to know) what is going on behind the panel. How can we justify our existence if too many amateurs don't have even the minimum of technical knowledge and the desire to experiment? We have been encouraged, protected, and licensed by our Government, not primarily for selfish enjoyment, but for the contributions we can make to the science of communications and to our country's welfare.

— *Mert Hasse, WØDKJ*

Route 2
Spencer, Indiana

Editor, *QST:*

Congrats on your April *QST* editorial. Please forgive me, but I was beginning to wonder.

— *H. E. Adams, W9JX*

1027 Leiper Ave.
Eddystone, Pa.

Editor, *QST:*

I heartily agree with your editorial entitled, "Newcomer Trends," in the April issue of *QST*. Strictly speaking, I am a newcomer to ham radio, even though I have had a lot of operating experience as a Radioman 2nd Class during two wars in the U. S. Navy. Most of the theory and design is over my head, but I feel that I am learning a little bit anyway. I, too, do not object to "store-boughten" equipment as you so aptly put it, as I have had to resort to kits in order to get on the air. However, I did not pay anyone to do the assembly work or the wiring. What is the use in having such a hobby if one is not going to learn anything of any value, even if it is only learning to use a soldering iron.

Some time in the future, I intend to try to build a receiver and a transmitter from scratch with the help of *QST* and the ARRL *Handbook*. Thanks for everything.

— *F. M. Davis, W3YVK*

201 Pioneer Street
Warren, Pa.

Editor, *QST:*

The April, 1956, "It Seems to Us . . ." on "Newcomer Trends," sums up a situation which could well make the true radio amateur extinct.

The writer has, at least in his own mind, found fault with many newer amateurs because of their lack of interest in the functioning of the circuitry back of the panels of their equipment. The status of the know-how of many is emphasized by a statement made by one licensed amateur, after a recent emergency, who stated that he would have had more equipment operating if he had known how to plug it in.

The existing situation is not the fault of the newcomer, but rather of the more-experienced hams who have failed to help them work out their problems. Many of us who have enjoyed our hobby for several years might not have ever got a start if it had not been for the help from the old-timers. Now it is our turn to repay an old debt by helping the leading hams of the future to know more about their equipment.

Your editorial should receive the widest possible circulation among amateurs and would-be amateurs. Therefore, the writer requested, by radiogram, to reproduce this article for distribution with our local newsletter.

— *Richard A. Gilson, W3NQA*

[Permission to reproduce granted — Ed.]

10 North 10 Avenue
Mt. Vernon, N. Y.

Editor, *QST:*

I seldom take pen in hand to criticize an organization that has done as much in its field as the League has done for amateur radio; but, in your editorial for April, I believe that you have led with your right, so to speak, and that you deserve what follows.

You decry the forward trend of commercialization in amateur radio circles, and express the wish that something be done to halt this trend. Well said, but what have you done to stop it? A frontal attack upon advertisers would no doubt lower the League's revenues from this source. But even more important, it would be in the way of a negative, or defensive action. Why cannot the League, with its great understanding of the problems which confront the ham, take it upon itself to develop a better mousetrap? It is all

(Continued on page 142)

Operating News

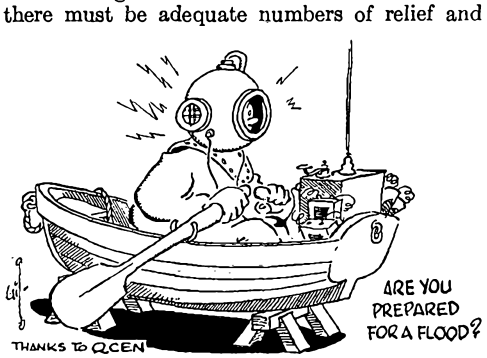
F. E. HANDY, W1BDI, Communications Mgr.
GEORGE HART, W1NJM, Natl. Emerg. Coordinator
PHIL SIMMONS, W1ZDP, Asst. Comm. Mgr., C.W.

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

Long Winded CQs. W5AXI writes that he has always been puzzled by these. "Why waste so much time calling CQ interminably? My operating time is limited and I certainly am not going to stand by and wait for the long-winded CQer to sign; nor will most other amateurs. So I move on to some fellow who calls CQ just a few times interspersed with his own call. Why waste time and electricity on long calls when a short CQ will do the job better? . . . And about calling CQ DX: I have always been a firm believer that you will raise more DX if you *listen* for it, instead of *calling* for it. I have worked all States, all Continents and many more than a hundred countries without *ever* having called CQ DX. While I have never used more than 200 watts, I *have* spent many hours patiently tuning the DX band for that elusive country. Imagine 100,000 Ws calling CQ DX with only 20,000 DX stations to answer them! The odds are 5–1 against getting an answer. Another thing is to think *before* you test, then do it on a dummy antenna."

Lessons from the Flood Emergencies. The floods are now gone but communications lessons learned the hard way are left. Need for operational and technical preparedness by each individual well in advance of emergencies must be given top emphasis. Nature, ever unpredictable, again proved "it can happen here" in natural or man-made form right in your and my home town.

Advance identity between you and the nearest AREC-RACES group is equally important with advance preparations to have *emergency power supply!* Wires, power and 'phone, are early casualties. Emergency-powered equipment tested in the ARRL Field Day can't help if you don't have a place in a pre-planned emergency set-up, and don't get it off the shelf. Another lesson: there must be adequate numbers of relief and alternate emergency operators on tap. Then, further, we *all* need to be familiar with handling traffic, preferably through recurrent use of procedure knowledge — if the maximum job is to be done. Club and individual training and dry runs are important. However, let us emphasize that you should offer your services, get connected with AREC-RACES and give yourself a place in advance of the emergency contingencies! Ask the nearest EC or RO about this today.



Faults. There are at least three "do it" items for you: get emergency-powered, get into a proper organizational-operating group, and handle a few messages each month or be part of the Section Net. You will thus enjoy making your know-how on traffic above question. More detailed faults in the recent emergency patterns were analyzed in four pages of a CD Bulletin. We covered such things as (1) stations in flooded-out areas slow to appear or nonexistent, (2) stations making *ineffective* and isolated communications contributions, (3) amateurs that were hard to convince at first that an emergency existed, (4) lengthy and otherwise faulty messages, (5) amateur circuits not kept busy, (6) slow and poor operators, (7) amateurs offering facilities unused, (8) interference delays, (9) personal assignments and understandings with those served inadequate.

The Remedies? Our numbers correspond to those of the last paragraph. (1) *Have* emergency-powered gear always *ready to use.* Power and telephones can be counted on as gone whether floods or sabotage are involved. (2) Be part of organized radio communication facilities *in advance* . . . the AREC/RACES groups, we mean. Teamwork and organized plans spell progress. (3) Use of QRRR and immediate sending of official messages to competent authorities through the first reliable station is suggested. (4) Study, training, familiarization with message forms and procedures for fills by *use* of the techniques in some every day work, could have extended the results; need was evident for advance instruction of persons handling telephones too. Tactful suggestions help get all messages clear and concise (with texts agreed to by the responsible originators). It seems a tough problem to get casual amateur workers and DX and v.h.f. men to know all they should of real two-way traffic techniques. (5) Circuits must be set up in emergency *early,* brought to attention of proper authority, and used in orderly fashion with sufficient latitude to *keep circuits constantly in use.* For efficient work normal priorities ob-

Douglas Pavek, W9FDX, presents the Erve Kreis memorial trophy to Edward R. Buchholz, W9VBZ (right), named outstanding amateur in the Milwaukee area by Milwaukee Radio Amateurs' Club for the third consecutive year. The award was based on operating ability in contests and traffic work, participation in club affairs and general conduct. Eddie holds OPS, ORS and OBS appointments and was among the first to receive an ARRL BPL Medallion.

(*Milwaukee Journal Photo*)

served (in order) would be official messages, notification of death or injury, press, assurance and worry traffic. (6) Only experience and advance self-training and *making message handling part of all exercises* can develop top performance. (7) Having sponsorship, and having a useful mission approved — and getting written into AREC-RACES plans in advance is the best start and assurance of being used. (8) All amateurs should always *listen* on a frequency before transmitting. Stay off unless there is a specific job of importance to handle. (9) Operators and leaders must, besides understanding their posts given by officialdom, insure that appropriate officials know how the circuits work and any communications limitations. Have a care not to pursue a self-appointed mission that jeopardizes chances of putting the more important job through. Our amateur facilities must be dedicated to the larger community objectives having greatest public service importance *first*.

— *F. E. H.*

BRIEF

A columnist's treatise about English spelling and pronunciation, noted by W5GQN in the Corpus Christi *Caller-Times*, says that there are 42 sounds expressed by the 26 letters, and that C, Q and X are *unnecessary*. (The italics are ours.) What would become of our c.w. abbreviations if we didn't have WX, XMTR, XTAL, XMSN, etc. No CQ? The columnist didn't consult amateurs on the importance of the letters — that's for sure!

ELECTION NOTICE

(*To all ARRL members residing in the Sections listed below.*)

You are hereby notified that an election for Section Communications Manager is about to be held in your respective Section. This notice supersedes previous notices.

Nominating petitions are solicited. The signatures of five or more ARRL full members of the Section concerned, in good standing, are *required* on each petition. No member shall sign more than one petition.

Each candidate for Section Communications Manager must have been a licensed amateur for at least two years and similarly a full member of the League for at least one continuous year immediately prior to his nomination.

Petitions must be in West Hartford, Conn., on or before noon on the closing dates specified. In cases where no valid nominating petitions were received in response to previous notices, the closing dates are set ahead to the dates given herewith. The complete name, address, and station call of the candidate should be included with the petition. It is advisable that eight or ten full-member signatures be obtained, since on checking names against Headquarters files, with no time to return invalid petitions for additions, a petition may be found invalid by reason of expiring memberships, individual signers uncertain or ignorant of their membership status, etc.

The following nomination form is suggested: (Signers will please add city and street addresses to facilitate checking membership.)

Communications Manager, ARRL. [place and date]
38 La Salle Road, West Hartford, Conn.

We, the undersigned full members of the.....
.....ARRL Section of the.....
Division, hereby nominate.....
as candidate for Section Communications Manager for this Section for the next two-year term of office.

Elections will take place immediately after the closing dates specified for receipt of nominating petitions. The ballots mailed from Headquarters to full members will list in alphabetical sequence the names of all eligible candidates.

You are urged to take the initiative and file nominating petitions immediately. This is your opportunity to put the man of your choice in office.

— *F. E. Handy, Communications Manager*

Section	*Closing Date*	*SCM*	*Present Term Ends*
Yukon*	June 15, 1956	W. R. Williamson	Mar. 17, 1949
West Indies	June 15, 1956	William Werner	Aug. 15, 1952
Idaho	June 15, 1956	Alan K. Ross	June 17, 1956
Kentucky	June 15, 1956	Robert E. Fields	Aug. 16, 1956
Nevada	June 15, 1956	Ray T. Warner	Aug. 16, 1956
Canal Zone	July 16, 1956	Roger M. Howe	Oct. 1, 1956
Santa Clara Valley	Aug. 15, 1956	R. Paul Tibbs	Oct. 15, 1956
Arkansas	Aug. 15, 1956	Owen G. Mahaffey	Oct. 15, 1956
Rhode Island	Aug. 15, 1956	Walter B. Hanson, jr.	Oct. 15, 1956
New Hampshire	Aug. 15, 1956	Harold J. Preble	Oct. 26, 1956
Kansas	Aug. 15, 1956	Earl N. Johnston	Oct. 29, 1956
Western Massachusetts	Sept. 14, 1956	Osborne R. McKeraghan	Nov. 10, 1956

* In Canadian Sections nominating petitions for Section Managers must be addressed to Canadian Director Alex Reid, 169 Logan Ave., St. Lambert, Quebec. To be valid, petitions must be filed with him on or before closing dates named.

ELECTION RESULTS

Valid petitions nominating a single candidate as Section Manager were filed by members in the following Sections, completing their election in accordance with regular League policy, each term of office starting on the date given.

North Carolina	B. Riley Fowler, W4RRH	Feb. 15, 1956
Maritime	D. E. Weeks, VE1WB	Feb. 15, 1956
Tennessee	Harry C. Simpson, W4SCF	Apr. 15, 1956
Washington	V. S. Gish, W7FIX	Apr. 15, 1956
Alberta	Sydney T. Jones, VE6MJ	May 1, 1956
Louisiana	Thomas J. Morgavi, W5FMO	May 31, 1956
E. Mass.	Frank L. Baker, jr., W1ALP	June 15, 1956
Ontario	Richard Roberts, VE3NG	June 15, 1956

In the Georgia Section of the Southeastern Division, Mr. William F. Kennedy, W4CFJ, and Mr. George W. Parker,

W4NS, were nominated. Mr. Kennedy received 259 votes and Mr. Parker received 103 votes. Mr. Kennedy's term of office began Mar. 18, 1956.

In the Oklahoma Section of the West Gulf Division, Mr. Ewing Canaday, W5GIQ, and Mr. R. L. Hawkins, W5FEC, were nominated. Mr. Canaday received 184 votes and Mr. Hawkins received 88 votes. Mr. Canaday's term of office began Mar. 23, 1956.

In the Utah Section of the Rocky Mountain Division, Mr. James L. Dixon, W7LQE, and Mr. Floyd L. Hinshaw, W7UTM, were nominated. Mr. Dixon received 42 votes and Mr. Hinshaw received 36 votes. Mr. Dixon's term of office began Mar. 29, 1956.

In the Connecticut Section of the New England Division, Mr. Milton E. Chaffee, W1EFW, Mr. Thomas G. Lappe, W1LWW, and Mr. Elmer P. Balcom, W1KYQ, were nominated. Mr. Chaffee received 232 votes, Mr. Lappe received 113 votes, and Mr. Balcom received 84 votes. Mr. Chaffee's term of office began Apr. 15, 1956.

In the Arizona Section of the Southwestern Division, Mr. Cameron A. Allen, W7OIF, and Mr. Kenneth P. Cole W7QZH, were nominated. Mr. Allen received 108 votes and Mr. Cole received 81 votes. Mr. Allen's term of office began Apr. 15, 1956.

NATIONAL CALLING AND EMERGENCY FREQUENCIES (kc.)

3550	3875	7100	7250
14,050	14,225	21,050	21,400
28,100	29,640	50,550	145,350

During periods of communications emergency these channels will be monitored for emergency traffic. At other times, these frequencies can be used as general calling frequencies to expedite general traffic movement between amateur stations. Emergency traffic has precedence. After contact has been made the frequency should be *vacated immediately* to accommodate other callers.

The following are the National Calling and Emergency Frequencies for Canada: *c.w.* — 3535, 7050, 14,060; *phone* — 3765, 14,160, 28,250 kc.

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc. 7140 kc.

FEBRUARY FMT RESULTS

The Frequency Measuring Test of February 14th, open to ARRL Official Observers and other amateurs, brought entries from 202 participants who made 782 measurements; 98 entries were submitted by Observers and 104 by non-OOs. Each amateur taking part has received an individual report comparing the accuracy of his measurements of the special W1AW FMT transmissions with those of a professional frequency-measuring lab.

The standings of the leaders are given below. Decimal fractions are shown only to establish an order of listing, since the official readings can be accredited only to 0.4 parts per million. Sharing honors equally, therefore, are WØOTR, W1MUN, W8GBF, W6AXV, W4VGO, W8GQ, W8CUJ, W8HB, W8YCP and W9TCJ.

Observers	*Parts/ Million*	*Non-Observers*	*Parts/ Million*
WØOTR	0.1	W6AXV	0.0
W1MUN	0.2	W4VGO	0.1
W8GBF	0.2	W8GQ	0.2
W2FE	0.8	W8CUJ	0.3
W8ORY	2.4	W8HB	0.3
W7PQJ	2.5	W8YCP	0.3
W9CBW	2.6	W9TCJ	0.4
W3DVO	2.7	W4HER	0.5
W3TFN	2.9	G6JJ	0.9
W4FJ	2.9	W5QDX	2.6
W2AIQ	3.0	W1TWJ	3.8
W6GBG	3.7	W7FU	5.1
W9KA	5.0	W1QQO	6.0
W1RLQ	7.2	W8IYZ	6.2
W6BEZ	7.6	W2TTM	6.4

Going mobile this summer? If our statistics are correct, about one in every three AREC members is already mobile, and summertime is when most of the operating is done.

If you *are* going mobile, don't forget to check the National Calling and Emergency Frequencies often, and use them whenever you need help or whenever you have some traffic you'd like to dispatch. If you can monitor at regular hours, let us know what they are so we can put you on our master emergency monitoring chart here at headquarters (for 3550 and 3875 kc. only).

Mobiling can be more fun if we can establish some regular procedures for operating. Using and monitoring the NCE frequencies are just a beginning. Above and beyond that we have possibilities for (1) concentrating our mobile operation on certain segments of each band, (2) indicating highway number and direction in addition to required location, so other mobiles or fixed stations can more readily spot us, (3) adding the letter "M" to the call identification on c.w. (e.g. W1NJM/1M) so you can readily be identified as mobile, (4) posting your operating frequency on your car so other mobiles passing will know where to listen for you (it's fun to contact another passing mobile, exchange info on where you're from and where you're going — this can even be done crossband), and (5) "checking in" with the local EC or RACES Radio Officer if you're stopping somewhere for more than a couple of days, so he can call on you in an emergency. During the floods in August and December last year many out-of-town mobiles were used to good advantage, but many more could have been used if local AREC or RACES officials had known of their availability beforehand.

Mobiling can be a highly fraternal aspect of our hobby, and a highly useful one as well. Vacationers trying to find their way through a city can be helped by fixed stations or other mobiles, and "why don't you stop in for a cuppa coffee while you're passing through?" Look up the frequency of the local net (see net directory) and report in; most nets welcome visiting mobiles with open arms. Time was when amateurs were so rare that every amateur was every other amateur's pal, sight unseen. We'd like to bring back some semblance of those old days of high fraternalism, for in fraternity there is strength, and in strength there is the ability to render a useful and worthwhile public service.

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During the period of November 3rd and 4th, the area around Port Angeles, Wash., experienced flood waters cutting off communications lines to the west and roads to Neah Bay and Siku. Six AREC members maintained communications until normal lines could be restored. One field unit was set up in Forks to relay between Port Angeles and Neah Bay. Traffic was handled for Red Cross, County Engineers, Pacific Tel. & Tel., and private parties. Amateurs participating: *W7s* WQD WAK VUP YJW BMG PIK WLQ DHZ POH UVI. — *W7WQD, EC Clallam Co., Wash.*

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Severe sleet and wind storms in the Maritime Provinces of Canada on January 5 and 6 brought out amateurs with full emergency regalia. We have already reported on operations on Prince Edward Island (May *QST*); this is supplementary data from *VE1s* UT and VC, sent to us by VE1WB covering operations not mentioned in the May squib.

The extent of the damage and communications disruption becoming apparent on Friday, January 6, VE1UT operated a phone patch between Truro and Moncton for the Canadian National Railroad all Friday evening, and again on Saturday to assist VE1ACW and VE1VV. Later a station was established in the Chief Dispatcher's office. When power failed, VE1UT and VE1RN set up an emergency powered rig at the latter's home and continued operation until after midnight Saturday. Operation continued on Sunday and Monday, all on emergency power. On Tuesday lines began to go back into service, and at 2200 Tuesday the boys called it quits, after more than 70 hours of operation, much of it on emergency power. Services were rendered to

Canadian Civil Defense Director Major-General F. F. Worthington addresses the members of the civil defense net during on-the-air demonstration of amateur radio equipment following a banquet at Belleville, Ont., in the interest of civil defense. Taking notes is Belleville EC VE3AUU. Standing at right is Air Vice Marshall Bryans, R.C.A.F., and at left Arnold Duke, President of the Quinte Amateur Radio Club.

railways, telephone companies, the RCAF, broadcast stations, newspapers, air lines, commercial industries and private parties. VE1UT alone handled 412 messages, and was assisted by the Maritime Net, Newfoundland Net, Quebec Net and Northland Net. VE1UT lists the following amateurs as having assisted: *VE1s* ACW VV KK NZ CV TT SR VY ZM BZ WA WL EV EL XX QM KZ ACL MY TK EY FQ AYL PF ABT WB JP FR ZG AV AO XY FX IR ABQ HC WF WK PT HH FM YM RM CK ADT ABZ XE DW VU ZU AEE OL WT PA PI LZ; *VE2s* AEV AFJ DK RU.

In the Bathurst area, local amateurs handled 55 emergency messages. EC VE1VC alerted the local AREC at 1220 Wednesday, January 11, and two amateurs were assigned to patrol the area from Bathurst to Petit Rocher in coordination with the Royal Canadian Mounted Police. They sent messages back to Bathurst for dissemination on the central net. Operators taking part included *VE1s* UL VC WF PH DJ DU ACT UV AEB ABQ ADV UZ ZU.

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On Saturday, Feb. 18th, a small boy and girl were listed as missing somewhere in Tarrant County, Texas. A search party, later to become 400 strong, was formed to find them. The Arlington Radio Club and the Tarrant County Disaster Control Net were asked to assist, and by 2245, a half hour after being alerted, 23 amateurs were involved in the search. Operations continued all night, resulting in finding the lost children at 0815 the next day. W5URG lists the following amateurs as having been active in this emergency: *W6s* URG AXV TQV NVJ UXY DFB TGH BNG KCQ UYQ WTP HZF BUN OSV TT HB AUA ZLL KIP, *K6s* BDN BDF ASZ.

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On the morning of March 7 a tornado hit the eastern section of Marion, Ind. W9ZTZ alerted the Indiana Phone Net, which was kept in session for the remainder of the emergency. W9MDC/m drove to Marion where he contacted W9LSZ, who put his rig on the air and worked throughout the emergency. W9JWI came from Culver with his mobile unit to assist. The following stations participated: *W9s* AYW JWI DCW EGV VNV HBD NTA KTX WIN JUQ CHO HST WKP JYO BSZ ZTZ MDC/m KQZ LEW IQP EJW LSZ SWD PNV EQO. The Noblesville Daily Ledger gave good publicity. — *W9EQO, PAM for Indiana.*

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The heavy snows in New England on March 22nd precipitated emergency conditions in several places. At present we have reports from Winthrop and Worcester, Mass.

In Winthrop, the first storm on March 16th brought W1DLY into action early, and W1ORV/WN1EAJ operated on emergency power. This was the lesser of the two storms, and not much communication was required, nor was RACES officially activated. The second storm on March 19th was a different proposition. RACES was activated at 1400 on that date, and W1DEL manned the control center. A portable station was established at Point Shirley with considerable difficulty by W1MQB, which maintained communication from the Point to Town Hall over night. W1DEL operated the control station from 1400 Monday until 0600 Tuesday, with two operators assisting him. Other operators active in the area during the emergency: *W1s* OIR DQF HFJ/m BDU DUV ZVO DGY DJ/OIR. Operation was controlled by RACES Radio Officer (and Winthrop EC) W1BB.

The situation in Worcester became critical on the 16th when it was reported that many motorists were stranded on Route 20. W1SPF (EC) put out an emergency call on ten meters and within twenty minutes there were sixteen stations on 28,720 kc., the local emergency frequency. W1RDR and W1DOZ volunteered to brave the storm in their cars to rescue some children in the pileup of cars on Route 20, and succeeded in doing so (at 0300), maintaining contact with W1SPF and the local emergency net at the same time. W1SPF then alerted Auburn police, through W1YPD, to open the schools to shelter freezing refugees from the traffic jam. Over 700 people were caught in jams and were in danger of freezing as cars ran out of gas. Sixteen stations monitored the 28,720 kc. channel all night to keep communications open.

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On March 30th at 1725, W7FTV/m called EC W7MQI reporting a light plane with two persons aboard was lost between Hardin and Billings, Mont. At 1730 the EC alerted the AREC in Billings and requested mobiles go to the aid of the search, as liaison with planes. W7YZQ/m left Billings at 1753 and was directed to Prior Gap, south of Billings. W7RDO/m was dispatched to the Prior area, with instructions to reach the Dry Head area, southeast of the Prior Mountains. Periodic checks with the mobiles were made with the assistance of *W7s* JHR ZCO and FTV. W7VZN/m, enroute to Billings from Nye, also checked in to assist. Early the next morning W7FTV/m reported the wreckage had been sighted at the head of Sage Creek. Control Station W7JHR dispatched W7VZN/m to the area, but nothing had been found by 1100. A searching party found the wrecked plane at 1145. There were no survivors. All details of activity were reported at 1210 to W7JHR by W7VZN/m, with the help of some relaying stations. Operators assisting during Sunday morning were *W7s* PKX ZZG YHS and ZCO. — *W7MQI, EC Billings, Mont., area.*

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Twenty-one SECs submitted monthly reports for February activities, representing 5366 AREC members. *This is a* pleasing increase over February a year ago. Twenty-five sections have thus already put in an appearance in 1956. Sections represented in February reports: Ind., S. Tex., Mo., NYC-LI, W. N. Y., Minn., SJV, S. Barbara, Ala., Wis., Wash., SCV, MDDC, Mont., Nebr., *Ore., E. Pa., Colo., E. Fla., N. M., Ont.*

In the April *QST* year-end summary, we listed Alabama as having submitted only ten reports. This was in error. Alabama was 100% in 1955. We also listed Santa Clara Valley (SCV) as having submitted three reports, but SEC W6NVO has wrathfully produced copies of *nine* that he sent in. We therefore gladly revise our statistics as concerns both Alabama and SCV.

RACES News

Representatives of eighteen states and Canada gathered at Battle Creek, Mich., on April 5-6 to attend the first annual meeting of the United States Civil Defense Amateur Radio Alliance (USCDARA). Host FCDA provided excellent quarters for the meeting, as well as many expert speakers on the various fields to be covered. Some 30 states have now entered USCDARA as members. States represented (with call letters of representatives) were Nevada (W7JLV), North Dakota (WØVAL), West Virginia (W8-HZA), Connecticut (W1LKF), New York (W2BGO), New Jersey (W2IIN), Pennsylvania (W3UA, W3YA), Missouri

(WØEOI), Ohio (W8FYW, W8ZQX), Indiana (W9BSZ, W9UDD, W9WTY, W9SWD), Illinois (W9LLX), Calif. (W6LLR), Virginia (W4NAD), Michigan (W8EWE), Mass. (ex-W1SC), Louisiana (W5IUG), Kansas (WØKXB), Montana (W7GFT). Also present were representatives from FCDA, MARS Army, MARS Air Force, USNR, Canadian Civil Defense, U. S. Weather Bureau, Red Cross, and, of course, ARRL. Manufacturers represented included Collins, Dumont, General Electric, Motorola and Technical Material Corp.

Fifty-six people were in regular attendance at the meeting, not including regular FCDA staff members, many of whom dropped in from time to time when matters of special interest to them were being discussed, and some of whom, like Jim MacGregor (W8DUA), Charlie Dewey (W8LBM) and Bob Arrowsmith (W9ABS), being directly involved in RACES work, were in almost constant attendance. A conference of FCDA Regional Communications Officers, held the previous day, also added to the attendance as many of the visiting FCDA staffers stayed over for that and other purposes. Thus, the role of amateur radio (RACES) was brought emphatically to their attention.

The USCDARA Conference itself was noteworthy for a number of recommendations and policy resolutions coming out of various committee deliberations. Chief among these were the following:

(1) Greater liaison and coordination between RACES and MARS units through high level contact.

(2) Better Control Center liaison between various municipal services and RACES, especially where radio communications equipment for such services is purchased through the civil defense budget.

(3) Amateurs be requested to refrain from use of RACES segments during RACES tests and drills (especially the annual Operation Alert) by FCDA, FCC and ARRL.

(4) Study ways and means of reducing the use of the crowded 3990–4000 kc. for intra-state communications, using v.h.f. for this purpose if possible.

(5) Devise a program for use of federal "Matching Funds" for spare parts.

(6) FCC be petitioned for additional RACES frequencies 7000–7010 and 7290–7300 kc. for long-range communications.

(7) Study be made for greater use of s.s.b. to preserve frequency space.

(8) USCDARA's frequency allocation plan be adopted as recommendation of FCC and FCDA.

(9) Type 6F2 emission (a.f.s.k.) be authorized for use in the low-frequency RACES segment of the six meter band.

Although a little disappointed that more states were not represented, we nevertheless felt that the conference was successful for the initial meeting. Regional alliances are being formed in other FCDA regions, so it is hoped that attendance will be better next year.

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The annual Operation Alert Civil Defense national exercise will not be held in June this year. Watch this column for the date, probably in the July issue.

W1AW OPERATING NOTE

The summer W1AW operating and general-contact schedule, effective April 29th, appeared on page 87 of May *QST*. See that issue for full information on when and where to look for the ARRL Headquarters station.

A.R.R.L. ACTIVITIES CALENDAR

June 1st: CP Qualifying Run — W6OWP
June 9th-10th: V.H.F. QSO Party
June 12th: CP Qualifying Run — W1AW
June 23rd-24th: ARRL Field Day
July 7th: CP Qualifying Run — W6OWP
July 18th: CP Qualifying Run — W1AW
July 21st-22nd: CD QSO Party (c.w.)
July 28th-29th: CD QSO Party (phone)
Aug. 3rd: CP Qualifying Run — W6OWP
Aug. 16th: CP Qualifying Run — W1AW
Sept. 1st: CP Qualifying Run — W6OWP
Sept. 13th: Frequency Measuring Test
Sept. 14th: CP Qualifying Run — W1AW
Sept. 15th-16th: V.H.F. QSO Party

W9GME is a RACES station in Chicago civil defense, with function of liaison between city and state. Operator Grace Ryden proudly displays the RACES emblem on her sleeve. *Chicago Sun Times photo.*

A.R.R.L. AFFILIATED CLUB HONOR ROLL

There is a League policy for *special recognition* to all affiliated clubs whose *entire membership* consists of members of the League. It is now a pleasure to present the new 1956 Honor Roll of such clubs. The affiliates having 100 per cent ARRL membership are determined from data supplied in the 1956 Annual Report of Club Data. An additional *QST* Honor Roll will be published later this year to include clubs reporting results of ARRL membership drives being conducted currently. Such list will include consideration of full reports from affiliated societies whose questionnaires gave incomplete information and others that qualify for listing on completing their membership program. Each listed club now will receive the 100% ARRL Club certification for its records and display in the club rooms.

Aeronautical Center Amateur Radio Club, Inc., Oklahoma City, Okla.
Amateur Transmitters' Association of Western Pennsylvania, Pittsburgh, Pa.
Arrowhead Radio Amateurs, Duluth, Minn.
Astoria Amateur Radio Club, Astorio, Ore.
Bandhoppers Radio Club, Ferguson, Mo.
Batavia Amateur Radio Association, Batavia, N. Y.
Blossomland Amateur Radio Association, Inc., Saint Joseph, Mo.
Bronx Radio Club, Bronx, N. Y.
Central Illinois Radio Club of Bloomington, Inc., Bloomington, Ill.
Connecticut Wireless Association Inc., New Britain, Conn.
Door County Amateur Radio Club, Sturgeon Bay, Wis.
Falls City Amateur Radio Club, Falls City, Neb.
Fountain City Radio Club, Fountain City, Tenn.
Illinois Valley Radio Association, LaSalle, Ill.
Kaw Valley Radio Club, Topeka, Kans.
Kearfott Amateur Radio Club, Inc., Cedar Grove, N. J.
Kingsport Amateur Radio Club, Kingsport, Tenn.
Mancorad Radio Club, Manitowoc, Wis.
Middlesex Amateur Radio Club, Waltham, Mass.
Mid-Island Radio Club, Baldwin, L. I., N. Y.
Muscle Shoals Amateur Radio Club, Florence, Ala.
Norfolk County Radio Association, East Walpole, Mass.
North Shore Radio Club, Bayside, N. Y.
Northbridge High School Radio Club, Whitinsville, Mass.
Orange County Amateur Radio Club, Orange, Calif.
Order of Boiled Owls, Levittown, N. Y.
Pacifico Radio Club, Los Angeles, Calif.
The Pendleton Amateur Radio Club, Inc., Pendleton, Ore.
Potomac Valley Radio Club, Arlington, Va.
Providence Radio Association, Inc., Providence, R. I.
Rappahannock Valley Radio Club, Fredericksburg, Va.
Raritan Bay Radio Amateurs, Inc., South Amboy, N. J.
Rock River Radio Club, Dixon, Ill.
Sheridan Radio Amateur League, Inc., Sheridan, Wyo.
South Lyme Beer, Chowder and Propagation Society, South Lyme, Conn.
State Line Radio Club of New York and New Jersey, Upper Saddle River, N. J.
Suburban Radio Club, Inc., St. Louis County, Mo.
Sunrise Radio Club, St. Albans, N. Y.
Tehama County Amateur Radio Club, Red Bluff, Calif.
Valley Radio Club, Eugene, Ore.
Windblowers VHF Society, Butler, N. J.

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for March traffic:

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W7BA	58	978	940	33	2009
W7PGY	39	956	907	47	1949
WØCPI	13	950	897	53	1913
WØSCA	15	760	748	1	1524
W9DO	17	693	636	74	1420
WØBDR	28	671	621	19	1339
W3WIQ	51	586	605	80	1322
W2KFV	16	606	484	102	1208
W2KPB	45	607	387	166	1205
WØOHW	4	501	500	1	1006
K6WAY	94	373	428	5	900
W9NZZ	257	314	1	312	884
W6DDE	96	333	423	6	858
W3CUL/4	63	357	311	42	773
W6GYH	529	121	90	16	756
W7VAZ	52	294	245	49	640
WØPZO	10	318	304	8	640
W9SHR	15	310	274	40	639
W9JOZ	5	301	302	10	618
WØGAR	18	283	291	10	602
K5AOV	20	320	257	4	601
W3UE	26	292	266	12	596
W3WZL	66	223	267	35	591
K4AKP	26	282	257	24	589
WØRDN	475	58	49	0	582
WØWVO	3	284	277	3	567
WØLGG	27	274	231	19	551
W9ZYK	20	266	251	11	548
WØBJP	6	269	263	6	544
WØZJF	10	278	252	0	540
W9ZWL	2	343	11	183	539
WØCZ	4	267	251	16	538
W4PJU	11	263	230	33	537
WØKQD	43	265	217	10	535
W1EMG	1	268	230	24	523
W4PL	5	267	217	31	520
W6GJP	0	256	257	1	514
W7FRU	7	263	224	19	513
W3CVE	160	173	146	27	506

More-Than-One-Operator Stations

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W6IAB	65	1212	1546	334	3157
W6YDK	413	852	780	72	2117
KØWBB	130	449	393	31	1003
K6FCY	139	269	350	23	781
KH6QU	135	273	203	44	655
KØFEI	18	331	271	3	623
K7WAT	120	173	179	33	505
Late Reports:					
K4FDY (Feb.)	36	337	323	14	710
K6FCY (Feb.)	30	278	252	26	586

BPL for 100 or more *originations-plus deliveries*:

KNØCED	249	WØQVA	119	W1YBH	106
K3WBJ	202	VE3DPO	119	W7QKU	105
W5FEC	199	W8ZLK	116	KP6AK	105
W6KTZ	175	W9SAA	115	W1DWA	103
WØTVR	174	WØRLQ	114	W8DAE	103
W4PIM	172	W5LPL	113	W1DYE	102
W9SVZ	152	WØTUS	113	W6BHG	102
WØNIY	139	WØTVI	112	WØKLG	102
W3BUD	130	W4DDY	111	W2OE	100
W9KTX	128	W4BWR	109		

More-Than-One-Operator Stations

W1AW 102

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: W1CDX, W9DGA, W9UQP.

The BPL is open to all amateurs in the United States, Canada, Cuba, and U. S. possessions who report to their SCM a message total of 500 or more, or 100 or more originations-plus-deliveries for any calendar month. All messages must be handled on amateur frequencies within 48 hours of receipt, in standard ARRL form.

CODE PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying run from W1AW will be made on June 12th at 2130 EDST. 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 June 1st at 2100 PDST on 3590 and 7128 kc.

Any person may 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 get sending practice, hook up your own key and buzzer and attempt to send in unison with W1AW.

Date	Subject of Practice Text from April *QST*
June 4th:	*A Club-Project 2-Meter Portable*, p. 11
June 7th:	*Understanding Television Interference*, p. 15
June 13th:	*Dual-Battery Power System for Mobile*, p. 18
June 15th:	*The Beer-Can Antenna, Minnesota Style*, p. 23
June 19th:	*A Radical Approach to VFO Design*, p. 24
June 22nd:	*Push-Pull 6146s in a Two-Stage Rig*, p. 26
June 26th:	*Pep Up Your Old Receiver*, p. 28
June 28th:	*Simulated Emergency Test — 1955*, p. 40

TRAFFIC TOPICS

In March *QST* we advanced some ideas by W4IA for monitoring the National Calling & Emergency Frequencies, promising to submit to you a list of stations responding to the call for moinitors on 3550 as a "trial balloon." Well, we received quite a bit of correspondence on the subject, some saying it was a good idea, some a bad idea, and others using it as a springboard to launch a discussion on a related subject — like the practicability of having NCE frequencies in the first place. We had about a dozen responses, of which only two set up definite schedules and said they *would* monitor. They are K2KIR and WØUML. K2KIR is monitoring from 1630–1730 EST Monday thru Friday, 1930–2030 EST Saturday and 1300–1600 EST Sunday. WØUML is monitoring from 0000–0200 CST daily except Friday, and from 1200–1400 CST Sunday In addition, W1LKP offered to monitor from 0600–0800 EST each Sunday and KØWBB (Mac) offered from 1700–1800 Monday thru Friday.

W3BUD and VE2DR expressed approval of the idea and offered to monitor as possible. W9BRD felt that the NCE frequencies, for the most part, are ill-placed in the bands and should be moved to the low ends of each band.

Admittedly, this isn't a very long list of volunteers. Anyone else want "in" on this act? There is going to be a lot of mobiling during the summer, and people away from home who want to get a message back. *Use the NCE frequencies* (see list elsewhere in *QST*). We need more volunteers for 3550, and might as well start signing them up for 3875, too. How about it, you phone guys?

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In a recent Tennessee Net Bulletin (put out by W4WQW) we came across a net member "check list" by means of which each net member may quickly evaluate himself. We liked it so much that we think it is worth mentioning here, because we know that many net members content themselves just to report in once in a while without giving much thought to what might happen if they were called on to do some real arduous operating, like in an emergency. Ask yourself these questions: (1) Can I act as NCS if called upon to do so? (2) Do I know the National Calling Frequencies? (3) Do I know my fellow net members and their QTHs? (4) Do I know who the SEC, PAM, SCM and RM are? (5) Do I know my QN signals? (6) Can I operate efficiently without more training? If you must, in all honesty, give a negative answer to one or more of the above questions, your value to the net can be and should be improved. As we have so often said, there is a great deal more to this traffic game than just handling traffic.

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Transcontinental Phone Net for March reports the following traffic totals: First Call Area, 856; Second Call Area, 883; Fourth, Ninth and Tenth Call Areas, 753; Total, 2493. Transcontinental Relay Net reports 31 March sessions, eight stations participating, traffic total of 1406.

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National Traffic System. Ever stop to ponder on how you would "size up" to a newcomer to NTS? The two operators at W2AEE (W2AIP and W2PHX), having recently caught the traffic bug and plunged headlong into NTS activities, have passed along a few plaudits and boos. We'll keep the boos to ourselves (or should we?), but here are the plaudits: (1) For "top" NCS (bar none!): W3NF (W2ZVW) on EAN. (2) For solid copy, chips-down condx: W6UTV, W9DO, KØWBB. (3) For general "savvy" and net courtesy W2ZRC. (4) For patience and grey hair: W1NJM.

Of course, the above are just two operators' opinions. Do you agree? Shall we start some arguments about it? We (editorial) could easily argue against the fourth point from personal experience, and add a few of our own; but we'll let you do that if you want to.

Just recently, someone remarked that we forgot to enter our customary May *QST* diatribe on the subject of "daylight saving" time — proof of creeping senility, they said. We forgot it last year, too. So let's just re-read the sentiments expressed in this column for May, 1954, *QST* (bottom of righthand column), to which we can add only the following comment: $\%\#*+'@¢!$

March reports:

Net	Sessions	Traffic	Rate	Average	Representation (%)
EAN	23	860	0.97	37.4	94.9
CAN	21	997	1.72	47.4	100
PAN	29	1122	0.65	38.7	—
1RN	27	386	0.46	14.3	92.0
2RN	27	226	0.82	8.4	100
3RN	52	265	0.33	5.1	63.5
RN5	43	439	1.12	10.1	61.4
RN6	54[1]	534	0.47	9.8	49.5
RN7	54	295	—	5.4	32.1
8RN	44	153	—	3.5	84.1
9RN	31	908	1.12	29.3	89.5
TEN	71	1601	—	22.7	66.9
TRN	39	81	0.23	2.1	83.8
Sections	724[3]	5725		7.9	
TCC (East)	52[2]	559			
TCC (Central)		1459			
TCC (Pacific)	111[2]	759			
Summary	1239	16369	CAN	11.0	—
Record	1239	16369	1.72	13.9	—

[1] Reported out of 62 scheduled

[2] TCC schedules reported, not included as net sessions

[3] Section nets: GSN (Ga.); NYS (N. Y.); S. Dak. 75 Meter Emerg. Phone; Iowa 75 Meter Phone & TLCN (Iowa); AENB, AENT & AENP (Ala.); CN (Conn); QKS, QKS SS & QKN (Kans.); IFN (Ind.); MSN (3 Minn. Nets); Tenn. 160 & Tenn. c.w.; KYN (Ky.); NTX (Tex.); CSSN, WN Net & HNN (Colo.); NCN (Calif.); WVN (W. Va.); N. Dak. Phone; QMN (2 Mich. Nets).

Gloomy Gus predicts that we can't go on breaking records forever, and that sooner or later our NTS fortunes will level off or maybe show a decline. This is undoubtedly true; but let's hit the top before we start worrying about that. We still have plenty of room, gang, before we bump our heads on the ceiling.

W6ZRJ, energetic manager of RN6, has produced a circular which he mails to new stations reporting into RN6 and to other amateurs who might be interested in NTS or whom he is trying to get into the system. It explains the purpose of NTS generally and of RN6 in particular in words that anyone can understand. We advance the idea to other regions and areas for what it might be worth; ask Doc for a copy of it if you're interested.

W9DO feels that NTS in the Central Area is working "to perfection" as 100% attendance and operation on CAN is the regular thing. Certificates for 1RN have been issued to W1s TYQ YNC EOK WHI BXN CMH DAQ ZNM WCC and ZUU; controls, liaisons and alternates are divided among all seven sections in the region. K2EB and K2GFX have been awarded 2RN certificates as 2RN completes its fourth successive month of 100% one-session operation. W3UE's first act as 3RN Manager was to institute a 2130 session; 3RN will remain on standard time during the summer. W4OGG is continuing as RN5 Manager until a successor can be found. W9YYG has been awarded a 9RN certificate; 9RN manager W4KKW puts out an excellent little monthly dope sheet. WØKJZ reports that TEN is being bothered by poor conditions, but the net just keeps rolling along.

Transcontinental Corps: TCC is now handling almost 100% of NTS inter-area traffic, thanks to the hard work of TCC Directors W8UPB, WØSCA and WØKQD. Over 3500 messages were handled during the month by TCC stations, over half of these on out-of-net TCC schedules. We still have our troubles, the turnover remains rather high, rough spots appear here and there as an unreliable station must be weeded out, or a non-functioning schedule must be changed, but we're getting there, and that's the important thing. WØDQL, WØKJZ and WØLGG have been added to the TCC roster, Central Area, to spell WØBDR and WØSCA, although neither of them are particularly desirous of being spelled; they *like* their jobs. WØKQD adds one here, drops one there, as the situation demands, requiring a close check on all schedules.

In closing this column for this month, we want to take a few lines to express our pleasure and gratification at the continued progress being made in NTS procedures and operation during the past "traffic season." We can expect a decrease in activity during the summer months. Don't let it discourage you, because activity will increase again in the fall, probably better than ever. It looks as though NTS is here to stay. *You* have brought this about, not we; all we did was plan the structure, and even this was done with your help. NTS is your system; be proud of it and keep on improving it as we learn by doing.

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• 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. RM: AXA. PAM: TEJ. Nets: 3850 and 3610 kc. Appointees again are reminded that to keep appointments in effect, monthly reports must be sent to your SCM. The Harrisburg RAC joined the Hilltop Transmitting Assn. in a joint meeting at Red Lion recently. According to *QTC*, the Northeastern Pennsylvania ARC bulletin, the Luzerne County RACES plan is being drawn up. SOC and ATF are a new OM/XYL team in Sweet Valley. YEK is operating from Georgia Tech. Radio Club station, 4AQL. Philmont's March transmitter hunt was won by QQH. DSG was second. The Beacon Radio Amateurs of Philadelphia has been issued the call of ATR, the club's founder, and it will be operated as a memorial to him on Field Day. The Northeast Radio Club saw the Philmont film, "Every Single Minute," at a recent meeting. YUW is a new ORS. YUW suggests a Pennsylvania QSO Party. Anyone interested, contact him. WN3CMN has been working 15 meters with his Adventurer. UEU and his new 813 rig still are running wild on all bands. CUL, operating portable 4, still is able to make BPL with a total of 773. DHJ is chairman of the North Penn ARC construction committee, which is building crystal calibrators as a club project. NF is taking PAN traffic on EAN and is NCS of EAN on Fri. nights, all with 10 watts. DHH has a new 829B rig ready for 2 meters. IBH is getting ready for amateur TV in the Philadelphia Area. BUR has a new 10-15-20 combo beam. BO is a new OO. AXA reports that activity is running high on the EPA C.W. Net. ZRQ's first report as AN net mgr. shows 25 sessions, 33 messages handled, with 24 stations QNI. The York Road Radio Club again is publishing a paper called *QUA*, edited by WN3FCM. SEC NNT is looking for Emergency Coordinators in counties not already represented. Coordinators are needed in Bradford, Carbon, Columbia, Cumberland, Dauphin, Delaware, Juniata, Lackawanna, Lebanon, Lycoming, Montour, Perry, Pike, Schuylkill, Snyder, Sullivan, Susquehanna, Tioga, Union, Wayne, and Wyoming Counties. How about you clubs naming one of your members to this important job? Drop a note to NNT or PYF with your nominations. BBS has a new B&W 5100. AMC is going s.s.b. Traffic: (Mar.) W3CUL/4 773, ZSX 318, OK 227, TEJ 214, BFF 192, DHJ 183, YAZ 116, YUW 76, ZRQ 60, NF 57, BHC 48, YVX 45, OGD 39, AXA 33, NOK 30, GIY 28, UEU 23, ZLX 21, BNR 20, ELI 18, WUE 18, PYF 15, CNO 13, AMC 10, ADE 8, BUR 7, NQB 6, EAN 4, QLZ 4, WN3CMN 1.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, John W. Gore, W3PRL — The MEPN will hold its Annual Picnic Sun., July 22nd, at Braddock Heights Park from 10 A.M. to 6 P.M. It will be open to all. This new location was required because of the fact that the attendance the last two years has been running well over 300. The Rock Creek Club at its Mar. 9th meeting presented two movies, the first on "Steel Spans the Chesapeake," describing the Bay Bridge, and a second on "Radio Communications." The Chesapeake Club, on Mar. 12th presented YYB in "Something New in Magic," and on Mar. 26th PRL gave a talk and a demonstration on "Proper Beam Orientation for DX," which was also presented at the BARCS on April 2nd. BUD has at last made BPL, and at the rate his activity is increasing he probably will be in that column many times. YRK's Fiberglass beam withstood the 104-mile wind storm of Feb. 25th when many other beams and antennas suffered greatly. OXL and NHR operated a portable station on 10 meters at the Washington County Scout Council Jamboree held on Mar. 1st. Contacts were made with AUY, VAM, and JZY, giving the scouts many interesting sidelights on "ham radio," which aroused quite a bit of interest. The Radio Experimenters Association of the Boonsboro High School has applied for a club call. The club gave 3 Novice examinations in March. VAM, radio instructor at the Hagerstown High School, also gave 3 Novice examinations during March. BAW got his General Class license, after which he acquired a DX-100. The Antietam Net, which operates at 1900 hours the 1st and 3rd Tue. on 3827 kc. prior to the club meeting, will have a subnet under the control of ZGN on 3729 kc. to facilitate coordination with the increasing number of Novices in the area. HKS is installing a new multi-band antenna. MSN is operating s.s.b. and c.w. with a 20A and an LA-100 Linear. Liz, CDQ, visited Kitty, PPQ, at Miami, Fla., and also CO1AN in Havana, Cuba, doubling in brass and a vacation and also an escape from the cold weather at her own QTH. 5RVI/3 has appeared on the local ether waves. One of 3WV's sons, he has moved into the area from Texas and is applying for a W3 call. PQT again is on the air, being a reactivated club station at the NAS Patuxant River. Both the RACES group and the Harford Co. Civil Defense amateur network, under UCR, received very favorable publicity for their activities recently in *The Aegis*, Bel Air, the *Aberdeen Enterprise*, and the *Havre de Grace Record*. The articles dealt at great length with the activities during the heavy snow of Mar. 18th and other emergencies which have occurred recently. It can only be said that these articles are predicated on valuable services rendered and bespeak the readiness and willingness of amateurs to serve in the public interest when the occasion demands. Traffic: W3UE 596, WZL 591, CVE 506, K3WBJ 358, W3WV 288, BUD 282, UCR 78, COK 69, RV 52, PKC 28, ULI 26, PQT 20, ZGN 20, JZY 19, CQS 16, OYX 8, BKE 4, NNX 4, MSN 2, WKB 2.

SOUTHERN NEW JERSEY — SCM, Herbert C. Brooks, K2BG — SEC: ZVW. PAM: ZI. Appointments of the month are K2JGU as OPS and K2CWJ as OO. Congratulations to UAP, Camden, for having received the MARS Operator of the Month award and the A-1 Operator certificate. K2HPV, Pennsgrove, has been reporting into the phone traffic nets. BAY has been carrying portable 2-meter gear on business trips. Many of the clubs, including the SJRA, BCRC, and SCARA, are working on their Field Day plans. ZVW, our SEC and NCS on EAN, has been operating a QRP rig from his home QTH and his traffic skeds are kept from his 3NF station. The Delaware Valley Radio Assn. elected K2CLD, pres.; HX, vice-pres.; UPS, secy.; K2DSL, asst. secy.; and Charles Rebman, treas. RG is experimenting with transistors and has worked over 400 miles on 40 meters running 100 milliwatts. K2CPR worked 47 countries for 32,000 points in the recent DX Contest. The Tri-City Club, Millville, is making plans for its annual picnic. The construction of its 2-meter mobile receivers is nearing completion. The Burlington County Radio Club plans to build 6-meter portable units for use in emergency work. SUG, Hunterdon County EC, is doing a fine job in his area. LS, Pleasantville, continues to do a fine job as Official Observer. ECs are urged to report regularly each month to the SEC. K2BHQ, Basking Ridge, is heard on NJN, CDNJ, and 2RN. K2OOK also has several net skeds. Traffic: W2YRW 186, HDW 182, K2EWR 181, W2RG 172, K2BHQ 97, OOK 69, W2ZVW 61, K2JGU 52, W2ZI 39, K2CPR 4, W2SUG 4.

WESTERN NEW YORK — SCM, Edward G. Graf, W2SJV — Amateur radio has suffered a very great loss in the passing of our Asst. SCM, Jeanne Walker, W2BTB. Her call was internationally known on the ham bands as well as the Air Force frequencies, through her handling of traffic between servicemen and their families, in disasters, emergencies, or anything relating to public service. Her thoughts were always of others and she was a champion of all that was in the best interests of amateur radio. She was truly a great amateur and one who will be missed by the entire amateur fraternity. SEC: UTH/FRL. RMs: RUF and ZRC. PAMs: NAI and TEP. NYS C.W. meets on 3615 kc. at 6 P.M.; ESS on 3590 kc. at 6 P.M.; NYS phone on 3925 kc. at 6 P.M.; TAR on 3570 kc. at 4 P.M.; NYS C.D. on 3509.5 and 3993 kc. at 9 A.M. Sun.; TCPN 2nd Call Area on 3970 kc. at 7 P.M.; SRPN on 3980 kc. at 10 A.M.; ISN on 3970 kc. at 3 P.M. LCP is changing QTH to W6-Land and is using 2- and 6-meter mobile on the trip. IUF now has RTTY on 2 meters. DPL and UMS have KWS1s. QNA's beam was damaged in a storm. COB is having good luck at DX. BKC made a crystal frequency standard and a multivibrator which work FB. K2KIR is doing an FB job on the Auburn RC bulletin. C.D. RO K2DYB received RACES authorization for the City of Oneida and plans drills on 144 Mc. GXE has a new modulator. K2IJK is mobile on all bands. K2EJE joined the USAF. K2DYB is in Army MARS. KN2ROD has an AT-1 and a BC-312. WLR has built a True Matcher for 1.8 to 29.7 Mc. BLP, MTQ, and K2KIR have been appointed OO. OY is progressing satisfactorily after an operation. It is good news to hear that GIH is out of the hospital. The RAWNY has

(Continued on page 88)

The Decibel—What Is It?

SEVERAL years ago the writer had occasion to dictate a letter on microphones to a brand new secretary, just out of business college. When it came back for signature including the statement that "this microphone has a level of —55 deshabilles" (from the French, meaning "undressed") the resulting amusement and embarrassment can be imagined. Judging by some of the conversations heard over the air these days there are still a good many of us who are slightly deshabille concerning our decibels.

THE DECIBEL is a measurement of relative loudness and is defined as a change in the power level which is just detectable as a change in loudness under ideal conditions. (See ARRL Handbook 33rd Edition, page 566). The decibel is based on logarithms, as the response of the human ear to changes in sound intensity is also logarithmic. Measurement in decibels is therefore the most logical and convenient system wherever acoustic levels are concerned.

IT IS NOT necessary to get involved in higher mathematics to understand decibels; a few simple examples will show how they are applied. In power measurements each time the power is multiplied or divided by two, there is a gain or loss of 3 db. Thus, if we start with 10 watts as the zero level and go to 20 watts we have gained 3 db; to 40 watts, 6 db; to 80 watts, 9 db; etc. Multiplication by 10 means a gain of 10 db so if we increased the power to 100 watts we would have gained 10 db and to 1000 watts, 20 db.

IT WORKS the same way dividing or going down. If we divide the original10 watts to 5 watts we arrive at —3 db; to 2.5 watts, —6 db; etc. When the specifications of a SSB transmitter state that hum, noise and unwanted sideband are down 40 db it means that if the peak envelope power is 300 watts the energy in the unwanted sideband, etc., is one-ten thousandth or only 30 milliwatts. If an amateur AM transmitter with 500 watts output met the FCC requirement for broadcast stations of —60 db for hum level the actual power in its hum component would be only one-half milliwatt.

WHEN decibels are used in connection with voltage or current instead of power, the principle is the same but there is a gain or loss of 6 db for each multiplication or division by two. You will find an example in the "S" meter calibration of the SX-100. There are two scales on this meter, one marked in "S" units and db over S9 and the other in microvolts. The S9 or 0 db point corresponds to 50 uv. (approximate value at 3.5 Mc.). As multiplying the voltage by ten means an increase of 20 db we find the 20 db mark opposite 500 uv; 40 db opposite 5,000 uv; 60 db opposite 50,000 uv; etc.

PAGE 566 of the Handbook gives the formulas if you wish to calculate decibel values more closely than is practical with this "rule of thumb" method and for those who want further information we recommend pages 259 to 261 of Terman's Radio Engineering.

— Cy Read, W9AA

Bill Halligan Jr. W. J. Halligan W9AC for hallicrafters

voted your SCM a life membership. NAI is up and around after an illness. The Corning ARC is now incorporated. Director Crosley, 3YA, addressed the Northern Chautauqua ARC at its Annual Banquet. 3WBM was M.C. Fr. Chas Tardiff, 3EHG/2, showed his color movies of Africa at a meeting of the KBT. The joint meeting of the RAWNY, LARA, KBT, ARATS, and NFRC in Lockport was well attended and those present heard an interesting talk on Satellites by Dr. Dornberger, world famous expert and guided missile consultant of Bell Aircraft. RAWNY directors elected PPY, pres.; TAX, vice-pres.; JR, treas. K2HUK, corr. secy.; K2DJN, rec. secy. The Sidney ARC, which publishes a club bulletin, *SARC Sparks*, has elected ZLT, pres.; CYV, vice-pres.; MSJ, secy. K2HRB, an OES, had very good results on 2 meters because of Aurora. The Syracuse V.H.F. Club elected RHQ, pres.; EMW, vice-pres.; WZR, secy.-treas.; UFI, act. mgr. HNH is planning a 40-ft. tower for 6- and 2-meter beams. GBX has been appointed OBS. The IBM ARC publishes an FB bulletin. K2BHP discussed "Transistors in Amateur Applications" at an IBM meeting. Join the safari to the RAGS meetings, where everyone is tops in the field of amateur radio and electronics. Traffic: (Mar.) W2RUF 334, K2IYP 270, W2OE 156, K2LSF 131, DJN 113, JIR 72, DSR 70, AMZ 63, W2FPW 56, K2KXE 54, W2COB 43, EMW 38, SJV 38, K2KTK 34, W2CUQ 32, RUT 29, KUD 27, RQF 25, OZR 18, FEB 12, K2KNV 9, W2BKC 8, RJJ 8, K2DG 6. (Feb.) W2FPW 24.

WESTERN PENNSYLVANIA — SCM, R. M. Heck, W3NCD — SEC: GEG. RMs: NRE, UHN, NUG and GEG. PAMs: AER and LXE. The Mon Valley ARC meets the 1st and 3rd Thurs. at 8 P.M. Code practice is conducted on Mon. from 7 to 9 P.M. The Roundtable Net meets Sun. at 1 P.M. on 3980 kc. G. Lundy demonstrated his Panadapter at a recent club meeting. The Breeze Shooters Net, 29 Mc., reports incorporation completed. MUC has a 5100 now. SHT now has an 11-meter beam. SIR has been working DX, such as II, EI, and OEI3. AYB added an S-meter to his 88. W3UEP/KP4 is working into his home town with ZZQ, his brother. ZCP, a new member, now has an SX-100. CGP also is a new member. PII worked a VU. QYF added audio clipping. UJP worked W7- and KP4-Land with n.f.m. The Cumberland Valley ARC, now an ARRL affiliate, is doing a fine job of public relations with press releases in the Chambersburg newspapers. The main topic at a recent meeting was the AREC by DPC. The Brass Pounders & Modulators RC held a 10-meter ground-wave contest and will hold its Annual Hamfest Aug. 5th. UJP and SIR are working DX. VKS has a Triband ahead of his SX-28. ZUT and TTR are back on 10 meters. ACH has a new KWS-1 on 10-meter s.s.b. NKM is s.s.b. on 10 meters with a B&W. YOA was successful in removing TVI from 21 Mc. From the Steel City ARC RSL, APN, and ANX have new DX-100s. SDV, UUH, and NRQ gave a fine talk on amateur radio over WDUQ. NKM and YDP have new Telrex beams on 10 meters. OKU is working DX on s.s.b. SDV owns a G-66 mobile receiver. MPO, RIK, and NKM are working 40-meter phone with 9CWL. WHY is wrestling with filters to get on s.s.b. The Radio Association of Erie is holding evening work parties in order to rush the completion of the new communications truck. MED, VNC, YKE, WVG, and BFB have completed installation of the equipment and MED reports the wiring harness now is under way. 1ICP, Technical Assistant from Headquarters, spoke at a recent meeting on TVI. The talk was supplemented by slide films. LKJ is happy with the all-band reports received on his new all-band antenna. KKJ soon will be mobile. MED recommends 6-meter operation. BQE is having beam trouble. KVB nears the century mark on 20-meter phone DX. WBA and QWL soon will open a new radio parts store. The Mercer County Radio Association's code classes are conducted weekly by GEG. Mercer County EC, QHS, has made WAS after a long, long time. SYZ has been recommended as c.d. Radio Officer for Sharon. VWZ, a Novice graduate, is using an AT-1 and an HT-18 and has added an SX-100 to his shack. VKD is back from a tour of DX countries. PWN scored 37,350 in the DX Test. ZEW is working DX on 80 meters with QRP rig. WN3ERJ has organized the Pittsburgh Novice Net (PNN) with 25 members and ERJ manager. The net meets Thurs. at 1545 EST on 7162 kc. UTR enjoyed some nice contacts and DX working in the YL/OM contest on c.w. Traffic: (Mar.) W3WIQ 1322, NRE 148, ZEG 90, ZEW 75, UHN 56, YA 51, SIJ 38, KNQ 24, NCD 16, KUN 13, WN3ERJ 12, ERK 8, W3UTR 8, PWN 4.

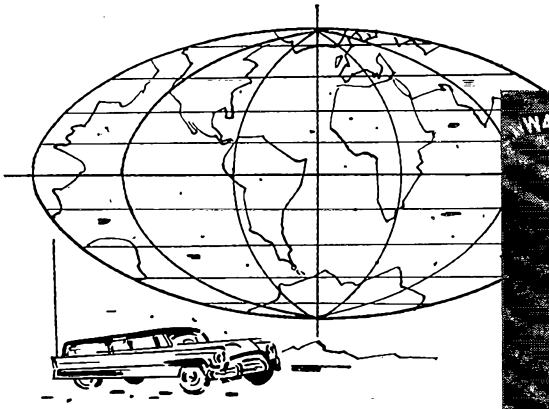
CENTRAL DIVISION

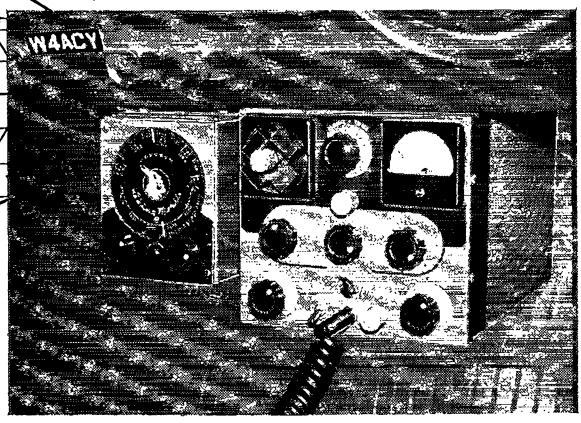
ILLINOIS — SCM, George T. Schreiber, W9YIX — Section Nets: ILN c.w., 3515 kc., Mon. through Fri. IEN, 3940 kc. SEC: HOA. RMs: BUK and CTZ. PAM: UQT. Cook County EC: HPG. By the time you read this MRQ will be retired and basking in Florida sunshine. ILN is making a drive for new members downstate. BUK has written to all radio clubs in the State. New officers of the Chicago Suburban Radio Assn. are DWD, WTG, BDM, and IDO. The DX bug has bitten both LQF and FVU with a private contest of their own; score to date, FVU 83 countries and LQF with 42. The Hancock County Emergency Net meets every Sun. at 0800 on 3845 kc. with everyone welcome. New calls licensed in the section are K9CKP (ex-W4SOD) and YJN, and Novices KN9CWF, CWQ, and CVQ, the latter from a class of 23 graduated by the Kankakee Area Radio Society. HKA has his RTTY going and has worked seven states on 3612 kc. OKI is pleased with the results of his new two-element beam. AA and NA are back on the air with low power but are having fun. The Chicago Area Club Council decided *not* to sponsor a division convention in Chicago in 1956 but press for a national meeting in 1957 or 1958. BA writes that things are quiet downstate, except when the dentist pulls his teeth. UVM is back in school and has a new Ranger to drive the old kw. K9CFJ has a coax-fed doublet on 10-meter c.w. and worked all over the country and Europe. UIN writes that the Evanston gang is becoming interested in MARS, BUK, KCW, etc. He has finished his code practice sessions and will resume them after Labor Day. Congrats to EZA, the son of VEY and K9AXS, who wed ex-WN9LBP. 9HAW, president of the Greenville, Ill., College Radio Club, writes that so far they have not had a failure in their code and theory classes for Novices. Warren County AREC still is conducting tests. SYF, SKI, and BTF have new DX-100s on the air. BTF, OJK, NBF, and NOT have all graduated from Novice to General Class, writes VSX. The Zion Radio Club is conducting a Novice class, with LL teaching the theory and QAB the code. HUX reports he has his portable for summer outings finished and that it works. The Joliet Amateur Radio Society has a 2-meter net going with MEZ, LVG, MHC, GYZ, OTV, and ODT as active members. The net specializes in "coat hanger" antennas and regularly works into Chicago. SKR put the finishing touches to his grounded grid amplifier. SXL reports that 100 per cent attendance is nothing for the DeWitt County nets; they make it all the time. LI writes that the Elgin c.d. gang is "getting on the ball and it looks like we will wrind up with a communications center." DRN reports the following enjoying 432 Mc. regularly: AGM, ZQT, BOD, OBW, and JHH. HOV writes an interesting column of notes and gossip for *Ham Gab*, the official organ of the Hamfesters Radio Club. The paper, a six-page job, does much to hold the club together. K9CFJ has been appointed public relations officer of the Illinois Net. BRD is president, PDH and PDI, veeps, HPJ treasurer, and CEE secretary of a Brew, Propagation, and Pizza Society, with ZJZ and EDH, co-sergeants at arms. The group is composed of commercial operators at the Illinois State Police station, KSB 47. We are revising the files of appointments. Please look at the date on yours. Traffic: (Mar.) W9DO 1420, SHR 639, MAK 466, YYG 258, FAW 165, MRQ 151, AA 135, CTZ 90, YIX 77, BUK 61, ICF 56, SXL 53, K9CFJ 52, W9VEY 33, AMD 25, EHY 24, EDH 23, STZ 22, LL 20, UVM 10, VSX 9, FRP 8, HPG 8, HKA 2. (Feb.) W9ICF 34, CZB 28.

INDIANA — SCM, Seth Lew Baker, W9NTA — Nets: QIN, 3656 kc. 1900 EST M-S; RFN, 3656 kc. 0900 EST Sun.; IFN, 3910 kc. 0900 EST daily and 1830 EST M-F; CAEN, 1805 kc. 1900 CST M-F. All Hoosiers are urged to participate in Field Day June 23-24. Hamfest dates: IRCC at Ft. Wayne July 15th; Kokomo Aug. 5th; Evansville Aug. 26th. UWL is installing 20- and 75-meter s.s.b. in his Cessna. Appointments: IFZ as OO; DZC as OBS; JGS as Daviess Co. EC; and FFE as Switzerland Co. EC. New Novices: KN9CQS and KN9BBP in Clark Co.; KN9TPJ, who is LDB's father; KN9CRA in Seymour. ASX graduated 8 Novices from his classes. JVF and his XYL, PBT, have a new harmonic, Ruth. BKJ is chairman for contacts between Urbana, Ill., and Flint, Mich., for the Powder Puff Derby July 7-8. The Weather Bureau is issuing FB certificates to members of RFN. New officers of the CCARC are IRT, pres.; HRY, vice-pres.; EAO, secy.; ANV, treas.; and JBQ, act. mgr. NCN, AKE, TDI, and SIX dropped the "N." Code and theory classes are conducted by DKC and ANV. The new call for the Ft. Wayne c.d. station is K9CLU. DES is Seymour ARC president. AMW reports better results after raising his antenna. JGS changed his 15-meter beam to 10 and added 10 new countries. The TARA elected LOT, pres.; YXU, vice-pres.; IMU, secy.; YWW, treas. WQS, director. SIO is a new Tech. Class licensee in Columbus. The Fayette Co. RC held an XYL pitch-in supper. NH made 148 QSOs in the DX Contest. New in Indianapolis are KN9BSU and KN9CJQ. UQW has moved near Noblesville. MHP has a 5-over-5 beam on 6 meters and works Dayton, O., on a regular sked. SWR has an SX-100. AQQ soon will be back on 6 and 10 meters. MNM is new in No. Liberty on 75 meters. PSV, an OT, is back with the call K9KKY on 6 meters. Ft. Wayne has 12 fixed and 12 mobile on 50.8 Mc., plus 1 each at Garrett and Waterloo. CTF is on 6 meters with 10 watts and a beam. CYC plans to erect 10- and 20-meter beams as soon as he is released from the hospital. KN9AZF has an NC-300. PPD has a new tower for his 15- and 20-meter beams. A new Tech. Class call is ZSB and a new Novice is KN9CTE, at New Castle. LQB worked 50 counties in the contest. KYQ has the big rig back on the air. NTI and K9AOB are going on 2 and 6 meters. MJJ has an NC-183D. EHZ and NTA have Traffikers Club 2500 certificates. The State RACES plan has been filed after months of hard work by QYQ and his committee. Those making BPL are KTX, NZZ, JOZ, SVZ and ZYK. IFN traffic: Morning 158, evening 221, total 379. QIN traffic was 217, RFN 72, and CAEN

(Continued on page 98)

W4ACY works 42 DX countries with the Viking Mobile





Not just a transmitter . . . but a COMPLETE MOBILE TRANSMITTING SYSTEM!

Here's another of the many reports on the outstanding performance of Viking Mobile Equipment. Phil Wicker, W4ACY, an active ARRL member, has logged 42 DX countries (32 confirmed) with his Viking Mobile VFO and Transmitter.

VIKING "MOBILE" TRANSMITTER

This power-packed Viking "Mobile" Kit delivers 60 watts maximum PA input . . . instant bandswitching on 75, 40, 20, 15, and 10-11 meters. Gang tuned exciter through final — series tuned link output circuits for each band ganged to a single front panel control! RF fixed bias supply saves up to 7 amperes car battery drain. PP807's modulating a single 807 provide terrific audio punch for cutting through QRM. Compact — only 6" high by 7" wide by 10" deep — designed for under-dash mounting — all controls readily accessible. For 6 or 12 volt operation.

Cat. No. 240-141 Viking "Mobile" Transmitter Kit, less tubes, crystals and microphone. **$99.50** Amateur Net

Cat. No. 240-141-2 Viking "Mobile" Transmitter, wired and tested, less tubes. . . . . **$144.50** Amateur Net

VIKING "MOBILE" VFO

Extremely stable, only 4" x 4½" x 5". Designed for steering post or under-dash mounting. Will drive any straight pentode crystal stage. Vernier dial calibrated 80, 40, 20, 15, and 11-10 meters. Tube line-up; 6BH6 oscillator, 6BH6 amplifier/multiplier, 0A2 regulator. Requires 6.3 V at .45 amps. or 12.6 V at .25 amps. and 250-300 V DC at 20 ma. Complete with tubes and cables. Plugs into Viking "Mobile" or may be used with any mobile transmitter.

Cat. No. 250-152 Viking "Mobile" VFO Kit with tubes, and assembly instructions. . . . . **$33.95** Amateur Net

Cat. No. 250-152-2 Viking "Mobile" VFO, wired and tested with tubes. . . . . **$49.95** Amateur Net

"WHIPLOAD-6"

Provides high efficiency base loading for mobile whips with instant bandswitch selection of 75, 40, 20, 15 and 11-10 meters. On 75 meters, a special capacitor with dial scale, permits tuning entire band. Other bands covered without tuning. Air-wound coil provides extremely high "Q." Fiberglas housing protects assembly. Mounts on standard mobile whip.

Cat. No. 250-26 "Whipload-6". . **$19.50** Amateur Net

Free 8-page catalog! Write for your copy today!

DYNAMOTOR POWER SUPPLIES AND BASE KITS

Supplies voltages for all stages of Viking "Mobile" and Viking "Mobile" VFO. Base contains contactor, fuses, filter and adjustable 50 watt dropping resistor. Supplied with connectors for Viking "Mobile." Rated 500 volts, 200 ma. intermittent. Base kits accommodate PE-103, Carter and others.

Cat. No.		Amateur Net
239-102	Dynamotor power supply, 6 volt primary	**$89.50**
239-104	Dynamotor power supply, 12 volt primary	**92.50**
239-101	Base kit for 6 volt operation	**16.50**
239-103	Base kit for 12 volt operation	**17.40**

E. F. Johnson Company

2828 SECOND AVENUE SOUTHWEST • WASECA, MINNESOTA

Capacitors • Inductors • Knobs • Dials • Sockets • Insulators • Plugs • Jacks • Pilot Lights

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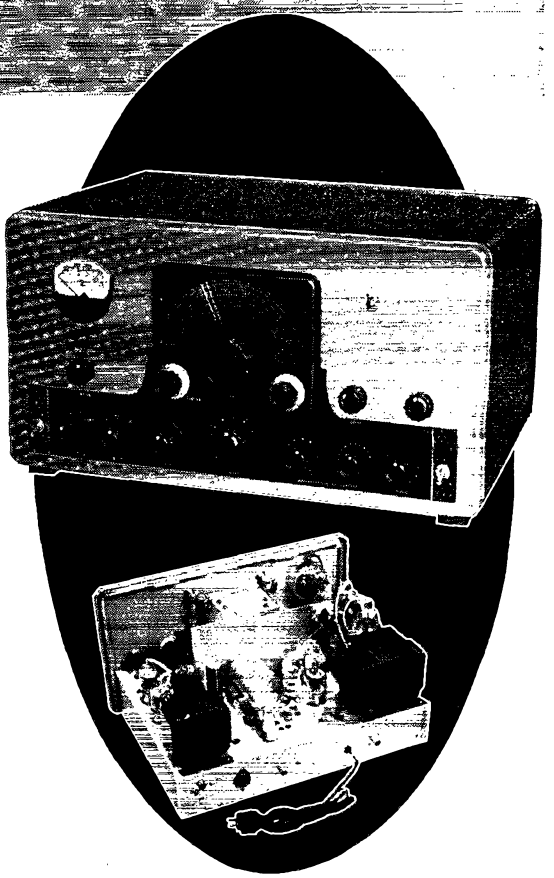
Introducing another NEW Viking transmitter the . . . "Valiant"



Bandswitching 160 through 10 meters . . . 275 watts input CW and SSB* . . . 200 watts AM!

*P.E.P. input with auxiliary SSB exciter

HERE'S EXCITING NEWS! Another new Viking . . . the "Valiant." This compact transmitter gives you outstanding flexibility and performance . . . power to punch through terrific QRM! The "Valiant" may be operated by built-in VFO or crystal control . . . VFO is temperature compensated and extremely stable — operates in the 1.75 to 2.0 mc and 7.0 to 7.45 mc ranges.

High efficiency pi-network tank circuit matches antenna loads from 50 to 600 ohms . . . tunes out large amounts of reactance — final tank coil is silver plated. Other features: complete TVI suppression; timed sequence (grid block) keying; high gain push-to-talk audio system; low level audio clipping; built-in low pass audio filter; self-contained power supplies and single control mode switching.

As an exciter, the "Valiant" will drive any of the popular kilowatt level tubes and will provide a high quality speech driver system for high power modulators. A nine pin receptacle on the rear of the transmitter permits the "Valiant" to be used as a filament and plate power source, and also as a modulator for auxiliary equipment such as a VHF transmitter.

The Viking "Valiant" is available completely wired and tested or as an easy-to-assemble kit. Cabinet is finished in attractive maroon and grey with green nomenclature. Complete kit includes assembly instructions, tubes and all necessary hardware. Dimensions: 11⅝" x 21⅛" x 17⅜". Shipping weight: 83 lbs.

Cat. No. 240-104 — Viking "Valiant" Kit with tubes, less crystals, key and microphone. **$349.50** Amateur Net

Cat. No. 240-104-2 — Viking "Valiant" wired and tested with tubes, less crystals, key and microphone. **$439.50** Amateur Net

E. F. Johnson Company

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Capacitors • Inductors • Knobs • Dials • Sockets • Insulators • Plugs • Jacks • Pilot Lights

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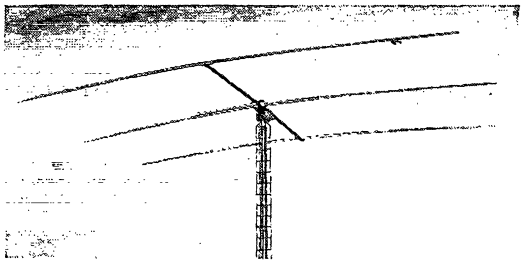
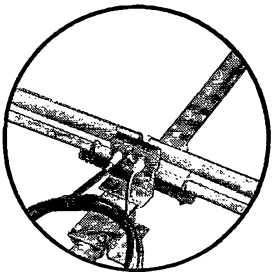
Johnson Amateur Equipment is sold only through Authorized Johnson Distributors—most offer convenient time payment plans. For complete information see your distributor.

PRE-TUNED BEAMS





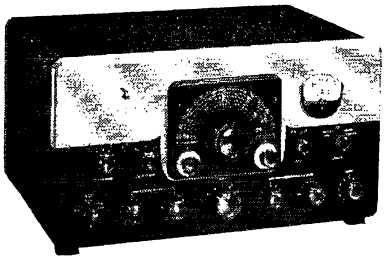
FOR 20, 15 OR 10 METERS— HIGHER GAIN! LOWER SWR! RUGGED CONSTRUCTION!

Completely pre-tuned with balun matching sections, these new Semi-Wide Spaced Beams have shown in recent tests that they will outperform all other commercially available pre-tuned beams. No adjustments necessary . . . simply assemble, connect your coax feedline and you're ready to go!

- Greater than 9.0 db gain over dipole.
- Pattern is uni-directional, less than 55° beam width.
- Greater than 27 db front-to-back ratio.
- Covers entire 20 meter band with lower than 1.4 to 1 SWR.
- Extra rugged construction — beam clamps eliminate drilling and subsequent weakening of structural elements. Boom is galvanized steel — extra heavy element construction.
- No loading devices needed for flutter dampening or corona discharge.
- Mast arrangement permits stacking of up to three beams.

Complete with 3 element beam, boom, and balun.

Cat. No.		Amateur Net
138-420-3	20 meters	$139.50
138-415-3	15 meters	110.00
138-410-3	10 meters	79.50



THE VIKING "PACEMAKER"

90 WATTS INPUT—BUILT-IN HIGH STABILITY VFO!

- 90 watts P.E.P. input SSB!
- Built-in, high stability VFO!
- AM and CW at the flip of a switch!
- "Fool-proof" voice controlled operation!
- Wide range pi-network output!
- Plenty of power to drive a kilowatt!
- Compact . . . for desk top operation!

Handsome maroon and grey cabinet . . . 11⅝" x 21⅛" x 17⅜". Supplied as a completely wired and tested unit only; all tubes furnished. **Cat. No. 240-301-2** Viking "Pacemaker", wired and tested, complete with tubes, less crystals, key and microphone. . . . . **$495.00** Amateur Net

Designed for the amateur who wants more than just a single sideband exciter, the exciting new Viking "Pacemaker" has the power to put it in the transmitter class with unmatched flexibility of operation and control. Completely self-contained and effectively TVI suppressed. Bandswitching on 80, 40, 20, 15 and 10 meters. Extremely stable built-in VFO operates in 3 to 4 mc region. VOX and anti-trip controls easily adjusted. Pi-network output circuit will load virtually any antenna system . . . plenty of power here, too, to drive conventional or grounded grid amplifiers up to a full kilowatt.

E. F. Johnson Company

2827 SECOND AVENUE SOUTHWEST • WASECA, MINNESOTA

Engineers Wanted

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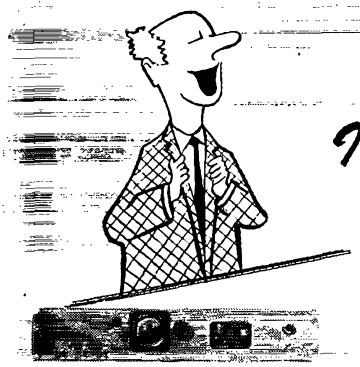
Capacitors • Inductors • Knobs • Dials • Sockets • Insulators • Plugs • Jacks • Pilot Lights

GPC • DRP • RAC • RCR • RTC • TAC • TIS • TRC

TMC? Sure!



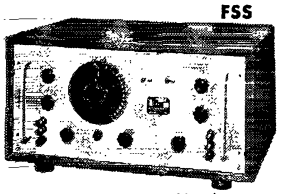
I've heard of 'em . . .

. . . they make a real full line of 24 hour continuous service communications equipment for commercials and governments . . . maybe that's why you never heard of them . . . before the **GPR-90** *that is . . .*

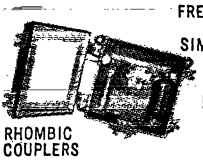
FREQUENCY SHIFT CONVERTER **CFA**

POWER SUPPLIES **PSPI-2**

FSS



FREQUENCY SHIFT SIMULATOR

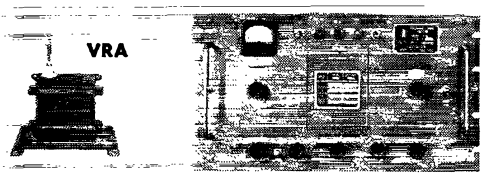


RAC

RHOMBIC COUPLERS

XFK

VRA



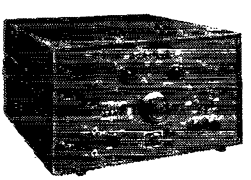
VERTICAL RECEIVING ANTENNA

FREQUENCY SHIFT EXCITOR

The advertisement on the opposite page was prepared for the AFCEA (Armed Forces Communications and Electronic Assn.) Show in Boston in May. The equipment shown on these two pages are some of the more than fifty different products conceived, designed and manufactured by TMC and being used in top installations throughout the world.

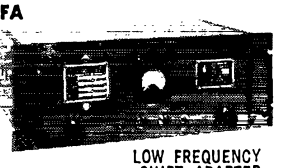
- FACSIMILE - TONE INTELLIGENCE.
- FREQUENCY SHIFT EQUIPMENT.
- LOW FREQUENCY - HIGH FREQUENCY.
- RECEIVING - TRANSMITTING.
- ANTENNA SYSTEMS EQUIPMENT.
- TEST EQUIPMENT.

PMO-3



PORTABLE MASTER OSCILLATORS

LFA



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Individual Sales Bulletins are available for the asking
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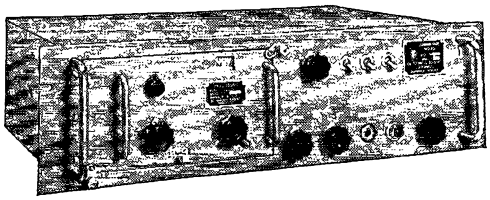
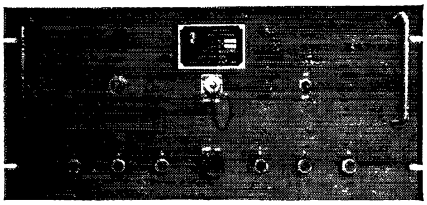
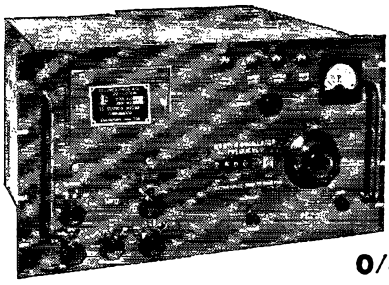


AN/FRR-49 (V)
AN/FRR-502
MODEL FFR COMMUNICATIONS RECEIVER
Bulletin S-124



AN/CU 5013 ( )/SRR
MODEL AMC-6 ANTENNA MULTICOUPLER
Bulletin S-155A



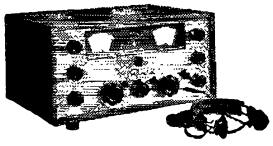
VARIABLE FREQUENCY OSCILLATOR (Direct Reading)
Bulletin S-134A

O/330
MODEL VOX Series 2

Commercially designed *and* accepted for A/N Nomenclature *without* change

FCDA APPROVED GPR-90 GPT-750

COMMUNICATIONS RECEIVER (General)



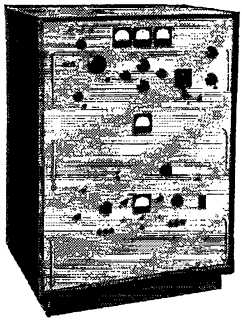
GPR-90
Being Considered
Bulletin S-179B

Although TMC products are commercially designed, many have been accepted and nomenclatured by the services for their use without change.

This is due primarily to clean, imaginative design, geared to operational requirements, but secondarily to the fact that the units are built to rigid specifications and from the same family of parts which can be easily supported from a logistic standpoint. Parts peculiar are kept to a minimum. TMC products represent the latest and best in the state of the art in their respective fields and the customer is assured of our continued efforts in this direction.

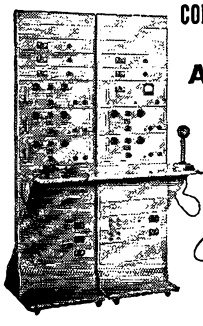
Full, detailed information of each of these products are available in special Sales Bulletins. The Bulletin number appears with each item—just write.

COMMUNICATIONS TRANSMITTER



GPT-750
Being Considered
Bulletin S-174

CONTROL TERMINAL

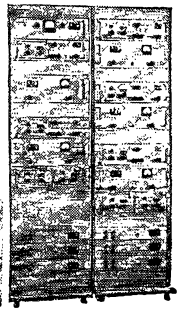


AN/FRA-19 (V)
AN/FRA-501
MODEL RCR

REMOTE CONTROL SYSTEMS
Bulletin S-124B

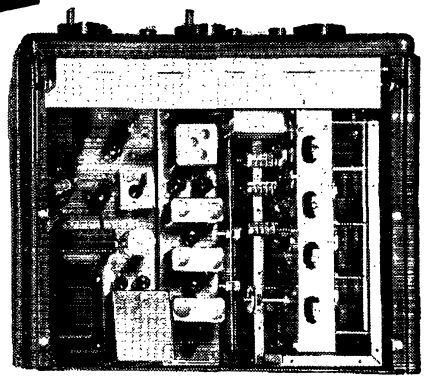
REMOTE TERMINAL

AN/FRA-19 (V)
AN/FRA-501
MODEL RCR

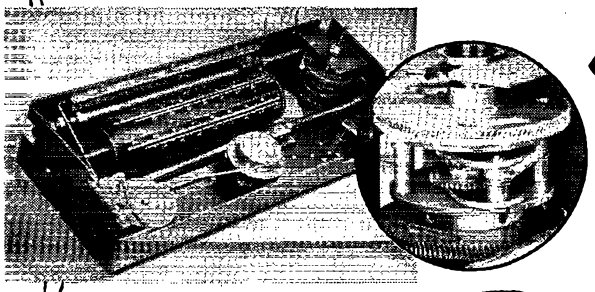


THE TECHNICAL MATERIEL CORPORATION
TMC CANADA LTD OTTAWA, ONTARIO
MAMARONECK, N.Y.

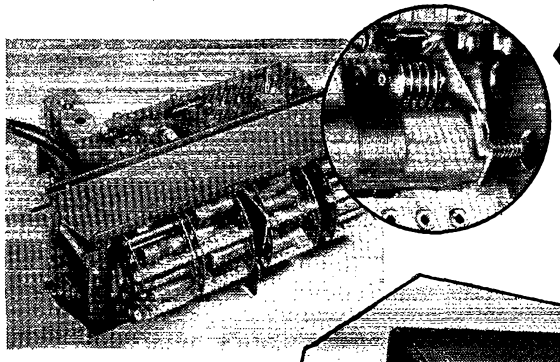
Why $595.00?



Here's the inside story of the PRO-310. It shows the front-end unit with the shield removed (right), the IF strip (center), and the audio, BFO, crystal calibrator, and power supply unit shown together (left). Chimney-type shield on rectifier provides means of exhausting heat through rear of cabinet. Here is the assembly of high-quality components designed for a professional communications receiver—not a receiver designed around available components.



Here's the inside story of the dial drive assembly. It uses precision gears in the differential and a worm-gear dial indicator drive mechanism which maintains dial readability to 0.05%. The differential drive mechanism (see inset) provides mechanical bandspread which allows the use of one capacitor gang instead of the two normally employed for electrical bandspread. This provides the best in overall performance.



Here's the inside story on the front-end showing the printed wiring board and the associated coil turret. Four tuned circuits are employed, with two ahead of the tuned RF stage for improved selectivity and improved signal-to-noise ratio, plus reduction of cross-modulation distortion. Inset shows ceramic coil support and contact assembly and the air trimmer. Components are of the highest quality for maximum stability.

the PRO-310 Your Best Buy!

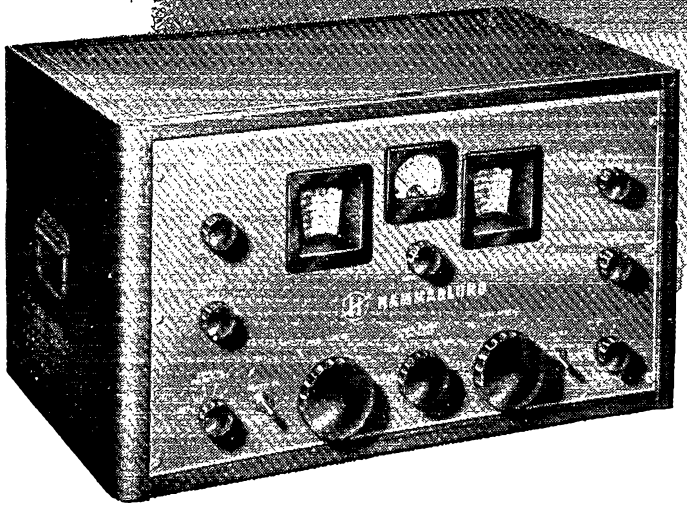
Established 1910

HAMMARLUND

HAMMARLUND MANUFACTURING COMPANY, INC., 460 West 34th Street, New York 1, N. Y.
INTERNATIONAL DIVISION: 13 East 40th Street, New York 16, N. Y.

Now better than ever!

the New HAMMARLUND HQ-140-XA



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★ Crystal filter provides extreme selectivity for high adjacent signal rejection.

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The new HQ-140-XA offers many new and exciting features —higher usable sensitivity—new, smooth-as-silk tuning with improved dial markings for greater accuracy—further refinements in the already fine superheterodyne circuitry—full 2-watt undistorted audio output—and many other advances.

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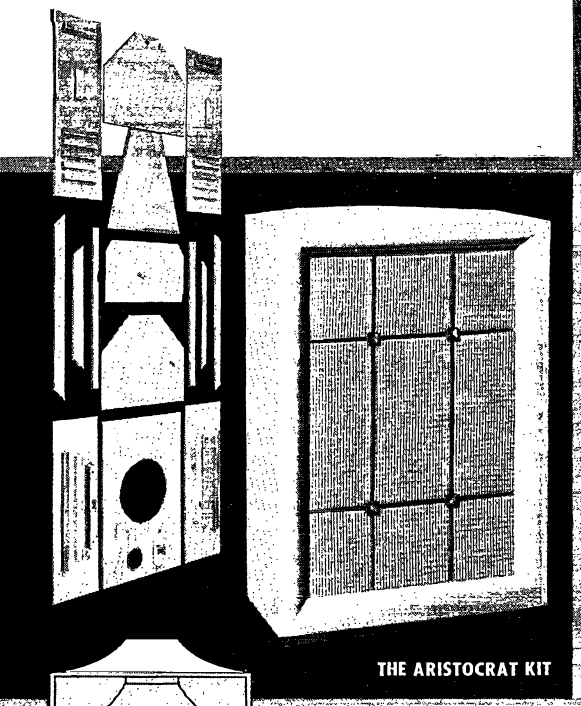

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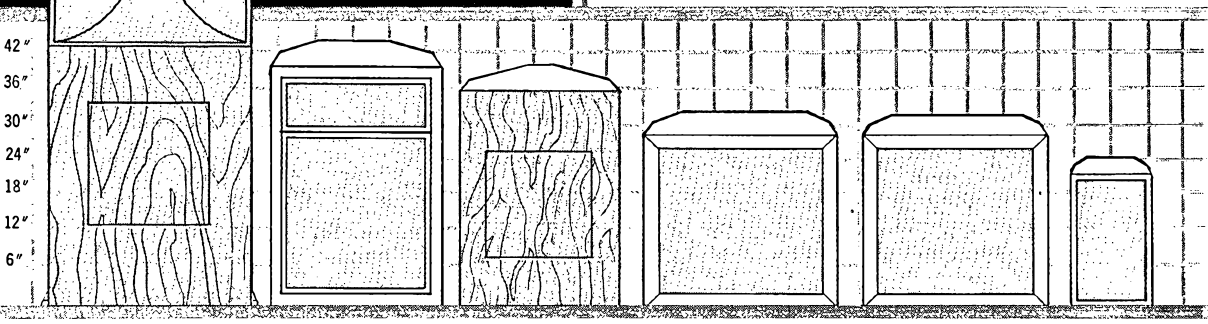

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THE PATRICIAN IV KIT. The interior working horn assembly kit for those desiring the finest. This augmented design of the corner folded-horn bass section for 18-inch, 4-way speaker systems delivers widest bass response of any loudspeaker system. Designed for use with E-V Model 103C Patrician IV four-way driver components. For built-in installations or to be decorated as you choose. Finished size: 57½ in. high, 34½ in. wide, 26⅞ in. deep. Shpg. wt. 150 lbs.

Model KD-1.....Net, $118.00

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Model KD-2.....Net, $65.00

THE CENTURION KIT. Four-way system folded-horn, corner enclosure. Uses exclusive E-V "W" type single-path indirect radiator for propagation of extended bass. Sealed cavity behind 15 in. low-frequency driver cone promotes superlative transient response, subdues cone excursions, lowers distortion. For use with E-V Model 105 or Model 117 package of driver components. Finished size: 42⅛ in. high, 29 in. wide, 22½ in. deep. Shpg. wt. 75 lbs.

Model KD-3.....Net, $87.00

THE REGENCY KIT. Most popular low-boy style folded-horn enclosure that can be used in corner or flat against one wall. Improves the bass range and response of any 15-in. speaker. Makes an outstandingly efficient reproducer when used with E-V SP15 coaxial speaker, 15TRX triaxial reproducer or 114A 2-way or 114B 3-way system. Finished size: 29⅜ in. high, 33½ in. wide, 19 in. deep. Shpg. Wt. 70 lbs.

Model KD-4.....Net, $73.00

THE EMPIRE KIT. Economical enclosure for use in a corner or flat against one wall. Designed for 15-in. speakers and separate 2- and 3-way systems. Particularly effective when used with SP15B coaxial speaker, 15TRXB triaxial reproducer, or 116 2-way or 116A 3-way system. Recommended components for Regency kit may also be employed. Finished size: 29⅝ in. high, 32 in. wide, 16 in. deep. Shpg. wt. 45 lbs.

Model KD-5.....Net, $51.00

THE ARISTOCRAT KIT. Folded-horn corner enclosure designed for 12-in. speakers and separate 2- and 3-way systems. For use with Electro-Voice SP12 or SP12B coaxial speakers, 12TRX or 12TRXB triaxial reproducers, and 108, 111 2-way and 108A, 111A 3-way systems. Smooth reproduction down to 35 cps, with remarkable purity and efficiency. Finished size: 29⅜ in. high, 19 in. wide, 15¾ in. deep. Shpg. wt. 37 lbs.

Model KD-6.....Net, $39.00

THE BARONET KIT. Phenomenal reproducer in very small size. This folded-horn corner enclosure is designed for use with E-V Model SP8B 8-in. Radax speaker. E-V T35 or T35B Super Sonax UHF driver can be added for a 3-way system. Finished size: 23 in. high, 14 in. wide, 13 in. deep. Shpg. wt. 24 lbs.

Model KD-7.....Net $26.00

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Send for Bulletin No. 211. Folders describing Electro-Voice high-fidelity speakers, systems and components; amplifiers, tuners and cartridges available on request from your Electro-Voice distributor or write:

(Continued from page 88)

257. Traffic (Mar.): W9NZZ 884, JOZ 618, ZYK 548, TT 408, EHZ 375, SVL 239, KTX 227, JYO 207, TQC 168, SVZ 167, UXK 142, SWD 135, UQP 124, DGA 93, ALL 82, EQO 59, NTA 59, DHJ 48, KRJ 48, VNV 39, WBA 38, QYQ 36, DOK 29, WUH 29, AMW 28, FHA 26, AB 25, EHE 25, CMT 21, DKR 21, QBD 20, STC 20, BRW 19, CTF 14, WTY 13, BDP 12, ZSW 12, NTR 11, LGD 9, AZF 6, CC 6, FGX 6, QXL 6, NSY 5, QR 5, NIO 4, UTL 4, AQR 3, GDL 2, HPO 2, NH 2, YVS 2, PPS 1 WAU 1. (Feb.) W9LIT 7, WLY 2, AMW 1, SWH 1.

WISCONSIN — SCM, Reno W. Goetsch, W9RQM — SEC: OVO. PAMs: AJU, NRP, and ESJ. RMs: BVG and KQB. Nets: WIN, 3685 kc., 7 P.M. daily; BEN, 3950 kc., daily; WPN 3950 kc., 1215 Mon.-Sat., 0930 Sun. Wisconsin mobile and emergency frequency: 29,620 kc. OMT garnered KZ5, KG4, and VE8 for some mobile DX on 21 Mc. AKY is now EC for Vernon County in addition to LaCrosse. EIZ can be heard regularly on WIN and c.d. nets. SQM has been putting finishing touches to the big final. We are sorry to report KBG as a Silent Key. JEF made an all-hand receiver from BC-454 and BC-453 and a crystal converter. The Lake Superior Radio Club is a newly-formed group in the Ashland Area. DIK had good luck in the DX Contest. PJT now has a BC-459. ZAV is using a Viking Adventurer and an S-40B. VEF, now KP4AEY, is active on mobile. JCL has a two-element 21-Mc. beam. KN9CJO is new in Menasha. GSS is building a three-element 10-meter beam. WN9VFD is working on his Conditional Class license. RZL has a new DX-100. SOA uses an NC-300 and a 21-Mc. beam. Look on 28-Mc. mobile for EZY. WZI has a new 21-Mc. vertical dipole. JCL, WZI, UOB, and GSS put on a half-hour show over WFRV-TV. SAX and WTD are attending Marquette U. KXK is visiting W6- and W7-Land. We wish to commend KQB for an FB job in handling WIN and the neway WIN bulletin. NCSs on WIN are GOC, DKH, KZZ, ZAV, KQB, KKM, and RTP. HAT is president of the new Waukesha Club. GPI is putting up a "trapped" dipole. GAB made first Wisconsin-to-Massachusetts QSO on 144 Mc. He has a 4-125A final at 900 watts on c.w. JWN has a new QTH, new transmitter, GPR90 receiver, and an all-band doublet. Our best wishes to GFL, who is convalescing. SQL is chairman of the MAREC. WYE has a new SX-100. OTL has a 3-watt mobile on 75-meter phone. KN9CAH and KN9AYK invite everyone to join with them on the Wisconsin Novice Net Sun. at 1300 on 3705 kc. IIU has been QRL putting WLFM on the air. Officers of the Kenosha Radio Communications Society are IXF, pres.; YOS, vice-pres.; JCC, secy.-treas. YOX is on s.s.b. with a 10B. RHP is back chasing DX. JCV is on with 14-Mc. ground-plane antenna. With 30 watts, YOS worked HB9, ZS6, VP1, and PJ2 on 28 Mc. 1ICP, of ARRL Headquarters, was guest speaker at a WVRA meeting in Wausau. Traffic: (Mar.) W9SAA 137, KQB 88, FFC 55, JCL 51, OMT 22, AKY 20, EIZ 14, RTP 13, SQM 13, GYA 10, JEF 10, UMJ 10, RQM 9, AJU 8, DIK 8, EFX 4, OVO 3, PJT 3. (Feb.) W9JCL 22, DIK 4.

DAKOTA DIVISION

NORTH DAKOTA — SCM, Elmer J. Gabel, WØKTZ — SEC: CAQ. PAM: HVA. RM: FVG. The State Hamfest will be held June 10th in Lindenwood Park located on the south edge of Fargo. DBH and DBI are the proud parents of a baby boy born March 14th. AVT is de-TVIing his rig. PHC is getting acquainted with his new Globe King 400. MQA is back at the old QTH after a winter's absence. TOM is building a 150-watt rig. The following K calls recently dropped the "N": ADI, APX, CCA, CNC, CND, and CMX. CNC is building a modulator for his Adventurer. New Novices are KNØEFF, EMA, and EFI, the XYL of VQX. EFI makes it six active hams at Buxton, which has a population of about 375. KØAIP, KØATK, CAG, GQA, EXO, KLP, UBG, and TSN/M were present at the AREC drill held March 25th. Traffic: WØUBG 79, LHB 75, FVG 43, WRK 34, VCQ 33, BFM 27, HVA 23, IHM 23, KTZ 21, EXO 18, SDN 17, BEA 14, KLP 11, NPR 10, OAB 6, PHC 6, KØCND 4, WØIRN 4, KØADI 2, WØCAQ 2, TOM 2.

SOUTH DAKOTA — SCM, Les Price, WØFLP — Assistants are APL, YKY, HOH, GQH, FKE, RMK, TI, MZJ, and GDE. PAM: UVL. RM: SMV. Ray Mayer, ex-ØENS, is now 4HFC and lives in Kingsland, Ga. OOL is going to Europe this summer on the student work or exchange program. We hear that Jack Gerkin, now in Washington, has a DX-100 so will be looking for South Dakota contacts. Ben Hunt, formerly WØSTI, now is 7CPM. DKJ is getting settled in the new house in Vermillion. The Huron ARC had its station, QDN, set up at the Huron Arena Mar. 24th, during the Boy Scout Exposition and Adult Hobby Show and originated some traffic. RGN is running for mayor of Vermillion. The South Dakota C.W. Net for March, 13 sessions, traffic 50. S.D. 75-Meter Emergency Net, 31 sessions, traffic 93. S.D. 160-Meter Net, 31 sessions, traffic 11. S.D. 75-Meter NJQ Noon Net, discontinued until Sept. 1st. S.D. 75-Meter WX Net closed April 14th. Traffic: WØZWL 539, SCT 129, KØARF 120, WØKXZ 87, BLZ 57, DVB 57, PHR 53, EXX 49, SMV 31, NNX 29, FLP 28, GDE 22, BQH 15, GWS 15, OII 14, KØAPZ 5!

(Continued on page 100)

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

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For more information on the 4-125A, see your distributor or write to our Amateurs' Service Bureau.

Be sure to visit the ARRL National Convention at San Francisco, July 6-7-8.

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MINNESOTA — SCM, Charles M. Bove, WØMXC — WMA now holds WAC. Thirty-two states, plus Hawaii, Alaska, and the Canal Zone, now have call letter license plates. KNØECZ is a new Novice in Hakensack with one awaiting his ticket and two waiting to take the exam. There also is one in Backus waiting for his ticket and one in Boy River waiting for his Conditional Class license. CFV is organizing an Emergency Corps in Cass and Crow Wing Counties. AZF is QNI the MJN using a 696 running 150 watts and using a 454 with a 457 as a Q5-er. The Minneapolis Radio Club, Inc., has secured its park permit for Aug. 19th. KH6ANC, of Honolulu, has moved to his new QTH in St. Paul. KLG, WVO, TUS, and RLQ made BPL this month. This month's BPL qualifies RLQ for the BPL medallion. WDW has worked KV4AA, DJ1ER, F8VQ, and some HB9s. Bill also holds a new Tenth RegionalNet certificate. The Mankato Radio Club has elected TCK, pres.; OET, vice-pres.; PBK, secy.-treas. For club meeting information contact PBK. VBS needs Asia for WAC; DX worked so far includes KH6, KZ5, KL7, VP6, CO7, TI8, PZ1 G5, G8, DJ1, and CT3. ALW reports into the TCPN on 3970 kc. six nights a week handling traffic for this area. LUX has been having antenna trouble with his KWS1. Others in Minnesota using the new KWS1 are DKL and CO. BUO has built a new Linear final amplifier using a pair of 833s in parallel. Power input is 1 kw. The Radio Amateur Teletype Society now has 20 members in the Twin City Area. Officers of the RATS are BP, pres.; LFI, secy.-treas. The University Radio Amateur Society has 21 members and meets on the 2nd Fri. of the month. Officers are HGH, pres ; ORZ, vice-pres.; QXA, secy.; and QXF, treas. TYX has been appointed ORS. ORZ is organizing an AREC net on 40 meters. It will meet at 1900 CST on 7120 kc. All interested may check into this net. At 0155 on Mar. 19th CO put out a CQ on s.s.b.s.c. with his beam pointed 13 degrees west of south and KC4USA at Little America answered on 14,216 kc. Ted's signal was Q3 S6 and was the first Minnesota contact. KC4USA is using a KWS-1s.s.b.s.c. ALL has worked WAS with his new three-element beam. Traffic: WØWVO 567, KLG 338, KJZ 235, TUS 223, RLQ 202, UMX 84, QXF 77, IRJ 61, QVR 55, KFN 47, LST 44, ZBL 44, ALW 43, UMJ 43, WDW 40, TVG 38, NNG 33, VEP 32, ZEL 32, HUX 31, MXC 31, TCK 30, ABA 28, RQJ 28, AEE 27, KNR 27, AZF 26, WMA 25, OJG 23, VEM 22, GWJ 19, BUO 18, LUX 18, VJS 18, IMJ 17, FCU 14, RVO 14, PBK 12, TQQ 12, VEZ 12, VXO 12, LIG 11, EMZ 9, GTX 9, QDZ 9, ZMK 7, IIW 6, YNY 5, CVD 2, VBS 2.

DELTA DIVISION

ARKANSAS — SCM, Owen G. Mahaffey, W5FMF — SEC: VKE. EJA is EC for St. Francis County. VZM and EMT have been operating on 10 meters lately. K5BUT is operating on 6 meters. JAX is NCS Mon. on the Graveyard Net; he also made WAS on 75-meter phone. KRO reports the organization of the Benton Amateur Radio Club with the following officers: SMZ, pres.; ING, vice-pres.; VAD, secy.; and HDQ, treas. Two new Novices in Searcy are KN5EAO and KN5DUN; also one at Centerton is KN5-DNG. YZI reports that he is moving to WØ-Land, where he expects to enter Missouri University for two years. We are sorry to see him leave as he has been the instructor in code and theory at the Ozark Academy Radio Club. The Hot Springs Amateur Radio Club was organized in the Air National Guard Headquarters. There were 18 amateurs and 3 hopefuls present. Officers elected were CAC, pres.; VAG, vice-pres.; KN5DCJ, secy.; and GDD, treas. A movie on frequency modulation was presented. Meeting dates are the 1st and 3rd Thurs. of each month. Traffic: W5FMF 52, YHC 11, KN5DKT 9, W5JAX 6.

LOUISIANA — SCM, Thomas J. Morgavi, W5FMO — An official visit by our Director, Vic Canfield, BSR, was made recently to the New Orleans Amateur Radio Club. FMO will be your SCM for another two years starting next June. K5ABD dropped a line to let me know that K5s BES, DVQ, ABD, ANN, DVI, JXC/5, and AHF, and W5s VAR, KRJ, TRV, ZDW, with TAO as net control station, meet each day at 12 noon on 7220 kc. for traffic and ragchewing. IUG, on s.s.b. with about 3 watts, is planning an 837 final. DOC is attending the National Conference of C.D Radio Officers at Battle Creek. He will give us details on the Delta Net, 3905 kc., when he returns. CWC is acting NCS for the Delta Net. GAD is back on after an absence of many years. JFB has a DX-100 on the air. DTN is using the mobile rig MXQ was off the air because of rig trouble but is back on now with RN5-CAN, MARS, and the Hurricane Net. He had an eyeball QSO with KRX. K5DVQ is operating a DX-100 on 40 meters. KC worked a mess of DX in the last contest. So did CEW, who snagged KC4USA, 14,332-kc. c.w. John Reinartz, K6BJ, paid a visit to New Orleans and the radio club. JCC has a new ground-plane antenna for 10 meters. UPM still is on the high seas. NE and YZL are getting the Westside ARC transmitters on the air. We have been notified by EGU of the passing away of BJI of Alexandria, on April 3rd. FMO finally is on s.s.b. with the Collins filter rig as described in Jan. *QST*. Monitor 3905 kc., the Louisiana calling frequency. Send in your reports at the

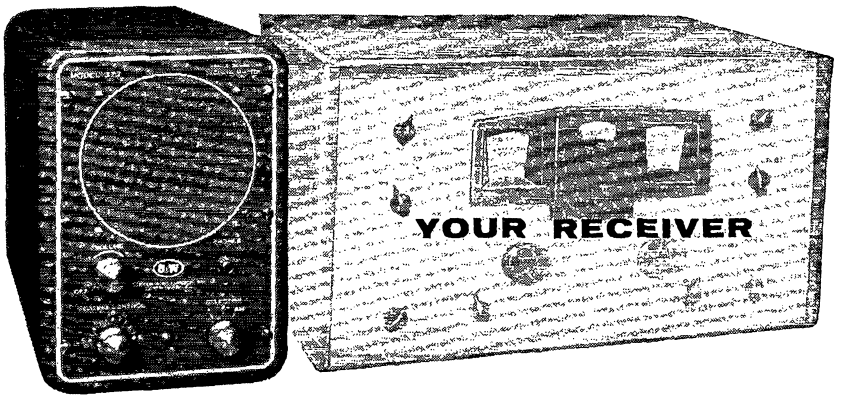
(*Continued on page 102*)

YOU HAVEN'T REALLY HEARD

SSB

CW

AM



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SSB Truly superlative SSB reception—far better than the so-called SSB built into many of today's receivers. The model 370 adapter not only lets you select the upper or lower sideband by a flip of a switch, but it *also effectively rejects all other unwanted signals.*

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You can add this adapter to all communications sets without, in any way, changing the receiver characteristics.

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end of each month. Traffic: (Mar.) W5KRX 178, NDV 82, MXQ 52, K5AGJ 38. (Feb.) W5KRX 122. (Jan.) W5KRX 115.

MISSISSIPPI — SCM, Julian G. Blakely, W5WZY — 9APY/5 (5JOF), now DL4RT, reports W5BWN is operator of DL4BH, W5ZPP is DL4XJ, and W5YFJ is now SVØWY from Athens. IM has his old call back and is active. JCK is on 15 meters. WZ has the 812c operating and is looking forward to getting the c.w. net going. IGW turned in a report of 357 on Easter traffic alone. The MRN may get a foothold now. OTD reports the Copiah Radio Club has rented a club room and has 10 code students, plus 6 AREC members. KN5DZE is active with an AT-1 and an NC-98. Columbus had a small hamfest with 5 carloads of hams from Alabama attending. ZNY has a new harmonic, a girl. WZY/WZZ also have a new harmonic, a girl for a total of 5. GUU now is Asst. MARS Director for Mississippi. Thanks to all for the news and letters. Traffic: W5IGW 357, GDW 62, WZ 12, OTD 4, RIM 4, BSA 2.

TENNESSEE — SCM, Harry C. Simpson, W4SCF — SEC: RRV. PAM: PFP. RM: WQW. Fine bulletins were received from the Memphis and Bays Mountain AR Clubs, from Tennessee C.W. and Memphis 2- and 10-meter Nets; also a nice "Sell or Swap" bulletin from BNK, State MARS Director. The grapevine has it that WQW has finished his new transmitter, but still operates from a prone position — on the floor, yet! K4GFL visited with RMJ and BMI. WQW and BMI set up an emergency c.w. station in Lexington for tornado traffic. AYQ and PKE set up W4SZI/4 at the same scene, and both nets operated efficiently. UWA, with high distinction, worked 5 new countries with 10 watts during the DX Test! PQP reports that KN4s EHA and EJO (now General Class) are father and son, each WAS, 11 countries, and 7 VE districts during their first 6 months as Novices! PL again made BPL, and is operating mornings only on two nets. WQT spoke before the Tenn-tucky Club on "What ARRL means to the Amateur." K4ABE reports that the Confederate Teen-Age Net, 3950 kc., 1600 EST Mon. through Fri., is going great. K4CWS, NCS for the Dixieland Teen-Agers Net, invites all stations with traffic on Tue. 7280 kc. at 1615 EST. A nice letter was received from BXG, who introduces KN4IBS, on 2 meters with a 32-element beam and a 522, and also reports that LNB has a new 32-beam. UVU is very active on 2 meters, and TZJ, FEP, ZEN, JSP, and VTT are getting new 2-meter converters. K4GXM is a new minister in Maryville and we hope he meets PVD and K4DOC soon. Traffic: (Mar.) W4PL 520, K4DIZ 288, W4VJ 127, TZD 78, UIO 54, BQG 52, TIE 50, K4WBF 49, W4UVL 47, HLR 43, IIB 41, OGG 37, PQP 37, K4BMC 34, W4PFP 34, SCF 31, UWA 24, K4CWS 21, W4TYW 17, K4WCL 16, W4IGW 14, PTI 14, TIG 14, YPG 14, GGM 13, K4BCV 12, W4HUT 12, W3AKJ 10, W4WQW 10, BMI6, SZI 6, GEN 4, PVD 4, TIZ 4, DCH 3, STI 3, FEB 2, K4GFL 2, BXG 1, HSX WQT 1. (Feb.) W4PQP 30, K4ABE 18.

GREAT LAKES DIVISION

KENTUCKY — SCM Robert E. Fields, W4SBI — SEC: CDA. PAM. YYI. RMs: ZDB and ZDA. K4CHK is getting a new DX-35 and has been working some DX, too — VE6, HK3 and CT1. ZLK has a new Q5-er and a complete emergency-powered station which runs off a 12-volt car battery. KKW has built a new TR switch, which he says works mighty ne. The circuit is available to anyone interested. RYL reports that 15-meter DX is FB. SZL says he is having a bang-up time on 20 meters. YOK is teaching a code class and says there should be at least five new hams there soon. 4URF/1 is busily engaged in paperwork on the *Post-Army Service Killowatt* and is planning on p.p. 813s and 100TH modulators, complete automatic break-in, sequential keying, etc., and should be home by the time this goes to press. SBI, JPV, KRC, and ZDA have been conducting a code class each week day on the air using an oscillator while transmitting via A3 emission. Traffic: W4QCD 279, KKW 150, ZDB 132, ZDA 100, RPF 83, CDA 52, NIZ 49, SBI 44, HSI 38, BZY 35, K4AGT 29, W4URF/1 28, JSH 27, JCN 23, K4DLI 18, W4WBD 18, KRC 14, ZLK 13, K4HEV 10, W4SUD 10, JUI 8, SZB 6, YOK 3.

MICHIGAN — SCM, Thomas G. Mitchell, W8RAE — Asst. SCM (phone), Bob Cooper, 8AQA; Asst. SCM (c.w.), Joe Beljan, 8SCW. SEC: GJH. One BPL certificate this month was issued to ZLK. Congratulations, Ralph. QMN net certificates for '55-'56 were issued to the following stations: IUJ, IV, NOH, OQH, PHM, NTC, SCW, SIB, NUL, PHA, ILP, WGU, DSE, ZLK, ELW, OGY, QQO, HKT, RVZ, FX, HSG, RTN, and FWQ. These are issued for a minimum of eight QNIs per month in any of the QMN sessions for three consecutive months. SRK is a new ORS appointee. New officers of the Niles Amateur Radio Club (NARC) are HKT, pres.; Bill Gregory, secy.; NLO, treas.; AIJ, act. mgr.; SWG, programs. JYJ submitted the following list of new officers for the Huron Valley Amateur Radio Club: JLM, pres.; RP, vice-pres.; ZRF, secy.; MFI, treas. Congratulations and thanks to all stations who offered assistance in the tornado disaster that hit the Grand Rapids Area. None of us likes to gain experience in that way, but we should learn of our deficiencies and be able to profit by the knowledge in the future. This is not intended as criticism,

(Continued on page 104)

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but rather a reminder. Those who were on the job did a fine piece of work. The Blossomland Club is carrying out experiments to determine the optimum mobile frequency for coverage of Berrien County. ESR now has 96 countries toward DXCC since August 1955! Here's wishing all of you the best of luck and success in this Field Day operation. From all reports of the plans being made, this one ought to be the biggest ever. Let's hope that conditions are as good or better than they were last June. March traffic was down 17 per cent from the February totals. Traffic: (Mar.) W8ELW 327, ZLK 200, ILP 126, QQO 82, JYJ 68, NUL 67, SCW 40, SJF 39, QIX 34, FX 31, IUJ 28, RVZ 28, FGB 24, NOH 22, PHM 21, SIB 16, OQH 14, PHD 14, OGY 13, FWQ 12, HKT 12, WXO 11, DAP 9, DSE 9, TIC 8, AUD 7, EGI 6, UCN 5, DLZ 3, FSZ 3. (Feb.) W8SHP/8 171, IUJ 62, RTN 62, PHD 30, OQH 20, PHA 19, SIB 19, NSS 5.

OHIO — SCM, Wilson E. Weckel, W8AL — Asst. SCMs: J. C. Erickson, 8DAE, and E. F. Bonnet, 8OVG. RMs: DAE and FYO. PAMs: HPP and HUX. We regret to report that QIE lost his wife. KCZ is putting up a 6-meter beam. IZB has a new DX-100. The Parma RC's 1956 officers are FFK, vice-pres.; and SQZ, secy.-treas. The South East RC's officers are CTZ, pres.; BPN, vice-prcs. and treas.; and OPC, secy. EVO's antenna blew down. STD has a new SX-100. BVJ has his General Class license and is doing fine on 2 meters. OSM, DUI, and HQZ are mobile. EXX now is General Class. CRS has a new mobile rig. CVZ has a Q multiplier and was laid up with flu. VKD has a new Viking rig. VKD and VQR have their General Class licenses. The big wind storm damaged the antennas of BMC, IXA, LAB, and YAC. CMS lost two beams in the wind storm. BKP's antenna blew down. NMP has a new YL harmonic. An N. E. Ohio 2-meter net is forming. Your SCM lost his mother and DNC, FRB, IKM, LDQ, OYV, and TND were her pall bearers. The Seneca RC received the station call of ID in memory of Charles Jacobs. I want to correct my error — AJW was in Europe a month instead of two weeks. The Seneca RC of Tiffin meets the 1st and 3rd Mon. and lists the following new calls: BDH and IUW, and KN8s ABL, AEC, AFL, AHK, and AJF. 5UJW, formerly with Goodyear Aircraft at Akron, took a position with HCJB in Quito, Ecuador, and will be looking for States QSOs on 10-meter phone. HNP is expanding RACES in the surrounding counties. MGB had his 75-A2 receiver stolen, serial No. 371. HWX underwent an operation. The Toledo RC's 1956 officers are RZM, pres.; UEL, vice-pres.; AAS, secy.; RBX, corr. secy.; and DN, treas. The Toledo Mobile RA's 1956 officers are MBE, pres.; JOR, vice-pres.; QCT, secy.-treas.; and MQQ, corr. secy. HUX worked her YL-WAS and is awaiting her certificate. BN and his XYL spent two weeks in Florida. VQP has a new 75-A3. BCQ broke a foot bone. The Ohio Valley Amateur Assn. is holding its picnic on June 10th. Make it if you can. Traffic: (Mar.) W8VTP 409, DAE 252, PLV 120, DG 81, PLQ 67, FYO 60, AXX 56, AL 55, IIR 44, HDA 38, SDI 36, VDA 23, CVZ 19, HPP 18, ORS 17, VWX 17, QCU 16, EEQ 15, RO 15, OJG 14, HNP 13, HXB 13, APC 12, ILC 12, JDN 12, GZ 10, SYD 10, EQN 9, PZS 8, AQ 6, MGC 6, SES/8 6, VCD 6, STB 5, STR 5, HZJ 4, ILE 4, LQB 4, LER 2, RSG 2, SBN 2, URN 2, VKD 2. (Feb.) W8OPU 85, SUI 28, EQN 26, PLV 25, SDI 25, PZS 21, HPP 20, PLQ 20, CVZ 17, AXX 16, URN 12, OJG 9, SES/8 9, STB 9, STR 7, VSA 7, BLS 6, HUX 6, HZJ 6, UAZ 6, UHW 5, APC 4, SYD 4, USU 2, VCD 2, LFO 1, LQB 1.

HUDSON DIVISION

EASTERN NEW YORK — SCM, George W. Tracy, W2EFU — SEC: RTE. RMs: BXP and K2BJS. PAMs: GDD and IJG. Section Nets: NYS on 3615 kc. at 1830 EST; ESS on 3590 kc. at 1800 EST; NYSPETN on 3925 kc. at 1800 EST; SRPN on 3980 kc. at 1030 EST; IPN on 3970 kc. at 1500 EST; MHT on 3716 kc. each Sat. at 1300 EST. The Stamford Club visited the Harmonic Hill Radio League in February. 1DX, of the ARRL staff, spoke on new receivers at the Schenectady Club in April. WN3DVJ is working /2 from the dormitory at R.P.I. in Troy. APF is on his way to India, Australia, New Zealand, and then to Europe before returning to the States. K2HEF is working with transistorized audio circuits. John Reinartz, of Eimac in California, was guest speaker at the Albany Association. Section Net certificates were issued to ATA, K2CXO, and HNW. New appointments: HZZ as Asst. SEC, K2BBJ as OPS, and K2OSY as OBS. Endorsements: IJG and GDD as PAMs; ANB as OES; GDD as OBS; K2CXO and CYW as ECs. AAD now is using the all-band antenna. K2BSD is one of 11 stations sending fallout wind patterns to the State Civil Defense Directors. BGO reports NYS Civil Defense "Operation Alert" will take place the week end of June 15th. All ECs are reminded to forward their certificates for endorsement. BSH needs Utah for WAS. TYC claims there is not much traffic on 40 meters these days. The NYS Net would welcome more stations from Westchester County. The ENY Medical Net has 18 stations reporting regularly and will resume operations in October. Traffic (Mar.) W2BXP 285, K2HPQ 68, BE 38, W2EFU 36, ATA 20, GDD 17, K2AWA 13, W2WWK 10, GTC 9, BGO 7,

(*Continued on page 106*)

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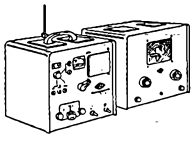

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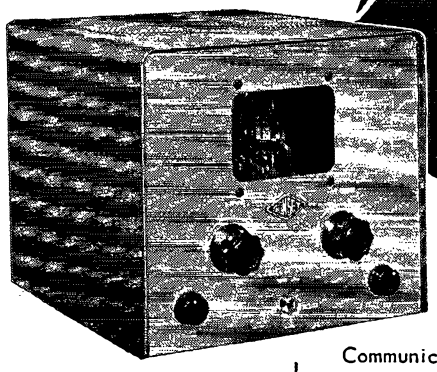

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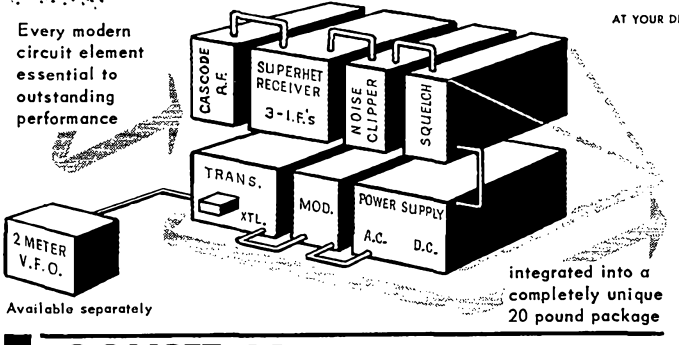

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K2EKS 6, W2GTB 6 BBJ 5, HNW 5, HQJ 5. (Feb.) K2BBJ 8, W2WWK 3, BSH 1. (Jan.) K2PPB 85.

NEW YORK CITY AND LONG ISLAND — SCM, Harry J. Dannals, W2TUK — SEC: ADO. PAMs: NJL and OBW. RM: WFL. Section Nets: NLI, 3630 kc. nightly at 1930 EDST and Sat. at 1915 EDST; LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 EDST. OBW is our new PAM. NJL will continue to devote his attention to NYSPETN activities. The LIPN, in its first full month of operation, had 29 sessions with a total of 94 different stations calling in to handle 156 messages. The net is looking for stations in N. Y. C., Brooklyn, Bronx, and Queens to assist in relaying traffic. The March snowstorms brought out many of our emergency groups on 10 and 75 meters. KEB, with an identical BPL score to last month's, was topped by KFV, for the first time this year — by three points! K2DPG passed his General Class exam. K2DEM worked Mexico for his 56th country. A new 14-Mc. folded dipole landed 4X4-Land for K2CQP's WAC. The Tu-Boro Club again will be operating from Shohola, Pa., on Field Day. 1SZO/2 is the latest Tu-Boro member. HJ is sporting a kw. on phone and c.w. A new multi-band trap antenna brings IN back to the low-frequency bands. IAG runs 60 watts to his new Viking mobile. New members of the Order of Boiled Owls are HMJ and HQL. MUM has a new two-element 20-meter beam atop a 40-foot tower. K2CF, IOI and LBT are enjoying new DX-100s. A Collins 75A-3 and Viking I form K2IHD's station. K2AED installed a Super 6 in preparation for summer mobiling. Ten watts on 7 Mc. provided K2PGP with his first DX — DL, HB, and KH6. W2s DUS, DQN, ELK, SMQ, and K2GFM responded to a Wantagh c.d. alert in record time. AZS replaced his 75A-3 with an A4. LCF increased power on 50 Mc. to 65 watts. MDM's 40-meter vertical has trouble staying vertical! MZX is secretary of the Stevens Institute RC, BSC, at Hoboken, N. J. WL is busy with a new 75A-3 and 50 watts on 21 Mc. YSL spends his spare time trying to master an electronic key. K2CMV snagged 10 new countries in the DX Contest but still needs Wyoming for WAS. K2CUI worked his first KH6 on 10-meter phone. K2KRC reports W4s and W8s on 50-Mc. c.w. K2s OZY and PSV dropped the "N." K2KTT has his AT-1 on 15-Mc. c.w. K2MBY is now on 6. Frog Hollow RC officers are K2EQH, pres.; K2IEH, vice-pres.; K2HJN, secy.; K2EOR, treas. and KDO, trustee. K2JTW has a Q multiplier for his HQ-129X. Officers of the North Shore RC are PBG, pres.; BKY, vice-pres.; WHY, secy.; GDL, treas. K2OEE will be operating from W4-Land during the summer. YBT has his 813 rig running 200 watts. WH/4, vacationing in Florida, keeps skeds with the home boys. New officers of the Eastern Suffolk RC are K2EGY, pres.; K2EC, vice-pres.; KN2OQC, secy.; K2ASB, corr. secy.; KDN, treas.; WUK, act. mgr. K2PWH is on 50-Mc. mobile. AEE is putting up new 80 and 40 full-size beams. K2KBQ and her OM, DIU, run 125 watts on all bands. Judy has WAC and WAS awards. New members of the Suffolk RC are WMS, K2s KCS and PCL, and KN2OIT. KN2RBM has her Adventurer on 15, 40, and 80 meters. The Levittown Club visited Press Wireless on a tour conducted by OXM. Officers of the UHF Club of Jamaica are OTA, pres.; R. Couppez, vice-pres.; QPQ, secy.; OKX, treas. K2DRJ is a new member of the club. K2ODE made WAS. K2HZC is going mobile. With Field Day around the corner, let's try to get out with our clubs. If you can't be in the field, then fire up the rigs at home and give the boys 'n gals in the field a contact. Field Day stations are reminded to send their message to the SCM. See you from YKQ/2. Traffic: (Mar.) W2KFV 1208, KEB 1205, AEE 251, VDT 249, K2DEM 162, CQP 147, W2WFL 134, LGK 76, K2OPJ 74, W2DSC 73, K2KXZ 60, GHS 49, W2OME 44, K2AMP 37, W2TUK 35, GP 32, K2DVT 29, W2OBW 29, IN 28, LPJ 18, DUS 15, UGF 15, PDU 14, DCI 12, PF 11, JFU 9, IAG 8, MUM 8, OJX 7, K2EQH 6, W2OBU 6, K2IHD 5, AED 4, ECY 4, PGP 4, W2ELK 3, K2LEP 3, W2LDQ 2, JGV 1. (Feb.) W2JCA 6.

NORTHERN NEW JERSEY — SCM, Lloyd H. Manamon, W2VQR — SEC: IIN. PAM: CCS. RMs: NKD, CGG, and MLW. The monthly report on NJN shows a total attendance of 386, sessions 27, traffic 194, best net attendance CGG, RG, and K2EWR, all 100 per cent. New officers of the Kearfott Amateur Radio Club are EYF, pres.; K2IRU, vice-pres.; K2KJP, secy.; and Phil Puglisi, rec. secy. VMX announced his engagement Easter Day. The wedding will take place June 23rd. All our best wishes to you, OM. HXP is working on antenna systems and new mobile gear. The Raritan Bay Radio Amateurs have the following new members: K2GE, K2MFX, and KN2QZA. K2MFX is active on 2 and 6 meters with Communicators. K2DDM is installing mobile gear in the new car. K2DSW is up to 97 countries. K2EQD again is active on 2 meters. K2JOM has a new antenna system. The Raritan Valley Club meets the 1st and 3rd Fri. of each month. New prospects for membership should contact K2JOM for further information. GVU has just completed 110 countries for another DXCC. This will make three. Fred also has made WAC ten times and WAS three times. NIY is QRL for a bit. K2GAN is working on portable mobile equipment for the local civil defense RACES group. K2MTL has been doing a bit of DXing of late on 20 meters. He worked 19

(*Continued on page 108*)

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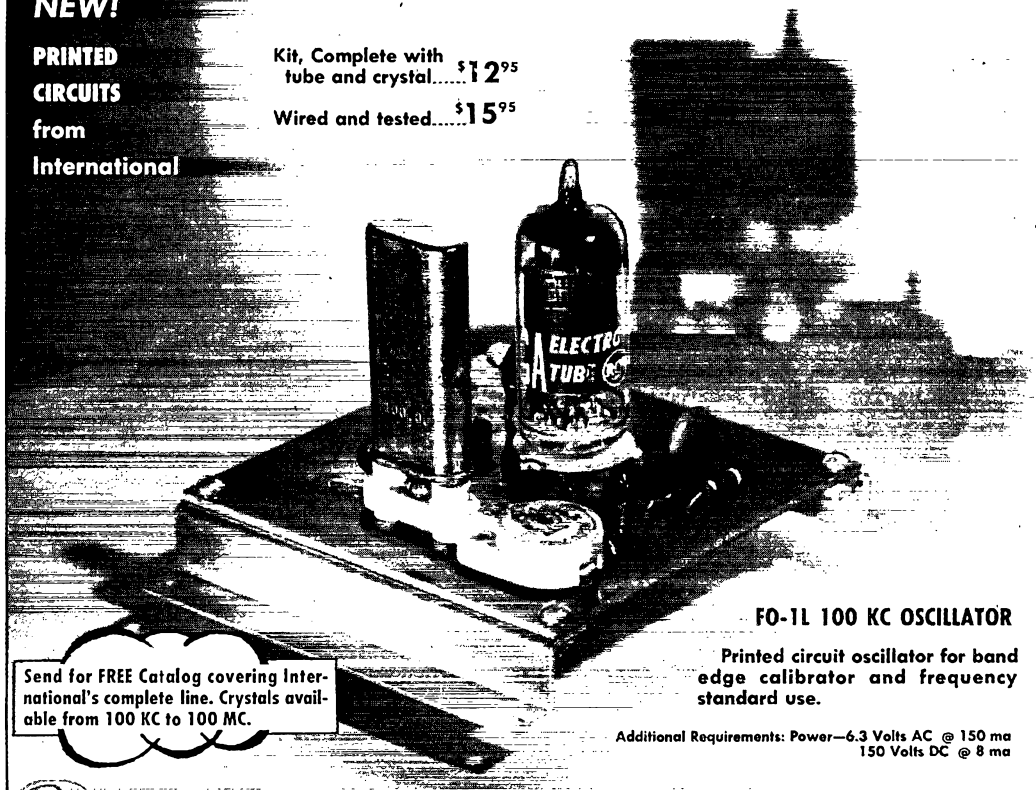

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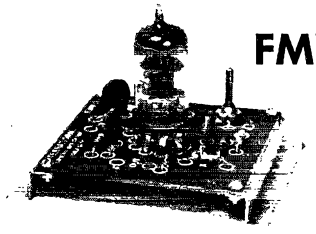

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countries during the first three weeks of operation and is planning to be on 2 meters with a new rig soon. The Irvington Radio Amateur Club has instituted "It Night." This follows in the form of a club auction. You either *sell* it, *swap* it, or *auction* it off. All members are invited to bring their surplus equipment to the meetings. NIE is going all out for s.s.b. K2ICE has repaired the 64 elements for the V.H.F. Contest. Lou has trouble with the big birds stealing the elements for nesting purposes. HJL has a new sixteen-element vertical array on 2 meters. AWL also is on the band wagon with the same type of array. K2HCE is worked frequently by the South Jersey gang mobile fixed atop Eagle Rock Mountain. GUM is building a fine RACES organization in Long Branch. K2IPR and K2DHE are on RTTY, the upper end of the 2-meter band. They invite fellow RTTY men to give a look for them. They are getting out with fine signals. New Jersey RACES groups were fully mobilized for operation on a state-wide basis May 1st. The State RACES groups supplied back-up communication for the Ground Observer Corps during this exercise. Additional groups assisted along the Delaware River in cooperation with the New Jersey Bridge Commission. OUS is fully recovered from a recent illness. VMX was elected alternate director for the TCPN 2nd call area. Traffic: W2MLW 318, K2GFX 94, EQP 88, W2BRC 53, CGG 43, GVU 17, OXL 9, CFB 7, K2JOM 6, W2CJX 4, K2BWQ 3, EMJ 3, W2HXP 1.

MIDWEST DIVISION

IOWA — SCM, Russell B. Marquis, WØPDR — PUR renewed his OPS appointment. BDR visited the Creston and Sioux City Clubs. Congratulations to LGG, BJP, and QVA for their first BPLs. QVA has a 10,000 Traffikers certificate, the result of 10 years of handling traffic and the first one ever made without benefit of a BPL. The 7 BPLs for this month gets a new Iowa record. The Quad City 6-meter Net will be integrated with the Davenport 10-meter C D. Net in the near future. CXX just returned from an aeronautical mobile trip to the Orient. WPM has a new homebrew 100-watt rig on the air. LJD had a nice write-up about his ham activities in the local newspaper. He had had a ticket since 1922 and has applied for membership in the OT Club. LCX is back on the air after rebuilding. KJN has a new 75A-4. New officers of the Des Moines Club are KØALD, pres.; WØPRF, vice-pres.; QNO, secy-treas. MYQ edits the monthly bulletin, *Static Sheet*. KNØEBZ, BRD, and DHQ are new calls reported from the Waterloo Club. TLCN will go on summertime schedule June 1st. USQ has worked 40 states on 6 meters. Traffic: (Mar.) WØSCA 1524, BDR 1339, PZO 640, LGG 551, BJP 544, CZ 538, QVA 286, SQE 190, LJW 139, BLH 73, PKT 42, KVJ 23, PTL 22, KØDBW 16, WØNGS 13, KØWAD 12, WØCQS 11, NYX 10, UTD 10, YI 10, YCL 9, DPI 6, EEG 6, FMZ 6, JPJ 4, QQA 4, HNE 3, PUR 3, DJY 2. (Feb.) WØQQA 5. (Jan.) WØCLS 6.

KANSAS — SCM, Earl N. Johnston, WØICV — SEC: PAH. PAM: FNS. RM: FEO. One of the new radio clubs in Kansas is the Larned Amateur Radio Club. Officers are DMH, pres.; DLP, vice-pres.; DWV, secy.-treas.; and DL, trustee of club station KØEIE. Meetings are held every Tue. at 7:30 in the club room in the Masonic Bldg. The club station has an SX-100, Globe Scout with BC-375, and 600-watt portable generator. OJQ sends a nice traffic report for KØFEI at Forbes Air Force Base in Topeka. Having a new five-element Telrex beam on 20 meters, Ray says they will accept traffic for any place on the globe. FEI checks in on the Kansas Phone Net and the Yankee Net regularly. From the *Ground Wave*, the newsletter of the Air Capital Amateur Radio station of Wichita, we note some nice prizes were given to the winners of the last series of mobile hunts. BMV won first, receiving a Heathkit VFO and power supply; KØBQB took second place, receiving a Heathkit grid-dipper; and TSL took third, winning a Heathkit Q Multiplier. Wichita has 128 calls on its c.d. roll call. The Jayhawk Amateur Radio Society of Kansas City has a new meeting place, class room D in the new National Guard Armory. The club meets the third Thurs. of each month. Traffic: (Mar.) WØOHW 1006, KØFEI 623, WØBLI 279, NIY 258, QGG 203, FNS 131, MXG 82, TOL 75, VZM 67, ABJ 63, SAF 62, RXM 56, FDJ 43, QJB 35, YVM 28, ONF 19, LQX 16, TNA 14, FCE 13, LIX 13, KØAHW 11, AOQ 6, KNØDDW 6, WØGYK 6, VFP 6, ITO 5, MOU 4, UAT4, TSR 3, VFC 3, DEL 1. (Feb.) WØFEO 101, WWR 12, ECD 9, TSR 9. (Jan.) WØFVD 5.

MISSOURI — SCM, James W. Hoover, WØGEP — CPI handled over 500 messages the two days before Easter. BVL has a new 75A-4 receiver. IJS is active in Boy Scout work. RTW is learning the watch repair business. The Missouri School of Mines Radio Club, EEE, has a new VFO and Q multiplier. KØACK has finished a 6-meter converter. GCL is now on 75-meter mobile. DPO is on the air after several years' absence. OMM received an OPS appointment. MFB was shut down a few days after wind removed the top of a mast. WEQ reports about 70 fixed and 25 mobiles on 6 meters in the St. Louis Area. WEK, KØACK, and KØBDT are sporting new cars and are working on mobile rigs. OMM is alternate NCS for BUL on

(Continued on page 110)

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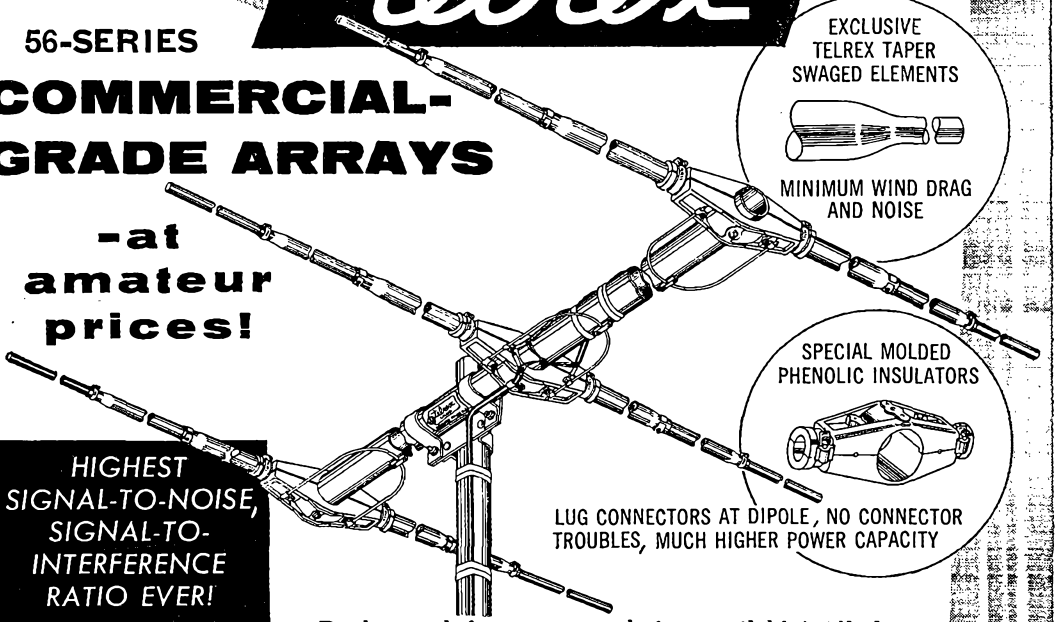

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The variety of models available in this series enable the amateur to dominate one or more bands from 1¼ meters through 80 meters. In fact, Telrex "Big Bertha" rotating masts can be equipped with arrays with gains exceeding many commercial service installations.

In service in all 48 states, on every continent and 78 foreign countries! Call or write for new illustrated bulletins

THE STANDARD OF COMPARISON

Telrex LABS.
TV & COMMUNICATION ANTENNAS

ASBURY PARK 42
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ORIGINATORS AND MANUFACTURERS OF THE WORLD'S FINEST TV AND COMMUNICATION ANTENNAS

MEN. KNØCHE has WAS with 815 contacts. KØs AWM and CNW dropped the "N" upon receipt of General Class licenses. GBJ qualified for a Traffikers 10,000 certificate. RTW has taken over a MON Net recorder from SAK. ZYI, Hannibal, is a newcomer on MON. MON needs an outlet in Kansas City. WPS, RACES RO for the St. Louis Area, arranged to furnish communications for 75 auxiliary police during open house at the new airport terminal building. Three days of operation were required: (1) 10 meters with ten participating, (2) 6 meters with 24, and (3) 6 meters with 15. The Southwest Missouri Amateur Radio Club has 57 members. *Sidebands*, publication of the St. Louis Amateur Radio Club, published an article on a transistorized "Capsule Code Practice Oscillator" by QHL. Traffic: (Mar.) WØCPI 1913, GAR 602, GBJ 243, BVL 170, OMM 118, CKQ 81, OUD 80, WAP 77, SAK 75, IIR 70, RTW 65, IJS 52, WFF 49, KIK 33, VPQ 23, EEE 20, ZYI 18, HUI 14, KØACK 7, WØEBE 5, BUL 3, MFB 2, GEP 1. (Feb.) WØIJS 127, SAK 88, VPQ 34, KØBDT 17, WØEBE 14, KØACK 6, WØQFD 4, ECE 2.

NEBRASKA — SCM, Floyd B. Campbell, WØCBH — Asst. SCM: Tom Boydston, ØVYX. SEC: JDJ: AKR has a WRL VFO and Globe Scout. The Tri-City Radio Club is setting up a 10-meter emergency system and hopes to cover 250 miles. We very reluctantly add EKP and SZL to Silent Keys. KØCDG is now on phone and a member of the NEB Phone Net; he got that RCC too. KØBDF and WØYCY are back on the Net. AEM has left the Nebraska shores and will be portable 2. PQP went East for a trip. KNØDYJ, KNØBMV, KNØDTT, UML, and KNØDQT are new members of NSS. The Western Nebraska Net had 27 sessions for March and handled 24 messages, with 22 members. The net is affiliated with Wyo. Weather, Wyo. Pony Express, Colo. Hi Noon, and So. Dak. Weather Nets and has contact with Wyo. C.W. Net and Nebr. 160-meter and 75 Phone Nets, also EAN, PAN, CAN, NCW, and 10 RN, and also is affiliated with MARS station KØARE. FTQ is busy with 160, 75 phone, 80 c.w. and liaison for TEN. The Tri-State Radio Club at So. Sioux City has affiliated with ARRL and Tom Dye is secretary. DDT is NCS for NEB and TEN and liaison NEB to TEN Thurs. AIN is QRT because of TVI. ZJF is busy on TEN, NEB, and CAN. IJK is moving to Denver in August. LRK has a new Elmac mobile receiver. RIG has joined Uncle Sam and probably will be on MARS one of these days. EWO was the CAP link between North Platte and Valentine during that much-needed snow recently. Traffic: WØRDN 582, ZJF 540, DDT 210, UJK 140, MAO 77, AIN 70, FTQ 51, EGQ 50, TIP 47, KØWBF 34, WØPQP 30, ORW 29, NIK 28, KØCDG 25, FBD 18, AKR 17, WØPPT 13, DQN 10, KLB 10, TFZ/Ø 7, KFY 5, KØBDF 4, WØBEA 4, OCU 3, SPK 3, VGH 3, KNØBQY 2, WØFMW 2, HQN 2.

NEW ENGLAND DIVISION

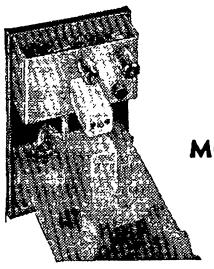
CONNECTICUT — SCM, Milton E. Chaffee, W1EFW — SEC: LKF. RM: KYQ. MCN and CN, 3640 (0645 and 1845); CPN, 3880 (1800, Sun. 1000); CTN 3640 (Sun. 0900); CEN 29,580 kc. With good conditions prevailing on c.w. our CN racked up 301 in 26 sessions. RM KYQ credits AVS with 24 appearances, RFJ and RGB 22 each, while TYQ was there 19 times. We announce with regret the resignation of LWW as PAM and expect to have a successor soon. In the interim RRE has been holding CPN records and his help is much appreciated. MCN met 21 times, handling 71 pieces of traffic with IBE, BVB, and RFJ most consistent. Members of CN-CPN-MCN met at Waverly Inn, Cheshire, April 14th for their annual conclave with 30 present. AIC is reported to have regained his 1930 call to resume activity in Meriden. New calls are JYU and Novices JGE, JGS, KAC, and KEV. DHP, now General Class, credits YWU, DFX, and MHF with getting him squared away and active. APA says there is no news but he woke up KX6AF, W7VMD/KP6, VK2AEK, KA2KK, KA2YA, 5A1TZ, and ET2US on 20-meter phone, which proves he hasn't been idle. RAN will be signing DL4 by the time this is printed. Torrington: HQM heads the TVI committee. JJL is transmitting pictures on 430 Mc. KXB, OQM, and TZO are active on 2 meters. YNP applied for ORS and OPS appointments and is active on several phone nets. OO reports were received from ANU, BVB, and GIX. Middletown: An active station was used at a Progress Exposition in March. QPD is chasing and working DX. The new B&W 5100B at AW is kept hot on nets and DX bands, including a QSO with KC4USA on 20-meter s.s.b. GVJ has a new DX-100. AW and YBH made BPL on originations plus deliveries. FVV has been taking advantage of 50-Mc. openings as OES. Appointments: FVV as OES; ZTQ as EC; AVS as ORS. Renewals: APA, GVK, and ADW as ORSs; APA as OPS; ADW, CUH, HDQ, and OAX as ECs; RFC as OO; WKW and HDQ as OESs. Section Net certificates went to TYQ, AVS, EVH, and DAV. Appointments should be current; what is the date on yours? Traffic: (Mar.) W1YBH 337, AW 245, TYQ 129, KYQ 121, RGB 108, EFW 98, LV 62, YNC 57, CUH 52, RRE 49, BVB 42, RFJ 40, BDI 38, WVV 29, KV 19, AVS 14, HYF 13, DHP 8, GIX 8. (Feb.) W1GVJ 16, EDA 14, YNP 7.

MAINE — SCM, Allan D. Duntley, W1VYA/BPI —

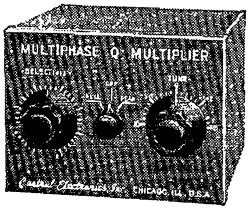
(*Continued on page 112*)

NEW MULTIPHASE "Q" MULTIPLIER

- Peaks Desired Fone or CW Signal
- Nulls Out Interfering Carrier up to 50 DB. No Loss in Speech Intelligibility
- No Insertion Loss — New Two Tube Circuit
- Special High "Q" Pot Core Inductor



MODEL AQ



MODEL DQ

MODEL B SLICER

CONVERTS MODEL A SLICER

Plugs into Model A accessory socket, converting it into a Model B. New front panel and controls provided. Enjoy all the advantages of "Q" Multiplier selectivity on CW, AM & SSB with your present Model A Slicer.

Wired.....$29.50
Kit.....$22.50

FOR AM, CW, SSB OPS

Desk Model "Q" Multiplier for use with any receiver having 450 to 500 KC IF. In attractive, compact case with connecting power-IF cable. Power supplied by receiver. Also provides added selectivity and BFO for mobile SSB or CW reception.

Wired.....$29.50
Kit.....$22.50

BUILT-IN "Q" MULTIPLIER

Upper or lower sideband reception of SSB, AM, PM & CW. For use with any receiver having 450-500 KC IF.

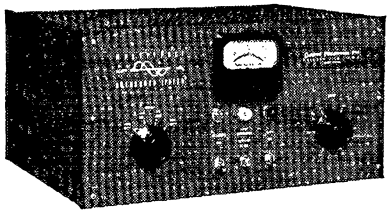
Wired.....$99.50
Kit.....$69.50

MODEL A SLICER

Same as Model B but less "Q" Multiplier

Wired.....$74.50
Kit.....$49.50

A NEW CONCEPT IN LINEARS



IN PRODUCTION

MULTIPHASE 600L

BROAD BAND LINEAR AMPLIFIER

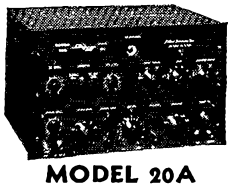
NO TUNING CONTROLS!

SINGLE KNOB BANDSWITCHING 10-160 METERS

- Single 813 in Class AB_2. 500 watts DC input.
- New band-pass couplers provide high linear efficiency: 60%.
- Designed for 50–70 ohm coaxial input and output.
- Built-in power supply. Bias and screen regulation. Automatic relay protection.
- Exclusive metering circuit reads grid current, watts input, RF output, reflected power from mismatched load —switch to any position while on the air!
- Completely shielded—TVI suppressed. Free of parasitics! Low intermodulation distortion.
- Choice of grey table model (17⅝" W, 8¾" H, 13" D) or grey or black rack model.

Wired, with tubes.....$495.00

*All orders received prior to April 20, 1956, will be filled at the old price.



MODEL 20A

- **20 Watts P.E.P. Output SSB, AM, PM and CW**
- **Bandswitched 160 — 10 Meters**
- **Magic Eye Carrier Null and Peak Modulation Indicator**

Choice of grey table model, grey or black wrinkle finish rack model.

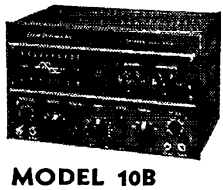
Wired and tested.....$249.50
Complete kit.....$199.50

MULTIPHASE EXCITERS

Check These Features

NOW IN BOTH MODELS

- Perfected Voice-Controlled Break-in on SSB, AM, PM.
- Upper or Lower Sideband at the flip of a switch, with 40 DB. suppression.
- New Carrier Level Control. Insert any amount of carrier without disturbing carrier suppression adjustments.
- Talk yourself on frequency.
- Calibrate signal level adjustable from zero to full output.
- New AF Input Jack. For oscillator or phone patch.
- CW Break-in Operation.
- Accessory Power Socket.



MODEL 10B

- **10 Watts P.E.P. Output SSB, AM, PM and CW.**
- **Multiband Operation using plug-in coils.**

Choice of grey table model, grey or black wrinkle finish rack model. With coils for one band.

Wired and tested.....$179.50
Complete kit.....$129.50

MULTIPHASE EQUIPMENT

Central Electronics, Inc.

1247 W. Belmont Ave. Chicago 13, Illinois

WRITE FOR LITERATURE ON THE COMPLETE MULTIPHASE LINE

SEC: TVB. RM: EFR. PAM: WTG. The Barn Yard Net meets Mon. through Sat. 1800-1930 on 3960 kc.; the Sea Gull Net Mon. through Sat. 1700-1800 on 3940 kc.; the Pine Tree Net Mon. through Sat. 1900-1930 on 3596 kc.; and the State C.D. Net Sun. 1100-1200 on 3993 kc. GPP is now GFP. GEG and GRG have both dropped the "N" from their calls. Congrats to you fine lads from Northern Androscoggin County. OLT and Mable have a shiny new Super 88. There are two new nets for you guys and gals to watch — the Andy Valley Net on 3940 kc. at 1000 Sun. and the Horse Traders Net on 3925 kc. at 1200 Sun. Both are a lot of fun and good listening. Another new ham in Casco is WN1IZS. WN1IZK also is being heard in Harrison. Anyone heard JRM on phone yet and who is he? PTL is fully recovered from his operation. Now is the time to make plans to go to Dexter. Hope to see you all there. We still are looking for a transmitter for SSF. What say, boys, let's look around a bit! Anyone hear GYY on the Sea Gull Net? IKW, CBU, and many others now are on 2 meters. TVB and YTE have a fifth harmonic — can't remember if it's pink or blue. If you 2-meter guys want to work WRZ you will have to flop your beams. Horizontal makes a whale of a lot of difference, we have found. HOU needs net control for the Barn Yard Net. Traffic: W1LKP 118, CEV 71, FNT 40, EFR 28, UDD 24, FZK 18, DAW 14, BX 13, VLU 13, BCB 7, TKE 4.

EASTERN MASSACHUSETTS — SCM, Frank L. Baker, jr., W1ALP — New appointments: AUQ as OO, IHC and AHE as OESs, RCQ as ORS, ADX as EC for Provincetown. Appointments endorsed: AR Belmont, TFJ Wilmington, VIN Carlisle, DDC Ayer, KT Georgetown, DPO Chatham, RUU Easton, MKX Lowell, AKN Sandwich, as ECs; BHD, CTR, and SPL as OBSs; AR, HIL, SCS, and IIM as OPSs; AGX and QLT as ORSs; NF as OO. UMA is on 6 meters. Heard on 2 meters: NAR, BMM, IVF, QZX, LHV, ILE, AZF, QF, IME, YHQ, DJ, JJI, and 9FJK/1. HQK, Saugus, is on 80 meters. Heard on 10 meters: ABJ, SGH, GOL, YWE, YS, VIX, URP, WXC, NAA, and FSZ. Heard on 75 meters: SVL, SON, OQ, MKX, BSY, BUA, JJS, WTY, PE, EZL, BJT, ZSJ, CMT, PSY, ALK, ZTI, and MFY. USM and CIB moved to Quincy. Ex-1TBR-3DDX, formerly of Lowell, passed away. The Winthrop c.d. group was very active during our snow storms of March. WZJ reports that K1AIR is now active on the air to provide the local net with a Cape Cod outlet at Otis Air Force Base, Falmouth. BPW is working DX on 20 meters. Winthrop has a RACES license. QLT is a little more active on the air. SUE/MM is operating in the Carribean Sea. The Falmouth Radio Club has 15 members now and a new project, 2-meter walkie-talkies. IOE is a new Novice on 80 and 2 meters. SMO has a certificate for the N. H. Net. WLU has a MARS license and is operating at K1WAS. WU has a new 304TH final. The Wellesley Amateur Radio Society held a meeting. MME and QPH gave a talk on 2-meter walkie-talkies at the Braintree Radio Club. ALP was present. BPA has a DX-100 rig. JEP is Asst. EC to AWO in Wenham. Radio Amateur Open House held a meeting with a talk by AAT on spark transmitters and early receivers. DDC has an El-Mac AF-67. IHC built a transmitter from a kit. KT says Georgetown has a RACES license. CTR is active again in MARS and has a Stancor mobile rig for 10 meters. THV is Radio Officer and BEG and OLC are his alternates in Marblehead. Net members: RNM, WWU, AGE, BUJ, YQI, MAN, NLU, UVU, COH, UFT, VUO, and NTX. New officers of the Hingham Amateur Radio Club are HFA, pres.; BIY, vice-pres.; ONV, secy.-treas. DWO is on s.s.b. and TUD is s.s.s.c. on 3804 kc. The South Shore Club held two meetings but snow storms held the gang at home. The P.L. Club meets at 11 A.M. Mon. through Fri. on 75-meter phone. The Cape Cod & Islands Amateur Radio Assn. and Radio Amateur Open House are now ARRL affiliates. A new club has been formed in Maynard, the Assabet Valley Radio Club, and meets the 2nd and last Mon. of each month at the Town House. Visitors are welcome. Officers are ZEC, pres.; PSP, vice-pres.; FF, secy.; EHG, treas.; OTN, act. mgr. Code classes are being held. AHE is planning on some gear for 420-1215 and 2300 Mc. Sorry to have to report the death of GD, who was killed in an explosion and fire on the S.S. *Salem Maritime*. The Framingham Radio Club has a nice book, called *HI-M U*, put out by MEG and BSO. PIW has TVI. SXD has a 75-A receiver. DUF is working in Needham. SGH changed jobs. NEM is trying s.s.b. RM has a vertical antenna on 6 meters. MJA is rebuilding. The Newton gang is on 6 meters every Sun. night. QMU is building a converter. LMU is working on the mobile rig. UH is revamping the DX-100. UG is in Florida. CMT is rebuilding for 2 meters. RWL has a new QTH in Wilmington. PBQ now is in Lynnfield. DFS and NJN spoke at a QRA meeting. UFM and TFJ have new shacks. TFJ is Radio Officer and also is in MARS. The Malden Amateur Radio Assn. held another auction. SCS and IIM moved to Wayland and have 2 towers 60 and 40 feet with a five-element beam for 15 meters. AKN is on several bands. 7HUV, ex-1HUV, would like to hear from any of the old gang. He has a new NC-300 and B&W 5100 transmitter. RUU says there are about 17 hams in Easton. He is mobile on 2 and 10 meters and has an SX-100. DPO has a 20-meter Gonset Bantam

(*Continued on page 114*)

HOW MUCH SHOULD YOU PAY FOR A GOOD ROTARY BEAM?

The only true measure of value is (a) performance and (b) amount of aluminum per dollar cost. 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.

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.)

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.

MATCHING. Matching of the transmission line to the beam is extremely simple and quick. Everything is furnished and the matching is automatic. No electronic equipment or measuring devices are required.

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.

MAST. Any Gotham beam can be mounted on a simple pipe mast. Diameter of the pipe should be between ¾" and 1⅝".

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.

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.

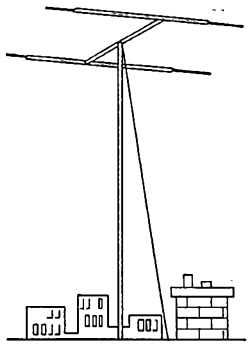
WHAT WILL A GOTHAM BEAM DO? A Gotham beam will amplify the transmitted and received signal tremendously and will greatly reduce noise and QRM.

NEW VERTICAL ANTENNAS

ENGINEERED VERTICAL ANTENNAS for 40 meters, 80 meters, 160 meters. Gotham Hobby Corporation proudly announces three vertical antennas for operation on 40 meters, 80 meters, and 160 meters. Each antenna is absolutely complete with 2–12 foot lengths of tubing and a loading coil, can be assembled in less than two minutes, and requires no special tools or electronic instruments for adjustment and operation. Radiation is omnidirectional, with maximum radiation at the very low angles necessary for DX operation. These three vertical antennas have been developed over a period of three years in response to requests by hams for efficient, fool-proof, small-space, low-cost antennas for 40, 80, and 160 meters. Literature available.

#V40 vertical for 40 meters.....$14.95
#V80 vertical for 80 meters.....$16.95
#V160 vertical for 160 meters.....$18.95

HOW TO ORDER: Send coupon with check or money order directly to GOTHAM or visit your local distributor. Immediate shipment by Railway Express, charges collect. Foreign orders accepted. Some leading distributors who handle GOTHAM beams: Offenbach & Reimus, Curle, M. N. Duffy, Alltronic, Purchase Radio, Lew Bonn Co., Henry Radio, Evans, Gib's Ham Gear, Hobe's Radio, Western Electronics, Harris Radio, Capitol Radio, Kinkade, Johannsen, W. H. Edwards Co., World Radio Labs, Graham Electronics, Geo D. Barbey Co., Hudson Radio, Selectronic, Radio Electric Service, Ken-Els Radio, NRM Wholesale Radio.



This Full Size Gotham Cost Only $21.95 And Brought In 87 Foreign Countries, All Continents And 30 Zones On 35 Watts!

MAIL THIS COUPON TODAY!
10-DAY MONEY BACK GUARANTEE

GOTHAM Dept. QST-J
107 E. 126th ST. NEW YORK 35, N. Y.

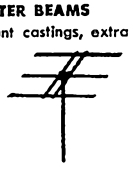
Enclosed find check or money-order for:

2 METER BEAMS			
☐ Deluxe 6-Element	$9.95	☐ 12-El	$16.95
6 METER BEAMS			
☐ Std. 3-El Gamma match	12.95	☐ T match	14.95
☐ Deluxe 3-El Gamma match	21.95	☐ T match	24.95
☐ Std. 4-El Gamma match	16.95	☐ T match	19.95
☐ Deluxe 4-El Gamma match	25.95	☐ T match	28.95
10 METER BEAMS			
☐ Std. 2-El Gamma match	11.95	☐ T match	14.95
☐ Deluxe 2-El Gamma match	18.95	☐ T match	21.95
☐ Std. 3-El Gamma match	16.95	☐ T match	18.95
☐ Deluxe 3-El Gamma match	22.95	☐ T match	25.95
☐ Std. 4-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 4-El Gamma match	27.95	☐ T match	30.95
15 METER BEAMS			
☐ Std. 2-El Gamma match	19.95	☐ T match	22.95
☐ Deluxe 2-El Gamma match	29.95	☐ T match	32.95
☐ Std. 3-El Gamma match	26.95	☐ T match	29.95
☐ Deluxe 3-El Gamma match	36.95	☐ T match	39.95
20 METER BEAMS			
☐ Std. 2-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 2-El Gamma match	31.95	☐ T match	34.95
☐ Std. 3-El Gamma match	34.95	☐ T match	37.95
☐ Deluxe 3-El Gamma match	46.95	☐ T match	49.95

(Note: Gamma-match beams use 52 or 72 ohm coax. T-match beams use 300 ohm line.)

NEW! RUGGEDIZED HI-GAIN 6, 10, 15 METER BEAMS

Each has a TWIN boom, extra heavy beam mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.



☐ Beam #R6 (6 Meters, 4-El).....$38.95
☐ Beam #R10 (10 Meters, 4-El)..... 40.95
☐ Beam #R15 (15 Meters, 3-El)..... 49.95

Name.....
Address.....
City.....Zone....State.....

beam and it works well on 15 meters. VIS and UOC, while in Florida, visited 4TAS/CCS. BOX is operating 6KXN in California. CP5EQ, formerly of Winthrop, is in Bolivia. The Winthrop drill had DEL, K2CCQ, BDU, CMW, JJI, DGY, DLY, DPN, IOO, ORV, EAJ, MQB, QA, TEO, EHZ, and the YLs on. AWO is on 15-meter c.w. and 2 meters. The Quincy Net and the Sector 1-B Net were very active during the snow storm of Mar. 19th. DXQ, ONV, and VOU were at IA in City Hall and ALP and WFQ were at ALP's. SH had the Red Cross group at Dedham and many messages were handled. Weymouth has its RACES license. ONK is home from the hospital and is on 10 meters again. Traffic: W1EMG 523, K1USA 273, W1EPE 153, IBE 136, K1AIR 98, W1AVY 60, CUW 42, BPW 37, BB 36, UKO 34, TY 22, AUQ 20, NUP 18, QLT 17, ATX 12, SMO 12, AKN 8, WLU 8, WU 7, AHP 6, SSZ 6, BY 4, CZW 4, DFY 4, FHJ 3, ADL 2, CAM 2. (Feb.) W1BOA 75, NUP 36, BPW 32, AOG 12, AKN 9, VTT 8, ABJ 2. (Jan.) W1BPW 1.

WESTERN MASSACHUSETTS — SCM, Osborne B. McKeraghan, W1HRV — SEC: RRX. RM: BVR. PAM: QWJ. The WMCW Net meets on 3560 kc. Mon. through Sat. at 1900 EST. OBS and EC endorsements go to SPF; EC endorsement to BCT. AGM is back from a Florida vacation. OBS ZEO is getting out Official Bulletins in spite of rig trouble. The WMCW Net has missed DWA, who has been working nights. DPY is enjoying his new NC-300. BPL goes to DWA for the third month in a row. Word from UPH in Iceland is that he has been licensed as TF2WBF. TXS has a new 75A-4. SXJ is building a new 60-watt mobile. DGJ has a new DX-100. FPH has acquired a Viking II. The Pittsfield Radio Club had an FB talk on antennas and antennascope by BKG and HPA. WPW reports the group in Athol is ready to form a radio club. The Hoosac Valley Radio Club in North Adams holds theory and code classes and meets the 2nd and 4th Tue. of each month. The Berkshire County Amateur Radio Assn. now is an ARRL affiliated club. AZW is pres.; HJL is secy. The Hampden County Radio Assn. held an FB auction April 6th to dispose of gear left by the late W1KK. The HCRA-sponsored radio school has completed the course and about 15 new licensees are expected soon. RO HRV, of Easthampton, has received RACES authorization. A c.d. station will be set up in the town hall and the communications group will start training as soon as the 6-meter gear arrives. Excellent cooperation from amateurs in the Worcester Area resulted when they were alerted by EC SPF during the Mar. 16th and 19th blizzards to help stranded motorists on Route 20. DRD, accompanied by DOZ, drove his mobile into the raging blizzard to rescue several children from stalled cars and bring them to shelter. Auburn police and the c.d. were alerted through VPD to open up and warm public buildings to shelter dozens of stranded motorists. COI reports hearing plenty of choice DX up in the hills and not much time to work them. Traffic: (Mar.) W1DWA 160, HRV 155, BVR 82, TAY 26, DVW 18, RWR 7, AGM 5, BYH 2. (Feb.) W1AGM 3.

NEW HAMPSHIRE — SCM, Harold J. Preble, W1HS — SEC: BXU. RMs: CRW and COC. PAM: CDX. NHEN is operating Sun. at 1300 on 3850 kc. Check in for information on RACES. GSPN needs a regular Concord contact for traffic to that area. GSPN is on 3842 kc. Mon. through Fri. at 1730. High scorers in the New Hampshire QSO Party: (N. H.) c.w., BFT; phone, CNX; combined, BFT; (Outside N. H.) c.w., JLN; phone, BXT; combined, JLN. 122 logs were turned in with many reporting all 10 counties. Certificates will be mailed soon. DYE made BPL for the third time in March. CVB has received his Gen. Class ticket. N1GNW put on a very successful demonstration of 2-meter operation for Epsom School. GMH has a new 15-meter beam and reports good hunting. FZ was high phone scorer in the January CD Party, BFT was 3rd on c.w. BYS is having a weekly sked with F7AR on 28 Mc. and talks with his son and XYL on duty in France. BXU attended the RACES conference at Battle Creek Apr. 18th. The Concord Brasspounders had an FB set-up on 2 and 10 meters at the Hobby Show in Concord. Plans are shaping up for the New Hampshire Hamfest to be held in September. Traffic: (Mar.) W1GMH 303, DYE 129, IP 102, CDX 54, WUU 45, FZ 37, COC 30, BYS 22, HOU 18, VZS 4. (Feb.) W1HOU 32, DYE 13.

RHODE ISLAND — SCM, Walter B. Hanson, jr., W1KKR — SEC: TQW. RM: BTV. PAM: VXC. Congrats to the BCRA and the BVARC on their affiliation with ARRL. The BCRA has moved to the George Hail Library in Warren, where meetings are held the 1st and 3rd Tue. of each month at 8. The NAARO gang meets each evening on 29.08 Mc. with such regulars as YLH, KNE, WQU, HCG, ICJ, NCX, and CDV. WAN is the Field Day chairman. YLH and CDV have windmill towers and CJH has an FB handy-talkie while KNE is working on a kw. final. The new RIYL Club, with VXC, pres. and secy.; and CEW vice-pres. and treas.; hit the section with a bang. The club plans to hold a luncheon meeting at the Grist Mill at 1:30, June 16th. An RIYL certificate is available by contacting 10 RIYLs. A clamdiggers certificate is available by contacting Bristol County stations. BIS is within 2 states of WAS and needs 1 for WAC. ISE, LOB, CCN, TBY, YDH, GXW, ZVK, CVF, HWY,

(*Continued on page 116*)

GQC, and NCD visited AW on Mar. 11th. ZGH/5 operates from K5FGJ and is looking for Rhode Island on Saturday mornings. The NAARO says 73 to CTH, now in W7-Land. New AREC members are JRC, HNJ, and K4HSY/1. Traffic: W1BXN 181, UTA 79, BTV 65, BBN 58, VXC 39, TGD 13, BIS 2. (Jan.) W1BXN 116.

VERMONT — SCM, Robert L. Scott, W1RNA — SEC: SIO. PAM: RPR. RM: OAK. The BARC is co-sponsor with the Montreal ARC of the 5th Annual International Field Day, to be held Sun., June 10, 1956, at Bayside, Malletts Bay, Colchester, Vt. (7 miles north of Burlington). As of April 1st it was undecided if the Vermont hamfest will be added to the Field Day or if someone else in the State will put on a small hamfest. Officers of the Burlington Teen Age Amateur Radio Club at Burlington High School are CTM, pres.; ENR, vice-pres.; UFZ, secy.; FDT, treas. GAE is making progress after his recent illness. VZE has just about recovered from his illness. We understand there is to be a Vt. QSO Party but no information has been received from its sponsors. Traffic: W1OAK 155, IT 38, VZE 26, ZNM 24, RNA 13, VMC 8.

NORTHWESTERN DIVISION

ALASKA — SCM, Dave A. Fulton, KL7AGU — Having spent a week weather-bound in the beautiful city of Kodiak we had a wonderful opportunity to get acquainted with the local hams. The local gang meets twice a day at the local coffee shop at 10 A.M. and 3 P.M. Those usually attending are ML, BDD, BDC, and BDK. The fellows in Kodiak are s.s.b. boosters for sure, those not on s.s.b. now are going on. We enjoyed the use of the rig and the hospitality of ML and his XYL, BRX, most every evening working phone patches to Anchorage, with APV being on the Anchorage end of the circuit. We also spent an evening on the base with DG and family. DG is running another Novice class on the Base. We had a tour across the Island to DG's new QTH, via John's mobile, which he tried to turn into an amphibious operation on the return trip. However, we all returned to Kodiak safe and sound. We hope that the Kodiak gang will be able to attend the convention in Anchorage in July.

IDAHO — SCM, Alan K. Ross, W7IWU — Riggins: GII is applying for membership in the AREC. He is on the air with auxiliary equipment plus a Viking II and NC-88. Twin Falls: A nice letter was received from KEA, formerly of this city, now working in KR6-Land (Okinawa) for Philco as a field engineer. He expects to get a KR6 call soon and always picks up *QST* at the local library to keep track of the Idaho gang. Kellogg: RQG reports fine cooperation with the local civil defense officials. He now is running an 813 final linear. HXN and HIQ are active on phone nets. Boise: Civil defense nets on 3509.5 and 3997 kc. have been going nicely. We understand the National C.D. Alert has been changed from a June date to the third week in July. All amateurs are urged to take part in the Field Day June 23-24. Traffic: W7WHZ 24, RQG 6, VQC 4, HOV 2.

MONTANA — SCM, Leslie E. Crouter, W7CT — NEG and PDE are instructors in the Hell Gate Radio Club. RHB, WKN, and FAG are active on 10 and 15 meters. YFU is working DX on 75 meters. NDW has departed for California. VGZ and BNK are active on 40-meter c.w. WXG/7 is QRL with studies at the University. JIZ, IBG, and WWS attend the Hell Gate Club meetings and report into the net regularly. The emergency nets in Missoula, Great Falls, and Billings hold emergency drills each Sunday. The Cathode Ray Radio Club NVF, of the Great Falls Senior High School, has 15 members, 13 of whom are members of ARRL. The club meets each Wednesday. The Glacier-Watertown Hamfest will be held at the Apgar Camp Ground July 21st and 22nd this year. Official Observers are reporting many violations, such as out-of-band, spurious, and harmonic radiations. See ARRL Special Bulletin No. 351. The amateur organization is getting larger every day and we need more qualified volunteers as Official Observers. The Yellowstone Radio Club *Splatter* and Electric City Radio Club *Short Circuits* are very fine club papers. Recent enforcements or appointments: NPV as PAM, SFK as OO, and COH as ORS. Traffic: (Mar.) W7SFK 116, TGU 97, MQI 27, CT 3. (Feb.) W7TKB 47.

OREGON — SCM, Edward F. Conyngham, W7ESJ — New appointments: ZQB as EC for Grant County, TMF as OPS. WLL's OBS and OO appointments have been endorsed. PPG is on vacation in Arizona. QNI started work on a new 40-meter beam as soon as he was up from a sick bed. ATQ is building a new rig and working on OARSN. GUR is NSCing OARSN. JCJ is on OARSN and assisting with the new Oregon Amateur Call Book. TMF is active on OEN, MARS, and c.d. UHN is active on OEN and the new Novice net, SAN. WLL has a new three-element 10-meter beam. OMO has just received a new CP25 sticker and also a new MARS certificate. WHE received a new CP30 certificate. YZM is pleased with his new Bandmaster Z Match. VIL is building 2-meter equipment. KAB is NCSing OSN and is on RN7. After being away for a long time DH is back on and building a new DX-100. AQK is active on OSN. RIM is working on his M.A. thesis and

(Continued on page 118)

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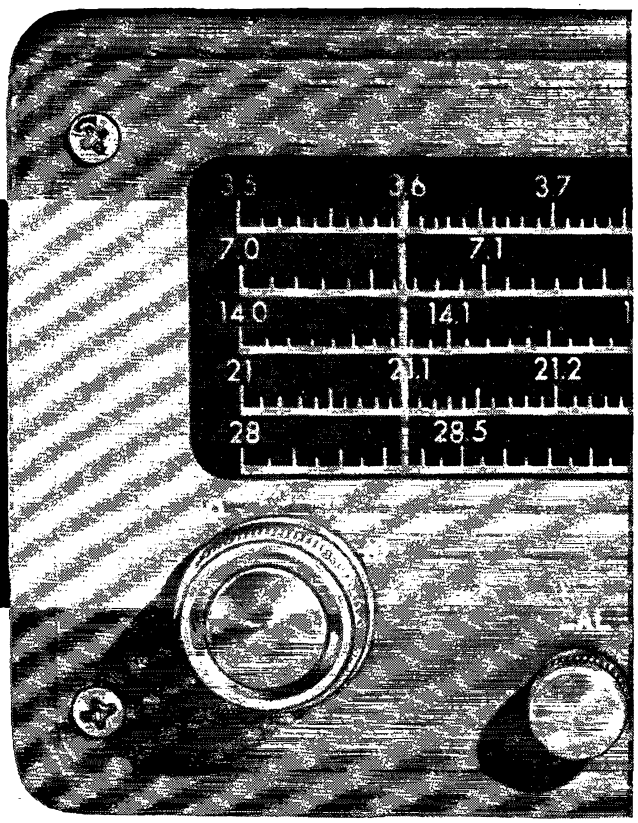

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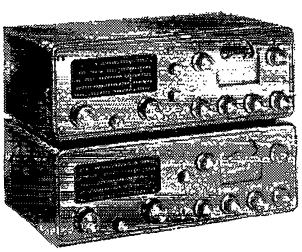

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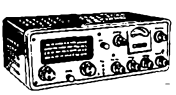

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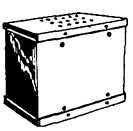

RVP-250 POWER SUPPLY
Mobile vibrator pack for MBR-5 and exciter of MB-560.
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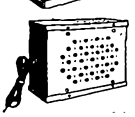

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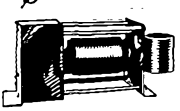

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MARS. SEZ is using n.f.m. on 6 meters. RGS reports 19 stations near Portland on 6 meters. HBH and VBH are working 220 and 420 Mc. On 2 meters we have heard RGS, HBH, VBH, BXK, INK, SEZ, NGW, ERA, WSP, VS, FXY, WRD, UYT, TOJ, and WLZ. ESJ has been QRL with some material work on rigs. The Oregon Amateur Call Book is off the press; VGI is editor. The OARS Net reported one ZL checked into the net. Traffic: (Mar.) W7QKU 391, UVD 85, KAB 74, OMO 70, PRA 62, HDN 39, BVH 35, YUY 34, BLN 20, VIL 16, TMF 13, LT 12, QWE 8, JCJ 4, YZM 3, WLL 2, UHN 1. (Feb.) W7QYS 10.

WASHINGTON — SCM, Victor S. Gish, W7FIX — SEC: PQT. RM: RXH. PAM: PGY. A copy of the *Wenatchee Cascade*, an Alcoa publication, in which the rigs of WHX and SIL were given good write-ups, was received. The Radio Club of Tacoma reports the following via WLX, the secretary: The recent banquet was well attended and the auxiliary surely helped to make it an OM-XYL affair; IG and his XYL sailed from San Francisco April 10th for a six-month visit to Norway; AZI and WLX took the Asplunds to San Francisco, and had a vacation trip for themselves; FVY suffered a heart attack April 1st; DK, the club station is making plans for Field Day. HRC is back from six months of Telco work in Chicago. VAZ de-TVIed the Viking and realigned the HQ-140Z. The neighbors are happy but Ai can't find the bands any more. KZ is planning on p.p. 814s instead of single. RGL is QNIing WSN with 4 watts, but is back up to 65 again. BXH is trying out antennas. FZB is learning to handle the SX-100 and is hearing rare DX. WLK reports the station was filmed for its appearance on the TV show "Career." From HDT: FM has a new SX-100 and 500-watt rig; UJA is rebuilding to all-band; new officers of the Lewiston-Clarkston RC are UJA, pres.; YBV, vice-pres.; HDT, secy.-treas.; GMC, past-pres. WN7ASE is impatiently awaiting his Tech. Class license. POZ visited friends in Clarkston over Easter and showed off the new harmonic. AVM reports an AREC drill was held Mar. 29th on 29,600 kc. and 145.35 Mc. with ZA, CPE, ROH, UNI, VHX, ZOW, and AVM participating. BPL certificates this month go to BA, PGY, VAZ, FRU, and K7WAT. Many Grays Harbor Area stations assisted in reporting progress of the March of Dimes March by Marine Corps Reservists to the local radio station for reporting progress. CWN is dreaming of a 75A-4 and kw. all-band rig. K6BDF/7 still is going to night school four times a week. QHR renewed his appointment as EC for the Walla Walla Area. FPV reports the following Oroville stations have signed up with the County c.d. and also are members of WARTS: CAC, GXI, OBI, and FPV. Traffic: (Mar.) W7BA 2009, PGY 1949, VAZ 640, FRU 513, K7WAT 505, W7KZ 243, USO 49, RGL 43, RXH 37, WAH 36, BXH 32, NYJ 29, AIB 26, APS 23, EHH 22, VCF 14, WQD 13, AMC 12, GVV 12, LVB 10, EVW 9, FZB 5, WLK 4, YFJ 4, BMK 3, CLZ 2, FIX 2. (Feb.) W7FRU 709, BXH 15, UIN 4.

PACIFIC DIVISION

HAWAII — SCM, Samuel H. Lewbel, KH6AED — The first KH6 to work Little America was AFN, Jeanette De Long. Husband Al, ABQ, has the new five-element beam on 20 all tuned and pruned. AVH is now OBS and transmits Official Bulletins on A-3, 147.0 Mc. every Tue., Fri., and Sun. at 1730 HST. MG has rebuilt the damaged antenna system. AFC and KS have their new A4 well broken in by now. ZP is using his new home-brewed s.s.b. receiver and AWG is using the new Elmac in the car. ALH divides his time between hamming and skin-diving, with the water sport well in the lead. OS, ZD, LD, ALM, and AVH are setting up a 522 on 147.0 Mc. for continuous monitoring. It will be set up at BEH's bedside where he can keep the band covered all day every day. Traffic: (Mar.) KH6QU 655, KP6AK 106. (Feb.) KH6QU 488.

NEVADA — SCM, Ray T. Warner, W7JU — VIQ received his appointment as EC for Henderson. A simulated disaster, cooperating with all local agencies, was planned for April. PWE, of Boulder City, is Southern Nevada's first single-sideband station. He was closely followed by PBS, of Las Vegas. CTK, of Parumph Valley, burns a hole through the 21-Mc. phone band with the help of a 1200-foot antenna. CXQ is the latest Novice to blossom out in Boulder City. VVL, of Las Vegas, has a well-known kw. final with a pair of 450s which should do well driven by his BW. TVF made WAC. Bill has been quite active on 20-meter c.w. Italian I1DCO needs Nevada for WAS and has been trying on 21 and 14 Mc. for the past two years. Any helpers? YNO and VIU, of Winnemucca, both hold ORS appointments JU is ready with a new 24-element 2-meter beam, to be followed by a 48-element.

SANTA CLARA VALLEY — SCM, R. Paul Tibbs, W6WGO — Asst. SCM: Roy E. Pinkham, 6BPT. SEC: NVO. YBV has been very active on the NTS nets recently. He works NCN, RN6, and PAN. K6BAM can be heard on 144 Mc. using a Gonset Communicator into a Gonset Twin-Six Yagi. K6DYX is using a recently-finished beat frequency v.f.o. and exciter on all bands 3.5 through 28 Mc. Smitty reports no more chirpy note. ZRJ is on with a band-switch 3.5- through 28-Mc. rig. DOC reports working FO8AO on 14-Mc. c.w. and KV4AA on 7-Mc. c.w. YHM

(Continued on page 120)

6-METER BEAMS AT NEW LOW PRICE

Skysweeper

3-Element 6-Meter Beam

Complete
Ready-to-Assemble

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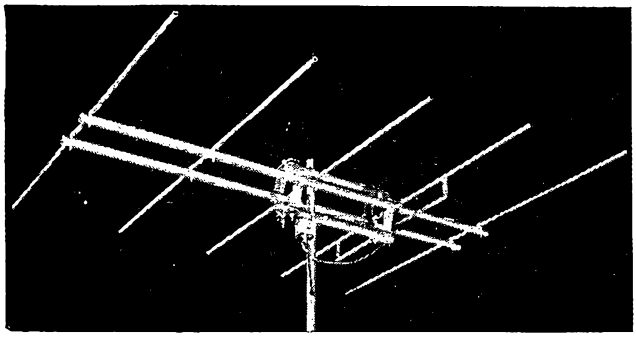

Model HM6-5AK 5-Element 6-Meter Beam

Exclusive Tri-Boom and Quad-Boom construction. Extra-rugged. Cut to 52 mc. with SWR 1.2 or less at resonance. Covers 6-meter band. Terminates in SO-239 coaxial socket. Matches 52-ohm cable. 3-element can be rotated with TV rotator. No cutting, trimming or tuning necessary.

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Mineola, L. I.; Arrow Electronics, 525 Jericho Tnpk.
New York City; Arrow Electronics, 65 Cortlandt St.
New York City; Harvey Radio Co., 103 West 43rd St.

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(10-11-15-20-40 Meter Beams are on the way)

6-Meters—Cut to 52 mc. Covers 50-54 mc.
(Featuring Skysweeper exclusive Tri-Boom and Quad-Boom Construction)

Model HM6-3AK	**3-element**	Net, **$10.95**
Model HM6-5AK	**5-element**	**19.95**
Model HM6-10AK	**5-over-5**	**33.25**

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Model HM6-3EEK	**3-element**	**$1.75**
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2-Meters—Cut to 146 mc. covers 144-148 mc.

Model HM2-3AK	**3-element**	Net, **$ 4.95**
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Model CAP-MK2	**4-alongside-4**	**$15.00**
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McHENRY, ILLINOIS

is QRL on a business trip to Reno. While there Don followed an amateur mobile station figuring on getting a Nevada outlet for RN6. No luck, for the mobile got away before Don made contact. Speaking of nets, RN6 and PAN really are going to town with activity at an all-time peak and NCN is showing improvement every week. The traffic count on all nets has held up very well for this season. Now is the time for all you c.w. men or you who want to improve your code to get on the wagon. Start checking in on the net that suits your speed — NCN for you who are not so fast, RN6 when you get your speed up to 20 or 25 w.p.m., and PAN for those with traffic. Your efforts in any of these nets will be rewarded with many pleasant hours of operating. All you amateurs are welcome to check in, even though you have no traffic to send. You may be able to help clear messages that bring cheer to some. Check in. Traffic: W6YBV 309, K6DYX 174, W6BPT 91, YHM 81, AIT 67, HC 56, ZRJ 10.

EAST BAY — SCM, Roger L. Wixson, W6FDJ — Asst. SCMs; Harry T. Cameron, 6RVC; and Oliver A. Nelson, jr., 6MXQ. SEC: WGM. PAM: LL. RMs: EFD, JOH, and IPW. WGM states that he would like to resign as SEC in favor of someone who might have more time to spend on the job. If you would like the job and feel you are qualified, please get in touch with the SCM or contact WGM, 2947 Blanding Ct., Hayward. K6GID reports openings for c.w. traffic men in the Northern California Net. If interested, check in on 3635 kc. any evening Mon. through Fri. at 1900 to 2200. HELP WANTED! Oakland, Alameda, and Piedmont are without a TVI committee. The television interference problem is not over. This is a public relations problem and if we are to maintain a "Good Neighbor Policy" we must accept the responsibility of helping our neighbors to clean up the problem. I suggest that every club and organization get together and set up a committee to cope with the problem. Two members of our section are Silent Keys: Sterling Marshal Gardner, JCR, and Ernest D. Silva, DMM. Sterling was a member of the Oakland Radio Club, Inc. In 1914 he founded the Gardner Electrical Manufacturing Company, which made transformers. As a youth he became interested in radio and was awarded one of the first amateur licenses with the call W6JCR. He was a member of the nation-wide network of "hams" during WWII. DMM passed away suddenly at his home after a long illness. Ernest spent most of his time building equipment which the Oakland Radio Club, Inc., helped to sell at its semi-yearly auction. Around the clubs in the East Bay section: The East Oakland Field Day Club, KZH, known as the ARCS, reports having a good time on its monthly transmitter hunts and use 10-meter gear on 29.4 Mc. VDR, JKI and RKT keep things alive in the club. Art Suppona reports the Hayward Club enjoyed an FB talk on antennas and propagation by AEA. A second program featured IPM, who gave a talk on converting ARC-5 Command transmitters for mobile operation. K6LCB is doing an FB job conducting Novice classes at the Irvington School. Clyde Sunderland reports the SARO had a field trip through UC's Bevatron installation. A preliminary technical talk was given by UHM. VSV reports the East Bay Radio Club had a demonstration by the Telephone Co. The program was on transistors and various applications were shown, which included tiny transmitters, amplifiers, and test equipment. The Richmond Radio Club has been busy with a construction contest based on originality, function, and construction. The club holds mobile transmitter hunts the last Friday of each month. The Napa Club reports a bull session at its March meeting. Field day and programs were discussed. The Northern California DX Club reports that its 2-meter intercom system is almost complete. RTTY is getting more activity. A6VPC/6 and A6FZC/B report good activity on MARS RTTY. Traffic: K6WAY 900, W6IPW 150, QXN 142, K6GK 75, EPC 66, W6ASJ 16.

SAN FRANCISCO — SCM, Walter A. Buckley, W6-GGC — Asst. SCMs: Fred H. Laubscher, 6OPL; and William T. Nakahara, 6GHI. The San Francisco Radio Club enjoyed a talk on Bell Solar Battery given by a representative from P.T. & T. Co. at its March meeting. GHI was elected new representative of the Central California Radio Council. BIP and SY came in first in the hidden transmitter hunt held by the 29ers Club on 10 meters. KFS acted as the hidden transmitter for the 6-meter hunt. The group had its monthly luncheon in Palo Alto in March with 62 attending. The San Francisco Naval Shipyard Club held its monthly meeting at the QTH of GGC with a good turnout. UPX brought his new s.s.b. final amplifier to the Tamalpais Club meeting. New members in the club are K6PML, PPL, and PVC. QMO was hostess for the Young Ladies Radio Club at its March meeting. The HAMS is busy studying parts for the Wouff Hong Initiation to be held at the convention. The Central California Radio Council meeting in March was held in the Red Cross Bldg. in San Francisco with the HAMS as host. The Humboldt Radio Club reports two new calls at Fortuna, K6OSY and K6OBD; both men are teachers at Fortuna High School. Congrats to KN6RFE, at Ferndale, on his new call through Braille. PYL sports an airplane pilot's license. The March meeting of the club was held at the Eureka Naval Reserve Armory on invitation

(Continued on page 122)

TOPS!!

1955 Sweepstakes

Operating a SSB-100A on AM and SSB, Amateur Radio K2AAA topped all phone competition in 1955 Sweepstakes. Setting a new all time high for phone competition, the 100 watts talk power worked 848 contacts, and 73 ARRL sections for a grand total score of 184,398 points proving the versatility of the SSB-100A. For complete contest details see "Phone Sweepstakes Results" this issue. For complete equipment details write for SSB Brochure today.

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10 meters 28.500-29.000*

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of the Naval Reserve. Operation of various electronic equipment, radars, etc. was demonstrated. A new amateur was added to the NCK family with Susan receiving her Novice ticket. Susan is now the youngest member in the San Francisco Radio Club. JDN, Asst. Director, attended the CCRC meeting with GHI and GGC and entered the local hospital for surgery the following day. We wish Harold a speedy recovery. 7AQK, from Oregon, visited PHT's TV Store when passing through San Francisco! CBE reports excellent DX on all high-frequency bands. YC worked five new countries in the C.W. Contest, bringing him up to 95 and closer to DXCC. He also received two awards, WFKAS and AJD, the AJD award for working all Japan Districts. ATO, AWT, BIP, EYY, WB, and YC all took part in the C. W. DX Contest. DEK spent a week in the hospital with the flu bug. BSO is installing a new tower under his 20-meter beam-watch. LES's tower and beam withstood all of California's recent storms and then suddenly crumbled during the nice weather. K6GWS is busy installing new 6- and 10-meter beams. All San Francisco amateurs are busy making plans for the National Convention to be held in July. WB now is taking pre-registration requests and reports events are shaping up fine so that all amateurs attending, as well as their XYLs and harmonics, will have an enjoyable time. Traffic: W6FEA 196, QMO 103, K6IFM 33, W6WJF 21, GGC 18, GHI 6, JWF 6, BIP 4, PCN 4.

SACRAMENTO VALLEY — SCM, Harold L. Lucero, W6JDN — The Sacramento Valley Emergency Net has consolidated with the Central Valley Net on 3525 kc. This will make both nets more effective. CMA and K6EHT still are on the jump and are doing a wonderful job. K6ER still is on the job and doing a wonderful thing by keeping a very close check on the bands. There should be quite a number who should be thankful to Joe and I know some haven't received a ticket because of his work as OO. JDN paid a visit to Mountain View during the Central Council meeting and met a number of old friends. I want to thank those who sent cards during my stay at the Stanford-Lane Hospital, San Francisco. The first and main thing is for us to be looking forward to the National Convention in San Francisco. It's going to be a great affair. CU all there. K6ENT is one of our very brave girls; Wanda is bedridden for a while, but the OM hooked up the mobile job near her bed and now with amateur radio she keeps in touch with the world. All I can say is that it's wonderful. The Dunsmuir Club is getting along fine and in a short time should have quite an increase in membership. Well, folks, the Roseville Club will be reorganized soon. This is another boost to the amateurs. Let's have the information as soon as possible, fellows. Traffic: W6CMA 261, K6EHT 91, W6JDN 4.

SAN JOAQUIN VALLEY — SCM, Ralph Saroyan, W6JPU — BNP is the official call of the two-meter repeater sponsored by the Fresno Amateur Radio Club. Receiving frequency for the repeater is 145.44 Mc. (8080 kc. crystal). Transmitting frequency for the repeater is 147.06 Mc. It should be in full operation by the time this is in print. JUK is out of the hospital and back on the job. LOS has a new B&W s.s.b. exciter. JPU has a 75A-3. On Apr. 1st and 2nd K6LYO, W6BJI, and TZJ worked LU5CK on 6 meters. YMH is new president of the Pleasant Valley Radio Club, Coalinga. UBK is active on 40, 10, and 2 meters. JXY is having receiver troubles. K6KLE has a 2nd harmonic, a girl. K6CLK has a new shack and 35-foot pole. K6CWF is putting up a new vertical. KN6MQV has a new shack. The Turlock Amateur Radio Club is planning a de luxe Field Day. VPV is looking for BC-458s. K6BP is building a 2-meter antenna. EXH still is recuperating from a heart attack. K6AYL is on 20 meters. K6AYA is chasing 20-meter DX and is going after DXCC. K6AYL has about the only mobile rig attached to a tractor that I know of — QSO with work. K6AYG has a new mobile rig. NTV still is trying to break the barrier on 2 meters. DBH has a new Gonset. ZNL is s.s.b. mobile. K6IRO has TVI problems. I need news from the Bakersfield gang. Traffic: W6ADB 134, K6CQT 2.

ROANOKE DIVISION

NORTH CAROLINA — SCM, B. Riley Fowler, W4RRH — The Amateur Radio Club of Rutherfordton County will hold its annual ham picnic June 3rd at Forest City, N. C. Clubs: K4DIE sent a nice report on the Southport Club. DRC reports that the Gastonia Club is rebuilding and has a new HQ-140X receiver. HUW reports that the Raleigh Club (DW) is being moved to C. D. Headquarters. K4AJR says that a club has been formed in Washington, N. C. The Catawba Valley Club is being re-formed and meets on a rotation basis, among members. The Coastal Plains Radio Club (Rocky Mt.) welcomes visitors every 2nd and 4th Tue. meetings. KN4GKS reports that TLA is prexy. The club recently put over a museum project-display (radio training) for the city aldermen. PNF has a new Globe King. His XYL, AWK, checks on him from all over the State. ZQB reports the C.D. Net is working in Charlotte. I am interested in finding out how much emergency equipment is located in the State. HUW and K4DJZ are Official Observers. Please cooperate with

(Continued on page 124)

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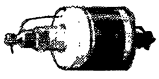

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these men. DSO was top man in the State on MARS. FRH is new NCS for the Tar Heel Emergency Net. A North Carolina Traffic Net is being formed for traffic only and meets daily at 1900 EST on 3820 kc. Check in to help deliver and send traffic. ZQB reports as follows: The Charlotte Amateur Radio Club will hold its 2nd Annual Swapfest July 22nd. K4BTN is leaving for college in Fort Wayne, Ind. BNX is moving to California. IEL will need a replacement for him on NCN. K4BVQ and W4FKT have had great success on 20 meters with Frank calling and Russ tuning to find who the DX station came back to. ZQA is finally finding time to finish his kw. Traffic: W4IEL 169, K4DJZ 41, W4ZWF 37, DRC 29, FDP 28, RRH 23, DTI 20, VBO 20, K4ARP 17, W4DSO 12, BCE 8.

SOUTH CAROLINA — SCM, Bryson L. McGraw, W4HMG — 2 meters in Charlestown is buzzing with SWT, IZD, USW, GQE, AGA, AOG, and 9RWB/4 mobile all doing an FB job. GQR is 2-meter coordinator. K4CTX has a kw. K4CSB, with a Viking Ranger, got 55 countries in two week ends. The Shaw-Sumter Club had a big doing recently with more than 50 attending, including groups from Columbia, Georgetown, and Charleston. ZRH and HMG were guest speakers. ZRH, our SEC is getting 18 AREC converts. Thanks to club president 2KGQ/4 and others for a fine time. TYS has a new QTH in Columbia. OLZ has a new shingle as a lawyer. NJG, transplanted to North Carolina, still is active in the South Carolina Phone Net. Orchids to OOC for his help in the mobile net. WSA is proud of FB contacts with Karl Carlsen and his *Flying Enterprise*. Attention Charleston hams: FFH now is an arm of the law. DNR is getting much FB DX via 40 meters. BZX took a bride. LVF got a new pair of 813s. K4ADD is operating fixed, mobile, and aeromobile. We all enjoy FM YOS's technical discussions via 75-meter phone. The Greenville Club reports much fine work on the club house and gear and a fine tour of the Navy Reserve Station. SBR is the new EC. UUB reports the Spartanburg Club station now is going full blast on 75-meter phone and 80-meter c.w. KWH is donating an FB 33-ft. vertical for 40 meters. KN4DBJ is joining the ranks with 50 watts. K4DTQ dropped the "N." Orchids to AOG, UUB, and AIB on the club reports. FB work was accomplished by our mobiles on the International Sports Car Races. Traffic: (Mar.) W4AKC 123, RPV 54, HMG 22, DYP 14, YAA 14. (Feb.) W4AKC 165.

VIRGINIA — SCM, John Carl Morgan, W4KX — HMK reports AREC activity with mobile during the forest fires in the Lynchburg Area. We regret to note the Silent Key of AXA, one of the Lynchburg Area's stalwarts. CXQ sends a copy of the FB *Petersburg ARC Bulletin*. IA reports 99 confirmed for DXCC! It's that 100th QSL that ages a man early, Ev! K4EAQ, on the bottom rung, reports his first European QSO. KFC has been DXing in person, visiting Europe and the Near East, and racked up a QSO with country No. 234. CGE, back from the Caribbean, has a new 75-A3. LW visited KG4AO and has been ordered back to the Pentagon. CVO met lots of hams at the Inst. of Engrs. show in N. Y. C. K4BCT is on the West Coast on the USS *Roanoke*, operating from Long Beach. The South Boston delegation, accompanied by a pet skunk, visited the Danville Club. K4CDK is out of the Navy and is back in Massachusetts. UBP succeeds him as Manager of VON. BYZ is the new manager of the Graveyard Net. SHJ reports FOR again is active. K4ASU has a couple of high-power finals cooking and is DXing hard. K4BBR has two new ARC-5s and an electronic keyer. K4DKA settles for a straight bug. AQA, in a new QTH, reports KN4IJA is a new one in Hopewell, and OWV says his ace student is now KN4IIX. BIJ and CZB are plenty busy at OO chores. SCM KX hopes to have a new 75-foot stick and a new final on the air long before you read this. Traffic: W4IA 226, FV 164, K4BBR 93, DBC 83, W4SHJ 75, AAD 51, HMK 49, K4ASU 47, W4FKP 45, TYC 43, ZM 31, CVO 25, K4DKA 23, EAQ 22, W4BYZ 21, CZB 16, CWB 13, KFC 12, SZT 10, CXQ 8, AQA 5, K4CZB 4, DWP 4, W4CGE 1.

WEST VIRGINIA — SCM, Albert H. Hix, W8PQQ — SEC: GEP. PAMs: FGL and GCZ. RMs: DFC, GBF, HZA, and JWX. HZA, Civil Defense Radio Officer for W. Va., attended a National C.D. meeting in Michigan recently. Let's all get behind John and also the SEC. PRT has a new s.s.b. layout and is doing a good job. Let's all support the efforts of NLT and NBG in our drive to get call letter license plates this year. GCN has transferred to Virginia and IWB is now permanently in New Jersey. We will all miss both Cliffs. They did a lot for ham radio while with us. FQS and ICP are now on 6 meters. PQQ, CLX, and ZJS are working on 6-meter gear and should be on before too long. TMI has a good s.s.b. signal. QVS is doing a fine job in publishing the Kanawha Radio Club bulletin. OIC is now a member of the Tri-State Club. HWI, of Catawba, is working a lot of good DX on 15 meters. He has an NC-300 receiver. NYH still is working the night shift. How about sending more information to the SCM for the activities report? It sure will be appreciated. Traffic: (Mar.) W8HZA 68, KXD 60, PBO 52, UYR 30, BWK 27, PZT 26, IXG 12, NYH 10, PQQ 2. (Feb.) W8JWX 132.

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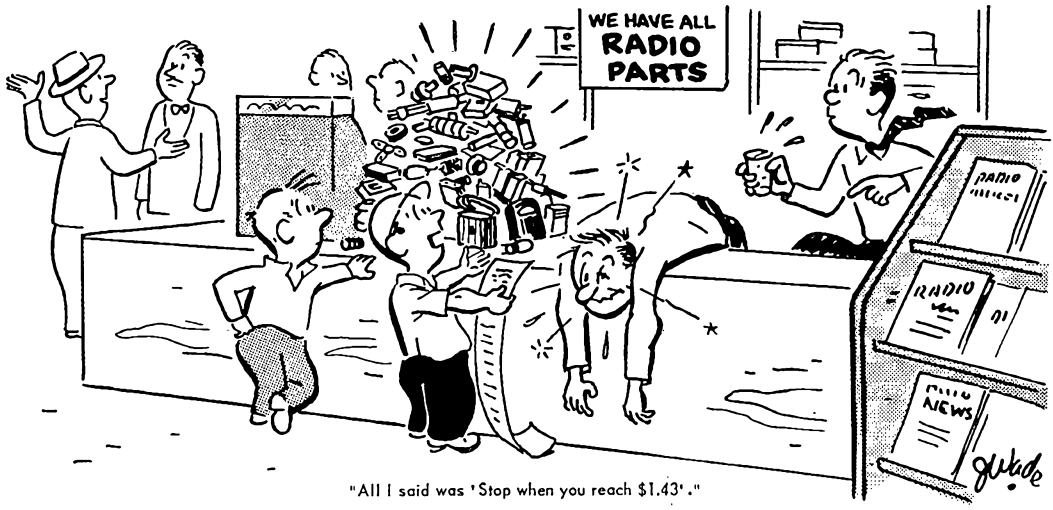

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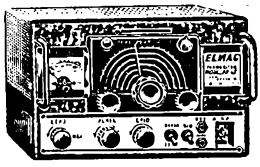

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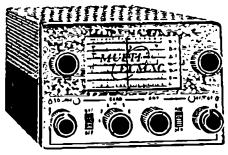

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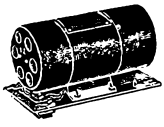

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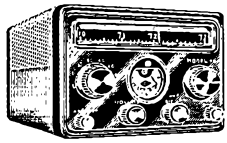

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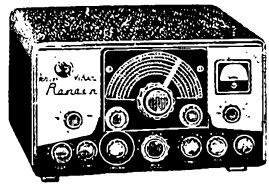

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ROCKY MOUNTAIN DIVISION

COLORADO — SCM, James B. Simpson, WØHEM — SEC: NIT. RMs: KQD and MYX. PAM: IUF. A sincere welcome to Lamar ARC, which joined ARRL last month. SGG is playing with a chicken-wire center-fed vertical fed with 52-ohm coax; it has the edge over a doublet at 2000 miles or better. DRA is working on 6 and 2 meters. AZT gives the DX hounds some good advice on working DX. It's *The Round Table*, the DRC's swell little paper. VYP is constructing a Snorkel Twirler for 10 over 20. We are very interested in how it works. Ye Olde Brass Pounders look out; there is a Novice who can take it. HHR and MQG have been experimenting on 6 meters and find the Bandspanner mobile antenna has shown the best results so far. KNØCEN qualified for RCC. The El Paso Radio Club is getting ready for its annual climb up Pikes Peak to handle communications for the Pikes Peak Races July 4th. Come on, fellows, we need news. Traffic: KØWBB 1003. WØKQD 535, TVR 400, TVI 226, NVU 221, SWK 95, AGU 67, IA 55, KHQ 54, DRY 49, MMT 35, TVB 34, KØDXF 31, WØWVG 28, NIT 19, DRA 18, NWJ 16, SGG 4, UPE 3.

UTAH — SCM, Floyd L. Hinshaw, W7UTM — SFU is now operating 10-meter phone almost daily between 28.8 and 29.2 Mc. Merv is running 200 watts. VEW has a new four-element beam for 10, 15, and 20 meters. Steve is looking for VKs and ZLs which MWR doesn't consider DX. Hi. QWH is on 6 and 2 meters, but finds school work is keeping him too busy to catch all the openings. SAZ says that by the time this is read Utah will have a new SCM. Congratulations to LQE, who will be writing this column next time. HDCO sent a card requesting Utah stations to help him with WAS. He will be on 14 Mc. (or 7 Mc. if 14 is closed) at 1800 to 0000 MST. His alternate frequencies are 14 or 21 Mc. at 0700 to 1200 MST. QDJ suggests early morning schedules for those who are plagued with TVI on 6 meters. Vic also advises the following stations are using horizontal polarization: VHS, WLV, SPO, RQS, RNW, and QDJ. Traffic: W7UTM 2.

WYOMING — SCM, Wallace J. Ritter, W7PKX — The Sagebrush Amateur Radio Club, of Newcastle, now is an ARRL Affiliated Club. TZK still is working on a new transmitter. Cheyenne reports two new members, NEI from Laramie and BLW from Denver. HDS reports the following for the Cheyenne Club: BCL is active on 7-Mc. phone. EUZ is building two s.s.b. rigs, one for mobile. JJO now is in Florida. WET is building s.s.b. also. YGW is operating mobile on 75 meters. YWW expects to be VFO all bands soon. AXD is now located in Cheyenne with the Highway Department. ØQOB/7 is operating at Warren AFB MARS and is 75-meter mobile. His XYL, ØBWY, is a new member of the XYL Club. HDS NCS of the Wyoming Weather Net on 3830 kc., reports the net will operate through May 31st and then close for the summer, resuming operation Sept. 1st. The Pony Express Net still is going strong with a good number of QNI in spite of QRM, etc. The "YO" C.W. Net is doing fine with BHH taking over the NCS job helping DXV, net manager. The Sheridan Emergency Net on 3835 kc. still is operating when QRM permits with UZR as NCS. TZK and PKX were the only stations reading mobile VZN, southwest of Billings in the Pryor Mountains, who located a crashed aircraft. Traffic: W7HDS 191, DXV 152, TZK 65, NMW 45, PKX 40, AXG 37, BHH 34, YKU 31, ZOS 30, NIH 20, NVL 12.

SOUTHEASTERN DIVISION

ALABAMA — SCM, Joe A. Shannon, W4MI — Section Nets: AENB C.W., daily 1900 CST, 3575 kc.; AENP Phone, daily 1800 CST, 3955 kc.; AENT Teenage Phone, Mon., Wed., Fri., 1630 CST, 3910 kc., Sat. 0800 and Sun. 1430, 3910 kc. K4APA, Bessemer, is mobile all bands while K4BOU, also Bessemer, is mobile strictly *six*. HKK has completed a new mobile with T-90. It is reported that AZX is back in business following a tonsilectomy. WHW reports that Mobile is losing two stalwarts in LCK and CJR. Both have been transferred to work in other states. WHW, UZE, and GUA are planning 20- and 15-meter quads. The Azalea City Mobileers would like to hear from other mobile clubs. Address them care of WHW. RLG was awarded a plaque for outstanding NCS, AENP, for the first quarter of '56. K1FDY is back on from new quarters. NZM made a good score in the DX Contest. TOI is TVI-chasing and drooling over a new 100-kc. standard. TXO is having fits trying to make the T-19 work in the car. The Muscle Shoals gang is conferring with RC and whipping up plans for AREC operation. AVX has been knocking off some good ones on 11 meters. TKL and K4ABK are mobile on 2 meters. GUV has 108 countries and is working six. EWB has a new Q5-er and is working on mobile installation. Traffic: (Mar.) W4RLG 206, EVD 68, YRO 65, K4AOZ 55, W4YAI 54, K4AJG 44, W4ZSH 39, DTT 37, TOI 22, AVX 18, K4ACO 14, W4TKL 13, WOG 12, SXS 11, RTQ 8, GUV 7, CNU 5, TXO 4, WHW 4, K4AAQ 3, W4CRY 3, EWR 3. (Feb.) K1FDY 710.

EASTERN FLORIDA — SCM, Arthur H. Benzee, W4FE — SEC: IYT. Asst. SCM: John F. Porter, 4KGJ. Dade County: K4ALW, popular TV and radio disc jockey,

(Continued on page 128)

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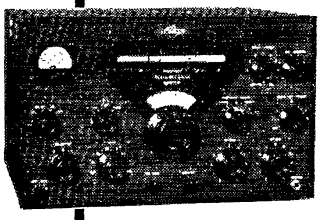

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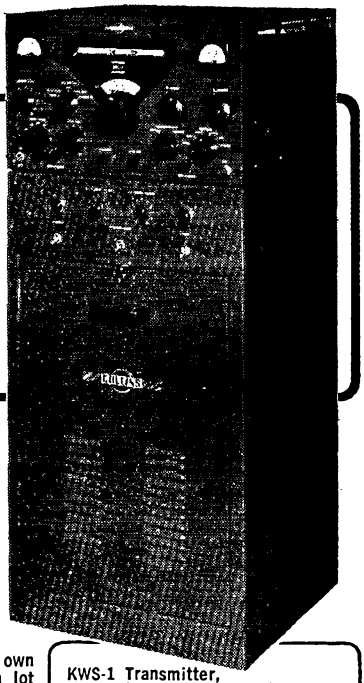

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has a B&W 5100 on 10 and 15 meters. All Dade nets joined to assist the Variety Children's Hospital 18-hour Telethon by picking up donations. BTM and K4AG set up on 29.6 Mc. and passed information to FAJ in Coral Gables, PQ in N. Miami, GFQ and AHW in Hialeah, and YJE in Miami on inter-county frequencies and they in turn relayed to mobiles in their areas. Forty-one mobile units assisted during this operation. K4AHW snagged 63 countries on 10 meters in 2½ months. GGO, KQG, RNV, FLH and others are now on 6 meters. Monroe County: The Key West AREC Emergency Net held a picnic at Seven Mile Bridge. More than fifty attended, including 10 Dade AREC members. BCZ and KOH planned it, with others chipping in. New ECs: CQZ, Lee County; WPF, So. Pinellas; and OEG, Charlotte. Note: Your SEC needs ECs in Baker, Bradford, DeSoto, Glades, Hardee, Suwannee, Indian River, Martin, Citrus, Union, and Flagler Counties. Can anyone help? If so, get in touch with IYT by card or radio. Daytona Beach: The DBARA was founded in February with 20 members. Officers are K4DUH, pres.; K4DBG, vice-pres.; TNR, secy.; FZV, treas. K4EEK has dropped the "N." Lake County: 50-Mc. contact has been established with Daytona Beach. The County Net meets Thurs. at 1930 hours EST on 50.16 Mc. Lakeland: We regret to note the passing of VIE, EC for Polk County. The Annual Hamfest of the Orlando Amateur Radio Club held at Rock Springs was well attended. Traffic: (Mar.) W4PJU 537, WS 133, BWR 124, AHZ 107, DRD 95, WEO 91, ZIR 68, IYT 61, FSS 46, HED 44, AHW 36, AZJ 28, SGY 27, K4AHA 21, W4WHK 18, ZJZ 16, YNM 4, WEM 2. (Feb.) W4GOG 188, LMT 163, WHK 150, AHZ 41, K4AHW 34, W4EVY 29.

WESTERN FLORIDA — SCM, Edward J. Collins, W4MS/RE — SEC: PLE. ECs: MFY and HIZ. RM: K4AKP. K4AFF, the Pensacola High Radio Club, has a new DX-35 perking. The EARS, at Eglin Field, is getting set for Field Day. The Tallahassee gang is planning a hamfest for June. For details contact ACB or YUU. AOK has a new car. RKH is getting ready for summer activity. K4AEP now is Tech. Class. NN has several kw. rigs for sale. UXW and HDW are getting new cars for better mobile units. DKG is doing phone patches for KZ5s. K4EAA has an FB mobile rig. NRX is back on with low power. K4AH is changing QTHs. ZFL is a 10-meter DX man. PAA has a new NC-300. OWN divides time between 40-meter DX and spear-fishing. HBK gets 10-meter DX via c.w. K4BZN is enjoying 10-meter DX. VR and UL work at the NAS radio shop. YES now has Florida call plates on his car instead of Alabama plates. AXP just can't bring himself to build a modulator. BGG is busy on 15 meters. HJA is the proud owner of a 75A-4. 6TOR/4 is giving the B&W 5100-51SB a workout. GMS wants a GG amplifier for his 10-B s.s.b. exciter. QK keeps 75 meters going with his 813s. K4DDD is building converters and beams. CCY is squeezing the last watt into his rig. MUX keeps things humming on all frequencies. JLW has three beams stacked on a 60-ft. tower. ZPN is doing an FB job on 40-meter phone. MS is busy building gear — for other people. BKN holds forth on 75-meter phone. K4APE has been appointed OO Class IV. K4AKP, our traffic man, has been appointed RM. Contact Johnnie for traffic skeds. KN4HJH is a welcome newcomer. KN4EHI is fighting antennas. K4AGM wants a converter for 6 meters. PQW is working on the Pensy Club's transmitter for the FB new club rooms at the Airport. DAO keeps the Ranger going FB. K4DKG has an FB new mobile unit going. Traffic: K4AKP 589.

GEORGIA — SCM, William F. Kennedy, W4CFJ — SEC: YTO. PAMs: LXE and ACH. RMs: MTS and PIM. Nets: GCEN meets on 3995 kc., at 1830 EST on Tue. and Thurs., 0800 EST on Sun. ATLCW meets on 7150 kc., 2100 EST Sun. The Georgia State Net (GSN) meets Mon. through Fri. at 1900 EST on 3590 kc. PIM is NCS. The Atlanta Ten Phone Net meets at 2200 EST on Sun. at 29,600 kc. MTS is NCS. NCSs for the Georgia Cracker Emergency Net are Tue. YEK, Thurs. ZDP, and Sun. CFJ. Thanks for your confidence in electing me your SCM and I assure you I will do everything to represent you as you should be represented. NS did an FB job and I hope I can do as well. PIM is doing an excellent job as NCS of the GCN. QBA is being transferred to Camp Le Jeune, N. C. LNG has a new 32-element 144-Mc. beam and a 4-over-4 on 50 Mc. KN4DKM and FGH lost their antennas in the recent high winds. We were all saddened to learn of the death of PFA and PMC. BQF is back on after considerable receiver trouble. 5URW has moved from Texas to Ellijay, Ga., and has a beautiful set-up for emergency communications. KL has a new DX-100 and is active on 40-meter c.w. IKK is active on 6 meters in Rome and reports WWQ, of Gainesville, is now active on 6 meters. K4BXU has some new emergency equipment. K4CRQ works all bands on phone and c.w. WIA is back on 2 meters with a 2E26 in the final. K4CFO, K4CFN, KN4ETX, and KN4GIA (all one family) lost their 2-meter antenna in the recent high winds and have decided to go mobile with two new Elmac mobile rigs. Your SCM and his XYL, K4CZR, are the proud parents of a new arrival, another girl, making five girls in all. LQQ has a new jr. operator, a boy. Traffic: W4PIM 283, DDY 151, ZD 50, CFJ 35, BXV 30, K4GCF 22, CZR 21, GCT 20, W4HYW 19, MTS 16, MA 12, LNG 10.

(Continued on page 130)

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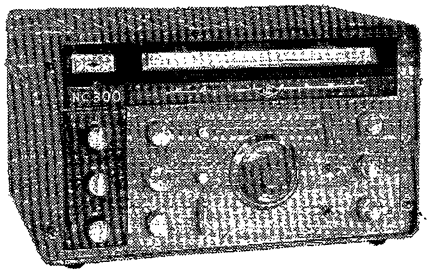

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WEST INDIES — SCM, William Werner, KP4DJ — SEC: HZ. The following ECs have been reappointed: ES Ponce, CO Mayaguez, GP Arecibo, WR Aguadilla. QR, Fajardo District EC, will renew appointment soon. WT has been reappointed as OPS and ZW as ORS. KV4BA, St. Thomas, reports to the net with a QSA5 signal since using an electromagnetic-decoupled vertical antenna. WT reports three new Novices in Mayaguez; one is her son-in-law WP4AFE. DO has a 75-meter mobile station 6 inches by 2 inches, including transmitter and converter; power comes from the automobile radio. EE advises there are 20 would-be-Novices studying at his school, the Colegio Ponceño. EE has a new B&W s.s.b. receiver adapter. KD got rid of all gear except a 35T running 100 watts and a 65-foot antenna. HM, at Yauco, wants to join the Police Auxiliary Net because the Island's Chief of Police has his family at Yauco. QS is a CAP pilot. WR is on 75 meters every afternoon, The Antilles Net, 3815 kc., has a 5:30-P.M. schedule on a daily basis as well as the 7-A.M. schedule, NCS is FAC or WW at Ramey AFB; ZW is alternate NCS. YX, the XYL who did such a wonderful job as NCS for two years has returned to New York. WD left for Spain and the Canary Islands. Look for him on 20-meter phone. DV reports a score of over 575,000 in the DX Contest, but DH made over 700,000. ABD's 12-year-old daughter Felita is WP4AEZ on 3735 kc. every afternoon. MO sends greetings from Germany. KNØBRP/KP4 is using an AT-1 and an SX-28. AEM is active on 3735 kc. AER is a new station in Ponce. AAM is working 40-meter DX since putting up a 40-meter doublet, and also puts in a fine signal on 80 meters with the same antenna. EK is Assistant EC for mobile operation in San Juan. ABN is Assistant EC for v.h.f. organization. ACH is on 144 Mc. with a Gonset Communicator. PRARC's officers, recently reelected, are HZ, pres.; MV, vice-pres.; DV, secy.; QA, treas.; DJ, RM, PW, KD, and ABN, directors. ZT has a new 20-meter beam at the Los Angeles Development near the International Airport. QM is engineer at WPRA. DJ visitó a WT la abuela de Mayaguez. HG está muy activo en 80, 40, 20, 10 metros porque está enfermo de los pies. WT actualmente está trabajando los 20 metros fonia y se ha encontrado con muchos de sus viejos amigos de hace mas de 20 años. WT has a BC-54 receiver tuned to 3925 kc. all day for traffic. AZ worked CR9AH, Macao, and VS6AE, Hongkong, on 15 meters at 10 A.M. AST using a Transmaster at 35 watts. BJ is studying for Extra Class license. BR is building a 10-meter ground-plane antenna. CU, DJ, QA, and WT took turns acting as NCS of the 3925-kc. Net. HZ is working DX on 10 meters with a DX-100. PW received new Viking II, Viking VFO, a 30-foot tower, and Telrex beams for installation at the new QTH. ABI is on 75-meter phone modulating his AT-1. Traffic: (Mar.) KP4WT 111, ZW 19, DJ 2, DV 2. (Feb.) KP4WT 71.

CANAL ZONE — SCM, Roger M. Howe, KZ5RM — Lois and Nels, LM and NM, entertained the "QRMARYS" and their OMs at their home in Margarita with a nice buffet dinner and all the trimmings. KA has made DXCC and becomes the second YL to join that select group. BE is back on the air on 40 and expects to be on 20 this summer when QRN is bad on 40 meters. AD is moving to the Atlantic side as soon as quarters are available; he needs only Vermont, Delaware, and Nevada for WAS from the present QTH. VR had visits from maritime mobilers Pat, W6DHQ/mm of the M/V *Ecuador*, and Earl, W6GXX /mm of the M/V *Mary E Petrick*. VR and family were the guests of Bill, W6VDA/mm, for dinner and movies on board the M/V *Dominator* at the outer anchorage. CF has qualified as a member of the "Morons of the Megacycles" Net and has received its certificate. LB has gone all-out. He now has an NC-300, a Viking II, a four-element beam on 20 and a three-element beam on 15 meters. Traffic: KZ5VR 92, CF 51, AD 36, RM 20, LB 13, BE 7.

SOUTHWESTERN DIVISION

LOS ANGELES — SCM, William J. Schuch, W6CMN — Asst. SCM: Albert F. Hill, jr., 6JQB. SEC: LIP. PAMs: MEP and PIB. RM: BHG. New officers of the Aerojet Radio Amateur Club are K6KVJ, pres.; K6JAK, vice-pres.; KN6MNJ, secy.; K6DQE, act. mgr. K6FCY is putting a kw. on the air. GYH is unofficial QSL Mgr. for San Fernando Valley. GJP has gone phone (part time). The So. Cal. Traffickers are meeting soon. See BHG. K6KCI is getting a new receiver and moving to Santa Barbara. We hate to lose her. K6EXQ made WAC and YLCC on 10 meters. LYG complains about sunspots. TDO is doing FB on MARS and SCN. K6MON is alt. NCS of the 2x4x6 Net. K6GUZ needs five more for DXCC. K6MON makes 100 per cent attendance on the 2x4 Net. ORS does some FB work on 144-Mc. DX. K7IYF forwards a magazine with CMN in it, old stuff, 1937. CK is journeying East for two months. K6BEQ worked KR6QV mobile on 75 meters. K6KJN is QRL c.d. K6ELX has a new mobile. K6IQF is rebuilding the 3.5-Mc. rig. GYH is active on all nets. K6BWD is moving to Valley. YMD operated AM n the DX Test for an FB score. RW, multi-operator in the Test, is way up there. The Rio Hondo Club paper is sporting a new and very FB cartoonist. NJU makes DXCC. YAS writes that K6HGF is building for 28 Mc., KN6PCT has a

(*Continued on page 132*)

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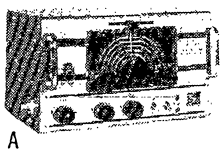

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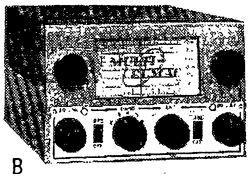

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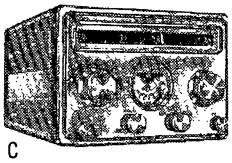

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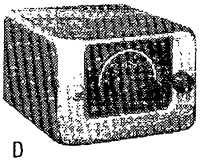

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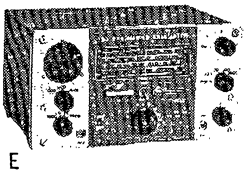

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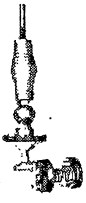

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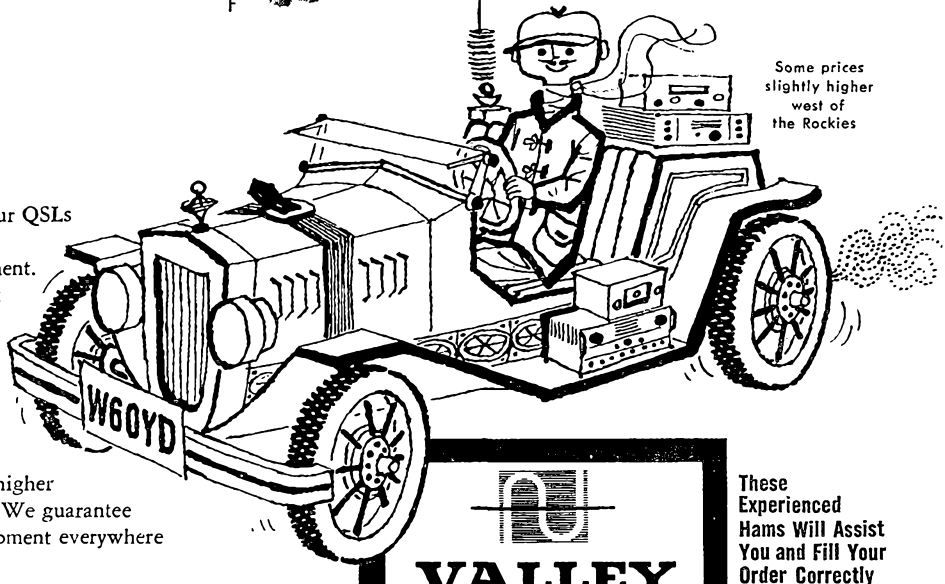

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G-66, K6IDV is mobile all bands, 9OWL/6 is mobile with all Elmac. Appointees not reporting can expect to lose appointments. We are cleaning house here and *must* have reports *on time*. 73 and happy vacations. Traffic: (Mar.) W6DDE 858, K6FCY 781, W6GYH 756, GJP 514, KTZ 315, BHG 276, USY 248, K6DQA 192, W6LYG 177, K6KCI 162, W6TDO 113, K6MON 110, GUZ 99, W6MEP 94, RNY 94 ORS 90, K6IYF 80, W6CK 79, KN6OZJ 65, K6HOV 58, COP 29, W6INH 27, CMN 15, K6BEQ 11, KJN 6, PLW 6, ELX 5, BWD 4, IQF 4, W6AM 2, BUK 2, NTN 2. (Feb.) K6FCY 586, JYO 32, BWD 2, OIZ 2.

ARIZONA — SCM, Albert H. Steinbrecher, W7LVR — Asst. SCMs: Kenneth P. Cole, 7QZH; and Dr. John A. Stewart, 7SX. SEC: VRB. PAM: KOY. RM: PKW. Arizona Phone Net: Tue. and Thurs. 7 P.M. MST, 3865 kc. Arizona C.W. Nets: Tue. and Thurs. 8 P.M. MST, 3690 kc., and daily Mon. through Fri. 4 P.M. MST, 7115 kc. Grand Canyon Net: Sun. 9:00 A.M. MST, 7210 kc. During February a picnic was held at Saguaro Power Plant under the auspices of LJN, who conducted a tour of the operations for 59 present including the following: AKX, BFA, BFC, BFE, BNR, BNU, BRK, CPY, DJH, HUV, KOY, KUJ, LAD, LJN, LND, LVR, MAE, MII, MLL, OAS, OUE, PMQ, PZ, QFQ, RFE, SWL, SXP, UCX, ULP, UXS, VAV, VZJ, WFY, WKM, YCU, YMQ, ZMH, 6EJT, 6EL, 6HQV. During March, Wickenburg held a hamfest with the following among those present: ACD, BFA, BKJ, BKP, BNU, BRK, CPY, DJH, EAW, JTM, KOY, KWB, KYM, MAE, MWD, MWQ, NAP, NDD, NEL, NGJ, OAS, OIF, OQS, OTY, OUE, PMQ, QZH, RFD, RFE, RIJ, SUL, UDI, UXK, UXZ, WFY, WKM, YJR, YJS, ZBK, 5VFH, and 6EL. Another outstanding event was the Annual Dons Trek on Superstition Mountain with OIF in charge and handling traffic with 9 fixed stations in Phoenix, 7 walkie-talkies and 2 mobiles. Among those participating were CDQ, JYH, KGB, KYM, MAE, NAP, NFL, OIF, OQF, OUE, PMQ, RIJ, RUX, SXP, UCA, UDI, IXZ, WFY, WKM, WYY, ZBK, and ZMH. The Maricopa County V.H.F. Club gave a demonstration of a simulated emergency before the officials of the Red Cross, with OSM as NCS and the following fixed and mobile stations: KYE, LED, QNO, QZZ, RUX, SUJ, VFT, VLN, and 6FVK. Don't forget the Montezuma Hamfest June 16, 1956. Traffic: W7QFQ 157, NFL 103, LVR 14.

SAN DIEGO — SCM, Don Stansifer, W6LRU — Vergne Hoke, ex-4VH and K7VH (Alaska), is the new FCC engineer-in-charge of the San Diego office. He was a visitor at the Helix Club meeting shortly after his arrival. NLK is now EC for Coronado. Sorry to report the passing of KN6RCH two days after he received his license. 9MDS/6 is now one of the operators at IAB in Oceanside. BKZ lost six pounds during the recent DX Contest. A new club, the Ryan Amateur Radio Club, was recently organized with 14 members. The president is K6JNO. The total score made by San Diego DX Club members in the c.w. portion of the contest was over 500,000 points, a new high for the group. Your SCM met two ex-San Diego hams recently in Los Angeles; PBI, a charter member of the San Diego DX Club, and AAJ, who operated 9YST/6 in 1945 and 1946 on 10-meter phone from here. Both pass their regards to friends down here. WNN is working good DX on 6 meters with improved conditions, as are many of the Orange County gang. BZE has sent in cards for 200 countries confirmed, the first to our knowledge from a San Diego section station. WYA recently put in two weeks duty for the Navy on a San Diego-based ship. FMJ is getting ready for another trip into the High Sierras as soon as school is out. From advance preparations it appears that Field Day this year will be the largest in its history from this area. EKM, Division Director, was a visitor at the San Diego Council meeting in April. With summer nearly here, don't forget that your SCM needs news for this column even though some people are on vacation. Traffic: W6IAB 3157, YDK 2117, ELQ 344, BKZ 63, K6DBG 42.

SANTA BARBARA — SCM, William B. Farwell, W6QIW — Asst. SCM: Betty Wilson, 6REF. SEC: K6KPU. The Santa Barbara AREC assisted the American Motorcycle Assn. in its Annual Endurance Derby. The AREC supplied spot communication at the check points. ZSM acted as net control. Participating mobiles were K6ELR, CZD, KVW, KJU, HEB, KPU, EAQ, CRJ, and W6KZO. One serious accident occurred near the beginning of the Derby. A quick call to ZSM and relay to the Highway Patrol by KZO brought an ambulance and help to the injured man. The Santa Barbara Club will be looking for you on Field Day from LUC/6. Santa Barbara is saddened by the passing of BOZ. TOP is on 75-meter phone using an inverted "V" antenna. BE has a new KWSI rig, and was on c.w. 36 hours in the DX Contest. TTX now is "chief engineer" of Cal. Poly station BHZ. A new call in San Luis Obispo is K6RKR. Old-Timer Chuck Brown, ex-4CYK, NYH, 5NHM, 7RFA, 2CSA, has retired from the Navy and is on the faculty at Cal. Poly. Traffic: W6QIW 67, K6NBI 56, W6REF 28, K6KPU 17, W6KLR 8, W6ORW/K6CNY 5, W6FYW 4.

WEST GULF DIVISION

NORTHERN TEXAS — SCM, Cecil C. Cammack, W5RRM — SEC: PYI. PAMs: TFP and IWQ. RMs:

(*Continued on page 134*)

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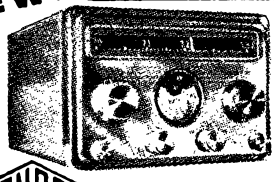

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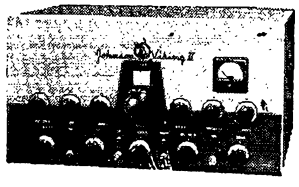

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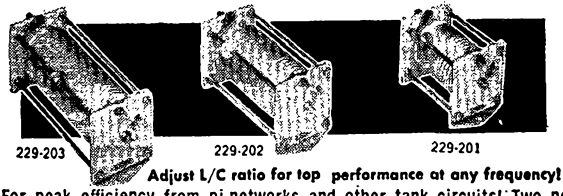

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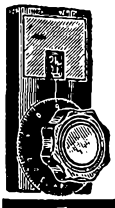

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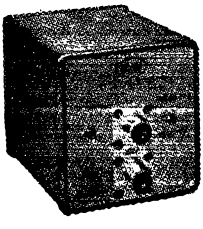

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KPB and PCN. The Belton ARC operated a station at the Belton Science Fair. The Brownwood ARC has organized with PKZ pres., VOE, secy.-treas., and YKT as EC. JXU heard XE1GE on 6 meters. AVA reports 6-meter activity is picking up in the Wichita Falls Area. K5ACL passed his Conditional Class exam and is on the air with a DX-35. New officers of the Midland ARC are GGC, pres.; SMJ, vice-pres.; BWV, secy.; VOH, treas. NTEN average attendance for March was 89 per cent. AWT is now at Monahans. EOZ's 10-meter beam went down in a sandstorm but he is back up on another tower. New officers of the Dallas Caravan Club are TJE, caravan master; GXX, asst.; DBD, secy-treas.; NRE, prog. dir.; TUU, asst. BNP has a new Q5-er and AR3 receiver. GYW is building rigs for ILO and IOZ. AFR has a new NC-300. WIJ and AFY are model plane fans. We regret to learn that Mrs. John H. Homsy died Mar. 15th in Bisbee, Ariz. John formerly was FCC Engineer in Dallas. This constitutes our final report before moving to Oklahoma and I wish to pass along my most sincere thanks for the splendid cooperation and assistance which each of you have given while I have acted as your SCM. I shall look forward to contacting you from the new QTH. Until then — hasta la vista. Traffic: W5KPB 267, FJB 187, UBW 104, BKH 58, NEW 57, TFP 36, RP 30, YKT 26, OCV 25, YPI 17, PAK 14, ZTG 14, CF 12, JFX 12, GHU 11, DWL 4.

OKLAHOMA — SCM, Dr. Will G. Crandall, W5RST — SEC: KY. RM: GVS. PAM: SVR. It is with both pleasure and regret that I turn over my duties as SCM to GIQ who, I am sure, will do a good job. My only claim to success is the selection of those appointees as SEC, RM, and PAM sho have done such an excellent job. We are sorry to lose PML as PAM and OPEN net manager as his tour of duty in the service takes him to Germany. An embossed certificate was sent to him expressing the appreciation of the Oklahoma hams for the excellent management of OPEN. RRM is moving to Bartlesville soon. Portable units from Tulsa, Bartlesville, and Stillwater got into Drumright after the tornado in time to handle welfare traffic. JBX went to the hospital with a heart attack instead of going to Drumright but is improved now. EIU and K5EMY, in Oklahoma City, now have General Class tickets. JYT is giving code practice on 50 Mc. The Aeronautical Center ARC now has 70 members. CXU and DFF, at DFF, worked in the DX Contest two week ends and made a score of 10,530. I wish to thank all the Oklahoma hams for their cooperation and forbearance during my term as SCM and hope they will continue with increased effort for the new SCM, Ewing Canady, W5GIQ, 919 Stanley, Stillwater, Oklahoma. Traffic: K5AOV 601, W5FEC 232, LPL 113, MFX 43, GVS 40, GIQ 23, GXH 23, QAC 19, ADC 15, PML 15, PNG 15, KY 14, RST 14, DFF 13, EHC 12, SVR 12, KN5CBA 5, W5UCT 4, KN5BJG 2.

SOUTHERN TEXAS — SCM, Morley Bartholomew, W5QDX — SEC: QEM. There is very little time left, so get your tickets and reservations for the West Gulf Division Convention to be held in Galveston June 15th, 16th, and 17th. The Convention Committee has an excellent program planned for your entertainment. YEI has a 75A-4 and a KWS-1. FDL is trying for "Worked all Texas Counties" with a new Viking II and v.f.o. GIU also has a new Viking II. KNs 5DFL and EFC are on 80 meters. A number of the El Paso hams lost antennas during the wind storm. ES lost his vertical, HRR and HRS lost beams, ESZ lost his tower and beam. FJF is recuperating from a heart attack. PCO and his XYL, OVH, have a new Viking II. AKR put up a 10-meter beam. DAY and CRO are both sporting new DX-100s. QEM and his XYL, KN5COZ, and jr operator, KN5CPA, have moved to a new QTH. AMF has a new jr. operator. HQR, YCV, AQK, and BKG mobiled to San Antonio to hear John Reinartz speak before the San Antonio RC. QKF has a new 75A-4. CCL and his XYL are back from Oklahoma. Zone 3 of the STEN held a picnic and transmitter hunt at New Braunfels April 8th. FZA is building a combination 10-, 15- and 20-meter beam. DIC is active on 40-meter c.w. QCB is building a new modulator. New officers of the Houston ARC are CE, pres.; LSE, vice-pres.; FBI, secy.; OBA, treas.; ETA, membership chairman; and LRK, program director. YVJ, PBX, FDZ, EKT, LOF, ENT, RMX, URU, URM, SDA, and RPH assisted the Harris County Mounted Sheriff's Posse in a recent Pony Express Ride from Houston to Austin. ACL is back on 10 and 160 meters with a DX-100 after a four-year absence. Traffic: W5TFY 40, ZWR 31, FDL 2, HEX 2.

NEW MEXICO — SCM, Einar H. Morterud, W5FPB — SEC: FHP. RM: RKS. The NMEPN meets on 3838 kc. Tue. and Thur. at 1800 MST, Sun. at 0730; the NM Breakfast Club meets on 3838 kc. daily except Sun. at 0700-0800 MST. With the appointment of an RM it is hoped that the 3633-kc. NM C.W. Net can be revived. Interested stations, please contact the RM. If there is enough interest a 7-Mc. net also is planned. Our sympathy to FHP on the loss of his father. John Reinartz, K6BJ, addressed the Mar. 28th meeting of the Pecos Valley ARC in Roswell. K5ADS, W5NSN, and PDY furnished communications for the Wide Wide World telecast from Acoma on Easter Sunday. QKA was hospitalized. NXF showed the SBRC his collection of certificates, as well as samples of other ARRL certificates. Norm is quite a "certificate-getter." Traffic: (Mar.) W5MYM 53,

(*Continued on page 136*)

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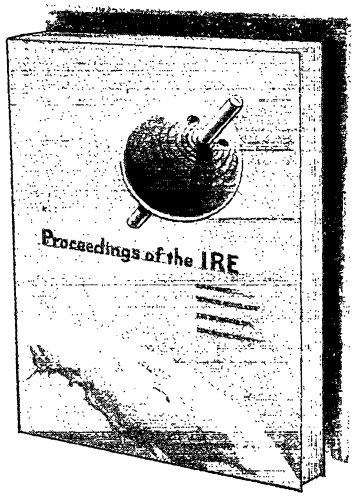

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"Symposium: The U.S. Earth Satellite Program—Vanguard of Outer Space," Chairman: W. R. G. Baker, General Electric Co., Syracuse, N. Y.

"The International Geophysical Year Program," by Joseph Kaplan, National Academy of Sciences, Washington, D. C.

"The Exploration of Outer Space with an Earth Satellite," by J. P. Hagen, Naval Research Laboratory, Washington, D. C.

"Placing the Earth Satellite in its Orbit," by M. W. Rosen, Naval Research Laboratory, Washington, D. C.

"Telemetering and Propagation Problems of Placing the Earth Satellite in its Orbit," by D. G. Mazur, Naval Research Laboratory, Washington, D. C.

"Tracking the Earth Satellite and Data Transmission by Radio," J. T. Mengel, Naval Research Laboratory, Washington, D. C.

"Optical Instrumentation of the Earth Satellite," by F. L. Whipple, Harvard University, Cambridge, Mass.

"The Scientific Value of the Earth Satellite Program," by J. A. Van Allen, State University of Iowa, Iowa City, Iowa.

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UAR 22, GEM 15, FPB 13, ZU 10, ARD 9, NQG 6, KKW 4, BIH 3. (Feb.) W5NQG 24.

CANADIAN DIVISION

MARITIME — SCM, Douglas C. Johnson, VE1OM — Asst. SCMs: Fritz A. Webb, 1DB; Aaron D. Solomon, OC. SEC: RR. W4ZUS/VO2 is a new OO. UY reports the formation of the Bay of Fundy Net on 3655 kc. at 2245 GMT each evening. C.w. operators are urged to call into this net and give it their full support. JD and RM are active on 3.5 Mc. looking for DX. AEB is giving QRP a try with 1.7 watts on 3.7-Mc. phone. PF is getting results with a mobile set-up on 14, 21, and 28 Mc. CP is a new Saint John ham. GA worked a VS9 on 28 Mc. with a Heath AT-1. BN skeds VO6O. AV is active from Ellershouse QTH. Ex-1KJ is now VE2BX at Fort Chambly, P. Q. Aubrey Haines, ex-1KW, is at Whitehorse, Yukon, with the call VE8AN. LY has a new grounded-grid linear amplifier working FB. ADM has been getting good DX QSOs on 28-Mc. phone. NP is active with a Heath AT-1 rig. DZ and BZ are the only active s.s.b. stations in VE1 to date. FQ has been testing an 813 final on 3.7-Mc. phone using the 8-watter as an exciter. W4ZUS/VO2 reports there are five active hams in the Argentia Area. VO6X has been transferred from Goose to P. Q. VO6N is on holidays. VO6AH has a new 813 final. VO6AQ is now using an S-76 receiver. VO6AP's XYL is newly-licensed as VO6AC. Traffic: (Mar.) VE1FQ 150, VO6AH 94, VE1VB 32, OC 29, DB 24, YO 20, OM 14, GA 13, WK 13, ME 12, VU 8, ABT 2, PF 2, BN 1. (Feb.) VE1UY 11, WL 10.

ONTARIO — SCM, G. Eric Farquhar, VE3IA — DQL, DSX, and DUH are heard regularly on the Gold Belt Net, 3750 kc., Wed. at 1900 EST. AJE enjoyed a visit to Timmins recently. The Annual Banquet of Kirkland Lake was a tremendous success and was enjoyable to the Timmins gang, who extend thanks for everything. RU vacationed in Florida. The Northern Ontario Six-meter Net gains in popularity and now has twelve stations reporting with regularity. DSJ and DQL are busy learning what new receivers will do. VD is busy rebuilding. AJR reports much fun in the YL/OM Contest. DPO makes BPL for the second time. He advises that the Amateur Radio Philatelic Society meets in net form Mon. at 2000. DTO and his XYL, DXZ, had the misfortune to lose their farmhouse and entire contents by fire. Ham gear included a Viking Mark Two, a TG12G, and a ship-to-shore rig. Members of this section are indeed sorry to hear of this tragedy. NG reports the Sportsman Show was a success. We understand some 600 messages were handled from the show by Nortown Radio Club personnel. Had this been reported to this office, they could have qualified for the BPL award. DWG is president of the Ryerson Ham Club. AUU sojourned to Quebec. RR is DXing on 10 meters. CAB is now mobile on 20 meters. Officers of the newly-formed Metropolitan Radio Club of Toronto are BUT, pres.; SE, secy. DUH, ALH, and DCI are now Class A. Congrats to AXH on the arrival of a girl. W8PHD was a visitor at the Soo Club meeting. We record with regret the tragic death of WO as the result of an automobile accident. Our condolences to his family and also to JV on the loss of his father and to Dick Charlton, a member of Quinte Radio Club, on the loss of his mother. Traffic: (Mar.) VE3NG 249, DPO 152, NO 100, GI 69, BUR 59, AML 55, AJR 17, BZB 17, KM 17, CJM 15, PH 13, APL 8, DH 7, DSX 6, VD 2. (Feb.) VE3DSX 2.

QUEBEC — SCM, Gordon A. Lynn, VE2GL — It is with regret that we note the accidental death of Fen Job, ex-VE2TH, who was killed in an automobile accident recently. The MARC held a successful March meeting when AMA and SU gave an interesting and informative talk on "Amateur Antenna Measurements." PQN continues to meet regularly tri-weekly with fair attendance. The Northland Net has changed from c.w. to phone with increased average attendance. SC has 700 watts on 75 meters but reports he is not satisfied with his f.m. and will have to rebuild the reactance tube modulator. ADD is back on 75 meters. AMY is enjoying some DX on 20 meters. ABS has his 10-meter beam back in operation. AVN now is on 10-meter phone. AJQ is on 20 meters mostly but occasionally joins the Northland Net. AVH is preparing to visit the R. I. for phone endorsement. FL now works 20 meters with his TA-12 but spends most of his time on the Northland Net. AFI, formerly VE3AFC, has a new YL jr. operator. The McGill University Radio Club reports a club net is being formed on 160 meters. AIY and AHF are operating portable from St. Gabriel de Brandon during May. AQE, AQT, ATG, and W2LHL are graduating from McGill University. Traffic: VE2DR 67, CP 23.

ALBERTA — SCM, Sydney T. Jones, VE6MJ — PAM: OD. RM: XY. Congratulations to our old friend, HM, on attaining WAC after so many years. WL has a DX-100 ready to go. Al is busy working over the station equipment. Very best wishes to the Lacombe gang on its official affiliation with ARRL as a club. GE is active on 3.8-Mc. phone. SX is a new member on the Alberta Phone Net. Have you a section net certificate? EA has been a business visitor to Southern Alberta. Plan now to be in Edmonton for the Alberta Amateur Convention on July 28th and 29th. Yes,

(*Continued on page 138*)

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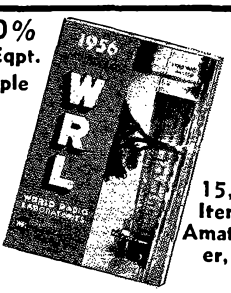
National HRO-50T-1 with coils $279.00
Collins 32V-1 ...$275.00



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Q-6

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gang, this time it's going to be a full-fledged convention and we hope to have some real important guests. BW is heard on 3.8-Mc. mobile after a long absence. Word has been received from ARRL Headquarters confirming my reelection as SCM for another two-year term. Many thanks, gang, I shall do my best to warrant your continued confidence. Keep the monthly reports coming; they do help so much in writing these reports. Traffic: VE6HM 183, OD 40, YE 30, AL 21, IZ 5, MJ 3.

50-Mc. Trans.-Recvr.

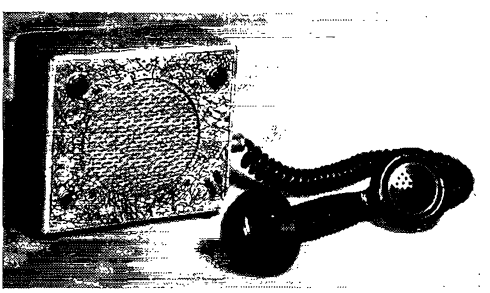
(Continued from page 16)

cillator is crystal controlled. It is suggested that the i.f. be aligned roughly, using a signal generator set to approximately the frequency resulting from the selected oscillator crystal. The receiver is extremely sensitive and has considerable i.f. gain, so it is important to keep the input signal at low level to allow optimum alignment adjustments.

A grid dipper is an asset in tuning the local oscillator tank to the proper harmonic. Final alignment should be accomplished by tuning to a carrier or test oscillator on the proper signal frequency. A test point is brought out so that the a.v.c. voltage can be measured as an indication of proper alignment. Several volts can be measured at the a.v.c. line on normally-received signals.

The transmitter is tuned by peaking each tank coil for maximum grid drive, being careful to hit the proper harmonic at each stage. The final should then be neutralized by adjusting the small condenser. The pi-network tank loads nicely into random antennas. Final cathode current will run about 45 ma. at normal loading. A handy dummy load can be made from a small 10-watt 110-volt lamp, and the relative brightness will give a rough indication of output power.

Operation of the equipment is simple, primarily because the fixed-frequency design eliminates all tuning once the gear has been aligned.



Control head, with speaker, switches and gain control for remote operation. Cable connections are made at the rear.

The squelch threshold control should be set so that noise alone will not normally activate the receiver. All operational control is then handled from the control head. One of the switches applies power; the other disables squelch when desired. A volume control is in the control head, and a telephone type handset is connected for push-to-talk operation. An F-3 handset was used in

(Continued on page 140)

this particular construction, but other conventional mobile type carbon mikes may be easier to obtain.

The unit runs rather warm in normal operation, so ventilating slots were cut in the Minibox cover, and fitted with perforated metal to provide easy flow of air through the equipment. The rig has been given a long period of operational test, and has been very dependable and convenient to use. It has been operated in aircraft, marine, and mobile service, as well as base station installation, and has performed most satisfactorily in all instances.

Conelrad

(*Continued from page 19*)

a relay that grounds the positive side of the meter while the transmitter is operating.

A resonant coil or a tuned circuit can be used in conjunction with the monitor's pick-up antenna for the purpose of improving selectivity and sensitivity.

— *Robert R. Rathbun, W8TGH*

[EDITOR'S NOTES:

1) The effect of fading should be checked by anyone who must depend on a *distant* station for the Conelrad alarm signal. A signal that comes in loud and clear at one time of day may fade below a useful level at other times.

2) In many installations, it will be practical to take the power for the circuits shown in Figs. 2 through 5 from the control receiver, especially if the receiver employs a transformer-type power supply. Plate power for the circuits may also be obtained from many of the popular a.c.-d.c. receivers, but stealing heater voltage from any such set may be a more difficult problem, requiring a change in the heater wiring of the receiver and the substitution of a new resistance-type line cord — one having a lower resistance. Remember also that most a.c.-d.c. receivers have the chassis *above* ground, and the hazard of shock will be avoided only if the companion Conelrad unit is constructed so as to prevent direct contact with its controls, circuit and chassis.]

— *C. V. C.*

Novice Special

(*Continued from page 39*)

On the higher frequencies, changing the setting of the regeneration control will have some effect on the frequency, so it may be necessary to readjust C_1 slightly to keep the signal in tune.

An antenna that happens to be resonant at the listening frequency may load the detector so that it will not oscillate. These "dead" spots can usually be eliminated by inserting a 50-$\mu\mu$f. variable capacitor in series with the antenna and setting the capacitor at a point that permits oscillation. Dead spots should not occur in any of the amateur bands with the 75-foot antenna, although some will probably be found in between the bands.

(*Continued on page 142*)

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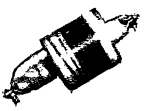

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Western Elec.	12 v	625v	225	**19.50**
Westinghouse	5.75v	410v	275	**24.50**
Westinghouse	5.8 v	375v	325	**24.50**
Carter	5.8 v	600v	175	**24.50**
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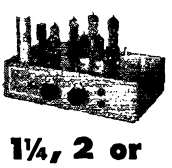

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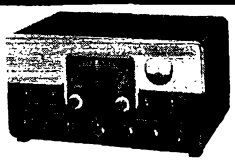

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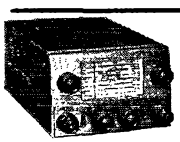

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The detector should go into oscillation at screen voltages from 15 to 50. At 250 volts, the total current drain should be about 45 ma.

The frequency stability of this receiver on the amateur bands above 7 Mc. will probably not be considered good enough for regular station use on c.w. It will, however, be found entirely adequate on phone signals where high stability is of less importance.

Preliminary tests have shown that the problem of stability on the higher frequencies can be readily solved by the addition of a converter. The frequency stability on the higher frequencies then becomes essentially the same as on 80 meters. We expect to have more on this in a later issue of *QST*.

Simple Ground Plane

(*Continued from page 26*)

stood all Hurricane Connie and an "Extra Tropical Cyclone" could muster up!

As stated, the antenna was mounted on the chimney. However, it could be easily adapted to other types of mounting. Still, this would be the ideal mounting for a cliff-dweller QTH!

The radials should be equally spaced and at least four used. They could be run at almost any convenient angle.

In the short time I have had the vertical in operation, it has snagged all continents with very good signal reports, using a Viking II.

Build one! Give some competition to the kw. + beam men!

Correspondence

(*Continued from page 78*)

well and good to prate about the other fellow, and what he should (and should not) do; but what has the League been offering up that is so vastly superior? Precious little, I might say. . . .

Commercialization is upon us for many reasons. Among them are such factors as (a) lack of time among busy professional men; (b) lack of construction facilities in crowded apartments; (c) apprehension that it may not work as expected; (d) difficulty in obtaining certain parts; (e) knowledge that home-brew gear has negligible trade-in value; and, (f) lack of interest in any phase of construction . . . there are, no doubt, many other factors. I have touched upon those that appear most frequently. . . .

— *Neil A. Johnson, W2OLU*

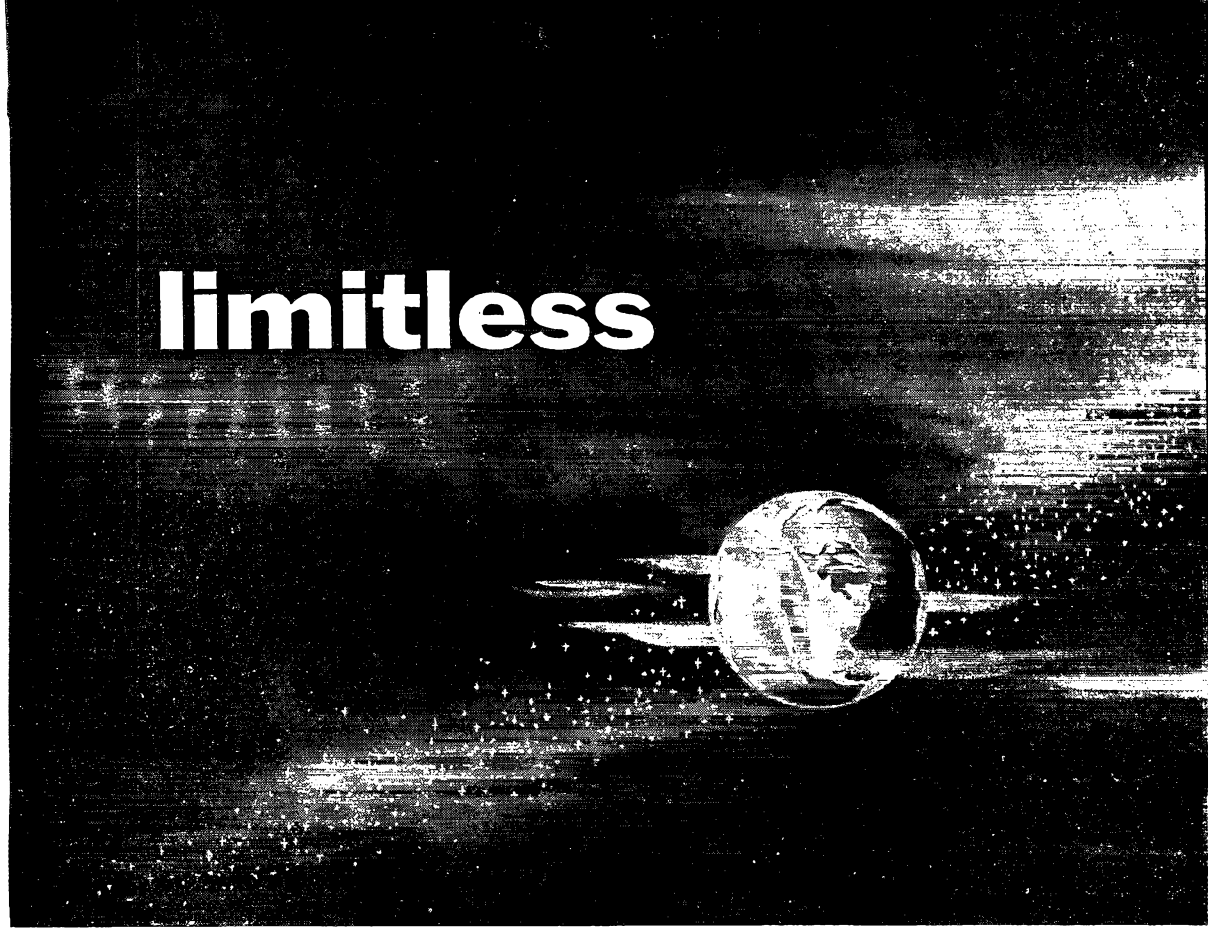
RAPP-TURISTS

4802 Palo Verde Ave.
Lakewood, Calif.

Editor, *QST*:

This letter is written after the members of this club unanimously decided to request a satisfactory explanation for the articles which you allow to appear in your magazine each April. The particular article in question is, naturally, "A Radical Approach to VFO Design," the author of which was not given — unless you want your readers to think that your fictitious character, "Larson E. Rapp," is for real.

(*Continued on page 162*)



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RACES funds

(*Continued from page 55*)

ing and operation of the equipment are easier because the equipment is uniform. It may also be argued that the depreciation during the first few years is only 10 to 20 percent, and that the loss to the town would be small if it was decided to discontinue the activity. This is not likely, but it may ease the minds of doubtful officials.

What is the Town Buying?

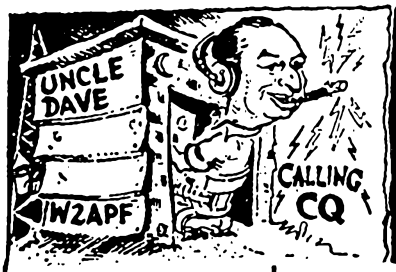
Now that we have the cost picture pretty well in mind, there is still a question to be answered: "Even if the cost is small, what do we specifically buy for our money?" As we see it, the town buys:

1. Increased protection of life and property,
2. Assistance to the police, fire and other town departments when needed,
3. A message handling service during emergencies, and
4. Many man-hours donated by the local amateurs. Regarding the latter, it might be pointed out that the provision of equipment will result in effort from the amateurs to set up station facilities, install the equipment and antennas, and use personal automobiles during emergencies and drills and many hours of practice operation. If we assume ten amateurs working only 30 minutes a week, we find that roughly 2500 man hours will be donated in a ten year period. At $1.50 per hour this represents a saving of $3750, which more than exceeds the cost of equipment.

There are other good arguments for buying emergency radio equipment. The foregoing are not all of them, but they may serve to give some inspiration to amateurs in places where the officials have been complacent, apathetic or just plain not interested.

Before concluding, there are two additional thoughts which may be worth consideration. First, "don't bet on a dead horse" — plan ahead and buy equipment for the town which will not have to be replaced. Specifically, we refer to the use of v.h.f. gear (50, 144 and 220 Mc.) for local nets. Buy equipment that will not be put out of operation by skip conditions or shut down for security reasons. It's hard enough to get the taxpayers' money the first time; avoid the embarrassment of having to explain that you "goofed."

The second thought is somewhat afield from the immediate one in this article but relates to the manning of your eventual setup. Namely, don't underestimate your need for operators. Several days of operating twenty-four hours a day is a long time, especially when the menfolk are needed at home. The use of third class operators under the RACES rules will help a lot. Make good operators of them, though. This can be a real challenge, since we ourselves can do much to improve our local net procedures to make them more efficient and to lessen the number of unnecessary words used. In short, be sure that you can really answer the emergency call when your town needs you and has supplied you with the necessary equipment.



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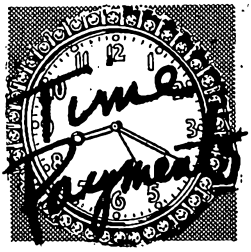

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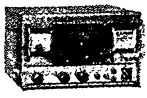

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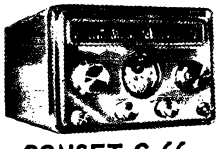

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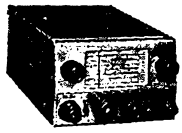

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Novice Round-up

(*Continued from page 67*)

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KNØDEY.....1- 1- 1- 1

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WN1FKE.....748- 44-17- 5
WN1FYF.....363- 33-11-14

Maine

WN1FKT.....315- 36- 9-25
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Eastern Massachusetts

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WN1FIQ.....3248-102-29-32
WN1EZZ.....2010- 67-30-19
WN1EPY....1836- 88-17-22
WN1FJI.....1242- 54-18-22
WN1HGS.....504- 36-14- –
WN1FBM.....77- 11- 7- 6

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WN1FSJ.....697- 26-17- 6
WN1FIX.....320- 17-10- 6

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WN1GXZ.....180- 20- 9- 2

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WN7BXW....130- 16- 5-14

Oregon

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WN7AOZ...16,701-273-57-35

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WN7ZUF....1178- 52-19-21
WN7CJQ.....9- 3- 3-15

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KN6LLC.....60- 10- 6- 6
KN6OHG.....24- 6- 4-25

Sacramento Valley

KN6LOA.....528- 33-16- 9

San Joaquin Valley

KN6OVJ.....4251- 94-39-36

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KN4DNW....3780-105-36-27
KN4EDV....1176- 49-24-17

South Carolina

KN4DGE.....750- 50-15-16

Virginia

KN4DNA....3605- 88-35-39
KN4CMC.....808-101- 8-22
KN4CLP.....684- 38-18-33
KN4EUS.....372- 21-12-
KN4EJG.....130- 13-10- 8
KN4GLX.....55- 5- 3- 5

West Virginia

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WN8WWF....525- 20-15- 6

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Colorado

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KNØBWI....1830- 51-30-23

SOUTHEASTERN DIVISION

Alabama

KN4GWZ....1740- 43-30-16
KN4GQK.....576- 32-18-27

Eastern Florida

KN4CMB....8619-154-51-33
KN4DRO....2511- 81-31-14

Western Florida

KN4GOZ.....2343- 71-33-16
KN4EFG.....378- 27-14-23

Georgia

KN4HIG.....8- 4- 2- 5

SOUTHWESTERN DIVISION

Los Angeles

KN6KRW....2607- 72-33-15
KN6OVN....1144- 52-22-24
KN6LWD.....756- 34-14-13
KN6MVE.....270- 27-10-24

Arizona

WN7BSP.....2673- 66-33-26
WN7ZJW....1904- 68-28-11

(*Continued on page 148*)

A home-built job running 70 watts to a 6146 final, an SX-99 and a coax-fed dipole did the trick for KN5DGI. 11,376 points goes to Wes, along with top honors for the Louisiana section.

SENSATIONAL! TELESCOPING 45-ft. MASTS!

- ★ In FIVE 9-foot sections!
- ★ Weather-lacquered steel
- ★ Erected height 40½ feet!
- ★ Ideal for light ham beams!
- ★ Ideal for TV and FM!
- ★ Use TWO for dipoles!
- ★ Use FOUR for rhombics!
- ★ Guy-hole rings built on!

Worth over $35!

$14.95

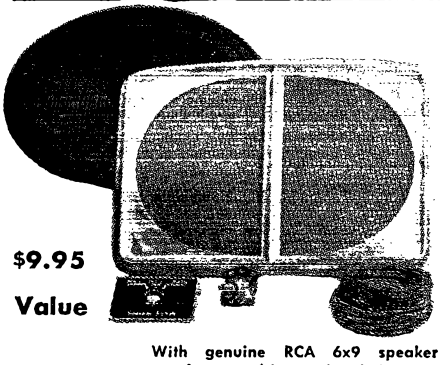
Crate of 4, $52.00

RADIO SHACK'S BIGGEST MAST VALUE IN 33 YEARS! Seamless, heavy-gauge steel mast is black weather-lacquered; with sealed ends, chained cotter pins and pre-drilled holes! Easily mounted on ground or roof by just two men! Net weight is only 39¾ lbs.! Use all five sections, or *any combination* of sections for mast of desired height! Its telescopic feature, strength and light weight make it ideal for field use. SAVE EVEN MORE on 4-mast crate purchases, because we bought 'em in crates and can save shipping room time! Mast tapers from approximately 2½" at the capped base to 1" at the extreme tip. Each section has attached ring with 3 guy holes. Sections fit deeply and tightly into each other — fasten securely! Mounts anywhere — ground, wall, roof; on brackets, in concrete, etc. BEST BUY in a solid, all-steel mast — ANYWHERE! Because of limited supply, orders will be filled on first-come first-served basis — ORDER EARLY! Average shipping weight: each mast 40 lbs.; crate of 4 masts 225 lbs.

Order No. QR-8500 ..... **Single mast, $14.95**

Order No. QR-8500-4 ..... **Crate of 4 masts, $52.00**

Automobile Rear Deck Speaker Kit



$9.95 Value

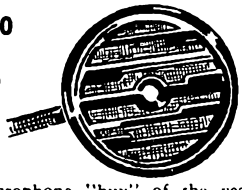
$4.49

With genuine RCA 6x9 speaker worth over $4.00 alone! Kit includes 3-position selector switch with etched plate; 25-ft. insulated wire; mounting hardware; full instructions. Ship wt 4 lbs *Order* No. Q-8502

CRYSTAL LAPEL MIKE

List $20.00

$2.95



ARCHER microphone "buy" of the year! Finish: TV gray, including 15-ft. cable. Features swiveling attachment clip, cord strain relief, and INDIVIDUAL sensitivity report with figures for 200, 1000 3000 cycles. Tiny 1¾x⅜" hideaway size. RETMA guarantee. Ship. wt 8 oz.

Order No. QR-3464 ..... **$2.95**

RADIO SHACK

167 Washington Street, Boston 8, Massachusetts

and 230 Crown St., New Haven 10, Conn.

San Diego

KN6LIV	5076-108-47-34

Santa Barbara

KN6DJZ	143- 13-11- 6

WEST GULF DIVISION

Northern Texas

KN5BKH	3478- 79-37-17
KN5CCQ	2196- 61-36-14
KN5BDX	75- 15- 5- 3

Oklahoma

KN5BFS	5040-111-40-27
KN5BXG	4733- 98-41-
KN5CBA	4107- 96-37-40
KN5BBE	2992- 73-34-40

Southern Texas

KN5BTE	10,560-220-48-10
KN5AFY	352- 32-11- 9
KN5BEF	90- 15- 6- 5

[1] KN0ASW, opr.

National Convention

(Continued from page 60)

will be open and several informal side events, plant tours, mobile caravans, etc., are planned. Registration is at the Whitcomb Hotel. An interesting event for the ladies is planned for the afternoon and for the early part of the evening while the men are at the opening meeting. The convention officially opens in the main Civic Auditorium at 7:00 P.M. The big ARRL meeting follows with ARRL President Dosland, General Manager Budlong and Communications Manager Handy in attendance. Pacific Division Director Engwicht and many directors and League officials are expected to be present. This meeting is under the chairmanship of Wally Buckley, W6GGC, SCM for the San Francisco Section. After this meeting, the entire convention moves back to the Whitcomb Hotel for a lively party. There will be an excellent orchestra for dancing and fast-moving entertainment, and other activities for those who do not dance. All the usual trimmings will be provided along with a few new ones. Special note: Wouff Hong initiation Friday night at the "witching hour," W6GGC presiding, with the Hams Club putting on the extravaganza.

Saturday is the big day for all the technical meetings. The ladies are sent off and the men settle down to serious business. Exhibits will be in full swing and time will be allotted so that everyone can see them. Every attempt is being made to schedule events in a manner that will avoid undesirable overlapping or having to break up interesting meetings which are running over the allotted times. The banquet is set for Saturday evening in the main auditorium. This is the highlight of the convention and nothing will be missing. The menu appears very good and some very special side attractions are an excellent possibility. A large number of people are going to leave this banquet very happy indeed. Cases, boxes and packages of all sizes will be quite evident. After the banquet comes adjournment to the Whitcomb Hotel for the Grand Ball. This crowning event calls for pretty dresses for the ladies but is "no tux" for the men. An excellent orchestra and equally excellent entertainment assures everyone a wonderful time extending into the wee small hours.

Sunday will see the now-traditional breakfasts by the various special groups. Many of these will have special programs, talks, contests, awards. The mobile judging contest with suitable awards follows along with Mobile Caravan and other

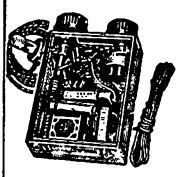
(Continued on page 150)

FREE! LAFAYETTE CATALOG

132 PAGE ELECTRONIC CATALOG

Packed with the largest selection of Electronic, Radio and T.V. Parts, and equipment, PA, Hi-Fi systems, tubes, antennas, Transistor Kits, parts and components, Test Equipment, new build your own kits, tools, books, Microscope, drafting equipment, Binoculars, Telescopes, All Radio, TV and Ham supplies — ALL AT GREAT SAVINGS — For the economy minded servicemen, dealer, engineer and technician. CHUCK FULL OF BUYS! SEND FOR YOUR FREE COPY TO-DAY.

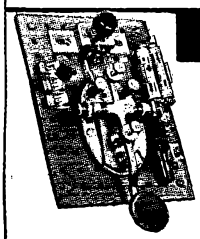
2 TRANSISTOR POCKET RADIO KIT



Packed into a 2½"x3½"x1¼" plastic case This Two Transistor plus crystal diode radio kit offers many surprises, utilizing a regenerative detector circuit with transformer coupled audio stage, gives you high gain and excellent selectivity. Pulls in distant stations with ease with more than ample earphone volume. Kit comes complete with two transistors, crystal diode, loopstick. Argonne transistor audio transformer, resistors, condensers, plastic case, etc. Including schematic and instructions.

KT-68A Complete Kit less earphones. Net **11.80**

MS-260 New Super Power Dynamic Earphone, Ideal for Transistor Circuit Imp. 8000 ohm, D.C. 2000 ohm **3.95**



TRANSISTOR CODE PRACTICE OSCILLATOR KIT

For those interested in mastering the international code, an audio tone oscillator is essential. The circuit of this transistorized feedback oscillator has the simplicity of the neon glow, the signal strength of the vacuum tube, and requires only two penlite cells for weeks of service. It may be used for solo practice, or two may send and receive with the same unit. Kit comes complete with Tranalator, Telegraph Key, Resistors, Condensers, Masonite Board, etc., and Schematic Diagram.

KT-72 ..... Net **2.99**

Cannon ECI—Single Headset ..... Net **1.13**

NEW!

9.95

SLIM HIGH OUTPUT DYNAMIC MICROPHONE

Reg. Price ~~11.50~~

A pencil-slim design, high output PA Dynamic Microphone of exceptional quality, at a price that is ⅛ of the price of any comparable microphone on the market today. Very smooth response, 60-10,000 cycles. Omnidirectional, tiltable head. Switch on side gives choice of either high impedance (50,000 ohms) or low impedance (250 ohms). Instantly removable bracket permits use either on stand or as hand mike. Features exceptional mechanical strength. Cast case with satin chrome finish, ⅝"-27 thread, Acoustically-treated grille head, 8" long; 1¼" barrel diameter. Shipping weight 2 lbs.

PA-29.....In lots of 3, Each **9.25**
Singly, Each **9.95**

CRYSTAL MICROPHONE

COMPARE IT WITH ANY MIKE AT 2 to 3 TIMES THE PRICE

A quality crystal Microphone for PA systems, house recorders, etc. Frequency response 30 to 10,000 cycles. Output level —52 db. Provides ample output for use with low gain amplifiers. Complete with 5 ft. of shielded cable. Shpg. wt., 3½ lbs.

PA-24— in lots of 3, each ... **3.95** singly, each **4.25**

NEW! EXCLUSIVE REVOLUTIONARY DESIGN!

TRANSISTOR 2 GANG VARIABLE SUPER-HET CONDENSER — ½" x 1" x 1" THE SMALLEST SUPER HET VARIABLE CONDENSER IN THE WORLD!

Lafayette does it again with this new super 2 gang midget variable condenser. An exciting and proven innovation in the transistor parts field! Manufactured for top performance in transistor super-het circuitry, it measures only ½" x 1" x 1". Has 2 gangs specifically designed for transistor super-hets — 10 to 208 mmf capacitance on the antenna section, and 10 to 100 mmf on the cut oscillator section. Self contained trimmers. Tunes through 180°. Entirely enclosed in a transparent plastic case! The smallest complete 2 gang variable for super-hets in the world! Offers unlimited possibilities to the experimenter.

MS-270 ..... Net **1.95**

MATCHED COIL SET } **MS-265**—Osc. Coil ..... Net **.79** Ea.
} **MS-272**—Ant. Coil ..... Net **.95** Ea.

365 MMF SINGLE GANG SUPER MIDGET VARIABLE CONDENSER

For exceptional performance in TRF and experimental transistor and subminiature circuitry. 10 to 365 mmf single gang. Enclosed in transparent plastic case. ½" x 1" x 1".

MS-274 ..... Net **1.25**

NEW! ALL-PURPOSE DYNAMIC EARPHONE

- **FOR RADIO AND TV LISTENING**
- **FOR SUBMINIATURE, MINIATURE AND TRANSISTOR RECEIVERS**

A sensitive all-purpose earphone designed for your listening pleasure. Combines the range of a dynamic earphone with the performance of its special magnet to give you excellent reproduction. Lightweight and equipped with ear support that slips comfortably over your ear. You can relax! The support is practically invisible — the earphone can't slip out — it can't fall off. Ideal for use with TV and radio sets, amplifiers, miniature and transistor receivers etc. Complete with 3 ft cord. A super value for the price!

MS-278 — 3000 ohm impedance, 1000 ohm DC resistance, with phone tip plugs.....Net **1.95**

MS-277 — 6 ohm impedance, with phone tip plugs. For Silent Radio and TV Listening or Viewing Net **1.95**

MS-273 — 3000 ohm impedance, 1000 ohm DC resistance, with subminiature phone plug and matching phone jack.....Net **2.39**

MS-279 — 6 ohm impedance, with subminiature phone plug and matching phone jack, For Silent Radio and TV Listening or Viewing.....Net **2.39**

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last-minute events. It is planned to bring the convention to a close early Sunday so that everyone will have time to say their appropriate farewells, check out and head for home.

A golf tournament is planned for Friday, July 6th. This is an extra-curricular activity for which green fees must necessarily be charged. There will be suitable trophies awarded to the serious golfers and prizes, on a "blind bogey" basis, for the "hackers." Everyone has a chance to win regardless of his (or her) score. Contact W6WB well in advance if you plan to participate.

The overall convention committee will number more than 75 people. Present chairmen include the following: General chairman, W6WB. Ladies chairman, W6PCN. W6ATO, W6SR, W6TT, W6GGC, Rose Buckley, Rose Pera, W6OKQ, W6DOT, W6DZZ, W6BYB, W6GPB, W6WQX, W6DUB, W6CBE, W6FDJ and V. N. Zachariah.

Registration fee is $9.50. This includes the "works" — all convention events, banquet, dances, entertainment and side events for Friday and Saturday afternoon and evening. Also, the complete program for the ladies, transportation where applicable, gifts and awards. The actual per-person cost to the convention committee is considerably greater than the ticket price. The wonderful cooperation of many manufacturers and jobbers in supporting our convention souvenir program and participation in our exhibits, have made the necessary extra revenue available. The committee is proud to state that this is strictly a non-profit convention. None of the committee receives remuneration of any sort — no fund raising is involved — no club treasury profits. It's strictly an *amateur* venture.

Advance ticket reservations will be honored until midnight, June 15th. These advance registrations will carry the traditional incentive. Amateurs who plan to attend are urged to assist the committee by making ticket *and hotel* reservations at the earliest moment. Send checks or money orders (no cash please) to: General Chairman, 391 Monterey Boulevard, San Francisco 12, California. Hotel reservations to Rose Buckley, 36 Colonial Way, San Francisco, California. Make all checks payable to: 8th National ARRL Convention Committee.

Field Day Rules

(*Continued from page 68*)

of being used while in normal motion. If they utilize antenna supports not normal or suitable for use during motion, installations must be classified as portable instead of mobile. Each mobile entry call must be different from any other FD station participating.

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

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

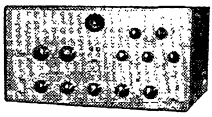
5. **Field Day Period:** The Field Day starts at 4:00 P.M. Local Standard Time (*not* Daylight Time) June 23rd and ends at 4:00 P.M. Local Standard Time (*not* Daylight Time) June 24th. (Hawaii and Alaska sections use Pacific Standard Time). All contacts must be made during this period. Class

(*Continued on page 152*)

We've got Single Sideband!

Take your choice from our complete stock of Single Sideband gear!

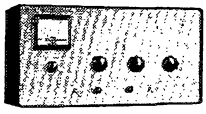
LAKESHORE



Phasemaster II — 9 mc phasing-type, bandswitching transmitter/exciter for AM, PM, CW and SSB. 100 watts P.E.P. input SSB—50 watts input AM, PM and CW. 160 through 10 meters.

Wired and tested with tubes:
$32.95 down, **$17.95** mo. 18 mos.

Complete kit with tubes:
$27.95 down, **$15.23** mo. 18 mos.



P-400-GG — Grounded-grid linear amplifier for use with the Phasemaster II. 575 watts P.E.P. input SSB — 200 watts input AM, PM and CW. Bandswitching 80 through 10 meters.

Wired and tested with tubes:
$26.95 down, **$14.68** mo. 18 mos.

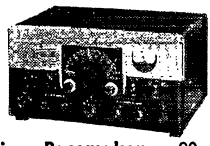
Complete kit with tubes:
$22.95 down, **$12.50** mo. 18 mos.

ELDICO

SSB-100A . . **$745.00** Amateur Net
SSB-500 . . . **$495.00** Amateur Net
SSB-1000 . . **$695.00** Amateur Net

These ELDICO items are available at the same convenient terms as other items on this page. For complete information on Burghardt's Easy Payment Plan, write today!

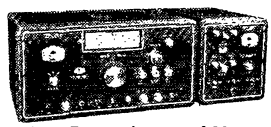
JOHNSON



Viking Pacemaker — 90 watts P.E.P. input SSB! AM and CW at flip of a switch! Built-in, high stability VFO. Voice controlled operation. Wired and tested, complete with tubes. 80 through 10 meters.
$49.50 down, **$26.97** mo. 18 mos.

Viking Kilowatt—1000 watts AM, CW and SSB. Continuous tuning 3.5 to 30 mc. Completely self-contained, with tubes.
$159.50 down, **$66.98** mo. 24 mos.

BARKER & WILLIAMSON



5100-B Transmitter — 180 watts peak envelope input SSB and CW — 140 watts AM. Built-in VFO. Bandswitching 80 through 10 meters. Complete with tubes.
$47.50 down, **$25.88** mo. 18 mos.

51SB SSB Generator—Powered by the 5100-B. Converts transmitter for SSB operation.
$26.50 down, **$14.44** mo. 18 mos.

COLLINS

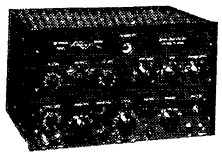
KWS-1 Transmitter — Optimum kilowatt performance on AM, CW, or SSB. Bandswitching 80 through 10 meters. Built-in VFO. Push-to-talk or VOX relay. With power supply and tubes.
$199.50 down **$83.70** mo. 24 mos.

HALLICRAFTERS

HT-30 Transmitter/Exciter — 30 watts peak output SSB. For SSB suppressed carrier, AM and CW. Bandswitching 80, 40, 20, 11-10 meters. With built-in VFO tubes.
$49.50 down, **$26.97** mo. 18 mos.

HT-31 Linear Amplifier — Bandswitching 80 through 10 meters. 500 watts P.E.P. with 10 watts drive. 450 watts CW with 9 watts. Continuously variable pi-network output.
$39.50 down, **$21.52** mo. 18 mos.

CENTRAL ELECTRONICS



Model 20A — 20 watts P.E.P. SSB AM, PM, and CW. Bandswitching 160 through 10 meters. Magic eye carrier null and peak modulation indicator.

Wired and tested with tubes:
$24.95 down, **$13.59** mo. 18 mos.

Complete kit with tubes:
$19.95 down, **$10.87** mo. 18 mos.

600L Linear Amplifier — Bandswitching 160 through 10 meters. 2 watts effective or 4 watts P.E.P. required for 500 watts DC input. Built-in power supply. With tubes.
$34.95 down, **$19.50** mo. 24 mos.

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.

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10% Down—Easy Terms Up to 18 months to pay on balances over $200. Terms adjusted to your budget. Full payment within 90 days cancels interest.

Speedy Delivery—Personal Attention—No order too large or small for personal attention. All inquiries acknowledged and orders processed day received.

C stations may cross a time-zone line but may not receive credit for more than 24 hours of operation if they do so.

6. Bands: Each phone and c.w. band is regarded as a separate band. The following (and additional u.h.f.-s.h.f. bands) constitute separate bands: *A1:* 1.800-1.825 1.875-1.900 "east" or 1.900-1.925 1.975-2.000 "west," 3.5-4.0, 7.0-7.3, 14.0-14.35, 21.0-21.45, 26.96-27.23, 28.0-29.7, 50-54 and 144-148 Mc. *A2:* radioteletype and frequency-shift keying are grouped with A1, in the bands where they are allowed. *A3:* 1.800-1.825 1.875-1.900 "east" or 1.900-1.925 1.975-2.000 "west," 3.8-4.0, 7.2-7.3, 14.2-14.3, 21.25-21.45, 26.96-27.23, 28.5-29.7, 50-54, and 144-148 Mc. All forms of voice transmission will be grouped with A3, in the bands where they are allowed. (In Canada and Cuba, their respective phone bands apply.)

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

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

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

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

10. Scoring:

Points: Each valid contact counts 1 point.

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

Multipliers:

Power: Output-stage plate input under 30 watts: 3. Output-stage plate input over 30 and under 100 watts: 2. Output-stage plate input over 100 and under 1000 watts: 1. The plate input of a grounded-grid amplifier is its plate input plus the plate input to the driver stage.

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

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

Multipliers do not apply to Class D and E entries.

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

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

12. Reporting: Mail reports or entries on or before July 21st. Reports must show bands used, dates and contact times, calls of stations worked, signal reports sent and received, and ARRL sections or locations of stations worked. Reports must also show power inputs and sources of power, number of transmitters in simultaneous operation, location of station, number of persons participating, class of entry, and score computations.

V.H.F. QSO Party

(*Continued from page 47*)

7) Awards: A certificate will be awarded to the high-scoring single-operator station in each ARRL section. In addition, the high-scoring multiple-operator station will receive a certificate in each section from which three or more valid multiple-operator entries are received. Certificates will also be given to the top Novice and Technician in each section where three or more such licensees submit logs. Award Committee decisions will be final.

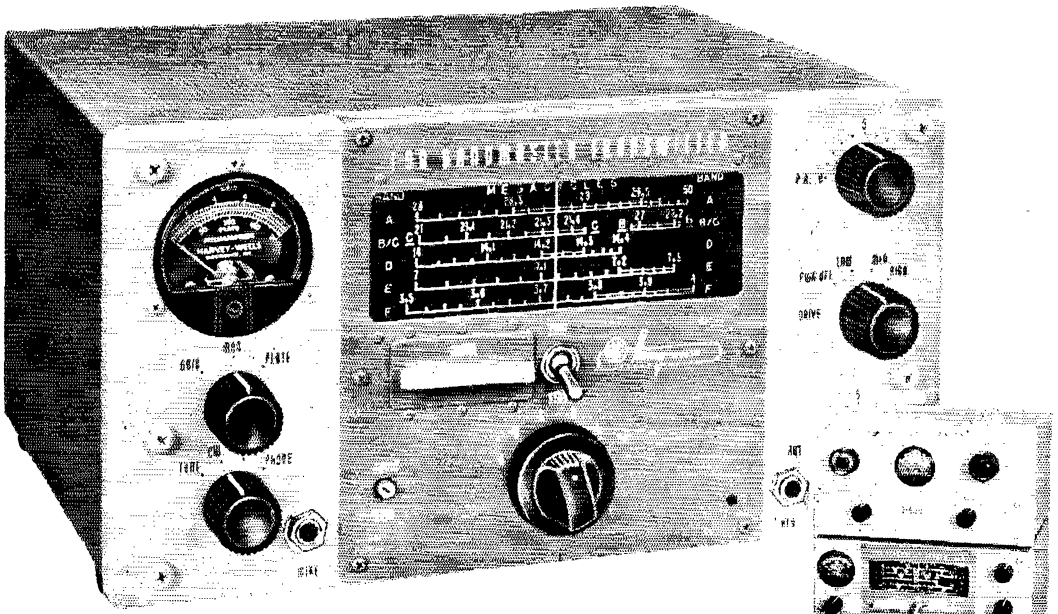
8) Reports must be postmarked no later than June 27, 1956, to be eligible for awards. See the box on page 60, June, 1953, *QST*, for correct form, or a message to Headquarters will bring a lithographed blank for your contest report.

YL News & Views

(*Continued from page 72*)

about twenty YLs in Iowa, according to a check made by WØBFW, Ethel. . . . Anyone interested in forming a YL club in the Philadelphia area? Contact W3VNN, Shirley, who is. . . . W4ZVW, Ellie, and W4PIK, June, are Orlando, Florida's two YLs. . . . A member of several MARS nets, W3ZFB, Leona, is senior NCS for one of them. . . . W5s EGD, EYE, and ZPD helped out radio-wise in Houston's March of Dimes telethon. . . . W5SYL, Iva, of Grand Prairie, Texas, reports that local hams and the Civil Air Patrol took an active part in "Operation Ready" in January. Both groups had equipment in service minutes after the "bomb" was dropped. . . . W4YAI, Lucy, is President of the Mobile (Ala.) ARC Auxiliary. . . . Following a QSO, WN8HRS emptied an ash tray into a waste-basket and left the room. She returned to find the curtains and part of the shack aflame. Smoke damage was heavy throughout the house. Irene admonishes this is one way to get your house redecorated in a hurry. . . . W3TSC, Camille, and WØIRJ, Jean, have made WAS; and W1s VYH and YNI, both Bettys, have made their YLCCs. . . . W8HWX, Lillian, recuperating at home, wishes to thank the more than 100 YLs and OMs who sent her cards when she was in the hospital. . . . The Chicago Sunday Sun-Times, March 18, 1956, carried a two-page feature story on W9GME. Grace's husband recently became K9CUM after several years of service as a patient OM. . . . Seven new R. I. novices are WN1s JDH, Paula; JGO, Lois; JHY, Frances; JJH, Emma; JJK, Jean; JJT, Rita; and JJU, Jacqueline. . . . OM W1ZPG received R. I. YL Certificate No. 2 (see W1 group photos for No. 1 holder). . . . W1ZEJ, Mary (see photo elsewhere in this column) was appointed to represent the Nantucket Island members of the Cape Cod and Islands Amateur Radio Association, Inc.

The new KZ5 QSL Manager is Kay Howe, KZ5KA, of Balboa Heights, Canal Zone (QSLs should be sent to Box 407, Balboa, and not to address previously given here). Kay, whose stateside call is W9RIH, has worked 112 countries, with 100 confirmed on 10, 15, and 20 phone and c.w. The XYL of the District SCM, KZ5RM, Kay holds WAS, KZ5100, KZ5YL, RCC, and Maritime Mobile certificates.



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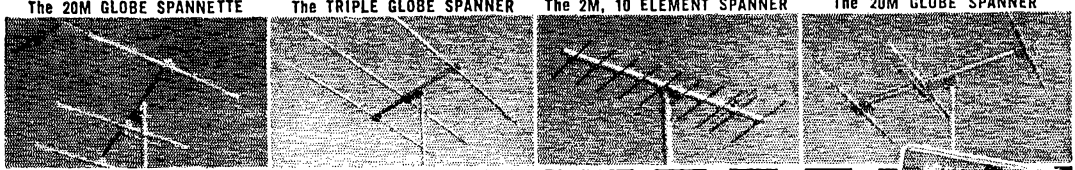

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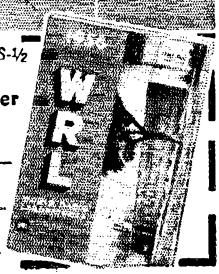


Hints & Kinks

(*Continued from page 77*)

may be used to disconnect the new padder for operation at 3.5 Mc. and above.

The switch used here at W9ZGB is mounted on the front panel to the right of the meter and above the output control. One end of the 350-$\mu\mu$f. capacitor is connected to terminal No. 2 of the 80C coil and the other side of the capacitor is tied to the new switch. The other contact of the switch goes to ground via terminals 80C1 or CA1. Terminal designations given are those used in the Heathkit instruction book for the AT-1. Coils terminal identifications will be found in Fig. 5 of the booklet.

It should be noticed that the oscillator plate circuit requires no conversion in order that 160-meter operation of the transmitter may be enjoyed. The oscillator plate circuit is untuned at frequencies below 7 Mc. and will therefore, without modification, drive the amplifier at the desired frequency.

— *William O. Mehuron, W9ZGB*

21-MC. CALIBRATION FOR THE HQ-129-X

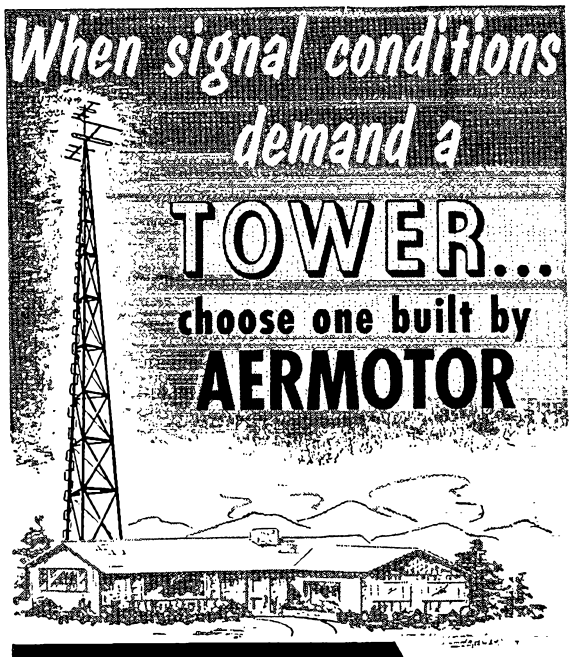
THE FOLLOWING is a simple and convenient method of providing 21-Mc. calibration for the HQ-129-X receiver.

Using a crystal-controlled frequency standard, and by adjustment of the two tuning dials, set number 2 of the calibrated bandspread scale (the uppermost ring of numbers — 0 to 200 — on the dial) as the position for 21-Mc. reception. With this setting of the controls, it works out that each higher number on the bandspread scale — after multiplication by 4 — equals the approximate number of kc. above 21 Mc. Therefore, by multiplying by 4 and then adding 21,000, the approximate frequency is readily determined.

For example, 25 on the scale corresponds to 21.1 Mc. ($25 \times 4 + 21{,}000 = 21{,}100$ kc.). With the scale set at 100, the approximate frequency is 21.4 Mc. ($100 \times 4 + 21{,}000 = 21{,}400$ kc.). The mental process of multiplication and addition may slow you up a bit at first, but soon becomes a routine matter.

The main tuning dial of my receiver is set at approximately 21.85 Mc. for 15-meter operation. The exact setting of the dial for each particular receiver should be determined by means of a frequency standard. Band-edge operation should also be checked against a standard.

— *John Abbott, W6ZOL*



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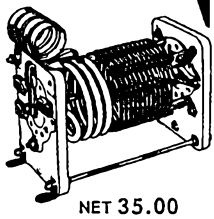

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High-Power Final

(Continued from page 46)

feed line, should be used in tuning. We prefer to do the preliminary tuning with the plate voltage applied to the tubes but with the screen voltage at zero. Zero screen voltage, provided the d.c. screen circuit is complete, will give enough output for tuning adjustments. C_3 and C_4 are adjusted to give maximum output, and the screen voltage is then increased until the amplifier is running at the desired input. C_3 is of course tuned for the plate-current dip so that the amplifier tank is kept tuned to resonance.

The fixed values of inductance available in the B&W unit preclude the possibility of matching over a wide range of impedances. The circuit can handle an s.w.r. in the coax line of about 2 to 1, but with higher s.w.r. values it may not be possible to get the desired loading. Also, although the construction is such that the amplifier is "clean" insofar as direct radiation and leakage of harmonics in the TV bands are concerned, a good low-pass filter will be required in most installations. A low s.w.r. in the coax line is definitely a requirement if excessive build-up of currents or voltages in the filter is to be avoided. If the line cannot be matched at the antenna, an auxiliary matching circuit or "antenna coupler" will have to be used.

For plate modulation a choke coil may be connected in the d.c. screen lead so the screen voltage will follow the audio variations in plate voltage. The choke should have an inductance of about 10 henrys, and must be capable of carrying 125 ma. d.c. For Class AB_1 operation on single sideband the circuit may be left intact, the only requirement being to supply the proper operating voltages from suitably well-regulated supplies. If the amplifier is to be operated in AB_2 on s.s.b. the grid-leak resistor should be shorted out; also, suitable loading should be applied to the grid tank to maintain good regulation of the r.f. driving voltage.

Strays

Research at Stanford University indicates that microwave energy of moderate power levels can cause permanent damage to the eyes of personnel unless reasonable precautions are observed. The exact effects are not known, nor is it known precisely what precautions are necessary. However, the general safety rule to be observed is, "Don't peer into the open end of a waveguide or coax cable unless you know the power is off."

—•••—

President Eisenhower has recently sent congratulations to Dr. Lee de Forest, commemorating the 50th anniversary of the invention of the three-element vacuum tube. Dr. de Forest revolutionized the field of radio and electronics with the vacuum tube, and it is refreshing to note that at the age of 83 he is still active in his research laboratory.

World Above 50 Mc.

(*Continued from page 75*)

vantage whatever. It may not be easy to raise stations by calling them above 51 Mc., but spots up in the band are fine for calling CQ. We can all help by *tuning* the upper part of the band, and giving preference to stations found operating there. If you have only low-edge crystals, try announcing that you are going to tune "from the high end down," or "up from 51 Mc.," and you'll be extending a helping hand to those who are trying to do something constructive about our band-use problem. Same thing applies to 144-Mc. work, too, of course, though operating habits on that band are by no means as bad as on 50 Mc.

For many years it has appeared that the states bordering the Gulf of Mexico should enjoy the best v.h.f. propagation of any area in the country. There have been occasional contacts made on 144 Mc. over considerable distances, but with nothing like the regularity that TV DX is logged in the same region. From TV DX records it appears that 2-meter work should be possible over distances up to 500 or 600 miles fairly often around the Gulf. W4GJO, recently set up for 50 and 144 Mc. at Ft. Myers, Fla., got his first taste of 144-Mc. DX on the night of April 14th. At 2145 he heard W5KRT, Opelousas, La., but wasn't able to raise anyone until 2248, when he hooked W5JTI, Jackson, Miss., whose signal was S9-plus. Then followed W5AIE, McComb, Miss., and W5KRT. Last station worked was W4EQM, Langdale, Ala. Unfortunately, CO2VY (note change of call from CO2CT) was not on that evening. Swapping of extremely strong signals at these distances, 500 to 700 miles, indicates that much greater DX should have been possible with activity in the right places.

W4VTJ, West Palm Beach, is a recent 2-meter convert with DX aspirations. Jay made his first contact with CO2VY, about 300 miles, on April 4th, using only 15 watts. He has a 200-watt final in the works, and is active nightly, 1900 to 2130. He will keep schedules with anyone interested in attempting DX work, phone or code, and is particularly keen for a shot at the West Indies or Canal Zone.

Here's one opening on 50 Mc. that everyone else seems to have missed. At 1930 CST April 4th, W5JXU, Pottsboro, Texas, turned on his receiver and heard XE1GE, Mexico City, coming through S9-plus. Contacting Jeff, Sim got the news of the new 50-Mc. record. XE1GE remained in with a good signal for about an hour.

When we reported the work from Japan to Australia (April *QST*) as the first between those two countries we did a couple of 50-Mc. pioneers an injustice. This path was first spanned on October, 1949, by JA2AZ and VK2AH. Major Bates, who was JA2AZ, is now W8GKJ. He has a 400-watt rig about ready to go on 6.

V.h.f. news from Cedar Rapids, Iowa: There are now 26 50-Mc. stations in the Cedar Rapids area, tying into a net that operates on Tuesdays and Thursdays at 2000 CST. The net frequency is 50.4 Mc. There is considerable 144-Mc. activity as well, 15 operators showing up at a recent gathering of 2-meter men at the home of WØGM.

Lots of interesting things could happen during the daylight hours on the v.h.f. bands, if we had enough regular activity to catch the openings. With this in mind, W8SSD and W8PXX started noontime skeds on 6 recently. The news spread around and now the noon sessions have many stations reporting in. Anyone in the Akron area is welcome to join the Noonday Rattlers. Six-meter operators will have a picnic July 1st, at the home of W8PTL, 145 South Lyman St., Wadsworth, Ohio. W8PTL will be on 6 to direct mobiles to the picnic site.

We've had quite a bit of confusion in our official records for two-work on the various bands above 50 Mc., what with the round-the-world 50-Mc. DX, a 500-mile 420-Mc. contact across the Mediterranean, and a 125-mile 1215-Mc. two-way claim in Czechoslovakia. When we get the facts all sorted out we'll run our two-way records box occasionally again. Meanwhile, here's one that we'll bet has not been duplicated. Mike Barlow, G3CVO, who heads up amateur TV activities for RSGB, writes that he and G2WJ sent color bars two-way via amateur 430-Mc. TV over a 13-mile path. This was done on April 7th. Their two-way monochrome TV record is held by G2DUS and G3KKD, at 38 miles. There are now 21 amateur TV stations licensed in Great Britain, of which 11 have been on the air.

If we missed hot news this month, please bear with us. Your conductor did a stretch in the hospital between deadlines. Better coverage next month!

Happenings

(*Continued from page 32*)

Florida: The law prohibits the use in a motor vehicle of equipment capable of receiving on police frequencies; however, amateurs are specifically exempted.

Indiana: Prohibits use in motor vehicles of equipment capable of receiving on police frequencies.

New Jersey: Prohibits use in motor vehicles of equipment capable of receiving on police frequencies, unless user has a permit from local chief of police.

New York: Same as New Jersey. Additionally, the city of New York prohibits the operator of a motor vehicle in motion from using two-way radio equipment; *no exemption for amateurs.*

North Dakota: Prohibits installation and use of mobile short-wave receivers without a permit. (Like many others of this nature, the law was originally passed to give authorities a means to control "ambulance-chasers." To our knowledge it has never been applied to amateurs, though technically it could be.)

South Dakota: Same as North Dakota.

As a matter of interest, the states of Connecticut and Vermont prohibit the installation of a television set in a motor vehicle in a location where it can be seen by the driver!

It goes without saying that any amateur operating mobile should double-check to make certain he has both his motor vehicle operator license, registration, and amateur license always in his possession.

AMATEUR RADIO WEEKS

Responding again to representations of the Ohio Council of Amateur Radio Clubs, Governor Lausche has proclaimed the week of June 17th through 23rd as Amateur Radio Week in that state, making it three years in a row. In his proclamation, the Governor praises the volunteer public service of amateurs in research and experimentation, in disaster emergency work, and in civil defense activities.

Just in time to insert this brief mention we learn also that the same dates have been designated as Amateur Radio Week in Illinois and Maryland in proclamations which similarly commend the outstanding performance of amateurs in the public interest.

Correspondence

(*Continued from page 142*)

We, the members of SCRC, unanimously agree that you, as the head of an official organ, have as much right to mislead your readers as the average novice has to transmit phone on 20 meters.

A healthy percentage of the members of the SCRC are also ARRL members, and, as human beings, they do not like to be taken for imbeciles — nor do they like to spend their hard-to-come-by cash on your inane, worthless, nonresonant circuitry. There are a great many newcomers to radio in this organization, as there no doubt are in your own; how you could deliberately print a hoax like this is

(*Continued on page 168*)

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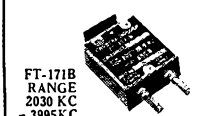
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372	394	416	487	509	533	440	463	
374	395	418	488	511	534	441	464	
375	396	419	490	512	536	442	465	
376	397	420	491	513	537	444	466	
377	398	422	492	514	538	445	469	
379	401	424	493	515	540	446	470	
380	402	425	494	516		447	472	
381	403	426	495	518		448	473	
383	404	427	496	519		450	474	
384	405	431	497	520		451	475	
385	406	433	498	522		452	476	
386	407	435	501	523		453	477	
387	408	436	502	525		455	479	
388	409	438	503	526		457	480	
390	411	481	504	527		458		
391	412	483	506	529		459		
392	414	484	507	530		461		

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6497	7810	2082	2282	2435	3250	
6522	7930	2105	2290	2442	3322	
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4280	5773	6350	7475	7766	8690
4330	5775	6373	7500	7773	
4340	5780	6375	7506	7775	
4397	5806	6400	7520	7800	
4445	5840	6406	7525	7806	
4490	5852	6425	7540	7825	
4495	5873	6673	7550	7840	
4840	5875	6675	7573	7841	
4852	5880	6700	7575	7850	
4930	5892	6706	7583	7873	
4950	5906	6725	7600	7875	
5030	5925	6740	7606	7900	
5327	5940	6750	7625	7906	
5360	5955	6773	7640	7925	
5385	5973	6775	7641	7940	
5397	6206	6800	7650	7950	
5437	6225	6825	7660	7975	
5485	6240	6850	7673	8250	
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5660	6273	6900	7700	8300	
5675	6275	6925	7706	8306	

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3735	6173	6573	7325	8375	8690
3990	6175	6575	7425	8383	8700
6025	6185	6600	7440	8400	8733
6040	6200	6606	8000	8425	
6042	6440	6625	8050	8450	
6050	6450	6640	8125	8475	
6073	6473	6656	8173	8500	
6075	6475	7000	8175	8525	
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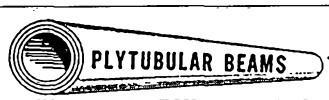

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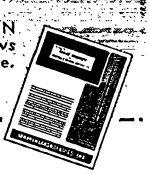

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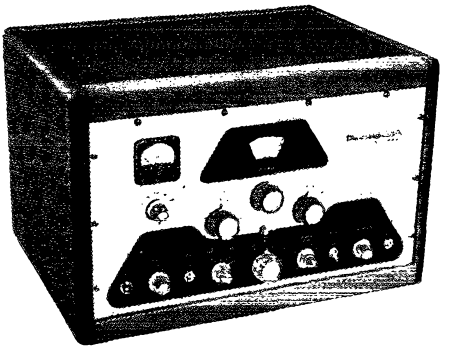
★

Attractive and functional physical design.

The Heathkit Model DX-100 Transmitter is rapidly becoming the "standard" ham rig in its power class. The high quality and outstanding performance it offers can be matched only in equipment costing many dollars more. It features a built-in VFO, modulator, and power supplies, and is bandswitching for phone or CW operation on 160, 80, 40, 20, 15, 11, and 10 meters. The kit includes a detailed construction manual, the cabinet, all tubes, prewound coils, and all other parts necessary for construction.

Push-pull 1625 tubes are used to modulate parallel 6164 tubes for RF output in excess of 100 watts on phone, and 120 watts on CW. May be excited from the built-in VFO or from crystals. Features pi network output circuit, illuminated VFO dial and meter face, and 5-point TVI suppression. High grade, well-rated parts supplied. Schematic diagram and technical specifications on request.



MODEL DX-100

$189.50

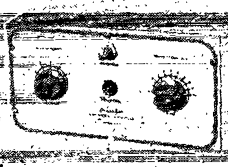
Shpg. Wt. 107 Lbs.

Shipped Motor Freight unless otherwise specified. $50.00 deposit required on all C.O.D. orders.

HEATHKIT

antenna coupler

KIT



MODEL AC-1

$14.50

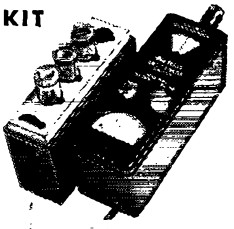
Shpg. Wt. 4 Lbs.

In addition to matching a low power transmitter to an end-fed long wire antenna, this antenna coupler incorporates a 3-section low-pass filter, to attenuate output above 36 mc and reduce TVI. Handles up to 75 watts, 160 through 80 meters. 52 ohm coaxial input—tapped inductor and variable capacitor—neon RF indicator. Ideal for use with the Heathkit AT-1 Transmitter.

HEATHKIT

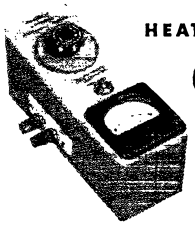
grid dip meter KIT

The Model GD-1B is a time-proven instrument. It will enable you to accomplish literally hundreds of jobs on all types of equipment. Frequency range is from 2 mc to 250 mc. A 500 ua meter is employed for indication, and a sensitivity control and headphone jack are provided. Includes pre-wound coils and rack. Indispensable for the ham, serviceman, and engineer. Extra coils available to extend frequency down to 350 kc.



MODEL GD-1B $19.50

Shpg. Wt. 4 Lbs.



HEATHKIT

antenna impedance meter KIT

MODEL AM-1

$14.50

Shpg. Wt. 2 Lbs.

Used with an RF signal source, the AM-1 will enable you to match your antenna-receiver-transmitter system for optimum operation. Will double as a phone monitor or relative field strength meter. Uses 100 ua meter, and covers 0 to 600 ohms. Frequency to 150 mc.

HEATH COMPANY

A Subsidiary of Daystrom, Inc.

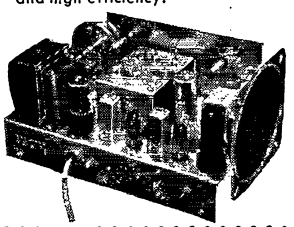
BENTON HARBOR 9, MICHIGAN

HEATHKIT communications-type all band receiver KIT

Slide-rule dial —electrical bandspread—ham bands marked.

Slug-tuned coils and efficient IF transformers for good sensitivity and selectivity.

Transformer-operated power supply for safety and high efficiency.



The Model AR-3 receiver features new high-Q slug-tuned coils, new layout, and new-type IF transformers. The result is high sensitivity and selectivity and better image rejection on all bands.

Transformer-type power supply, electrical bandspread, RF and AF gain controls, antenna trimmer, AGC, BFO, headphone jacks, socket for Q multiplier, 5½" PM speaker and illuminated dial.

SPECIFICATIONS:

Frequency Range—550 kc to 30 mc on four bands.
Tube Complement—1—12BE6 oscillator and mixer • 1—12BA6 IF amplifier • 1—12BA6 second detector, AVC, first audio amplifier and reflex BFO • 1—12A6 beam power output • 1—5Y3 full wave rectifier

$27.95 (Less Cabinet) • **MODEL AR-3**
Shpg. Wt. 12 Lbs.

CABINET: Fabric-covered cabinet available. Includes aluminum panel, speaker grille, and protective rubber feet. Measures 12¼" W. x 6¼" H. x 7¼" D. No. 91-15. Shpg. Wt. 5 Lbs. **$4.50.**

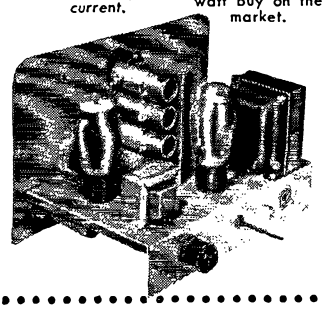
HEATHKIT CW amateur transmitter KIT

Single-knob bandswitching for 80, 40, 20, 15, 11, and 10 meters.

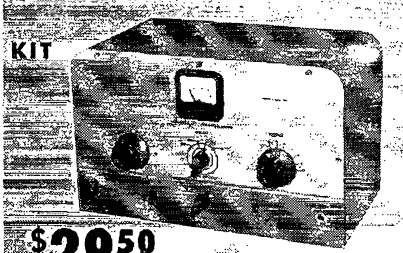
Panel meter monitors final grid or plate *current.*

Plate power input 25-30 watts.

Best dollar-per-watt buy on the market.



The AT-1 is complete with its own power supply, and covers 80, 40, 20, 15, 11, and 10 meters with single-knob bandswitching. Designed for crystal or external VFO excitation. Incorporates key-click filter, line filter, copper plated chassis, pre-wound coils, 52-ohm coaxial output, panel meter, and high quality components throughout. Easy to build, even for the beginner. Employs 6AG7 oscillator and 6L6 final. Up to 30 watts power input.



$29.50 • **MODEL AT-1**
Shpg. Wt. 15 Lbs.

SPECIFICATIONS:

RF Amplifier Power Input	25-30 watts
Output Connection	52 ohms
Band Coverage	80, 40, 20, 15, 11, 10 Meters
Tube Complement:	
5U4G	Rectifier
6AG7	Oscillator—Multiplier
6L6	Amplifier—Doubler

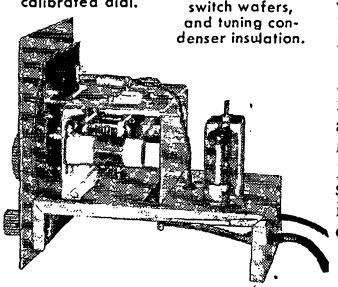
OA2 voltage regulator tube for stability.

Covers 160-80-40-20-15-11-10 meters.

Smooth-acting, illuminated and pre-calibrated dial.

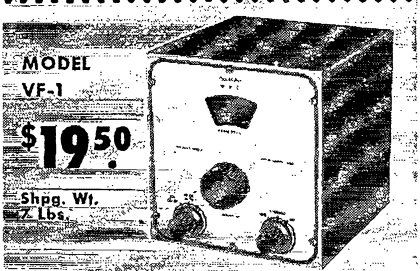
6AU6 electron-coupled Clapp oscillator.

Copper plated chassis—aluminum case—profuse shielding—ceramic coil forms, switch wafers, and tuning condenser insulation.



HEATHKIT vfo KIT

The Model VF-1 features illuminated and pre-calibrated dial scale. Cable and plug provided to fit the crystal socket of any modern transmitter. Covers 160-80-40-20-15-11 and 10 meters with 3 basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Derives operating power from transmitter power supply. Has VR tube for stability. Go VFO for more operating enjoyment.



$19.50
Shpg. Wt. 7 Lbs.

SPECIFICATIONS:

Output Frequencies—1750-2000 kc, 7000-7425 kc, 6740-6808 kc. **Calibrated Bands**—160-80-40-20-15-11-10 meters. **Tube Compliment**—6AU6 Oscillator OA2 Voltage Regulator. **Power Requirements**—250-350 VDC @ 15-20 ma. and 6.3 VAC @ .45A.

ORDER DIRECT FROM THIS AD . . . OR WRITE FOR FREE CATALOG. Describes more than 65 interesting "build-it-yourself" projects. Amateur equipment, hi fi amplifiers, and the complete Heathkit line of test instruments. Get yours today!

HEATH COMPANY
A Subsidiary of Daystrom, Inc.
BENTON HARBOR 9, MICHIGAN

(*Continued from page 168*)

beyond us. We want no part of an organization that thinks so little of the members.

I sincerely hope you publish this letter in your "Correspondence From Members" column; it will perhaps serve as a warning to all newcomers who are reading this magazine for the first time.

— *Ken W. Sessions, Jr., K6WVII, Sec'y*
Southern Counties Radio Club

7, Koste Abrasevica
Belgrade, Yugoslavia

Editor, *QST:*

Just got my April issue of your magazine, and my eyes immediately stopped at your new Mr. Rapp's (W-I-OWE-YOU) story. Thing sounds very promisable, with one small exception. You should suggest to every reader that, if he made that dandy v.f.o., he should put some drops of Yugoslavian plum-brandy (a stoff which makes able everybody, after taking it, to see Neverland in nature) across the key contacts. I think that only this will pull d.c. to go via the RFCs, instead to go thru short way, via the grounded center-tap of the coil. Furthermore, this solution will change your stating reinfluence of the keying shaping elements.

One thing is missing, we believe. You should inform the public that probably USKA sends H 22 certificate blanks with their announcements sent to all ham societies over the world, just as example ones.

Well, generally to say, all three Mr. Rapp's stories (solving the receivers problems, the SSFM and finally Harpitts, pardon, Coltley) are one of the best jokes we have ever seen. By one word: they are the jokes of the century. At least, as far as the hams people are concerned.

I am very interested to see next April issue!

— *Mirko Voznjak, YU1AD*

P.O. Box 254
Steger, Illinois

Editor, *QST:*

. . . I also found it extremely difficult to QSY due to the exceptional stability of the v.f.o., but I soon discovered the obvious solution: turn off all power, reset the v.f.o., then turn the power back on. This procedure results in much faster QSYing. . . .

— *Allen Fenstermacker, W9ZFD*

11 E. Woodland Drive
Montgomery, Alabama

Editor, *QST:*

. . . Your v.f.o. intrigues me. No imaginative ham will fail to see the significance of a v.f.o. so stable that it shows no immediate change of frequency even on being detuned! Imagine! Now, when some OM tunes up on the band and calls a few CQs, only to find that a net is already on the frequency, he can give the knob a twist and still give a leisurely reply to the NCS who has requested him to please QSY. . . .

— *Fred Jory, W7TRD/4*

Heppner, Oregon

Editor, *QST:*

Mickey and I built one of Mr. Rapp's push-pull push-push Harpitts (Coltley) oscillators.

Please have Mr. Rapp give us some advice. It works fine, but has one defect — he said that it wouldn't chirp — ours chirps both ways, simultaneously!

— *R. E. Smith, W7UZI*
— *Mickey Van Scholack, W7ZTQ*

St. Raphael's Rectory
Dubois, Indiana

Editor, *QST:*

I am willing to go on record as saying that Mr. Rapp's erudite exposition of his ultra stable v.f.o. monstrosity is space well used in *QST*, for besides furnishing some good chuckles, it carries a valuable lesson to those who can catch on. This lesson is contained in the last sentence of his whimsical but lovable masterpiece of balderdash: "Eventually, the key, with its associated shaping circuits, was placed in a later stage in the transmitter, and the fondest hopes of amateur radio were realized. No chirps or clicks."

I add my fondest hope that c.w. operators will soon realize that keyed oscillators ought to go out and stay out, because we no longer need to key the oscillator for perfect break-in, or even with a full gallon input.

— *Rev. Joseph Terstegge, W9LQE*

RADIO OPERATOR-TECHNICIANS

The U. S. Government has a continuing requirement for single and married men with radio operator-technician experience. Individuals with less than minimum required experience can qualify for training. Persons with past applicable experience, who for some time have been out of touch with this type of activity, will be refreshed. Assignments are overseas at interesting foreign posts.

Starting annual salaries, which will be determined by the applicant's experience and ability, range from $3670 (GS-5) for trainees to $4970 (GS-8) for fully qualified men. Normal promotional progress within this salary range may be expected when quality of performance dictates. Beyond this latter level, advancement possibilities exist on a selective and competitive basis. Standard government allowances are paid in addition to the salary.

A variety of foreign posts are available. Rotation of the employee and his family from post to post is accomplished in accordance with standard government regulations and usually involves tours of 24 months duration at each post followed by Stateside leave between assignments. Work is challenging and varies from post to post. If you are in good health, will not be subject to military draft under selective service regulations for at least one year, and are interested in the above openings, please write —

DAVID R. RINGLAND
U. S. Government Personnel
Post Office Box 6478
"T" Street Station, Washington, D. C.

When writing please give us the following information: 1. Name, address, telephone number, and hours when you can be reached; 2. Date of birth; 3. Military history including dates, schools, experience, grade or rank, and MOS (primary and others); 4. Civilian training and experience; 5. FCC license if any; 6. CW speed; 7. Typing speed; 8 Marital status and dependents. If your letter indicates that you have the required qualifications, a local interview will be arranged in the near future.

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 non-commercial in nature. Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, takes the 7¢ rate. 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, 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.

CODE slow? Try new method. Free particulars. Donald H. Rogers, Ivyland, Penna.

MICHIGAN Hams! Amateur supplies, standard brands. Store hours 0800 to 1730 Monday through Saturday. Roy J. Purchase, W8RP, Purchase Radio Supply, 605 Church St., Ann Arbor, Michigan. Tel. NOrmandy 8-8698. 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, BC221 mounts and parts wanted. Highest prices possible paid. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

PANORAMIC Adapter AN/APA-10 Tech. Manuals $2.75 postpaid in U. S. A. Electronicraft, 27 Milburn St., Bronxville 8, N. Y.

DX-O-GRAPH. The DX man's guide for band conditions. Know when, where, and what band. Foremost DXers use it. $2.50. Request flyer. Box 4596, Winston-Salem, N. C.

RECEIVERS repaired and aligned by competent engineers, using factory standard instruments. Hallicrafters, Hammarlund, National, Collins authorized service station. Our twentieth year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

MULTI-BAND Antenna, 80-40-20-10, $18.95. Patented. Send stamp for information. Lattin Radio Laboratories, Owensboro, Ky.

UFO Patrol data. W5CA.

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. Zimmermann Jr., K2PAT, 570 Jamaica Ave., Brooklyn 8, 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.

MIAMI and vicinity: Communications receivers repaired. Bryant Electronics, 13341 N.W. 7th Ave. Phone 84-4001.

URGENTLY need AN/APR-4 items particularly tuning units for important defense contracts. New high prices. Engineering Associates, 434 Patterson Rd., Dayton 9, Ohio.

CLEANING Shack! Have equipment for AM, SSB, Power supplies rotator, Hi-Fi, air conditioner, books, magazines, test equipment for TV-Radio repair, few TVs and radio-phone. Consider trades. Stamp for list. W4API, 1420 South Randolph, Arlington 4, Va.

FLORIDA Bound? Stop at Tamishaw Motel, a Ham's Haven. North Trail, Ft. Myers, Fla. "Eb" Long, K4GEW.

DELUXE Chart "Amateur Bands at a Glance." All the amateur bands illustrated. Band limits. Privileges, emissions, etc. Send 50c to Amband Co., P. O. Box 632, Boston 2, Mass.

RUBBER Stamp: Call, name and address, $1.00, includes inking pad. Richard's, 2029T Bradley, Chicago 18, Ill.

VAN SICKLE stocks Hallicrafters, National, Gonset, Johnson and other popular gear. Big trades too! W9KJF, Gene, Van Slicke Radio Supply, 1320 Calhoun, Ft. Wayne, Ind.

COLLINS 75A-3 recvr, brand new, $395. 5000 VCT at 500 mills CCS rating power xfrmr with tapped primary for 100 and 120 volts, $25.00. 40 ft. steel self-supported tower, $30. WØOMH, RFD No. 2, Hastings, Nebraska.

WANTED: Used 2-6 Meter gear low or medium power. W3VKD.

QSLS? SWLS? Finest and largest variety samples, 25¢ (refunded). Callbooks (summer) $4.00. "Rus" Sakkers, W8DED, P. O. Box 218, Holland, Mich.

QSLS: $2.00 per 100, mostly 3 colors while supply lasts. 48 hour service. CPS, Bladensburg, Md.

QSL-SWLS. 100, $2.85 up. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

QSLS. Cartoons, colors, etc. Samples 15¢ (refunded). Chris, W9PPA. 365 Terra Cotta, Crystal Lake, Ill.

QSLS. Attractive. Samples free. Cy Jones, W3EHA, 840 The Terrace, North, Hagerstown, Md.

QSL Samples. Dime, refundable. Roy Gale, W1BD, Box 154, Waterford, Conn.

QSLS-SWLS. Samples 10¢. Backus, 5318 Walker Ave., Richmond, Va.

QSLS! Colorful, attractive samples free. Rogers, KØAAB, 737 Lincoln Ave., Saint Paul 5, Minn.

QSLS-SWLS. Meade WØKXL, 1507 Central Avenue, Kansas City, Kans.

QSLS. Nice designs. Samples. Besesparis, W3QCC, 207 S. Ballict St., Frackville, Pa.

DELUXE QSLS — Petty, W2HAZ, Box 27, Trenton, N. J. Samples 10¢.

QSLS-SWLS. Samples free. Bartinoski, W2CVE Press, Williamstown, N. J.

QSLS of distinction! Three colors and up. 10¢ brings you samples of distinction. Uncle Fred, Box 86, Lynn, Penna.

QSLS "Brownie," W3CJI, 3110 Lehigh, Allentown, Penna. Samples 10¢; with catalogue, 25¢.

QSLS-SWLS. Samples 10¢. Malgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

WOODY'S QSLS. Box 164, Asher Sta., Little Rock, Ark.

QSLS. Western states only. Fast delivery. Samples 10¢. Dauphinee, K6JCN, Box 66009, Mar Vista 66, Calif.

QSLS, Taprint, Union, Miss.

QSLS. Postcard brings samples. Fred Leyden, W1NZJ, 454 Proctor Ave., Revere 51, Mass.

QSLS, SWLS. High quality. Reasonable prices. Samples. Bob Teachout, W1FSV, 204 Adams St., Rutland, Vt.

QSLS Multicolor, all kinds, all prices. Samples dime. Fast service. DX Cards, Kulik St., Clifton, N. J.

QSLS: Comic, rural, Doctors!! Samples 10¢. C. Fritz, 1213 Briargate, Joliet, Ill.

QSLS, sharp, 200 one color, three bucks. Multi-color samples dime refunded. Edward Green & Sons, 4422 Marquette Drive, Ft. Wayne, Ind.

QSLS samples 10¢. Bob Morris, W2IHM, 230 Rose St., Metuchen, N. J.

QSLS-SWLS, rubber stamps, letterheads, bargain prices. Craigprint, Newark, Arkansas.

QSLS, Printed book matches and memo pads, free samples. W2SUN, Freismuth, P. O. Box 169, Bayville, N. J.

QSLS, SWLS, 2-colors. 100 for $2.00. Bob Garra, W3UQL, Lehighton, Penna.

MATCH-GUIDE standing wave indicator, new design using 53 or 75 ohm coax, one kilowatt capability. No resistors used. Twin meter or twin lamp indication. Easy to assemble (about 1 hr.). Specify for 53 or 75 ohm coax feed line. Kit includes material for twin lamp indication. USA only, $14.50. Riddle Engineering, 3106 Sherbrooke, Toledo 6, Ohio.

WANTED: Bliley xtal controlled oscillator, Mod. 1-A, B or C, must be clean, with all xtals and manual. A. H. Glines, 46 Winter St. Quincy 69, Mass. Tel. MAyflower 9-5152.

WRITE for list of bargains to Box 575, Church St. Station, New York City.

SELSYNS: Bendix, .115V 60 cy., $7.95 pair. Wt. 12 lbs. Add postage. Every pair guaranteed. No CODS! Rogers Radio Co., 1745 Arapahoe St., Denver 2, Colo.

FOR Sale: Collins KW-1, perfect condx, like new; 110 ft. special heavy duty Aermotor tower. All offers considered. K2HLB.

WANT to buy: #UL-1008 oscillation transformer, #UR542 sockets, #PR-535 rheostats, all made by General Electric Co., for RCA during 1921. Also ¼ or ½ K.W. spark transformer, any make. Old battery radio sets and speakers. George N. DeLaplaine, P.O. Box 861, New Brunswick, N. J.

SWAP or sell: M5 generating unit. One and three phase, 125 volts 60 cycles, 3KVA gasoline operated, complete with panel board, skid-mounted. Hardly used. Asking $500. F.o.b. White Plains, N. Y. or accept countervalue in receivers or xmitters of standard brand. Write W2BIB, P. O. Box 244, Grand Central Annex, N. Y. C., 17.

CLEANING Shack. Write for bargain list. W4BA, Box 266, Anniston, Ala.

WANT: DM-240 Decimeter 13 CM oscillator, W5BSU.

SELL, Trade: radio magazines. *QST* solid 1935 thru 1946. Bob Farmer, Plainview, Texas.

TRADE for ham gear: "Classroom 16 mm" sound projector in two leather carrying cases, 35mm Mercury II camera and exposure meter. Want commercial xmittr or recvr. Will take clean home-built xmittr or what have you to swap. All inquiries answered. Will ship. L. L. Thomas, W5VUW, 1609 LaSalle St., Amarillo, Texas.

WANTED: ART-3 receivers. ART-13 transmitter, radio altimeters. Advise price. Bill Spivey, 3117 Rolling Rd., Chevy Chase, Md.

HAM Guest Register Books, $2.00 in U. S. A.; $2.25 in Canada postpaid. Gratton George, W4PJU, Clewiston, Fla.

VACATIONS! Ham with my equipment. American plan. Modern cabins. Nice for children. Lighthouse Lodge, Big McKenzie Lake Spooner, Wis. A. Martorano, W9HZC.

FOR Sale or trade: Hy-Lite 3-element 20 meter beam $25.00; 3-element 10 meter beam, $10; Telrex 2-element 20-meter Shortbeam, $25; W3DZZ Tribander, 10-15-20 meter beam, $145; Ferris microvolter, Model 18C, $65; Simpson signal and sweep generator Model 479 for TV and FM, $245; SP44 Panadaptor, $65; Bandmaster "Z" match $49; SX71, $135 Lampkin No. 105 $45; TR4 rotator and indicator, $19. S. Gogel, W2FUR, 1096 Laux Pl., North Bellmore, L. I., N. Y. Tel. SUnset 5-6876.

WYOMING DX QSOs: W7HYW, W7PSO, W7UFB monitoring 14050, 21050 daily 1400 and 1915 GMT.

MEDICAL Ham! Swap Burdick EK-2 for Globe King, 500-A, C. R. Faulkner, M.D., K4AXE, 106 No. Main, Somerset, Ky.

FOR Sale: BC-221 frequency meter. Built-in 400 cycle modulation. Complete with calibration book: $75.00. Lewis G. McCoy, 38 LaSalle Rd., West Hartford, Conn.

WANTED: AWT-13 transmitters, ARC-3 equipment, test sets, BC-788 transceivers. Other military and aeronautical surplus. Advice price condition. We pay freight and C.o.d. James S. Spivey, Inc., 3908 Hamden Lane, Bethesda, Md.

WANTED: Collins 51J or R388URR. K4AET, Arnold, Gwynn, Va.

OUTSTANDING ham list revised monthly. Our prices are realistic and attractive. Standout values in used Barker & Williamson, Collins, Central Electronics, Elmac, Gonset, Hallicrafters, Hammarlund, Harvey-Wells, Johnson, Morrow, and National units. We deal easy and offer time payments tailored for you. All leading brands of new equipment always in stock. Write immediately for this month's Bulletin and our new exclusively amateur catalog just out. Stan Burghardt, WØBJV, Burghardt Radio Supply, Inc., Box 746, Watertown, S. Dak.

WANTED: Two-way FM equipment. Ronald Phillips, Communications, 1312 McGee, Kansas City, Mo.

NATIONAL ARRL Convention Flash! Civic Auditorium, Hotel Whitcomb, San Francisco, July 6, 7 and 8. Plan now for a really terrific show! Exhibits first-time technical talks, entertainment, music, dancing, banquet, golf. DX, SSB, VHF, traffic, mobile. Novice. Complete ladies' program. Write Bud Bane, W6WB, Chairman.

VIKING I, TVI-suppressed transmitter and Viking VFO in excellent condx for sale: $180. John M. Pincomb, W2SIM, 2 Great Oaks Road, Roslyn Heights, N. Y. New York City hams please call RO 3-0574.

U. S. A. DX QSL Co-op. We are now saving more than 50% of mailing costs for hundreds of DX QSL'ers. We are clearing cards to every known QTH in the world. Only 2¢ a card after membership. Send name, call sign, and address along with membership fee. $1.00 for two years; $2.00 for five years. U. S. A. DX QSL Co-op, P. O. Box 5938, Kansas City 11, Mo.

DXCC Directory. $1.00 postpaid anywhere. W8VHO, Norm Thompson.

FOR Sale: Leece-Neville 6 volt system 100 amp, alternator, rectifier, voltage regulator with mounting brackets, schematic in exc. condx: $49.50. Samuel Lieberman, K2IFL, 130-29 228 St., Laurelton, Queens 13, N. Y. Tel. LAurelton 7-1642.

WANT: May 1916 QST. Sell 1932 to date and CQs 25¢ ea. four or more. WØMCK, Art Jablonsky, 1022N Rockhill, Rock Hill 19, Mo.

TRANSFORMERS. Modulation and power, rewound to your specifications. Henry Havill, 9007 Avalon Blvd., Los Angeles 3, Calif.

AMATEUR Paradise Vacation Spot! Livingstone Lodge and Log Cabins, Mascoma Lake, Enfield, N. H., swim, fish, boats, sports — 100 acres, 11 buildings, churches, recreation building, main dining lodge, 75 and 40 meter rig in lobby, family groups, 27th year, low rates, booklet. Al Livingstone, W2QPN, 12-01 Ellis Ave., Fair Lawn, N. J.

WANTED: 1 KW split stator tuning condensor, tune to 75 meters; 1-2000 v. CT at 200 mills UTC, 1 ea. filter and swinging choke for above; 1-75 meter KW tank coil, complete with jack and link; 1 split stator tuning condensor for grids of 250TH. Give details in first letter. B. Riley Fowler, W4RRH, Box 143, Morganton, N. C.

HARVEY-WELLS TBS-50, $60; Messner EX Signal Shifter, $40; both TVI suppressed with low pass filters. In excnt condx; 6 v. Leece-Neville alternator system, complete, $45 RCP 442 voltohm milliameter, $10; TG10 keyer, $14; set of 15 tapes in chest, $8.00. Write W5NHB, 4615 Laurel, Bellaire, Texas.

SELL or trade HT-18, VHF-152A; BC221. Want: Z-match HF-10-20 Panadaptor. W5NFZ, 5407 Druid Lane, Dallas, Texas.

SWAP one used RCA TV camera tube, type 5820. Costs $1200. Removed from service to avoid costly breakdown while on air. Want one Eimac air system socket for 4X150A. George Hann, K6QVW, P. O. Box 1003, Castle AFB, Merced, Calif.

FOR Sale: Link radio telephone transmitter, 400 w. input, remote control unit, 100 ft. steel tower and antenna, complete 50 W. mobile unit for car. Operates six meter band. $650. Fine for Civil Defense. T. S. Cliff, W9ET.

SELL-Trade: Hallicrafters S-36 receiver, 27 to 143 Mc. 3 bands; AM-FM. New 5527 RCA camera tube; Hickok 533 tube-tester; Hickok 680 crystal marker calibrator. Want: Frequency meter covering 20 Mc. up. Slim's, 2025 Sunkist, Waukesha, Wis.

COMPLETE Novice station consisting of AT1 modified for output of 27 watts; antenna coupler and BC348 converted to 115 volts AC. All in gud condx. The lot goes for $80 F.o.b. Reno, Nev. or may be purchased separately. Lloyd S. Hobron, 820 W. Eleventh St.

SELL: Heathkit AT1 xmittr, AC1 ant. coupler and a 25-watt modulator, sacrifice. K2JSS, Kenneth Warner, 64-11 99th St., Forest Hills 74, L. I., N. Y.

WANTED: QST, 1920, Jan., Feb., Mar.; 1923: Jan., Mar., Apr., June, Dec.; 1924: Jan., Feb. W1CUT, Box 1, West Hartford, Conn.

FOR Sale: Eldico TR-75-TV2, excellent condx, $39.00. Will QSO. K2BLK, 43 Green St., Huntington, N. Y.

SALE: 1st phone communications course, Nilson's, $35.00; SX-25 with speaker and Model A slicer, $85; PE-103, like new, $20.00; Mon-Key, $15.00; pair 4-65A, $20.00; pair 813, $12.00; pair 810s, $10.00; 4-250A, with socket, blower, fila. xfrmr, $25.00; 829B, $5.00; MB40SL, $12.00; hi-voltage supply, 2000V. at 750 Ma., $60.00. WØTQL.

RUBBER Stamps: with your call, name and address, $1.50; stamp pad, 35¢. El Kay Stamps, Box 5-WT, Toledo 12, Ohio.

SELL: DeLuxe 6-meter Gonset Communicator 6 volts DC/115 AC, in nu condx. Also 6 meter Kreco co-axial antenna; $195. K21RX, Butler, N. J.

FOR Sale: Globe King 275 watts c.w./fone xmitter with Knight VFO filter and four sets of coils in gud condx. All for $325.00. Ben Hassell, W8VPC, 403 East Mount Hope Ave., Lansing 10, Mich.

FOR Sale: "Ranger," almost new, lab-wired, in original box: $185; Heath antenna tuner, $10. F.o.b. Denver, Colo. KØCXS, 5200 E. Cornell, Denver 22, Colo.

NEW DX100 and NC-183D. Will sell for best offer. Need money. Will ship. Tom Jones, K5ANI, 1605 Quin St., Bossier City, La.

SELL for best offer: High power, all band rig, PP813s, 807, VFX680. Screens and grids electronically regulated; Variac control for 6500V at 700 Ma. final power supply; 10 meters; Par-Metal cabinet; coaxial fittings; spare tubes. W2TAM.

FOR Sale: Hallicrafters HT-9, in gud condx; 80, 40, 20, 10 meter, coils, spare 814, built-in filter. Will ship. $150.00. Sonar NBFM, $10. Lots of TV xfrmers, etc. Send for list. John Kakstys, W2FNT, 18 Hillcrest Terrace, Linden, N. J.

USED tube and battery tester. Supreme 589-A, $25.00. Leo Kern, Jefferson, Wisc.

CDR, TR-12 rotator, complete and in exclnt condx w/ 60 ft. cable: $18.00. F.o.b. Golden, Ill. W9WXK, Box 97.

HOMELITE gas-driven 115 volt AC generator, Mod. 24A-115, 2500 watts, weight 135 lbs. Includes instruction book and parts manual. In new condx. Cost $535.00. Will sacrifice for $325 F.o.b. Allentown, Pa. W3ALX, 934 Wyoming St.

PLANNING to drive to Florida (2 weeks vacation October). Seeking fellow ham driving companion to share travelling expenses and operation of mobile rig en route. W1FGF de ARRL Hq.

FOR Sale: Converted Lettine xmitter, f5763-f6146 R.F. band-switching, pi-network, 6L6 mod., $48.00. Wecker, W2FZR, 17 Copiague Pl., Copiague, L. I., N. Y.

COLLINS 75A2 and 32V2 factory conv. to 32V3; recvr has spkr. Both for $750. Will sell separately. F.o.b. WØHIB.

SALE: ARC-5 90 w. xmitter with 200 m. 700 v. supply, $50.00; 0-3 milliammeter, $5.00; inte com, $10.00; 807's, 1625's high voltage condensers, etc., $10 for entire batch; 75 w. Masco public address system, $95.00; record-changer, $5.00; alarm radio $5.00; Motorola portable, $5.00. W1GFE, 40 Seneca St., New Britain, Conn.

SALE: Heathkit AR-3 receiver with cabinet, $30; Instructograph complete electric drive, oscillator, 11 tapes, phones and key, $28; Radio City Prod. VTVM, $12; large assortment of metal and miniature receiving tubes. Chatfield, Redstone Arsenal, Huntsville, Ala.

FOR Sale: EICO 232 VTVM with hi voltage probe — $30; Globe Scout 65A in exc. condx, $80; Hickok 505A scope, orig. cost $225. Will sell for $100. Ship express prepaid within 500 miles. A. C. Elliott, Jr., K5BFN, Shuqualak, Miss.

WANTED: Converter RME Preselector and bug. E. Bieglecki, 3309 East Warren, Detroit 7, Mich.

WANTED: 6 meter transmitter with AC power supplies. All inquiries will be answered. M. G. Long, Box 9251, Univ. Station, Reno, Nev.

SSB & Novice ham! XYL says following equipment must go to make room for newly arrived gear: NC-88 late model, $65; Eldico 10/20A VFO for Central SSB, $25; brand new never used; SW-54 in top shape for $25; Instructograph AC with 10 tapes, key and phones, $30. If above prices are steep, contact me with best offer. Bert Dellins, W2NSS, 112-41, 72 Road, Forest Hills, L. I., N. Y.

FOR Sale: HRO complete, $85.00; SX-24 complete, $50.00; Lysco 600 with Lysco 50 antena tuner, $75.00; 1500 volt 300 mill power supply, $18.00; Raytheon 147.5 Mc. FM recvr and xmitter, 115V complete, $30; Heath FM2 receiver, $15; miscellaneous meters, tubes, parts. All inquiries answered. A. Salzwedel, 810 Second St., La Porte, Ind.

HAMMARLUND HQ-129X receiver, like new; 60 watt phone transmitter. Sell separately, best offer. Arthur Lukach, 35 east 84th St., New York City, N. Y.

BRAND new HQ-140X in factory sealed carton. Unexpected bills. $237.00. John Zuchegna, 130 Bates St., Northampton, Mass.

RARE Opportunity! 31 bound volumes of QST, February 1921 through December 1951: $100.00. Cash & carry. BC-221 with calibration book, $50.00. W2AEB.

SWAP: TVI-suppressed Viking I with voice control unit, VFO and speech clipper, like new, for Model 20A SSB or $200. Dick Acker, W9TOK, 5434 S. Kostner Ave., Chicago, Ill.

NATIONAL NC24OD and matching speaker, excellent appearance and operation, $145; Cardwell BC221Q, complete with calibration book, power supply and indicator light, $65; Millen R9R with two coils, $15. Answer all inquiries. W3OJW, 6913 Churchland St., Pittsburgh 6, Pa.

WANTED: 15-Meter coil set for HRO-7. W5IVF, 1608 Fairview Ave., Monroe, La.

SELL: WRL Globe Scout Smtr model 40A with mike and lo-pass filter. Like new, $60. George Parkins, 91-41 89th St., Woodhaven 21, L. I., N. Y. VI 9-0461.

WANTED: One AR-8510 low frequency receiver. State condition and price in first letter. Lee McKinnis, W5MHH, P. O. Box 668, Shawnee, Okla.

FOR Sale: Tubes, parts, tools, equipment. Making room for KW. Example: 813, $7.50; 4D32, $12.50; 829B, $7.00; 830B, $3.00; 4-65A, $10.00; 4E26, $15.00. Write for complete list. WØDVN, P. O. Box 5938, Kansas City 11, Mo.

SELL: Central Electronics Model 20A exciter factory wired, together with BC458 VFO in matching cabinet; VFO modified with factory conversion kit. Included QT-1, speaker anti-trip. Total value $294.50. Condition like new. Manual and schematic. A steal at $199.00. National U.H.F. receiver with power supply. Instructions. In excellent condx. $50.00. John E. Cain, Jr., W4MB, c/o Cain-Sloan Co., Nashville, Tenn.

CANADIANS NC-300 receiver, xtal calibrator and matching speaker for $395.00 F.o.b. Wpg. Top condx as new January. J. W. Speirs, VE4CJ, 93 Cobourg Ave., Winnipeg, Can.

COLLINS 75A3, 800 and 3000 cycle filters plus speaker, $350.00; coils E, F for HRO with dial scale, $35; Bogan DB20 Hi-fi amplifier, $50; Precision VTVM series EV-10A, $50; Globe King 500 HT-18 VFO for same, $475; Kodak premier 16mm sound projector worth $450. Asking $170. All items in like new condition. All prices F.o.b. New Haven Conn. Dr. P. Iaccarino, 506 Orange St., New Haven 11, Conn.

ARC-5 converted for 40; 75 watts phone, c.w., V.F.O. Includes power supply, modulator, mike, and rebuilt antenna coupler, $50 F.o.b. Salt Lake Ciy, Utah. W7BLZ, 3600 South 2445 East, Salt Lake City, Utah.

FOR Sale: MC-55 converter used less than ten hours, 6 or 12 volt operation, $45. Super Pro recvr (BC-1004) with matching speaker, immaculate, $150. Will deliver up to within 150 miles. Also Jefferson-Travis portable radio. Marine and broadcast frequencies. New, never used on boat, $45, with batteries. S. Cokas, 211 Eastern Ave., Lynn, Mass.

FOR Sale: PE103. Unopened, in original crate and can: $25.00. John E. Jednacz, 17 School Lane, Springfield, Pa.

SWAP high quality chinchilla breeding stock for good quality ham gear. What do you have? WØUSE, H. S. Clements, Rte. #3, Box 645, Golden, Colo.

FOR Sale: Complete mobile station, Gonset Commander with VFO, Super Six with noise limiter; 300 volt 200 Ma. Vibrator 6 volt supply, Master Mobile all bander antenna, heavy duty stainless mount, relay and coax, used six months: $160.00; Millen grid dip with coils, like new, $35.00; pair of 4-400A's used only 2 hours, $60.00. D. McClead, K20RQ, 73-23 Little Neck Pkwy, Floral Park, L. I., N. Y.

FOR Sale: CREI course, Advanced Practical Radio Engineering, Specialized Broadcast, Aeronautical and Television Engineering, 101 lessons. Complete. In excellent condition. Best offer, Schneider, W2NGY, 414 Roosevelt Ave., Elberon, N. J.

TRADE one Jaquet tachometer Mod. B-622 60 to 24000 r.p.m. in case with instructions and adpters for a Millen grid dip meter. Earl Foster, W2RSY, Box 253, Russell, N. Y.

144 Mc. Cascode preamp for sale. New, less tubes and power supply, $19.95. W4HHK, Collierville, Tenn.

SELL: QSTS, January 1937 through December 1953. Make offer. W2LWW, 122 Harrington Ave., Westwood, N. J.

WANTED: Used Wheatstone bridge and other used laboratory type equipment. For sale: used BC-610 exciter unit and new set of tuning units; TU-47 through TU-54. Several new tubes, used meter movements and other parts and equipment. Send for a detailed list. Clarence Bigelow, 105 No. Main, Bluffton, O.

SELL: Modulators: 100 watt p.p. 1625's, $24; 340 watt p.p. 6L6's, $20 each; 3 modulators for Heath AT-1 xmittrs, $10 each; supplies: 800 v. 275 Ma., 6.3-12 v. filaments, $18. Duals: 800 v., 275 Ma., 350 v. 125 Ma., 6.3-12 v. filaments, $24.00; 750 v. 275 Ma., 375 v.-125 Ma., 6.3-24 v. filaments, $24.00; Vibrapacks; 375 v. 90 Ma., $7; Mallory VP-554H, $10; duals: 400 v. 150-Ma., $15.00 each; 3 dynamotors 6 v. 425 v.-375 Ma., $15 each. Everything listed above like new condx. W8QKU, 2748 Meade St., Detroit 12, Mich.

WANTED: Measurements Corp. Grid Dip meter Models 59LF, 59, 59 UHF General Radio wavemeters 566A, 758A, 1140A, Gonset Communicator. H. I. Griffiths, W2OQR, 39-82 65th Place, Woodside 77, L. I., N. Y. Illinois 7, 1549.

WILL Sell HRO-60. Bought late in 1955. Details: George Lambrette, 1023 W. G. River, Williamston, Michigan.

SELL: Eighty assorted new, used and surplus tubes. 50¢ each; $30 for the entire lot. Radio books. Only one priced as high as $4.00. Write for lists. 5 x 19 x 11 heavy gauge steel parts chest. Removable tray. Full of small components. Because of weight, will sell only to Pennsylvania. $6.00. Cecil Baumgartner, Box 343, Milton, Pa.

CUSTOM Elgin 24-hour wristwatch, expansion band, nearly new, $75. F. King, W7NRB, Box 488, Kirkland, Wash.

WANTED: Electronic keyer/bug; Eldico, Mon-key or equal. Moran, 90 Barrister Rd., Levittown, N. Y. LE 3-2967.

FOR Sale: all F.o.b.11 set (9) BC610 tank coils, $25; 10 meter mobile rig, complete, $55; PE-110A power supply, $25; 829's, 3 for $5.00; pair of N-250 nuet. cond., $4.75; vacuum cond (1) 55 μfd. (1) 12 μfd.20,000 volt, $5 & $3. Ed Tompkins, W9LYJ, 818 James Ct., Waukegan, Ill.

TRADE for 32V2, Leica 3C, F2 Summicron lens, F 4. 90 mm Jap telephoto, case, 500 watt B&H projector, Dalite Screen, used slightly. R. M. Reavis, 127-9 West Main. W5OWG, Ardmore, Okla.

SWAP: Winchester Model 50. 12 ga., 2 barrels, 28 in. Mod., 26 in. imp. cyl., N. R. A. excellent. Weaver K4, crosshairs, never out of box. Transmitter. Springfield custom 30-06. Write for details F. R. Anderson, 2421-K St., Bedford, Ind.

FOR Sale or swap: Super Pro, SX-25, VHF 152A, SCR522 xmitter and Gonset 100%er; need: 20A and accessories, cannot ship. Deliver New York metropolitan area. W2IQS, FR 4-1731W.

FOR Sale: Globe King xmittr, model 400B, TVI-suppressed, LP filter, four complete sets of coils for 18, 20, 40 and 80. Brand new and unused spare U7OD, 5514, two 866A's and two 866 JR's; P & B PR11A relay in xmittr and switch for remote control. In excellent working condx. Will deliver within 100 miles or ship. All for $350. Contact K2JZT, Sherburne, N. Y.

TRADE or sell: 35 watt Masco speech amplifier and 1500 v. 300 mil pwr supp. with pr 811 modulators and mod. xfrmr. New filament xfrmrs. Cn use gud tape recorder. L. E. See, W1HPF, 52 Langley Rd., Quonset Point, R. I.

HIGH power rotary inductor. Rugged commercial type. Use in pi-network of all-band final. No arcing under load. $19. F.o.b. Clifton, N. J. Send for photo, further details. Paulson Electronics, 138-E 6th St.

COLLINS 75A-4 rcvr with speaker, instruction book, original cartons, used 2 hours. Need cash: $475 takes it. Cost $615.00. Ed McMane, W2HXM, 50 New England Ave., Summit, N. J.

WANTED: Gonset 2-, eter Communicator with 12 V. DC and 110 V. AC supply. L. Chipman, 816 Melrose St., Winston-Salem, N. C.

WANTED: High power commercially built communications type surplus modulation transformer. Durward J. Tucker, 6941 Lakewood Blvd., Dallas, Texas.

NEW junior op loudly demanding more house trailer room. 32V1, $295; new HQ140X, $245; both for $495. Reasonable free delivery. Don Miller, W2MQB/4, McCullough Trailer Park, Millington, Tenn.

SELLING Out! The new Panadaptor PR-1 used less than 3 hours, $145; HRO-60 with all accessories, $460; complete 813 push-pull final with 2 power supplies, 900 watts c.w., 700 watts phone, $400. Heathkit audio generator AG-8 in excellent condition, $22. James Hartshorne, 502 Veterans Place, Ithaca, N. Y.

HAMMARLUND HQ-129X w/s, $170; 2 mtr. converter with own 110 AC supply, $25. John Klarmann, K2GQS, 550 North Albany, Amityville, L. I., N. Y. Tel. AM 4-6746.

ANTENNAS and materials. 2 meter 6-element, $6.95; 6 meter 5-element, $14.95. "Do it yourself" castings, stampings, tubing, etc. to make your own. Wholesale Supply Co., Lunenberg, Mass.

FOR Sale: HRO-5Tal with all coils and speaker. In exc. condx: $130. Want: Burnell cootie key. W6HHN, 3467 Rambow, Palo Alto, Calif.

VIKING Ranger, professionally wired, excellent condition, wired push to talk with E-V stand, $165.00; no shipping. Will deliver in metropolitan area. H. Ronald Levine, K2JXB, 445 Grand Ave. Leonia, New Jersey. Tel. LEonia 4-4305.

BARGAINS: with new guarantee: S-38D $37.50; S-77 $69.00; S-47C $49.00; Lysco 600 $69.00; S-27 $79.00; SX-28A $149.00; S-76 $109.00; SX-71 $139.00; SX-96 $189.00; SX-88 $375.00; HQ-140X $189.00; NC-173 $139.00; NC-183 $169.00; NC-183D $269.00; HRO-50T1 $279.00; SOJ $9.95; Collins 75A3 $349.00; Collins 75A2 $299.00; Sonar VFX 680 $14.95; Eldico TR75TV $35.00; HT-17 $29.95; EX Shifter $35.00; Globe Scout 40A $69.50; Globe Trotter $49.50; HT-18 $49.00; Harvey Wells Sr. $69.00; Elmac PMR recr. $89.00; PSA-500 $19.95; Viking I $129.00; Viking VFO $29.50; Viking II $229.00; Globe King 275 $249.00; Globe King 400A $299.00; 32V1 $275.00; 32V3 $475.00; and many others. Free trial. Terms financed by Leo, WØGFO. Write for catalog and best deals to World Radio Laboratories, 3415 West Broadway, Council Bluffs, Iowa.

WANTED: HT-9 xmttr. Geo. Leininger, W8QZF, 225 E. Merry, Bowling Green, Ohio.

WANTED: HRO Sr rcvr manual. Wm. Jackson, 4719 Telegraph Rd., Los Angeles, Calif.

FOR Sale: Collins 75A1, BC-221F, BC-348N, PCA-2T 200 Panadaptor, Philco 7008 sweep alignment generator 'scope combination, WV97A voltomist, Solar condenser bridge, Corona mill, 2 meter Command xmittr and rcvr. Robert Wolfe, W3HDT, 2506 Hoffman St., Balto 13, Md.

COLLINS 32V2 TVI-suppressed; 75A1, speaker, Vibroplex key, Cardex mike, Johnson Matchbox, low-pass filter, complete: $675.00; Stancor plate xfrmr 3000 volts 500 miles, $50.00. 833-A tube, $25. All in gud condx. W3YNO, Joe Simon, Lettsdale, Penna.

SELL: Complete mobile station! Elmac A 54, push-to-talk hand-mike, Morrow 5 BRF converter, Morrow FTR rcvr with pwr supp, coaxial ant. relay with extrnl contacts; Delco Remy 50 ampere heavy duty generator, and voltage regulator, P.E.— 103 Dynamotor. All in A-1 condx and priced for quick sale: $250.00. Will consider selling separately. Russell Weissman, W2BRN, 82–50 210 St., Hollis, L. I., N. Y.

SELL: BC-221 complete with xtal, calibration book and cabinet: $65.00. Hays Sneed, W5RY, 4049 Berkley Drive, Jackson, Miss.

FOR Sale: Sideband exciter with remote VFO, $70; Linear amplifier with 4-250A tube less HV power supply, $85; 450TL tubes, $15.00; 250THs, $8.50; 100TH's, $4.50; 810's, $3.50; 832's, $3.50 guaranteed. Send for list of gear. Want: Valpey DFS crystal, Panadaptor, and 4 Mc 12-volt mobile equipment. W3PKI, 737 Pine St., Steelton, Penna.

SELL: SCR-522 xmttr-rcvr. Makes a swell 2 or 6 meter rig, $40; new 813's, $6.00; TA-12B Bendix xmttr, $25.00; BC-1267 xmttr/rcvr 154 to 186 mcs., $150; Need: An ART-13 xmittr. Advise price, condx, etc. W4FHY, Slep, Box 178, Ellenton, Fla.

LINK 250 UFS FM xmittr. Sell or trade for a rcvr or xmttr. Viking mobile and VFO, $85. M. H. Klapp, 17 Kenosha St., Albany 9, N. Y.

WANTED: Gonset or equivalent mobile converter. KØBRD, Waverly, Iowa.

SELL: DX100 with new 6146S, now operating, $210 F.o.b. Want SSB rig or equipment. Jack Hefferon, K2HWD, 200 High St., Geneva, N. Y.

SOLAR CE capacitor checker, $20; Precision signal generator E200, $35; Hickok tube tester, Mod. 530, $30; PE-103, $15; SCR-522, $20. Walter M. Jensen, 1009 South St., Racine, Wis.

BRAND New condx: Collins 310B-1 TVI suppressed, $190; Collins 310C-2, new 70E8A PTO, $80. Both guaranteed perfect, complete all tubes. W9VND, 4129 Main St., Downers Grove, Ill.

NC-240D receiver and speaker. Cash and carry: $100. K2BEJ, 6130 Liebig Ave., Bronx, N. Y.

ROTARY converter, 110VDC input, 110 VAC 60 cyc. 2.3A, filtered output, in gud condx: $20; signal generator, 100 Kc. to 150 Mc., in exc. condx, $10.00 Dick Day, K9CWP, Ligonier, Ind.

TAPE Recorded code courses, Novice course: 3 tapes, $11.00. Other practice tapes various speeds. None other comparable. Send for information. Tapecode, Box 31, Langhorne, Penna.

VIKING Ranger, factory wired, like new, coax relay, crystal mike. BC-348-R, professionally converted, noise limiter, "S" meter, audio amplifier, power supply. Speaker in metal cabinet. All for $275.00. W. H. Murphree, W4GBI, Spring Hill, Alabama.

COMPLETE Station: AT-1 modified A's in October QST; VF-1, push-pull 6L6 modulator with 3" meter and separate power supply, $65; NC98, just realigned, $120. Whole works for $175. K6GNJ, Box 239, Colusa, Calif.

2-METER final amplifier: 100 watts input phone; 150 watts CW. Uses 5894 silver-plated lines, clamp tube, plate meter and other features on attractive, shielded aluminum chassis. Drive required: one watt. $32.50 less tubes; $49.50 with tubes. Descriptive literature on request. Amplex Radio Products, Inc., 1195 West Lake Drive, Walled Lake, Michigan.

MOBILE rig, 12v. 10 or 75, factory units, complete, $50.00; power supply, 1400 v. 300 ma., $20; LM freq. meter, $25; ART-13 mod. xfrmr, PE-73, BC-453, BC-454, $5.00. Satisfaction guaranteed. F.o.b., Bremerton, Washington. Stamp for details. LT Jg Rambow, W6RIJ/7, NAD Bangor.

NATIONAL SW-54 communications receiver recently reconditioned and in gud condx: $30; BC-348-R rcvr, 200-500 Kc and 1.5–18 Mc., less pwr supp, but with surplus radio conversion manual: $35.00. Robert Macfarlane, 406 Maple Ave., Richmond, Va.

FOR Sale: Collins receiver 75A-3 with 3.1 Kc and 800 cycle filters, speaker, instruction book, serial #800, condition excellent: $400. W8JRG, R. C. Littler, 640 Snowhili Blvd., Springfield, Ohio.

NC-183D, $269; HQ-129X, $159; RME70, $119; HQ120X, $129; SX16, WRL65A, $79; Hickok 600A, $110; CRO-2, $159; TVG-2, $149. All exceptionally clean. Sell us your receiver. Electronic Labs, Station A-21, Lincoln, Nebr.

SELL: Collins 32V2, in exc. condx; 2 unused RK63 tubes; National MB150 tank assembly; Thordarson Multi-Match 300 watt modulation transformer and 15 watt driver transformer. R. Haynes, W8FOV, 2413 Mallery, Flint 4, Mich.

WANTED immediately: 75A1 or 75A2, perfect condition. Low price. W9TJG, 3581 S. 47th St. Milwaukee, Wis.

WANTED: Shore accommodations east coast two weeks this summer. W8LSA, 474 Overlook Rd., Mansfield, Ohio.

BC-221 AA, with calibration charts and regulated power supply for AC, $85, crated F.o.b. Morgantown, W. Va. R. Wardle, 494 Pythian St.

WANTED: Receiver, not over 10 years old. Able to receive 80–10 M and capable of using 2 m. converter. Send description and price to K2GYY, P. Margulies, 108 E. Gibbons St., Linden, N. J.

DYNAMOTORS for 12V cars, $15.00; PE-135-AX 24-12V input, 500V 400 Ma. output. New in original boxes. Includes relay, condenser, fuses. 13 x 12 x 7 in. J. L. Newmen, 1830 G St., N.W., Washington 6, D. C.

SELL: NC-125 and speaker, 4 months old, $150. 7–9 P.M. Steve Carantonis, 994 E. 172nd St., Bronx 60, N. Y.

CLEANING House: 813 — $5.00; 829B — $7.00; 807 — $1.50, all new. Also other tubes and gear. Write your wants and send for list. Rcvr R.A.F. 1155, $35.00. VE3AJT, Box 385, Essex, Ont., Can.

TRANSFORMERS, modulation and power, rewound to your specifications. Harry Havill, 9007 Avalon Blvd., Los Angeles 3, Calif.

FOR Sale: NC-98, in excellent condx, $110.00. Steve Stone 755 Nicolet Ave., De Pere, Wisconsin.

SALE: Collins 75A2 100 Kc xtal, like new, $295; RME-45, like new, $125; VHF-152 RME 10–6–2, $40; 300 watt U.T.C. mod. trans., $15; 803's PAR GG, Class B linear, 20 Mtr. coil TVI-suppressed, $40; Heath VF-1, $19.50; QF-1, $9.95, LP-1, $22.50; 0–8, $45; Precision 612 tube-tester, $45; Telrex Super Mini Beam 2-ele. 20 meter beam, $50; Bud Deluxe relay rack CR-1773 with castors, $35. W1ERX, Frank Harrington, Jr. 919 High Ridge Rd., Stamford, Conn. Phone DA. 2–0703.

CENTRAL-Electronics A-Slicer, $49.95, 10-B, $139.95; Collins 32V1, $395.00, 32V3, $550.00, 75A1, $249.95, 75A2, $325.00, 75A2A $395.00; Elenco BSM-3, $50.00, SS-75, $175.00, PA-400 (new), $199.95; Gonset 10–11, $19.95, Clipper, $4.95, Tri-Band, $24.95, Super-Six, $34.95, Superceiver, $79.95; Hallicrafters SX-62, $250. SX-88, $429.95, S-76, $139.95, HT-9, $89.95; Harvey-Wells TBS-50A, $49.95, TBS-50C, $59.95, TBS-50D, $79.95; Lakeshore PM-Jr, W&T (new), $69.95, Kit, $54.95, PM-Deluxe, $149.95 (new); Morrow 5BRF (new), $49.95, FTR (new), $89.95; National NC-183, $179.95, 183D, $275.00, HRO-5RA1, $150.00, 5TA, $140.00, 51TA, $150.00, NC-173, $134.95, HRO-60, $399.95; Sonar SRT-120, $99.95, SRT-120P, $129.95; other used items available. Write for latest list. Evans Radio, Concord, N. H.

ILLUMINATED "S" Meters for Communicators. Attached without soldering, cutting, or disassembling. Just plugs in. Also new and used Gonset Communicators, Linear Amplifiers, V.F.O.'s, Mobile Equipment. Graham Company, R. T. Graham, W1KTJ, P. O. Box 23, Stoneham, Mass.

FILE your QSO's in a permanent record. Send amateur radiogram or postcard for sample QSO record sheet and prices on permanent loose-leaf QSO record book to: Mager, WØMJH, Box 334, Primghar, Iowa.

"WIRELESS World" — 16 finely bound volumes from Vol. 1 No. 1 to Vol. 16 No. 20, April 1913 to June 1925 complete and perfect. The amazing birth of amateur and commercial radio in U. S. and U. K. Intensely interesting and unique. Trade for good recvr G3GAD, 13 Agnew Rd., London, Eng. SE23.

FOR Sale: Collins 75A-2 receiver, $325; HRO-60 recvr, $375; HROVII recgr with coil assemblies for 1.7 to 30 Mc. Dr. C. Twinam, No. Wilmington, Mass.

PERFORATED aluminum sheet .051, 5/64" OD holes, 1/8" centers, $1.20 sq. ft., cut to size. Send for listing on Beams, Aluminum Tubing, etc. Radcliff's Fostoria, Ohio.

TEMCO 75GA transmitter for sale. Going overseas. 100 watt 80 through 10. Complete with low pass filter, Baluns, and mike, $130. Charles Renick, K2GVZ, 7 Elizabeth Pkwy, Eatontown, N. J.

TRANSMITTERS, For VFO, SSB or conversions, ARC-5 transmitters 4.0 to 5.3 Mc used good, $3.75; 5.3 to 7.0 Mc. new, $5.75 shipping weight 12#. All transmitters unmodified with tubes, 28 volt dynamotors for above, $1.00, 9 ½#; receiver dynamotors, $1.00; 4#; racks for three ARC-5 or Command recvrs, $1.95; 5#; new 800 or 803-A tubes, $1.75; 2#, 850 tetrodes, $2.75, 4#; BC-654-A, 80 meter xmitter/recvr, $9.75 less some tubes. Woods, W6KEG, FOrest 8–3139, 2142 Parkway, El Monte, Calif.

MARINE crystals, transmitting, $2.95, receiving, $2.50. New manufacture. Airmailed. C-W Crystals, Box 2065, El Monte, Calif.

HARRISON's "Lime-New" trade-ins give you more actual performance and resale value! This month's "Cream of the Crop"; Collins 75A-1, $249.50; 75A-3, $369.50; NC-125, $119.00; HRO-50, $279.50; HRO-60, $349.00; SX-96, $194.50. Fully guaranteed! Free trial! Trades! Terms! Come see our tremendous assortment of lower-priced bargains, or request listing. Harrison Radio, 225 Greenwich St., NYC. (Jamaica Branch, Hillside at 145 Street).

FOR Sale! Complete station: Sonar SRT 120 transmitter, Hammarlund HQ-129X receiver. Also, Johnson Matchbox, SWR bridge. George Kravitz, 7919 20th Ave., Brooklyn 14, N. Y.

EXPERIMENTERS' Special! CK-718 transistors, two for only $1.00. The Researcher, Box 175, North Dayton Station, Dayton, Ohio.

WANTED: ART13, ARC3, BC788, BC348, BC312, BC342, BC610, ARC-1, BC-221 and other military surplus. W4VHG, Box 5878, Bethesda, Md.

COLLINS 32V2 transmitter AM and NBFM A-1 condition, $365.00. Ed Branchfield, W9SRJ. 531 Linden Ave., Wilmette, Ill.

TREMENDOUS bargains: New and reconditioned Collins, Hallicrafters, National, Johnson, Elmac, all others. Completely reconditioned with new guarantee. Hallicrafters S38, $29.00; S40A, $59.00; S40B, $69.00; S85, $89.00; SX43, $99.00; S76, $119.00; SX71, $149.00; SX42, $149.00; SX96; SX100; National SW54, $29.00; NC88, $79.00; NC98, $119.00; NC125, $129.00; NC183, $189.00; Super Pro, $99.00; HQ129X; Collins 75A1; 75A2; 75A3; 75A4; 32V3; Viking Rangers; Viking II; AF-67; mobile receivers, transmitters, converters, many other items. Easy terms. Shipped on approval. Write for list. Henry Radio, Butler, Missouri.

BUY Heathkit, Johnson, Viking, Tecraft and other equipment wired and tested. New Heath DX-35 available for immediate delivery, DC-100 wired and tested, $241.50; Novices, Technicians write us your needs, get our package deals. Free list new and reconditioned equipment. J. Lynch Electronic Co., P. O. Box 54, Glen Oaks Branch, Floral Park, N. Y.

ELMAC PMR6-A receiver and mobile power supply. Brand new. Best offer over $100. Also another PMR6-A and supply, used about 5,000 miles. Best offer over $75. Trading cars. W4NJE, Box 246, Lewisburg, Tenn.

BC-610D with speech amp. gud condx. Instr. book, 2 spare 250THS, $350. Will ship. 450TH new, $25. W4LKP, Craig R. Woodward, Bowling Green, Va.

FILE for QSLS with States and DX index. Size 11" by 6½" by 5". Will initial your call letters. Send $5.50. We pay shipping. Gerold Kaminski, W8OQR, 2814 Albion St., Toledo 6, Ohio.

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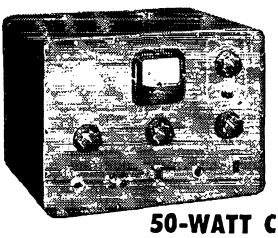

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Complete with built-in power supply! Careful design and voltage regulation assure high stability. Excellent oscillator keying characteristic for fast break-in with clicks or chirps negligible. Full TVI suppression. Has plenty of bandspread: separate calibrated scales for 80, 40, 20, 15, 11 and 10 meters; vernier drive mechanism. 2-chassis construction keeps heat from frequency determining circuits. Output cable plugs into crystal socket of above Knight-Kit or any other transmitter. Output on 80 and 40 meters. With Spot-Off-Transmit switch. Extra switch contacts for operating other equipment. Complete kit with tubes, all parts and instructions for easy assembly. Shpg. wt., 8 lbs.

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a progress report . . .

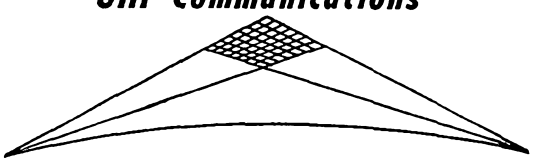
ACHIEVEMENTS IN ELECTRONICS *by* National NC *1955-1956*

For 42 years, National Company has enjoyed an outstanding reputation as a leading manufacturer of communications receivers and components. Less widely known to hams, but equally important, are National's endeavors in other fields. These add up to an impressive total of achievement in vital areas of national defense, scientific research, advanced communications, and standardization of time and frequency measurement. The following paragraphs outline briefly some of the major contributions National Company has made in these fields.

A New Standard of Measurement of Frequency and Time

ATOMICHRON . . . the first commercially feasible atomic primary frequency standard . . . is typical of the advanced research and engineering that typifies National Company these days. Because it is a full order of magnitude more precise and stable than any primary frequency standard now available, the National ATOMICHRON opens new horizons of accuracy for navigation, crystal calibration, frequency monitoring and control, and elapsed time measurement. For example, its use in communications can effect a substantial increase in the number of channels available in the now-crowded radio spectrum.

Advances in Specialized UHF Communications

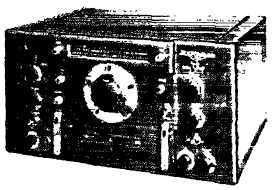


National TRANS-HORIZON "scatter" propagation systems are now in active use in installations including the nation's first "Texas Tower" offshore radar station. National Company provides both Tropospheric and Ionospheric TRANS-HORIZON systems, the former effective on all types of signals at distances up to 400 miles, and the latter for pulse signals for transmission over 1500-mile distances.

Electronics for Defense

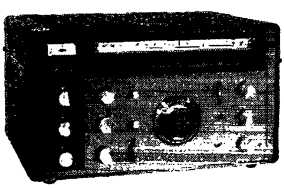
National Company is also active in both development and manufacture of a variety of electronics devices for National Defense use. Typical products include a low-powered portable radar system for Semi-Military use; an exceptionally stable "Stabilidyne" receiver of revolutionary design; automatic alarm systems for radar receivers; radar search receivers; and digital data transmission equipment.

Advancing Scientific Knowledge



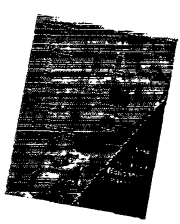
One of National's recent achievements was having its HRO-60 communications receiver selected to accompany Ohio State University's scientific expedition to Viet Nam for observation of a total solar eclipse. Eleven HRO-60's were used in a communications net extending from Khartoum to Formosa, and an HRO-60 served as the monitor receiver to insure satisfactory recording of time signals from WWV, some 10,000 miles away!

Amateur Communications



National's NC-300 communications receiver has been the talk of the hams since before its introduction in 1955 . . . and no wonder! It is designed specifically to serve only the amateur bands. It is the first receiver ever designed after a search for "dream receiver" design suggestions from hams. And it sells for an amazingly low price, in spite of all its extra-value features.

Perhaps you'd like more information about events at National Company that insure continued progress in the design and construction of superior quality electronic equipment. If so, simply write for a copy of the informative 8-page brochure, "Take a Look at the New National Company." Ask for Bulletin QST-6.



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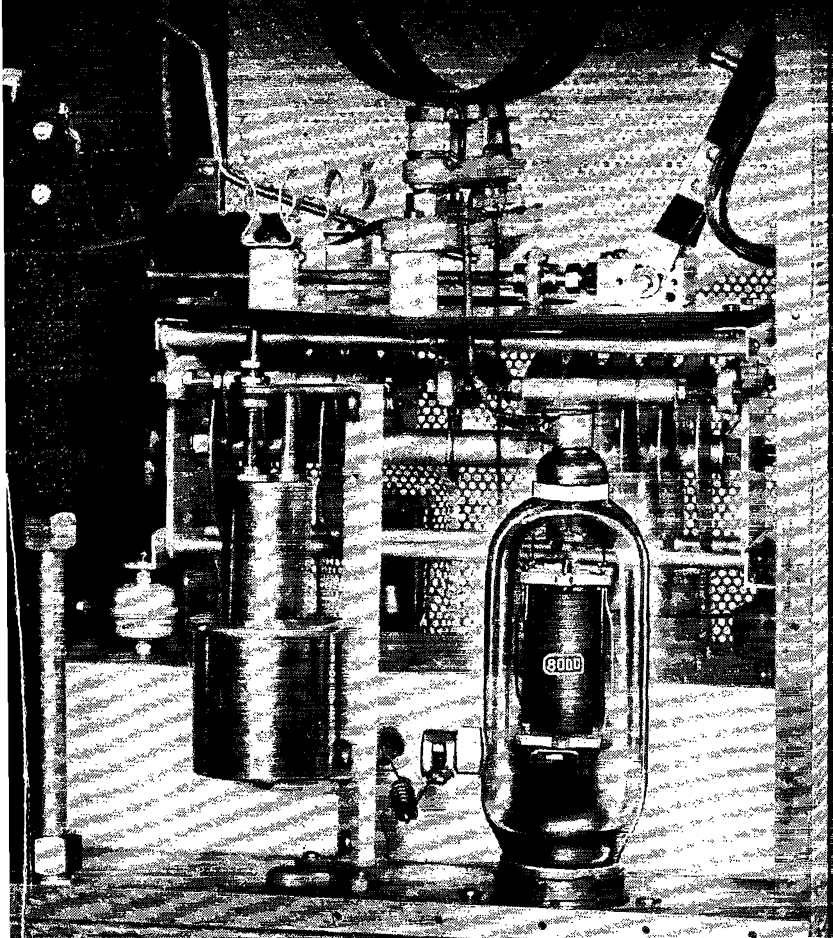

RCA-8000 POWER TRIODE
Up to 750 watts input on CW —at 2500 v on plate. Up to 500 watts input on 'phone—at 2000 v on plate. 360 watts output on SSB—with only 4 watts of grid drive.

RCA-8000 push-pull 1-KW "final"—fully described in the 14th Edition of the new "RADIO" Handbook. William I. Orr, W6SAI, Editor. Says the Handbook: "A '32-V type' transmitter or a 'Viking II' drives it."

Designed and assembled right in the "shack", the husky p-p final you see here is rated to take the legal limit—cw or 'phone. Two RCA-8000 power triodes do the job.

Here are just a few reasons why this outstanding tube is a big favorite:

RCA-8000 is a high-perveance type—takes high plate power at reasonable plate voltages. You can drive the tube to full input power—with a grid power of only about 20 watts. And you can operate it at maximum ratings up through the bands to 30 Mc.

Capable of handling nearly 50 watts of plate power for every tube dollar, RCA-8000 is the answer for the high-power man who prefers triodes. You can get a pair—quickly—from any RCA Tube Distributor. For technical data on the RCA-8000, write RCA, Commercial Engineering, Section F37M, Harrison, N. J.

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BOARD MEETING HIGHLIGHTS

The Board of Directors of the American Radio Relay League, Inc., held its 1956 session in Hartford, Connecticut, on May 11th and 12th. Present officers of the League were re-elected, and George V. Cooke, jr., W2OBU, was newly named to the Executive Committee.

In frequency and regulatory matters, FCC will be asked to expand the 20-meter voice band to read 14,200–14,350 kc., with the additional 50 kc. to be open only to holders of Advanced (Class A) and Amateur Extra Class tickets. A specific request is to be made for radioteleprinter privileges in the 1800–2000 kc. shared allocation, if feasible, and the General Manager is also instructed to continue his efforts to obtain additional privileges in this region. The Planning Committee was asked to examine the desirability of an exclusive c.w. allocation in the 2-meter band. The Board ordered a study by the General Manager of the overall problem of an incentive program in the amateur license structure.

In the field of League administrative affairs, the counties of Hunterdon, Somerset, Sussex and Warren of the state of New Jersey are transferred from the Southern New Jersey section of the Atlantic Division to the Northern New Jersey section of the Hudson Division. The Articles of Association were amended to eliminate membership misunderstanding as to the Board meeting date, which will now be set for the second Friday of May each year. An addition to the list of standing committees provided in the By-laws is the Membership & Publications Committee. A revised Merit & Awards Committee is asked to study the general matter of awards by ARRL in various fields.

The Board gave initial approval to the application of the Chicago Area Radio Club Council to hold an ARRL National Convention in that city some time in 1957.

Expanded travel arrangements for certain ARRL administrative officials were set up, with SECs now permitted to attend their division conventions with expenses paid, and SCMs entitled to undertake up to ten trips in their sections. These and other League volunteer workers were paid tribute by the Board for their continued fine performance during the year, with a special bouquet for Henry W. Yahnel, W2SN, who recently retired after 23 years as Second District QSL Manager. The Board urged continuance and expansion of the Headquarters program of promotion of interest in u.h.f. and v.h.f. fields. A study will be made of the possibility of reviving the trunk line traffic system.

Once again the Board expressed its thanks to the Field Engineering & Monitoring Division of FCC for continued cooperation, and set up a "National TVI Committee" of Board and Hq. personnel to assist further in any TVI problems.

Additionally, the Board heard a late report from General Manager Budlong relating to proposed amateur participation in the International Geophysical Year program, particularly with respect to propagation studies and satellite tracking, and learned also from him of the imminence of changes in the 1800–2000 kc. shared band with temporarily reduced privileges in immediate prospect.