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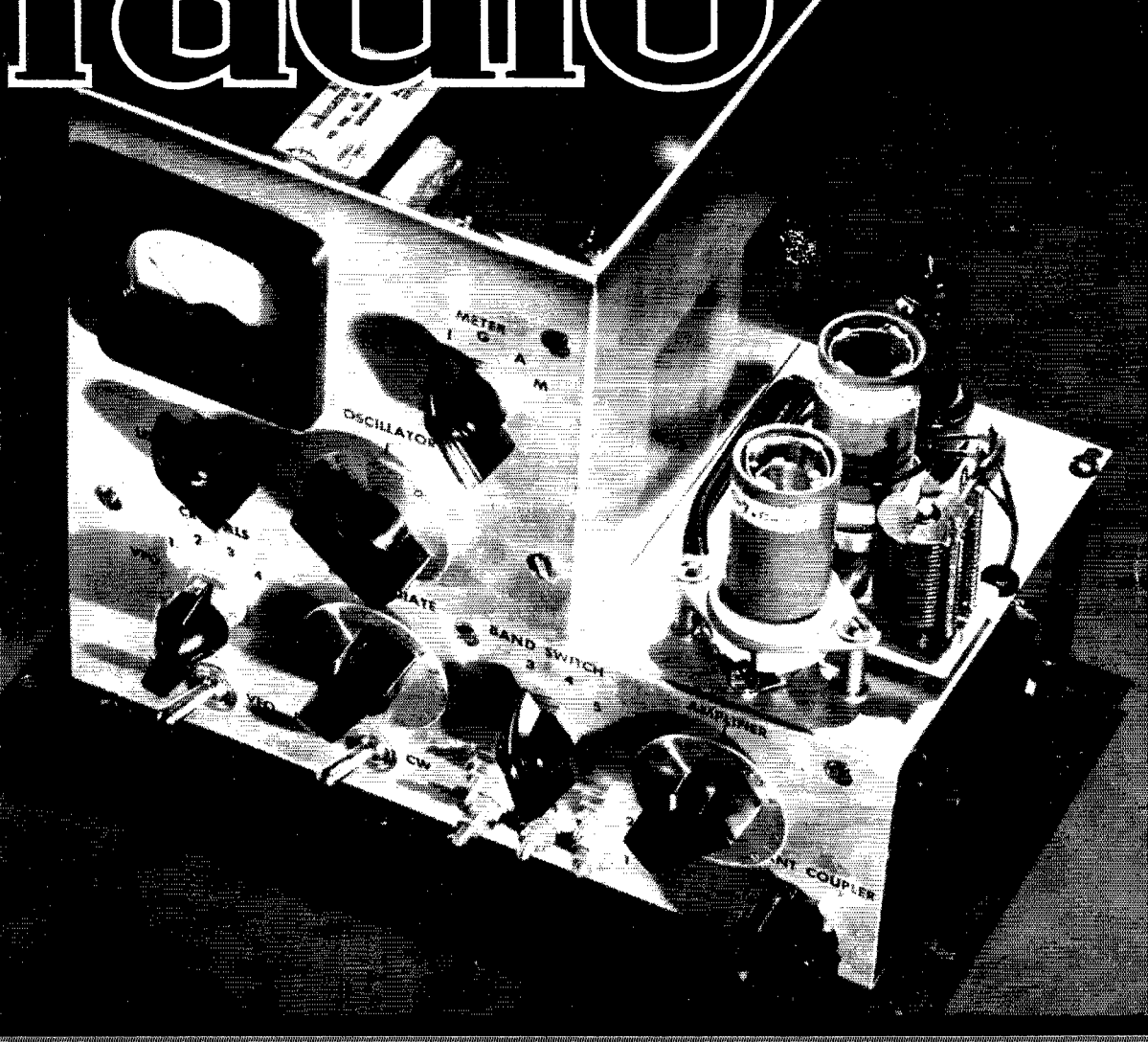
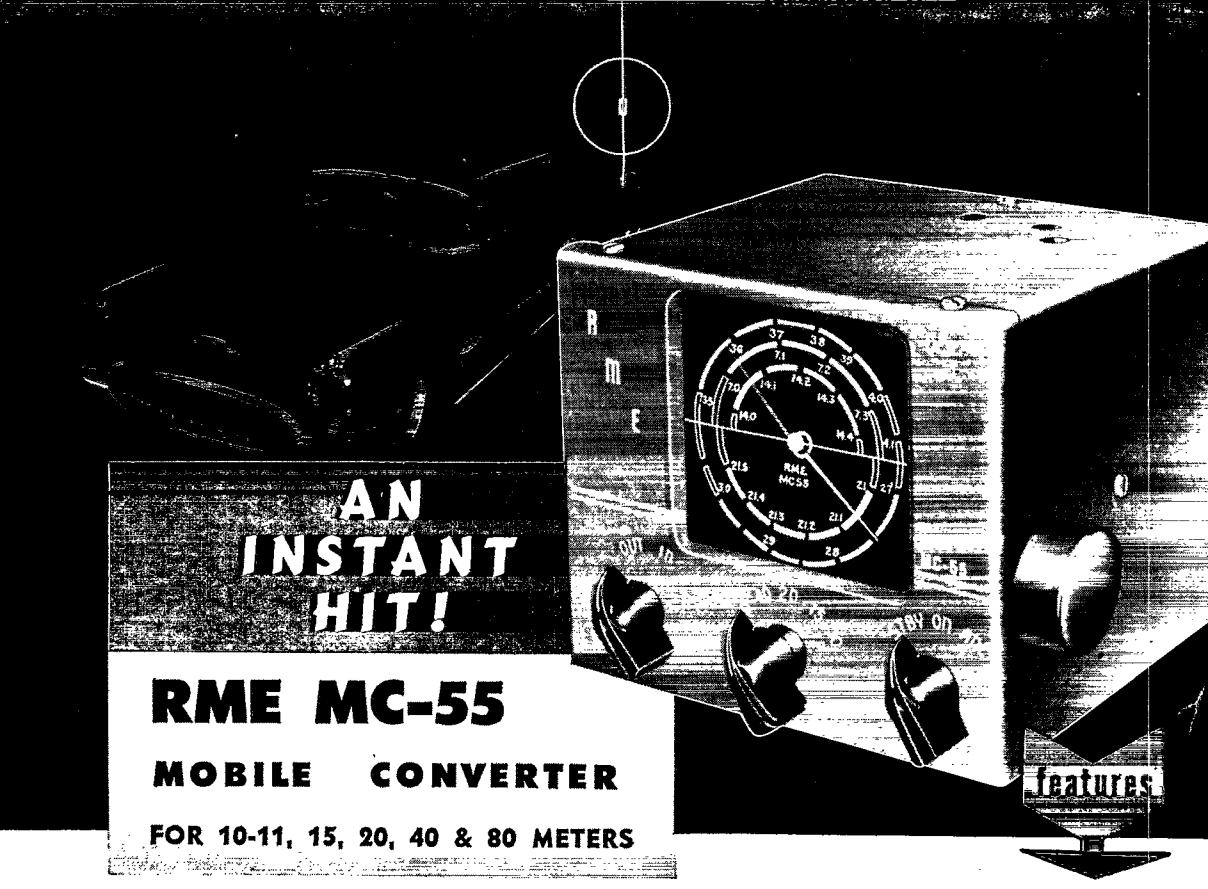


This Issue!— MOBILE RIG FOR EIGHT BANDS, 6 THROUGH 160



FOR 6 AND 12 VOLT OPERATION

In bringing out the new MC-55, RME anticipated the needs of the amateur by providing for both 6 and 12 volt operation, the latter voltage becoming increasingly popular on new car models. In addition, you're all set for fone operation on 15 and 40 meters since the MC-55 covers all ham bands, 10 thru 80 meters! As a pioneer in the construction and design of converters, RME has built into its new models rock-like stability, so that they can "take it" in the hard-riding old jallopy or the smooth new Cad. Many of the features found in the VHF-152A and the HF10-20 are incorporated in the new mobile converters.

SMOOTH FREQUENCY CONTROL

Knob driven 25 to 1 worm gear provides smooth frequency control that stays put. Experienced operators welcome this feature since it enables careful, accurate tuning while the car is in motion. Other brand new features found only in the MC models, make these small, compact converters outstanding performers. Compare the design and workmanship, then decide!

Write for Illustrated Specification Sheet.

Address

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MC-53

Also ask to see the new MC-53, the only converter for 2, 6 and 10-11 Meter Operation.

HIGH GAIN — Adds average gain of 25 db to any receiver.

BUILT-IN NOISE CLIPPER — Highly efficient automatic noise limiter all ready to connect into your car radio. Handy In-Out Switch.

STAND-BY SWITCH for muting converter while transmitting.

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TUBE LINE-UP — 6BJ6 rf amp, 12AT7 osc and det, 6BJ6 if amp, 6AL5 noise limiter.

LARGE DIAL — Large, attractive edge-lighted dial calibrated for 26.4-30 mc, 21-21.5 mc, 14-14.3 mc, 7-7.3 mc and 3.5-4 mc.

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ATTRACTIVE CABINET, complete with tubes, connecting cables and instruction sheet.

AMATEUR NET $69.50

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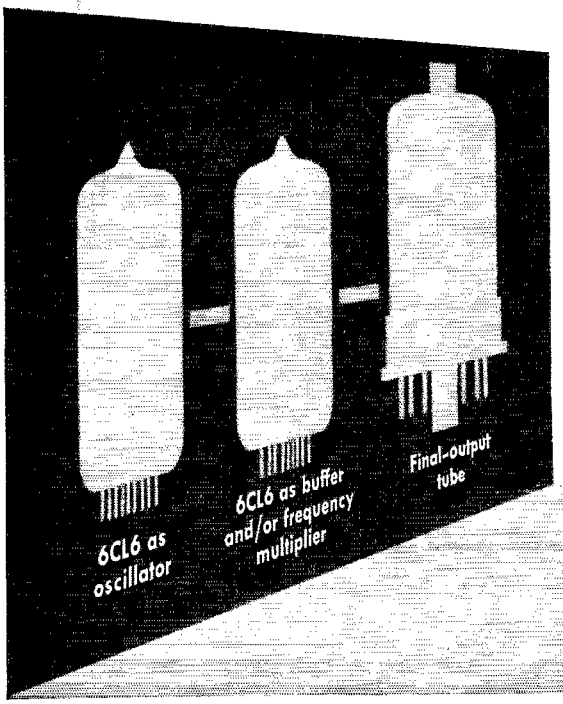
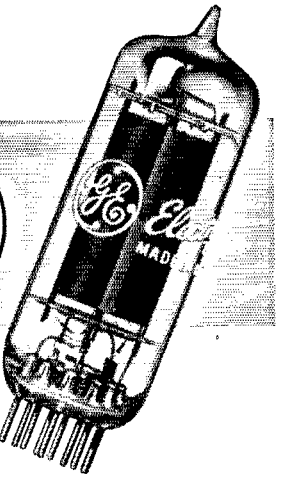


USE G-E 6CL6 POWER-PENTODE MINIATURES!



POPULAR, versatile type 6AG7 takes a back seat to G.E.'s 6CL6—a new miniature equivalent that will do what the larger tube will do, while occupying but a fraction of the space!

You can add this "plus": the new miniature's 9-pin construction provides two base pins each for control and screen grids. This feature increases flexibility when connecting up the tube. The 6CL6 is useful in so many different ways, you are assured of a clean installation no matter how you may apply the tubes or revamp your circuitry later.

In a low-power rig, two 6CL6's will handle your r-f unassisted, one as oscillator, the other as amplifier-output tube. For medium power, two 6CL6's will feed the signal into your "big bottle", with the first again serving as oscillator. The second splits the functions of buffer and frequency amplifier, or does either job alone.

Ask your G-E tube distributor to show you the 6CL6! Do your pocketbook a favor by taking advantage of the tube's moderate price! *Tube Department, General Electric Co., Schenectady 5, N. Y.*

6CL6
9-Pin Miniature

Filament Voltage	6.3 v
Filament Current	.65 amp
Plate Voltage	300 v
Plate Current	30 ma
Screen Voltage	300 v
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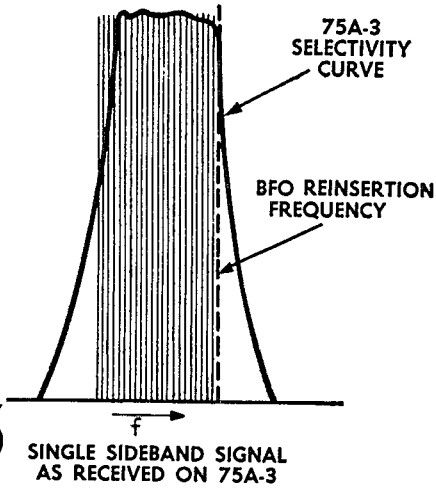
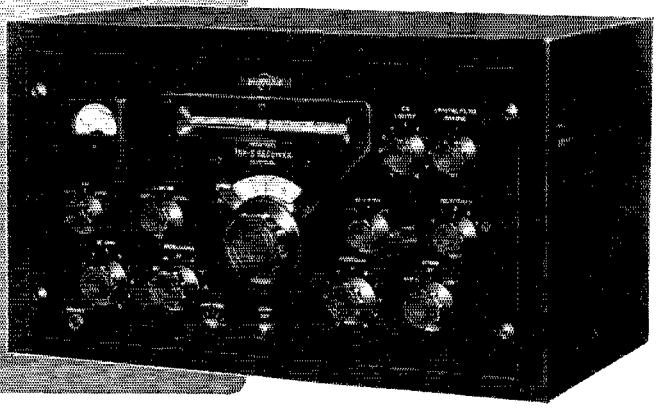


SINGLE SIDEBAND SIGNAL
AS RECEIVED ON 75A-3



SINGLE-SIDEBAND reception requires high stability. The 75A-3 is stable as a rock — because it's controlled by a rock. Quartz crystals, a different one for each band, control the high-frequency oscillator. The low frequency injection voltage is supplied by the famous Collins permeability-tuned oscillator — also noted for its stability.

But it takes more than stability. Notice how the width and shape of the 75A-3 selectivity curve is ideally suited to single-sideband reception.

And, with the 75A-3, you don't have to nurse single-sideband signals in with the b.f.o. control. Just set the b.f.o. knob for high-sideband or low-sideband operation and tune in those single-sideband signals with the main tuning dial.

We have prepared a descriptive booklet on the 75A-3. It includes information on single-sideband reception and the new Collins mechanical filter. Write for your copy today; or better yet, see your nearest Collins distributor for a demonstration.

75A-3 receiver with 3 kc mechanical filter.
Net domestic price $530.00
10" matching speaker and cabinet assembly.
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MAY 1953

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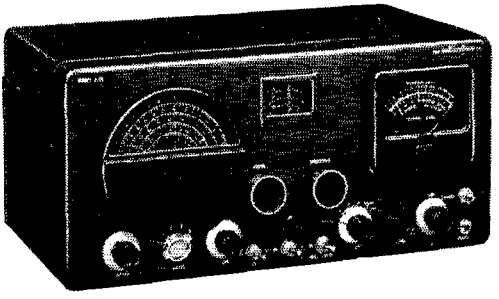

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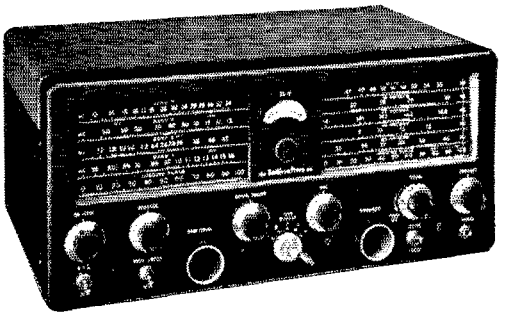

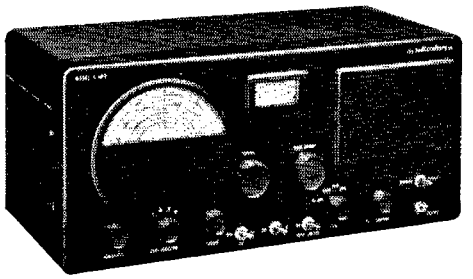

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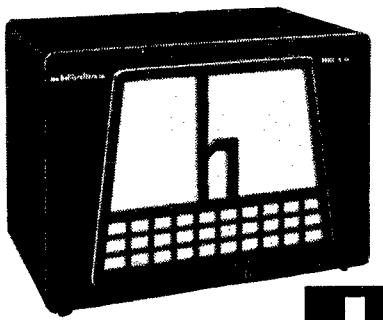

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It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors.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

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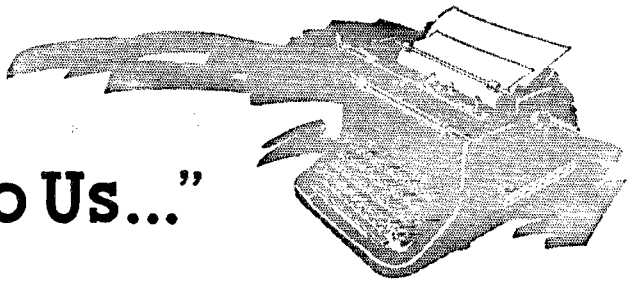

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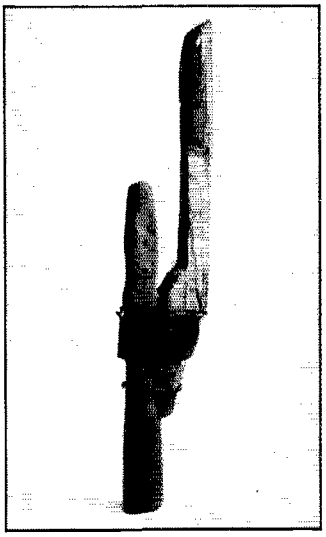
In an institution as old as amateur radio, traditions and symbols of the art appear and become a part of it. Our traditions are many, among them our long record of self-policing, our dedication to public service in emergencies, our amazing versatility in experimentation, our instant response to the call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

That symbol is the Wouff Hong.



Every ham should know its origin. It seems to us that it is time to retell the story of this famous and beloved part of the very fabric of amateur radio.

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

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

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

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

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

We know the significance of the Wouff Hong. We don't know the significance of its weird shape. Not even the beloved T.O.M. (revealed, after his death, as none other than

our first president, Hiram Percy Maxim) ever explained that. Nor was the precise manner of its use ever prescribed, although it perhaps may be guessed with a little imagination. But as the years passed, it continued to grow in the affections of amateurs the country over, old-timer and youngster alike. It became the inspiration of the Royal Order of the Wouff Hong, the amateur secret society of ARRL conventions. Today, it is thoroughly entrenched in the lore of amateur radio as its most sacred symbol.

See it when you next visit ARRL Hq.

Strays

W7BG, noting the Farad, Calif., Stray in March *QST*, points out that CQ (spelled Sekiu) is really a town in northwest Washington state. There are no hams in Sekiu to his knowledge. He thinks this may account for the fact that so many CQs go unanswered these days.

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W3KDR sees little logic in manufacturing neutralizing tools from plastic drink stirring rods (p. 67, February *QST*). He's always seen the thing the other way around.

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For the student of the technical in amateur radio's history, W1DF points out that an early form of grid-dip meter shows up in the May, 1923, "Antenna Issue" of *QST*.

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W3NRG advises that inexpensive steering-column flashlight holders, available at mail order and automobile parts stores, make excellent mountings for small mobile converters, control boxes and the like.

OREGON STATE CONVENTION

Salem, Oregon, May 23rd–24th

The Oregon Amateur Radio Association will sponsor an ARRL Oregon State Convention on May 23rd–24th to be held at the Marion Hotel in Salem. Included in the program of entertainment for visiting amateurs are lectures by eminent authorities, contests, equipment displays and an opportunity for "swap and shop." ARRL President Dosland and Northwestern Division Director Roberts are scheduled to give talks on the 24th. Prominent civic leaders and representatives of the field of radio and electronics to be present include John Reinartz of Eimac and Ray Morrow of the Morrow Radio Manufacturing Co.

Registration fees are as follows: General and Advanced Class amateurs, $7.00; Novice Class, $5.00; non-licensed persons, $3.00. Pre-registrations close May 10th. Further information may be obtained from William F. Sanders, 1230 Fairview Ave., Salem, Oregon.

HAMFEST CALENDAR

CALIFORNIA — Saturday, May 2nd, at the Fresno Memorial Auditorium — the 11th Annual Hamfest of the Fresno Amateur Radio Club. A dinner and an evening of interesting activities have been planned. Pre-registration tickets, at $4.50 each, may be obtained from Grant Storey, 908 W. Pico, Fresno.

MISSOURI — Sunday, May 31st, at the Creve Coeur Farmers Club, 2 miles west of highway 66 on Olive Street Rd. in St. Louis County — the Greater St. Louis Hamfest will be held. There will be a barbecue and lunch with the usual refreshments and many unusual and exciting activities such as dancing, music, games for men, women and children, and amateur participation contests. Admission $1.00 for adults. Children accompanied by parents will be admitted free. For further information contact Dr. H. A. Hecht, WØZXS, 7649 Delmar Blvd., St. Louis.

GEORGIA — Sunday, May 31st, at Lithia Springs — The Big Kennehoochee Hamfest for 1953, sponsored by the Kennehoochee Amateur Radio Club of Marietta. The program includes a barbecue, transmitter hunt, swimming and lots of entertainment for the XYL and children. Tickets sell for $2.75 for adults, $1.50 for children under 12. Advance registration not required but tickets may be obtained from R. B. Pledger, W4UPG, 208 McCord Street, Marietta.

CALIFORNIA — Sunday, May 17th, at Paradise Camp near Santa Barbara — the Santa Barbara Amateur Radio Club will hold the Annual Tri-County Hamfest. Interesting talks, auctions and transmitter hunts will be featured. The central location of the hamfest site will make it easily accessible to amateurs from many surrounding towns. Further information will be supplied by Ray Kubly, W6KZO.

ILLINOIS — Sunday, June 7th, at Camp Ki-Shau-Wau, near Utica — the Annual Hamfest of the Starved Rock Radio Club. There will be games, contests and entertainment for all. Special programs have been planned to interest Novices and the fair sex. Free coffee and doughnuts will be served at 10 A.M. Follow hamfest signs south from junction of Illinois routes 178 and 71 near Starved Rock State Park or east on black-top road from route 51 at Tonica. Registration is $1.00 prior to May 25, $1.50 at the Hamfest. For additional data, write to W9MKS in Utica.

PENNSYLVANIA — Saturday, June 6th, at the club grounds on the old Pittsburgh Road — the Fourth Annual Gabfest of the Uniontown Amateur Radio Club, formerly the Fort Necessity Amateur Radio Association. An interesting program, including movies, auctions and refreshments, has been arranged. For more information, write the club at P. O. Box 849, Uniontown.

ALABAMA — Sunday, May 31st, at Millers Park, Mobile — the Amateur Radio Club of Mobile will sponsor its Annual Hamfest. Gillis Cook, club president, will supply further information.

KANSAS — Sunday, May 24th, at the Osage City Fair Grounds, Osage City — the Annual Ham Picnic of the Neosho Valley Amateur Radio Club. Better known as Christy's picnic, this affair in the past has drawn hams from several states. A rig will be operating on 75 meters to guide the mobiles. Registration is 50 cents. Bring your own food and tableware. Coffee, doughnuts and soda pop will be furnished.

KANSAS — Sunday, May 3rd, at the American Legion Hall in Satanta — the Fourth Annual Hamfest of the Hi-Plains Amateur Radio Club. Festivities will begin at 9 A.M. and will feature a covered-dish lunch at 1 P.M., followed by an all-day program of fun. Entertainment for the XYLs has been planned. There will be rigs on all bands from 160 thru 10. Admission is $1.00 for adults, 25 cents for junior ops.

COMING A.R.R.L. CONVENTIONS

May 23rd–24th — Oregon State, Salem, Ore.
June 20th–21st — Rocky Mountain Division, Estes Park, Colo.
July 10th–12th — National Convention, Houston, Texas

An Eight-Band Mobile Transmitter

15-Watt 'Phone-C.W. Rig for 160 Through 6

BY C. VERNON CHAMBERS,* W1JEQ

OUR COVER

• If you have been left out in the cold whenever conditions or interest shifted the gang to a band which the existing rig won't handle, then you should be about ready for the type of transmitter shown on our cover and described here. It's a bandswitching-multicircuit-tuner job that can hop from band to band in a matter of seconds.

THE transmitter described is a compact audio-r.f. assembly that delivers approximately 10 watts output. It includes crystal and meter switching and has provision for external VFO input. The first two stages and the output coupler employ bandswitching and the amplifier uses a multicircuit tuner in the plate circuit. No coil changing is necessary in the amplifier circuit to cover 3.5 to 30 Mc. inclusive, and only a single coil need be changed for operation on 1.8 or 50 Mc. The transmitter keys well for c.w. work and is plate modulated during 'phone operation. Relays for starting and antenna changeover are built into the unit and the push-to-talk circuit employed permits microphone-button control of an externally located power-supply relay. The plate power requirements are 200 ma. at 300 volts and can be met most economically by a vibrator-type supply. The battery drain is approximately 15 amperes when the transmitter is operated at full input. The physical layout of the unit permits either under-the-dash or trunk mounting.

The Circuits

The circuit diagram of the transmitter, Fig. 1, shows that Type 5763 tubes are used in the three r.f. stages. In the oscillator section, S_1 permits selection of any one of five crystals or of an external VFO that may be connected to J_1. S_2 grounds the cathode of the tube through a by-pass condenser when VFO operation is employed. Parallel feed is used in the plate circuit of the oscillator and S_{3A} is the bandswitch for the plate coils. These coils, L_1 through L_5, have inductance values which allow 1.8-, 3.5-, 6-, 7-, 8- and 25-Mc. crystals to be used in the oscillator. The cathode of the oscillator is returned to the common keying jack, J_2, along with the cathodes of the intermediate and amplifier tubes so that the entire r.f. section may be keyed.

Bandswitching of the intermediate amplifier is accomplished by means of switch S_{3B} and inductors L_6 through L_{10}. L_{11} is one end of an inductive neutralizing link used to stabilize the transmitter in the 14–28-Mc. range. Instability at other frequencies was cured by making the intermediate stage slightly degenerative, with the latter accomplished by using a cathode bias resistor, R_5, without the customary by-pass condenser. The intermediate circuit may be worked straight through or as a frequency multiplier, and its output can be adjusted to any value within reasonable limits by the excitation control, R_6.

Parallel feed and a homemade multicircuit tuner [1, 2] make up the plate end of the r.f. amplifier. The tuner is resonated by means of C_{19} and employs plug-in coils. L_{15} coils for 1.8 and 3.5-7 Mc. plug into Prongs 2 and 3 of the 4-prong socket and the forms for these two coils carry the output links, L_{16}. Prongs 1 and 4 of the 4-prong

[1] Leiner, "All-Band Tank Circuit," *CQ*, May, 1949.
[2] Chambers, "A Two-Control VFO Rig with Bandpass Exciter," *QST*, August, September, 1950.

*Technical Assistant, *QST*.

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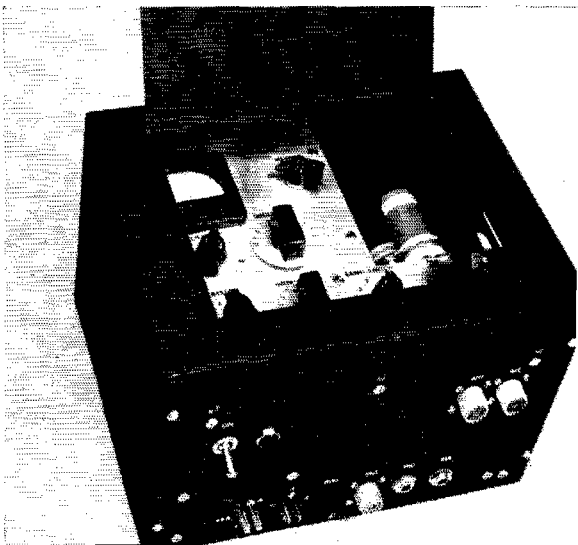


The hinged-cover side of the 7 × 10 × 8 cabinet becomes the front of the transmitter when the unit is mounted under the dash. In this position, power and control leads enter and leave at the bottom. If the rig is trunk mounted, it is convenient to orientate it with the hinged cover facing upward so that cabling will run to and from the front. The components shown from left to right at the bottom are J_6, J_7, F_1, J_1, J_3 and J_2 respectively. S_8 and the panel indicator are above J_6, and J_4 and J_5 are mounted above the key jack. The cut-out at the top right-hand corner of the unit is large enough to permit changing of the amplifier plate coils when the transmitter is in the cabinet.

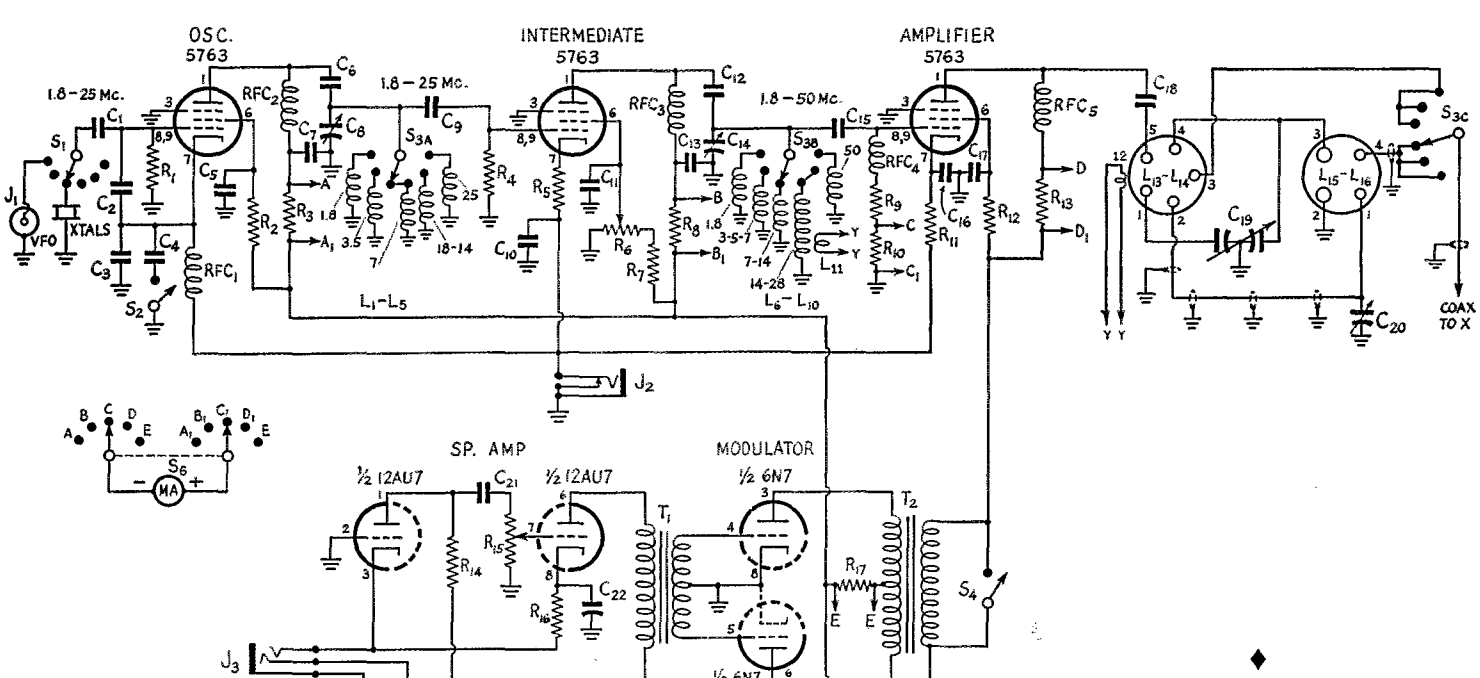
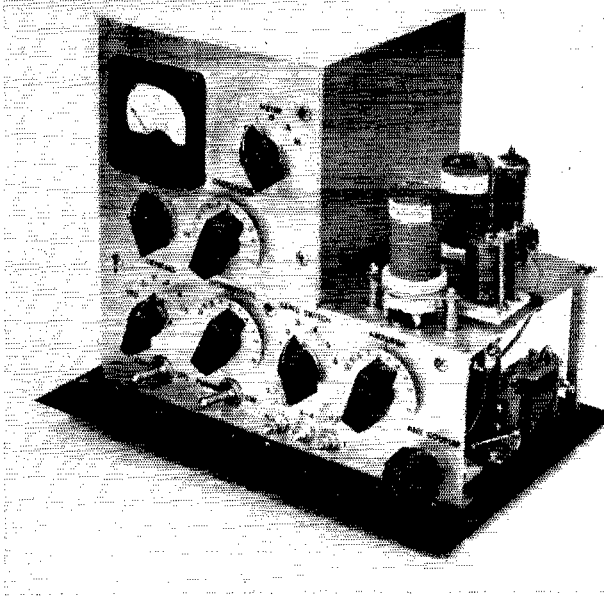


Fig. 1 — Circuit diagram of the mobile transmitter.



Panel view of the mobile transmitter. The meter switch is located to the right of the milliammeter. The excitation control and switches S_1 and S_2 are in line, from top to bottom, below the meter. Controls for the oscillator, the intermediate stage and for phone-c.w. operation are mounted in that order just below the meter switch. The oscillator coil slug adjusting screws project through the panel below the bandswitch, S_3. The knob at the lower right-hand corner is for the output-link tuning capacitor. Sockets for the plug-in coils are mounted on the right-hand edge of the chassis and the 5763 amplifier is located to their rear. L_{12} is supported by a tie-point strip to the right of the socket for L_{15}–L_{16}, and the 75-ohm Twin-Lead runs back to L_{11} of the intermediate stage.

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socket are connected to the link tuning condenser, C_{20}, and the output switch, S_{3C}, respectively. A 5-prong socket is used for the 14- through 50-Mc. section of the tuner. Coils for 14 through 28 Mc. (L_{13}) plug into Prongs 1 and 5 of the socket and have a jumper connected between Pins 4 and 5 of the forms, thus tying this half of the circuit back to the parallel-tuned portion, $C_{19}L_{15}$. The 50-Mc. coil does not include a jumper and, as a result, the plate tank at this frequency is simply a series-tuned affair with L_{13} connected in series with one half of C_{19}. L_{14} for both of the higher frequency ranges is mounted so as to connect between Prongs 2 and 3 of the socket and, in turn, to C_{20} and S_{3C}.

The neutralizing winding, L_{12}, is a one-turn loop that encircles the 5-prong coil as shown in the panel view of the transmitter. This loop is connected to L_{11} of the intermediate stage by a short length of 75-ohm Twin-Lead. The loop is large enough to permit inserting and removing the plug-in coil with ease.

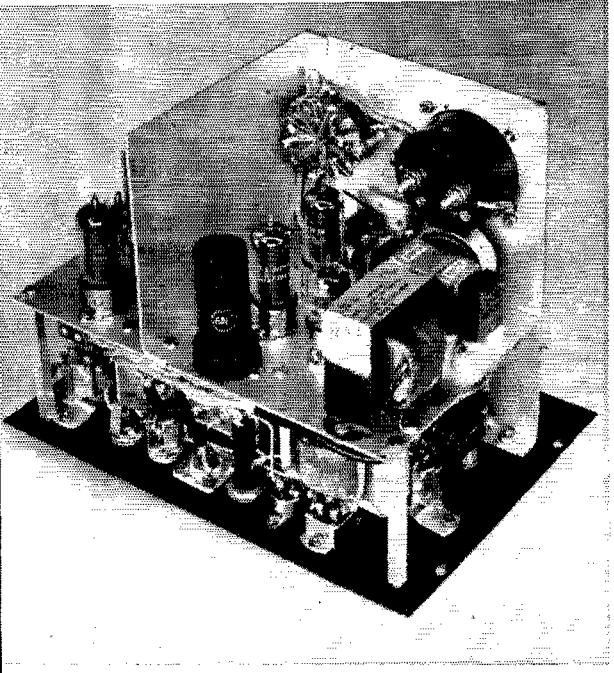
Switch S_{3C} has three of the fixed contacts connected to L_{16} and three contacts tied to L_{14}. The rotor arm of the switch connects to the antenna jack, J_5, through K_2. The use of separate output links results in uniform coupling to the amplifier when either L_{13} or L_{15} is serving as the active plate inductance. *LC* values for the link circuits have been adjusted for working into 52-ohm cable and will require some modification if the line (52-ohm cable) is not terminated in its characteristic impedance. Unfortunately, it is not possible to recommend a given set of *LC* values that will match all types of mobile antennas over an 8-band range.

A small amount of cathode bias, developed across R_{11}, holds the cathode current of the amplifier tube to a safe value when excitation is either abnormally low or absent during testing, tuning, etc.

One half of a Type 12AU7 is used in the grounded-grid input circuit of the audio equipment. The Class A driver uses the second section of the dual triode and is transformer-coupled to a 6N7 Class B modulator. Microphone voltage is obtained by connecting the carbon microphone (through J_3) in series with the cathodes of the 12AU7.

Plate current for the oscillator, intermediate,

C_1, C_9, C_{15} — 220-$\mu\mu$fd. mica.
C_2 — 10-$\mu\mu$fd. mica.
C_3 — 100-$\mu\mu$fd. mica.
C_4 — 0.002-μfd. mica.
C_5, C_7, C_{10}, C_{11}, C_{13}, C_{16}, C_{17} — 0.001-μfd. disk ceramic.
C_6, C_{12}, C_{18}, C_{21} — 0.005-μfd. disk ceramic.
C_8 — 50-$\mu\mu$fd. variable (Hammarlund HF-50).
C_{14}, C_{20} — 140-$\mu\mu$fd. variable (Hammarlund HF-140).
C_{19} — 140-$\mu\mu$fd. per-section variable (Hammarlund HFD-140).
C_{22} — 25-μfd. 50-volt electrolytic.
R_1 — 0.1 megohm, ½ watt.
R_2 — 27,000 ohms, ½ watt.
R_3, R_5, R_8, R_{10}, R_{13}, R_{17} — 100 ohms, ½ watt.
R_4 — 22,000 ohms, ½ watt.
R_6 — 20,000-ohm 4-watt potentiometer.
R_7 — 2700 ohms, 2 watts.
R_9 — 3300 ohms, ½ watt.
R_{11} — 68 ohms, ½ watt.
R_{12} — 10,000 ohms, ½ watt.
R_{14} — 47,000 ohms, ½ watt.
R_{15} — 0.5-megohm potentiometer.
R_{16} — 1000 ohms, ½ watt.
L_1 through L_{16} — See coil chart.
F_1 — 7-amp. fuse.
I_1 — 6.3-volt panel-indicator assembly.
J_1, J_4, J_5 — Coaxial-cable connector.
J_2 — Closed-circuit jack.
J_3 — 3-circuit microphone jack.
J_6 — 4-prong chassis connector (Cinch-Jones P-304-AB).
J_7 — 2-prong chassis connector (Cinch-Jones P-302-AB).
K_1 — S.p.s.t., normally open, 6-volt relay (Potter & Blumfield MR1D).
K_2 — S.p.d.t. 6-volt relay (Potter and Blumfield MR5D).
MA — 0–100 d.c. milliammeter.
RFC_1, RFC_2, RFC_3, RFC_4 — 1-mh. r.f. choke (National R-50).
RFC_5 — 2.5-mh. r.f. choke (National R-100S).
S_1 — 1-pole 6-position ceramic selector switch (Centralab 2501)
S_2, S_4, S_5 — S.p.s.t. toggle switch.
S_3 — 3-pole 6-position ceramic selector switch (Centralab 2521).
S_6 — 2-pole 5-position phenolic switch (Centralab 1405).
T_1 — Driver transformer, variable ratio, single plate to Class B grids, pri. rating 20 ma. (Merit A-2922).
T_2 — 10-watt modulation transformer, variable ratio, pri. rating 70 ma., secondary rating 60 ma. (Merit A-3008).



The 6N7 modulator tube, intermediate-amplifier tube, and oscillator tube are in a row near the left wall of the large compartment. The 12AU7 is to the left of the modulation transformer mounted on the rear corner. The lead between the oscillator tuning capacitor, C_8, and S_{8A} goes through a feed-through bushing in the chassis. This view shows how the base plate is supported by the front panel and by 3¼-inch lengths of ¼-inch rod. Relays, jacks, S_5, the fuse holder and the lamp indicator assembly are all mounted on the cabinet panel. K_1 is at the right-hand end of the lower section.

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amplifier and modulator circuits and grid current for the final may be observed by switching the 0–100 ma. meter across metering resistors R_3, R_8, R_{10}, R_{13} and R_{17}.

The starting switch, S_5, of the control circuit is connected in series with the field winding of K_1. With the contact arms of K_1 closed, 6 volts d.c. is connected to the heater chain of the transmitter and to one end of the field winding of the antenna change-over relay, K_2. The other end of the winding for K_2 is returned to the microphone jack and, in turn, to ground through the microphone push-to-talk switch. A pair of control leads are connected between K_2 and Prongs 3 and 4 of J_6 so that an external power-supply relay may be easily connected to the rig.

Construction

Construction of the transmitter involves a fair amount of metal work, the sections to be cut and bent being made from flat pieces of 1/16-inch aluminum stock. The panel is 8⅞ inches wide, 7 15/16 inches high, has a half-inch fold at the bottom for fastening to the plate of the Bud C-993 cabinet, and a cut-out at the top right-hand corner that measures 3⅜ by 4¾ inches. The chassis measures 5¼ by 8⅞ inches and has a half-inch lip which bolts to the panel. The above-deck shield between the amplifier and the exciter section has half-inch lips bolted to the panel and the chassis and has depth and height of 5 3/16 and 4¾ inches, respectively. The partition which runs from front to rear of the unit (bottom view) measures 3 by 5 inches and has a half-inch lip bolted to the chassis. The distance between the partition and the end of the chassis is 2¼ inches. The shield that mounts just to the rear of the oscillator coils is 1¾ inches high and 2 inches wide, and has a lip attached to the partition. A bracket measuring 2 by 3 inches supports the coils for the intermediate amplifier and the rear end of bandswitch S_3. This bracket is bolted to both the partition and the chassis.

Although the chassis-panel assembly should not be bolted to the flat cabinet plate at the start, it is wise to go ahead with the drilling and tapping that will be required. The square support rods which will go at the rear of the chassis should be drilled and tapped for 6–32 machine screws at both ends. Holes for No. 6 screws should be drilled at the

COIL CHART

L_1 through L_5 and L_7 through L_{10} are CTC slug-tuned coils.
L_6 is a National type R-33 750-μh. r.f. choke.

Coil	*Freq. Mc.*	*CTC Type*	*Turns Removed*
L_1	1.8	LS3–1	60
L_2	3.5	LS3–5	10
L_3	7.0	LS3–10	none
L_4	8.0	LS3–10	5
L_5	25.0	LS3–30	none
L_7	3.5– 7.0	LS3–5	25
L_8	7.0–14.0	LS3–10	13
L_9	14.0–28.0	LS3–30	none
L_{10}	50.0	LS3–30	3

L_{11} — 1 turn No. 18 enam., wound around ground end of L_9.
L_{12} — 1 turn No. 12 enam., 1¼-inch diam., mounted on tie point so as to encircle ground end of L_{13}–L_{14} assembly.

AMPLIFIER COILS

Coil	*Use*	*Freq. Mc.*	*No. Turns*	*Wire Size*	*Diam., In.*	*Length, In.*	*B & W*
L_{15}	plate	1.8	40½	22	1	1⅛	——
"	"	3.5– 7.0	22½	24	¾	¾	3012
L_{16}	link	1.8	38½	"	"	1¼	"
"	"	3.5– 7.0	32½	"	½	1	3004
L_{13}	plate	14.0–28.0	12½	20	¾	¾	3011
"	"	50	7½	18	"	1	3010
L_{14}	link	14.0–28.0	8½	20	½	½	3003
"	"	50	7½	20	½	7/16	"

NOTE: L_{15} for 1.8 Mc. is wound on outside of Millen type 45004 form. L_{15} for 3.5 Mc. and both L_{16} coils fit inside 45004 form. All L_{13} and L_{14} coils mount inside Millen type 45005 forms. B & W numbers refer to Barker & Williamson Miniductor coils.

rear corners of the chassis and in the fold-over at the bottom of the panel, and holes for screws through to the support posts and the panel should be drilled in the flat plate that comes with the cabinet. The locations of this last group of holes must be such that the panel of the r.f. unit will be set back 1⅛ inches from the front edge of the plate when the final assembly is completed.

The photographs show how the components are mounted on the panel, base and partitions. C_{14} and the slug-tuned coils should be mounted after the wiring of the sockets and smaller parts has been completed. The 1.8-Mc. inductor for the intermediate stage is supported at the ground end by a small feed-through bushing mounted in the switch-coil bracket; a second bushing, mounted in the long partition, carries the r.f. lead from C_{14} to the amplifier grid coupling capacitor. This capacitor, C_{15}, mounts directly between the amplifier side of the bushing and the grid prong of the tube socket.

The bottom view also shows how the coaxial leads between the coils and S_{3C} are run through the chassis to the rear of the bandswitch. The 75-ohm line between L_{11} and L_{12} enters and leaves the compartment through rubber grommets.

The layout for the components mounted on the bottom of the case is quite critical, and the exact placement of each part will depend considerably on how the main section has been put together. Mounting holes for the jacks, switches, etc., should be marked after the finished r.f. assembly has been positioned on the plate. After drilling and mounting the parts, the plate and chassis can be bolted together and the remaining wiring completed.

Coils

Coils L_{13} and L_{15} for the r.f. amplifier, with one exception, use ¾-inch diameter Miniductor mounted inside the forms. The 1.8-Mc. coil is the exception, and this one is close-wound on the outside of the form. This same coil does use ¾-inch Miniductor for the coupling link, L_{14}, however. Coupling links L_{14} and L_{16} for the other assemblies use half-inch Miniductor which is fitted down inside the ¾-inch diameter plate coils. The links are positioned in the forms so that the bottom and the top ends will connect to C_{20} and S_{3C}, respectively, when the coils are inserted in the sockets. Be sure to cover the ends of the links with spaghetti before mounting them in the forms.

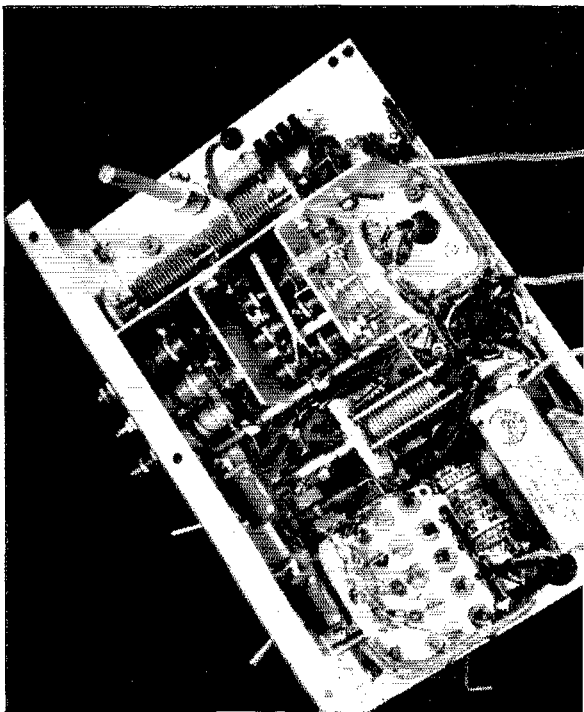
Testing

A standard a.c. supply capable of delivering 300 volts at 200 ma. may be used for bench testing of the transmitter. The filament drain is 3.35 amp. and a 6.3-volt transformer may be used, providing the a.c. is not applied to the control relays. If complete a.c. operation is planned, it is necessary to hold the antenna relay, K_2, in the transmit position with a wedge of cardboard.

A 25-watt lamp bulb connected to J_5 will serve as a dummy load for the amplifier. S_2 and S_4 must be opened and closed, respectively, before testing is started. Set the excitation control to the zero-voltage position and, assuming that a 1.8-Mc. crystal is available, set S_1 and S_3 at the appropriate positions. L_{15} for 1.8 Mc. should be plugged into the final amplifier and S_6 should be set for reading oscillator plate current.

An accompanying tuning chart lists bandswitch and tuning dial positions, plate and grid currents that indicate normal operation of the r.f. stages, and output frequencies that may be obtained with a given crystal. When lining up the transmitter, the following procedure is recommended:

Tune the oscillator for resonance at 1.8 Mc. Only C_8 requires adjustment in this case inasmuch as the plate circuit employs an r.f. choke rather than a slug-tuned coil. Next, switch the meter to Position 2, advance the excitation control, and adjust the tuning control for the intermediate stage as listed in the tuning chart. Set S_6 at the amplifier-grid position and adjust the slug of L_6 for maximum amplifier grid current. Readjust R_6 to deliver 7 or 8 ma. to the grid and then tune the final for resonance by means of C_{19}. C_{20} should now be varied (keep the amplifier



The oscillator coils, mounted on the front panel, are shielded from the intermediate-amplifier coils by an aluminum plate attached to the wall between the amplifier section and the remainder of the unit. A second shield supports L_6–L_{10} inclusive. The bandswitch, S_3, has Section A toward the front of the chassis, Section B between the shields, and Section C at the rear of the assembly. Coax leads run from Section C through a hole in the chassis to the coil sockets located on the top side. C_{14}, below the coil assembly in this view, is mounted on a ¼-inch metal post. RFC_1 is just below it. R_7 is supported by a terminal strip located above the crystal sockets and C_{22} is in front of T_1 at the lower right-hand corner.

in resonance by retuning C_{19} when necessary) until the 25-watt lamp loads the final to the value of plate current listed in the chart. If the rated plate current cannot be obtained, or if the amplifier appears to be too heavily loaded, it is necessary to readjust the position of the output coupling link with respect to the plate inductor.

TUNING CHART

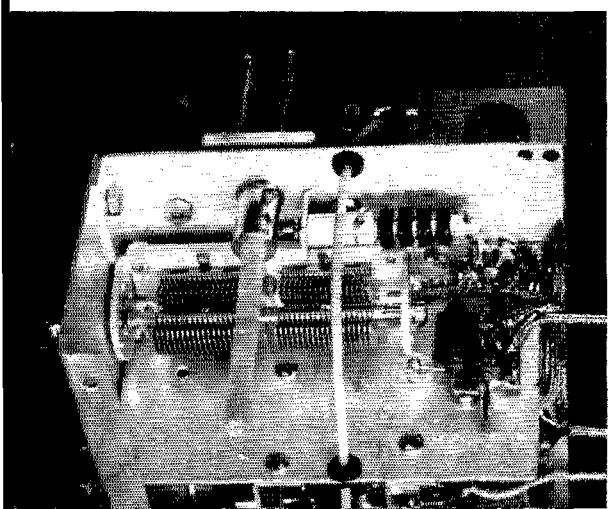
XTAL	S_8	*Oscillator*			*Intermediate*			*Amplifier*			
$f_{Mc.}$	*Pos.*	*Dial*	$f_{Mc.}$	I_p *Ma.*	*Dial*	$f_{Mc.}$	I_p *Ma.*	*Dial*	$f_{Mc.}$	I_g *Ma.*	I_p *Ma.*
1.8	1	7.2	1.8	17	0	1.8	10	7	1.8	6	50
3.5	2	9.8	3.5	"	10	3.5	"	7.8	3.5	"	48
"	"	"	"	"	0	7.0	"	1	7.0	"	"
"	3	5.1	7.0	19	9	"	"	"	"	"	45
"	"	"	"	"	0	14.0	"	7.5	14.0	"	53
7.0	"	"	"	18	9	7.0	12	1	7.0	7	50
"	"	"	"	"	0	14.0	"	7.8	14.0	"	53
"	4	"	"	"	10	"	32	7.5	"	"	"
"	"	"	"	19	3.2	21.0	"	3.5	21.0	"	50
"	"	"	"	"	0.5	28.0	35	1.3	28.0	"	44
6.275	5	0.2	12.55	22	1.6	25.1	24	1.5	50.2	13	52
8.4	"	9.5	8.4	19	"	25.2	38	"	50.4	7	"
6.275	6	4.1	25.1	24	0.2	50.2	"	"	50.2	3	45
8.4	"	"	25.2	"	"	50.4	36	"	50.4	5	47
25.3	"	"	25.3	22	0.2	50.6	"	"	50.6	5	"

The tuning procedure for 3.5 through 50 Mc. is, with one exception, identical to that already outlined. At any of these frequencies it is necessary to start off with C_8 adjusted as given by the tuning chart instructions and then slug-tune the oscillator coil to resonance. It should also be observed that when crystals for 3.5 Mc. and above are employed, it is possible to operate the intermediate stage either as an amplifier or frequency multiplier, thus the output stage may be worked straight-through on more than one band without first resetting the bandswitch.

The original amplifier was perfectly stable at all frequencies outside the 14–28 Mc. range. The link used to prevent self-oscillation in this region is adjusted as follows: Remove the load from the final, switch S_1 to the VFO position (make sure an external oscillator is not connected to J_1), close S_2 and back off the excitation control. Now, adjust the coupling between L_{10} and L_{11} to prevent self-oscillation. Stability is indicated by an absence of grid current at any setting of C_{19} and by a steady amplifier plate current of approximately 40 ma.

The speech equipment and the relay circuit can be properly tested only with 6-volt d.c. fed to the transmitter through J_7. The regular mobile plate supply should be connected to Terminals 1 and 2 of J_6 and the supply may be turned on and off by means of a relay cabled to Terminals 3 and 4 of the same connector. With a microphone plugged into J_3, with S_4 open, and with a dummy load at J_5, the transmitter heaters may be turned on by closing S_5. After a few seconds of warm-up time the entire transmitter can be activated by the push-to-talk switch and a quick check of the various meter readings should be made immediately. Plate current for the modulator should idle at approximately 30 ma. and should rise to 60 or 70 ma. when voice modulation is applied. If the output lamp shows a distinct increase in brilliance during this last test, it is a fairly good indication that all is well.

In closing, we should like to direct a few words to those readers who like the transmitter but have no need for 8-band coverage. This group can simplify both the circuit and the construction of the rig by settling for 6-band operation. If output at 1.8 and 50 Mc. is sacrificed, it is possible to eliminate four of the exciter coils, all of the plug-in features and quite a bit of metal work. L_1, L_5, L_6 and L_{10} need not be installed in the oscillator and the intermediate stages, and L_{13} through L_{16} for 1.8 and 50 Mc. will not be required. It will take little ingenuity to redesign the amplifier layout so that the plate coils and the output links may be permanently mounted below the chassis. If this is done, it will not be necessary to install the plug-in coil sockets, the shield "above deck" and the cut-out at the top corner of the panel.



The bottom section of the r.f. amplifier is separated from the exciter circuits by an aluminum partition. RFC_4, R_9 and R_{11} are supported by a tie-point strip at the rear of the partition and R_{12} is connected between the tube socket and the tie point at the rear of the base. RFC_5 is fastened to an aluminum bracket bolted to the chassis. The insulated tuning rod for C_{20} shown in this view was later replaced by a flexible shaft so that the loading could be controlled from the front panel. The amplifier tuning capacitor, C_{19}, is mounted on the chassis directly under the ¾-inch holes that clear the leads between C_{19} and the coil sockets.

TVI Reduction in Strong-Signal Areas

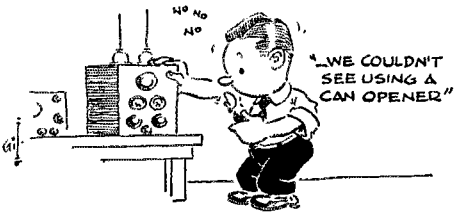
Simple Measures for the City Dweller

BY NEIL JOHNSON,* W2OLU

• When TVI first reared its ugly head the city apartment dweller was the one most affected. However, that picture has changed with the increase in power, as well as number of stations, in metropolitan areas. This article serves to illustrate the simple measures that may be adequate to eliminate TVI if you're a city dweller, particularly if you can get along without 10 meters.

Some time ago we had a little TVI. It really wasn't too bad, but some of the neighbors objected to it. Not owning a TV receiver at the time, we couldn't sympathize with them entirely, but we set about to eliminate or minimize the trouble. Of course, we have our own 20-inch job by now and, likewise, the TVI is entirely gone. This has been a rather gradual sort of evolution, rather than anything really drastic, so this is offered in hope that some other ham, similarly located, may find an easy way out.

The rig at W2OLU is a metal-breadboard type, with push-pull 24Gs in the final. The 7/14-Mc. driver unit is a converted BC-457, modified according to April, 1949, *QST*. The whole rig, with the exception of the high-voltage power supply and Variac is built on the aluminum chassis, 11 by 17 by 2½ inches. Ham radio means various things to different OMs. To us it has meant experimentation and fine QSOs, rag-chews and so



on. To continue the QSOs we had to clean up the TVI, or most of it. But to experiment, well, we just couldn't see taking a can opener to open up the rig for band-changing. Experimentation under this sort of construction would be impossible. In a nutshell, we wanted to keep our metal-breadboard type of construction, if at all possible.

The early TVI in the small apartment building where we live was no doubt a combination of harmonics from the rig, plus blanketing caused by receiver overloading and lack of preselection. With such a set-up, it was hard to tell where to begin. The first real clue came when we noted that TVI was less on a neighbor's set when the Variac was cranked up to give higher plate voltage on the final! The TV set was an expensive Philco projection job, and the TVI was bad on Channel 2 only. The TV antenna was pointed away from our antenna, and the downlead was coax to the TV receiver, hence no antenna effect. Quick figuring showed the reason for less TVI with higher power. Our VR-150 regulating the p.a. grid bias kept the bias voltage constant while we ran the plate voltage to the final from zero up to 1500 volts. At 600 to 800 volts, we were running roughly four times cut-off; at 1500 volts, the 150-volt bias represented a normal Class C

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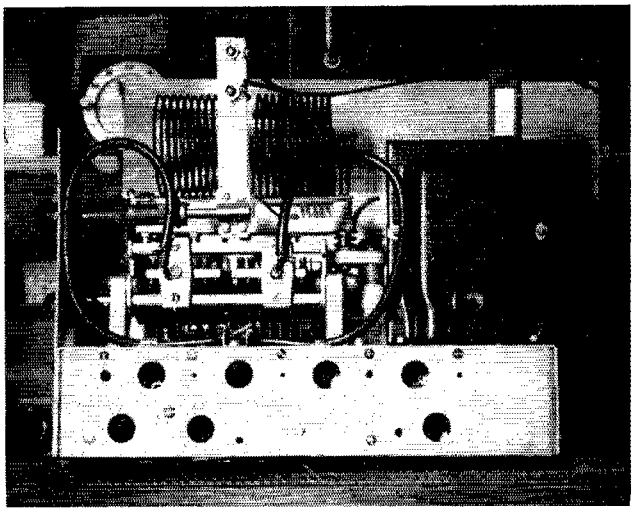
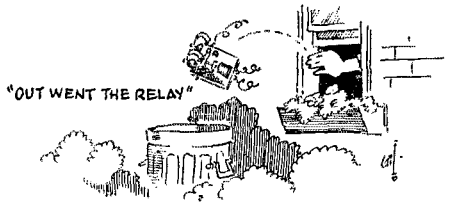


At 14 miles from the Empire State Building, W2OLU can operate this open 225-watt rig on 40 or 20 meters without QRM to his own TV receiver.

bias of twice cut-off, approximately. The next step was to reduce the p.a. bias to 105 volts; it is now down to a VR-75, and our Class B efficiency on 40- and 20-meter c.w. is about 65 per cent for the tubes, with about 60 per cent overall efficiency for the stage.

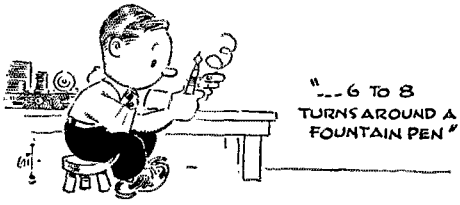
By this time, a 7-Mc. "Harmoniker"-type half-wave filter had been installed in the Twin-Lead. This was some help, but when a near-by ham told us our 20-meter sigs were almost as strong as the 7-Mc. fundamental, we were in a quandary. The filter was partly taken apart; checking each quarter-section with a grid-dip meter showed everything OK, so we put it back together and began to look around. Evidently, the a.c. line to the antenna change-over relay was by-passing some of the TVI harmonics from the a.c. line around the theoretical 80-db. filter attenuation. Out went the relay! About this time, we removed a 0.002-μfd. 2500-volt plate by-pass condenser at the "cold" end of the plate r.f. choke, and replaced it with a 470-$\mu\mu$fd. unit from one of the BC-375 tuning units. Connection to chassis was through a half-inch-wide strip of transcription aluminum, about 2 inches long.[1] A 500-$\mu\mu$fd. 10-kv. television condenser would serve as well, if not better.

Our TVI was down considerably by now, and checking on an RCA set next door (where we had coöperatively installed a high-pass filter our neighbor paid for) showed all channels in the New York area free from TVI, except Channels 5 and 2. Of the two channels, the interference was objectionable on Channel 2 only.



About this time, the XYL put her foot down. Result — one TV set for the family. I work at TV broadcasting all day, hence the one-sided enthusiasm in the family. Aside from an occasional show, the biggest asset the TV receiver affords the OM is peace of mind. With a very FB high-pass filter we made at home, our own QRM likewise showed up on 2 and 5 only. The high channels 7, 9, 11 and 13 were clean. So was Channel 4 for some unaccountable reason. The next step was to install 0.005-μfd. ceramic disk capacitors across all the a.c., d.c. and keying leads coming from the exciter. Also, we made up two coaxial condensers from approximately 12 inches (each) of RG-59/U coaxial cable. These were installed from the tank-condenser stator terminals to ground.

By now, all TVI had gone except on Channel 2. Running into a noninductive dummy load showed that the interference was missing under these conditions, so it was evident it was being radiated by the antenna, and being picked up by our TV antenna, located about 8 feet from one end of the transmitting antenna. Our p.a. tubes were drawing a few milliamperes of plate current at 1500 volts with only 75 volts of grid bias, so it was evident that we had Class B conditions here with low harmonic output. Our thoughts were then concentrated on the exciter unit. With a spare piece of Twin-Lead about 20 feet long, we formed a pick-up loop of one turn at one end, wrapped it with plastic tape for insulation and, with the other end connected to the TV-receiver terminals, it was used as a harmonic-detecting probe. The XYL acted as recorder, while the OM probed the exciter unit with key down. Our d.c., a.c., and key leads showed very low TVI levels, but the 1625 driver plate circuit showed a fair amount of harmonic output. It was also present at the final grids. A small wavetrap using a 25-$\mu\mu$fd. APC condenser and 6 to 8 turns of wire wound on a



fountain-pen barrel in the 1625 plate lead soon cured this. The TV receiver was normalled, and the off-the-air TVI was checked on dear old Channel 2. At full power — 225 watts on 7 Mc. — we were able to tune the herringbone pattern in and out on our 20-inch picture tube by adjusting the wavetrap. Similar results were obtained on 14 Mc. using a 20-meter "Harmoniker."

Some of our neighbors evidently don't believe in high-pass filter installations, so to convince the doubting few, I had the XYL call a few OWs in to view our television while the OM was on the air. As a final and acid test, we privately ran our full-power output — about 140 watts of r.f. — into a dummy load mounted on top of the TV receiver. We then proceeded to wrap the TV receiver Twin-Lead twice around the dummy load. Still no QRM on any television channel, including Channel 2. In fact, the XYL doesn't even know when the transmitter is on the air.

P.S.: The final remains unshielded and we have not yet installed the Hy-pass capacitors in the a.c. line.

Strays

W8IVK made a clean sweep of the Los Alamos, N. Mex., Freshwater "ham family" — Phil, W5TOU; mom, WN5YBJ; and dad WN5WYF — on 20- and 40-meter c.w. May we suggest a WAF (Worked All Freshwaters) certificate with space for endorsement stickers should any other Freshwaters come along?

[1] Grammer," By-passing for Harmonic Radiation," *QST* April 1951.

Class AB_1 Modulator for the Small Transmitter

40 Watts of Audio Output Using 807s and an "Economy" Power Supply

BY GEORGE GRAMMER,* W1DF

• This modulator, complete in every respect on one chassis, was designed as a companion unit to the 5763-6146 transmitter described in the December, 1952, issue. It includes all the necessary control circuits, and has provision for metering employing the 0-1 milliammeter built into the transmitter. The design is considerably simplified by using an inexpensive dual power supply and operating at high-enough voltage to permit using the modulator tubes as Class AB_1 amplifiers, thus eliminating the power driver ordinarily found in a 40-watt amplifier. The unit can be used with any transmitter having a single 6146, 807, or equivalent power input.

Of the various tube and power-supply combinations that could be used to obtain the 40-odd watts of audio needed to modulate the plate and screen or a 6146 or 807, the one shown in Fig. 1 is probably close to the top in terms of economy and ease of adjustment. In this power range, first consideration no doubt would be given to a pair of 6L6s working Class AB_2. A typical modulator of this type is shown in the *Handbook*. It is complete except for the modulator power supply, which is a problem in itself when it comes to selecting suitable components. Good voltage regulation is desirable, which in general means that a choke-input filter should be used.

However, the catalogs aren't full of transformers that will deliver 360 volts through the usual rectifiers and chokes at an average load of 150 ma. or so. A 400-volts-each-side unit, which is about the largest available in the replacement-type transformers, will wind up giving about 300 volts d.c. with a choke-input filter through an ordinary rectifier. On the other hand, a 500- or 600-volt transformer from the transmitting line will give too much voltage, so the Class AB_2 6L6s make a somewhat awkward combination from the power-supply viewpoint.

The modulator shown in the photographs saves a good deal of power-supply cost by using a dual supply of the type described earlier.[1] The two voltages, approximately 670 and 250 under average load, are obtained from a single inexpensive replacement-type transformer. With any replacement transformer of moderate power capability the two voltages are automatically in this range, so in order to take advantage of the power-supply saving it becomes necessary to tailor the modulator to the supply. Fortunately, this is easy to do.

There is a worthwhile advantage in operating a modulator of the 40-watt output class at a plate voltage of 600. Beam tubes such as the 6L6, 807, and 6146 will easily deliver the required output without having to be driven into the grid-current region; that is, they can be operated Class AB_1. This avoids the necessity for a power driver and the attendant struggle to minimize distortion; a plain voltage amplifier can be used. In turn, this means that a higher voltage gain can be realized from the same number of tubes in the speech amplifier, along with a reduction in the actual audio voltage required at the modulator grids for full output. This modulator uses a pair of 807s. The same output can be obtained from 6L6s but it was found that some tubes would not stand up at 600 volts, and since the difference in

*Technical Editor, *QST*.

[1] Grammer, "More Effective Utilization of the Small Power Transformer," *QST*, November, 1952.

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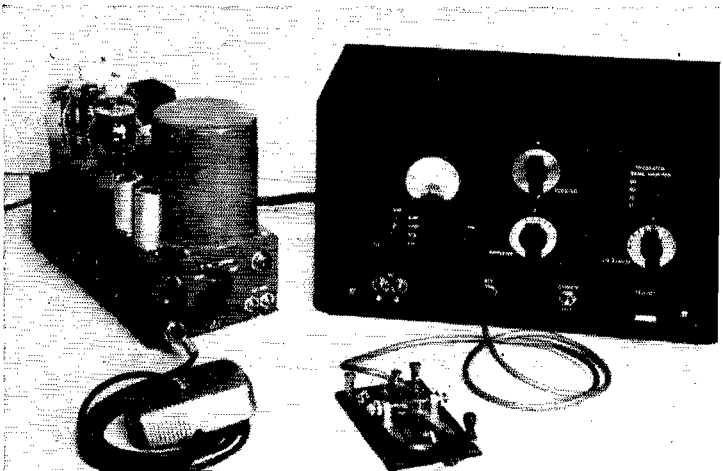


The modulator unit, shown here with the 6146 transmitter from December *QST*, has an audio power output of approximately 40 watts and uses 807s in Class AB_1. It is completely self-contained, with power supply and control circuits, on a 5 × 10 × 3-inch chassis.

The control switch, *center*, has four positions — off, test, 'phone, and c.w. Microphone connector and gain control are at the left; a.c. switches at the lower right. The two speech amplifier tubes are at the left front, followed by the 807s and the 5V4G to the rear.

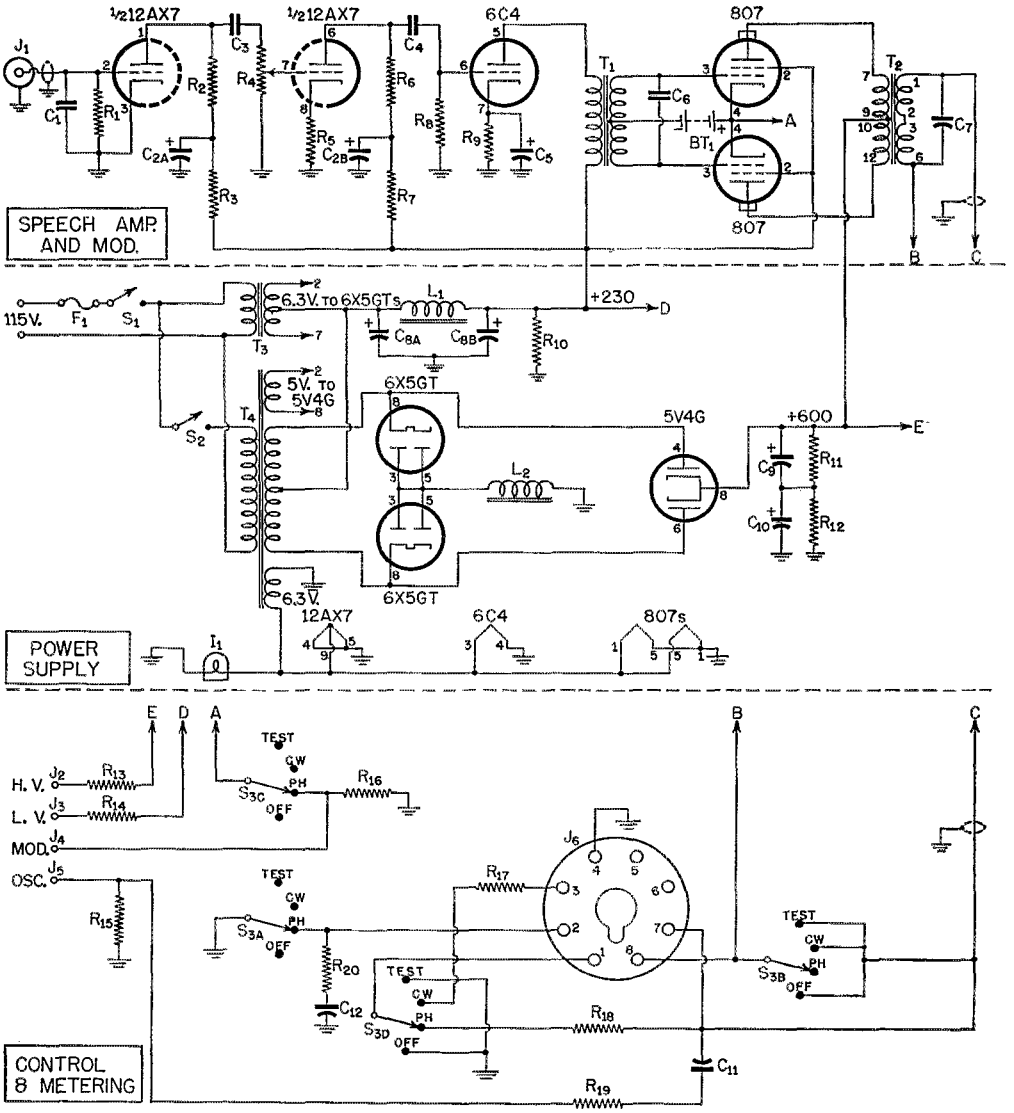


Fig. 1 — Circuit diagram of the Class AB$_1$ modulator using 807s.

C_1 — 100-$\mu\mu$fd. ceramic.
C_2 — Dual 8-μfd. electrolytic, 450 volts.
C_3, C_4 — 0.0015-μfd. ceramic.
C_5 — 10-μfd. electrolytic, 25 volts.
C_6 — 470-$\mu\mu$fd. ceramic.
C_7 — 0.002- to 0.004-μfd. paper, 600 volts.
C_8 — Dual electrolytic, 8 (A) and 16 (B) μfd., 450 volts.
C_9, C_{10} — 30-μfd. electrolytic, 450 volts.
C_{11} — 0.004-μfd. paper, 1600 volts.
C_{12} — 0.1-μfd. paper, 600 volts.
R_1 — 2.2 megohms, ½ watt.
R_2, R_6 — 0.1 megohm, ½ watt.
R_3 — 47,000 ohms, ½ watt.
R_4 — 1-megohm volume control, preferably log taper.
R_5 — 1500 ohms, ½ watt.
R_7 — 10,000 ohms, ½ watt.
R_8 — 1 megohm, ½ watt.
R_9 — 1000 ohms, ½ watt.
R_{10} — 0.1 megohm, 1 watt.
R_{11}, R_{12} — 20,000 ohms, 10 watts.
R_{13}, R_{19} — 1 megohm, 1 watt.
R_{14} — 0.47 megohm, ½ watt.
R_{15} — 15,000 ohms, ½ watt (see text).
R_{16} — 50 ohms, ½ watt.
R_{17} — 4700 ohms, 1 watt.
R_{18} — 35,000 ohms, 10 watts.
R_{20} — 1000 ohms, ½ watt (value not critical).
F_1 — 2-amp. fuse.
I_1 — Pilot light, 6.3 v., 150 ma.
J_1 — Panel-type microphone connector (Amphenol PC1M).
J_2, J_3, J_4, J_5 — Insulated tip jack.
J_6 — Octal socket.
L_1 — 4.5 henrys, 50 ma., 300 ohms.
L_2 — 8 henrys, 100 ma., 375 ohms.
S_1, S_2 — S.p.s.t. toggle.
S_3 — 4-section, 5-position ceramic wafer switch (2 wafers), 4 positions used.
T_1 — Interstage audio transformer, center-tapped secondary, 10-ma. primary, total secondary-to-primary turns ratio 3 to 1.
T_2 — Adjustable-ratio modulation transformer, app. 30 watts (UTC CVM-1).
T_3 — Filament transformer, 6.3 v. at 1.2 amp.
T_4 — Power transformer, 350 v. each side c.t., 90 ma.; 5 v. at 2 amp.; 6.3 v. at 3 amp.
BT_1 — 22.5-volt battery (hearing-aid type used in modulator shown in photographs).

cost is not large the extra reliability is worth it. On the other hand, 6146s cost appreciably more; they will deliver much more power output in Class AB_1 but for modulating a single 807 or 6146 it is not needed.

According to the tube curves, an audio power output of approximately 45 watts can be obtained from a pair of 807s operating with a plate-to-plate load of 13,000 ohms. This is for a plate voltage of 600 and a screen voltage of 250. Measurements on the modulator shown here gave a power output of 42 watts (with negligible distortion as shown by an oscilloscope) with 620 volts on the plate and 225 on the screen. Although only a single-section filter is used in the modulator plate supply, measurement also showed the hum level to be 40 db. below full output. This ratio, which is thoroughly adequate by ordinary standards, is considerably better than the power supply ripple itself, and results from hum cancellation in the two halves of the modulation transformer primary, as well as from the fact that the 807s show very little change in plate current with a change in plate voltage.

Circuit Notes

The speech amplifier section uses a dual-triode 12AX7 as a two-stage resistance-coupled amplifier, followed by a single medium-μ triode transformer-coupled to the modulator grids. The cathode resistor, R_5, in the second triode section is left unby-passed to introduce some negative feed-back, since the extra gain obtainable with a by-passed cathode resistor is not needed. A single pentode stage could be substituted for the double triode if desired.

The circuit diagram calls for a 6C4 in the stage feeding the 807 grids. It was originally intended to use a phase-inverter here, and a 12AT7 was installed for that purpose. However, the specifications on the 807 require a rather low value of grid-circuit resistance when resistance coupling is used, and this makes the gain of the preceding stage low. While it was possible to get enough driving voltage, it was found difficult to balance the phase inverter properly without having an oscilloscope available for its adjustment, so the simplest solution was to use only one section of the 12AT7 with transformer coupling to the 807s. A 6C4 is a somewhat less expensive replacement for the 12AT7. Any inexpensive audio transformer can be used.

Battery bias for the 807s also was found to be the easiest way. We did not want to sacrifice plate voltage by getting bias from a resistor in the negative lead, and an attempt at using a separate bias supply working from one side of the transformer was not satisfactory; without excessive current drain the regulation was too poor, resulting in a shift in bias when the 807 grids were occasionally overdriven into the positive region on peaks. The battery is a standard voltage — 22.5 volts — and since it does not carry current it will last its shelf life.

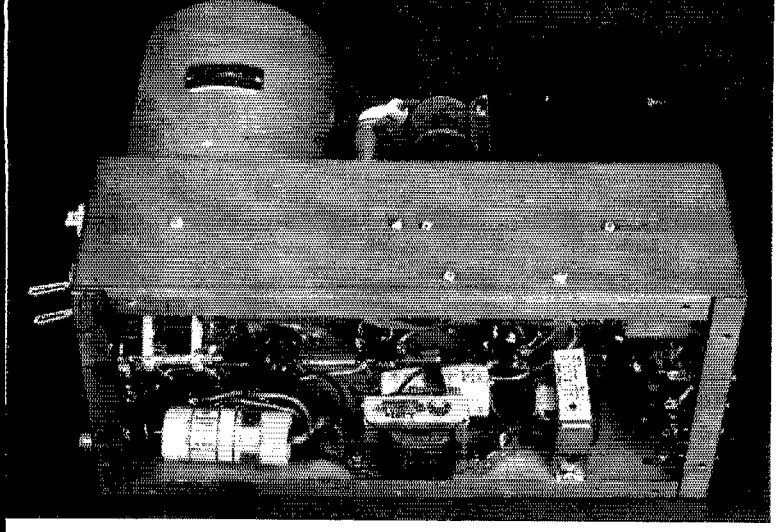
The frequency response of the amplifier has been doctored to put the maximum speech energy in the range where it contributes most to intelligibility. Maximum response is in the 500–1200 cycle range. On the low side, it is down 3 db. at 300 cycles, 6 db. at 200, and about 15 db. at 100 cycles. On the high side, the comparable figures are 4 db. down at 3000 cycles, 8 db. at 5000, and 15 db. at 10,000. By listening tests this is a satisfactory type of response, giving quite natural-sounding speech with sufficient highs for good intelligibility. The low-capacitance coupling condensers, C_3 and C_4, between the speech stages account for the low-frequency cut-off, while C_6 and C_7, across the secondaries of the modulator grid coupling and output transformers, respectively, cut the highs.

Although the modulator can be used with any transmitter running an input of up to 80 watts (total input to plate and screen, in the case of a tetrode r.f. stage) by using the two upper sections of Fig. 1 and ignoring the lower one, it has been constructed as a companion unit to the transmitter described in the December issue. The lower section of the circuit provides the interconnections between the two units, the control circuits necessary for regular operation, and means for checking the plate-supply voltages and modulator plate current, using the meter built into the r.f. unit. It also includes provision for taking off a small amount of audio for operating an oscilloscope, in case one is available.

Construction

The entire modulator, including speech amplifier, power supply, and control circuits, is built in a 5 × 10 × 3-inch chassis. The construction is, perhaps, unnecessarily compact, and since there is very little about the layout that requires careful attention to placement of parts it could be built on a larger chassis with somewhat less trouble in construction. In the construction shown all the available chassis space, including walls, has to be utilized. Although it may look crowded and difficult to service, all of the larger units mounted on the chassis walls easily can be removed, with leads intact, to get at the components underneath.

Only two points about layout and construction need mentioning. Originally, the heaters in the speech amplifier were connected up using twisted wires for the heater leads, with the center-tap of the filament supply winding on the power transformer grounded. As the hum seemed to be excessive, this was changed over to a single heater lead from tube to tube, with one heater terminal grounded at each tube socket. This reduced the hum to the point where it is negligible compared with the plate-supply hum in the modulator stage. The second point is probably more important: with the high voltage gain from the microphone input to the plates of the 807s — it is in the neighborhood of 50,000 with the gain control set for the average communications-type crystal microphone — it takes very little over-all feedback to cause oscillation. In this layout, the output transformer is quite close to the first speech stage — an undesirable arrangement but one



In this view the baffle shield between the speech-amplifier section and the other circuit wiring has been removed to show the layout. The condenser in the left foreground is C_2, the dual electrolytic used for the decoupling circuits. The interstage audio transformer, T_1, is at the center, mounted on the chassis wall. The bias battery is behind it, held in place by a small strip of metal. L_1, the low-voltage supply filter choke, is at the right. The cable socket and pin jacks are on the rear chassis wall.

On the top of the chassis, *left to right*, are the modulation transformer, bleeder resistors, R_{11} and R_{12}, for the high-voltage power supply, the 6X5GTs, and the power transformer. The bleeder resistors are mounted vertically, using lengths of threaded rod running through the resistor tubes.

dictated by mechanical necessities on the small chassis. Such proximity should be avoided, if possible, in case a different layout is used. However, the feed-back was completely cured by installing a small aluminum shield near the speech amplifier, as shown in the bottom view, and by using a shielded lead from the "hot" terminal of the modulation transformer secondary to the terminal socket at the rear of the chassis.

Operating Data

As stated above, the optimum load for Class AB_1 807s operating at these voltages is about 13,000 ohms. The modulation-transformer primary-to-secondary turns ratio should be selected to give this plate-to-plate load when the actual load is connected to the secondary. The actual load resistance will, of course, depend on the plate voltage-plate current ratio of the modulated amplifier, it being understood that where a tetrode is modulated the screen current should be added to the plate current when a screen-dropping resistor is used.

For example, with a 6146 the plate and screen current, using a 35,000-ohm screen-dropping resistor, will total about 120 ma. with 600 volts on the 6146 plate, when the operating conditions are set for best modulation. This represents a load resistance of 5000 ohms, so the impedance ratio, primary to secondary, is 2.6 to 1. The nearest value available should be selected by means of the taps on the particular modulation transformer used. It is seldom possible to come out with the exact figure required, but a variation of ± 10 per cent or so in the reflected plate-to-plate load will not be serious.

In the case of the transmitter described in December *QST*, the rated plate input of 67.5 watts resulted when the antenna loading was adjusted to give a plate current of 106 ma., at which value the d.c. voltage at the plate measured 640. The screen current was 12 ma., giving a total current of 118 ma. and a load resistance of 5300 ohms for the modulator. The tap numbers indicated in the diagram worked satisfactorily.

The d.c. power supply voltages in the modulator unit (120 volts from the line) measured 690 and 260 for the high and low supplies with no audio input. The modulator idling current is about 50 ma. under these conditions with a new 22.5-volt (actual voltage 24.5 volts) battery for bias. With tone input and the gain adjusted for maximum undistorted output, the voltages drop to 620 and 225, respectively. The modulator cathode current is about 100 ma. at full output. However, with speech waveforms it was found by tests with an oscilloscope that the modulator plate current should not kick beyond 60 to 65 ma. on voice peaks; this represents 100 per cent modulation. Under these conditions the average supply voltages, with speech, are very nearly the same as the values with the modulator idling.

Interconnections and Control

As stated earlier, the lower section of Fig. 1 applies particularly when the modulator is to be used with the transmitter shown in December *QST*. The switching arrangement in this section does all the jobs necessary to serve as an on-off control for 'phone, for disabling the modulator when c.w. is to be used, and providing the same type of test position that was incorporated in the original transmitter.

The control switch, S_3, is a four-section ceramic-wafer type, four positions being used. In the "'phone" position it disconnects the 6146 r.f. amplifier screen from the supply in the transmitter unit and connects it to the screen-dropping resistor, R_{18}. Simultaneously, the secondary of the modulation transformer is connected in series with the 6146 d.c. plate lead, and the cathodes of the 807 modulators are connected to ground through R_{16}. The drop in voltage across R_{16} is used for measuring the modulator plate current. In the "C.W." position the modulator cathode circuit is opened, the secondary of the modulation transformer is short-circuited, and the 6146 screen is connected to the screen supply in the transmitter unit. In both the "Test" and "Off" positions the 6146 screen is disconnected from its supply and grounded, and the modulation transformer secondary is shorted. If a key

is plugged into the jack on the transmitter, either position can be used for testing; the key must, of course, be open when using the "Off" position for on-off 'phone switching.

A few changes in the original transmitter circuit are required. Referring to the circuit diagram on page 24 of the December issue, these are:

1) Disconnect the lead between the arm of S_{4A} and J_7. This section of S_4 is no longer needed.

2) Remove R_9 from the circuit. (This resistor is replaced by R_{17} in Fig. 1 herewith.)

3) Connect the now-vacant Pin 2 on the auxiliary socket, J_8, to the top contact of J_7. This connects the 5763 and 6146 cathodes to the auxiliary socket and thence through the connecting cable to the modulator, where they can be switched along with the modulator cathodes.

These changes are all that are necessary. However, two other changes are recommended. In testing the transmitter-modulator combination it was considered that the hum introduced by the transmitter plate supply was a bit greater than some might find acceptable. The original filter is a single-section affair having an output capacitance of only 8 μfd., which is adequate smoothing for c.w. Substituting 40-μfd. 450-volt units for C_{30} and C_{31} effected enough of an improvement to make the hum inaudible. The second change is to mount the resistor (R_9) removed from the transmitter on the jumper plug, connect it between Pins 1 and 3, and remove the jumper between Pins 1 and 2. This restores the transmitter alone to its original circuit, so far as c.w. operation is concerned, and thus makes it independent of the modulator simply by pulling out the cable plug and inserting the jumper plug.

A six-wire cable completes connections between the two units. The same pin numbers are used for corresponding circuits at each end, so it is merely necessary to connect Pin 1 in one plug to Pin 1 in the other, and so on. Pins 5 and 6 must be connected by a jumper — preferably one in each plug, so it will not make any difference which plug is inserted in which unit — in order to complete the heater circuit in the transmitter.

The meter in the transmitter is used for making measurements on the modulator by means of a cord with pin jacks running between the "External Voltmeter" jack on the transmitter and the jacks (J_2 to J_5, inclusive) shown in Fig. 1. Modulator plate current is read through J_4; the full scale range is 100 ma. with a 50-ohm resistor at R_{16}. A.f. voltage for an oscilloscope can be taken from J_5, through the voltage divider formed by R_{15} and R_{19}. C_{11} is a blocking condenser for the voltage divider. The ratio of R_{15} to the total resistance is such as to give about 10 volts peak, which is ample for a 'scope having a horizontal amplifier. Where more voltage is required for sufficient deflection, it can be obtained by increasing the value of R_{15}.

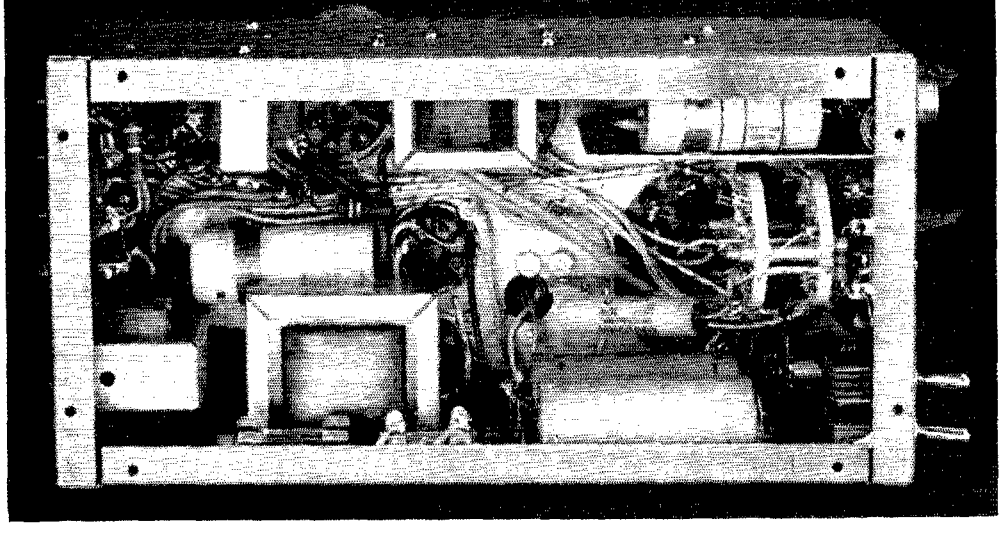
C_{12} and R_{20} are used to suppress sparking at the control switch when going from "'Phone" to "Off." The inductive discharge of the modulation transformer secondary gives a high-voltage "kick," on opening the cathode switch, that is absorbed in the condenser. R_{20} slows down the discharge of C_{12} when closing the cathode circuit and thus reduces the sparking on "make."

Operating the Combination

When the transmitter and modulator are connected by the cable all the control functions, ex-

(Continued on page 122)

The principal components along the lower wall of the chassis, from left to right, are the filament transformer for the 6X5GTs, T_3, common power-supply choke, L_2 (with the low-voltage supply dual filter condenser, C_8, just above it), filter condensers C_9 and C_{10}, and the a.c. switches. R_{19} and C_{11}, for the oscilloscope audio take-off, are mounted on a tie-point strip on the front wall (at the right in this view) near the control switch, S_3. The screen-dropping resistor, R_{18}, for the r.f. amplifier is mounted between the S_3 and a tie point on the chassis.



The Seventh A.R.R.L. National Convention

Houston, Texas — July 10–12, 1953

BY CHARLES FERMAGLICH,* W5FJF, AND WALDO TOWNLEY,* W5FEK

GRAB your ten-gallon hat and boots, pardner, and get ready for a visit "Deep in the Heart of Texas." The Houston Amateur Radio Club (to be referred to as HARC) hereby officially announces the end of the Civil War. You all who have been wanting to visit fabulous Texas can now do so without the danger of being shot as a damyankee, if you attend the Seventh National ARRL Convention in Houston, Texas, July 10–11–12. Convention headquarters corral will be at the world-famous Shamrock Hotel.

You may see some Confederate flags and hear a few rebel yells, but the entire HARC has united to put on one of the finest conventions of all times and in true Texas tradition. Houston, the South's largest city, is well suited as the site of the first ARRL National ever to be held in the South. There are many fine places of entertainment, excellent hotel and motel facilities, and it will be an opportunity to see that part of Texas that Texans brag about so much. Galveston, with its famed beach, is only 30 minutes' drive from Houston over the new Gulf Freeway. The world-famous San Jacinto Battleground, where one of the most decisive battles in world history was fought, with its museum of historical importance and towering 570-foot monument, is worth a visit. Here, also, is moored the battleship *Texas*. Fort Houston, the nation's No. 2 port, with its busy wharves, will be of interest to many visitors.

Over 30 committees, headed by Dr. Charles Fermaglich, W5FJF, have been working for over a year to organize and execute a convention that will appeal to amateurs in every phase of the game. Many of the leading manufacturers and distributors of the nation will have display booths in the Hall of Exhibits at the Shamrock. One booth will be set up as a "swap shop" for amateurs who wish to "horse-trade" for amateur gear with other hams. So bring along equipment that you would like to trade for something else. Orin B. Gambill, W5WI, Fifth District QSL Bureau Manager, will have his complete file of Fifth District QSL cards on hand. All MARS nets will be represented and military equipment will be on display, including the new radiotele-type circuits. A ham television station will be in operation and the Teletype Society will demonstrate ham teletype. A number of ham stations will be in operation to handle traffic.

Many contests, with worth-while prizes, are being planned. Among them are: QSL card, frequency guessing, tone guessing, gadgets, tall tales, tube identification, code speed, amateur gear photos, and others. There will be a display of mobile rigs and a prize awarded to the best.

For the mobile boys there will be an excellent 75-meter hidden transmitter hunt, with a prize for the winner. So bring your best direction-finding equipment with you. Houston is located on the coastal plains of Texas, but the transmitter will be well hidden.

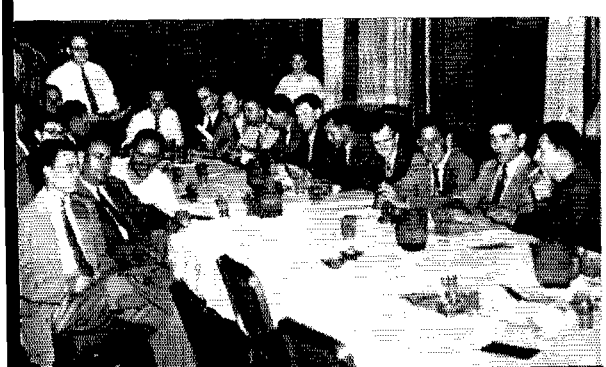
A "convention-within-a-convention" is being planned for the v.h.f.-u.h.f. gang, with W5FEK, Waldo Townley, in charge. Ed Tilton, W1HDQ, will head the list of featured speakers. Cal Hadlock, W1CTW, will give a talk on 220 Mc.; he will also explain the advantages of 6 meters for civilian defense. W5AYU, B. D. Lee, will go into the design and construction of 420-Mc. gear. Bill McNatt, W5FEW, ex-W9NFK, has promised one of his interesting talks. A tape recording of W4AO's and W3GKP's 2-meter lunar DX will be played. An informal luncheon is slated for Saturday, at which time the second annual awarding of plaques to the outstanding v.h.f. men of Texas, Oklahoma and New Mexico takes place. A number of contests are being planned for the v.h.f. group and will be announced in Ed Tilton's column, "The World Above 50 Mc.," in next month's *QST*.

Brad Beard, W5ADZ, well-known DXer, who has more than 200 countries confirmed, heads the program for the DX hounds. There will be two and one half hours of DX discussion, plus a luncheon. One of the nation's best DX men will be the featured speaker.

A luncheon for all teenagers is in the works and a plaque will be awarded to the outstanding West Gulf Division ham under 21 years of age.

The ladies have not been overlooked. Arrangements have been made for a YL ham luncheon. A tea and luncheon is scheduled for all of the ladies. In the past, many prizes won by the ladies were suitable only for the OMs, but the ladies' committee, under the chairmanship of Mrs. Charles Fermaglich, has purchased a large number of valuable awards selected for the ladies

* Convention Committee.



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"Over 30 committees . . . have been working for over a year to organize and execute a convention that will appeal to amateurs in every phase of the game."

QST for

alone. In addition to the special ladies' functions, there will be a semiformal dance Saturday night in the Crystal Ballroom of the Rice Hotel and a full-course banquet at the Rice on Sunday for both the ladies and men.

Thursday evening, July 9th, there will be an optional preconvention dinner party for those who arrive early enough to participate. This will be a grand time to get acquainted in an informal atmosphere. This event will be $2.00 per person. Kenneth Perron, W5JYM, is chairman.

On Friday, July 10th, the registration desk will open at 8 A.M. at the convention headquarters at the Shamrock. All technical meetings and displays will be held at the Shamrock Hotel, as well as some of the social functions. Other entertainment will be held at the Rice Hotel, another of Houston's famed hotels. All room reservations should be made well in advance, directly with the hotels. Rates and hotels: Shamrock, single $6.00 up, double $8.00 up; Rice, single $4.50 up, double $6.50 up; Lamar, single $4.00 up, double $6.00 up; Texas State, single $3.50 up, double $5.50 up; Ben Milam, single $3.50 up, double $4.50 up; Montagu, single $3.50, double $6.00 up. Motels in the vicinity of the Shamrock are Alamotel Courts, $4.00; Carlon Courts, $4.00; Chief Motel, $4.00; Clover Leaf Motel, $4.00; Grace Courts, $3.00; Grant Motel, $5.00; King Motel, $5.00; LaSiesta Courts, $5.00; Motor Inn Hotel, $3.00. Houston is called the most thoroughly air-conditioned city in America.

The rest of Friday will be devoted to general sessions of interest to everyone. Some of the well-known speakers already scheduled are Commissioner George Sterling of FCC, John L. Reinartz, Phil Rand, E. W. Pappenfus, A. H. Lince, C. V. Clark, Don Norgaard and G. S. Bradford. Talks will be given by Army and Air Force MARS personnel; a lecture on transistors is scheduled and many more are planned.

The entertainment for Friday night has been left open as there are many fine restaurants and night spots that folks will want to visit. A list of suitable entertainment will be available.

Saturday morning, special group sessions will start at 9:30 o'clock and last through luncheon. These various lectures will run concurrently.

The ARRL business meeting will begin at 2 P.M. with President Dosland presiding. Many of the Headquarters gang will be present as well as a number of division directors and ARRL officers. Many important matters will be discussed. There will be a special meeting of representatives of ham nets and also a meeting of SCMs and emergency coördinators.

The semiformal dance in the Crystal Ballroom of the Rice Hotel will be held Saturday night. An excellent orchestra has been engaged.

Sunday morning will be taken up with the "swap shop" and more technical talks. The

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"The ladies have not been overlooked. Luncheons . . . teas . . . dances . . . sightseeing . . . banquet. . . ."

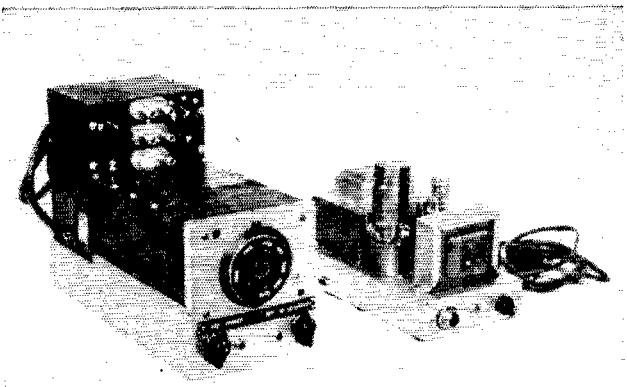
Sunday afternoon banquet, at which a minimum amount of speech-making is scheduled, will conclude the formal convention.

Numerous sight-seeing trips are being planned for those who wish to take advantage of them and a list will be available. Babysitters will also be available. One of the postconvention highlights will be an enjoyable nine-day Mexico City tour. The Mexican government has prepared a very interesting all-expense tour, including rail travel, first-class hotels, good meals and wonderful sight-seeing trips, all for as little as $162.25 per person. All interested contact Mr. F. Alatorre, General Agent, National Railways of Mexico, 2401 Transit Tower, San Antonio, Texas.

Registration for the convention is $13.50 per person. The preconvention dinner party, July 9th, is optional and will be $2.00 per person. All checks and money orders should be made payable to the HARC Inc. Convention Committee, and sent to P.O. Box 10173, Garden Oaks Station, Houston 18, Texas. In order to be eligible for the preregistration award, you must have your registration blank in the mail before midnight, June 18, 1953.

For any further information you may contact the Convention Chairman, Dr. Charles Fermaglich, W5FJF, at 618 Medical Arts Bldg., Houston 2, Texas.

See you in Houston in July!



This BC-453 has been converted to provide a double superhet and a heterodyne-type VFO transmitter for 7 Mc. The single dial tunes both receiver and transmitter to the same frequency. Antenna and power terminals are on the front of the "cupola."

A Single-Control Transmitter-Receiver

Building a Unique 7-Mc. System Around a BC-453

BY GUS TREUKE,* W6DSR

A SHORT WHILE ago the writer decided to give the 40-meter band a whirl after an absence of many years. A compact transportable arrangement, preferably with receiver and transmitter combined in one unit, was decided upon. Because of the selectivity it could afford for reception, a BC-453 was acquired. For the receiver portion, two broadband r.f. stages and a converter with its oscillator section crystal controlled at 6800 kc. were built into the BC-453 chassis. The 6800-kc. crystal heterodynes the 7.0- to 7.3-Mc. band to 200–500 kc. The latter thus becomes a variable first i.f. to which the BC-453 dial (the only tuning control) is adjusted. Room was also found on the chassis for a simple crystal-controlled transmitter, and things seemed pretty well sewed up.

Operating crystal-control on a single frequency for several practically QSO-less days reduced the writer to an SWL's existence and convinced him that VFO was the only answer to his dilemma. While in this rôle, the writer could not help but admire the extreme stability of the receiver arrangement, and this started him musing upon the possibility of using the local oscillator of the BC-453 as a means not only of controlling the receiver's frequency, but the transmitter's as well. After a bit of mental gyration, it was discovered that the sum of the BC-453 oscillator's

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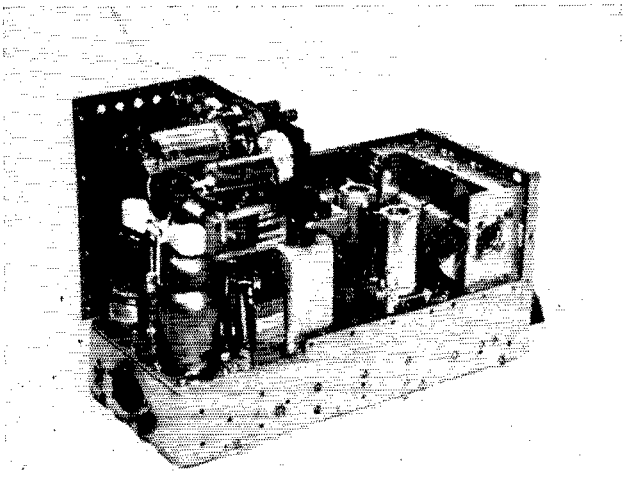


Inside view of the transmitter-receiver for 7 Mc. built by modifying a BC-453 low-frequency receiver. The components for the pi-section tank that forms the transmitter output circuit and receiver input circuit are above the 2E26 final amplifier.

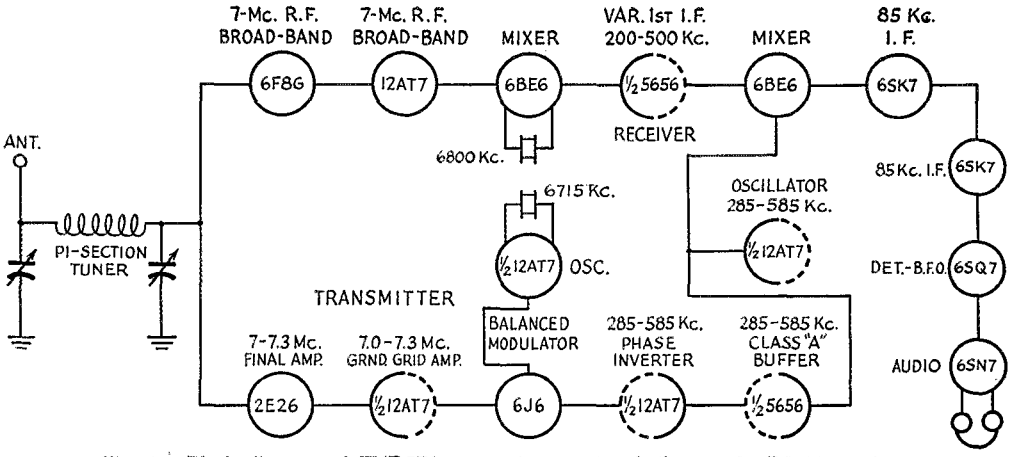


Fig. 1 — Block diagram of W6DSR's transmitter-receiver built around a BC-453 receiver.

frequency (285 to 585 kc.) and 6715 kc. always equals the frequency to which the receiver is tuned. A variable-frequency single-control transmitter-receiver thus seemed a definite possibility. After much experimenting, the arrangement shown in the block diagram of Fig. 1 was arrived at.

Receiver Circuit

Because its terminal arrangement is convenient, a 6F8G was chosen for the first r.f. stage. This is followed by a second r.f. stage in which a 12AT7 is employed as a cathode-coupled amplifier feeding the 6BE6 converter. The oscillator section of the 6BE6 uses a Pierce crystal circuit and, by means of a 6800-crystal, the 7.0-Mc. band is heterodyned to 200 to 500 kc. The tubes and components of these three stages are mounted on the rear deck originally occupied by the dynamotor power supply.

Because of the space factor and the need for a pentode Class A stage in the transmitter section, one section of a 5656 dual pentode was employed in place of the 12SK7 originally used in the single variable (200 to 500 kc.) first i.f. stage. Also, in order to conserve space, a 6BE6 was chosen as the second converter. In the interest of maximum frequency stability, a separate tube (one section of a 12AT7) was employed as the local oscillator. The two 85-kc. i.f. stages, second detector and b.f.o. are unaltered except for the substitution of

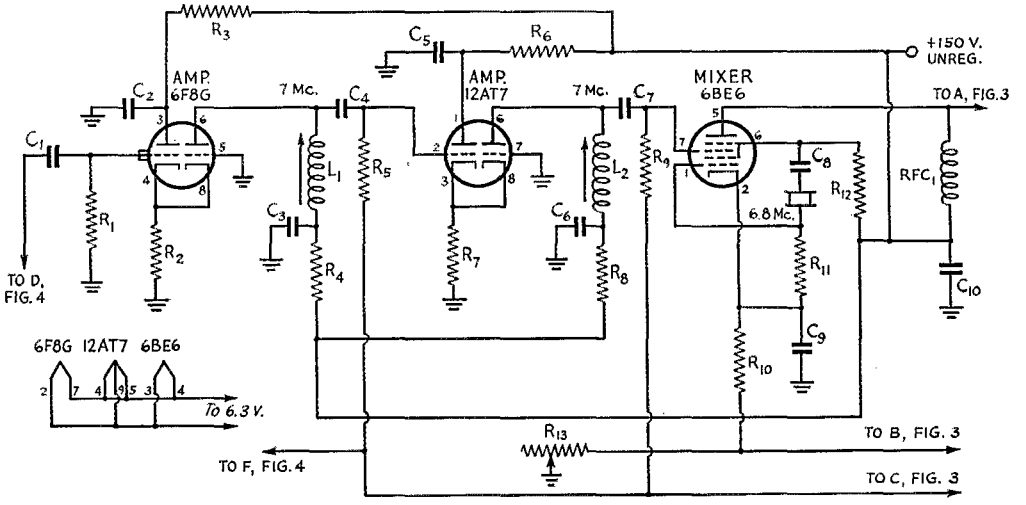
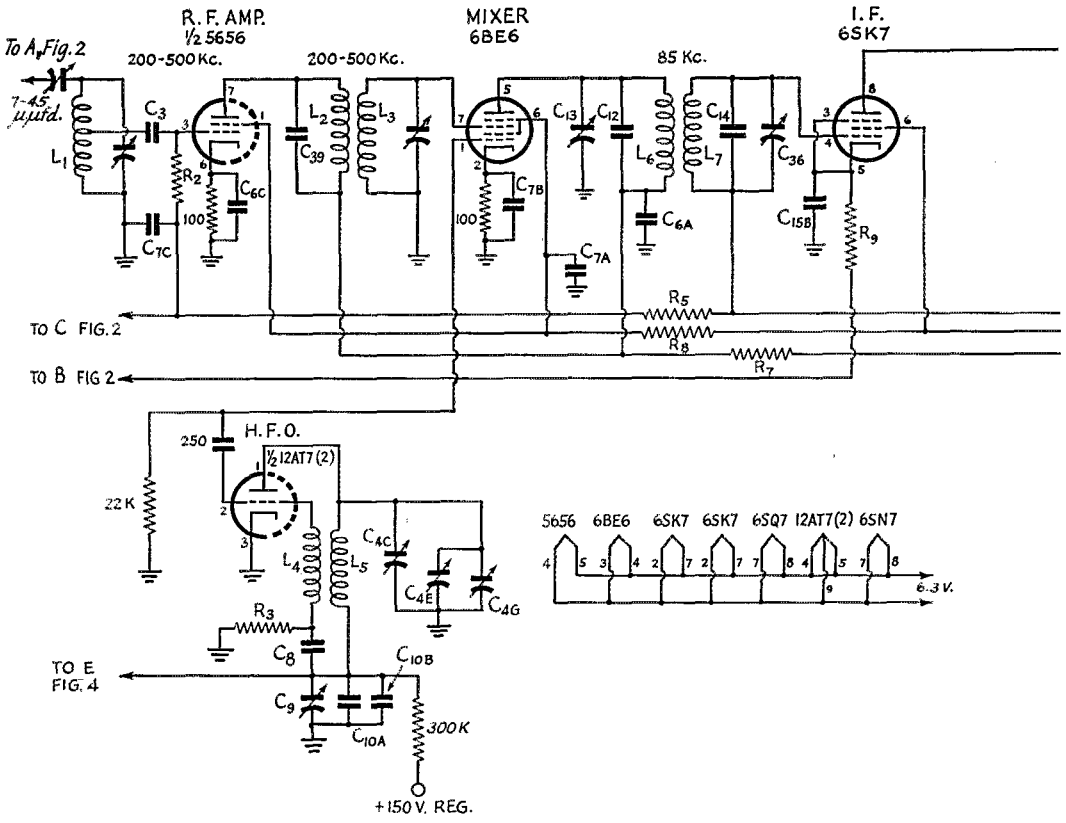


Fig. 2 — Circuit of the 7-Mc. converter section.

C_1 — 18-$\mu\mu$fd. mica.
C_2, C_3, C_5, C_6, C_8, C_9, C_{10} — 0.01-μfd. ceramic.
C_4, C_7 — 33-$\mu\mu$fd. mica.
R_1 — 2.7 megohms.
R_2 — 390 ohms.
R_3, R_4, R_6, R_8 — 3300 ohms.
R_5, R_9 — 1 megohm.
R_7 — 100 ohms.
R_{10} — 220 ohms.
R_{11}, R_{12} — 22,000 ohms.
R_{13} — 25,000-ohm potentiometer.
L_1, L_2 — 40 turns No. 38 d.s.c., 3/8-inch diam., iron-slug form (CTC LS-3 form).
RFC_1 — 2.5-mh. r.f. choke.



6-volt equivalents for the 12-volt tubes originally employed in the BC-453. The original straightforward 12A6 audio stage was discarded and a 6SN7, wired in as a peaked audio amplifier, was put in its place. The variable shown in the filter is a compression-type mica unit.

The pi-section tuner couples the antenna to both receiver and transmitter.

The Transmitter

In the transmitter section, the signal from the high-frequency oscillator in the BC-453 (285 to 585 kc.) is fed in at *E*, Fig. 4 to the grid of a buffer amplifier, then into a phase inverter and finally to the input of a 6J6 mixer where it is heterodyned with the output from a 6715-kc. crystal oscillator to produce the sum frequencies of 7000 to 7300 in the output of the mixer. It was necessary to employ a Class A stage between the receiver oscillator and the phase inverter in order to eliminate pulling of the VFO frequency when the crystal oscillator was keyed. One section of a 5656 performs this function.

The other triode section of the 12AT7 receiver-oscillator tube is employed as a phase inverter to feed the grids of the 6J6 balanced modulator (mixer) in push-pull fashion. Since the plates are connected in push-pull, the VFO signal would appear in the output of the mixer were it not for the fact that its frequency is remote from the frequency to which the mixer output is tuned. One section of another 12AT7 is employed with a 6715-kc. crystal in a Pierce circuit to drive both grids of the 6J6 in phase. Because of the push-pull plate tank, this 6715-kc. frequency is largely balanced out in the 6J6 plate tank and the main frequency appearing here is the frequency to which the receiver is tuned (7.0 to 7.3 Mc.). A bandpass circuit couples the output of the 6J6 into the cathode of the other triode section of the 6715-kc. crystal oscillator tube. This triode acts as a grounded-grid stage with its output coupled by means of a bandpass circuit into the grid of the 2E26 final amplifier. The tubes and components of the 12AT7 crystal-oscillator grounded-grid amplifier, the 6J6 balanced modulator and the 2E26 final amplifier are mounted on the dynamotor deck of the BC-453 chassis.

The bias developed by the transmitter's final amplifier is employed as a means of reducing the receiver's gain when the key is down. Enough 85-kc. signal is developed by the random mixing of the keyed 6715-kc. crystal oscillator and the 6800-kc. receiver's crystal oscillator to provide a comfortable audio beat with the b.f.o. Comfortable and complete break-in operation is possible along with a means of monitoring one's fist. The cathodes of the final amplifier, the 12AT7 buffer, the mixer and the crystal oscillator are keyed simultaneously through J_1, Fig. 4.

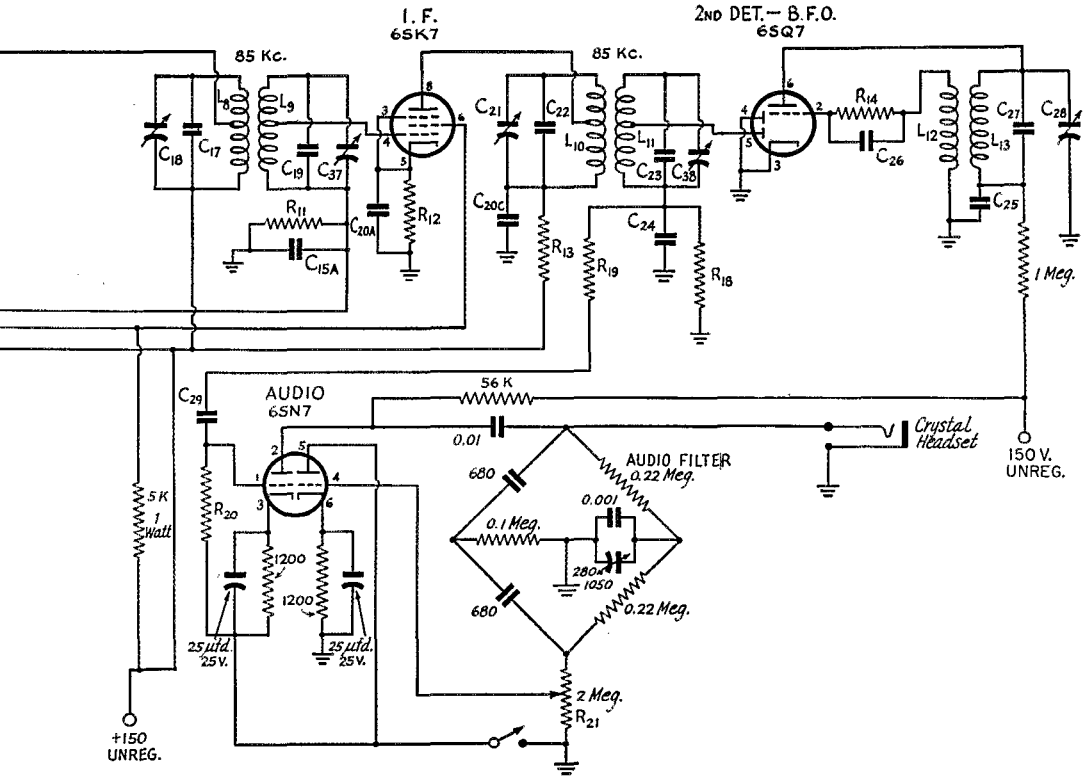


Fig. 3 — Revised circuit of the BC-453. Values not marked on the diagram are the same as in the original. (See *QST*, September, 1948, for a discussion of the audio-filter circuit.)

Construction

Except for the pi-section tank circuit and plate-current meter, it was found possible to contain all the additional components in the original chassis without the aid of a shoehorn. A new case was built with a cupola on it in which are mounted the plate-current meter and pi-section tank circuit. These components are mounted directly above the 2E26 final amplifier and the 6F8G receiver first r.f. stage. These two tubes are mounted on the extreme rear end of the chassis. The socket for the 6F8G is mounted below the chassis so that the height of this tube above the chassis is no greater than that of the 2E26. Mounted on stand-offs over the unused octal sockets of the 12K8 mixer and 12SK7 r.f. stage is a strip of metal containing two nine-pin and one seven-pin miniature tube sockets. These sockets were wired and the wiring brought down through the keyholes of the two octal sockets. One of the nine-pin sockets is for the 5656 Class A buffer stage, while the other is for the 12AT7 HFO and phase inverter. The seven-pin tube socket is for the second 6BE6 mixer.

Adjustment

In the initial lining up of the receiver, the screen voltage was removed from the 2E26 transmitter final amplifier. The HFO was disabled by shorting to ground the oscillator section of the gang capacitor and the b.f.o. was disabled by shorting to ground the B+ terminal of the b.f.o. A vacuum-tube voltmeter was then connected to read the voltage at the junction of R_{19} and C_{29}. With power applied to the rig, and with the key down, the three i.f. transformers were adjusted for maximum voltage indication. The short from the B+ terminal of the b.f.o. tank was then removed. With the 'phones plugged in and the key still down, the b.f.o. screwdriver adjustment was set for the desired beat note. It was found necessary to adjust the r.f. gain control during the above procedure so as to get sharp indications of resonance. The short was then re-

• Believe it or not, with only a small expansion of the original BC-453 box, W6DSR has managed to develop a 7-Mc. double superhet and a heterodyne-type VFO transmitter from the original circuit. The single dial controls the tuning of both transmitter and receiver. The transmitting frequency is always the same as the receiving frequency, unless a crystal of different frequency is substituted in the transmitter. This unique arrangement provides excellent frequency stability and receiver selectivity.

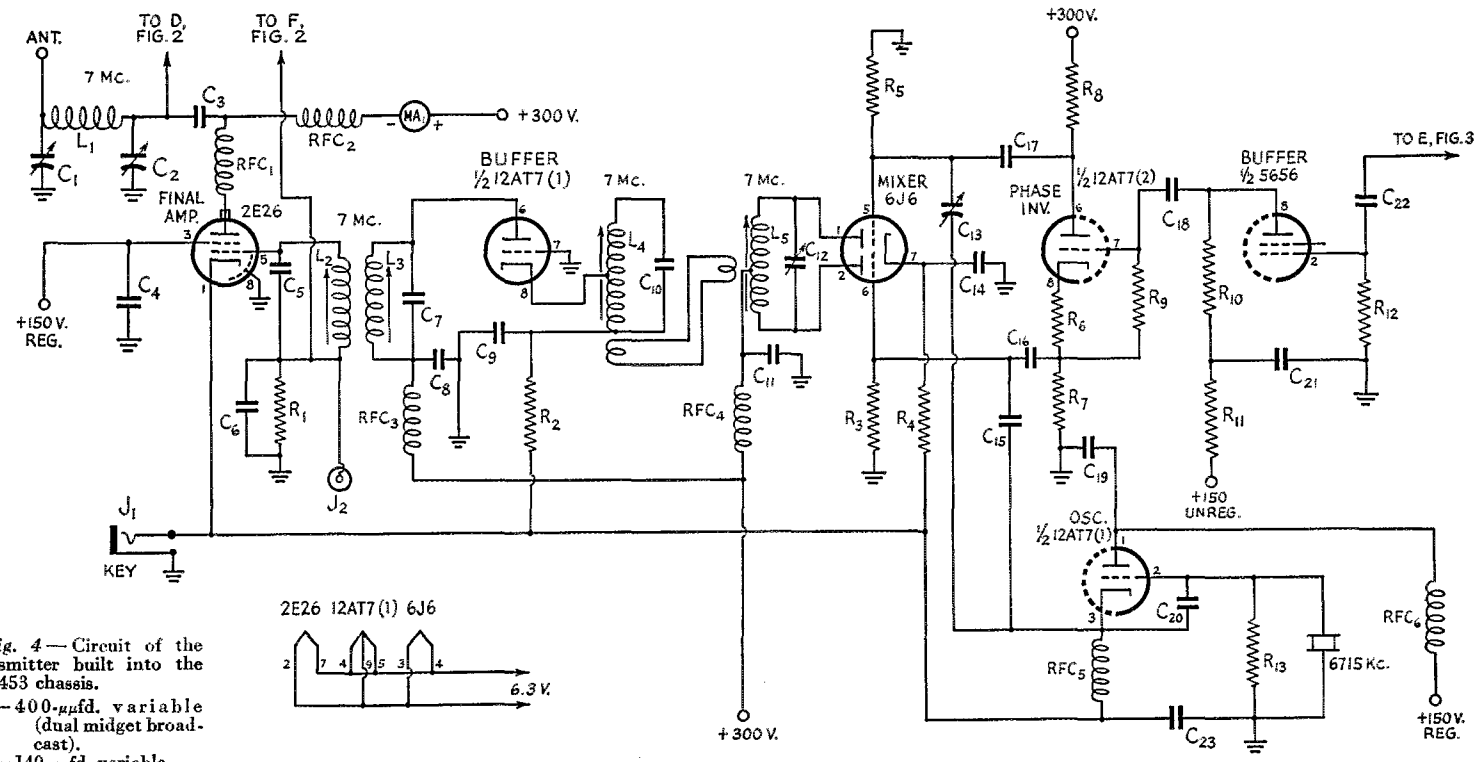


Fig. 4 — Circuit of the transmitter built into the BC-453 chassis.

C_1 — 400-$\mu\mu$fd. variable (dual midget broadcast).
C_2 — 140-$\mu\mu$fd. variable.
C_3 — 0.0033-μfd. mica.
C_4, C_8, C_9, C_{11}, C_{14}, C_{19}, C_{21}, C_{22} — 0.01-μfd. ceramic.
C_5 — 47-$\mu\mu$fd. mica.
C_6 — 0.001-μfd. ceramic.
C_7 — 68-$\mu\mu$fd. mica.
C_{10}, C_{22} — 10-$\mu\mu$fd. mica.
C_{12}, C_{13} — 45-$\mu\mu$fd. mica trimmer.
C_{15} — 33-$\mu\mu$fd. mica.
C_{16}, C_{17} — 39-$\mu\mu$fd. mica.
C_{18} — 100-$\mu\mu$fd. mica.
C_{20} — 10-$\mu\mu$fd. mica.
R_1 — 15,000 ohms.
R_2 — 470 ohms.
R_3, R_5 — 47,000 ohms.
R_4 — 1000 ohms.
R_6 — 220 ohms.
R_7, R_8 — 12,000 ohms.
R_9 — 0.1 megohm.
R_{10} — 2200 ohms.
R_{11} — 100 ohms.
R_{12} — 10,000 ohms.
R_{13} — 68,000 ohms.
L_1 — 23 turns, 1 inch diam., 1½ inches long (B & W 3015 Miniductor).
L_2 — 28 turns No. 26 enam., on ½-inch slug-tuned form.
L_3 — Same as L_2, wound on same type of form.
L_4 — 36 turns No. 26 enam., tapped at center, wound on ½-inch slug-tuned form, 3-turn link at cold end.
L_5 — 40 turns No. 26 enam., tapped at center, wound on ½-inch slug-tuned form, 3-turn link at center.
J_1 — Open-circuit jack.
J_2 — Pin jack for checking amplifier bias.
MA_1 — D.c. milliammeter, 150-ma. scale.
RFC_1 — V.h.f. parasitic choke (Ohmite Z-235).
RFC_2, RFC_3, RFC_4, RFC_5, RFC_6 — 2.5-mh. r.f. choke.

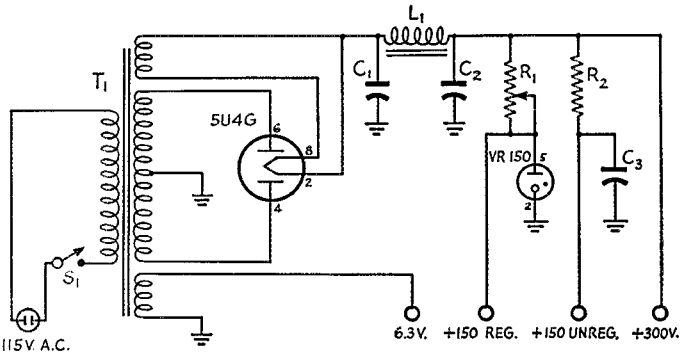


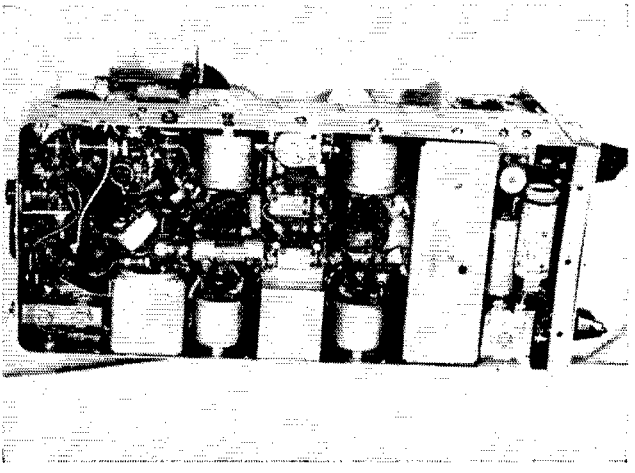
Fig. 5 — Power supply for the transmitter-receiver.
C_1, C_2 — 16-μfd. 450-volt electrolytic.
C_3 — 8-μfd. 450-volt electrolytic.
R_1 — 7500 ohms, 10 watts.
R_2 — 5000 ohms, 10 watts.
L_1 — 10-hy. 150-ma. filter choke.
S_1 — S.p.s.t. toggle switch.
T_1 — Power transformer: 370-0-370 r.m.s., 150 ma.; 6 volts, 5 amps.; 5 volts, 3 amps.

moved from the oscillator variable capacitor and the key was let up. A signal generator, variable from 200 to 500 kc., was coupled to the input circuit of the original BC-453 r.f. stage while the padder capacitor, C_9, and the trimmer capacitor, C_4, were adjusted to bring the dial back into calibration. The signal generator was then connected between the antenna terminal and ground. With the b.f.o. disabled and the dial set at 7150 kc. (350 kc.) a modulated 7150-kc. signal was pumped into the receiver. Then the original r.f. and mixer stages and the slugs in the coils of the signal-frequency stages were set for maximum output as indicated on an output meter connected to the receiver's output. The short from b.f.o. B+ to ground was then removed and the signal generator and output meter disconnected. An antenna was connected and 'phones plugged in. A stable c.w. signal was tuned in. with R_{21} adjusted for maximum, the audio-filter variable condenser was adjusted until the signal showed a tendency to ring. This completed the alignment of the receiver. The receiver is substantially single-signal and, with the above adjustments complete, the transmitter's frequency will always be equal to the receiver's wherever the receiver is tuned.

In the initial adjustment of the transmitter, a link of a couple of turns was temporarily soldered to the grids of the 6J6 balanced modulator. The screen voltage was still left off the 2E26. The 6715-kc. crystal was removed from its socket and the HFO was again disabled by shorting its variable capacitor. A variable-frequency oscillator that covered 7.0 to 7.3 Mc. was then coupled to the link and, with the key down, the four bandpass circuits were peaked up. It was found by stagger tuning these circuits the 2E26 grid voltage would remain substantially flat over the 7.0- to 7.3-Mc. range and drop off sharply on both sides of the band. The link was then removed, the 6715-kc. crystal plugged in, and C_{13} adjusted for minimum amplifier grid current. The short was then removed from the HFO capacitor. Then the final grid voltage was found again to remain substantially constant over the band. Screen voltage to the 2E26 was then applied and the station was ready to be put on the air.

In adjusting the pi-section tank, C_1 should be set first at maximum and the circuit tuned to resonance with C_2. If the plate current is less than normal, C_1 should be reduced and the circuit reresonated with C_2.

On-the-air results have been excellent. The sensitivity, selectivity and stability of the receiver are excellent and reports received from all QSOs have been T9 or T9X.



Bottom view of the converted BC-453 low-frequency receiver.

Another Vacuum-Tube Keyer

And Some Tetrode-Keying Considerations

BY HOWARD F. BATES,* KL7AQZ

• **This vacuum-tube keyer is only a slight variation of the usual type, but the article is of particular interest because it points up the importance of "by-pass" condenser values in determining the keying characteristic.**

THE usual key-click, or "shaping," filter consists of a choke and a condenser and, while effective when you have found the right combination, it does require some large components if any appreciable current is being broken. One alternative is a vacuum-tube keyer,[1] in which a vacuum tube, a few resistors and a condenser can do practically the same job. The vacuum-tube keyer is popular also because it is impossible to get any significant electrical shock at the key terminals of such a unit.

The problem at KL7AQZ was to key the 6AG7 crystal-oscillator stage that was used to drive a pair of 807s. When a conventional triode tube keyer was tried, too much of the available voltage was lost across the keyer tube, and an alternative was looked for. A pentode or tetrode seemed to be the obvious answer, and one was tried. It worked fine. With the values that were tried, the drop across the keyer tube was measured to be less than 10 volts.

Instead of adjusting the keying shape by the selection of R_4 and R_5 and the addition of a condenser from the 6V6 grid to ground, C_3 and C_4 were adjusted until the desired characteristic was obtained. This effect would be present in any event, since C_3 and C_4 are required for r.f. bypassing, and their capacities would contribute to the final result. By making C_4 small compared to C_3, the click on "break" is increased; conversely, by making C_3 small with respect to C_4, the click on "break" is reduced. The sum of both affects the "make" characteristic — the larger the sum, the softer the "make." Since the keying characteristic of a transmitter is a matter of personal preference, one should try different values than those shown, particularly if a different circuit or set of tube combinations is used. In this case it was found that the values of C_3 and C_4 should not differ by a factor of more than about 2 to 1; this might not be true if the circuit were used under different conditions.

The resistor R_3 may or may not be used, depending on the plate voltage in use. A screen bypass condenser may increase the output, but it wasn't necessary in this application. A large screen by-pass will soften the "break" characteristic, and hence it is one other component that can be juggled for optimum keying. If a higher plate voltage is used, it is advisable to feed the oscillator screen grid from the same 150-volt source as the 6V6 screen, since otherwise the value of R_3 would become too large.

As in any tube keyer, the key is quite safe from any danger of electrical shock.

With a tube keyer of this type, the keying characteristic with different crystals remains practically the same with varying tuning and loading conditions, assuming crystals of reasonable activity.

* Box 215, College, Alaska.

[1] E.g., Fig. 8-10, *The Radio Amateur's Handbook*, 30th edition.

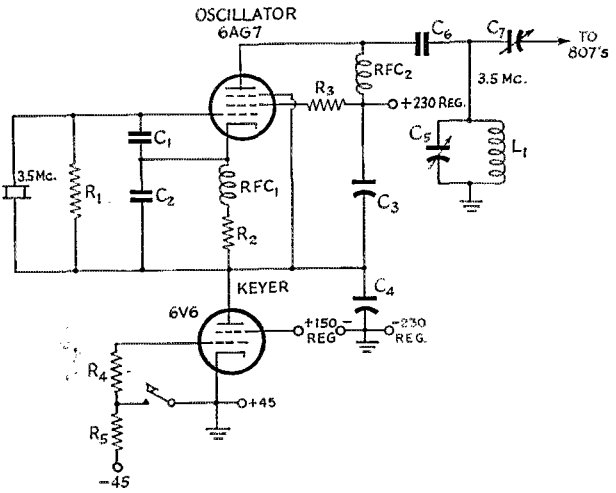


Fig. 1 — Circuit diagram of the crystal oscillator and vacuum-tube keyer used at KL7AQZ.

C_1 — 10 $\mu\mu$fd.
C_2 — 47 $\mu\mu$fd.
C_3, C_4 — 0.1-μfd. 400-volt paper.
C_5 — 200-$\mu\mu$fd. variable.
C_6 — 0.01-μfd. ceramic or mica.
C_7 — 100-$\mu\mu$fd. variable.
R_1 — 68,000 ohms.
R_2 — 390 ohms.
R_3 — 10,000 ohms.
R_4, R_5 — 1 megohm.
L_1 — 80-meter coil.
RFC_1, RFC_2 — 2.5-mh. choke.

Multiband Tuning for the 6146 Amplifier

A Compact Shielded Unit Covering Six Bands

BY DONALD H. MIX,* W1TS

• Here is a compact, shielded single-tube r.f. amplifier using a 6146. A multiband tuner covers all bands from 80 to 10 without coil switching. It was designed primarily as the output stage of a 90-watt transmitter consisting, in addition, of a remotely-tuned VFO and single-control frequency multiplier described in earlier issues of *QST*.

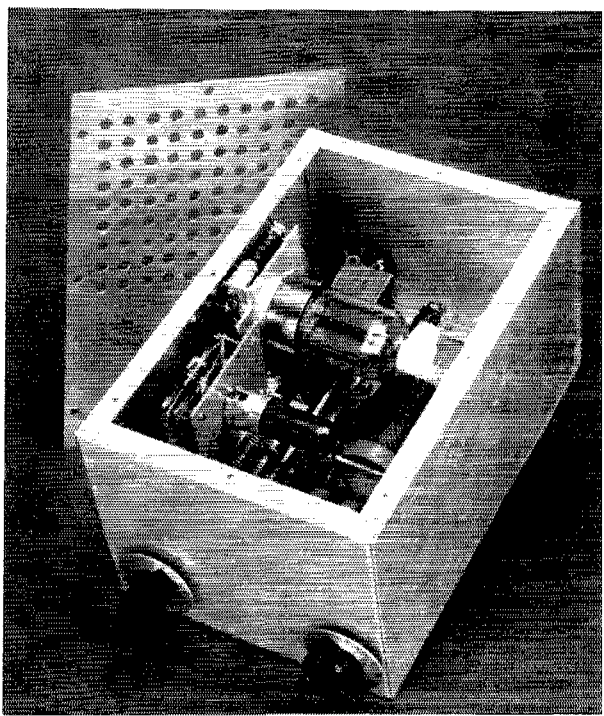
QUITE often in the construction of a piece of equipment the design centers around some particular desired objective, with other considerations compromised, if necessary, to achieve this objective. In the case of the r.f. amplifier shown in the photographs, one of the primary considerations was physical size. This was considered important not only for the sake of conserving space, but also because ready-made shielding enclosures are most easily obtained in the smaller sizes. In this case, the assembly is a one-piece unit that fits into a standard 5 × 6 × 9-inch aluminum box.

The unit was built primarily to follow the remotely-tuned VFO described in the January number of *QST* [1] and the Bandbox frequency multiplier illustrated in the April, 1952, issue.[2] Both are shown in the current edition of *The Radio Amateur's Handbook*. Since these units are designed so that their shielding enclosures can be permanently "buttoned up," it is naturally desirable that the amplifier should be built along similar lines. This, of course, rules out plug-in coils. Turrets and other coil-switching systems are bulky, and there is no way of easily providing for adjustment of the output coupling. The "roller-type" coil in a pi-section tank circuit can be made so that it takes up little space but, thus far, no inexpensive turns counter is available, making it difficult to change bands rapidly. Not entirely without misgivings, we turned to the National MB-40SL multiband tuner.

The Multiband Tuner

This tuner has a rating of only 40 watts input to the amplifier, whereas the 6146 can be operated up to 90 watts input. There was doubt both as to the voltage breakdown of the condenser and the current-handling capability of the coils. As supplied, the unit is designed for series plate-voltage feed. This means that for a d.c. plate voltage of 600 and 100 per cent modulation, the condenser must stand peaks of 2400 volts. Tests showed that the breakdown voltage was something over 1200 volts. By using parallel plate feed and grounding both the rotor of the low-frequency condenser and the center tap of the low-frequency coil, the peak voltage across the condenser can be cut in half since, with this connection, the d.c. voltage does not appear across the condenser. This leaves only the r.f. voltage with a peak of something less than 1200 volts.

At 90 watts input, the coils run warm, but they do not burn up over prolonged periods of operation so long as the circuit is kept loaded up to rating. As might be expected, the coil heating is greatest at 14 Mc. where the L/C ratio is relatively low and the tank current high. Although the small coil seems to take it satisfactorily, the heating could undoubtedly be reduced by rewinding the small coil with larger wire, keeping the inductance the same.[3] In spite of the coil heating, the efficiency is quite good. Incidentally, the leads to the smaller coil run back quite close



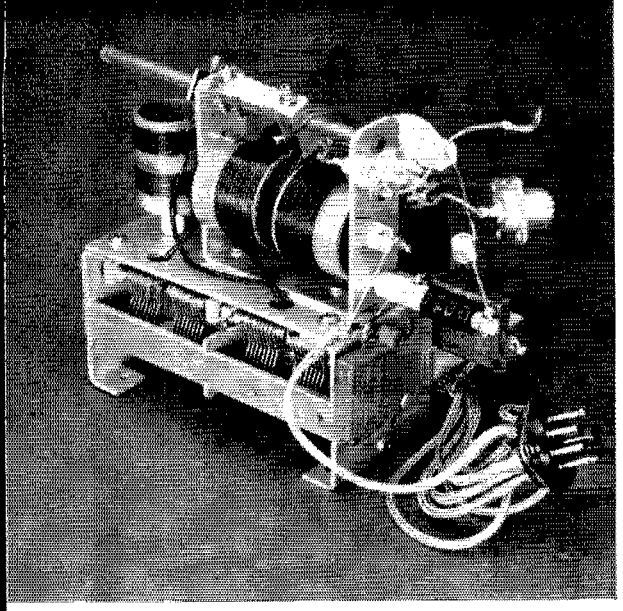
Looking in at the top of the 6146 amplifier. The unit may be mounted in any position, depending upon the desired placement of controls on the transmitter panel. Whatever side is chosen for the top should be perforated with ¼-inch holes in the area above the tubes.

* Assistant Technical Editor, *QST*.

[1] Mix, "Simple Remote Tuning for the VFO," *QST*, Jan., 1953, p. 27.

[2] Mix, "The 'Bandbox,' — A Single-Control Frequency Multiplier," *QST*, April, 1952, p. 11.

[3] The substitute coil could consist of two windings of 9 turns each, No. 14 d.s.c. close-wound or No. 16 enam. space-wound to a length of ⅝ inch, the two windings spaced ⅛ inch on a Millen type 45000 1-inch diam. coil form.



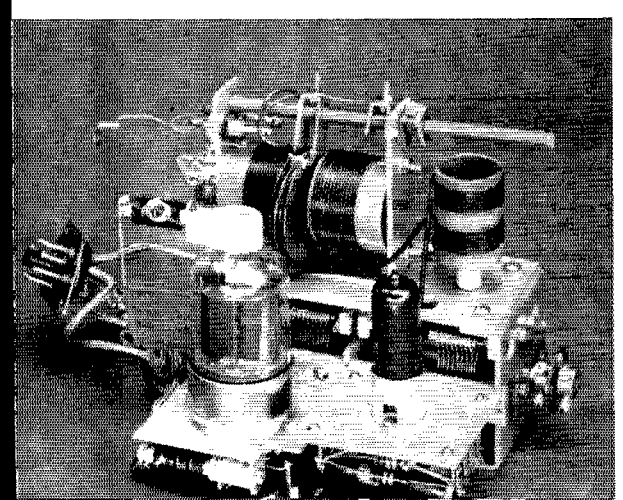
The plate r.f. choke is threaded onto one of the assembly screws and the plate by-pass, C_3, is fastened by its lower terminal with a screw tapped into the rear of the tank-condenser frame. The plate blocking condenser, C_4, is mounted by soldering one of its terminals to the rear stator terminal of the tank condenser. The small coil is the parasitic suppressor, L_1. The coax output connector is ready to be mounted at the rear of the box.

♦

to the winding and care should be taken to see that they are pried away to clear the coil. Until this was done, the output on 14 Mc. was noticeably less than on the other bands.

Screen Protection

Keying of the oscillator in the transmitter is desirable for break-in operation, and therefore some provision has to be made to protect the amplifier tube during periods when the key is opened, removing excitation from the amplifier. Most readers will undoubtedly be familiar with the fact that the biasing voltage of a grid-leak-biased amplifier falls to zero when excitation is removed. With zero bias (and plate and screen voltages applied), the tube will draw excessive screen and plate currents and the tube will be damaged permanently if the condition is allowed to exist for any appreciable period. With triodes, the input to the tube without excitation can be reduced quite simply, by providing sufficient fixed bias from a battery or other source, to a level within the dissipation rating of the tube. In this case, the grid-leak resistance is reduced correspondingly so that when normal excitation is applied, the bias will rise to the normal operating value.



The amplifier and clamp tubes are mounted on brackets swung from the side of the frame of the multiband tuner. Both link and tuning-control shafts are fitted with panel bearings and flexible coupling.

The same system may be used with a screen-grid amplifier, provided the screen is fed from a fixed-voltage source. However, this is not too desirable, because a relatively small increase in bias, an increase in driving voltage, or a reduction in plate loading will cause a large increase in screen dissipation, since there is nothing to limit the screen input. It is always preferable to operate the screen through a series resistance from a source of voltage higher than the normal screen operating voltage. Then, any increase in screen current above normal is accompanied by a corresponding decrease in screen voltage and the screen input is held within reasonable limits.

On the other hand, the use of a screen resistor makes the use of fixed bias unsatisfactory as a protective measure. While the bias required to cut off all input to a triode is approximately the plate voltage divided by the amplification factor of the plate, in a screen-grid tube it is dependent on the screen voltage and the amplification factor of the screen. For the 6146, this factor is about 4.5. Thus, it would seem that if the normal screen voltage is 165, for instance, a biasing voltage of 165/4.5, or approximately 37 volts, should bring the input to zero. But when we apply this 37 volts, we find that the input is not cut off. The reason for this is that the application of bias has caused the screen current to decrease as anticipated but, with less current through the screen resistor, the screen voltage has increased. A further increase in bias results in still higher screen voltage. The vicious circle continues until the screen voltage reaches the source voltage and can rise no higher. Under this condition, even if the maximum screen-to-cathode voltage rating of the tube has not been exceeded, it will usually be found that the bias is now higher than the normal operating bias for the tube.

Clamp-Tube Protector

A method of protection that has become popular more recently is the use of the so-called clamp tube. In Fig. 1, R_1 and R_4 are the amplifier screen resistor and grid leak, respectively. When proper excitation is applied to the amplifier, the biasing voltage developed across R_1, applied equally to both tubes, is sufficient to cut off the plate current of the clamp tube. Therefore, the clamp tube has no effect on the operation of the amplifier circuit.

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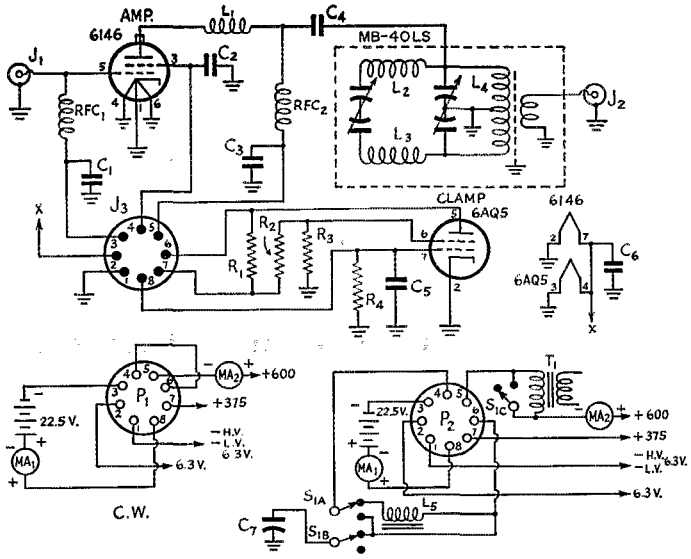

Fig. 1 — Circuit of the shielded 6146 multiband amplifier.
C_1, C_2, C_5, C_6 — 0.001-μfd. disk.
C_3, C_4 — 0.001-μfd. 1200-volt mica.
C_7 — 8-μfd. 450-volt electrolytic.
R_1, R_2 — 20,000 ohms, 10 watts.
R_3 — 11,000 ohms, 2 watts (two 22,000-ohm 1-watt units in parallel).
R_4 — 15,000 ohms, ½ watt.
L_1 — 5 turns No. 16, ¼-inch diam., length adjusted for v.h.f. parasitic, approx. 1½ inches long.
L_2, L_3, L_4 — Multiband-tuner coils (see text).
L_5 — 35-h. 15-ma. choke.
J_1, J_2 — Shielded 'phono jack.
J_3 — Octal power plug.
MA_1 — 15-ma. d.c. milliammeter.
MA_2 — 250-ma. d.c. milliammeter.
P_1, P_2 — Octal cable plug.
S_1 — 3-circuit 2-position rotary switch (shown in 'phone position).
T_1 — Modulation transformer.

However, when excitation is removed from the amplifier, the bias on the clamp tube falls to zero and the clamp tube draws a large plate current through R_1, dropping the amplifier screen voltage to a value that keeps the amplifier tube from drawing a damaging amount of power.

The limiting factor in this system is that as the clamp tube draws current through the screen resistor, R_1, the voltage at its plate is reduced so that the plate current drawn by the clamp tube tends to taper off. The clamp-tube circuit shown in Fig. 1, suggested by W2FBA,[4] constitutes an improvement over the usual arrangement in which the clamp-tube screen is connected directly to its plate. The screen of the clamp tube is maintained at a relatively high value by operating it from the comparatively fixed source of a voltage divider consisting of R_2 and R_3. Therefore, the clamp-tube screen voltage does not fall off along with the plate voltage and, as a result, the clamp tube draws more current at low plate voltage. With the 6146 amplifier and 6AQ5 clamp tube, and the amplifier screen operated from a 375-volt supply through R_1, the screen voltage can be brought down to 10 or 12 volts, the amplifier plate current falling to about 30 ma. with a 600-volt plate supply. This is within the dissipation rating of the 6146.

Background Noise

However, many of those who operate break-in have found that even a slight amount of idling input to the amplifier gives rise to objectionable noise in the receiver. To bring the input to zero to kill this noise, it becomes obvious that some fixed bias must be used. Since the screen voltage is held to a low value by the clamp tube, a fixed bias in the vicinity of 15 volts is sufficient to cut the input to zero. However, a 22½-volt battery is a more convenient source and the extra voltage does no harm. The normal grid-leak resistance is merely reduced to compensate. If the noise is not a factor, the battery may be omitted and the grid leak increased to normal value — 28,000 ohms.

Construction

Most of the constructional details can be seen from the photographs. All assembly and wiring can be done before the unit is placed in the box. The two brackets holding the tubes are each 2½ inches square, not including a half-inch mounting lip at the rear. The side strip of the condenser frame (on the side toward which the link swings outward) is drilled and tapped for the screws that fasten the brackets. The two separate brackets might well be replaced by a single one running the length of the condenser frame. In this case, the lip should be bent downward to provide sufficient space underneath for the components under the 6AQ5. There is only one essential precaution — mount the 6146 sufficiently far away from the tuning unit so that the tube does not interfere with the swinging link.

(Continued on page 122)

[4] Haner, "Tetrode Circuit for Clamper Tubes," *QST*, Hints & Kinks, Jan., 1953, p. 56.

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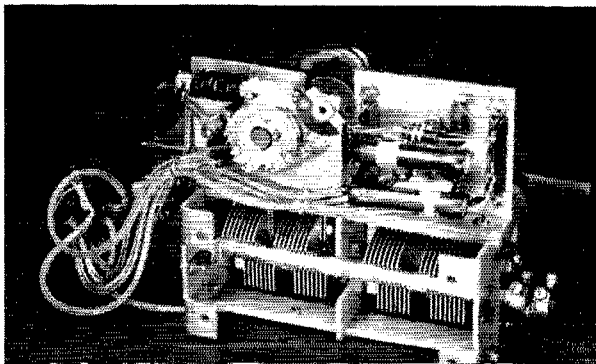


Small components are fastened underneath the tube brackets. All resistors are to the right, the grid choke, RFC_1, to the left. The input connector, J_1, and power connector, J_3, are wired and ready to be fastened in place when the unit is mounted in the box.

Six Vertical Elements on 21 Mc.

A Rotatable Beam with Wire Elements

BY JACK D. RIGGS,* W7HAD

• In these days of horizontal 3- and 4-element beams, we are likely to forget that antennas using vertical elements can often be built easily and inexpensively. In this article, W7HAD describes a 6-element beam for 21 Mc. that should give you some ideas for that band or for 28 Mc.

HERE is an antenna system that offers several advantages over other types, if you have a location where you can install it. The original idea was borrowed from Tom Erdmann, W7DND, who has been using a 9-element 28-Mc. affair of similar construction for two years with excellent results.

The antenna has most of the advantages of a horizontal array, plus a few features of its own. It can be tuned up at ground level and left that way. This is an important factor when one is looking for optimum performance and/or has an aversion to climbing towers.

As can be seen from the sketch in Fig. 2, the array is basically two close-spaced 3-element beams spaced 0.3 wavelength. The gain and directivity would be slightly higher with 0.5-wavelength spacing, but this involves mechanical complications in building the larger structure. The system is fed with either 50- or 75-ohm coaxial line, using a coil-and-condenser combination at the antenna for matching purposes. Wire elements are used for economy, and the wooden framework is made of 2-by-2s and 1-by-2s, as shown. The whole array is suspended from a 16-foot-long 2-by-2 boom that is attached to a tower.

Tuning the Beam

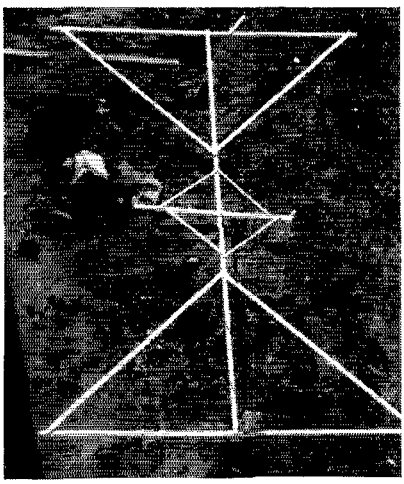
The tuning is rather simple, and it was done at W7HAD with the help of a grid-dip meter, "Antennascope," [1] and the remote field-strength meter shown in Fig. 1. With nothing connected to the coil and condenser (L_1C_1 of Fig. 2B), the circuit was tuned to 21.2 Mc. using the grid-dip meter. The antenna wire that connects to the coil and condenser was then attached, and its length was trimmed until, on or off, it didn't change the resonant frequency of the coil-and-condenser combination.

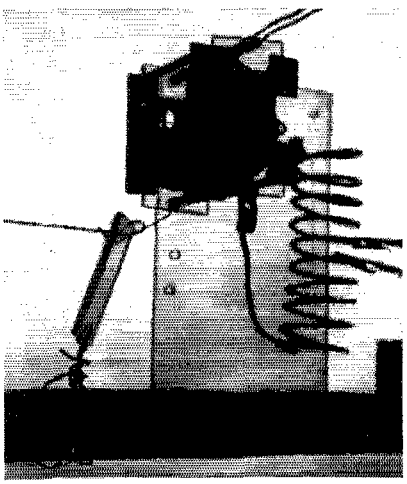
Next, the open-wire phasing system was attached and its length trimmed until it, too, had no effect on the tuning of L_1C_1. Finally, the other antenna wire was attached, at the far end of the phasing section, and its length trimmed until it had no detuning effect. The phasing section and the two driven elements are now of the proper length.

The field-strength meter is used in checking the reflector and director lengths. It should be set up as far from the antenna as possible — at least 100 feet — and at the same height or a little higher. Using the Antennascope, a "gamma" tap that indicated 70 ohms was found across a

* 135-I Elm St., Bremerton, Wash.

[1] Scherer, "The Antennascope," *CQ*, Sept., 1950.





Left: A view from the mast of the bottom spreader, showing the phasing-section support and the housing for the coil and condenser. *Right:* The coupling coil and condenser are shown here with the protective plastic housing removed. Clips on the end of the coaxial cable facilitate matching the line.

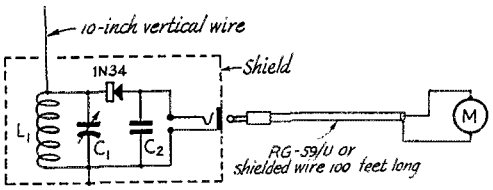


Fig. 1 — **Simple field-strength meter for tuning the beam.**
C_1 — 50-μμfd. variable.
C_2 — 0.002-μfd. mica or ceramic.
L_1 — 4 turns No. 20 on 1½-inch diam., 1 inch long.
M — 0–200 microammeter.

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few turns at the center of L_1, and the coaxial line from the transmitter was connected at these points.[2] Keeping the power input to the transmitter constant, the director lengths were adjusted to give maximum field-strength meter readings. The beam was then rotated 180 degrees and the reflector lengths were adjusted for minimum back radiation.[3]

The beam is finished by making a small plastic housing to weather proof the coil and condenser.

Checks on the beam were made, and it was found to have one major lobe, with little back and side radiation. The major lobe was approximately 50 degrees wide at half-scale readings. On receiving, the antenna has performed well, and the signal-to-noise ratio is good, despite the reputation for "noisiness" that generally is given to verticals.

A vertical antenna like this cannot be expected to fire into a hill and get through or over it, but it should be fine in flat country or on the top of a slight rise.

[2] The proper tap on the coil could also be found with a standing-wave bridge in the coaxial line, by adjusting the taps for a minimum s.w.r. — Ed.

[3] Best front-to-back ratio (which will be obtained by this procedure) is not always preferable to maximum forward gain, and many amateurs now tune their beams for maximum gain. Usually the two conditions do not coincide. — Ed.

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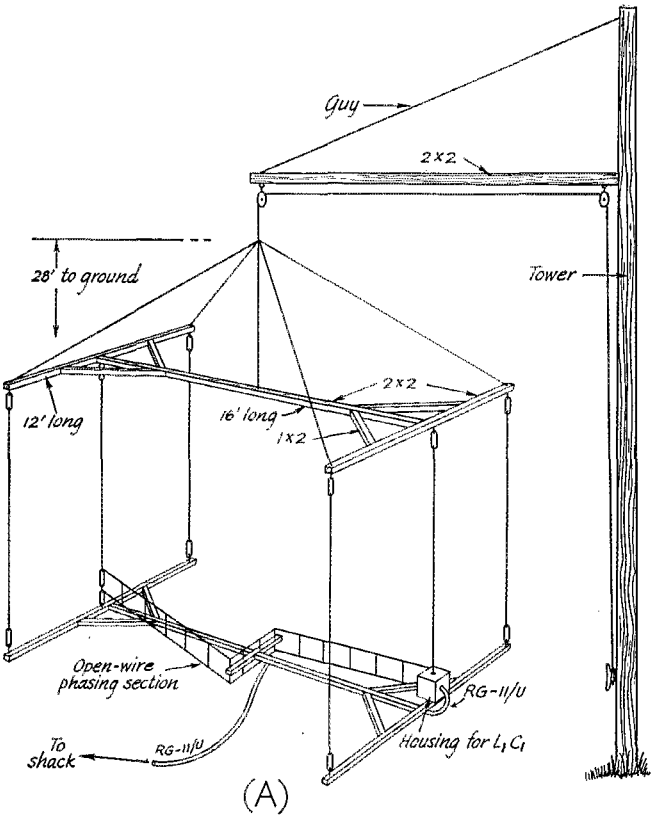

Fig. 2 — **The mechanical (A) and electrical (B) details of the 6-element 21-Mc. beam. The half-wavelength open-wire phasing section is jogged in the center to accommodate its length of 22 feet in the 16-foot separation of the driven elements. For simplicity, guy lines to ground are not shown.**
C_1 — 40-μμfd. variable.
L_1 — 10 turns No. 4 wire, silver-plated, 1½-inch diam., 7 inches long.

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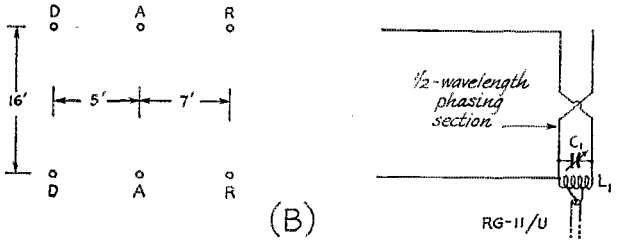


Modifying the Heathkit AR-1 Receiver for Amateur Use

A Low-Cost Receiver for the Newcomer

BY LEWIS G. McCOY,* W1ICP

• Nothing could be much more obvious than the fact that you need a receiver before you can have a ham station. How to acquire that receiver without a considerable outlay of cold, hard cash is not quite so apparent. However, there is a way to get started with a minimum of expense, as W1ICP points out in this article on modifying an inexpensive all-wave receiver for amateur use.

In all but a few isolated instances, one of the problems facing the newcomer to amateur radio is the cost of the equipment for his first station. Naturally, the cost will depend to a large extent upon how elaborate a layout is planned, and that is why most newcomers start with a modest station and add to it through the years. Perhaps the most important piece of equipment for the beginner is the receiver, since it will be used first for copying code-practice stations and, later on, in making contacts with other amateur stations. Receivers can be expensive items, but two ways to hold the cost down are to convert a war-surplus receiver or to build your own from scratch. There is still a third way, however, one that we believe has them all beaten when it comes to saving money, and the purpose of this article is to tell you about it.

Among the available "all-wave" receiver kits on the market, the Heathkit AR-1 struck us as having the greatest potentialities for conversion into a "communications" receiver.[1] The complete kit sells for less than $25, and if you build it as described you have a 5-tube superheterodyne that covers from 550 kc. to 20 Mc. It has an a.c. power supply (usually to be preferred to so-called "a.c.-d.c." operation) and "phono" input. The phono input would probably be of little use to a ham but, along with the broadcast-band coverage, it makes a good selling point if getting the little woman on your side is a factor.

The modifications necessary to make the AR-1 a communications receiver are simple and easy to make. They consist of adding a 12J5 b.f.o. ("beat-frequency oscillator," for the reception of code signals), a bandspread tuning condenser and vernier drive, an r.f. gain control and a.v.c. ("automatic volume control") switch, and a headphones jack. The a.v.c. must be disabled when receiving c.w. signals — the switch cuts the a.v.c. out and the gain control in, or vice versa.

Only a few simple tools are needed to assemble the receiver. These same tools can be used on future radio projects. Among the tools that are a "must" on the shack workbench are a 75- to 100-watt soldering iron with a ⅜-inch tip, some rosin core solder, a pair of long needle-nose pliers, a pair of diagonal side cutters and two screwdrivers (one with a ⅛-inch blade for small setscrews and the other with a ¼-inch blade for larger bolts). A set of metal-cutting drills in standard sizes such as ⅛, ¼, and ½ inch will also come in handy.

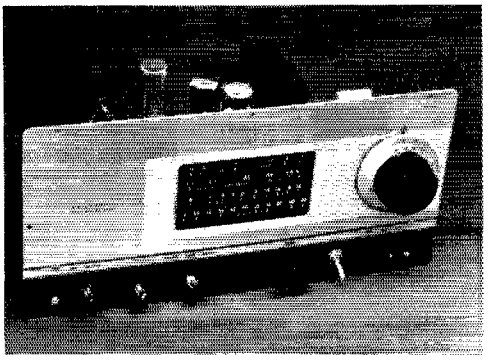
The Mechanical Work

The first step in the modification is to pick up the additional components at your local radio store — a list is given in the table. To mount these extra components, a few holes must be drilled in the chassis and panel. Two holes are required on the chassis front, with corresponding holes in the panel, for the r.f. gain control and the b.f.o. on-off switch. These holes are drilled 2¾ inches in from each end of the chassis, on the same horizontal line as the existing holes.

Holes for the b.f.o. transformer and the new tube socket are placed at the left front corner of

* Technical Assistant, *QST*.

[1] Although there is no exact dividing line between a "communications" and an "all-wave broadcast" receiver, the former is generally distinguished by including provision for c.w. reception. Any communications receiver worthy of the name should also have good stability, selectivity and sensitivity. — Ed.



Front view of the modified receiver showing the added controls. The second control from the left-hand side is the a.v.c. switch and r.f. gain control. The knob used with this control was taken from the main tuning control and a larger knob substituted for the general-coverage tuning. The toggle switch on the right of the main tuning knob is for turning the B+ oscillator voltage on and off. The large vernier bandspread knob is mounted at the right of the tuning scale. In mounting this control, be sure that the drive mechanism clears the string drive wheel on the main tuning condenser.

The b.f.o. transformer and 12J5 oscillator are mounted on the front left-hand side of the chassis. The black knob on top of the b.f.o. transformer is the pitch control.

the chassis, as can be seen in the photographs. Three holes are required for the b.f.o. transformer, two for mounting and a third between them for the wires. The headphones jack hole is drilled in the rear wall of the chassis, near the output transformer. A small right-angle bracket,

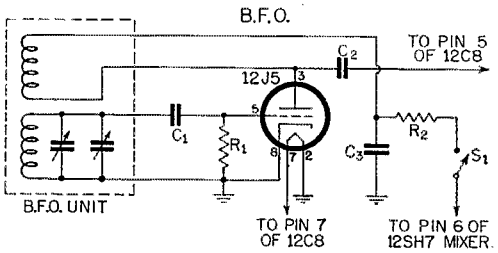


Fig. 1 — Circuit diagram of b.f.o. unit installation.
C_1 — 100-$\mu\mu$fd. mica.
C_2 — 5-$\mu\mu$fd. mica.
C_3 — 470-$\mu\mu$fd. mica.
R_1 — 47,000 ohms, ½ watt.
R_2 — 47,000 ohms, 1 watt.
S_1 — S.p.s.t. toggle switch, one-inch shank.
450-kc. b.f.o. unit (Meissner 17-6753).

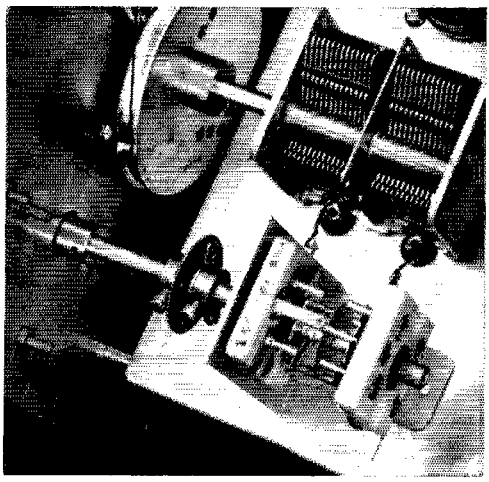
bent of aluminum or other scrap metal, is required for mounting the bandspread condenser, and it is fastened to the chassis by two screws. The exact size and placement of the bracket will depend upon the size of the tuning knob or drive mechanism that is used.

Wiring

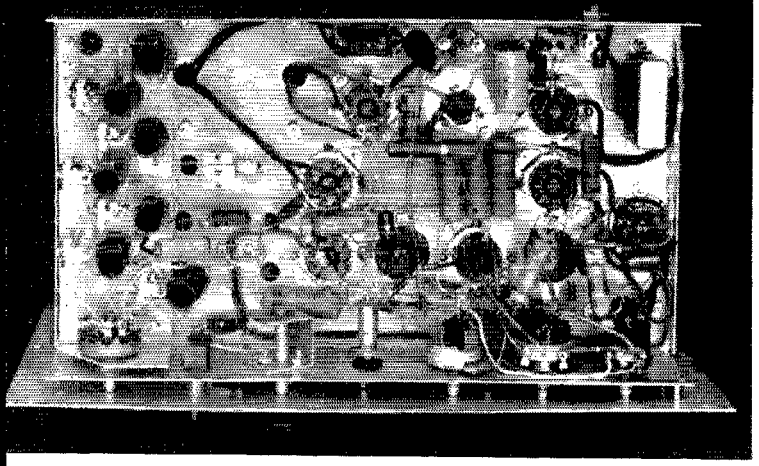
After the holes are cut in the chassis, the receiver can be wired as per Heathkit instructions, with the following exceptions: In Step 7 of the Heathkit instructions, Pin 7 is not soldered — this pin will be the connecting point for the heater lead from Pin 7 of the 12J5 b.f.o. heater. In Step 14 of the instructions do not mount the 100-ohm resistor (*SW11*) — this resistor will be mounted at a different point when installing the r.f. control. Also, do not solder Pins 5 and 6 of the 12SH7 i.f. tube, since these points will be used for r.f. gain control connections. Pin 6 of the 12SH7 mixer tube is not soldered, as the lead for the b.f.o. plate voltage is run to this point. Pin 5 of the 12C8 is left unsoldered, to take care of the lead from the b.f.o. output coupling condenser. The ungrounded side of the output transformer is left unsoldered, to take care of the lead from the headphones jack.

B.F.O. Installation

After the receiver is wired, we are ready to make the modifications. The b.f.o. transformer is mounted first and wired according to Fig. 1.



The mounting of the modified bandspread condenser, showing the connections from the stator sections of the bandspread condenser to the stator sections of the mixer and oscillator general coverage condenser. The rotor of the bandspread condenser is grounded through the metal mounting angle. An insulated shaft coupler is used to couple the rotor of the condenser to the vernier drive tuning knob.



Bottom view of the modified receiver showing the placement of additional parts. In this view, the b.f.o. toggle switch is mounted 2¾ inches from the left-hand chassis edge, and the r.f. gain control is mounted 2¾ inches from the right-hand side. The open-circuit headphones jack is mounted at the chassis rear directly over the 'speaker plug.

♦

An insulated tie point is mounted under the bolt that holds the soldering lug at the ground point of leads "E," "F," "G," and "H." A lead is run from Pin 6, the screen of the 12SH7 mixer tube, to one side of S_1. R_2 is mounted between the switch and the insulated tie point, and a lead run from the tie point to Pin 6 of the 12J5. Pin 6 of the 12J5 socket is used as a tie point for C_3, the B + lead to the b.f.o. transformer, and the lead from the insulated tie point. Pin 4 of the 12J5 socket is used as a tie point for the grid lead from the b.f.o. unit to C_1 and R_1.

R.F. Gain Control and A.V.C. Switch

Most communications receivers have a separate switch for the a.v.c., but to save panel space in this modification, the a.v.c. switch and the r.f. gain control are combined in one unit. A single-pole double-throw switch is mounted on the back of the r.f. gain control. The receiver gain increases as the control is turned clockwise. In the extreme counterclockwise position of the gain control, the switch actuates and turns on the a.v.c. (At the same time it also switches the cathode bias of the i.f. tube back to a minimum, so that the gain is limited only by the a.v.c. voltage.)

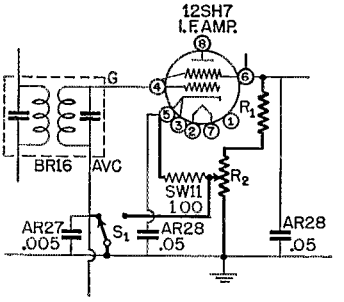


Fig. 2 — Circuit diagram of r.f. gain control and a.v.c. switch additions.
R_1 — 23,000 ohms, 1 watt.
R_2 — 1000-ohm potentiometer (IRC No. WK1000).
S_1 — S.p.d.t. switch, mounted on back of R_2 (IRC No. 53).

Fig. 2 shows the modified 12SH7 i.f. amplifier circuit, the added components being shown by the heavier lines. R_2 is installed with its terminals toward the bottom of the receiver. R_1 is mounted between Pin 6 of the 12SH7 and the terminal of R_2 closest to the audio volume control. Heathkit 100-ohm resistor, *SW11*, is mounted between the arm (center terminal) of R_2 and Pin 5 of the 12SH7. The third terminal of R_2 is grounded. A lead from the arm of R_2 is connected to the nearest terminal of S_1. The center terminal of S_1 is grounded. The third terminal is connected to the input i.f. transformer (*BR16*) at the junction of the 1-megohm Heathkit resistors, *O17*.

Bandspread Condenser Mounting

Fig. 3 shows the modified circuit with C_{1A} and C_{1B} installed. In removing the single stator plate from each stator section, care should be taken not to bend the other plates. The best method is to set the condenser at minimum capacity (open) and, with a pair of long-nose pliers, carefully remove the inside plate of each stator. It only takes a slight bend of the plates to loosen them. The condenser rotor is grounded through the supporting bracket. A lead is run

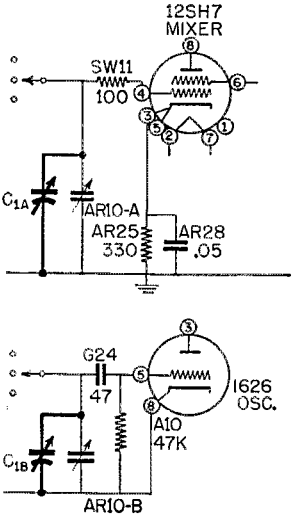


Fig. 3 — Circuit diagram of bandspread condenser addition.
C_{1A}, C_{1B} — Modified dual condenser, 15 μμfd. with one stator plate removed from each section (Bud LC1660 Tiny Mite Dual).

from each stator of the bandspread condenser to the nearest stator of the general coverage condenser (*AR10-A*) and (*AR10-B*). An insulated shaft coupler is used between the condenser and the shaft from the tuning knob or vernier drive mechanism.

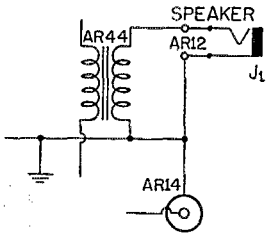


Fig. 4 — Circuit diagram of headphones jack addition. J_1 — Open-circuit jack.

Fig. 4 shows the circuit for the addition of the headphones jack. Because one side of the output is grounded, only one lead need be run from the output transformer to the ungrounded side of the open-circuit jack.

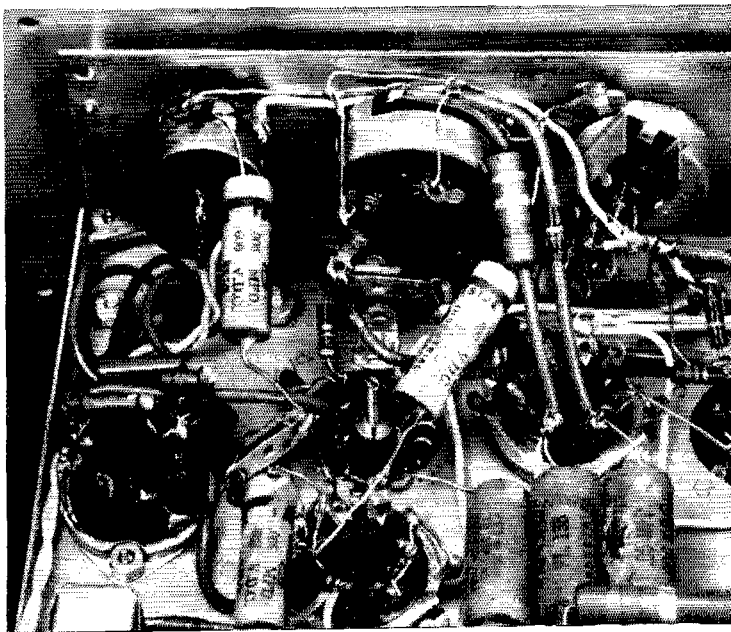
Operation

The receiver alignment is carried out as described in the Heathkit instruction book, and the b.f.o. unit is tuned according to the directions that come with it. For c.w. operation the receiver is set up as follows: the b.f.o. switch is turned on, the audio gain turned up, and the a.v.c. turned off. The r.f. gain control is set to a suitable signal level, and the b.f.o. pitch control is set to where the background hiss is low-pitched. Signals can then be tuned in by setting the main tuning dial to some amateur band and exploring the band with the bandspread condenser. With the modified bandspread condenser in the circuit there is approximately 200 kc. of bandspread on the 80-meter band for 180 degrees rotation of the bandspread condenser. This is ample spread for tuning convenience. The correct setting of the main tuning condenser to cover a given portion of an amateur band with the bandspread condenser will be determined by experiment. It will take three settings of the main tuning dial to cover the entire 80-meter band with the bandspread tuning dial. On 40 meters, only one setting of the main tuning dial is necessary as the bandspread condenser will cover approximately 400 kc. through 180 degrees of rotation. For 'phone operation, the a.v.c. is turned on and the b.f.o. turned off. The audio volume control is varied for best audio level.

The total cost of the receiver with modifications is approximately $30.00, and its performance is comparable to that of receivers costing a great deal more.

Parts List for the AR-1 Modification

5-$\mu\mu$fd. mica condenser
100-$\mu\mu$fd. mica condenser
470-$\mu\mu$fd. mica condenser
15-$\mu\mu$fd. dual variable condenser (Bud LC1660 Dual Tiny Mite)
22,000-ohm resistor, 1 watt
47,000-ohm resistor, ½ watt
47,000-ohm resistor, 1 watt
1000-ohm potentiometer with s.p.s.t. switch (Clarostat type AM-8-5 with Clarostat switch type SW-a 60-36; IRC type potentiometer No. Q11-108 with type 76-1 switch, or Centralab type B-5 potentiometer with type KB-1 switch)
S.p.s.t. toggle switch, 1-inch shank
B.f.o. unit (Meissner 17-6753)
Shaft coupler (E. F. Johnson No. 104-250 or National No. TX-10)
Open-circuit jack (Mallory type 701)
Vernier drive, optional (National type AM dial)
¼-inch diam. brass rod (ICA 2117)
One single-terminal insulated tie point
Three feet of insulated hook-up wire
Octal socket (Amphenol 88-8)
Type 12J5 tube



Close-up view of the r.f. gain control and a.v.c. switch wiring. The octal socket at the extreme left-hand side of the chassis is for the 12J5 b.f.o. tube. The four leads coming from the rubber grommet near the 12J5 are from the b.f.o. transformer.

Multi-Impedance Dipoles

Closer Matching at Various Antenna Heights

BY JOHN D. AVERY,* W1IYI

• It is safe to say that practically everyone ignores the effect of "height above ground" on the impedance of an antenna. This doesn't make any practical difference in many cases, but it can where you use a "flat" line and no means for adjusting the match. This article tells how W1IYI didn't ignore the height factor, and how it led to some interesting results and a slightly different concept in antenna design.

WHILE looking at a chart in the ARRL *Handbook* that shows the impedance of a half-wave antenna at various heights above ground, I began to wonder if a wire at my QTH would behave "like the book says." My location is at a lake shore, where water and wet ground are always present, so any measurements could be made over a period of time without running the possibility of a significant change in the electrical ground. ("Electrical" ground and the "surface" ground do not coincide — the electrical ground is usually some feet below the surface, depending upon the characteristics of the soil and the radio frequency being used.)

The measurements were made with a single wire a half wavelength long, split in the center so that a 52- or 72-ohm coaxial line could be connected. Two 60-foot towers were used to support the antenna, and a standing-wave bridge was available for use in the coaxial line. The procedure that was followed was quite elementary — with a given coaxial line connected to the antenna, the antenna was raised a few feet at a time until the minimum s.w.r. was indicated.

Starting with 52-ohm coax and the antenna one foot off the ground, the s.w.r. was rather high, but as the antenna was raised the s.w.r. dropped and was quite close to unity at around 35 or 40 feet. Substituting 72-ohm coax for the lower-impedance line, the s.w.r. was higher. As the antenna was raised (now fed with 72-ohm line) the s.w.r. was dropping as the maximum height of 60 feet was reached.

Having run out of height at my place, I managed to prevail upon a ham in Rhode Island who had higher supports to test with a 102-ohm line (52-ohm lines in series), and he found the minimum s.w.r. to fall at around 90 feet.

The diagram in Fig. 1 shows part of the *Handbook* graph that started this whole thing, with the three experimentally-determined points shown as small circles. Since they don't fall too far off the curve, they seem to prove that "the book is right."

This got me thinking about what might be happening to folded dipoles at various heights above ground. Since a two-wire folded dipole shows a four-times step-up in impedance (and a three-wire dipole a nine-times step-up) I added these values to the chart, on the left-hand side. A little study of this chart shows that, for low antenna heights (low in wavelengths) such as one runs into on 75 meters, the first choice of antenna and feed line might not always be the best. For example, a two-wire dipole only 25 feet off the ground should match better with 72-ohm coaxial line than with 300-ohm ribbon. A 3-wire dipole 35 feet above the ground offers a better match for 300-ohm line than does the more conventional 2-wire folded dipole. These statements are based on "electrical" ground, of course, a

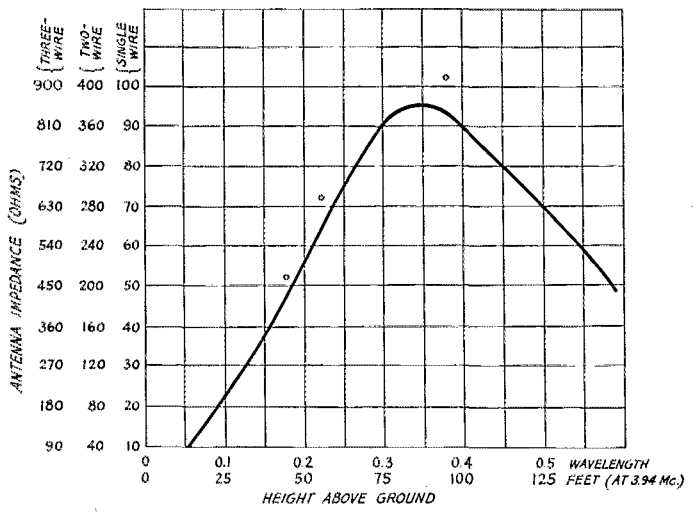


Fig. 1 — The solid line is a theoretical curve showing the variation in impedance for a single-wire half-wave antenna at various heights above ground. The values for 2- and 3-wire folded dipoles can be expected to vary in the same way. The small circles are experimentally-determined values for a single-wire antenna.

* R.F.D. 1, Rockville, Conn.

somewhat variable plane in most cases. Nine times out of ten it can only be found by experiment.

The Multi-Impedance Dipole

In an attempt to make better use of this (to me) newfound knowledge, a simple spreader system was devised that would permit changing quickly between two- and three-wire folded dipoles and a single-wire dipole. As shown in Fig. 2, the basic three wires can be used in these three ways. The spreaders were made from soft pine turned down to size and then boiled in hot paraffin. Fig. 3 shows some of the construction details. A center connecting block of ¼-inch lucite was built to take terminals and a coaxial connector, for quick changing of the various feed lines. It is apparent from Fig. 2 that changing from one antenna to another only requires changing a few jumpers, and perhaps disconnecting one feed line and connecting another.

With a system like this, it is not too difficult a task to find the best combination of line and antenna for the particular height you have available. You will probably want to use the maximum available height for the antenna, so it isn't suggested that you run the antenna up and down for a perfect match, although you may find the experiment interesting, as I did. For any length of antenna there is one frequency at which the s.w.r. is a minimum, and the s.w.r. will increase slowly as the frequency is changed in either direction. However, I noticed that the 2- and 3-wire folded dipoles, and the 3-wire dipole of Fig. 2A, seemed to be "broad" in this respect and not at all critical.

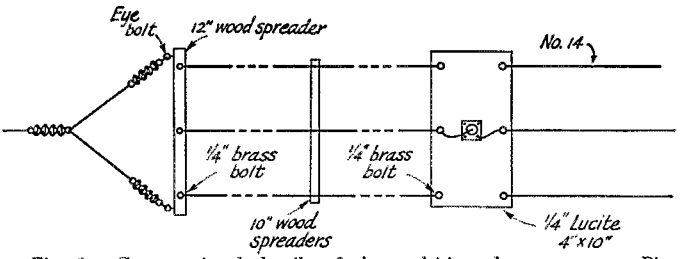


Fig. 3 — Constructional details of the multi-impedance antenna. Pine spreaders are used, boiled in paraffin to make them water-resistant. The antenna wires (and jumpers) are connected to ¼-inch brass screws in the end spacers and in the lucite terminal block. The terminal block carries a coax fitting — an open-wire line can be connected directly to the brass screws.

Although it has been pointed out many times before, it is worth repeating here that you need suitable coupling at the transmitter for each type of line. If you use an antenna coupler, small 2- or 3-turn links are adequate for coupling between coupler and transmitter, but larger links may be required if no coupler is used. I use plug-in links and a variable condenser in series with one side of the line. The largest plug-in link is 12 turns.

Right now I am using the antenna of Fig. 2A, fed with 52-ohm coaxial line. Local and DX results on 75 have been very encouraging.

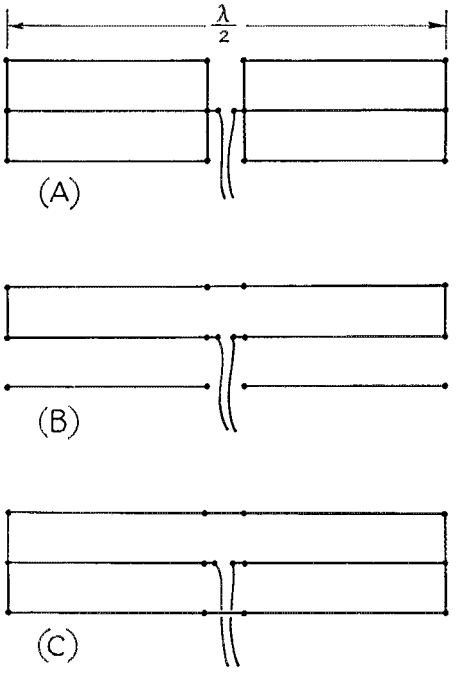
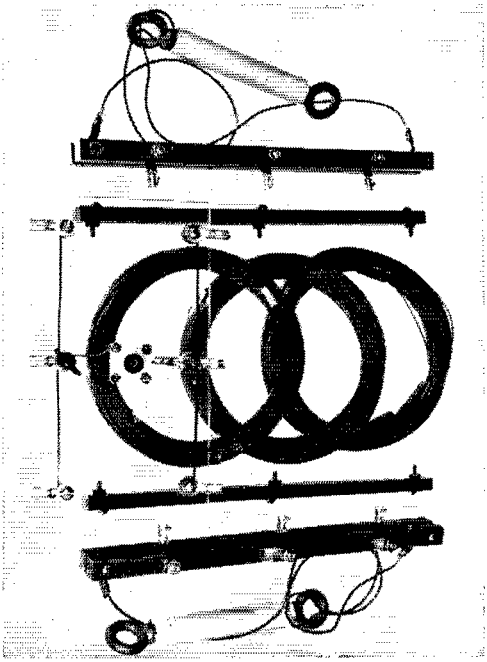
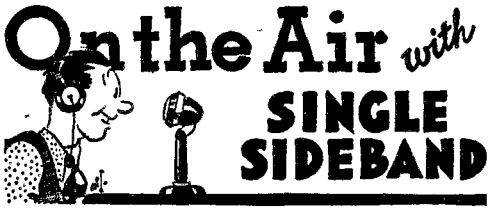


Fig. 2 — With three wires strung up in the air, one has the choice of connecting them as (A) plain dipole, (B) 2-wire folded dipole, and (C) 3-wire folded dipole.



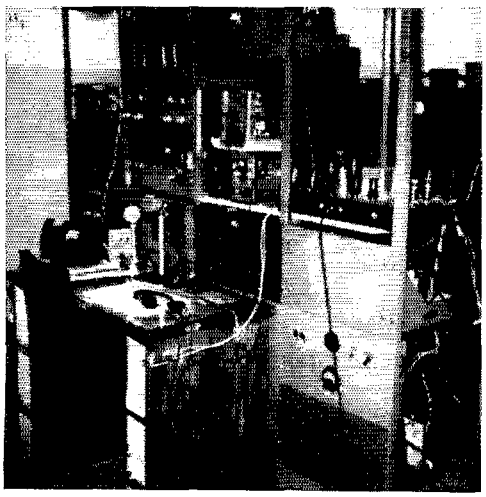
This is all that is required for a 20-meter antenna in which several different values of impedance can be obtained. An antenna for a lower-frequency band would require only more wire and more intermediate spacers.



The informal s.s.b. dinner in New York on March 23rd was a whopping success any way you look at it. If numbers measure the thing, then 110 at dinner should prove the point. If geographical distribution means anything, just note that all W districts were represented, along with a VE3, a CM9 and an LU3. If growth is an indication, compare the attendance with 33 the previous year and 17 two years ago. In all honesty, however, it should be pointed out that the attendance was not restricted exclusively to s.s.b. operators, and there were a half dozen or more self-confessed "a.m. spies" in the group. Credit for the party goes to **W2NJR** and **W2MTJ**, and everyone hopes the dinners will continue to be an annual affair, although the exponential growth curve may prove a problem.

FCC Commissioner George Sterling, **W3DF**, is active at the high end of 75 with an Edmunds exciter, and the gang is more than pleased to welcome him to the ranks. . . . The 7-Mc. s.s.b. activity isn't developing as fast as some thought it would, but **W2JJC** and **W6KNH** were among the first to get on, working each other in good style through the umpteen layers of QRM and general noise.

Roy Ehman, **ZS2GA**, in Port Elizabeth, is sharing South African honors with **ZS6KD**. Roy uses a phasing job á lá **W9DYV**, which at present



Although DL6WL is called "haywire" by operator Herbert Stratemeyer himself, there was nothing haywire about the 75-meter s.s.b. signal from this station during the spring months. An Edmunds exciter was first used back in 1951, but the present rig is a phasing affair, with bandswitching to 80, 20 and 15 meters in the p.p. 250-watt final. (*Photo courtesy W2JJC*)

ends in an 807 but will soon drive an AX-9903 final. Activity is on 80, 40, and 20 (ZS 'phone is 3.5 to 3.8 and 7.0 to 7.15 Mc.). ZS6KD uses a filter-type exciter.

A recent note from **G3FHL** tells how he has now worked 12 countries on two-way 80-meter s.s.b. Geoff reports **G3AUB** (Edmunds exciter, 30 watts) and **G2NH** (crystal filter) as two of the newest G stations on s.s.b.

Automatic Antenna Switching

Although relays can be used for quick switching of antenna from receiver to transmitter when working voice-controlled break-in, it is much nicer to do it electronically. Two circuits used for this purpose by Bill Rust, **W2UNJ**, are shown in Fig. 1. The circuit at A is along the lines of that

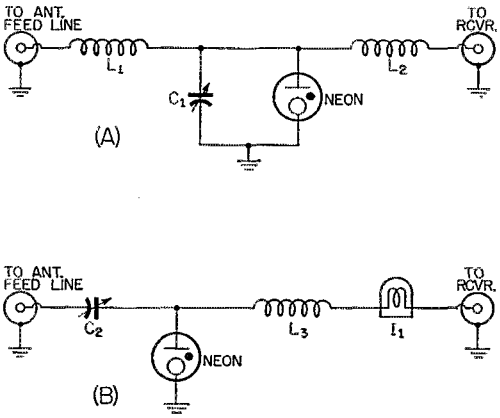


Fig. 1 — Two TR ("transmit-receive") switch circuits that have been used by W2UNJ. The circuit at A uses two large inductances, L_1 and L_2, a small condenser, C_1, and a neon bulb. The circuit at B uses only one coil and adds a small flashlight bulb for added protection of the receiver.

C_2 — 50-$\mu\mu$fd. variable.
L_3 — 90 turns No. 28 enam. on 3.4-inch diam. form (for 3.9 Mc.).
I_1 — 6–8 volts, 150 ma.
The neon bulb can be ¼ watt with a low-powered rig and 2 or 3 watts with a high-powered transmitter.

described by W2OUA (Cronin, *QST*, June, 1952). The system at B is presently in use at W2UNJ. The circuit C_2L_3 should be low-C and tuned for maximum received signal. It is broad enough to hold over a 'phone band without retuning. The neon bulb must have the resistor removed, of course, and a ¼-watt neon will suffice for 75 watts or so. The pilot lamp is a safety fuse to protect the receiver in case of failure of the "TR" switch. In some cases it may be necessary to shield the TR circuit to prevent the radiation of harmonics and subsequent TVI, but this hasn't been found necessary at W2UNJ.

Adjusting Phasing-Type Exciters

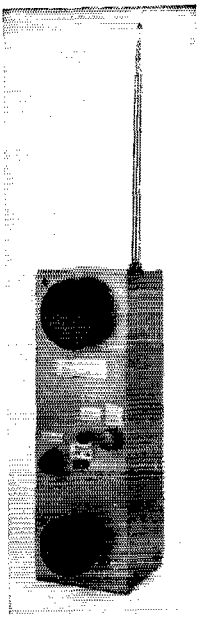
In one of the *QST* exciters (November, 1949) it was mentioned that a 'scope can be used for checking the 90-degree r.f. phase shift, by ad-

(*Continued on page 126*)

A Hand-Carried Portable Rig for 220 Mc.

Civil Defense Communication in a 3-Pound Package

BY J. ROY WOLFSKILL,* W2RPU/1



The hand-carried portable for 220 Mc. described by W2RPU. Total weight, including antenna and batteries, is less than three pounds.

REALIZATION of the full value of amateur radio in civil defense communication frequently is dependent on the availability of lightweight portable gear that can be operated from its own self-contained batteries. Many portable rigs designed for this purpose have been described, but few of them make use of 220 Mc., one of the amateur assignments designated for possible wartime emergency use under the RACES plan. The 220-Mc. band may have certain advantages for c.d. work. It can supplement other bands in areas where lower frequencies are already well occupied by c.d. nets, and it is capable of good coverage in short-range communication. The fact that a full quarter-wave antenna is only a foot long at 220 Mc. is a factor that should not be overlooked.

This complete self-contained 220-Mc. transmitter-receiver is only 3 by 3⅛ by 9 inches in size, except for protuberances for earphone, microphone, controls and antenna socket. Weight, including batteries and antenna, is under three pounds. Power output at 220 Mc. is approximately 250 milliwatts. Filament-type tubes are used throughout, and considerable thought was given to conservation of battery power, in view of the small size of the batteries used. With some modifications a similar design could be used on 144 Mc.

The transmitter section uses a 1V5 crystal oscillator-tripler, a 1V5 doubler and a pair of 958s in a push-pull final amplifier. The crystal frequency is between 36.67 and 37.5 Mc. In the superhet receiver, two 958s serve as oscillator and mixer, followed by a 1V5 superregenerative second detector. In the audio portion, common to both transmitter and receiver, a 1V5 drives a 3Q4. A quarter-wave rod antenna is used normally, though it is removable and a better antenna system can be substituted when available.

*319 Locust St., Danvers, Mass.

• Civil Defense needs have triggered off a boom in dry-battery portable rigs. This one is unique in that it has a crystal-controlled transmitter and a superhet receiver — for 220 Mc. If you intend to build a lightweight portable for any band, you're sure to find some ideas in this design by W2RPU.

Filament power is supplied by two standard flashlight cells. The rig will operate on a single cell, but two in parallel give much longer life. The drain is about 380 ma. in the receive position and 450 when transmitting. Two small 45-volt "B" batteries furnish 30 ma. plate drain while transmitting and 20 for receiving.

Circuit Details and Adjustments

In the transmitter, the oscillator circuits are slug-tuned, with no variable capacitance added. The position of the tap on L_1 determines the proper functioning of the oscillator. Normally, it will be about one-third of the coil up from the crystal end, though its position may be changed to take care of different crystal characteristics. Easy crystal starting, without a tendency to take off on any spurious frequency, should be the objective here. The grid coil is resonated at approximately the crystal frequency, and the plate coil, L_2, at three times this frequency. Initial adjustment is made easier if a grid-dip meter is available. Final setting should be made for maximum indication on a 0–1 ma. meter connected at test point *A*. This should be 0.5 to 1 ma.

The second 1V5 is tuned to the operating frequency by C_5 and L_3, connecting the 1-ma. meter at test point *B* for indication of resonance. About 1 ma. grid current should be obtained. As this reads the excitation to the final stage it may also be used for the neutralization adjustment, which is next in order. Neutralizing capacitors, C_N, are short lengths of insulated wire soldered to the grid terminals of the 958 sockets, the other ends being wrapped around the plate leads to the opposite tubes. The turns of these wrap-arounds are trimmed to the point where there is no fluctuation in grid voltage when the plate circuit is tuned through resonance with the excitation on but no

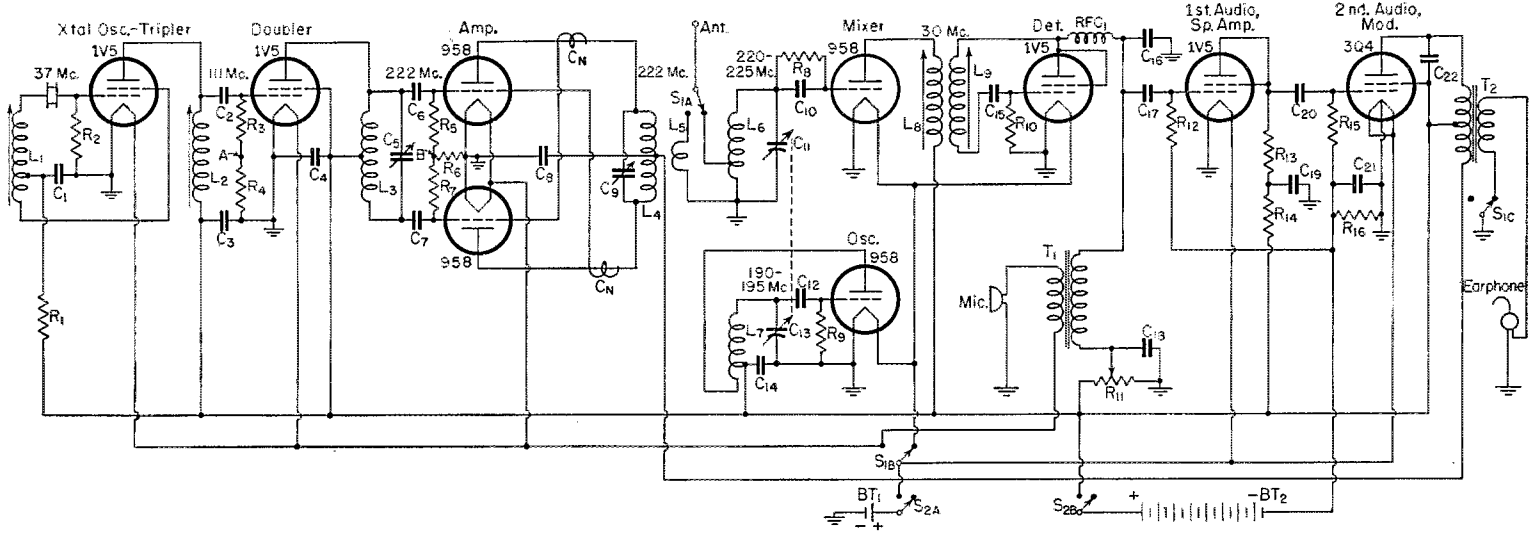


Fig. 1 — Circuit diagram and parts list for the 220-Mc. transmitter-receiver.

C_1 — 0.001-μfd. ceramic.
C_2, C_6, C_7, C_{10}, C_{12}, C_{15} — 40-$\mu\mu$fd. ceramic.
C_3 — 500-$\mu\mu$fd. ceramic, feed-through type.
C_4, C_8 — 500-$\mu\mu$fd. ceramic, stand-off type.
C_5, C_9 — 5-$\mu\mu$fd. variable.
C_{11}, C_{13} — 8.6-$\mu\mu$fd. midget variable (Johnson 9M11).
C_{14} — 500-$\mu\mu$fd. ceramic.
C_{16} — 0.0047-μfd. mica.
C_{17}, C_{19}, C_{20} — 0.01-μfd. midget tubular.
C_{18} — 8μfd., 100 w.v.d.c.
C_{21} — 20 μfd., 25 w.v.d.c.
C_{22} — 0.002-μfd. midget tubular.
C_N — Approx. 2 turns No. 18 insulated wire around plate leads. See text.
R_1 — 4700 ohms.
R_2, R_9 — 10,000 ohms.
R_3 — 0.1 megohm.
R_4, R_6 — 100 ohms.
R_5, R_7, R_{14} — 47,000 ohms.
R_8, R_{10} — 2.2 megohms.
R_{11} — 50,000 ohms, variable.
R_{12}, R_{15} — 0.47 megohm.
R_{13} — 0.15 megohm.
R_{16} — 470 ohms.
(All fixed resistors ½ watt).
L_1 — 13 turns No. 20 enam., ¼-inch diam., slug-tuned.
L_2 — 6 turns No. 20 enam., ¼-inch diam., slug-tuned.
L_3, L_4 — 5 turns No. 18 enam., ⅜-inch diam., ⅝ inch long, center-tapped.
L_5 — 1 turn No. 18 enam., ⅜-inch diam.
L_6, L_7 — 6 turns No. 18 enam., 5/16-inch diam., L_6 tapped ½ turn from ground, L_7 about 2 turns from plate end.
L_8, L_9 — 22 turns No. 26 s.c.c., close-wound on ¼-inch slug-tuned form.
BT_1 — 1½-volt Eveready type D (two in parallel).
BT_2 — 45-volt Eveready type 455, Minimax (two in series).
M1C — Single-button microphone.
Earphone — 2000 ohms, from headset.
RFC_1 — 7-μh. v.h.f. choke.
S_{1A}, S_{1B}, S_{1C} — D.p.s.t. microswitches, or 3-section unit designed for the purpose.
S_{2A}, S_{2B} — S.p.d.t. slide switch.
T_1 — Microphone transformer, 200 ohms to 50,000 ohms.
T_2 — Output transformer, 10,000 ohms, center-tapped, to 2000 ohms.

plate voltage applied. Resonance in the final plate circuit and optimum coupling to the antenna can be determined with a field-strength meter.

In the receiver portion the oscillator is tuned over a range of 190 to 195 Mc. It is inductively coupled to the mixer grid circuit, L_6 C_{11}, which is tuned from 220 to 225 Mc. The two coils, L_6 and L_7, are identical in construction, the spacing of their turns being adjusted for tracking across the band. The mixer circuit is not particularly selective, so tuning and tracking adjustments are not critical. The mixer plate circuit is resonated at 30 Mc. by adjustment of the slug in L_8, and the detector grid circuit similarly by means of L_9. These two slug-tuned coils are mounted end to end, about ¼ inch apart. The two tuning condensers, C_{11} and C_{13}, are ganged by mounting them back to back and soldering a short bushing between the rear ends of their rotor shafts. The oscillator and mixer grid coils are side by side, about ⅛ inch apart.

The 1V5 superregenerative detector provides considerable gain at the intermediate frequency, yet it operates smoothly as its load is a fairly constant impedance. It may be set up for optimum operating conditions and it will require very little adjustment thereafter. Such a receiver line-up provides a moderate amount of selectivity and considerable sensitivity with few tubes. It is superior to a superregenerative detector on the operating frequency, and it causes no interference.

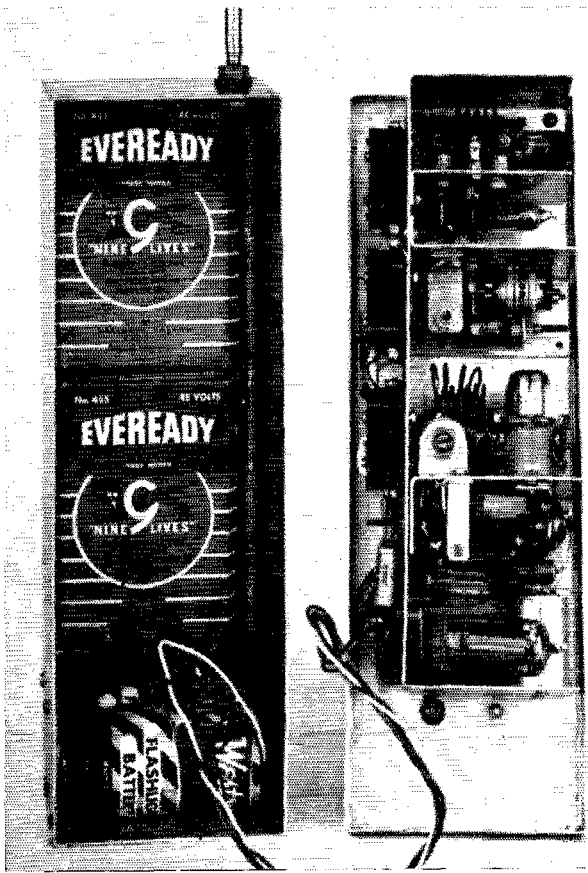
The audio circuit does away with the need for the transceiver type of transformer often used. A transformer with a tapped primary serves as a combination of modulation and audio output transformer. This balanced modulation arrangement, with the current for the 3Q4 running through one half of the tapped winding and the modulated voltage to the 958s through the other, provides better efficiency than the modulation choke method often used with single-ended modulator stages. An audio monitor may be had by shunting the contacts on S_{1C} with a 5000-ohm resistor, though some power is lost in this way.

Looking at the power circuits, it will be seen that with the two-circuit slide switch, S_2, in the off position no current can be drawn from either battery. The send-receive switch, S_1, has three circuits for antenna, filaments and output winding switching. In the normal or "receive" position, only the receiver and audio filaments are lighted. On "transmit" the receiver filaments go off and the transmitter filaments and microphone voltage come on, keeping the over-all drain from both "A" and "B" batteries to a minimum. The send-receive functions are performed by a homemade arrangement using three microswitches actuated by a push button made of phenolic rod. Several multicircuit switches of suitable design for this application are available commercially.

Mechanical Features

The rig is built on the cover of the box, with the batteries held in place in the main portion of the case. Construction was done by the subassembly method, with the whole r.f. and audio enclosed inside a U-shaped chassis that occupies approximately three-fourths of the panel area. Individual subassemblies mounted on L-shaped brackets inside this chassis are as follows, looking down from the top of the interior photograph: final amplifier and multiplier stages; crystal oscillator; and mixer, oscillator and second detector. The audio components are mounted in the end portion of the main chassis. The antenna socket is in the top of the case, the bottom of the socket making contact to a spring clip on the send-receive switch when the case is assembled.

A size-limiting factor in the use of acorn tubes is the relatively large sockets they require. This was taken care of through the use of special sockets made from polystyrene tubing of 11/16-inch inside diameter and 1/16-inch wall thickness. Ordinary polystyrene coil forms about ¾-inch diameter may also be used. Clips removed from standard acorn sockets were mounted on the outside of these forms and bent over the top and edge. Exact locations of the clips can be determined by inserting the tube pins in the clips and then bending and mounting them in such positions that tubes can be inserted and removed.



Interior view of the 220-Mc. transmitter-receiver. The individual subassemblies are mounted inside a U-shaped chassis attached to the cover of the case. Transmitter components are at the top, receiver circuits at the center, and audio equipment at the bottom. Antenna and batteries are in the bottom case portion.

Happenings of the Month

LICENSE RENEWALS

Considering the present volume of ARRL *License Manual* sales, it would seem that every amateur must certainly have a copy of his own, but that obviously is not so from the number of inquiries Hq. has been receiving concerning renewal requirements and procedures. Let's go over the story again.

If your application will be for straight renewal only — that is, no modification involved such as a change of address — you should use the new short form 405-A, obtainable from your district FCC office on request. This is a multiple card form which you fill out in detail and send to Washington; actually, portions of the form are kept as FCC's file records on your renewal, while one section is mailed back to you to become a renewal "endorsement" of your present ticket. Such application may be made any time within the last four months of the license term. In practice, 45 or 60 days before expiration is adequate since the production line on 405-As at FCC sidetracks applications submitted much earlier than that and picks them up about 30 days before expiration for processing.

So long as your application is submitted reasonably in advance of expiration, if the Commission is delayed in getting the endorsement back, you may continue operating as usual until you do hear from FCC, even after the expiration date.

To be acted on affirmatively, your application must state certain minimum requirements of activity and ability. These are that you can send and receive code at the rate of speed required for the license being renewed (5 w.p.m. for Technicians, 13 for General-Conditional-Advanced, and 20 for Extra Class), and that you have logged, at your own station or any other licensed by FCC, at least 2 hours' operating time out of the last 3 months, or 5 hours out of the last 12 months, of the license term. On Form 405-A, your signature automatically affirms that you do so comply.

Should some modification of your license be involved at the same time you apply for renewal, then use the standard Form 610.

If you let your expiration date slip past without filing an application for renewal, you are off the air. However, you have a period of grace of one year after expiration during which you may apply for "renewal" providing you have met the activity requirements. The license is not backdated, and in reality is a new license without examination.

CALL SIGN IDENTIFICATION

Every now and then we hear arguments on the air about correct signing procedure — whether the operator must sign the station call last. In other words, while it is obviously proper to use the form "W1AAA, this is W2BBB . . . ," is it similarly proper to say, "This is W2BBB returning to W1AAA. . . ."?

The question has been settled as an incidental part of recent FCC changes in our Section 12.82(a) which were primarily instituted to require teletype (television, too) stations to identify themselves periodically on A-1 or A-3, as appropriate, as well as by RTTY. The applicable part of the new reg, with italics added by us, is:

> The operator of an amateur station shall transmit the call sign of the station or stations . . . being called or communicated with . . . *followed by* the authorized call sign of the station transmitting.

Oh yes — if you've ever wondered whether it is proper to use, in a roundtable or other net, such language as "W1AAA and the White Mountains Net, this is W2BBB. . . ." instead of repeating each member call, the answer is (and has been) yes. A point of additional interest is that the new reg legalizes what has been pretty general amateur practice anyway during rapid-fire contacts in operating contests such as the Sweepstakes, where stations do not close their QSO with an actual sign-off. When your contact is terminated within three minutes, no identification at the end is required.

Here's the new language of the entire section.

> Section 12.82(a) to read as follows:
>
> (1) The operator of an amateur station shall transmit the call sign of the station or stations (or may transmit the generally accepted identification of the network) being called or communicated with, or shall identify appropriately any other purpose of a transmission, followed by the authorized call sign of the station transmitting:
>
> (i) at the beginning and end of each single transmission or;
>
> (ii) at the beginning and end of a series of transmissions between stations having established communications, each transmission of which is of less than three minutes duration (the identification at the end of such a series may be omitted when the duration of the entire series is less than three minutes), and;
>
> (iii) at least once every ten minutes or as soon thereafter as possible during a series of transmissions between stations having established communications, and;
>
> (iv) at least once every ten minutes during any single transmission of more than ten minutes duration.
>
> (2) The required identification shall be transmitted on the frequency or frequencies being employed at the time and, in accordance with the type of emission authorized thereon, shall be by either telegraphy using the International Morse Code, or telephony. In addition to the foregoing, when a method of communication other than telephony or telegraphy using the International Morse Code, is being used or attempted, the prescribed identification shall also be transmitted by that method.

LICENSE PROCESSING

Although doing its level best to keep up with the flow of applications for new ham tickets, the amateur license branch of FCC still finds itself plagued with personnel problems, so that it has ups and downs in ability to turn out the paste-

board forms at the same rate at which applications arrive. Add to that the absenteeism caused by the winter's "flu" bugs and it is easy to see why it's been taking a couple of months, recently, for the processing of papers in Washington. We mention all this simply so you new applicants won't be too disturbed if you have to wait what seems like an awfully long time to get your tickets. Also, for practical reasons the applications are processed in large batches, which explains why a friend of yours who took a different class exam the same day as you might get his ticket early and yours won't show up for a while longer.

AUTO LICENSE PLATES

With Virginia and the Territory of Alaska the most recent additions to the list, fourteen states plus Alaska and the Canal Zone were issuing call letter license plates as of the end of 1952. If our correspondence accurately represents amateur activity, we can expect new license plate legislation from several more states with the next few months. Inquiries have been received from over a score of states during the last half-year.

At least half of the states represented in recent correspondence have already turned down previous attempts by amateur clubs or individuals at call letter plate legislation; in many cases, the same "spark-plugs" are bouncing back for another try. With the recent convening of many State Legislatures, the pace has increased considerably. The Governor of Indiana recently signed a bill which will provide for the issuing of call letter plates effective January, 1954. Things look good in Oregon, where, at last word, a bill had passed the House of Representatives, with no opposition expected from the Senate. Bills in both New York and South Dakota await only their Governors' signatures. California and Oklahoma are among others reporting progress.

Admiring his call letter license plate is J. Carroll Melton, chairman of a committee which spear-headed the legislation in Virginia. Other committee members were W4s, AKN, JRX, JAQ and NAD.

Strays

From an AP dispatch via W2PPY we hear that 11-year-old Larry Ogurcak passed his General Class exam and changed his call from WN9UBY to W9UBY. At the same time dad, WN9UBV, failed the test and must try again.

—•••—

What the boys figured might be a TVL-BCL ambush was just coincidence after all. Prior to a meeting at one member's home, the Rappahannock Valley Radio Club was instructed to go west of town for about two miles and turn right at a sign reading "Ham Shoot."

—•••—

In addition to the WTVI TV-station call sign mentioned in a recent Stray, W1DBM informs us that KTVI, Boise, Idaho; WITV, Ft. Lauderdale, Fla.; and WINK-TV, Ft. Myers, Fla., are other new ones assigned. Also, KID-TV (juvenile programs?) is in Idaho Falls, Idaho, and WSUN-TV, of course, is in Florida.

—•••—

W6RJA and W7LKZ point out a "perpetual motion" gimmick others may have observed. By careful adjustment an ordinary bug can be made to make dots indefinitely while interrupting a minute current flow such as furnished by an ohmmeter continuity indicator.

—•••—

With another new crop of hams on hand since we last mentioned it, W9TKR and others figure it's time again to point out that alligator clips wrapped with a few turns of solder make easily-adjustable bug weights. From the safety angle, wooden spring-type clothespins are more apropos.

—•••—

A "Machine for Shrinking Speeches" was revealed at the 1953 Institute of Radio Engineers convention in New York. This device, capable of contracting speech length without affecting voice quality, should go far toward prolonging tube life expectancy in the rigs of some amateurs.

—•••—

TAN (Teen-Agers' Net) operates every Saturday night at 1830 EST on 7175 kc. W1UTH invites other interested "young squirts" to join up.

—•••—

A radio club for juniors aged 9 through 14 meets regularly in Philadelphia. Code sessions and theory periods are featured and newcomers are welcomed. Interested lads are invited to contact Fox Chase Radio Club, George Pfisterer, jr., president, at 914 Napfle Avenue, Philadelphia 11, Penna.

—•••—

W6OQY tells us that one dollar sent to the Coronado Radio Club, Box 277, Coronado, Calif., will secure any interested party a 1953 directory of over 1300 San Diego county amateurs, cross-indexed three ways. It has additional features and is a valuable reference in traffic work.

LOCAL amateur radio publicity has increased manyfold in the past few years. Largely through the work of clubs, but also through individual efforts, newspapers throughout the nation have carried thousands of stories on the activities of amateurs. The desirability of this tremendous achievement is obvious. But it is also one of those things of which there can never be enough — like candy and ice cream at a child's birthday party.

Amateur radio needs continued good public relations. Public relations is the job of selling one's self or one's group activity. Our need is of two kinds. First, the selling of amateur radio as an institution, as an organized body. Second, the selling of the individual amateur as a useful member of the community. The first is primarily the responsibility of Hq. The second is primarily the job of the individual member or club.

One of the most useful tools is publicity. Publicity in effect, is the voice of public relations, the practical and effective way of spreading your story and forming favorable opinions.

Publicity is news. News about you. About your fellow hams and your club doings. Publicity has become an accepted form of newsgathering, actually welcomed by editors whose staffs are unable to cover all events and report all news happening within their cities or towns. Editors are grateful for publicity — of the right kind. By the right kind we mean that which is newsworthy.

What is news? So far as the editor of a newspaper is concerned, it is anything that interests his readers. A news story can be built around almost any occurrence. One difference between a good publicity man and an average one is the ability to recognize news angles in ordinary events. We hams too often let opportunities for local news stories slip by because the events seem too commonplace to our everyday ham activities. The important thing is to develop a "nose for news" — to look at each and every event in your club or your personal amateur radio activities with the thought, "How can this be worked up into a good news story?" As you gather experience, and particularly as you make contact with local editors, you will see just what makes news to them and therefore what events in your own affairs are newsworthy.

The adjacent tabulation, taken from the publicity manual, supplied by Hq. to each ARRL affiliated club, is an illustration of some of the events which have news possibilities. Of course some rate higher than others — a routine club meeting might get a few sentences in the local paper; some unusual emergency activity probably rates page one, with pictures.

Let's take one simple example — No. 18, "Individual gets amateur license." What's so newsworthy about that? It's done every day of the year, isn't it? Sure. Some thousands of licenses are newly issued each year by FCC. And that means thousands of publicity possibilities for amateur radio. Now, when Joe Doakes of Podunk, Ohio, gets his Novice license it's of no interest whatsoever to the general public in Cleveland or Toledo or any outside place. But it's news in Podunk. Joe, one of the local citizens, has a Federal government license authorizing him to operate a short-wave transmitter from his home. Sounds a little more impressive that way, doesn't it? Joe doesn't need to be a seven-year-old prodigy or some other unusual case. As a citizen of the community, the out-of-the-ordinary things he does are of interest to his fellow townspeople. And passing a Federal radio license examination is by no means ordinary.

A story of that nature could bring in lots of possible angles — how long Joe studied, where he went to take the exam, how difficult or easy he found it, how nervous he was during the code test, what sort of gear he has in his station, his first contact, what Joe does for a living, etc.

Obviously, we're talking about smaller towns and communities, primarily. The Chicago *Tribune* for example, simply wouldn't have space for such an item even concerning a Chicagoan unless it

were an unusual case. In the metropolitan areas, however, there are community papers where a simple story such as this would obtain space.

Unless your sole amateur activity is routine rag-chewing, certainly some aspect of your hamming is newsworthy. Perhaps you handle an overseas GI message, bringing a local family the first news in weeks of their son in military service. Perhaps you knock off your 48th state, or 6th continent, or 100th country. Perhaps you are training a few Boy Scouts to become amateurs. Perhaps you have some unusual mementos of ham friendships, such as a set of wood carvings sent you by a long-time DX friend. There are many possibilities. The point is to recognize them. Such items are good local news.

How do you get your item in the paper? If you know the editor or a member of his staff personally, you're all set. More likely, you don't. If the item is hot news, such as emergency work in progress, telephone it. But if it has no vital time element, mail it in.

News stories should be neatly typewritten, double spaced on one side only of standard 8½ by 11 white paper. Your name, address and telephone number should appear in the upper left-hand corner. If you are the publicity man for a club or group, add its name. Then the editor can contact you for additional information, if needed. Always leave adequate margins and start your story about one-quarter the way down the page. This gives the editor plenty of space to mark the copy up to suit him.

Don't try to be fancy in your writing, or overly dramatic, or you'll create a bad impression. State the item in plain, simple facts. If you've got a story, a poor writing job won't hide it completely. If you haven't got a story, no amount of high-power writing is going to fool the editor. He's in the business. He'll probably rewrite parts or all of it to suit himself, anyway.

With your release in the hands of the city editor, he may turn it over to a reporter for follow-up. The reporter will be in touch with you and some of the questions he may ask might sound odd. Don't question his approach to the story — your task is to supply him with information.

Routine releases on club meetings may rate prominent space in small dailies or weeklies, but in larger papers they are usually relegated to a special club column or at the most a few lines of type. In large cities, it behooves the amateur radio publicist to concentrate on the more important stories such as Field Day and civil defense participation. Many of these will result in a personal follow-up by a reporter to develop additional news angles and obtain more information. Here, coöperation is the keynote of success.

Photographs are important but unless you have a club member or friend who can turn out finished work there is not much sense in submitting small, amateur photographs. If the editor feels the event merits a photo, you can be sure he will see that a staff photog is there to cover it.

One-shot affairs and occasional publicity releases serve their purpose — but what amateur radio needs is continual publicity. You may not always get a release published; you may find the city editor blue-pencilling your copy all the time — the important thing is to always keep pitching. Contacts on the paper help tremendously — many times it will mean the difference between big story and a few paragraphs buried inside the paper. Cultivate and build up your contacts. Perhaps you can even get your reporter friend to become an amateur radioman!

Newspaper publicity is a primary form for club groups and the techniques of writing effective copy should be aimed at the press. However, they are equally adaptable to company and community magazines and house organs.

Publicity, however, does not only take the form of the printed word. There are other forms in which clubs and individuals both may participate. Foremost among these is the hobby show or county fair. Throughout the year, ARRL Headquarters provides assistance in the form of

(Continued on page 126)

Examples of Incidents with News Value

Club Affairs

1. Election of officers
2. Routine club meetings
3. Guest speaker at meeting
4. Code and theory training classes
5. Club sponsors picnic or hamfest
6. Club station activities
7. Club forms committee; e.g., TVI
8. Club sends delegation to division convention
9. Club sponsors local contest; e.g., WAS
10. Club scores in ARRL contests
11. Club plans for Field Day, SET, etc.
12. Club supplies special communications; e.g., boat races
13. Club anniversary
14. Club radio exhibit in local store
15. Club official addresses civic group
16. Club publishes local news bulletin
17. Club participates in civic project

Individuals

18. Individual gets amateur license
19. Amateur enters military service
20. Amateur achieves prominence in another field
21. Amateur wins operating contest for his section
22. Amateur makes WAS, WAC, DXCC, etc.
23. Individual traffic-handling achievement

Civil Defense and Emergency Communications

24. Club station acts as NCS
25. Local emergency corps set-up
26. Tie-in with civil defense activities
27. Local demonstration of emergency facilities
28. Simulated Emergency Test participation
29. Field Day participation
30. Actual work in emergency

General

31. Unusual happenings — e.g., mobile communications at an automobile wreck
32. Boy-meets-girl via amateur radio
33. Chess by radio
34. Career story of prominent ham
35. Message delivered from overseas service man

Results — Nineteenth ARRL Sweepstakes

THE Nineteenth ARRL Sweepstakes, held November 15th–16th and 22nd–23rd, was a well-attended affair marked by snappy push-to-talk and tape fists. Conditions, though far from ideal, were good. Many contestants found the prevalence of "long skip" a real help in raising those tougher sections, but admittedly it was more of a chore to pile up huge contact totals. Be that as it may, 8.4 per cent more entrants — including a record number of club participants — were on hand to parcel out QSOs this year, and log comments indicated almost unanimously that "a good time was had by all."

Award Winners

Of the 1152 logs submitted by contestants, 957 were for c.w. and 195 for 'phone participation. As in the past, competition for awards was intrasectional. Accordingly, certificates are being given to the high scorers in all of the 71 sections from which c.w. entries were received and to 'phone winners in 58 sections. The call of an award winner appears at the head of each section in the tabulation of scores beginning on p. 54. The high degree of operating know-how which the winners displayed surely merits the congratulations of the entire SS fraternity!

Leading Brasspounders

At the head of the pack nationally was W4KFC, Vic Clark, a contest master who needs no introduction to those who follow operating activities. Vic, high in the 1950 fray, returned to the top spot in 1952, scoring 188,100 points by virtue of his 1048 contacts in all sections. The equipment at W4KFC included: transmitter, VFO-807-HK257 at 100 watts; receiver, BC-348; antennas, 138-foot long wire, 7-Mc. ground-plane, 14-Mc. two-element rotary.

In second position, but close on Vic's heels, was perennial SS star W3DGM with 187,650 points. Mel's total stemmed from 1043 exchanges in the 72 sections. He used p.p. 807s at 100 watts and a NC-101X receiver.

Third-place honors went to W9IOP, who snagged 1052 stations in all sections for a 186,660 point total. Larry's all-time record for number of contacts — 1100 as W8IOP in the previous SS — still stands despite the efforts of this year's entrants.

After the big three, these operators scored over 125,000 points: W3BES 181,710, W6BJU (W6-CUF, opr.) 175,104, W7PGX 169,513, W9RQM 168,840, W3CTJ 162,540, W4BGO 159,930, W3GAU 155,070, W3EIS 154,080, W7KEV 151,674, W3GHM 149,760, W3ALB 149,580, W3JTK 147,858, W9ERU 144,900, W8WZ 144,000, W7GEB 141,120, WØYCR 139,125, W6EPZ 135,788, W9WFS 133,560, W8LQA 127,889, W3LVF 127,440, W3JTC 125,563, W7KVU 125,010.

The top scorers by licensing areas were as follows: W1RY 118,170, W2GFG 124,118, W3-DGM 187,650, W4KFC 188,100, W5MCT 122,760, W6BJU 175,104, W7PGX 169,513, W8WZ 144,000, W9IOP 186,660, WØYCR 139,125, KH6IJ 61,200, KL7AIO 25,498, KP4QR 70,395, KZ5BC 25,326, VE1AR 78,913, VE2OL 44,318, VE3AWE 86,288, VE4ER 10,665, VE5QZ 98,460, VE6MA 47,043, VE7JO 51,150. For the second consecutive year VE5QZ tallied tops for Canada; he was also the only VE to knock off all sections.

All ARRL sections were active as evidenced by the number of brasspounders who eked out QSOs with *all* 72. The following operators qualified for the full section multiplier: W1EOB, W1RY, W3ADZ, W3ALB, W3BES, W3CTJ, W3DGM, W3EIS, W3EVW, W3GAU, W3GHM, W3IYE, W3KT, W3LVF, W4BGO, W4HQN, W4KFC, W4SHJ, W5MCT, W6BIP, W7GEB, W7KVU, W7PQE, W7YG, W8WZ, W9DWD, W9ERU, W9IOP, W9RQM, W9WFS, W9YFV, VE5QZ. An additional 31 operators missed only one section each.

With each succeeding SS more brasspounders climb to the 800-plus level in numbers of contacts. These 18 did it this year: W9IOP 1052, W4KFC 1048, W3DGM 1043, W3BES 1010, W6BJU 989,

In the 'phone section, SS newcomer Al Pichitino, WØEDX, earned the Minnesota award and the distinction of being the only entrant to tally a six-digit score.

Eugene Hubbell, W9ERU, walked off with the Illinois section c.w. award by working all sections and rolling up 144,900 points from 806 QSOs.

W7PGX 971, W9RQM 941, W3CTJ 903, W4-BGO 901, W3GAU 868, W7KEV 861, W3EIS 856, W3GHM and W3JTK 833, W3ALB 831, W5QNZ 813, W9ERU 806, W8WZ 805.

'Phone Leaders

Top 'phone honors went to Al Pichitino, WØEDX, who rolled up 108,972 points with 505 exchanges in all 72 — a particularly notable accomplishment in view of his 90 watts input. Doubtless these antennas contributed considerably to his success: 3-element rotary on 20; two horizontal half-waves out of phase; and a ground-plane vertical on 75. Al became the first 'phone man to seize the No. 1 spot from California in postwar SS competition — not bad for first try!

Second highest score came from W6OGZ with W6FRW at the controls. Dawkins, utilizing 2, 10, 20 and 75, talked his way to 99,684 points with 703 QSOs in all sections but Canal Zone. The line-up at W6OGZ included an elaborate assortment of arrays tied onto a KW-1 at one kw.

Another Westerner, W7PUM, was next with 96,255 points. Warner, with just 70 watts, logged 465 stations in 69 sections.

Here are the remaining 'phone scores over 40,000: W9NDA 91,728, W4PJU 83,283, W6AM 76,183, WØPRZ 74,520, W4KZF 71,379, W6CHV 61,620, WØBCF 60,705, W8AJW 56,826, W5-MYI 51,188, W7HAD 48,351, W3LXE 46,735, W2NSD 46,242, W4HUW 44,940, W5KC 42,494, W2JKH 42,480, W4CYC 42,147, W9RBI 41,481, W5KBU 40,548, W8VQD 40,020.

The licensing area leaders were: W1JEL 38,430, W2NSD 46,242, W3LXE 46,735, W4PJU 83,283, W5MYI 51,188, W6OGZ 99,684, W7PUM 96,255, W8AJW 56,826, W9NDA 91,728, WØEDX 108,-972, KH6MG 29,890, KL7AON 19,743, VE1CM

CLUB SCORES

Club	*Score*	*C.W. Winner*	*'Phone Winn*
Potomac Valley Radio Club	2,772,753	W4KFC	W4NTZ
Frankford Radio Club	2,628,936	W3DGM	——
Ohio Valley Radio Association	1,277,399	W8RSP	W4KZF
El Ray Radio Club	676,744	W1BOD	W1IXJ
York Radio Club	378,456	W9YFV	——
Detroit Amateur Radio Association	322,222	W8YIN	——
Queens Radio Amateurs	301,989	W2LPJ	——
South Jersey Radio Association	277,300	W2PAU	——
Sioux City Amateur Radio Club	273,981	WØFZO	——
Wisconsin Valley Radio Association	269,757	W9RQM	——
Syracuse Amateur Radio Club	264,174	W2AW	——
Associated Amateurs of Long Beach	252,409	——	W6AM
Milwaukee Radio Amateur Club	249,655	W9GIL	W9TPT
Garden State Amateur Radio Association	191,265	W2TPJ	——
South Bend Amateur Radio Club	186,660	——	——
Buckeye Short Wave Radio Association	182,137	W8OYI	W8OAC
Hampden County Radio Club	169,661	W1EOB	W1TCM
Nortown Amateur Radio Club	152,628	VE3BDE	——
Four Lakes Amateur Radio Club	139,481	——	——
San Antonio Radio Club	139,282	——	——
Connecticut Wireless Association	138,744	W1BIH	——
Niles Amateur Radio Club	124,147	——	——
Bloomfield Radio Club	124,118	——	——
Northwest Amateur Radio Club	123,718	——	——
Twin-City Contest Club	121,251	——	——
Lake Success Radio Club	118,264	W2DLO	W2BQM
Tri-County Radio Club	115,874	——	——
Westpark Radiops	108,562	W8PM	W8AJW
Dade Radio Club	102,090	——	——
Chicago Suburban Radio Association	100,720	W9ZSQ	——
Utica Amateur Radio Club	95,158	W2TVR	——
Point Radio Amateurs	92,750	W9KXK	——
Ridgewood Amateur Radio Club	88,075	——	——
Charleston Amateur Radio Club	86,880	——	——
Mid-Island Radio Club	86,319	W2KTF	——
West Seattle Amateur Radio Club	77,835	W7AJS	——
Narragansett Assn. of Radio Operators	77,201	W1CJH	——
Philadelphia Wireless Association	75,903	W3GAG	——
IBM Radio Club	74,248	——	——
Nassau Radio Club	62,623	W2VL	W2TUK/2
Case Institute of Technology Radio Club	59,144	W8DAD	——
South Lyme Beer, Chowder, and Propagation Society	55,230	——	——
Red River Radio Amateurs Club	54,138	——	——
Hamfesters Radio Club	53,608	——	——
Antietam Radio Association	52,699	W3CIQ	——
Albany Amateur Radio Association	51,900	——	——
Lancaster Radio Transmitting Assn.	44,682	——	——
Purple Glow V.H.F. Club	43,391	——	——
Central Illinois Radio Club	41,978	——	——
Columbus Amateur Radio Association	41,445	——	——
Rochester Amateur Radio Association	41,417	——	W2ICE
Knickerbocker Amateur Radio Club	38,520	——	——
Canton Amateur Radio Club	38,427	——	——
Johns Hopkins Amateur Radio Club	38,190	——	——
Worcester Polytech Radio Club	36,355	——	——
Green Bay Mike and Key Club	34,440	——	——
Rensselaer Polytechnic Institute Radio Club	32,860	——	——
Johnson County Radio Amateurs Club	32,860	WØDAK	——
Stratford Amateur Radio Club	30,853	——	——
Minneapolis Radio Club	30,525	——	——
Northern New Jersey Amateur Radio Assn.	29,373	——	——
Radio Amateur de Hull	28,939	——	VE2IZ
Pennsylvania DX Club	20,892	——	——
Raritan Valley Radio Club	18,500	——	——
Rebel Radio Club	18,460	——	——
St. Louis University Amateur Radio Club	17,491	——	——
Phillips Academy Radio Club	11,665	——	——
Kenmore-Buffalo-Tonawanda Radio Club	16,116	——	——
Dayton Amateur Radio Association	11,550	——	——
Huntsville Amateur Radio Club	7200	——	——
Jamestown Amateur Radio Club	6630	——	——
Keesler Amateur Radio Club	6320	——	——
Tri-State Amateur Radio Society	4978	——	——
Citrus Belt Amateur Radio Club	4774	——	——
Delaware Valley Radio Association	4371	——	——
Northern California DX Club	2900	——	——
New Haven Radio Association	1896	——	——
Ogden Radio Amateurs Club	435	——	——

2808, VE2IZ 11,679, VE3RM 6191, VE4JK 8008, VE7VT 9594.

W9NDA, WØEDX and WØPRZ managed to snare every one of those 72 sections, one or more of which is always elusive. Examination of the logs of W4PJU, W6AM, W6OGZ, W7HAD and WØBCF, who missed one section revealed an interesting sidelight: Yukon, missed by W4PJU and WØBCF, was the rare one! The other three ops latched onto Yukon but couldn't find either Vermont, Canal Zone, or West Indies.

The following made over 400 contacts: W6OGZ 703, W9NDA 638, W6AM 542, WØEDX 505, W7PUM 465, WØBCF 432. With 28-Mc. conditions spotty, W6QEU's record of 854 QSOs in 1950 was not approached.

Club Scores

A handsome gavel is presented annually to the club whose members submit the highest aggregate score. This year, with 78 groups competing, the award again goes to the fast-stepping Potomac Valley Radio Club with its sparkling 2,772,753 point total — but not without a fight-to-the-finish struggle from the Frankford Club of Philadelphia, whose members ran up 2,628,936 points. This makes it three straight for Potomac, a club with a gavel collection now beginning to rival that of Frankford! The Ohio Valley Radio Association with a 1,277,399 point aggregate went over the million mark for the first time to take undisputed possession of third position. All three clubs promise to make the race every bit as interesting in the 1953 SS!

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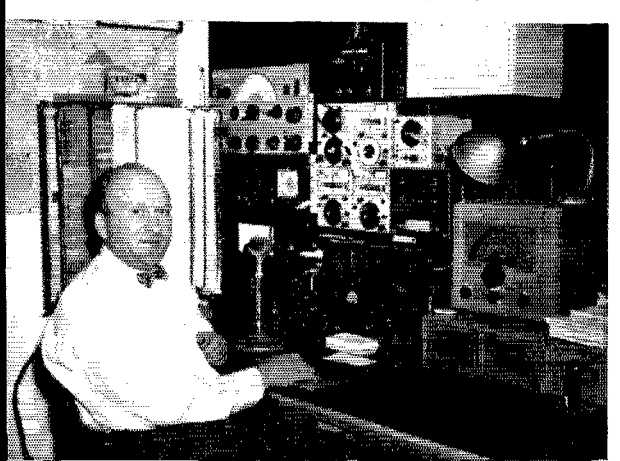
The Twentieth Sweepstakes is scheduled for the week ends of November 14–15 and 21–22, 1953. Keep track of those dates and start making your SS plans now. Why not get the TVI licked and the antennas pruned right away! Remember, those new 'phone bands and the Santa Barbara section will be there to liven up the proceedings. *See you in November!*

C. W. SCORES

Nineteenth 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 1.25), B indicates 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: W3DGM 187,650-1043-72-A-40, or, final score 187,650, number of stations 1043, number of sections 72, power factor of 1.25, total operating time 40 hours. . . . Stations manned by more than one operator are grouped in order of score following single-operator station listings in each section tabulation; calls of participants at multi-operator stations are listed in parenthesis.



ATLANTIC DIVISION

Eastern Pennsylvania

W3DGM....187,650-1043-72-A-40
W3BES.....181,710-1010-72-A-40
W3CTJ.....162,540- 903-72-A-40
W3GHM....149,760- 833-72-A-39
W3ALB.....149,580- 831-72-A-39
W3LVF.... 127,440- 708-72-A-25
W3KT.....120,870- 673-72-A-38
W3EQA....107,920- 610-71-A-37
W3CPS.....101,085- 596-69-A-40
W3OCU.....92,293- 551-67-A-32
W3CHH.....87,615- 531-66-A-38
W3LEZ.....78,488- 455-69-A-34
W3ADZ.....78,390- 438-72-A-29
W3DVC.....77,138- 468-66-A-33
W3QOR.....75,983- 461-66-A-35
W3ADE.....67,016- 426-63-A-36
W3BIP.....64,890- 412-63-A-40
W3EVW.....63,180- 351-72-A-34
W3JBC.....58,820- 346-68-A-22
W3HUS.....57,451- 390-59-A-28
W3GAG.....56,621- 360-63-A-20
W3MDE.....50,915- 300-68-A-30
W3ISE.....48,020- 343-56-A-20
W3KDF.....46,033- 363-51-A-22
W3NOK.....44,682- 340-66-B-29
W3CGS.....33,863- 215-63-A-24
W3IXN.....32,519- 238-55-A-18
W3JN.....32,250- 215-60-A-16
W3CHU.....31,106- 277-45-A- –
W3MFU.....30,345- 238-51-A-16
W3ENH.....29,355- 206-57-A-24
W3EAN.....28,731- 236-61-B-15
W3LTC.....28,656- 299-48-B-23
W3GHD.....26,040- 186-56-A- –
W3QLZ.....25,350- 260-38-A-18
W3NNL.....24,380- 184-53-A-16
W3MDO.....22,236- 218-51-B-28
W3RYT.....21,788- 250-35-A-39
W3CBF.....20,798- 177-47-A-28
W3TDF.....17,940- 189-39-A-13
W3HRD.....17,850- 174-42-A-15
W3DFJ.....16,349- 161-41-A-29
W3DYL.....14,620- 170-43-B-12
W3SNV.....10,871- 120-37-A-17
W3JLB.....7800- 125-26-A-13
W3SEB.....7088- 81-35-A-14
W3GRS.....5063- 81-25-A- 5
W3PST.....2933- 52-23-A-11
W3ITW.....2592- 48-27-B- –
W3SNY.....1900- 40-19-A- 8
W3SHO.....1463- 35-18-A-22
W3RAV.....1223- 40-13-A-16
W3LWY.....825- 22-15-A- 6

Md.-Del.-D. C.

W3GAU....155,070- 868-72-A-40
W3EIS.....154,080- 856-72-A-40
W3JTK.....147,858- 833-71-A-39
W3JTC.....125,563- 718-70-A-35
W3IYE.....115,380- 641-72-A-39
W3GRF....112,180- 633-71-A-40
W3FQB.....111,125- 635-70-A-40
W3AEL.....106,088- 615-69-A-35
W3KDP....105,848- 645-66-A-39
W3NOE.....99,248- 602-66-A-38
W3FQZ/3....80,063- 458-70-A-28
W3MFJ.....78,115- 460-68-A-37
W3DRD.....77,213- 435-71-A-33
W3WV.....75,900- 442-69-A-28
W3GBB.....60,150- 401-60-A-40
W3PZW.....58,625- 350-67-A-23
W3PTZ.....57,750- 385-60-A-28
W3CIQ.....38,269- 236-65-A-29
W3OQJ.....30,038- 223-54-A- –
W3HMH....27,608- 205-54-A-30
W3CDG.....23,600- 160-59-A-22
W3MCG.....23,230- 202-46-A-17
W3LVJ.....22,950- 180-51-A-15
W3SRJ.....22,140- 185-48-A-16
W3GA.....18,988- 202-47-B-16
W3FPQ.....18,040- 164-44-A-12
W3QZC.....17,919- 181-33-A- 8
W3RNA.....16,286- 153-43-A-15
W3IBX.....12,403- 121-41-A-18
W3CDZ.....12,309- 115-43-A-14
W4HZ/3.....10,865- 108-41-A-24
W3ROU.....10,010- 151-28-A-13
W3SCC.....5285- 76-28-A-13
W3UMS.....3720- 67-24-A-13
W3RXI.....525- 15-14-A- 5
W3OYX.....473- 21- 9-A- 4
W3IL.....158- 9- 7-A- –
WN3URX.....69- 6- 5-A- 7
W3RFW.....10- 2- 2-A- –
W3LTW (W3EFZ)
106,056- 600-71-A-38
W3QKO (W1RJN W2EZZ W3QLN QND SXN SZP)
33,900- 341-50-B-40

Southern New Jersey

W2IMU.....85,750- 490-70-A-35
W2PAU.....80,876- 515-63-A-34
W2EXB.....40,350- 269-60-A-32
W2BZI.....38,528- 345-56-B-34
W2BDL.....32,034- 281-57-B-30
W2DHJ.....23,750- 250-38-A- –
W2AHA.....21,450- 203-44-A-23
W2LY.....20,790- 198-42-A-24
W2PNA.....20,425- 190-43-A-19
W2YPQ.....19,723- 161-49-A-23
W2QKJ.....17,155- 148-47-A-25
W2QDY.....14,963- 200-30-A-28
W2BWW.....8250- 133-25-A- –
K2BG.....7758- 107-29-A- 9
W2ZVW.....7752- 114-34-B- 6
W2DMU.....5425- 70-31-A-17
W2QKO.....3531- 57-25-A-12
W2HAZ.....3510- 54-26-A- 6
W2BLV.....3250- 66-20-A- –
W2OBR.....2351- 50-19-A- 7
W2EWN.....460- 23- 8-A- 7
W2ZQ (W2HAZ LZA UAE)
4371- 71-30-B- 5

Western New York

W2BXZ.....88,901- 533-67-A-39
W2AW.....82,283- 477-69-A-31
W2RQH.....81,331- 501-65-A-39
W2COU.....57,528- 423-68-B-31
W2CCR.....46,473- 322-58-A-25
W2TVR.....44,022- 334-66-B-34
W2RSV.....37,230- 296-51-A-20
W2KEL.....35,796- 324-57-B-27
W2FXA.....32,400- 240-54-A-36

♦

Eighth highest 'phone score was submitted by Len Smeltzer, W4KZF, Kentucky section winner.

♦

Honors for ninth highest c.w. score went to West Florida winner Ben Letson, W4BGO: 159,930 points, 901 contacts and 72 sections worked.

♦

W2TRG.....25,848- 212-49-A-21
W2TMI.....18,804- 154-49-A-24
W2DTV.....18,418- 139-53-A-10
W2CIH.....16,116- 158-51-B-29
W2KHQ/2...11,840- 165-37-B-36
W2EMW....11,325- 151-30-A-20
W2SVC.....10,948- 159-29-A-10
W2MSF.....10,766- 161-27-A-24
W2SYT.....10,688- 113-38-A- 9
W2EZS.....9250- 105-37-A-16
W2FTY.....9245- 108-43-B- 8
W2KKZ.....9241- 114-33-A-14
W2JWU.....8094- 129-25-A-15
W2JMV.....7070- 103-35-B-13
K2APO.....6870- 118-24-A-12
W2MRL/2....6336- 103-32-B- 9
W2PYC.....4725- 70-27-A- 9
W2MSE.....3651- 67-23-A-11
W2FBA.....3500- 70-25-B- –
KN2AZA.....1466- 38-24-A-21
W2RUK.....1050- *31-15-A- 5*
W2DRQ.....770- 22-14-A- 4
W2RHQ/2....630- 21-12-A- –
W2EEB.....426- 15-11-A- 4
WN2KKT.....75- 6- 5-A- 3

Western Pennsylvania

W3UVB.....71,584- 456-63-A-34
W3PWN.....50,250- 404-50-A-29
W3NRE.....35,640- 324-44-A-33
W3SHX.....20,680- 189-55-B-27
W3IDO.....10,800- 108-40-A-21
W3SIJ.....9690- 114-34-A-29
WN3UTW....2599- 50-21-A-38
W3LHX.....450- 15-12-A- 3
W3KUQ.....10- 2- 2-A- 1
W3NCJ.....2- 1- 1-B- 1

CENTRAL DIVISION

Illinois

W9ERU....144,900- 806-72-A-36
W9WFS....133,560- 753-72-A-38
W9NII....123,718- 697-71-A-40
W9YFV....121,500- 675-72-A-40
W9PNE....107,468- 628-69-A-39
W9FAU....90,081- 508-71-A-27
W9ZRG....70,015- 418-67-A-34
W9WHF....55,815- 367-61-A-39
W9LUO....55,800- 462-62-B-37
W9WIO....50,720- 317-64-A-20
W9KLD....44,471- 308-59-A-32
W9AMU....39,520- 247-65-A-26
W9RXD....33,438- *281-50-A-34*
W9AGM....31,175- 215-58-A-18
W9QAQ....29,460- 249-48-A-31
W9BUD....29,434- 254-47-A-28
W9EET....28,156- 213-53-A-27
W9DOQ....*25,452-* 203-63-B-20
W9ERW....24,793- 211-47-A-28
W9EDH....24,365- 222-55-B-24
W9HCV....24,300- 246-50-B-19
W9QGP....23,595- 216-44-A-33
W9TH.....20,503- 140-59-A-12
W9FZE....19,440- 164-60-B-29
W9ZSQ....19,085- 178-44-A-32
W9MRQ....18,270- *205-36-A-18*
W9LQF....17,456- 144-49-A-27
W9IUV....14,963- 133-45-A-19
W9MWE....14,459- 135-43-A-19
W9RQT....14,060- 152-38-A-13
W9GNG....13,069- 131-41-A-17
W4MXU/9..13,020- 156-42-B-11
W9LGC....12,529- 132-39-A-18
W9QPI....10,305- 115-45-B-14
W9OAT....10,148- 99-41-A-14
W9OIN....8209- 101-33-A-15
W9TPH....7263- 85-35-A-16
W9YDQ.....5812- 75-31-A-14
W9QQN.....4524- 95-26-B-17
W9QXY.....3540- 61-30-A-19
W9PYV.....3360- 59-24-A- 9
W9OIJ.....3135- 57-22-A-34
W9SYZ.....2400- 40-24-A- 6
W9EBX.....2184- 52-21-B- 6
W9TQR.....1989- 40-19-A- 8
W9KWT.....1804- 42-22-B- 6
W9FDY.....1449- 31-19-A- 8
W9FWB.....1163- 31-15-A- 5
W9SQX.....763- 24-13-A- 4
W9KWO.....468- 18-11-A- 5
WN9RYU.....405- 20- 9-A-12
W9PTI.....289- 17- 7-A-10
W6CIW/9....160- 10- 8-B- –
W9HON.....95- 10- 5-B- 2
W9YTS.....50- 5- 4-A- 1
W9DWD (W9DDP GEM JJO MYC OUH WN9UVM)
87,192- 431-72-B-37
W9MZV (W9BXK CDO)
73,916- 431-69-A-40
W9OKI (W9OIJ)
71,156- 413-69-A-40
W9RMH (W9KWN)
53,295- 378-57-A-40
W9OKQ (W9AQJ)
51,838- 319-65-A-34
W9AML (W9ROK KAG LMJ OBN JRX JPR MRT AJJ QQX CFV SXL VPD ZST)
41,978- 293-58-A-36
W9CKC (W9JYI)
9090- 151-36-A-24

Indiana

W9IOP....186,660-1052-72-A-40
W9VUL....105,875- 650-70-A-34
W9NH.....56,942- 402-71-B-35
W9CNG....38,880- 243-64-A-23
W9HLY....21,500- 175-50-A-15
W9UC.....17,520- 150-60-B-20
W9SFR....13,432- 146-46-B-16
W9PGO.....5175- 70-30-A-14
W9QLW/9....4950- 75-33-B- 5
W9MWM....3915- 60-27-A- 9
W9GFS.....1302- 31-21-B- 5
W9DGA.....1063- 25-17-A- 1
WN9SWM....425- 19-10-A-10
W9YDP/9.....10- 2- 2-A- 1

Wisconsin

W9RQM....168,840- 941-72-A-40
W9KZZ....101,745- 605-68-A-32
W9GWK....98,000- 560-70-A-35
W9GKK....74,193- 503-59-A-29
W9FCF....66,030- 430-62-A-23
W9CBE....61,991- 417-61-A-31
W9GIL....59,500- 350-68-A-27
W9RKP....41,085- 249-66-A-30
W9FDX....38,700- 260-60-A-28
W9KXK....38,280- 264-58-A-26
W9WJH....34,440- 247-56-A-23
W9SDK....34,020- 243-56-A-20
W9BCC....27,795- 223-51-A-29
W9IKY....23,569- 210-45-A-18
W9QDP....23,348- 225-52-B-20
W9FPA....21,554- 201-43-A-27
W9CFL....21,500- 200-43-A-30
W9BSR....21,216- 205-52-B-18
W9UCR....19,834- *199-41-A-20*
W9MDG....15,168- 158-48-B-20
W9DR.....13,230- 150-36-A-17
W9GUR....11,615- 101-46-A- 8
W9FZC....11,000- 125-44-B- –
W9VKR....7812- 94-42-B-19
W9IQW....7310- 86-34-A- –
W9CXY.....5967- 77-39-B- –
W9GFH.....5076- 67-31-A-13
W9DTE.....2464- 44-28-B- –
W9LED.....1706- 53-13-A- 7
W9HRX.....1684- 36-19-A-12
W9LSK.....1382- 35-19-B- 3
W9PBA.....1328- *32-18-A-13*
W9IUQ.....975- 30-13-A- –
WN9VBZ.....285- 21- 6-A-34
WN9RUJ.....131- 11- 5-A- 6
W9EWM.....50- 8- 5-B- –
WN9RZD.....38- 8- 2-A-11
WN9RUQ.....11- 4- 1-A- –

DAKOTA DIVISION

North Dakota

WØLHS....54,138- 307-71-A-17
WØBPO.....6630- 72-39-A-28

South Dakota

KØFAL[1]....50,166- 300-67-A-29
WØWUU....22,982- 194-59-B-22
WØMFZ.....1725- 30-23-A- 9
WNØLBS.....525- 21-12-A-13

Minnesota

WØYCR....139,125- 796-70-A-38
WØMBY....109,043- 658-67-A-40
WØTJF.....74,080- 469-64-A-34
WØJNC.....47,171- 301-63-A-18
WØBAT....38,831- 277-57-A-26
WØWET....30,525- 204-60-A-30
WØDYD....22,476- 161-56-A-30
WØHUV.....8670- 120-34-A- –
WØWAB.....5760- 64-36-A-12
WØFDK.....775- 31-10-A- 9
WØBRA.....690- 23-15-B- 3
WØDNY.....220- 14-12-A- 3
WØDQL (WØFTN HFY)
35,072- 274-64-B-26

DELTA DIVISION

Arkansas

W5ASO....40,020- 355-58-B-18
W5BF.....29,580- 255-58-B-26

Louisiana

W5MCT....122,760- 685-72-A-38
W5WG.....96,425- 552-70-A-40
W5HNW....80,832- 636-64-B-40
W5NDV....44,485- 287-62-A-37
W5PXW....35,609- 236-61-A-40
W5BI.....24,780- 207-48-A-15
W5TRQ....17,135- 152-46-A-29
W5JET....15,400- 140-44-A-17

Mississippi

W5LPL....13,479- 136-41-A-17
W2ZEP/5....6320- 79-32-A- 6
K5FBB (W2ZEP W3PHN W5PNM TVI VCW W6FXZ PTB W9GMN QOM)
98,843- 575-69-A-40

Tennessee

W4FCF....89,425- 511-70-A-36
W4OGG....83,160- 528-63-A-32
W4VOS....79,538- 510-63-A-39
W4LKY....78,401- 455-69-A-40
W4YGO....50,388- 358-58-A-39
W4ONO[2]....44,265- 350-65-B-29
W4UOA....37,976- 270-57-A-30
W4CVM....25,145- 214-47-A-20
W4KH.....20,160- 180-56-B-20
W4DTI.....4428- 82-27-B- 9
W4UVP.....3563- 49-30-A-14
W4TIZ.....1037- 31-17-B- 5
W4PSB.....413- 16-11-A-15
W4TIE.....250- 14-10-B- 2

GREAT LAKES DIVISION

Kentucky

W4YFA....103,128- 581-71-A-33
W4OMW..65,850- 449-60-A-37
WN4UNH....4050- 60-27-A-11
W4NBS.....196- 14- 7-B- 1

Michigan

W8YIN....99,875- 589-68-A-36
W8DUS....62,377- 468-67-B-26
W8HJK....59,400- 396-60-A-37
W8NOH....58,220- 410-71-B-25
W8ISP....55,200- 350-64-A-31
W8RAE....53,213- 324-66-A-37
W8GP.....44,179- 281-63-A-24
W8SCW....39,732- 301-66-B-20
W8PG.....37,350- 252-60-A-30
W8TKW....33,320- 235-56-A-35
W8MGQ....25,074- 199-63-B-20
W8DM.....12,155- 143-34-A-18
W8FX.....11,700- 117-40-A-17
W8EGI....11,500- 100-46-A-18
W8OAF....10,537- 129-41-B-12
W8FLM.....9378- 121-31-A-21
W8GEB.....6270- 76-33-A-20
W8FGB.....5858- 72-33-A-16
W8BGY.....5250- 60-35-A- 6
W8JEF.....5184- 77-29-A-14
W8IVK.....2250- 36-25-A-14
W8JAE.....1144- 32-15-A-10

Ohio

W8WZ....144,000- 805-72-A-40
W8LQA....127,889- 726-71-A-40
W8OYI....115,500- 660-70-A-39
W8RSP....111,300- 643-70-A-33
W8SMC....107,168- 650-66-A-35
W8CEG....104,363- 605-69-A-25
W8ZJM....96,826- 551-71-A-35
W8PBU....92,225- 543-68-A-33
W8DQC....91,000- 520-70-A-29
W8UZJ....90,187- 555-65-A-33
W8BTI....70,525- 403-70-A-25
W8RSW....65,163- 401-65-A-30
W8BOJ....48,668- 309-63-A-21
W8VQI....47,580- 312-61-A-35
W8DWP....41,445- 308-54-A-37
W8FRD....38,645- 266-59-A-30
W8YGR....37,950- 220-69-A-26
W8PM.....36,683- 219-67-A-21
W8AL.....34,620- 292-48-A-35

W8NMR....27,365- 211-52-A-28
W8CLM....26,925- 180-60-A- -
W8KZT....25,541- 212-51-A-25
W8LPD....25,436- 200-51-A-13
W8DAE....24,054- 211-57-B-15
W8DAD....20,694- 194-43-A-20
W8RO.....19,916- 171-47-A-36
W8UPB....19,305- 178-44-A-13
W8HQH....18,490- 172-43-A-21
W8WE.....17,850- 140-51-A-14
W8LCX....15,400- 154-50-B- -
W8WAE....14,700- 148-44-A-21
W8MXO....14,640- 183-40-B-16
W8UOD....12,403- 141-42-A- -
W8GQ.....11,550- 105-44-A-25
W8GJG.....9994- 98-41-A- 8
W8EIV.....9785- 104-38-A-15
W8EPX.....8768- 84-42-A-17
W8SDJ.....8740- 93-38-A-21
W8AVT.....5320- 76-28-A- 5
W8PMJ.....3650- 73-25-B- -
W8SVK.....3344- 57-26-A-13
W8BAE.....3283- 52-26-A-19
W8FDC.....2970- 51-30-B-19
W8BUM.....2625- 50-26-A- 7
W8FU......2250- 38-24-A- -
W8JAR.....1733- 40-18-A- -
WN8KAO....1732- 36-21-A- 6
W8ET......1444- 38-19-A- 8
W8FZX.....1369- 38-15-A- -
W8ZHP.....1060- 27-16-A-10
W8HJH.....625- 29-10-A- 8
W8IMG.....513- 23-10-A-10
W8BSR.....408- 17-12-B- 6
W8JJB.....113- 8- 6-A- 1
W8URD (W3RJJ W8AVT FJP)
28,726- 273-53-B- -

HUDSON DIVISION

Eastern New York

W2MHE....70,720- 416-68-A-32
W2NZE....53-174- 366-59-A-38
W2IFP....41,820- 333-51-A- -
W2WSS....37,804- 303-51-A-39
W2NRD....34,255- 221-62-A-29
W2APH....27,380- 299-37-A-33
W2CJM....27,300- 196-56-A-37
W2LHM....11,223- 67-67-A-14
W2IVP....10,080- 130-32-A-15
W2NCG....10,058- 151-27-A-13
W2LDS....7475- 130-23-A-15
W2ZLL....7085- 109-26-A-11
W2TYC....4080- 105-16-A-11
W2GTC....2200- 45-20-A- 8
W2WZQ/2....1600- 50-16-B- -
W2JKJ.....919- 25-15-A- 5
W2BYI.....435- 15-12-A- 4
KN2BKU....293- 13- 9-A-16

N. Y. C.-L. I.

W2ZSM....123,080- 725-68-A-35
W2PZE....93,415- 550-63-A-36
W2KTF....86,319- 628-69-B-37
W2LPJ....59,933- 396-61-A-37
W2FNE....55,891- 368-61-A-36
W2GXC....53,985- 367-59-A-36
W2KPA....52,953- 360-59-A-34
W2HAQ....44,980- 347-65-B-32
W2OWX....44,389- 312-57-A-32
W2KGN....44,200- 272-65-A-23
W2AOD....43,106- 314-55-A-34
W2DLO....36,988- 269-55-A-28
W2LVS....36,820- 264-56-A-35
W2PVV....34,840- 268-52-A-32
W2GP.....32,358- 301-43-A-21
W2ZQW....29,202- 236-62-B-22
W2VL.....26,163- 257-51-B-17
W2OPY....23,543- 222-43-A-31
W2TUK/2...21,000- 200-42-A-15
W2GNP....20,372- 232-44-B-28
W2IDK....19,980- 223-36-A- -
W2GGN....18,253- 150-49-A-12
W2JBQ/2....17,425- 170-41-A-13
W2LGS....14,560- 186-32-A-28
W2HQL....14,274- 191-39-A-38
W2EQG....12,960- 138-48-B-17
W2OBU....12,458- 151-33-A-13
K2BH.....11,990- 109-44-A-15
W2DUQ....11,952- 166-36-B-17
W2CWD....11,880- 132-36-A-11
W2EEL.....8663- 105-33-A-16
W2AHC.....8300- 83-40-A-18
W3IJI/2.....7673- 99-31-A-18
W2AWH.....6938- 77-37-A- 9
W2IIG.....6834- 92-31-A-14
W2UXY.....6308- 87-29-A- -
W2KHJ.....5594- 90-25-A-11
W2ENW.....4830- 84-23-A- 8
W2TNI.....4440- 75-24-A-14
W2DQN.....3915- 60-27-A-13
W2LRI.....3308- 63-21-A- 6
W2WL......3162- 52-31-B- 6
W2LEO.....2730- 53-21-A-10
W2DBI.....2500- 51-20-A-16
W2IYV.....2274- 56-17-A-17
W2YSL.....2146- 51-17-A-12
W2IVU.....2120- 53-16-A-23
W2ZMK.....2083- 49-17-A-14
W2KAE.....1855- 53-14-A- 9
W2CPA.....1805- 38-19-A-18
W2KYN[3]....1700- 44-16-A- 7
K2AOE.....1480- 37-16-A- 8
W2GUV.....1200- 42-12-A-11
W2OMG.....984- 30-14-A- 1
W2CB......735- 25-12-A- -
W2ONG.....320- 16-10-B- -
W2JDN.....315- 15- 9-A- 4
W2LGK.....228- 13- 7-A- -
W2ORZ.....168- 12- 7-B- 2
W2YSI.....158- 13- 6-A- 9
KN2ABW.....125- 10- 5-A-11
W2ZML.....94- 8- 5-A- 3
W2KFV.....60- 7- 3-A- 2
KN2APG.....35- 7- 2-A- 2
KN2BKW.....5- 2- 1-A- 1

Northern New Jersey

W2GFG....124,118- 741-67-A-40
W2EQS....38,075- 547-65-A-40
W2TPJ....30,000- 500-64-A-33
W2GBY....57,000- 400-57-A-34
W2GND....56,678- 348-66-A-32
W2TWC....55,275- 336-66-A-23
W2MPP....49,804- 351-57-A-39
W2LSX....38,304- 342-56-A-22
W2FZY....37,500- 250-60-A-34
K2BCK....35,250- 235-60-A-20
W2AQT....29,378- 190-62-A-25
W2CAH....26,074- 205-51-A-18
W2LSJ....24,800- 248-40-A-19
W2EIK....22,695- 178-51-A-13
W2LYO....19,760- 231-34-A-33
W2JDX....19,565- 185-43-A-40
W2CWK....18,500- 200-37-A-12
W2CVW....16,863- 175-38-A-20
W2GIQ....13,438- 131-43-A-24
W2EWZ....12,240- 153-32-A-16
W7PGA/2...10,589- 100-43-A-24
W2ABL....10,313- 125-33-A-11
W2MHK....9751- 135-29-A-18
W2LPV....8160- 96-34-A-13
W2CFW....7483- 73-41-A-11
W2NEP....4648- 86-22-A-19
W2GNW....1518- 40-18-A- 8
W2ZK.....338- 15- 9-A- 2
W2IPJ.....290- 29- 8-A- 3
KN2AFQ....195- 14- 6-A-12

MIDWEST DIVISION

Iowa

W0NWX...111,358- 635-71-A-40
W0FZO....109,251- 626-71-A-40
W0BQJ....93,885- 569-66-A-32
W0CXN....87,969- 620-71-B-34
W0NYX....28,500- 200-57-A-16
W0ATA....28,130- 195-58-A-14
W0GVR....2800- 63-25-B- 7
W2DPV/0....240- 12- 8-A-10

Leading 'phone in the New Mexico section, John Harvey, W5MYI, chalked up a total of 51,188 points for the top W5 score.

Kansas

W0MUY....85,400- 492-70-A-38
W0BYV....62,176- 466-67-B-30
W0YFE....51,004- 306-67-A-29
W0IUB....50,213- 310-65-A-24
W0BCI....49,135- 318-62-A-35
W0AWB....43,549- 277-63-A-26
W0YRN....20,188- 163-50-A-23
W0FRL....15,938- 125-51-A-22
W0WMH....14,625- 130-45-A-19
W0FKO....12,544- 112-45-A-24
W0HAW....10,403- 116-38-A-18
W0DYX....2873- 46-25-A- 4
W0GAX....1148- 27-18-A- 8
W0AUH....900- 24-15-A- 5
W0BUM....113- 11- 5-A- 4

Missouri

K0FAY[4]....52,260- 413-65-B-39
W0MCX....18,156- 178-51-B-40
W0DAK....16,740- 140-48-A-19
W0FIR....8256- 96-43-B- 8
W0ETV....1725- 34-20-A-12
W0KIK....1317- 31-17-A- 8
W0FLN (W0AJE BYF ETW GFF) 1188- 33-18-B- 6

Nebraska

W0DW.....51,319- 305-69-A-38
W0CIO....49,849- 312-63-A-24
W0HSO....42,150- 282-60-A-21
W0EJA....27,540- 220-51-A-19
W0EUT....19,061- 150-51-A-19
W0JJK....17,213- 155-45-A-17
W0MZP....15,019- 136-45-A-22
W0NYU....14,943- 140-43-A-11
W0FVD....6078- 74-34-A-12
W0QNP....4970- 71-28-A- 9

NEW ENGLAND DIVISION

Connecticut

W1RY.....118,170- 657-72-A-37
W1BIH....78,075- 525-60-A-33
W1ODW....65,835- 399-66-A-33
W1DJV[5]....61,875- 453-55-A-23
W6YYN/1[5]..61,463- 376-66-A-35
W1VG[5].....55,230- 396-70-B-37
W1DIT.....41,344- 304-68-B-22
W1FTX.....34,618- 227-61-A-16
W1MTR....34,283- 329-42-A-30
W1QIS[5].....25,883- 204-51-A-15
W1UNG....22,844- 219-43-A- -
W1AYC....21,511- 232-49-B-13
W1CUH....17,630- 164-43-A-18
W1NLM.....9263- 95-39-A- -
W1RFC.....8585- 101-34-A-24
W1UHP.....4226- 74-23-A-10
W1RFJ.....4025- 70-23-A- -
W1NGQ.....1896- 41-24-B- 6
W1KDQ/1.....920- 23-16-A- 3
W1BDI[5].....168- 12- 7-B- 1
W2VMX/1[5]....105- 7- 6-A- 3
W1VWJ.....96- 9- 5-A- 6
W1MVC.....23- 3- 3-A- 1
W1AW (W1WPR, QIS, W2VMX)[5]
73,911- 524-71-B-32
W1TWZ (W1TWX)
30,943- 312-58-A-35
W1ORS (W1ASO EFM BGP TEQ BM FMU URC RFJ)
26,828- 257-39-A-24

Maine

W1UEB....29,708- 235-51-A-33
W1CV.....26,459- 179-61-A-24
W1PDN/1...18,688- 151-50-A-24
WN1VXV.....780- 31-23-A-14

Eastern Massachusetts

W1BOD....96,560- 570-68-A-39
W1IAP....86,130- 525-66-A-40
W1AQE....83,525- 515-65-A-40
W1JSM....61,923- 406-62-A-30
W1CMU....39,060- 326-48-A-37
W1RND....35,295- 272-52-A-33
W1ONP....32,200- 230-56-A-27
W1KQF....25,644- 189-55-A-21
W1RSR....23,518- 205-46-A-29
W1FTH....23,125- 186-50-A-23
W1CWX....22,976- 180-64-B-24
W1MQV....22,500- 180-50-A-22
W1JYC....20,720- 149-56-A-24
W1EIQ....17,899- 169-43-A-24
W1NYA....17,831- 158-45-A-26
W1SAD....16,650- 148-45-A-26
W1PLJ....15,383- 147-42-A-31
W1JCE....14,260- 125-46-A-14
W1GYP....14,079- 183-39-B-23
W1TVZ....13,063- 138-38-A-22
W1PH.....12,865- 166-31-A-12
W1AHP....12,348- 172-36-B-12
W1SW[6].....11,665- 131-36-A-14
W1KMS....9975- 143-28-A-32

W1MDV.....8370- 108-31-A-11
W1SXE.....7595- 105-31-A-20
W1KMY.....7400- 80-37-A-12
W1MND.....7215- 74-39-A-15
W1QIB.....7200- 120-30-B-23
W1TQS/1.....4410- 62-28-A-20
W1UPS.....3750- 61-25-A-17
W1TOQ.....3500- 70-25-B- 8
W1WAG.....1875- 38-20-A-12
W1TSN/1.....1870- 44-17-A-24
W1BTQ.....977- 23-17-A- 7
W1OMI.....845- 26-13-A- 9
W1IDU.....676- 25-11-A- 2
WN1WLZ.....633- 28-11-A-15
WN1VWM.....278- 22- 6-A- 7
W1AJ.....113- 9- 5-A- 4
WN1WAI.....75- 8- 4-A- 5
WN1VTT.....5- 2- 1-A- 4
W1MGP.....2- 1- 1-B- -

Western Massachusetts

W1EOB.....94,590- 526-72-A-31
W1JYH.....90,348- 509-71-A-24
W1CGK.....31,071- 239-53-A-27
W1MVF.....18,655- 182-41-A- -
W1TVJ.....14,140- 202-28-A-23
W1DVW.....7250- 100-29-A- 8
W1ASU.....4935- 72-35-B- 7
W1MNG.....2976- 48-31-B- 3
W1RLQ.....2142- 54-21-B- -
W1TSY.....1365- 39-14-A-10
W1RRX.....1190- 35-14-A-11
W1BVR.....881- 24-15-A- 2
W1YK (W1RAN RCS UGW)
36,355- 329-46-A-40
W1VBG (W1SRB)
3531- 57-25-A-30

New Hampshire

W1NHJ.....80,876- 527-63-A-34
W1CRW.....61,238- 355-69-A-23
W1BFT.....60,203- 349-69-A-19
W1FZ.....40,714- 259-63-A-24
W1USK.....8700- 145-24-A-25
W6BXH/1.....750- 31-10-A- 5
W1CVK.....50- 5- 5-B- 1

Rhode Island

W1CJH.....68,513- 440-63-A-39
W1KUF.....33,801- 300-57-B-22
W1AWE.....19,588- 166-59-B- -
W1AOP.....13,940- 136-41-A-20
W1BBN.....13,560- 113-48-A-11
W1TAT.....6588- 122-27-B-13
W1UEF.....2100- 62-28-A- -
W1VBR.....250- 17- 8-A-12

Vermont

W1RWP.....34,998- 308-57-B-35
W1BJP.....6649- 99-27-A- 7
W1UFZ.....4278- 59-59-A-14

NORTHWESTERN DIVISION

Alaska

KL7AIO.....25,498- 217-47-A-19
KL7TF.....24,920- 224-56-B-25
KL7WC.....23,028- 202-57-B-21
KL7AQB.....4770- 81-30-B- 8
KL7MF.....3800- 81-19-A-19

Idaho

W7PCZ.....57,980- 457-65-B-39
W7HAH.....54,990- 429-65-B-28

Montana

W7KVU.....125,010- 695-72-A-39
W7FLB.....45,492- 336-68-B-32
W8BTV/7.....19,520- 122-64-A-22
W7EWR.....17,089- 144-49-A-13
W7EIH.....6622- 79-43-B-19
W7FEE.....6606- 76-36-A-13
W7PTW.....5198- 63-33-A- 8
W7COH.....788- 21-15-A- 5

Oregon

W7GEB.....141,120- 786-72-A-33
W7YG [7].....115,200- 635-72-A-36
W7DIL.....37,820- 306-62-B-30
W7CYT/7.....25,288- 224-58-B-27
W7LT.....14,858- 144-42-A-29
W7RNY.....4425- 60-30-A-17

Washington

W7NLI.....88,573- 499-71-A-34
W7PQE.....82,584- 578-72-B-39
W7AJS.....68,340- 504-68-B-38
W7OPO.....65,325- 390-67-A-30
W7SHQ.....59,313- 368-65-A-38
W7JC.....31,290- 228-56-A-32
W7FVI.....20,250- 183-45-A-33
W7EYQ.....19,305- 150-52-A-26
W7ESM.....13,034- 134-49-B-16
W7ETO.....11,040- 115-48-B-16
W7PQP.....9472- 132-37-B-33
W7LEV/7.....3750- 60-25-A- 8
W7MTY.....1764- 42-21-B- 8
W7GAT.....1013- 27-15-A- 5
W7RNF.....750- 26-12-A-10
W7PUA.....715- 25-13-A-19
W2DGO/7.....340- 17- 8-A- 8
W7CWN.....23- 3- 3-A- 1

PACIFIC DIVISION

Hawaii

KH6IJ.....61,200- 450-68-B-37
KH6IB.....160- 8- 8-A-13

Nevada

W7KEV.....151,674- 861-71-A-39
W7CX.....12,954- 127-51-B-12

Santa Clara Valley

W6HOC.....106,944- 605-71-A-37
W6ZZ.....22,693- 162-58-A-27
W6II.....6045- 93-26-A-16
W6MMG.....2745- 61-18-A- 7
W6WMM.....1750- 35-25-B- 5
W6BTJ.....1386- 33-21-B- 6
W6QYR.....18- 3- 3-B- 1

East Bay

W6NGC.....38,550- 261-60-A-20
W6JOH.....22,220- 201-44-A-23
W6LJQ.....21,600- 145-60-A-14
W6IDY.....18,526- 162-59-B-14
W6AJN.....3432- 52-33-B-14
W6EJA.....2900- 58-25-B- 4
W6RRH.....585- 18-13-A- 5

San Francisco

W6BIP.....71,712- 499-72-B-31
K6DL.....44,785- 345-65-B-26
W6OTS.....32,780- 301-55-B-38
W6FVK.....10,163- 141-30-A-24
K6USN [8].....4917- 75-33-B-12
W6YC.....4860- 81-24-A-13
WN6NIM.....128- 13- 6-A- -

Sacramento Valley

W6TMP.....84,135- 474-71-A-39
W6OKK.....69,275- 412-68-A-38
W6NTQ.....25,054- 200-51-A-35
W6MTE.....8881- 103-35-A-21
W6OPY.....8040- 101-32-A-30
W6GTG.....3645- 81-18-A-21

San Joaquin Valley

W6EGX.....40,145- 259-62-A-34
W6BYH.....38,367- 305-63-B-19
W6PGP.....28,500- 238-60-B-35
W6QXF.....25,575- 165-62-A-29
K6EE.....853- 33-11-A- -
W6MYP (W6KIG)
29,160- 247-60-B-39

ROANOKE DIVISION

North Carolina

W4KE.....99,826- 703-71-B-40
W4GXB.....59,630- 445-67-B-28
W4LYV.....36,582- 251-59-A-29
W4TYR.....35,695- 251-59-A-34
W4VHH.....29,000- 237-50-A-34
W4HER.....23,869- 170-57-A-24
W4IZR.....20,460- 189-55-B-23
W4AIX.....5874- 64-37-A- 7
WN4WXZ.....4680- 79-26-A-24
WN4ULY.....845- 28-13-A-12

South Carolina

W4NZR.....40,194- 269-59-A-28
W1IIB/4.....21,402- 185-58-B-14

Virginia

W4KFC.....188,100-1048-72-A-40
W4CC.....124,605- 703-71-A-40
W4HQN.....110,970- 622-72-A-38
W4ESK.....99,830- 599-71-A-40
W4PNK.....96,075- 549-70-A-40
W4FF.....94,710- 575-66-A-38
W4WKQ.....93,225- 570-66-A-39
W4NH.....89,760- 529-68-A-39
W4KFT.....82,305- 531-62-A-37
W4UHG.....74,458- 522-58-A-40
W4KVM.....70,601- 422-67-A-30
W4EMJ.....50,173- 329-61-A-36
W4MLE.....48,600- 326-60-A-24
W4UWS.....42,705- 331-52-A-20
W4VBX.....39,300- 328-48-A-22
W4JUJ.....39,163- 242-65-A-23
W4SR.....36,438- 275-53-A-36
W4SHJ.....34,128- 237-72-B-31
W4LK.....23,925- 165-58-A-15
W4SPE.....21,620- 138-46-A-16
W4PHL.....21,100- 212-40-A-14
W4WRM.....13,750- 127-44-A-18
W4QCW.....10,500- 107-40-A- 9
W6LON/4.....3674- 70-21-A- 9
W4VYP.....2700- 56-20-A- 7
W4JUY.....2625- 50-21-A- 4
W4WBC.....2275- 46-20-A-25
WN4UOF.....1140- 32-16-A-19
W4TYC.....219- 15- 7-A- 6
WN4VQY.....140- 18- 7-A-20

West Virginia

W8PQQ.....71,568- 505-71-B-28
W8UMR.....52,325- 322-65-A-25
W8HRQ.....18,335- 205-38-A-23
W8JWX.....11,375- 130-55-A-18
W8TDG.....10,280- 129-32-A-19
W8VCT (W8VMP)
42,000- 300-56-A-25

ROCKY MOUNTAIN DIVISION

Colorado

WØANW.....53,320- 346-62-A-40
WØSJT.....41,966- 296-57-A-34
WØEWH.....38,464- 303-64-B-30
WØKHQ.....2924- 51-34-B- 8
WØKBD.....2280- 39-24-A-11

Utah

W7QDJ.....30,281- 227-57-B-25
W7QAG.....13,125- 128-42-A-24
W7QDM.....8415- 101-34-A-16
W7PIM.....7944- 88-41-A-23
W7BSE.....1063- 26-17-A- 4
W7PZE.....435- 17-12-A- 9

Wyoming

W7PKX.....73,150- 418-70-A-32
W7HRM.....70,518- 512-69-B-31
W7RDX.....22,745- 185-52-A-40

SOUTHEASTERN DIVISION

Alabama

W5ONL/4.....70,635- 425-68-A-34
W4KIX.....36,918- 296-63-B-17
W4TVM.....35,700- 258-56-A-30
W4JKU.....15,435- 159-49-B-17
W4EJZ.....13,443- 142-38-A-13
W4USM.....11,395- 107-43-A-21
W4TKL.....6975- 82-45-B-14
W4LEN/4.....605- 19-13-A- 6
WN4WOF.....225- 11- 9-A- 6

Eastern Florida

W4SAT.....105,829- 615-69-A-40
W4LVV.....93,081- 660-71-B-40
W4HQW.....73,313- 425-69-A-40
W4LOM.....61,200- 363-68-A-25
W4LQN.....40,052- 296-68-B-26
W4RTX.....18,460- 142-52-A-13
W4IYT.....1604- 64-29-A- 5
W4UGD.....1900- 38-20-A-13

Western Florida

W4BGO.....159,930- 901-72-A-40
W4NN.....50,719- 381-67-B-36

Georgia

W4BHG.....36,450- 243-60-A-32
W4YK.....14,495- 112-52-A- 9
W4WGY.....10,835- 99-44-A-25
W4GGD.....8225- 94-35-A- 8

West Indies

KP4QR.....70,395- 551-65-B-38

Canal Zone

KZ5BC.....25,326- 250-54-B-32
KZ5WZ.....3996- 54-37-B- 9

SOUTHWESTERN DIVISION

Los Angeles

W6BJU [9].....175,104- 989-71-A-40
W6EPZ.....135,788- 765-71-A-36
W6YLZ.....51,480- 312-66-A-25
W7LJD/6.....34,810- 236-59-A-27
W6KUC.....25,813- 208-50-A-27
W6KSF.....23,336- 196-49-A-30
W6NJU.....13,388- 129-42-A-34
W6TGY.....10,861- 121-37-A-20
W6ZOL.....10,124- 110-37-A-10
W6CCO.....9690- 114-34-A-17
W6JQB.....4774- 77-31-B- 6
W6MUW.....3861- 74-27-B-25
W6OTO.....2160- 54-16-A- 9
W6DPL.....1665- 37-18-A- 4
W6IIG.....1538- 42-15-A-14
W6LVQ.....894- 28-13-A- 8
W6HJK.....894- 28-13-A- 7
W6QOZ.....861- 27-13-A- 7
W6MYG.....788- 32-10-A- 8
WN6SWF.....85- 11- 4-A-15
W6QZR.....30- 7- 2-A- 4
W6LPV.....26- 4- 3-A- 3
WN6SWE.....5- 3- 1-A- 3

Arizona

W7PGX.....169,513- 971-71-A-40
W7RZQ.....77,050- 462-67-A-33
W7MLL.....24,827- 205-61-B-20

San Diego

K6AM.....52,841- 352-61-A-25
W6NKR.....34,438- 238-58-A-36
W6NLO.....26,313- 214-50-A-30
W6LRU.....23,850- 159-60-A-18
W6JVA.....5063- 79-27-A-26

WEST GULF DIVISION

Northern Texas

W5TFB.....88,605- 543-66-A-32
W5UXP.....84,975- 520-66-A-40
W5DB.....78,725- 471-67-A-31
W5GDH.....76,075- 448-68-A-32
W5THM.....70,400- 550-64-B-32
W5JD.....68,850- 406-68-A-38
W5PXT [10].....67,737- 506-67-B-30
W5TMZ.....66,246- 422-67-A-39
W5QF.....25,935- 203-65-B-22
W5TFR.....18,620- 166-49-A-34
W5TVY.....17,615- 140-52-A-27
W5WHE.....14,950- 132-46-A- 9
W5VNN.....13,585- 128-44-A- -
W5TGV.....10,023- 110-39-A-10
W5VNT.....7105- 100-29-A-19
W5TQD.....1725- 30-23-A- 5
WN5VNW.....19- 4- 3-A- 2

Oklahoma

W5OWG.....61,975- 466-67-B-33
W5EIO.....40- 4- 4-A- 1

Southern Texas

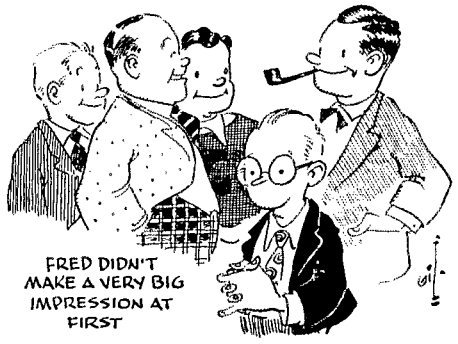
W5LGG.....117,949- 665-71-A-34
K5NRG [11].....62,388- 413-62-A-36
W5BTS.....40,162- 257-63-A-30
W5RID.....23,265- 143-66-A-21
W5FZA.....21,333- 162-53-A-18
W5EUK.....13,330- 125-43-A-18
W5HMO.....13,310- 121-44-A-24
W5VSL.....3813- 67-25-A-10
W5UMY.....3673- 57-26-A- 8
W5PTV.....1080- 27-16-A- 6
WN5WRW.....28- 7- 2-A- 6

(Continued on page 130)

The Man Who Broke the Bank

BY G. FRANKLIN MONTGOMERY,* W3FQB

No doubt about it, Fred was quite a boy. I can remember when he first joined the club back in the winter of '54, and you'd never have guessed then what would happen later. One of the members who worked with him over at United Research introduced him, and as I remember Fred didn't make a very big impression



FRED DIDN'T MAKE A VERY BIG IMPRESSION AT FIRST

at the time, probably because he was sort of small and didn't have much to say. It turned out he was some kind of physicist, maybe more like a mathematician, really, because his job was working on one of those electronic calculators, and I guess it was his training that helped him pull it off. Like his being the first ham I ever knew to have practically his whole station — receiver, transmitter, everything but the final — all built up using transistors. Seems he'd had a ticket for a couple of years, and when he joined the club he was active on the traffic nets and did a little DX on the side, just regular stuff as far as operating goes.

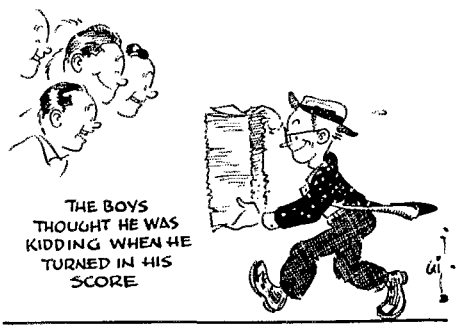
The guys in the club are great ones for contests, you know. We'd been going along pretty much as usual, and when the time came around for the '55 Sweepstakes, the boys began beating the drums for activity, and Fred was in the bunch of a dozen or so who swore they'd be on to build up a club score. We did pretty well that year, too, although the Frankford gang and a couple of others nosed us out, as always, but we felt good about the showing we made. Fred did all right. His score wasn't in the club's top four or five, but he was right in there pitching during the contest, and he was real enthusiastic about it beforehand. Apparently he hadn't ever had much time for contests before, and that year was the first time he got his feet wet. I talked to him about it afterwards, and I thought he'd done real well, never having any contest experience, but he didn't seem satisfied. Anyhow, the boys were glad to have him.

During the next year, he was pretty active. He got into all the DX contests and the Field Day, but when the fall of '56 rolled around, we didn't see much of him, and the fellows who were trying to line up a good team for the '56 Sweepstakes were a little afraid he might not take part. All we could get out of him was that he'd be in the contest but he was busy and couldn't get down to club meetings very often, so we left it at that.

Well, I suppose nearly everybody interested in the SS knows how it turned out that year. Fred rolled up a score that probably won't be topped for a long time, if ever. Before that, the best anybody had ever done was a little over twelve hundred QSOs — in '53, I think it was. Fred turned in just over two thousand, and the usual high men like 3BES, 4KFC, and 9IOP weren't even close. Figuring it at forty hours' operating time, it was better than fifty QSOs an hour on the average, which is really rolling in any kind of contest.

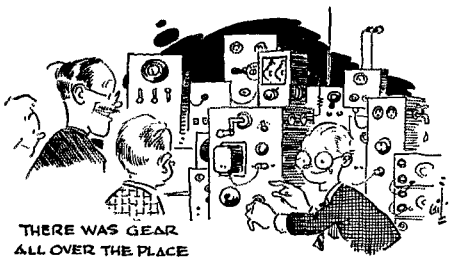
Nobody believed it, of course. When Fred showed up at the next club meeting and turned in his score, the boys thought he was kidding at first, and when he insisted it was right, some of them got kind of mad. There was a big discussion on whether we should even send it in with the club list, and Fred wasn't making things any easier because he wouldn't tell us how he did it. In the end, we did send it in, but with a lot of misgivings all around. We were right. The gang up at West Hartford didn't believe it either, although they cross-checked his log with all the other stations who sent in scores, and they admitted they couldn't find anything wrong. What they finally said was there must have been more than one operator, and they wouldn't allow the score unless Fred could explain how he did it. If it hadn't been for that, I guess we never would have found out.

A week or two afterwards, Handy came down from the League, and Fred invited him and the rest of us over to his shack. His station was built in the garage, and when I say built in, I mean it, because there just wasn't room for a car any more. There was gear all over the place. I couldn't recognize most of it, but there were separate rigs



THE BOYS THOUGHT HE WAS KIDDING WHEN HE TURNED IN HIS SCORE

* 4557 South Chelsea Lane, Bethesda 14, Maryland



for each band, a couple of magnetic tape recorders, an electric typewriter, and four receivers with selsyn-controlled tuning, in addition to the rest of the stuff. I'm no expert on this kind of thing, and it was all written up in *QST* a couple of years ago, but the way I understood Fred it was something like this:

He had built himself what was practically an automatic station. First, he had an electronic memory gadget that recorded the calls of every station he worked. The calls weren't recorded in regular c.w. but in some kind of special code Fred said he'd worked out from "information theory," or something like that. Then he had four receivers mechanically scanning any band or combination of bands he wanted. The receiver outputs were fed into a computer and feed-back control that was set up to zero the tuning on any signal sending CQ SS or a call. As soon as the station sent a DE, the computer compared the call with all the calls recorded in the memory. If it was a call he'd already worked, that receiver would go on tuning. If it was somebody he hadn't worked, the receiver would sit there, and one of his VFOs was automatically zeroed onto the receiver frequency. Meanwhile, one of the computer sections prepared a magnetic calling tape with the call of the unworked station. The calling tape was switched into the right transmitter as soon as the other station signed, and he had an interlock set-up so that only one rig could be on at a time. If the guy came back, the incoming dope was recorded on another tape and went from there into the computer, and if everything was received OK, a message tape was cut into the transmitter with all the regular stuff on it — number, time, and so forth — and the incoming tape was erased for the next one.

I know there are always dead spots in the contest when you can't seem to find anything, but Fred had thought of that too. He could limit the search time of any receiver to from fifteen seconds to two minutes, and if the receivers didn't find a new call in that time, one of the rigs was automatically set to a frequency two kc. from the nearest pile-up, and a three-times-two CQ tape was turned on. Of course, he could run CQs any other time he felt like it. You know how those IBM punch-card machines work? Well, that's more than I do, but anyway Fred had one that punched out a card for each QSO with all the dope on it like band, QSO number, and so on. That took care of the logging work, and when the contest was over, he simply ran the stack through a card reader and electric typewriter that typed out the log for sending in to ARRL. Matter of fact, Fred didn't really have much to do, except watch the stuff to be sure everything was running all right, because the computer even answered requests for fills — and got them — all by itself. Fred said the only time the machine got balled up was when it latched onto some guy who kept asking what the SS was! He did say that most of the time, just to keep awake, he monitored whatever receiver was in use and selected the RST report to be sent — by punching a button — but he didn't even have to do that. Sometimes he just locked in the RST-579 selector and let her rip. That's what you get most of the time anyway.

Pretty slick set-up, I thought. Something a lot of fellows have dreamed about, probably, but Fred just happened to be the first one to get busy and work on it. Sort of specialized, and certainly nothing for just chewing the rag or even working DX, but for the Sweepstakes it was strictly fine business. Fred? Well, the last I heard, he was out on the West Coast and had taken up flying. Got out of ham radio altogether, it seems!

May 1928

. . . The theme this month is the opening of our new 10-meter band and ARRL Secretary Warner's editorial speculates on its communications potentialities.

. . . "Getting Started at 30 Megacycles," by Robert S. Kruse, *QST* Technical Editor, discusses technical considerations bearing upon our newest band.

. . . For straightforward and foolproof performance at 30 Mc., J. T. McCormick, 9BHR, recommends his favorite oscillator in "Ten Meters and the Ultraudion."

. . . The Communications Department already lists reports of considerable 10-meter activity and schedules a special international test on Ten for May.

. . . Federal Radio Commission's newly adopted definition of amateur radio — stations operated "without pecuniary interest" — should exclude ham-band intruders.

. . . Carleton H. Kohler, 9EFO-9EZM, tells how the Minneapolis-St. Paul gang is licking the BCL interference problem with "The Twin-City Vigilance Committee."

. . . "Amateur Television," by Paul H. Thomsen, 3LA, points out essentials of General Electric's television system and shows how simple receiving apparatus functions.

. . . League Director Eugene C. Woodruff, 8CMP, describes some of his effective test gear in "A Combination Fieldmeter-Wavemeter-Voltmeter."

. . . Technical Editor Kruse leaves ARRL for the radio consulting field; Harold P. Westman becomes Technical Editor and Ross A. Hull, Associate Technical Editor.

. . . James J. Lamb, 3CEI, and G. Donald Meserve, 1FL, come to ARRL in technical and advertising staff capacities, respectively.

. . . In his "Rotten DX," The Old Man raps the knuckles of ill-mannered DXers who call CQ all night long and cut off all QSOs abruptly with brusque 73s.

. . . A descriptive write-up of 6CMQ, owned by F. T. Swift, jr., of Altadena, Calif., features some of the station's varied receiving and transmitting circuits.

. . . On the Correspondence pages, E. N. Dingley, jr., A. Binneweg, jr., and F. A. Lidbury, 8BAG, argue moot points of r. f. choke coil design and operation.

The Radio Amateur Civil Emergency Service

Part III — Funds and Frequencies

• This is the last of three articles on RACES that started out to be two articles. Much more might have been said. However, if the series has introduced this new amateur service to some readers and has clarified any points for others, it has served its purpose. As space permits, we hope to run additional material on RACES from time to time.

Funds

Many amateur groups, particularly those strongly organized under the AREC, are not much concerned with this problem. They fall into two categories. One is the category which finds that there are simply no funds available, so they set out to provide an amateur service for civil defense *without* financial support. Another category is the group which knows funds will be forthcoming if they show they can do the job, so they set out to do just that. These are in strong contrast to the group which, not being already organized under AREC, finds that civil defense is not going to finance them and therefore steadfastly refuse to have anything to do with it. We leave it to the reader to figure out which type of amateur group is doing the most good for the amateur service and for the public interest.

The question of who is going to pay for the equipment is one which is frequently asked by amateurs and ECs preparing to participate in RACES. In some places (Detroit, Dayton, etc.) amateurs have found financial support from other than government circles, and have made the most of it. Generally, however, funds for the purchase of civil defense gear, radio and otherwise, stem from the instrumentality of government responsible for the implementation of RACES at the local level — that is, your community. It is at this level where the first responsibility and initiative for all civil defense measures arise. Once that initiative has been taken, state and federal governments are in a position to assist, the degree of assistance varying widely among the different states from practically zero to almost complete control of the civil defense program.

The Federal Civil Defense Administration has under way a Federal Contributions or "Matching Funds" Program under which the federal government contributes one half of all (up to a certain limit) civil defense expenditures which fall within certain categories and meet certain specifications. Because federal funds available for this purpose are limited, they are at present available only for purchase of equipment in designated "target areas." Even within these areas, only that equipment most essential to c.d. requirements can be considered. The FCDA hopes that this lack of funds will not restrict the implementation of RACES. On the contrary, it is hoped that personal initiative at the local implementing level will draw upon, and utilize to the maximum, communications systems already established by amateurs. This does not, of course, preclude the consideration of more liberal or changed criteria and conditions should subsequent developments make this possible.

At the present time, the specifications are somewhat higher than can be met by the average equipment sold to or used by amateurs, while the equipment which can meet the specifications is higher in price than the average amateur and some civil defense authorities feel it necessary or possible to pay. Thus, some controversy has arisen on this point. FCDA argues that with limited funds we cannot afford to take chances on questionable equipment, that we need gear which will maintain high standards and stand the gaff. Opponents have argued that we ought to get the most equipment we can for the money, and that it is unjust to apply commercial equipment standards to equipment designated for use in an amateur service. We do not intend trying to settle the argument here, or even to discuss it fully. What does need to be pointed out is that the FCDA specifications are *not* the requirements to be met by *all* equipment to be used in RACES, but only the specifications for equipment eligible for matching funds.

Therefore, in connection with the Matching Funds Program, it might be well to examine carefully how the most and best equipment can be obtained with the funds available — that is, whether a better job can be done with inexpensive equipment *without* matching funds (as New York state has decided to do it), or with the more expensive variety purchased with the aid of matching funds. In the final analysis, this is not a matter for decision by us amateurs; it is within the prerogative of the holders of the purse strings — and that means local government authorities. All we can do is explain our capabilities in a given situation.

Frequencies

The frequencies for RACES were announced over a year and a half before the RACES regulations had been finalized, so you might think we would be all straightened out on that matter; but such is not the case. The principal difficulty seems to be that amateur equipment and amateur inter-

est, generally speaking, do not concentrate on those frequency bands which FCDA officials feel technically best suited to the business at hand — namely, the 6- and 2-meter bands for mobile and local work and the 80- and 75-meter bands for statewide and interstate use. What about the 10-meter band? FCDA officials are becoming more skeptical at the prospect of the band opening up for short and long skip as against dependable and exclusive ground wave propagation — to the extent that matching funds will no longer be approved for further expansion on ten meters. The concern is with both practical (QRM) and security aspects in the event of widespread enemy action simultaneous with a band-opening. When you think about it, it *could* be a terrible mess at that!

But we have to be practical about these things. The fact remains that majority mobile interest is still on 10 meters, and what interest is draining away from this band is going toward 40 and 75, not the other way as desired for civil defense purposes. The reason for this trend is just that amateurs naturally gravitate toward those bands where they will have plenty of company, and those bands for which manufactured equipment, both receiving and transmitting, is generally available. The possibility of sporadic DX work is also a lure — a factor just the opposite of the ideal for civil defense work. So, whether we like it or not from a civil defense standpoint, probably most of our mobile installations will continue to be on 10 and 75, especially if we have to pay for them ourselves.

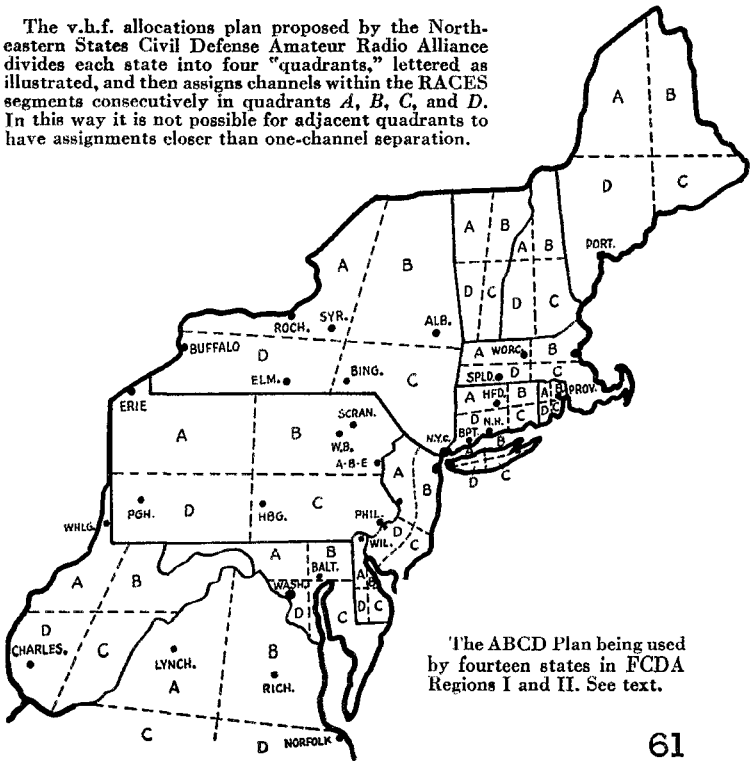
Even if we are supplied with funds for civil defense communications equipment, there is a strong practicability angle in establishing new equipment on frequency bands which can make the best use of *existing* amateur equipment. The changeover, if one is to be effected, must be accomplished gradually. Operation was initiated on 10 meters in the first place because of assurances that part of the band would be available for c.d. purposes in the event of war — assurances of all government agencies concerned. Once this assurance was given, heavy reliance on 10 meters for mobile and some fixed-station work was inevitable, considering the extent of amateur equipment operation there. Changing to six and two will not be easy, if indeed it will be possible.

So where does that leave us? It leaves us with cognizance of the desirability for increased emphasis (in local work) on six and two meters, and de-emphasis on ten and seventy-five. At the same time, we have to continue to do what we can with what we have. As a measure of recognition that the 6- and 2-meter frequency band segments are most desirable for local work, FCDA will no longer approve applications for matching funds for the establishment of complete new ten-meter systems. They will, however, approve requests for equipment to tie existing 10-meter systems with the applicable c.d. control centers. Anybody starting out from scratch should plan their local networks on six or two, if you want matching funds; others should effect migration to those bands if or as practicable.

Now let's talk about frequency channelization within the available RACES segments. Generally speaking, there are two basic proposals for channelization. One operates on the principle that RACES communications units should exist as such and be made available to specific civil defense services when, as and if the need arises; and that allocation of frequencies should be made on a geographical-separation basis. The other proposes that channelization should be according to the civil defense services in which RACES units will be used, so that the same services can have the same operating frequencies everywhere. The former is the way most c.d.-interested amateurs feel it must be done in view of personnel and equipment availability. The latter is the way all FCDA services would like to see it done. Unfortunately, space does not permit us to go into any great detail on either plan, but let's try to get across the salient points of each.

As early as May, 1951, a group of amateur representatives from ten northeastern states got together to confer on RACES matters, chief among which was to channelize the frequencies

The v.h.f. allocations plan proposed by the Northeastern States Civil Defense Amateur Radio Alliance divides each state into four "quadrants," lettered as illustrated, and then assigns channels within the RACES segments consecutively in quadrants *A*, *B*, *C*, and *D*. In this way it is not possible for adjacent quadrants to have assignments closer than one-channel separation.



The ABCD Plan being used by fourteen states in FCDA Regions I and II. See text.

available for RACES. Subsequent to the ideas expounded at and the proposals emanating from that meeting, similar meetings of this representative group have been held every six months. While the whole aspect of the Northeastern States Civil Defense Amateur Radio Alliance is of interest, we can discuss here only the v.h.f. allocations, which we wish to do because they are best representative of the thinking involved to overcome the very obvious shortage of channels and consequent possibility of adjacent-channel (or adjacent area use of the same channel) QRM. The device used is very simple, but rather ingenious. As can be seen in the drawing, each state (with Long Island considered a separate state) is divided into four quadrants labeled *A*, *B*, *C* and *D*. The drawing shows example only and not necessarily the actual quadrants, which will generally follow natural or political boundaries. Channels are assigned in these quadrants successively with a separation of 10 kc. on 10 meters, 20 kc. on 6 meters and 30 kc. on 2 meters.

Just for an example, suppose we consider the 6-meter band, with RACES segments 50.35–50.75 and 53.35–53.75 Mc. Since the plan calls for 20-kc. separation on six, we assign the first channel at 50,360 kc. in the *A* (northwest) quadrant, the second at 50,380 kc. in the *B* (northeast) quadrant, the third at 50,400 kc. in the *C* (southeast) quadrant and the fourth at 50,420 kc. in the *D* (southwest) quadrant. Note that no adjoining state will be assigning those same frequencies to an adjacent area, since such an area will be in a different quadrant, at least 20 kc. away, and usually more. Now if we need more channels in the same quadrant — the *A* quadrant, for example — the next one assignable in rotation is 50,440 kc., a full 80 kc. away from any other channel being used in that quadrant, and at least 20 kc. (judicious allocation can invariably provide for much more) from any channel being used in any adjacent quadrant of the same state or other state. The same system is used for channels in the RACES segments of the 10- and 2-meter bands, with less and greater separation respectively. Under the "Quadrant" or "*ABCD*" Plan, there are 38 channels available on ten meters, 40 on six meters and 34 on two meters. No channelization is considered necessary on 220 Mc. Medium- and long-distance radio communication required will be accomplished on the lower-frequency RACES segments and the Disaster Communications Service.

FCDA's frequency allocations plan is only tentative, and should in no case be construed to be in final form. We present its salient points here only to show the direction of their thinking to date. It also provides for medium- and long-distance facilities on the lower frequency segments, including the Disaster Communications Service Band. On v.h.f., the FCDA plan makes no provisions for allocations on the 10-meter RACES segments, saying only that any frequency within the RACES segments may be used.

On six meters, FCDA makes provision for *both* a.m. and f.m. on the lower segment (although only a.m. is now permitted) and for *only f.m.* on the upper segment. The a.m. allocation is based on 8-kc. channel separation, providing a total of 50 channels, 48 of which are to be used and two of which are retained as "guard" channels. Of the 48 channels, 19 are for fixed, mobile or portable[1], 17 are for mobile or portable only, and 12 are for portable only. The f.m. channelization of the same segment provides eight 40F3 channels starting 20 kc. within the low end of the segment, thence every 40 kc. except avoiding the a.m. "portable only" channels. In addition, provision is made for doubling these f.m. channels by use of "split-band" f.m. (20F3). In the high-frequency six-meter segment, channelization is for ten 40F3 channels or nineteen 20F3 channels. Four of the 40F3 channels are for fixed, mobile or portable; if 20F3 is used, seven such channels are available. Four 40F3 channels are also available for mobile or portable; if 20F3 is used, eight channels are available. One 40F3 or three 20F3 channels are available for portable only. The other 40F3 channel (53.53 Mc.) is the nationwide liaison frequency for the civil defense Transportation Service.

In the 2-meter RACES segments, the FCDA frequency plan provides for f.m. only, either 40F3 or 20F3. Five of the 40F3 channels are designated for specific c.d. services (Engineering, Health and Welfare, Fire Rescue and Police), these to be nationwide liaison frequencies for those services. Aside from these, for general use there are left (on the basis of 40F3) five channels for fixed, mobile or portable, five channels for mobile or portable only and three channels for portable only; or, on the basis of 20F3, nine for fixed, mobile or portable, fourteen for mobile and portable only, and six for portable only.

The above constitutes only a glimpse at two ways of setting up the allocations on only part of the bands available. It is complex and somewhat confusing, but with a little close study it is easy to see the basic differences, which naturally enough represent differences in viewpoint.

The NSCDARA (amateur) plan reduces the problem to one of avoidance of interference between simultaneously-operating nets; it assumes that available RACES communications units and nets will be deployed, both frequencywise (within proper quadrant, however) and servicewise, at local level in accordance with local strategic concepts or requirements that are important at that level; it also assumes that mutual aid and/or mobile support teams will continue to operate on their regular net frequencies when assisting somebody or that alternatives (a choice of crystals or use of VFO where feasible) will be available. The NSCDARA plan also assumes primary reliance will be placed on a.m. equipment, since that is what most amateurs are equipped with and familiar with.

(*Continued on page 134*)

[1] As used by FCDA, this means hand-carried units.

YL NEWS and VIEWS

BY ELEANOR WILSON,* W1QON

Fourth Annual YL-OM Contest Results

The Young Ladies' Radio League found it generally agreed that their 1953 YL-OM contest — the fourth annual such affair — was the best yet. As predicted, more YLs participated than ever before, and gratifyingly enough, most of the OMs contacted knew what the contest was about, in contrast with previous years. W1 YL participation was heaviest. Only one W6 log was received, and none came from the seventh district. Unfortunately, several YLs logged for credit were declared ineligible by the YLRL contest committee because they had apparently forgotten to pay their '53 YLRL dues and were temporarily discontinued from membership — a new ruling effective for the first time this year.

For having the highest combined score for the third consecutive year, OM winner W1BFT, Carl Evans, merited permanent possession of the gold cup donated by W8UDA. Carl deserves hearty congratulations.

Cups will be awarded to the following as designated: *First award* — YL W8HLF and OM W1BFT. *Second award* — ('phone) YL W8HLF, OM W1BFT; (c.w.) YL W1FTJ, OM W8AJW. *Third award* — ('phone) YL W4SGD, OM W8AJW; (c.w.) YL W9JUJ, OM W1BFT.

Certificates will be awarded as follows: (c.w.-only) YL VE3AJR, OM W3AS; ('phone-only) YL W4KYI, OM W1BFB.

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

Individual scores follow, the three columns indicating each station's aggregate, 'phone-to-'phone and c.w.-to-c.w. tallies, respectively:

YL SECTION

W8HLF	169,440	166,560	240
W4SGD	157,500	156,660	30
W4KYI	152,650	152,650	—
W6CXC	102,080	102,080	—
W1YYM	79,980	—	—
W1FTJ	68,080	10	68,080
W4STH	64,050	64,050	—
W9JUJ	63,040	2,940	47,120
W3MAX (OQF)	58,500	58,240	20

♦

W8HLF, Arlie Hager, of Beckley, West Virginia — top YL scorer in the Fourth Annual YLRL YL-OM Contest. Five youngsters keep Arlie and OM W8VPO quite busy. W8HLF was licensed in 1951.

♦

W4UNO	45,210	—	—
W1QON	33,600	—	—
W1ULF	28,750	—	—
VE3AJR	26,190	—	26,190
W8HWX	25,750	—	—
W3QPJ	22,680	120	21,600
VE1ABT	21,000	—	21,000
W2JZX	19,760	19,760	—
W5SPV	18,040	18,040	—
W1TUD	17,080	17,080	—
W1BCU	16,320	16,320	—
W2WCL	14,250	—	—
W3RXV	13,860	13,720	10
W3NHI	12,540	—	12,540
VE3DEX	12,040	12,040	—
W1RLQ	—	10,440	880

OM SECTION

W1BFT	11,440	4,250	4,080
W8AJW	8,880	3,150	4,140
W2BBK	7,560	1,870	2,850
W8SDD	5,000	720	2,560
W2OIB	4,860	—	—
W4ARR	4,560	—	—
W4NTT	3,840	—	—
W4OMW	3,570	—	—
W3AS	3,520	—	3,520
W8YGR	3,520	—	—

(*Continued on page 138*)

Twenty-five YLs of the Los Angeles Young Ladies Radio Club ensured themselves of dates with their OMs on St. Valentine's Day by arranging a YL-OM dinner. The OMs promised their presence for at least two club socials a year and even discussed the possibility of organizing a YL-OM club on a national basis. (*Photo by W6NSH*)

Armed Forces Day — May 16th

The Army, Navy and Air Forces are co-sponsors of a program for the participation of amateur radio operators in the celebration of Armed Forces Day, Saturday, May 16, 1953.

C.W. Receiving Competition

A c.w. receiving competition will feature a message from the Secretary of Defense. All individuals, amateur operators and others, are eligible to participate. A certificate of merit will be issued to each participant who makes perfect copy.

Transmissions will be at 25 words per minute on the following schedules:

Time	*Call Sign*	*Frequencies (kc.)*
2000 (EST)	AIR	3497.5, 6997.5, 27,994
	NSS	121.95, 4390, 9425, 12,804, 17,050.4, 22,491
	WAR	14,405, 20,994
2400 (EST)	AIR	3497.5, 6997.5, 27,994
	NPG	114.95, 9277.5, 12,966, 16,265
	WAR	14,405, 20,994

Each transmission will commence with a five-minute CQ call. It is not necessary to copy more than one station and no extra credit will be given for doing so. Transcriptions should be submitted "as received" and no attempt should be made to correct possible transmission errors. Copies should be mailed to Armed Forces Day Contest, Room BE1000, The Pentagon, Washington 25, D. C. Time, frequency and call letters of the station(s) copied should be indicated.

Radioteletype Receiving Competition

An innovation this year will be a radioteletypewriter receiving competition which will feature a special message from the Chief Signal Officer, U. S. Army; the Director, Naval Communications; and the Director of Communications, U. S. Air Force. A letter of acknowledgment will be sent to each amateur participant who submits a copy made from the radioteletypewriter transmission of this message. Transmission will be at 60 words per minute on the following schedules:

Time	*Call Sign*	*Frequency (kc.)*
1300 EST	NDC	7375
1300 CST	NDS	7375
1300 MST	NDF or NDW2	7375
1300 PST	NDW	7375

Each transmission will commence with a period of ten minutes of test and station identification to permit amateurs to adjust their equipment. At the end of the test period, the message will be transmitted. It is not necessary to copy more than one station, and no extra credit will be given for doing so. The message should be submitted "as received." No attempt should be made to correct possible transmission errors. Mail copies to Armed Forces Day Contest, Room BE1000,

(Continued on page 146)

Preview — DX Contest High 'Phone Scores

As we go to press each mail continues to carry batches of contest logs. A preliminary analysis seems to indicate that W/VE scores are running higher than those of last year despite fair-to-middling conditions — perhaps the 7-Mc. 'phone band helped. It should be stressed, however, that the totals below are *claimed* and subject to a considerable amount of checking before presentation of the final results at a later date.

Highest claimed W/VE scores are as follows: W4ESK 200,160, W1ATE 192,832, W3MSK 125,316, W2SKE 116,064, W6AM 110,660, W4KWY 93,318, W9EWC 82,069, W5BGP 79,596, W3GHS 72,518, W2WZ 67,284, W5JUF 57,368, W8NXF 56,742, WØPRZ 51,750, VE3KF 50,358, VE4RO 40,375, W6YY 38,391, W3NA 35,070, W7HIA 33,600, W1BFT 30,240.

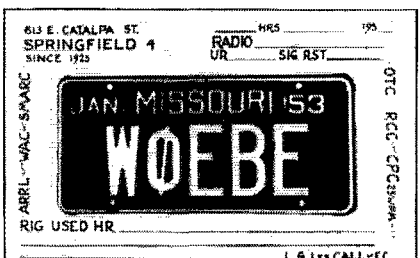
Leaders in the number of contacts: W1ATE 492, W4ESK 480, W2SKE 373, W6AM 357, W3MSK 354, W4KWY 302, W5BGP 270, W2WZ 267, W9EWC 256, W3GHS 240, VE3KF 218, W8NXF 195, W6YY and WØPRZ 191, W5JUF 190, W7HIA 175. Top multipliers: W4ESK 139, W1ATE 131, W3MSK 118, W9EWC 107, W2SKE 104, W4KWY 103, W6AM 102, W3GHS and W5JUF 101.

Entries from outside W/VE are, as always, the last to be received and presumably many more are on the way. Highest scores on hand so far include: VP6SD 155,805, CT1BS 68,880, KL7AON 41,574, XE2W 28,428, G2PU 24,708, PJ2AA 22,194, LU1DDV 21,252, KG4AF 13,141, CE4BX 9178, I1RL 8436, TA3AA 7560, LU3PF 6720, HP1BR 6314, EI3Y 6256, HC2OL 5796 PAØBRG 4528.

Strays

Tiring of dog-eared logbooks, W6GJZ found that a paperclip arranged to engage four or five pages at each corner will keep things neat and under control. On the other hand, W2FW clips off a small segment of the top right corner of each log page as he finishes with it. The page in current use then can be instantly located without fuss and bother, wear and tear.

—•••—



WØEBE's QSL stunt is a cinch if you're lucky enough to reside where call-sign auto licenses are available. India ink and photography do the job.

How's DX?

CONDUCTED BY ROD NEWKIRK,* W1VMW

How:

The last bars of the Wouff Hong Song had barely died away when brethren assembled at our yearly gathering of the DXHPDS — DX Hoggery and Poetry Depreciation Society — quickly organized their annual exploratory probings of the depths of verse. And in no time at all our motley collection of would-be bards had plumbed through to bed rock.

Philadelphia Phil took the floor unsteadily and volunteered something from the fifth layer:

"Long chats with the rare ones are jolly
And I'll yak all I want to, by golly!"
Not a pal shed a tear
When Jim ruined his gear
On a ten-minute final finale.

Skillfully ducking the whizzing Rettysnitch intended for Phil, charter member W1RWS rose to deliver a contribution of somewhat gory bent:

A VFO-swisher was Hans;
He would swish up and down all our bands —
Till a neighbor named Sam,
Who was also a ham,
Dropped over and chopped off Hans' hands.

Then Albuquerque Al proved that Jeeves never should have passed out that last round of root beers by foisting this atrocity upon us:

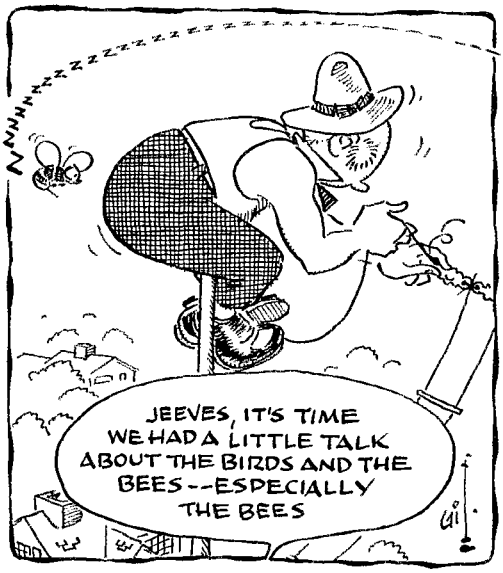
We've all heard Tail-Ender McBoom
Who calls, calls and calls until doom;
When at last he does sign
Not a soul can define
Who said what and what for and to whom.

Which was enough to adjourn the meeting in a clatter of shattering furniture. We escaped with the above fragments of the minutes just in time to make our deadline with the mail to follow.

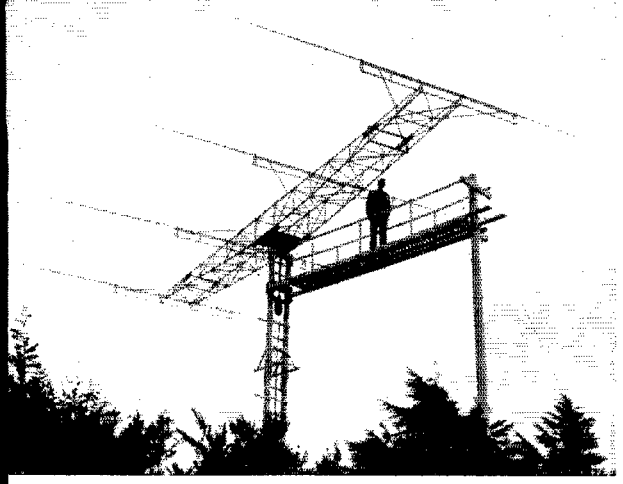
What:

DX echoes are still reverberating on *one-sixty* after one of the best lower-frequency amateur radio seasons in years. VE1EA, quite favorably located for such goings on, scored his *third* 1.8-Mc. Asian QSO on March 6th, with ZC4XP. It was a 15-minute contact with an abrupt fade-out. VE1EA has a postwar record of 12 countries and 4 continents on 160 (14 countries all-time). Clarry's other DX on 1.8 Mc. this season: EI9J, KP4DV, KV4AA, Gs 3BKF 3GLW 3PU 5JU 5RI 6BQ 6CJ 6GM 6LB 8JR and 8KP. VE1EA was heard by ZL1AH and he also had a cross-band 160/80-meter contact with VP4LZ . . . . . ZC4XP caused such excitement on 160 with the aid of a vertical wire supported by balloon. We understand the thing blew away on him once or twice . . . . . W1BB's vertical experiences this year brought him to conclude that a good horizontal is hard to beat. Stew's skeds with ZS3K haven't paid off with a two-way yet but W1BB is consistently heard in Southwest Africa. In addition to the ZC4XP QSO flashed last month, W1BB recently worked Gs 3PU 5JU 5RI 6CJ and 6GM while hearing the signals of G8WF, GI5UR, GW3FSP, KP4KD, KV4BB and VP9BDA. Ws 1BB 2EQS 9NH 9PNE and ØNWX were all reported heard by ZL1AH on schedule March 1st but the ZL was unable to break through for two-ways . . . . . A local beacon station near 1790 kc. gave W2WC a rough time but he hit 160 for QSOs with EI9J, Gs 3PU 5JU and 6GM . . . . . W3EIS made out well, too, working such 160-meter people as Gs 6CJ 6GM 8WF, KG4AF, KV4s AA and BB. Don lost no time in filling his DX Test c.w. G quota!

The spotty performance of *eighty* leaves something to be desired but the stalwarts keep knocking 'em off. In the DX Test, W2WZ wound up an unplanned 4-band contact series with CT3AB in under nine hours. Other four-banders that included 80 meters were reeled off with CE3AG, EA9AP, FA9RZ, KG4AF, KV4AQ, VP9BF and ZS2A . . . . . W9HUZ fights his way through East Coast competition without much difficulty to work CE3AX (3507), CT2BO (3506), FA8IH (3523), FF8AG (3505), FM7WD (3506), LU1EP (3507), PJ2AA (3531), TA3AA (3512), ZD4AB (3507), ZSs 3K (3515), 6R (3512) and 5A3TU (3515). Van also lists QSOs with nine other European countries which include CT1, HB9 and OK1 contacts . . . . . W1ORP caught W9HUZ's CT2 TA3 ZD4 and ZS3 customers in addition to FA9RZ, TI2TG, VQs 4HJP 5GLX, YN1AA, YV5DE and ZS2A (3502). Ed was apprised by VK5KO that VK1RG looks for Ws on the band; we hear that W2PEO has already nabbed the VK1. FKS8BD is still stalked by W1ORP . . . . . W2WC accounted for CT2 ZL1 ZS3 and 5A3 contacts while *QST* author W2AWH finds his location not bad at all for Oceania; VK2HC, ZLs 1MC 3GQ 3JT 3NE 3OP 3OZ and 3QX took Yardley's bait in late February . . . . . TA3AA picked off most U.S.-and-Canada call areas during the DX Test in March. According to W2VMX/1, TA3AA finds the hours around 0400 GCT the most productive in his 80-meter ramblings . . . . . KL7AOC worked ZL1DU three times on 3.5 Mc. as Novice WL7AOC . . . . . KG4AU (3508) and YU3BC (3512) are among W4KFC's exotic collection; CN8MI (3508) was heard . . . . . W9AND hasn't been missing much on eighty. Wes worked EL2P (3520), PJ2CB (3553), PY2AHI (3529), YV5FL, KH6ARA (3515) and KL7RR (3553) to reach the 3.5-Mc. 56-country mark . . . . . K2BNI's first DX on this band was G2AFU . . . . . CXs 1FB 1FY, OA4s BG DW and YJ1AB (3515) are available on eighty, we understand . . . . . So. Calif. DX Club's *Bulletin* turns its spotlight on FF8AE (3502),



* DX Editor, *QST*.



That fat signal of VK3HW takes off from this well-engineered 4-element 20-meter rotary beam in Ballarat. It is wide-spaced at 0.2 wavelength, has a 42-foot boom and is 45 feet above the ground. Owner John Lewis can be seen on the catwalk. (*Photo via W4BEW*)

♦

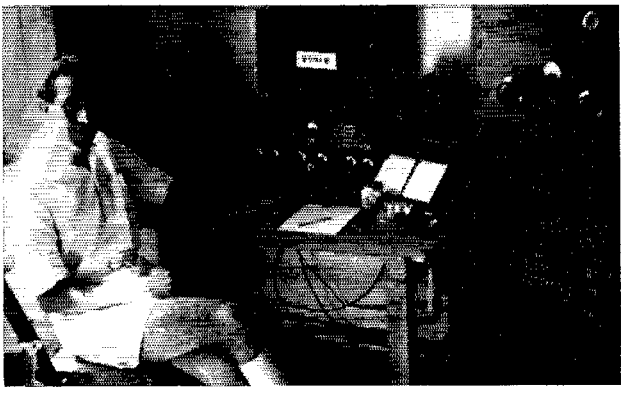
VR4AA, YU6BC, **ZB1BJ** (3520), **ZK1AA** (3515), **ZSs 5B** (3515) and **9I** (3510).

W2WZ and W9LMC have a few good words to say about *seventy-five 'phone*. Al worked CN8GZ, CT1s BS CL QF, EAs 2CA 2CQ 4DB, DL4OV, G2PU, HB9MX, KH6PM, OZ9R, ZLs 1WW and 2BE, while Jack noted the availability of **HR1BG** (3801) and **VP7NX** (3802). Not bad for a "local 'phone" band!

Forty 'phone rapidly attracted many boosters. Temporary lash-ups are giving ground to DX set-ups specifically designed for 7-Mc. 'phone. Operating W4UJJ, W5ONL/4 shook tonsils with CO7HQ, CT1s BS CL, KH6s IJ MG, **KJ6AX** (7207), KP4UB, KV4BB, VPs 6NA 6SD 6WR 9BDA, XE2W, ZLs 1MQ 2KX 3DL and ZS6BW. **VQ3DT** (7100) got away . . . . . CO2s MF and OZ were observed doing rush business with the W/VE crowd by WØFMW and SWL S. Tonsi comments on the big signal of **HP3FL** (7190) . . . . . KJ6AX and ZL2BJ made W4KZF happy while W2WZ soaked up KH6AGB, ZLs 1BY 1HY 2AAM 2KX, VK2BD and many Europeans . . . . . It will probably be some time before amateurs get 40-meter 'phone DX techniques down pat. European broadcasting QRM will necessitate considerable finesse in efforts to communicate with certain parts of the globe at certain times. Here is an instance where DX stations may be *forced* into the desirable habit of specifying clear listening frequencies!

Central and South American 'phones are gravitating toward the c.w. end of the 7-Mc. range but so far haven't caused much increased difficulty for *forty c.w.* DX-workers, judging from our mailsack. W9HUZ found the band good for **CN8s AF** (7023), EG (7014), **FA8VN** (7021), **KM6BG** (7013), **LUs 4ZI** (7011), **ØZDV** (7002), **VP8AP** (7008), **YU1ANO** (7017), **ZS3E** (7030) and **5A3TU** (7026) . . . . . **KC6QY** (7001) and **KW6BI** (7030) interested W1ORP while W1BTQ added PJ2CI, VPs 3WO and 7NM . . . . . WØCVZ raised the VP8 and CN8AF previously mentioned, as well as **CR7LU** (7029) and **ZS9I** (7018) . . . . . W9LMC captured KH6IJ and a CO2 while in hot pursuit of **KJ6AX** (7041) . . . . . **FA8CR** (7008), **IT1AGA** (7002) and **KT1UX** (7021) came back to W4ZAE. A reminder — 11 and IT1, same country . . . . . QSLs from KV4AE, **VP6AF** (7018) and **YU3AQR** (7050) are expected by W2LYO . . . . . Dick at W4UJJ tells us of luck with DU6IV, FA9VN, KB6AY, KG6FAA, KL7AMX, LU3ZO, TIs 2DN 2OZ 2RC 6EL, VKs 6SA 9GM (Norfolk Isle), VP9HH, XE1DA, ZB2I and ZD4AB . . . . . Mentioned as likely candidates by SCDXC's *Bulletin* are **CR4AG** (7040), **LZ1KAB** (7015), **SV5UN** (7010–7025), **YU5AKL** (7020), **ZC5VS** (7050), **ZD8A** (7006) and one **GY2A** (7015) who says he's on Esquire Island . . . . . West Gulf DX Club's *DX Bulletin* speaks of **CR7AO** (7013), **DU7SV** (7022) and **FO8AI** (7022).

Still for the most part a daylight DX band, *twenty c.w.* was put to work by W8HEV for quite a collection: CN8s BL at 1603 EST, FB (1337), FL (1643), CP1BX (1534), CR7s LU (1416), IZ (1504), CT2BO (1119), EA9BD (1629), EL2P (1651), FA8CR (1505), FF8AG (1548), FKS8BC (1126), FQ8AG (1610), GD3UB (1255), HC1NA (1625), HH3s FL (1640), L (1641), IS1AHK (1303), IT1TAI (1400), KA9AA (1906), MF2AE (1442), MP4BBD (0927), OA4s AS (1042), C (0812), OE13s HP (0845), RN (0850) PJ2AK (0837), ST2GL (1637), SU1FX (0813), SVØWB (1031), TA3AA (1017), TF3AB (0907), VPs 1AA (1220). 8AK (1922), 8AO (2002), VQs 2IM (1429), 3BM (1525), 4CW (1510), YU3s BU (0932), DM (0826), YV5DE (0816), ZB1KQ (1437), 5As 1TC (1400), 3TZ (1025), 9S4s AX (0910) and BS (0902) . . . . . W9HUZ's latest, frequency-wise: **CR6AQ** (14,076), **EA9BF** (080), **FF8AG** (053), **FY7YB** (098), **HE9LAA** (068), **KA2LK** (105), **MP4BBD** (048), **OY2Z** (072), **TA3AA** (013), VPs **2KO** (088), **8AP** (008), **8AR** (055), **8AT** (022), **8AU** (050), **ZD2DCP** (008), **ZS3T** (055), **4X4BR** (078), **5A3s TY** (012) and **4X4BR** (068) . . . . . W2LYO dug up **MF2AE** on 14,065 kc. and W1BTQ scored with an EA9, IS1, CN8, VP6EB and YU1EE . . . . . W8DLZ found an FQ8, **OX3GG** (040) and **YU3BC** (014) to his liking . . . . . **VQ4DO** (002) and **ZB1BU** (010) worked W8YGR. Jack still battles a Toledo power leak as well as droopy band conditions . . . . . W9MQK climbed up to 92 worked after spearing CR6CZ, CT2BO, FA3HH, an FF8, KG6ABN, OQ5LL, SP2KGA, SVØWY, an SU1, YU1CX, ZB1BU, ZD2FFB and a pair of 9S4s [In push-pull, Boss? — *Jeeves.*] Ray likes photos of DX stations-with-operators — we run all the good ones we can get our claws on, and the rarer, the better . . . . . W6ZZ dropped in for KA2LG and KB6AY while W4TO kept busy with KAs 9AA ØIJ, KJ6AX, MP4BBD, OD5AD, ST2AR, VK1EM, ZC4s RS XP, 4X4s DF and FG . . . . . W5KUC/UCQ's West Gulf DX Club adherents volunteer **C3BF** (071) at 2027 CST, **ET3Q** (042) at 1600, **FQ8AR** (005) 1440, **GC2CNC** (065) 0800, **JAs 1AQ** (069) 1812, **3AD** (070) 2035, **KA3AF** (055) 2021, **MB9BJ** (038) 0800, **PZ1AL** (008) 1620, **SP2KAC** (045) 0830, **VQs 2JN** (046) 1340, **3KIF** (079) 1400, **4HJP** (054) 1347 and **4X4AD** (071) 0830 in their *DX Bulletin* . . . . . SCDXC's gang point out **JA2US** (090) 1810 PST, **OD5AB** (060), **PZ2AK** (050) 1530, **PJ2CH** (025) 1800, **VP8AW** (020) 1820, ZC3AA and **ZP5AY** (025) 1730 . . . . . **NE1NMC** (130) sent word through ZS6s BW and DW to Ws 2GIC and 8UKS telling of his activity in Nepal . . . . . CEØAA will strive to represent Easter Island on 14 Mc. for a few days in late May according to CE3DG. CE3AG is the scheduled operator and QSLs should go to his *Call Book* address . . . . . W2PZM, who has been collecting his share of juicy ones, worked FQ8AS one P.M. and then raised FQ8AS's dad, FQ8AG



VS9AW was responsible for filling in Sultanate of Oman spaces on many DXCC Countries Lists. The operator, G3GUK, used a 100-watt 813 rig modulated by 807s, HRO and SX-71 receivers. (*Photo via W1FH*)

. _ . _ . _ W3YDC writes of one PR3WI on Washington Island who puts out a wicked sig with 150 watts and a 3-element whirler. PR3WI QSLs may go via KH6YP.

If you employ fast push-to-talk you may get a few words in edgewise during the quick openings that now characterize *twenty 'phone*. W9BDW worked fast for CR6s AI, AT, **KG4AO** (14,310) at 1725 CST, **KT1LU** (320) 1243, **KA3AC** (270) 1700, **VP1GG** (135) 1735, VQ4AA and ZD4BK . _ . _ . _ **ZD4BK** (155) was also landed at W1WQC, in addition to **MF2AA** (270) and **3V8BB** (315). Ham nominates YN4CB as a sure bet for fast Nicaraguan QSO/QSLs . _ . _ . _ **MP4KAC** (180) worked W5FFW while W4KZF came through for CP1AE, a CR6, **CT3AN** (184), VPs 1AB 3HAG 3YG, VQ4s NZK RF and ubiquitous ZD4BK . _ . _ . _ In a "small amount of operating time," W8HEV runs down stuff like (times EST) CN8s BL (1603), FB (1748), FR (1523), MM (1751), EL9A (1705), HH3FL (0855), HR1s FV (1228), KS (1750), OA4AS (1059), TG9RB (1710), VPs 4TO (1803), 5AK (1921), 6SD (1814), VQ2DT (1420) and YS2SA (1811) . _ . _ . _ The *DX Bulletin* of the WGDXC boys specifies 20-meter 'phones (times CST) **CR7AD** (158) 1500, **EA6AR** (130) 1520, **GD2FRV** (148) 0812, **LX1DC** (120) 1035, **OQs 5CJ** (125) 1338, **5EB** (138) 1350, **5FO** (140) 1315, **ØCZ** (172) 1335, **ØDZ** (175) 1345, **ST2NW** (191) 1440, **SU5EB** (125) 0740, **TA3AA** (311) 0730, **VQs 2DC** (121) 1430 and **5AU** (130).

The coming of clement weather to northern latitudes coincided with a lack of improvement in conditions on *ten* and *fifteen*. W6ZZ stuck by 21 Mc. and now has 34 countries on the band. CEs 3AG 6AB, KB6AY, KH6ER, KP4s KD QR, W6DFY/KP4, KV4AQ, KZ5s BS IL WZ, LUs 1EP 3EL 5CK 9AX, OA4N, PYs 2OE 4AJD 4IE, VPs 4LZ 7NM, XE1PJ, YN1AA, YV5DE, ZK2AA and ZS2A provided recent QSOs for Miles. By the time these words get around W6ZZ will be scouting for 15-meter juicies on 'phone . _ . _ . _ W5TFA would like to see more "What" dope on 10 meters — so would we! "Contrary to popular opinion, Ten is not quite dead and many DX stations have been either heard or worked [here] in the last month," writes Fred. W5TFA has evidence, too — recent chats with CEs 4BX 6AD, HP3FL, KH6MG, LUs 4DZI 8DDI and TI3LA. Twenty-eight-Mc. 'phones heard but not raised: LU7FU, OA4N, PY2AHS, **ZL1s GW** (28,240) and MQ . _ . _ . _ Back on 21-Mc. c.w. WØCVZ joyfully tangled with CP1BX, FF8AG, I1BLF/Trieste, OQ5BQ and VP4LZ. Next month we'll likely be taking up the subject of 15-meter 'phone WACs — good luck on yours!

Where:

With grousing about low DX QSL returns reaching another peak, it once again seems timely to point up an unfortunate fact: Many an overseas radio society will handle cards for its members only. QSLs for other stations in its country will be pigeonholed, or returned, or even possibly destroyed. In view of the existence of such policy it behooves all DXers to QSL via bureaus *only when instructed to do so* by the DX stations worked. When in doubt, QSL direct. The incoming-QSL bureau facilities of ARRL, on the other hand, are available to *any* U.S.A.-Canada amateur.

EA9AY, Box 213, Melilla, Spanish Morocco
EL2P, c/o PAA, Roberts Field, Liberia
EL2R, Henry J. Greenville, USPHS, Box 34, Harbel, Liberia
FB8BE, (QSL via REF)
FO8AI, (QSL via W7FNK)
FR7ZA, (QSL via REF)
JA1WA, Box 67, Niigata, Japan
JA6AD, Box 73, Kumamoto-Tsuboi, Japan
KA3AC, (QSL via FEARL)
KG6ABN, Jake Leons, USCG Air Det., Navy 943, Box 26, FPO, San Francisco, Calif.
KG6AEP, C. H. Jackson, jr., ex-W4DCE, Box 145, Agana, Guam
LU3ZO, (QSL via RCA)
NE1NMC, QSL to T. Cooke, Travel Agent, Nairobi, Kenya Colony
OQ5BI, Gerard Capelle, c/o Utexleo, Leopoldville, Belgian Congo
SU1FX, (QSL via RSGB)
SU1GB, (QSL via RSGB)
VP2KO, P. O. Box 213, Basseterre, St. Kitts, B.W.I.
VP7NS, P. O. Box 48, Nassau, Bahamas, B.W.I.
VQ6MY, (QSL via RSGB)
XZ2OM, Box 1490, Rangoon, Burma
ZC4IP, Box 219, Limassol, Cyprus
ex-ZM6AX, QSL to H. Smith, Picture Recorders, 1040 N. Kenmore, Hollywood 29, Calif.
ex-4UAJ, Edward H. Gull, Greenpar Engineering, Ltd., Harlow, N.T., Essex, England
4UAS, c/o United Nations Radio, Srinigar, Kashmir, India
5A1TC, S/Sgt Andy Martindale, 580th Comm. Sqdn., APO 231, c/o Postmaster, New York, N. Y.
5A1TZ, (QSL via 5A1TC)
5A3TS, (QSL via 5A1TC)
5A3TZ, Maj. J. W. Perry, USAF, AO-476004, P. O. Box 372, Tripoli, Libya

The foregoing came through the good offices of W1VG, W2s AOS/KG6 LYO, W3s JSH TM, W4s KFC TO, W8s HEV UKS, W9s CFT MQK, WØEDX, CN8EG, the WGDXC *DX Bulletin* and Gary Ripton. If *you* encounter a DX-station address previously unpublished, ship same along and do someone a good turn. Okay?

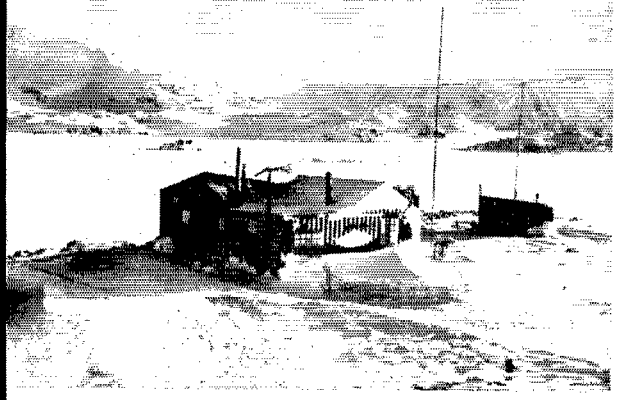
Tidbits:

Hereabouts — Those who receive QSLs from HHs 2PR 2RS and 3FL in the future may owe W2DEC a heavy vote of thanks. Urb arranged to obtain QSL stocks for these stations. W2DEC has proof positive that EI8J, HI6TC, HK1JO, HR1KS, PJ2s AA AF, KA9AA and TA3AA *do* QSL . _ . _ . _ W2BZM wants to know if anyone can give him tracers on VR2BM ('49) and MD2PM ('51) . _ . _ . _ VK9XK and EA9DC QSLs continue to elude W6BDZ. Any help? . _ . _ . _ VE3AVS is pretty good DX. He's located at Kapuskasing, Ontario, roughly 700 miles north of Detroit. Dudley, with a Zepp hung between two 50-foot poles, is after Africa for WAC and Nevada for WAS . _ . _ . _ W1JNE/VO6 witnesses that security regulations are quite strict in Labrador. John was out enjoying the fun in the ARRL DX Test and he further advises that QSLs will reach him sooner if sent to his home address . _ . _ . _

When Aspen Productions of Hollywood recently journeyed to Samoa to make "Return to Paradise," amateur radio went along. Gary Cooper helped movie sound engineer Harry Smith, ex-W6HEE, (right) make numerous contacts on 14-Mc. 'phone while using a Viking-I rig under the call sign ZM6AX. For commercial purposes the calls ASP-1 and ASP-2 were used in communication between on-location units separated by rugged volcanic terrain. Well-known ZM6AA was of great assistance in facilitating installation and W6AM helped keep the folks in touch with home. An interesting sidelight was the fact that another roving movie party, on location in Fiji for a Burt Lancaster film, regularly tuned in on "Paradise" doings via short-wave.

. _ . _ . _ W1TBR has a rare-DX pal for company while attending artillery school at Fort Sill, Okla. He's Capt. Kamchai Chotikul, HS1WR, of the Royal Thai Army . _ . _ . _ April's *National Geographic* carries "Three Months on an Arctic Ice Island," an interesting account of "T-3" doings concomitant with the ham activities of the KF3AA gang.

Asia — MP4BAU lately unleashed a large charge of QSLs U.S.A.-ward, some via OK1MB and others via bureaus. Adi told OK1MB that all W QSOs are QSLd up to date. This pitch via W3JSH, who is changing QTH to White Plains, N. Y., along with OM W3KWA. That's where Dottie used to operate W2MIY, you know . _ . _ . _



VP8AE is situated in the midst of very rugged Antarctic-type scenery, you will agree. Operator Tony Wilson had a 1200-watt RCA rig and CR-100 receiver with which to pass out some eagerly-sought 14-Mc. 'phone contacts. He should be back in the United Kingdom by now and amateur operation at this South Orkneys base will be in other hands. (*Photo via W6EAY and W9RBI*)

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Fred of KA9AA wishes to set a few facts straight for the record. JARL handles QSLs for Japanese nationals (JAs) only and FEARL does the job for Japan-stationed U.S. personnel. From the W/K standpoint, postage to FEARL via APO is the same as the U.S.-and-Possessions rate while mailers to JARL must pay foreign fare. There are no JA9s of JAØs now operating — JAØ (Iwo Jima) is still occupied territory. KAØIJ does a solo job in keeping Iwo on the amateur radio map . . . . . NE1NMC (W6NMC) will tackle the QSL backlog for his Nepal operations upon reaching Nairobi. Ws 1BDI 2GIC 8UKS and VS1CZ joined in feeding us NE1NMC information . . . . . Ted Gull, late of United Nations communications, writes: "Alas, 4UAJ is extinct, as few of the R/Os in Kashmir are interested in hamming." Ted left the UN for a job back in England and those still in need of cards from 4UAJ should write the "Where" address. Send along full QSO data, too — Ted checks his logs very carefully.

Africa — The new EL2R recently stocked up with 500 blank QSLs and has an ART-13 and BC-348 combo perking. Henry is a Stateside neighbor of W3TM and will remain in Liberia until August. He prefers twenty meters . . . . . In Tripoli, 5A1TC tells us of the activities of club station 5A1TZ. The boys — 5A3Ts R S U Y and Z — keep things hot nightly on 14-Mc. 'phone and c.w. That's early afternoon our time . . . . . The first Canary Islander to grab DXCC, says W1WPO, is well-known EA8BC . . . . . CN8EG (W1PWK) laments that regulations permit no 160-meter operation in Morocco. He otherwise would have taken a whack at the transatlantic tests of last season. "When 10 meters opens for short skip [in North Africa] it is FF8, EL, FQ8, FA8, 3V8, ZD1, ZD2, ZD4, etc., instead of W2, W3, W4 and W8 as it is back in Massachusetts." Steve's nearest TVI source is hundreds of miles away and that could be one of the reasons why he likes it over there.

Oceania — Talk about the fickle finger of fate — KB6AY, who would like nothing better than to be rare DX on 3.5 Mc., finds himself a few degrees of longitude "out of bounds" for such activity. FCC rules and regs put 170° west longitude as the farthest west that 80 meters may be used . . . . . W2AOS/KG6 effectively competes with Guam's local QRO gang although he uses only 75 watts input. "Conditions have been very poor," writes Charles. "Europeans have been QSOd over Ws in the ratio of 6 to 1." He adds further: "Most of the boys coming out here now are not applying for KG6 calls. There is quite a list of W5, W6, W7, W9 and WØ/KG6 stations on the air almost every night." W2AOS/KG6 has QSLd every station worked and anyone who has not received his card may write for another to Cmdr. Charles E. Biele, USN, c/o U.S. Naval Communication Station, Navy 926, FPO, San Francisco.

Europe — After knocking ZB2I off for a new country, CN8EG packed up and went over to visit him. Steve found that ZB2s A and I are the only Gibraltar stations active. ZB2A is a club-like deal operated by military personnel while ZB2I is the first and only civilian to nail down a Gibraltar ticket. ZB2I QSLs 100 per cent and believes his 80-meter contact with W2QHH to be the first 3.5-Mc. ZB2/W QSO. Ed runs 25 watts to an 807 on 'phone and c.w. and likes all bands from 80 through 10 meters. He uses doublet antennae and his receiver is an HRO . . . . . Tough luck at G3CFK. Peter lost his entire QSL collection in the recent European floods and would like stations who have worked G3CFK to ship him duplicate replacement cards . . . . . Except for four U.S.S.R. countries, G2MI needs only a card from FO8AB to have all countries-worked confirmed. Art sees QSLs for three-letter G4s once in a while — no such animals . . . . . *Radio Club Amatori* of Ravenna, Italy, offers a certificate (WAIP) to any station submitting QSLs for the working of sixty (60) or more Italian provinces. Cheer up, sheepskin-hounds — Italian stations must work *75*. Interested parties may write the club for details at P.O. Box 172, Ravenna . . . . . F7BB (3A2AQ) received orders for his return to the States and may be on the air soon out of Fort Bragg, N. C. Jim would have operated from Andorra while stationed on the Continent but there is at present a taboo on ham operation by nonresidents . . . . . In July, DL6SS will embark on a small DXpedition to Liechtenstein. Klaus intends to operate on 14 Mc. from 2100 to 0600 GCT after he gets fired up . . . . . W1WPO notes that SM5TQ racked up another DXCC, this time with the call SM7TQ.

South America — "I have returned from several months in Chile and find a copy of a letter to you from HC2JR relative to a stack of QSLs he forwarded to me covering alleged c.w. QSOs with HC2OT, my old call. Unless this call has been reassigned the guy is a pirate, as I went off the air (as HC2OT) several years ago." Thus writes Steve Stevenson, W5BR. Do we hear hysterical cackles from the stupe who pulled this stunt? . . . . . W9AND still handles QSL matters for FY7YB and desires the gang reminded that stamped, self-addressed envelopes are required. [Boss, who ever heard of an envelope addressing itself? — *Jeeves.*] Quiet, boy. VP8AP's long-awaited pasteboards are beginning to get around in force; W1ILO got his . . . . . We've heard that the British closed down LU4ZI. What price exclusive country-status!

One of the first Japanese-national amateur stations to hit the air legally postwar was Tokyo's JA1AH. Roy likes 14-Mc. work and runs 200 watts to a two-stage rig. Doublet antennae and a 12-tube homemade superhet are used. (*Photo Via W6BES and W3VES/1*)

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Well, somebody finally did it. W7ITN's new DXCC certificate is the first such earned by an Idaho station. DXCC has Worked All States!

The World Above 50 Mc.

CONDUCTED BY E. P. TILTON,* W1HDQ

May! Wonderful feeling, isn't it?

Like the crocuses, daffodils and violets that spring up seemingly from nowhere, signals from far beyond the winter range appear to cheer the v.h.f. man at this season. New calls, and old familiar ones, too, can be counted on to show green tips above the background noise, once the warmth of spring has shone down on them for a few days.

Big beams, battered by winter's storms, are put back in shape, and let v.h.f. DX of any sort show up and we'll hear activity in a volume that has not been in evidence for months. Yes, this is the season when the hardy annuals blossom forth on the v.h.f. bands. We're making progress in promoting greater all-year use of the frequencies above 50 Mc., but there are still many among us who, for one reason or another, lay low in winter. They're not far away, however, and the smell of May in the air brings them back in droves.

If you've been on the verge of a venture into the world above 50 Mc., now's the time to be about it. Perhaps we'll be pardoned, then, if we offer a word of familiar advice to the v.h.f. newcomer, as to what to expect of this strange and wonderful world he's about to invade. What does it take to have fun on 50 Mc. and higher bands? Wherein do they differ from lower frequencies?

Perhaps the most important difference is that good receivers and high-gain antenna systems are almost a must. You can work 80, 40 or 20 after a fashion with a receiver that's only fair, and an antenna that is makeshift in character, and still have fun. It's nice to have something better, but you can get along. So, often we find the budding v.h.f. enthusiast making his first pass at 6 or 2 with a mediocre receiver, a 10-meter beam or an 80-meter Zepp. He'll hear a few signals when things are red hot, so he assumes that things are working, but the results he obtains are not consistent enough to hold his interest for long.

After a few weeks you'll hear him at the local radio club, or back on a lower ham band, saying, "Well, I worked some guys on 6 (or 2) but you can't hear anything there unless the band is open — and it's open too seldom for me. That v.h.f. stuff is for somebody else!"

Well, how does he know, when he's never really tried it? Chances are that his chromium-plated communications marvel has a noise figure 15 db. or more above that of even a simple converter he could have built for himself. His makeshift antenna is sure to be robbing him of at least that much more in the way of received-signal strength, compared to what he would have had if he'd taken the trouble to put up a good beam for the band he was nibbling at.

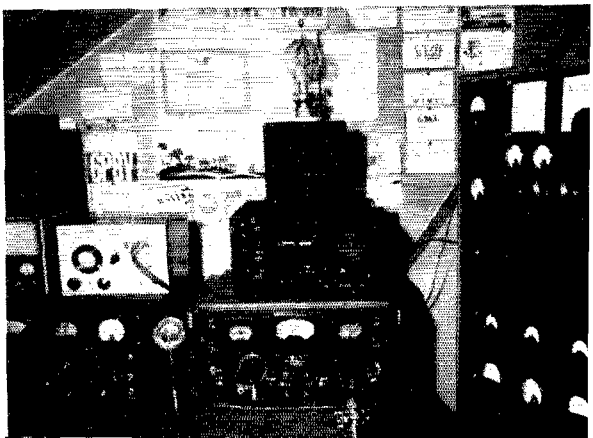
Every year about this time, v.h.f. makes — and loses — converts who fail to enjoy the game because they don't play it hard enough. So, if you're taking your first dip in the v.h.f. pool this spring, be sure that you wade in well equipped. Start out with a *good* converter (you may have to build it yourself), and a real beam antenna for the band in question, and we can almost guarantee that you'll like what you find. The transmitter can be of moderate power; you're not going to have to beat down a thousand other fellows on the same frequency, but you do have to be able to hear the stations that can hear you. Good gear and a little patience in learning the ropes will pay off in countless hours of fun like you've never had before. We'll be seeing you!

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

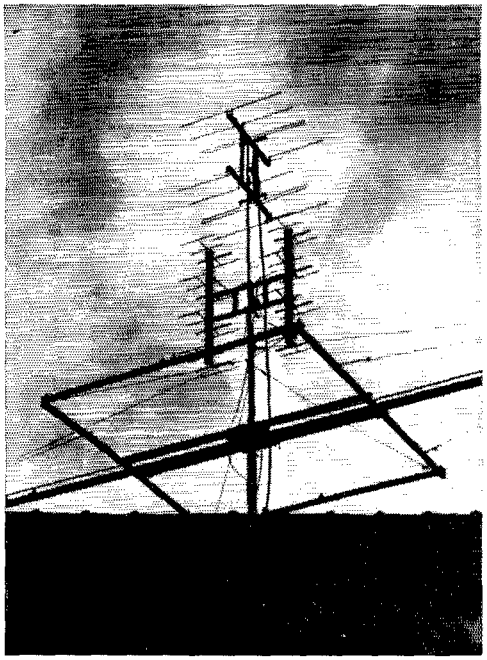
420-Mc. Record Moves to Europe

For years now we've been chipping away at that 262-mile 420-Mc. record held since 1949 by W6VIX and W6ZRN, who set the mark by using portable gear at two California mountain locations. When that job was done it looked worse than formidable to 420-Mc. workers who were confined to home locations. It seemed just about impossible that two-way work between home stations could even approach this distance, in view of the trouble fellows were having in covering paths of 15 or 20 miles!

Then we began to build crystal-controlled transmitters,



Operating position at ON4UV, Belgian end of the new 420-Mc. record. The crystal-controlled converter, *upper left*, has a 3-stage i.f. preamplifier and works into the SX-28 on 30 Mc. A panoramic adapter connected to the SX-28 is a great help in spotting weak signals. The transmitter at the right has a tripler-amplifier line-up driven by the regular 2-meter rig.



Antenna systems at ON4UV, Belgian 420-Mc. record holder, include a 4-over-4 for 144 Mc., *top*, a 32-element system for 420, consisting of eight 4-element bays, and a 14-Mc. rotatable dipole. The square framework formerly supported a 3-element 10-meter job.

and the converter-and-communications-receiver approach became practical for home-station use. Soon, just as on each lower v.h.f. band before it, we found that 420-Mc. signals were audible at points far beyond the horizon when conditions were right. Despite relatively ineffective receivers, lower efficiency in the transmitters and a limitation of 50 watts peak antenna power, we found that, on occasion, 420-Mc. signals ran ahead of those on 144 Mc. on paths of 200 miles or more.

From here on it was mostly a matter of getting two well-equipped stations on the air at the right times in the right places to extend the record. Again and again, the record was equaled in two-way work, but not surpassed, or crossband (but not two-way) contacts were made beyond the record distance. Notable examples of this were 144–432 QSOs between W8BFQ and W2QED, and F9BG and FA8IH, the latter a distance of nearly 500 miles across the Mediterranean. Your conductor both heard and was heard by stations in the Washington, D. C. area, but could pull off no two-way contact for a record.

Meanwhile, interest and activity were running high in Europe. With only 145 and 420 Mc. set aside for amateur use between 29.7 and 1200 Mc., the v.h.f. men of Europe outstripped us in 420-Mc. progress. Crystal-controlled transmitters and superhet receivers of superior performance were put into service in considerable numbers in Britain and on the Continent. The results have been reported in *QST* regularly; almost at once, home-station 420-Mc. coverage of Europe exceeded ours, and it seemed only a question of time before the record would move across the Atlantic.

This has now happened. On March 3rd, ON4UV, Fayt lez Mange, Belgium, worked GW2ADZ, Llanymynech, Wales, a distance of approximately 350 miles. Two contacts were made over this path, at 2030 and 2351 GCT, and between these times, ON4UV also worked G3BKQ, 270 miles, G4AP, Swindom, G2WJ, Dumow (who was running 3 watts!), G2XV, Cambridge, G3HAZ, Birmingham, and PAØWAR. The signals over the record distances were S9 each way, so you see the possibilities when 420 is open!

The rig at ON4UV uses a pair of 8012s in a push-pull tripler, following his regular 2-meter job, and these drive the European equivalent of the 9903 on 435 Mc., delivering about 15 watts to a 32-element array. The receiver has 6J4 and EC802 r.f. stages ahead of a crystal mixer, the output of which works into a 3-stage 30-Mc. i.f. Following this is an SX-28 with panoramic adapter. ON4UV has four countries worked two-way on 435 Mc., contacts including F8OL, F8GH, F8JR, F3LQ, G3DIV (worked in 1951), PAØPN, PE1PL, and the DX mentioned above. As yet, he has worked no stations in his own country, other than crossband!

GW2ADZ runs 30 watts input to a CV127 doubler, feeding a 32-element array. The receiver has a crystal mixer, followed by an EF54 i.f. amplifier stage on 8 Mc., working into an S-640 communications receiver. Exact geographical

2-METER STANDINGS

Call	States	Areas	Miles	Call	States	Areas	Miles
W1HDQ	18	6	850	W5SWV	7	2	—
W1IZY	16	6	750	W5FBT	6	2	500
W1RFU	15	7	1150	W5IRP	6	2	410
W1MNF	14	5	600	W5FSC	5	2	500
W1BCN	14	5	580	W5DFU	5	2	275
W1DJK	13	5	520				
W1CTW	12	4	500	W6PJA	3	3	1390
W1KLC	12	4	500	W6ZL	2	2	1400
				W6WSQ	2	2	1390
W2NLY	22	7	1050	W6NLZ	2	2	237
W2UK	21	7	1075	W6GCG	2	2	210
W2QED	18	7	1020	W6EXH	2	2	193
W2AZL	18	7	1050	W6ZEM/6	1	1	415
W2ORI	16	7	830	W6GGM	1	1	300
W2PAU	16	6	740	W6YYG	1	1	300
W2QNZ	14	5	400				
W2SFK	13	6	—	W8WJC	21	7	775
W2DFV	13	5	350	W8BFQ	21	7	775
W2CET	13	5	405	W8WRN	19	7	670
W2UTH	12	7	880	W8WXV	18	8	1200
W2DPB	12	5	500	W8UKS	18	7	720
W2FHJ	12	5	—	W8DX	17	7	675
W2BVU	12	4	260	W8EP	17	7	—
				W8WSE	16	7	830
W3RUE	19	7	760	W8RWW	16	7	500
W3NKM	19	7	660	W8BAX	15	6	655
W3QKI	17	7	820				
W3KWL	16	7	720	W9FVJ	22	7	850
W3LNA	16	7	720	W9EQC	21	8	820
W3FPH	16	7	—	W9BPV	20	7	1000
W3GKP	15	6	650	W9UCH	20	7	750
W3OWW	13	6	600	W9LF	19	—	—
W3KUX	12	5	575	W9WOK	17	6	600
W3PGV	12	5	—	W9MBI	16	7	660
W3LMC	11	4	400	W9BOV	15	6	—
				W9ZHL	15	6	—
W4AO	20	7	950	W9LEE	14	5	780
W4HHK	19	6	710	W9FAN	13	—	680
W4JFV	18	7	830	W9UIA	12	7	540
W4MKJ	16	7	665	W9GTA	11	5	540
W4OXC	14	7	500	W9JBF	10	5	760
W4IKZ	13	5	650	W9DSP	10	4	700
W4JFU	13	5	720				
W4CLY	12	5	720	WØEMS	21	8	1175
W4JHC	12	5	720	WNØGUD	20	7	1065
W4OLK	12	5	720	WØIHD	16	6	725
W4FJ	12	5	700	WØNFM	14	7	660
W4UMF	12	5	600	WØZJB	12	7	1097
W4LRR	5	2	900	WØINI	12	5	830
				WØWGZ	11	5	760
W5JTI	14	5	670	W9OAC	11	5	725
W5RCI	14	4	790	WØJHS	9	3	—
W5QNL	10	5	1400	WØHXY	9	3	—
W5CVW	10	2	1180				
W5MWW	9	4	570	VE3AIB	17	7	850
W5AJG	9	3	1260	VE3DIR	14	7	790
W5ML	9	3	700	VE3BPB	12	6	715
W5ERD	8	3	570	VE3AQG	11	7	800
W5ABN	8	2	780	VE1QY	11	4	900
W5VX	7	4	—	VE3DER	10	6	800
W5VY	7	3	1200	VE3BOW	8	5	520
W5FEK	7	2	580	VE3QN	7	3	540
W5ONS	7	2	950	VE3TN	7	4	480

locations have not been received from both ends as yet, but the distance appears to be at least 350 miles. It's a real mark for us to shoot at, in any event!

Late news: Word from GW2ADZ reports another QSO on March 22nd, again with S9 signals!

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

Transistor-to-transistor QSOs on 50 Mc.! W2IDZ, Denville, N. J., and W2WCM, Morris Plains, have built transistor rigs and made two-way contact on 6 over a 4-mile path with less than 100 milliwatts input. Ed has also worked W2MEU, at Washington Rock State Park, a distance of 18 miles. The rigs use a single point-contact transistor as an overtone oscillator, with either 25- or 8-Mc. crystals. The transistors are *not* special production for v.h.f. At a power input of 70 milliwatts, the signal between W2WCM and W2IDZ runs about S3 on c.w. Ed has also frequency-modulated his to provide narrow-band f.m. as well as c.w. So far, no TVI in Channel 2 has been reported with these super-power jobs!

W2IDZ reports good prospects of increased 6-meter activity in Northern New Jersey, with the Lakeland Radio Club in the process of building twenty 10-watt rigs for c.d. use. The nightly workouts on 6 begin around 9 P.M., instead of 10, as reported in our net tabulations.

Add 50-Mc. DX prospects: KZ5BS, Diablo Heights, Canal Zone, has 50 watts to an 807 on 6. Various long-wire antennas are in use at present, but he expects to have a 50-Mc. array up before long.

After months of almost no auroral activity, a series of openings in February and March caught most of the old aurora hands by surprise. March 8th and 9th were particularly good, with both 6 and 2 being open for the usual DX of 100 to 700 miles. An unusual feature of the 2-meter session of the 8th was the logging of a W6 signal by three different W2s. All are good c.w. operators, so we accept their version of the call heard, and the method of signing. W2OPQ mentions that it sounded strange to him because the signal came through from the same direction, with the same signal level, and at the same time as W8s and W9s. He suspects that somebody out W8 or W9 way was pulling eastern legs. Any more information on this one? The frequency was 144.45 Mc.

W9NJS, Kentland, Ind., was hearing WØEMS, numerous W9s, W8SRW, W3PMG, W3LZD, VE3AIB, W2ORI, and W2NLY on this one. Fuzzy TV reception was his tip-off.

Incidentally, we'd like to apologize to W9NJS for slighting him in the report on the results of the V.H.F. SS recently. We credited W2NLY and VE3DIR with the best DX reported, when actually it appears that W9NJS hit the jackpot in working WØEMS during the contest. This is a distance of some 375 miles, and by far the best 2-meter DX reported for the contest period.

W9KLR, Rensselaer, and W9ORZ at Anderson, Ind., report solid communication between their two locations on schedule, despite only 15 watts at W9KLR. Bill has also worked WN4VLA, Ft. Thomas, Ky., 190 miles, during the winter. He says that barometric pressure readings provide a good indication of favorable propagation, winter and summer, with the band being worth watching whenever anything higher than 30.0 is recorded. Band conditions have been invariably poor in periods of 29.8 or lower.

Note to 420-Mc. TV addicts: W2UTH and W4MS are usually on 20-meter 'phone on Saturday mornings, looking for other ham TV enthusiasts.

Activity on 220 Mc. is looming in VE3-land. VE3BQN is on with an 832A and a 6BQ7 converter. He'll be in business throughout the summer and looking for DX chances as well as local contacts.

Chicago is also in line for increased 220-Mc. interest. W9OVL, Hammond, Ind., says that several new rigs are on the air, and contacts are now possible nightly, both two-way on 220, and crossband to 144. W9s REN ADO NMS OJV QPR and OVL are on regularly, with things getting started between 2030 and 2100 CST.

Spring came early for the v.h.f. and u.h.f. fraternity this year. The European record-breaking work on 420 Mc. reported elsewhere came well ahead of the usual period for tropospheric openings of any magnitude. And the early-morning skeds kept by your conductor and W2QED came to life on March 14th. After working daily through the winter with barely-audible 2-meter signals over this 210-mile path, we were pleased and surprised to find S9 signals on 144 Mc. at 0730 on the 14th. Changing to 435 Mc., W2QED came in equally well on the higher band. The signal remained in until 0845, when a change back to 144 Mc. was necessary. The first success on 420 over this circuit last year didn't come along until well into June.

Tropospheric openings have been reported by the 2-meter gang for several dates during March, and everyone agrees that conditions at these times have been well ahead of the best usually encountered before May or June. All hands hope that is a sign of good things to come later on in the season.

Club Projects Use V.H.F. Bands

Wabash Valley AREC on 50 Mc.

The appearance of the hand-carried 50-Mc. transmitter-receiver in *QST* for May, 1951, set off a chain reaction in the ranks of the Wabash Valley Amateur Radio Association of Terre Haute, Indiana, and vicinity. This group, always civic-minded, organized a project to build and operate 10 small battery-operated 6-meter rigs shown in the accompanying photograph.

They served their purpose well, but mobile gear of greater power and range was also needed. This problem was solved when W9ZHL located 14 mobile units that could be converted readily to 50-Mc. operation. W9IHO writes that these were obtained by each member furnishing the money for one, the club having insufficient cash resources to purchase the equipment outright. In the event that any holder decides to relinquish a unit it is made available to the next man on the waiting list, the original deposit being returned, less charges based on the condition of the gear turned in. Both transmitters and receivers are crystal-controlled on 50.6 Mc.

A 50-watt portable station is kept in daily use, and antennas have been installed at Red Cross and Civil Defense headquarters. W9ET has furnished a 250-watt main station equipped with a 110-foot tower, providing coverage of 45 to 50 miles to the mobiles with ease. The car installations run up to 37 watts input. A 1.5-kw. gas-engine generator is a recent club purchase. Shown at the right of the photo-

♦

The AREC group of the Wabash Valley Amateur Radio Association is well supplied with 6-meter gear. Pictured with ten of their hand-carried 50-Mc. rigs are, *front row, l. to r.:* W9s ZHL PLG OMR IHO ANH and QOX. *Rear:* W9s QOZ ET NZH SYM QXT EHT and EQZ. The club also operates 14 mobiles, a 50-watt portable station and a 250-watt fixed station, all on 50.6 Mc. The gas-engine generator supplies power for the 50-watter.

♦

50 WAS Mc.

WØZJB.....48	W4BEN.....35	W8BFQ.....41
WØBJV.....48		W8OJN.....39
WØCJS.....48	W5VY.....48	W8LPD.....37
W5AJG.....48	W5GNQ.....46	
W9ZHL.....48	W5MJD.....46	W9ZHB.....48
W9OCA.....48	W5ONS.....45	W9QUV.....48
W6OB.....48	W5JTI.....44	W9HGE.....47
WØINI.....48	W5ML.....44	W9PK.....47
W1HDQ.....48	W5JLY.....43	W9VZP.....47
	W5JME.....43	W9RQM.....47
W1CLS.....46	W5SFW.....43	W9ALU.....47
W1CGY.....46	W5VV.....42	W9UIA.....45
W1LLL.....45	W5FAL.....41	W9UNS.....45
W1HMS.....43	W5FSC.....41	
W1LSN.....42	W5HLD.....40	WØQIN.....47
W1DJ.....40	W5HEZ.....38	WØDZM.....47
	W5LIU.....37	WØNFM.....47
W2AMJ.....46		WØTKX.....47
W2RLV.....45	W6WNN.....48	WØKYF.....47
W2MEU.....45	W6UXN.....47	W9HVW.....45
W2IDZ.....45	W6ANN.....45	WØMVG.....44
W2FHJ.....44	W6TMI.....45	WØJOL.....44
W2GYV.....40	W6IWS.....41	WØTJF.....44
W2QVH.....38	W6OVK.....40	WØJHS.....43
W2ZUW.....35	W6GCG.....35	WØPKD.....43
		WØIPI.....41
W3OJU.....45	W7HEA.....47	
W3NKM.....41	W7ERA.....47	VE3ANY.....42
W3MQU.....39	W7BQX.....47	VE3AET.....38
W3RUE.....37	W7FDJ.....46	VE1QZ.....34
W3OTC.....35	W7DYD.....45	VE1QY.....31
W3FPH.....35	W7JRG.....44	CO6WW.....21
	W7BOC.....42	XE1GE.....19
W4FBH.....46	W7JPA.....42	
W4EQM.....44	W7FIV.....41	Calls in **boldface** are holders of special 50-Mc. WAS certificates listed in order of award numbers. Others are based on unverified reports.
W4QN.....44	W7CAM.....40	
W4FWH.....42	W7ACD.....40	
W4CPZ.....42		
W4FLW.....42	W8NSS..... 46	
W4MS.....40	W8NQD.....45	
W4OXC.....40	W8UZ.....45	
W4FNR.....39	W8CMS.....43	
W4IUJ.....38	W8YLS.....41	
	W8RFW.....41	

graph, it provides for emergency operation of the 50-watter, and gets a workout each Field Day. Crystals for the receivers were purchased on frequency. Those used in the transmitters were etched to the required channel by W9ZHL and W9ANH. Installation of the rigs was supervised by W9EQZ, assisted by W9IHO.

All the gear is tested frequently in simulated emergencies, and it has been pressed into service for such diverse community projects as the Red Cross fund drive, the local Soapbox Derby, and long-distance swimming meets. It acquitted itself well in one actual emergency, a tornado that struck the town of Shelburn, Indiana. The interference-free nature of 50-Mc. operation has been ideal for such work.

TCRA Employs 2-Meter Rigs for Road Events

For more than two years, the Tri-County Radio Association of Plainfield, N. J., has been building and operating 2-meter gear designed especially for emergency use. Described by W2HNY in *QST* for October, 1951, the TCRA rigs consist of interchangeable subassemblies and can be operated from either 115-volt a.c. or 6-volt d.c. supplies. More than 50 complete stations have now been built, and their value has been demonstrated again and again.

Some 30 of these have been integrated into the civil defense organizations of several New Jersey towns served by TCRA. Their owners take part in frequent simulated incidents and drills of various kinds, and always come through with flying colors. In most cases, the rig remains the property of the builder, but is loaned to the local organization for c.d. use. In this way several towns have been sold on the idea and are now in the process of purchasing equipment for at least control-station service.

The TCRA gang have always been partial to the 2-meter band for local emergency planning. Recently, they demonstrated that the gear can be used successfully on what amounts to a statewide basis, delivering solid communication over circuits where 75-meter mobiles have tried and failed.

Last fall, an automotive group known as the Road Knights of New Jersey sponsored a reliability run on a 150-mile course extending from Plainfield up through Northern New Jersey and back. Mobiles operating on 75, 10 and 2 were deployed at check points along the route to handle information on progress of the run. This set-up was too complex to be satisfactory, particularly as to interference on the 75-meter circuits, but results were such that the Road Knights were willing to try again.

The TCRA group was called in again for the Knights first spring event, March 15th, and this time the job was done entirely on 144 Mc. The course of the run and the check points along it were chosen by the two organizations working together, taking advantage of topographical features that would suit the needs of the 2-meter operators. The runs are based on the strict observance of all traffic laws, so the course can be laid through any territory.

This one started at Watchung Lake, near Plainfield, and ran through Old Bridge and Englishtown to Toms River, returning via Freehold and Old Bridge to the starting point. Hills surrounded the low starting point, so a high spot nearby was selected as the control point, information being relayed from the actual starting line. At Toms River, the turn-around was also low, and in the center of the town, so a higher and quieter spot close by was used as a relay point. Roving units were deployed along the route, and portables were set up at the check points at Old Bridge, Freehold and Englishtown. TCRA stations were used at all points except the two ends, 522s being installed here in case more power was needed. All locations were checked out thoroughly well in advance of the date set for the actual event.

All hands were on deck by 7:30 A.M. on the big day, and the run started on schedule at 9. Operation was continuous until 4 P.M., and all necessary information in connection with the run was handled without a hitch. The regular net frequency, 146.43 Mc., was used, and the channel was completely clear throughout the day. The boys feel that similar work could be carried out on 50 Mc., or even possibly selected spots in the 10-meter band, but the freedom from interference on the 2-meter channel was in marked contrast to the tangled mess that prevails almost invariably when this sort of work is attempted on 75.

TCRA members participating in the event were W2s LI KOG OM AJC QJR AOE IXS FCC TWC BEP IHM LRO MHK and HNY. Matty, W2HNY, reports that photos and plans for the club gear have been supplied to more than 100 other groups, and that occasional requests are still being received. TCRA has done this gladly, but they ask again that only groups who actually intend to make a project of the construction of the gear send for the material, and that postage be included with the request.

In making plans for Field Day, A suggests that the club investigate the possibilities of a balloon-supported antenna for all bands. He has computed that the balloon he has in mind will support a 300-foot length of wire and says that the height should give them a terrific signal on all bands. B claims it isn't worth a hoot and that it would only be a menace to aerial navigation. Who is right?

(*Please turn to page 140 for the answer*)

Results of the Novice Round-up—1953

FOR two weeks in January of 1953, the call of CQ NR was a door-opening phrase. With it, you called somebody and dozens came back! A glorious period in which 'QRZ?' became the stock phrase accompanying it." — *WN3UJP.*

—•••—

If you were lucky enough to be participating in this second Novice Round-up, you probably will agree completely with the above words. The two-week period of January 10th through 25th brought out more Novice and non-Novice stations than did the initial event in 1952. One hundred Novices, and 18 other amateurs submitted their logs in the competition.

Let's take a quick look at the objectives of this contest. What's it for? It's to help the newcomer build up his operating skill, as well as his code speed. Some comments from participants really point this up! "The NR is just what I needed as an incentive to gain more operating experience." — *WN3UTR.* "Lots of fun, makes for good operators among the Novices." — *W9QLW/9.* "On the whole, I must say that the contest was exciting, and if it's only a fraction of the excitement of the SS and DX Competitions we'll be going all out for these contests when we get our General Class licenses!" — *WN2OLH.* "I was pleasantly surprised and impressed with the clean signals and snappy operating of the majority; that 50 kc. on eighty sounded like the low end of twenty during the DX test!" — *W4BZE.*

Don't think that the only winners are the top scorers. The Round-up was an opportunity to improve operating skill, meet new hams, learn of the League's field organization, add to your states, etc. An especially eventful two weeks was had by KN2AZA/K2AZA. During this period, he worked his best DX (VE7), his first W7, 5 new states and received his Technician License — but best of all, he made a lot of new friends.

"Some of the WN competitors sounded like candidates for the '53 SS!" — *W4KFC.* If you're one of the many excellent operators Vic is referring to, maybe you can find a clue to improving your operating percentages by glancing at the following figures on the top five Novice scores: 6004, 5891, 3900, 3872 and 3562. They all deserve merit for their outstanding showing in the competition. Offhand, which of those scores do you think reflects the most contacts per hour of operating time? If scored in order on this basis, the second total would be top man. Which reflects the most sections worked per hour? Here again, the second total leads. Don't be fooled by figures for the sectional basis is the best yardstick to measure yourself against. How did *you* do in comparison to others in *your* section?

With 48 sections represented, the state of Illinois can take pride in the achievements of WN9UVM and WN9TGY. Third and fifth places belong to Western New York, with the Arizona Section in fourth place, thanks to the nice work of WN7RUK. The majority of the Novice contestants claimed credit for code proficiency certifications of 15 w.p.m., with 13 entrants certified at 20 w.p.m. or above. Newcomers? Not by a long ways!

The following scores are those of non-Novice stations given alphabetically by section. Conn.: W1UFW 2990, W1WPO 1088, W1AW 550, W1BDI 38. Ga.: W4WBB 216. Ind.: W9QLW/9 12. Kans.: WØHAW 44. L. A.: W6NJU 30, W6SGU 4. W. Mass.: W1YK 150.[1] N. N. J.: K2BCK 45. N. C.: W4KE 10,252, W4BDU 48. E. Pa.: W3SBE 960, W3SEB 825. W. Pa.: W3SVY 217. Va.: W4KFC 784, W4BZE 645. Ont.: VE3DRD 110.

—•••—

With his fine flair for words, WN3UJP perhaps expresses best of all the tribute paid to a non-Novice participant by many of the newer boys. "Tribute must be paid to an unselfish, hard-working ham who helped hundreds of Novices acquire valuable contest points. He helped keep the frequency clear for the Novices and made the way a bit easier for many of the boys. Hats off to W4KE!"

SCORES

Scores are grouped by Divisions and Sections. The operator of the station first-listed in each section is award winner for that section. Example of listings: WN3UUA 576–33–12–15, or, final score 576, number of stations 33, number of sections 12, total operating time 15 hours.

ATLANTIC DIVISION

Eastern Pennsylvania

WN3UUA..... 576- 33-12-15
WN3TXO.....150- 15- 5-12
KN2CAF/3.....11- 1- 1- 1

Md.-Del.-D. C.

WN3VBO.....200- 25- 8-24
WN3USB.....161- 13- 7- 4
WN3VAR.....40- 8- 5- 2
WN3UYC.....25- 5- 5- 2

Western New York

KN2AZA.....3900-110-30-39
KN2AKS.....3562-122-26-26
KN2CBS.....2900-106-25-39
WN2OLH.....429- 29-11-32
KN2CAF.....42- 4- 3- 3

Western Pennsylvania

WN3UTW.....1794- 78-23-40
WN3UTR.....1680- 64-20-34
WN3UJP.....180- 15- 6-30
WN3TAS.....162- 12- 6- 4

CENTRAL DIVISION

Illinois

WN9UVM.....6004-138-38-30
WN9TGY.....5891-122-43-25
WN9WHH.....3335-100-29-24
WN9VBS.....1625- 65-25-28
WN9WBL.....1064- 41-19-17
WN9VGZ.....560- 20-14- 8
WN9SDD.....54- 8- 4- 6

Indiana

WN9QZE.....306- 19- 9-12
WN9QUH.....144- 9- 6-20
WN9URQ.....76- 4- 4-27

Wisconsin

WN9VOD.....304- 18- 8-13
WN9VBZ.....275- 25-11-15
WN9RUJ.....19- 19- 1- 5

DELTA DIVISION

Mississippi

WN5WMN.....275- 15-11- 6

Tennessee

WN4WXS.....2430- 75-27-24
WN4WXH.....2156- 77-28-23
WN4VUW.....429- 18-13-10
WN4VTT.....144- 18- 8- 5

GREAT LAKES DIVISION

Kentucky

WN4WXL.....650- 30-13-40
WN4WNH.....462- 22-11- 9

Michigan

WN8LKQ.....2656- 73-32-39
WN8KLZ.....184- 8- 8-10
WN8LIW.....100- 10- 5- 2

Ohio

WN8LWL.....855- 47-15-15
WN8KYZ.....440- 24-10- 9
WN8LRR.....57- 4- 3- 1

(Continued on page 140)

[1] Worcester Polytechnic Institute Radio Club station.

Hints and Kinks For the Experimenter

TIN-CAN METER SHIELD

THE tin cans that many types of fish, fruit and vegetables are packed in may be reworked for use as meter shields. Fig. 1 shows how a panel-mounted meter may be encased in a pair of these containers. Minimum can diameter should allow

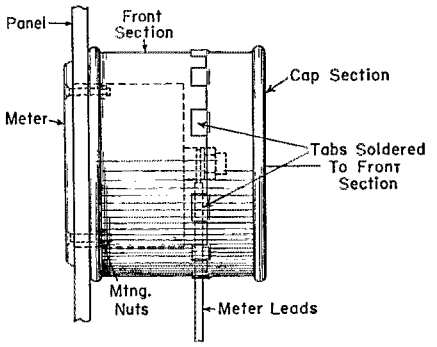


Fig. 1 — Tin-can meter shield suggested by W4UAB.

using the meter mounting bolts to hold the assembly in place. The top of the panel-mounted member must be cut out to clear the meter case and its length should be equal to the depth of the meter. The cap section is cut from a second can, the same size as the first. This cover should have a slot or hole to pass the meter leads and should be equipped with tabs that will force-fit over the front section when the two units are fitted together. Solder takes easily to the tin and may be used to complete the bonding between sections. — *John F. Shumaker, jr., W4UAB*

MOBILE-ANTENNA MOUNTING HINTS

MANY of the new cars are equipped with a pair of back-up lights. If one of the lamp assemblies is removed, it usually provides an opening that is ideally suited and located for the mounting of a whip antenna. The light may be returned to its proper place when the car is either sold or traded in and, as a result, there is no unsightly hole remaining to decrease the resale value of the car. — *Loren R. Norberg, W9PYG*

AT least one of the late Pontiac models has an Indian head emblem fastened to each of the rear fenders. Remove one of the emblems and you will find a hole that is just right for mounting the mobile antenna. You may even find that the local radio supply house has a base for the radiator that can be fastened to the fender by the three screws which originally held the emblem in place. — *Robert M. Resconsin, W1TRF*

FINGERNAIL POLISH AS A CONSTRUCTIONAL AID

THERE are several ways in which ordinary clear fingernail polish can be used to advantage during your next building project. It can be used to hold a nut in place on the underside of a chassis or on an interior surface of a compartment while a component, cover plate, etc., is being mounted, thus leaving both hands free for the handling of parts and tools. A few dabs of the polish will also serve as a substitute for lacing when a small within-the-chassis cable is made up and it can also be used to anchor a wire or small cable within a unit. Be sure to apply a small quantity of polish to both the insulation and the metal when one or more wires are to be bonded to the chassis. — *David G. Kocher, W9PNX*

RELAY-TYPE CRYSTAL-SWITCHING CIRCUIT

A REMOTELY-CONTROLLED crystal-switching circuit that is especially well suited for trunk-mounted mobile installations is shown in Fig. 2. The system employs a pair of 6-volt d.p.d.t. relays, 4 crystal positions and a 2-pole 4-position rotary switch. In operation, a particular crystal is

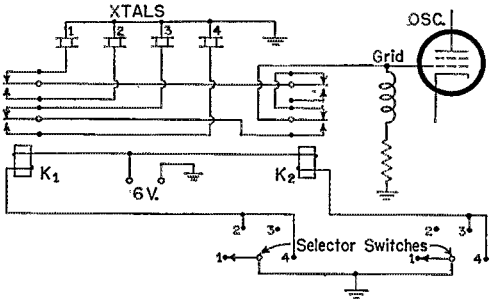


Fig. 2 — Circuit diagram of the remotely-controlled crystal-switching system used by W9PVD.

automatically connected back to the grid of the oscillator tube merely by proper positioning of the remotely-located selector switch. Of course, the relays are mounted in the oscillator compartment of the transmitter. The relays used in the original installation are C. P. Clare midgets that operate at a current drain of only 300 ma. at 6 volts. They were purchased from Relay Sales here in Chicago at a cost of approximately $1.50.

The frequency range covered by the four crystals should not exceed 100 kc. or so. An attempt to cover a wide band of frequencies will probably necessitate retuning of the transmitter and the antenna. — *Gordon Lauder, W9PVD*

Correspondence From Members-

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

SINGLE OR DOUBLE?

161 Darlington Rd.
Syracuse, N. Y.

Editor, *QST:*

I was startled to learn from the January issue that there are only 237 hams operating on single sideband in the U. S. Even though you have plugged the cause with page after monotonous page of explanatory and constructional articles and have even maintained a regular s.s.b. department in *QST*, you have cajoled only 1/50 of 1% of the licensed amateurs into the tedious pursuit.

Most of us are hard-pressed to keep our "old-fashioned" 'phone rigs in proper operating condition and to find time to operate them without neglecting home, family, church and friends. I suspect that many of the fellows who built their own s.s.b. equipment put so many of their working hours into the project that their hobby should more correctly be termed "an obsession."

Not that I am opposed to progress in the art. But, I believe *QST*'s valuable pages should more properly be devoted to the improvement of conventional 'phone transmitters, rigs that can be made more *simple* and effective. There is room for progress in that direction too.

Also, I am a democratic sort of fellow. If there is a dedicated group who feel that the electronic future of the world rests upon their humped shoulders, let them do what they wish with s.s.b. But please, *QST*, don't jam it down the throats of us ordinary citizens.

— *W. T. Curtis, W2IWS*

8314 S. Langley Ave.
Chicago 19, Illinois

Editor, *QST:*

I am a "short-timer" on single sideband and to say that I'm enthusiastic about its merits is an understatement.

Most QSOs on s.s.b. occur on 'phone subband edges due to the advantage of not having too many a.m. heterodynes to contend with — not because sideband won't compete — it's just easier this way! May I suggest we "sidewinders" organize to operate in the center of our subbands. This, I feel, would help establish more s.s.b. to a.m. QSOs, broaden the knowledge of s.s.b. receiving technique and prove to all concerned that s.s.b. isn't just for a small bunch of technical contortionists!

What say — see you around 7250 kc.?

— *J. A. Gundry, W9KNP*

BUT WHAT TV!!

3745 Veteran Ave.
Los Angeles 34, Calif.

Editor, *QST:*

We now have radio transmission and reception of hearing and seeing sensations — audio and video. There are three other sense impressions, which if proved to be vibrations, could be converted to radio waves and back again to their bodily vibrational equivalents. These are:

oleo — smell radio
senseo — touch radio
gusteo (or palateo) — taste radio.

By these means, an odor, taste or touch microphone would pick up the various sensations to be transmitted, convert them, send them out, reconvert them and through an odor speaker, a tongue electrode or a touch electrodal system, receive them again in the body of the person. This would mean tele-taste, tele-smell and tele-touch.

Here is a possible glimpse of radio transmission of the future.

— *Martel I. Mickey, W6EUT*

DEBT OF GRATITUDE

Hennessey, Okla.

Editor, *QST:*

In *QST* every month you list the passing of fellow amateurs. As I read the list, I note many are old-timers. My heart is saddened and memories of days gone by crowd my mind. Those old-timers are gone, but like footsteps upon the sands of time their works and marks of progress will remain as long as man. Do we amateurs who enjoy our hobby of today realize what a great debt of gratitude and respect we owe to those pioneers?

In the beginning those men started from scratch. They did not have the ARRL or a staff of engineers from which to obtain information and advice like we have today. With ingenuity, patience and love for their hobby, they pushed on and laid the foundation upon which all branches of electronics are built today.

We as a nation of people have set aside Memorial Day so we can pay honor and respect to our dead. Is there any reason why we cannot designate a certain time and a period of thirty seconds or longer and silence our keys on this same day in order that we may show our respect and gratitude to those men who have done so much for us?

Old-timers, living and dead, I salute you.

— *W. P. Waggoner, W5UCT*

FEED-BACK

29-23 212th Street
Bayside, L. I., N. Y.

Editor, *QST:*

On December 31st, 1952, I sent you a letter on dockets 10073 and 10173. I wrote, "THE ABOLITION OF THE CLASS A LICENSE, usually obtained after a year's operation, was a serious slap in the face of the younger and future hams and discriminated against them." In March *QST*, while quoting my letter, you left out the word abolition and said, "The Class A License, usually obtained. . . ."

I wish to protest in the strongest possible manner to this twisting of words — the two sentences definitely are not of the same meaning and I demand that you print a correction in the next issue. . . .

— *Peter Rosenbaum, W2GAW*

[EDITOR'S NOTE: Our apologies for the editorial slip, which occurred in the course of selecting material from the hundreds of letters received on the subject.]

NET OPERATION

411 Woodward Bldg.
Birmingham, Ala.

Editor, *QST:*

The acknowledgment of a communications emergency provides for no lapse in common courtesy, no usurping of frequencies other than by common consent of FCC action, and no failure invariably to listen before transmitting, emergency or not. These three things are collectively axiomatic. By intelligent criticism in retrospect it becomes possible to conduct ourselves better in the next emergency. Recently I heard an operator refuse to yield or share a frequency on the basis that his traffic was more important. He had landed on a channel long used by an established net. No opportunity was accorded to NCS to define the urgency of his traffic. Put the shoe on the other foot and no imagination is required to estimate the height of righteous indignation with the situation reversed. Furthermore, the easy, casual employment of the arresting phrase "Break! Break!" which brings all activity to a grinding stop (only perhaps to add the information that such and such station in East Crabapple

(Continued on page 142)

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
R. L. WHITE, W1WPO, Asst. Comm. Mgr., C.W.
PHILLIP SIMMONS, W3VES, Communications Asst.

GEORGE HART, W1NJM, Natl. Emerg. Coördinator
ELLEN WHITE, W1YYM, Asst. Comm. Mgr., 'Phone
LILLIAN M. SALTER, Administrative Aide

Amateur Radioteletype and C.W. Operations. C.w. net operators will be glad to know that amateur radioteletype societies have been studying some choices of preferred calling and working frequencies for voluntary RTTY practice. It was proposed by the League as mentioned in these columns last month, that there be a gentlemen's agreement and full coördination between RTTY and the published pattern of National Calling and Emergency Frequencies and net operations. Such can minimize QRM difficulty in *both* directions, and help RTTY fellows to locate and hook up with each other.

Midwest Clixs and Okla. AREC bulletins have noted difficulties in that A1 and RTTY are different languages. These bulletins point out that an operator can't tell offhand if it's traffic or ragchewing in progress, deploring no fast break method feasible for a courteous way to ask for coöperation. There are like gripes from Ohio and Indiana. NYS and other net members also have complained to ARRL about TT QRM on 3690 and 3615 kc. making their net operation impossible. The RTTY fellows in turn tell about alleged malicious interference from c.w. on 40 and 80. So every operator should quickly recognize the need and advantages of calling and working frequency patterns for amateur radioteletype operation, as well as the desirability of *registering* RTTY (as well as amateur c.w. and 'phone) net frequencies not in conflict with other current operations.

It is apparently *not* so easy to find the right RTTY frequencies, agreeable to all interested, for this, however. ARRL, after studying the desirability of avoiding VE 'phone, band edges popular for DX and net operations, came up with the suggestion to use 3620, 7070, 14,140 and 21,210 kc. (p. 77, Apr. *QST*) for RTTY calls. The ARTS, W2NSD, proposed 3620, 7140, and 14,340 kc., the latter a frequency ARRL couldn't recommend, in any event, before FCC decision looking to extension of A3 to the 14,350-kc. band edge. The So. Calif. RTS, after study of all these, recommended three new choices — 3550, 7090 and 14,125 kc. — for RTTY working purposes. The 3550-kc. spot, a c.w. channel long recognized and used as a National Calling and Emergency frequency just couldn't also be a working frequency for RTTY at the same time. ARRL has no quarrel with such frequencies as 7140, 7090 or 14,125 kc. if one wishes to ignore possible harmonically related choices that permit use of one crystal for a quick band-to-band switch with high stability and reliable reception on stand-by receivers if desired. The correspondence has been felt by ARRL *to be highly profitable to all in any event*, since if RTTY experimentation is pointed toward *any* or all of the specific points named except 3.55 Mc. it will make for better contacts for RTTY, and insure a minimum of grief for c.w. operators on all the other frequencies in the bands!

FCDA, as part of its civil defense planning, issued in January a working draft of a frequency plan for use of RACES frequencies for study by the states. Since the draft included no F1 recommendations or provisions, the League called attention to this. As a result a revised FCDA recommendation includes, earmarked for RTTY, a *3504-kc. working and a 3506-kc. calling channel* in the 10-kc. segment at this band edge, to which RACES planning is limited. W2NSD in response to a letter mentioning the above writes, "The traffic-handling ability of TT should make it a valuable asset in emergency. Our thanks to ARRL for having this change put through."

Comments from all amateurs interested in the sharing problem posed in TT and A1 operations, as to their choices of the voluntary frequency possibilities, and if they approve the principle for calling and working RTTY use, will be appreciated. A postal card to ARRL will give us your views on the frequencies put forward. With sufficient encouragement we'll consider publishing RTTY frequencies in *QST* as National RTTY Calling and Working Frequencies. The satisfactory degree of RTTY use of 3620 kc. leads us to note 3620 kc. the first such spot frequency (other than the RACES recommendations, that is) for *QST* listing.

We'll listen on all the additional frequencies mentioned above and count our postal card responses as favoring voluntary designation for RTTY Calling and Working Frequencies as between 7070, 7090, or 7140 kc., likewise 14,140 or 14,125 kc. If you have no objection to 21,210 kc. add whether you think that should be included in the designations or not. As we see it, the earlier in the game it is possible to pin-point what we are working toward in those voluntary areas of agreement in which we have no assist in the form of FCC regulations, the better off we are.

Prominent Third Harmonics? W9OBW/4, ARRL Official Observer, has noted a number of amateur signals being radiated in the vicinity of 5400 kc. since the opening of the new 40-meter 'phone band. He suggests the possibility of radiation of the *3rd* harmonic of 160-meter crystals when looking for a higher harmonic. It is sug-

gested that all amateurs check their output for radiation at the wrong spot and take proper steps to prevent such radiation. This is especially important whenever setting up in a new band.

Over to You. A fast come-back is a good thing; this can be promoted or arranged best by setting up for break-in or push-to-talk arrangements. During QSOs a lot of time can be wasted by slow control procedure or inconvenient switching arrangements which some good station planning can cure. After initial contact it's not so necessary to repeat the called and calling station calls several times; a one-by-one or two-by-one call will do the trick, or just a BK and what you have to say, remembering to comply with the FCC identification procedure at minimum required intervals. We had more on identification on the air, especially as applies to network-identification, in this department of March *QST*.

Honest Reports Called For. How are you on giving honest or candid reports? Anxious to receive them, but a Casper Milquetoast on giving the truth when unflattering, perhaps. An occasional letter (or listen) reveals that as well as good ones there are less handsome signals and some disgusting ones to be heard. Except for FCC citations there's little reason conditions should improve unless someone will be honest with the guys and tell them how they sound. It's no insult to tell a DX fellow that he's T5 — a "musically-modulated note." This is better than one "slightly musical" (T3) or "moderately musical but rather rough" (T4) and way above "extremely rough hissing note" (T1) or "very rough a.c. note, no trace of musicality" (T2). The definitions are quoted from this part of the scale, since they're good definitions and ought to be used, or even the better one, "modulated note, slight trace of whistle" (T6), when deserved. Send a radiogram for the free ARRL Operating Aids card. Keep all the RST definitions before you to use as you operate, if needed.

Use voice? So much the better. Here in reporting you can describe accurately in some detail what you hear. On all signals stability (as checked by b.f.o.) should be tested if time permits, drift mentioned if it can be noted. In c.w. reporting don't forget to add a C for chirp (short-term instability) or K for click when noted; these signal defects are among those most bothersome to other operators trying to use our common bands for communication.

Our Versatile Hobby. That there are so many specialties within amateur radio is one of the reasons it has such fascination. A station well-operated at a steady speed 12 to 20 w.p.m. can be a joy to copy. Not so people who bat a bug at 30 when incapable of sending at half that speed *well*. Interest in DX today may turn to traffic or v.h.f. or 'phone tomorrow. The new 7-Mc. 'phone band already has its followers. Some come from 28 Mc. or migrate from 3.9 Mc., hoping QRM will be a little less or at least have a different pattern. The Novice gang is getting increasing results from "forty." There's the satisfaction of traffic and net operations, real two-way *communication* accomplishment, perhaps the appeal of amateur (RACES) civil defense drills, or the high satisfaction of getting s.s.b. or RTTY gear working, or helping a newcomer obtain his first results. To become a respected *organizer* of an AREC or RACES group, or an NCS or RM or PAM or "wheel" otherwise in operations may require surmounting some problems but can be a richly rewarding personal experience.

— *F. E. H.*

MEET THE SCMs

Fred E. Ward, W5LUX, recently elected to a term as SCM of Arkansas, is most active on 80 meters. His transmitting equipment, located in the garage, consists of a Signal Shifter, Millen exciter, and p.p. 810s running 400 watts with 805 modulators, Harvey-Wells De luxe and a BC-696. For emergency work he has on hand a BC-654 and a BC-375. Receivers include an SX-28, a BC-348Q and an HFS. The antenna used is a long wire on 60-foot poles.

Fred received his first license in 1946, although his interest in amateur radio goes back considerably earlier. At present he holds radiotelephone 1st-class and radiotelegraph 2nd-class commercial tickets. He has received a Code-Proficiency certificate for 25 w.p.m. and Public Service certificates for his work in the Arkansas blizzard and ice storm of January, 1949, and the February, 1951, "Big Freeze." A former Route Manager and Official Observer, he now holds Official Relay Station and Emergency Coördinator appointments. He is past-president of the Harrison Amateur Radio Club and a member of the Rag Chewers Club.

In addition to his position as radio engineer for the Fred Ward Radio Service, he is employed as chief engineer at KHOZ, maintains radio equipment for the Arkansas Power & Light Co., Arkansas Western Gas Co., and the local police department.

A.R.R.L. ACTIVITIES CALENDAR

May 9th: CP Qualifying Run — W6OWP
May 15th: CP Qualifying Run — W1AW
June 6th–7th: V.H.F. Contest
June 7th: CP Qualifying Run — W6OWP
June 15th: CP Qualifying Run — W1AW
June 20th–21st: Field Day
July 3rd: CP Qualifying Run — W6OWP
July 14th: CP Qualifying Run — W1AW
July 18th–19th: CD QSO Party (c.w.)
July 25th–26th: CD QSO Party ('phone)
Aug. 1st: CP Qualifying Run — W6OWP
Aug. 12th: CP Qualifying Run — W1AW
Sept. 6th: CP Qualifying Run — W6OWP
Sept. 17th: CP Qualifying Run — W1AW
Sept. 19th–20th: V.H.F. Contest

Even while we write, FCDA conferences which include RACES as a major subject are being held, and some debate is being had on the status of the amateur. FCDA, at long last picking up some speed in its implementation plans for RACES, is naturally running into some resistance from those groups who have gone ahead on their own and who now feel, and understandably so, that their plans are not only better than FCDA's, but are actually being put into effect. Thus, we have a *fait accompli.*

The FCDA Regional conferences are doing much toward clearing the air, toward clarification of their positions and giving us an opportunity to clarify ours. ARRL headquarters was represented at such conferences in Boston, Cleveland and Chicago, at the request and invitation of FCDA. Amateurs were specifically designated by ARRL to represent us at Denver and Seattle. At Dallas, at Olney, Md., and at Jacksonville, Fla., there were amateurs present who took part in the discussions. Probably there will be (or has been) another conference on the West Coast in which we will want to be (or have been) represented.

The fact that representatives of the Amateur Service are eagerly sought after to attend these conferences is indication of a desire to learn and understand our viewpoints as well as to expound theirs. In the conferences we have attended there has been an undercurrent of sincerity which overrides any heat which might accompany differences of opinion or viewpoint. We all have the same objective — to provide the best possible Radio Amateur/Civil Defense radio service to supplement existing wire lines and to provide certain facilities which wire cannot provide. It cannot be done without us. We cannot do it without close collaboration with civil defense officials. The atmosphere of cordial good relations which has come to exist *must* prevail.

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On February 19, 1953, Nebraska was again visited by a snowstorm of blizzard proportions. Roads were blocked and communications disrupted all over the state. Both the 75-meter and 80-meter nets were alerted with WØVYX and WØFQB as NCSs respectively. The nets continued activity through Feb. 22nd, when communications lines were back in order. The following did outstanding work, although many others participated: WØs BDO HQQ HXH KCK RDN and ZJF. An increasing amount of traffic was noted flowing through Nebraska amateur channels during such emergencies. It appears that public utilities, government agencies and relief agencies are becoming increasingly aware of the value and availability of the AREC.

— *WØJDJ, SEC Nebr.*

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The Northwest Texas Emergency Net received a workout on Jan. 22nd when a cold wave with ice and snow left many communities without communications. Information on trains, telephone and telegraph services, and requirements of isolated towns were handled by amateur radio. One of the outstanding features was the request for information on a train between Slaton, Texas, and Clovis, New Mexico, which was routed on 10 meters into Lubbock, then on 75 meters to Amarillo, then by a Power Company "carrier system" into Clovis and return same way. Not much damage was done, and the emergency period was short, but the Emergency Corps learned a few things. Amateurs working in the 18-hour emergency included W5s IWQ MHM PDD IGU SNX QHI JQD GF RYC NFO HBD WB CWE ROZ KTX SQW BKH PXI JOG PXD ILK LLG IBH SVR BIH FLA LEZ RGU CF QOU SFW MQI LUQ PAK W6UIF and W9LDT.

— *W5JQD, SEC No. Texas*

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In mid-January a storm took out communications wires connecting Estherville, Iowa, with the outside world, and several others throughout that general area. WØTTT in Wallingford, with the assistance of WØGEL and WØUHC, handled traffic for Western Union from 1530 to 2245 on January 15th, with some breaks from other emergency traffic for southern Minnesota. The Milwaukee Railroad had all wires down between Fairmont, and Wells, Minn.; this traffic was handled by WØFAJ, WØDFC and WØTTT, and the Estherville situation was handled between WØTTT, WØGEL and WØMDM.

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On December 14, 1952, The San Diego County AREC furnished communications for the Torrey Pines Sports Car Road Race near San Diego. Mobile stations were located at each turn to report (1) condition of cars, (2) collisions, (3) position of cars and (4) crowd control information. There were 12 mobile stations on 29.5 Mc. with W6WYA as NCS. Two auxiliary units were on 3.9 megacycles in stand-by communication with W5EWU in San Diego in event of a possible major accident or crowd disaster requiring additional ambulances and police. The operation was quite successful. During the main races messages were flowing so fast that it was necessary for stations to be temporarily identified by number (such as "5" as in station 5) instead of call letters on each transmission with call letters given at appropriate intervals. The following amateurs participated: W6s AAY BLV EWU FOP HTH IBL JEC JIP KSI MIT NBJ ODR PKV REO SCX SK SKZ WYA YCP and ZUM.

— • • • —

Fifteen SECs reported for 3415 AREC members covering January activities. We list the sections represented herewith, and will henceforth list any new sections represented by regular monthly SEC reports: Los Angeles, Tenn., So. N. J., Nevada, Vt., West N. Y., Colo., E. Bay, N. Y. C.-L. I., S. Dak., E. Fla., Iowa, Ga., Wis. and B. C. Note that they are well scattered as to location. We would like to have each EC make an effort to submit at least *one* report on Form 8 in 1953. How about it?

D.C. GETS FIRST RACES AUTHORIZATION

On March 6, 1953, FCC informed District of Columbia Radio Officer W3PWB (who is also ARRL EC) that it had approved the RACES Communications Plan for the District of Columbia, the first to be so approved. Station authorizations were granted at the same time to W3PWB, W3NL and W3ECP, the latter two having been designated Alternate Radio Officers.

The approval of the D. C. Plan marks the culmination of many months of planning and conferences by Washington amateurs. The plan had its inception with the appointment, in October of 1951, of W3PWB as Civil Defense Amateur Radio Officer, at which time a survey of available amateur equipment and personnel was begun. As early as the Spring of 1951 amateurs in the Washington Metropolitan Area (including adjoining counties in Maryland and Virginia) had arrived at a mutual sharing plan based on the earmarked RACES frequencies. Upon the adoption of RACES regulations in August of 1952 work was begun to prepare a communications plan which would meet the combined approval of local and Federal civil defense and FCC. The

♦

Mac, W4NJE, is the new SEC for Tennessee, replacing W4AEE who recently resigned for personal reasons. A mighty fine operating position! W4NJE is OPS and EC in addition to his new SEC job, and holds three Public Service Certificates from ARRL. Being SEC for Tennessee, a wide-awake section emergencywise, will be no easy job.

initial plan received one disapproval by FCDA and had to be resubmitted.

The design of the D. C. RACES Plan accepts as its basic premise the proposition that a radio facility of any description is a communications center for whichever operating civil defense service requires communication. The available *frequencies and equipment preclude the assignment of radio* gear to any specific service for its exclusive use. For civil defense purposes, D. C. is divided into four zones, each with its own control center. The approved plan calls for a command circuit between each of the four zone control centers and the command or alternate command posts within the zone. It calls for two nets from each control center: (1) a fixed and portable net, and (2) a mobile net.

Amateur equipment will be utilized wherever possible and an immediate recruiting program is being initiated by W3NL for mobile operation and by W3ECP for fixed and portable operation. As alternate Radio Officers they supervise the operations and the personnel involved therein.

— *W3PWB, EC District of Columbia*

CODE-PROFICIENCY AWARDS

Have you received an ARRL Code Proficiency Certificate yet? Twice each month special transmissions are made to enable you to qualify for the award. The next qualifying run from W1AW will be held on May 15th at 2130 EST. Transmissions will be made simultaneously on 1887, 3555, 7120, 14,100, 21,020, 52,000 and 146,000 kc. The next qualifying run *from W6OWP only* will be transmitted on May 9th at 2100 PST on 3590 and 7138 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 EST. 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 is reversed during certain of the slow-speed transmissions. To get sending practice, hook up your own key and buzzer and attempt to send in step with W1AW.

Date	Subject of Practice Text from March *QST*
May 6th:	*Lunar DX on 144 Mc.*, p. 11
May 8th:	*The Transistor . . .* , p. 13
May 12th:	*A Handy Handful*, p. 29
May 14th:	*Let's Listen*, p. 43
May 18th:	*Combining the Antenna Coupler . . .* , p. 17
May 20th:	*TVG — An Aid to Break-In*, p. 20
May 26th:	*The Radio Amateur Civil Emergency Service*, p. 50
May 28th:	*The Poor Man's DX-Getter*, p. 38

W1AW OPERATING NOTE

Effective April 26, 1953, all W1AW operation as detailed on page 67, March 1953 *QST*, will change to *Eastern Daylight Saving Time*. This will mean in effect that listeners to code practice, bulletins, etc., will have to listen *one hour earlier by their clocks* if they are in areas which remain on standard time. Similarly, all general operation shown in the chart on page 65, October, 1952, *QST*, will be conducted according to EDST instead of EST until further notice.

The following changes in general operation at W1AW, as detailed in Oct., 1952, *QST*, are now in effect:

(1) On Wednesdays, W1AW will operate on 7255 kc. from 0100 to 0200, instead of on 7130 kc.

(2) On Fridays, W1AW will operate on 21,350 kc. from 1600 to 1700, instead of 21,020 kc.

(3) On Monday and Friday, W1AW will operate on 7255 kc. from 1930 to 2000, instead of 7130.

(4) On Monday, Wednesday and Friday, after the c.w. bulletin, W1AW will listen for Novice licensees on 7175–7200 kc. before looking over the band for other contacts.

(5) Change footnote 3 to read: "Operation will be conducted on 21,020, 21,350 or 28,768 kc., whichever band or frequency indicates the greatest likelihood of contact.

W1AW SUMMER SCHEDULE

(June 1 through September 26, 1953)

(All times given are Eastern Daylight Saving Time)

Operating-Visiting Hours:

Monday through Friday: 1300–0100 (following day).

Saturday: 1900–0230 (Sunday). Sunday: 1500–2230.

A mimeographed local map showing how to get from main highways (or from Hq. office) to W1AW will be sent to amateurs advising their intention to visit the station.

Official ARRL Bulletin Schedule: Bulletins containing latest information on matters of general amateur interest are transmitted on regular schedules:

Frequencies:

C.W.: 1885, 3555, 7125, 14,100, 21,020, 52,000, 146,000 kc.

'Phone: 1885, 3950, 7255, 14,280, 21,350 kc.; 52, 146 Mc.

Times:

Sunday through Friday, 2000 by c.w., 2100 by 'phone

Monday through Saturday, 2330 by 'phone, 2400 by c.w.

General Operation: Use the chart below for determining times and frequencies for W1AW general contact with any amateur. Note that since the schedule is organized in EDST, the operation between 0000 and 0100 each day will fall in the evening of the previous day in western time zones.

Code-Proficiency Program: Practice transmissions at 15, 20, 25, 30 and 35 w.p.m. on Monday, Wednesday and Friday, and at 5, 7½, 10 and 13 w.p.m. on Sunday, Tuesday, Thursday and Saturday are made on the above-listed frequencies. Code practice starts at 2130 each day. Approximately 10 minutes' practice is given at each speed. On June 15th, instead of the regular code practice, W1AW will transmit a certificate qualifying run.

W1AW GENERAL-CONTACT SCHEDULE

(In Effect June 1 to Sept. 27, 1953)

W1AW welcomes calls from *any* amateur station. Starting June 1st, W1AW will listen for calls in accordance with the following time-frequency chart.

Time (EDST)	*Sunday*	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*	*Saturday*
0000–0100[1]	.....	.....	3555	7125[3]	3950	7125	3555[3]
1300–1400[2]	.....	21 Mc.	21 Mc.	21 Mc.	21 Mc.	21 Mc.	.....
1500–1600	.....	7125	14,100	7255	14,100	7125	.....
1600–1700	.....	14,280	7125	14,100	14,280	14,100	.....
1800–1900	.....	14,280	14,280	14,280	14,100	7255	.....
1900–1930	.....	3950	.....	3555	.....	14,280	.....
1930–2000	.....	14,100	.....	3555	.....	14,280	.....
2000–2030[1]	14,280	3555[3]	14,100	14,100	7125[3]	14,100	.....
2030–2100	14,280	3555	14,100	14,100	7125	.....	.....
2100–2130[1]	146 Mc.	52 Mc.	146 Mc.	52 Mc.	52 Mc.	.....	.....
2230–2300	.....	.....	1885	.....	1885	.....	.....
2300–2330	.....	.....	3555	.....	3950	.....	.....
2330–2400[1]	.....	3950	7255	3950	7255	3950	.....

[1] Starting time is approximate. General-contact period on stated frequency begins immediately following transmission of Official Bulletin, on c.w. at 0000 and 2000, on 'phone at 2100 and 2330.

[2] Operation will be on 21,020 or 21,350 kc., whichever shows the greater activity.

[3] W1AW will listen for Novice class licensees on the Novice portion of this band before looking for other contacts.

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for February traffic:

Call	Orig.	Recd.	Rel.	Del.	Total
W6IAB	31	2147	2080	65	4323
W4PL	12	1750	1544	189	3495
W2BTB	61	1289	1279	53	2682
W9JUJ	17	1267	1131	31	2446
K5FKF	66	1135	1112	86	2399
W6KYV	85	1117	485	627	2314
WØTQD	6	1029	1014	15	2064
W4USA	64	597	653	52	1366
K4WAR	91	558	498	49	1196
WØSCA	3	590	577	0	1170
W7BA	39	546	513	27	1125
WØBDR	5	541	530	5	1081
K3WAS	402	124	504	22	1052
WØCPI	10	515	461	54	1040
K5FBB	26	475	438	31	970
W7ONM	0	478	469	9	956
W8AUJ	6	440	375	40	861
W8RJC	8	426	387	35	856
W4PJU	2	423	391	32	848
KA7LJ	175	328	245	83	831
W2ZOL	6	529	241	21	797
WØKHQ	1	388	388	0	777
W4ANK	9	383	353	30	775
WØITQ	12	372	309	63	756
W2VNJ	29	352	190	127	698
WØQXO	5	331	313	14	663
W2RUF	11	346	239	57	653
VE3BRR	587	20	0	20	627
W6YHM	3	301	269	26	599
W4TAV	19	299	240	32	590
W5MN	67	260	46	213	586
W4WHC	533	26	11	15	585
W4SHJ	20	275	248	20	563
W2CUI	10	278	258	15	561
WØJXJ	5	277	227	50	559
WØQYZ	0	279	276	3	558
W4KRR	31	260	198	61	550
W8FYO	8	259	208	48	523
W4JOT	11	251	242	14	518
W6GQY	1	294	216	7	518
W9NZZ	134	190	5	183	512
W4PFP	8	242	250	7	507
WØFUF	15	246	239	5	505
W9QLW	43	234	218	5	500
Late Reports:					
KA7LJ (Dec.)	226	318	664	154	1862
KA2US (Jan.)	1000	292	251	41	1584
W8ZGT (Jan.)	3	517	514	3	1037
W7ONM (Jan.)	0	408	402	6	816

BPL for 100 or more *originations-plus-deliveries*:

W7AWI 255	W6YDK 115	W2BO 105
W4DRD 187	W2ILI 111	Late Reports:
W3CVE 171	W2LPJ 109	W6YDK (Jan.) 108
W9FCF 143	W4PHQ 109	WØUVL (Jan.) 103

The BPL is open to all operators who report to their SCM a message total of 500 or more or 100 or more originations-plus-deliveries for any calendar month.

SUPPLEMENT TO NET DIRECTORY

The following list of nets will supplement and correct the listing on page 66 of November, 1952, *QST* and supplementary listings in the January and March issues. This list comprises information received between the dates of January 20, 1953, and March 18, 1953. An asterisk indicates correction from a previous listing since September, 1952.

Name of Net	Freq.	Time	Days
Azalea Emerg. Net (Ala.)	29,680	2100 CST	Sun.
Cascade Traffic Net	1990	1900 PST	Mon., Tue., Thu., Fri., Sat.
Eastern Pa. Emerg. Net	3610	2030 EST	Mon.
Flamingo Net (Fla.)	29,044	1930 EST	Fri.
Maritime 'Phone Net	3750	1900 AST	Daily
N. J. Civil Defense (CDNJ) Net*	3505.5	1930 EST	Tue.
New York State Net (NYS)	3615	1900 EST	Mon.-Sat.
Novice Traffic Net	3749	1500 EST	Mon., Wed., Fri.
Palmetto Net (FN) (Fla.)	3675	2000 EST	Mon.-Sat.
Quincy Mass. Emerg. Net*	28,620	1930 EST	Mon.
Quincy Mass. Sector 5 CD Net*	28,590	2100 EST	Mon.
Skiers Snow Service Net	3980	1930 EST	Fri.
Swing Shift Net (SSN)*	7120	1230 EST	Mon.-Sat.
Teen-Ager's Net (TAN)	7175	1830 EST	Sat.
Trunk Line Atlantic-Pacific (TLAP)*	3630	0130 EST	Mon.-Fri.
Whiteside VHF Radio Net	145,200	1915 CST	Tue., Sat.

TRAFFIC TOPICS

Traffic that is "slower than walking" is poor publicity for amateur radio. It seems to us that a lot of traffic is taking a long time to reach its destination these days; but rather than froth at the mouth and say "Shame! Shame on you!" to amateur traffickers in general, and to desert our own traffic nets or systems for those sponsored by semi-amateur or quasi-amateur organizations, maybe we ought first to see if we can't figure out what is wrong, what is happening.

Probably no two people will agree on that. In the first place, let's recognize that the situation is not so bad as some would have us believe. You always hear about the message that took two weeks to go from here to there, but not very often about the one that went from hither to yon in a couple of hours. Much more often than we have handled bewhiskered traffic, we have handled some which had originated far away only a few hours ago.

After that, it's a matter of opinion. Newcomers to the traffic game being looked down upon by the oldsters, lack of standard net procedure, poor conditions, inaccuracy and carelessness in operation, lack of system or failure properly to follow the system that does exist, fighting among ourselves — all these and a few more are contributing factors to what The Old Man would have called "Rotten Traffic." Wish we could write it up the way he did.

Even if we agree on the causes, that's only part of the battle — the smallest part. The correcting of them is something else again, and about all we can do is preach and do what we can to educate. The minorities who disagree that the standards set by the League are the best standards often simply will not comply. Even in our own National Traffic System the standard procedure outlined in the rules is not followed by some nets. This is because we are all volunteers and don't *have* to comply. But if we *did* comply, all of us, there would be vast improvement in our traffic-handling set-up.

We understand all this, and you should too. It is not a matter for bitterness or disgust; that serves no useful purpose. It is simply a matter of patience, waiting for the time when new ideas considered radical or revolutionary by some are generally accepted. Meanwhile, we'll continue to promulgate in every way we can what we think the majority consider the best way of doing things. If you do not agree, you ought to give consideration to the general benefit before you haughtily go your own way.

In these basic concepts, rather than in attention to any particular details, lie the roots of any poor traffic handling that might be growing in our ranks.

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The Transcontinental Relay Net reports 3728 messages handled by nine stations in 28 sessions, averaging 133 per session. The Early Bird Transcontinental Net reports 191 messages handled by 46 stations in February, an average of 15.9 per meeting.

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National Traffic System. In the Pacific Area there has been a proposal under discussion which the rest of you should know about. It concerns the creation of a Pacific Area NTS Staff, a group of about seven traffic amateurs to consider the problems not just of one net, but of all NTS nets in that area, especially the all-important aspect of liaison between nets at the various levels, which is the only thing which makes NTS different from and superior to anything we traffic men have heretofore attempted. This idea is not yet a reality even on the West Coast, but is being kicked around. Our proposal was for a seven-man staff in the Pacific Area, one of whom would be chairman. The membership would consist of both regional net managers, the area net manager, the assistant TCC manager for that

area, and three other prominent traffic men in the area who do not have any single or specific net to worry about and can therefore devote their thoughts and energies toward the system as a whole. Such a staff to shoulder responsibilities for conduct of NTS in their area would undoubtedly help to dispel any feeling among NTS nets that they can or should operate without regard to the welfare of other NTS nets they are supposed to work with or into. It would also help decentralize responsibility from this headquarters and generally make it a shared proposition, just as NTS operation is supposed to be. The welfare of the *system*, more than any particular net, would be the business of the Area Staff. No use kidding ourselves, NTS is dependent for its existence on teamwork. If we don't have that, we won't have an NTS. What do you fellows think of this idea?

February reports:

Net	*Sessions*	*Traffic*	*High*	*Average*	*Most Consistent*
1RN	34*	286	61	8.4	Vt.
2RN	40	388	33	9.1	NJN, NYS
3RN	27*	228	34	8.0	E. Pa., W. Pa.
4RN	40	729	58	18.2	Va.
RN5	21*	156	17	7.8	N. Tex
RN7	48	656	181	13.3	Wyo., Wash.
8RN	32	148	16	4.8	Ohio, Mich.
9RN	24	583	62	24.3	Ind.
TEN	40	1119	69	27.9	
TRN	38	76	13	2.0	Ont.
EAN	20	825	114	41.3	2RN, 4RN
CAN	18	692	78	36.8	9RN, TEN
PAN	20	497	74	24.7	
QIN (Ind.)	48	1166	67	24.2	
Minn.	22	98	18	4.5	
QKS (Kans.)	20	113	16	5.7	
Total	472	7760	181	16.4	
Record	649	8064	181	16.4	

* Out of 40 sessions scheduled.

Two new records for the Jan.-Feb.-Mar. quarter: RN7 sets a new record of 181 for traffic in one session, topping the previous record of 119 made by TEN in March, 1951; and the over-all average of 16.4 per net session is the highest set for this quarter, the previous record having been 14.2 in February, 1952. The total number of net sessions being considerably lower than the record helps account for this, of course.

Everybody agrees on one thing: conditions in February were *lousy!* Enough said. In 1RN, W1DVW received a net certificate. W3BIP is going to have to resign his managership in 3RN. W5QHI of 5RN says he needs more stations from Arkansas and Western Florida, and compliments the Tennessee gang on their fine representation. A new QNY system has been adopted by 9RN, which announces that it will continue all summer (won't we all?), welcomes W4BAZ back into the fold, and has granted net certificates to W9QLW, W9LZI and W4WHC. TEN certificates have been issued to WØCGK, WØRDN and WØRXL. VE3WY has received his EAN certificate. EAN attendance this year is lead by 4RN with a record impossible to beat — 100%.

In the Transcontinental Corps, there are still spots which need filling, especially EAN-PAN liaison involving late-hour operation by East Coast stations. If you can muster a potent signal on 80 or 40, know how to handle traffic, and would like to have a once-a-week schedule for long-haul traffic, let us know. We need you.

FEBRUARY FMT RESULTS

Open to both ARRL Official Observers and other amateurs, the first 1953 ARRL Frequency Measuring Test was one of the most successful activities of its kind yet held; entries were received from 184 participants (73 Official Observers and 111 non-OO entrants) who made 672 measurements. Each entrant has received an individual report comparing the accuracy of his measurements with those made during the test by a professional frequency-measuring laboratory.

Honors for the top position in the OO group go to William N. Fellows, W6CIX, whose measurements averaged out to 0.2 parts per million. Two star performers in many previous tests, Homer Apple, W4HER, and Lloyd W. Root, W8HB, tied for the lead in the non-OO category with a rating of 0.5 parts per million. The standings of other leaders in the test are given below. Since the official readings can only be accredited to 0.4 parts per million, the decimal is shown only to establish listing order. In accordance with the announced rules, no entry consisting of a single measurement was considered eligible in the competition.

Observers	*Parts/ Million*	*Non-Observers*	*Parts/ Million*
W6CIX	0.2	W4HER	0.5
WØOTR	0.3	W8HB	0.5
W9PFK	0.4	W4VGO	0.8
W1MUN	0.5	WØBYV	1.7
W8PM	0.6	W1BSY	2.8
W6CK	1.5	W4QN	6.2
W6CBO	2.8	W4NLB	6.4
W2FE	4.6	WØDRB	6.8
KZ5RM	5.0	WØLRM	6.9
W9PBI	5.1	W1RLQ	7.0
W8WAV	5.4	W6CJ	7.3
W1BGW	6.7	VE3BIK	8.3
W1BB	6.8	W7LXT	8.7
VE6HM	6.8	W9LZP	10.2
W4FJ	7.0	W3MBF	12.2

The following ratings are based on a single measurement: OOs — W8PZT 0.0. Non-OOs — WØQVA 4.0, W9FSA 4.5, W3QCB 9.1, W4FWZ 9.7.

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH.....252	G2PL.....242	W3KT.....236
W8HGW....247	W6AM.....238	W6SN.....236
W6VFR.....245	W2BXA....237	W3CPV.....235
WØYXO....245	W3GHD....237	W4BPD.....234
W3BES.....244	W3JTC.....237	W6MEK.....234
W6ENV.....242	G6ZO.....237	

RADIOTELEPHONE

W1FH.....225	XE1AC.....213	W1JCX.....201
PY2CK.....222	W1NWO....205	W1MCW.....198
VQ4ERR....219	ZS6BW.....203	SM5KP.....196
	W8HGW....202	

From February 15, to March 15, 1953, DXCC certificates and endorsements based on postwar contacts with 100-or-more countries have been issued by the ARRL Communications Department to the amateurs listed below.

NEW MEMBERS

MF2AA.....174	4X4CW.....107	W2ZQW.....100
W3JNM.....134	W4FNQ.....104	W3QMC.....100
W1KKP.....123	F8VK.....104	W7ITN.....100
W5DML.....113	FF8AG.....103	W8ILG.....100
W2OKM....110	PAØLY.....103	PAØUV.....100
G2DPY.... 110	W7CSW....102	ZL4CK.....100
EA8BC.....108	SM7TQ.....102	ZS5LA.....100
	WØCAW....101	

RADIOTELEPHONE

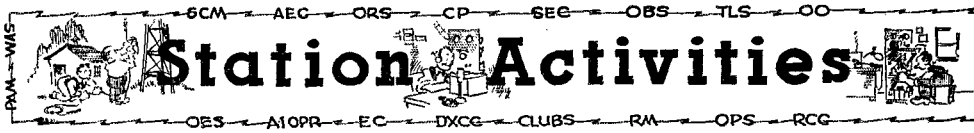
W3JNM.....110	PY4PQ.....104	PY4KL.....103

ENDORSEMENTS

W2WZ.....223	4X4RE.....194	W4AAW.....133
W2NSZ.....219	WØAIW.....191	W2ABS.....130
W5KC.....215	W2IWM....182	W5BNO.....130
ZS6BW.....210	W6UHA....179	W7RT.....130
W9FKC.....201	W8JBI.....170	W9EXY.....130
WØUOX.....201	W8TJM....160	VE5JV.....130
W4BRB.....200	G4ZU.....160	ZS2U.....121
W4OM.....200	W9BQE.....153	W4QT.....120
W9LNM.....200	ON4PA.....151	F8CW.....120
DL7AA.....200	ZC4XP.....150	W2OKM.....110
W5ADZ.....199	W9NZZ.....140	W3AS.....110
	VE7VC.....140	

RADIOTELEPHONE

CT1CL.....161	WØAIW.....132	F8CW.....111
W8GZ.....160	I1CAR.....123	CT1DX.....110
W4MKB....157	F8XP.....120	HB9LA.....110
	W8TJM.....120	



• 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, John H. DuBois, W3BXE — SEC: IGW. RMs: AXA, BIP. PAM: PYF. E. Pa. Nets: 3610, 3915 kc. The North Branch ARC of Benwick plans to participate in a Hobby Show sponsored by the Rotary Club of that town. The Hill School station, MWL, now is on the air with a TVI-proof BC-610 on all bands. The E. Pa. 'phone net, sparked by PYF, KAG, VN, and IGW, would welcome additional members. EAN is sporting new p.p. 813 final. LYU just finished Viking II. PDJ and RFI operated portable on 80 and 75 meters during a recent Florida trip, the former having received his Extra Class ticket in February. OQG now is in Korea and PSH is scheduled to go on active duty in the Navy shortly. RCG is building a new home, practically in ADE's backyard! E. Pa. Net members recently participated in a "Worked All Penna. Counties" contest, with BFF, PVY, and NOK taking win, place, and show, respectively. Because of the success of this contest, it has been suggested that WAPC certificates be issued to any amateur verifying contacts with all Pennsylvania counties. Your comments are solicited and should be addressed to AXA. Traffic: (Feb.) W3PYF 150, BFF 125, QLZ 114, BIP 109, AXA 74, PDJ 66, NOK 64, ADE 47, DUI 37, PVY 29, ELI 20, AD 16, OML 11. (Jan.) W3NHI 126, IGW 41, MLY 24, QLZ 10, RCG 9.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, James W. John, W3OMN — As this is my final activities report, I wish to thank the amateurs of this section who have furnished information for this column. I know EQK, your new SCM, will continue to receive your coöperation and support. The Washington Radio Club, on Feb. 14th, visited the "Voice of America" studios in the Department of Interior Building as guests of QQS; LSI was the guest speaker on Feb. 28th and spoke on "Old Time Ham Radio." QOM's subject at the Baltimore Amateur Radio Club meeting of Feb. 2nd was "Some Ideas to Help in Tube Selection"; on Feb. 16th Martin L. Jones, of WCAO, covered "Automatically Controlled Mixer." The BARC's annual smoker was held at the home of Ed Nichols on Feb. 6th. William C. Vergara, of Bendix, was the speaker at the Chesapeake Amateur Radio Club on Feb. 9th. His topic was "I.F. Design." FPT coördinated "Novice Nite" for the Rock Creek Amateur Radio Association on Feb. 13th and on the 27th the Executive Committee held a forum on a variety of subjects. RGX is operating from IMX, where he is working on his Doctor's degree in E.E. JH is disposing of his k.w. equipment since acquiring a new 32V-2. KTR tried new T2FD antenna. OQN again is on 80 and 40 meters with a new 813 rig. LQK was heard working from PCI's QTH to renew his license. PZW's beam is giving him trouble. CVE and PZW are handling U.S.O. traffic from Washington. URI received QSL refuting QSO. SYNY now is 3UGF. 5GWD now is stationed at Andrews AFB and running 813s on 75 meters. The Maryland Mobile Radio Club now has 60 active units in the Baltimore Area on 28 Mc. CDQ's Viking broke down during the YL/OM Contest. PTZ is converting his station to RTTY. Traffic: K3WAS 1052, W3CVE 285, UGF 220, COK 81, QZC 79, JZY 58, QCB 58, JE 53, AKB 47, ONB 32, RJA 31, EEB 15, MCD 13, HC 12, EQK 8.

SOUTHERN NEW JERSEY — SCM, Lloyd L. Gainey, W2UCV — SEC: K2BG. Amateur radio in the Camden and Gloucester County Areas provided communications for a large scale c.d. drill held March 8th. More than fifty amateurs participated in this drill. IIA has been appointed c.d. Radio Officer for Lawrence Township. K2ART is putting out a fine signal with his new Harvey-Wells. SPV is very well pleased with the early results of his new Viking transmitter. Delaware Township c.d. drill turned out to be quite exciting, with PTM spotting two fires from the air that were not on the program. EWN, PAU, JRO, ASG, EGP, K2BQW, W2ABQ, and FXT, all operating mobile, were chasing fire engines around most of the afternoon. EGE was off for a vacation in Florida with a complete 2-meter station in the car. ZI received a Public Service award from the ARRL for his communications assistance to the Ketch *Miru* off the Jersey shore. ASG is going strong on 20 meters again. More than 120 attending the February meeting of the SJRA heard a very interesting talk on bomb disposal and protection. SDO and JAV seem slightly disappointed in the Countryman antennas they recently erected. It can't be the fault of the transmitter as Tony has a brand-new 32V-3. Traffic: K2BG 387, W2RG 121, ZI 21, ASG 12.

WESTERN NEW YORK — SCM, Edward G. Graf, W2SJV — SEC: UTH. RM: RUF. PAM: GSS. NYS — 3615 kc., 7 and 10 P.M. 3980 kc., 6:30 P.M. NYSS — 3595 kc., 8 P.M. NYS C.D. — 3509.5 and 3993 kc., 9 A.M. Sun. FXU is on 40. SFO is on 40 and 75. KN2s AUY, BRW, and BFZ are on 80. OO FE came up with an average of .46 for 11 readings in the F.M.T. during 1952. The Niagara Radio Club Christmas Party was a "howling success" per QNA. The Ithaca Mike and Key Club converted a school bus to a communications center for AREC and c.d. use with a 75- and 80-meter rig, one 2-meter, two 10-meter rigs. KBT meetings have been devoted to "gadget nite," an address by Mr. Champness on TVI counter measures, and a movie, "The Jet Story." Oswego County nets meet on 3965 kc. Sun. at 10 A.M. and 144 Mc. Sat. at 9:30 P.M. ORI and RUI addressed the v.h.f. group at Oakville, Ont. W2s JFZ, ALZ, LXE, SJV, FEB, TBD, CWB, ORI, RUI, and ALR attended. GHS reworked his VFO and transmitter to cover the entire 80- and 75-meter bands. GBX has been appointed c.d. communications officer for Erie County. WAC, chief electronics engineer at National Analine Co., addressed an RAWNY meeting on "Industrial Electronics as applied to Instrumentation." By arrangements of AFY and PVI, the Buffalo Area Mobile Club visited WBEN-TV. QNA is on 40-meter 'phone. KHO is back on 75 with a kw. DEQ is trying a loaded 75 horizontal on his car. RZP and HKA are back on the air. The Delaware County AREC Net meets on 3655 kc. each Wed. at 6:30 P.M. Congratulations to BTB on her election as director for the 2nd call area by the members of TCPN. COU has resigned as OBS. K2DG has new Harvey-Wells transmitter. WN2FTY was winner of Kenmore H.S. Science Medal. UTH and 4MS talk over amateur TV on 20-meter 'phone each Sat. morning. VEO is on 2 meters. HYN is on 2 meters with 522. VVG lost his antenna in a windstorm. UTH has 828B at 135 watts on 2 meters modulated by p.p. 807s in C1 AB2. FCG has resigned as Broome County EC and YLM has accepted this appointment. K2CBE is a new call in North Tonawanda. In demonstrating mobile radio to members of the Black River Valley RC, TZM was contacted and instructed to bring ice cream for a party; members then discussed the possibility of a c.d. net with TEP, Lewis County EC. YFZ enjoyed the CD Party. While attending the MARS advisory committee meeting in N.Y.C. COU visited VNJ, EAS, MTV, IVS, LEO, and AEE. FSB is at WHLD. VEP visited hams in the Albany Area. TPN is busy instructing for Novice exams. GRB is a new ham in Olean. FEB won a Call Book for top attendance in the NYS C.W. Net. Most consistent QNI for 1952 were RUF 231, TYC 226, FEB 167, OE 151. Walt won 50 radiogram cards as 2nd prize; then in order were AOR, COU, SJV, DJF, RJJ, KEL, ZRC, JWU, RUT, NAI, HUM, WZQ, GTI, LDS, K2DG, and IFP. Traffic: (Feb.) W2BTB 2682, ZOL 797, RUF 653, NAI 228, COU 92, OE 80, KEL 75, RUT 48, SJV 46, RJJ 34, K2DG 18, W2ZHU 12, GHS 1. (Jan.) W2HKA 19, AOR 18.

WESTERN PENNSYLVANIA — SCM, R. M. Heck, W3NCD — As a newcomer to the office of SCM I wish to extend my thanks to Retiring SCM E. J. Hlinsky for his thorough coöperation, and congratulate him for the fine job he has done for us during the past six years. With the aid of the members I hope to see the W. Pa. section continue to progress in true amateur tradition and solidly back ARRL for continued enjoyment of our hobby. The BARC Emporium reports new Novices are VEE and VEF. Welcome and good luck. Sunday mornings on 3525 kc. is a good spot to meet the McKean County gang. SCARC says the 2-meter weather net (144.55 Mc. 2000 Wed. nights) is going strong. "Pop" Way is WN3UFR. QCD now has a new shack. NKM is going great on 15 meters. AEV, new OO, reports receiving 100th-country QSL. From the RA of Erie we note with regret the loss to amateur radio of SER. Activity in Erie continues high. PSI is testing a new rig, QMY is building anew, HTD is back on the air, and LKH is aiding prospective hams. Thanks to QN for the dope. More weather net information: 8:30 A.M. Sun., 'phone on 3965 kc., MPO NC, and 10:30 A.M. Sun. c.w. on 3590 kc., KSR NC. In *ATA*

(Continued on page 86)

{Number two hundred twenty-nine of a series}

15

ON THIS PAGE of the issue of last December, the writer broached the idea that versatility in ham radio was desirable. About a month ago, the gypsy in me had me eyeing another band on which, until then, I had done no operating. This was the comparatively new 21 mc. band which should be a cross between the 10 and 20 meter bands. Which of these two would it resemble most? Well, there was one way to find out. Accordingly, the old 6 meter two-tuber was renovated to use a 6AG7 grid-plate oscillator-tripler driving an 829 final amplifier to about 65 watts input. All this time the bugaboo of 21 mc. IF amplifiers of neighboring TV receivers stared me in the face. I could spend weeks building a bang-up TVI proofed transmitter, but, for a try-out, I took the easy course and planned to operate only on Saturday and Sunday mornings, and early afternoons. The antenna used is a folded dipole in the attic where it is out of the rain and public view. The first two week-ends netted me eight countries, four states and one TVI complaint. The latter was scored only because I inadvertently opened up on Monday morning of the holiday, right in the middle of Arthur Godfrey's program! A home-built hi-pass filter satisfied this case. The HRO receiver was used with an AC coil.

Operation on 15 meters was a pleasant surprise. My first QSO was with W6ZZ, who turned out to be ex W1WV, an old friend and ex-neighbor. This was the first contact with Miles since he retired and moved to California. Another surprise was a contact with a station in Newport in northern Vermont. That path is just impossible at this frequency. A chat with KP4QR or XE1PJ was enjoyed about every morning that I was on. My biggest thrill so far came when I hooked MI3SL in Eritrea which my cohort W1JEL with his 97 countries hasn't got yet. I understand Eddie has already erected a 15 meter antenna. All in all, it looks like a swell band. On March 28, it will have been opened up for phone and novice operators. Possibly, TVI will scare a lot of hams from getting on the band at home. Possibly, for this reason, it may turn out to be our best mobile DX band. As KP4QR has brought out, there isn't any TV to scare off the DX stations — yet.

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CAL HADLOCK, W1CTW

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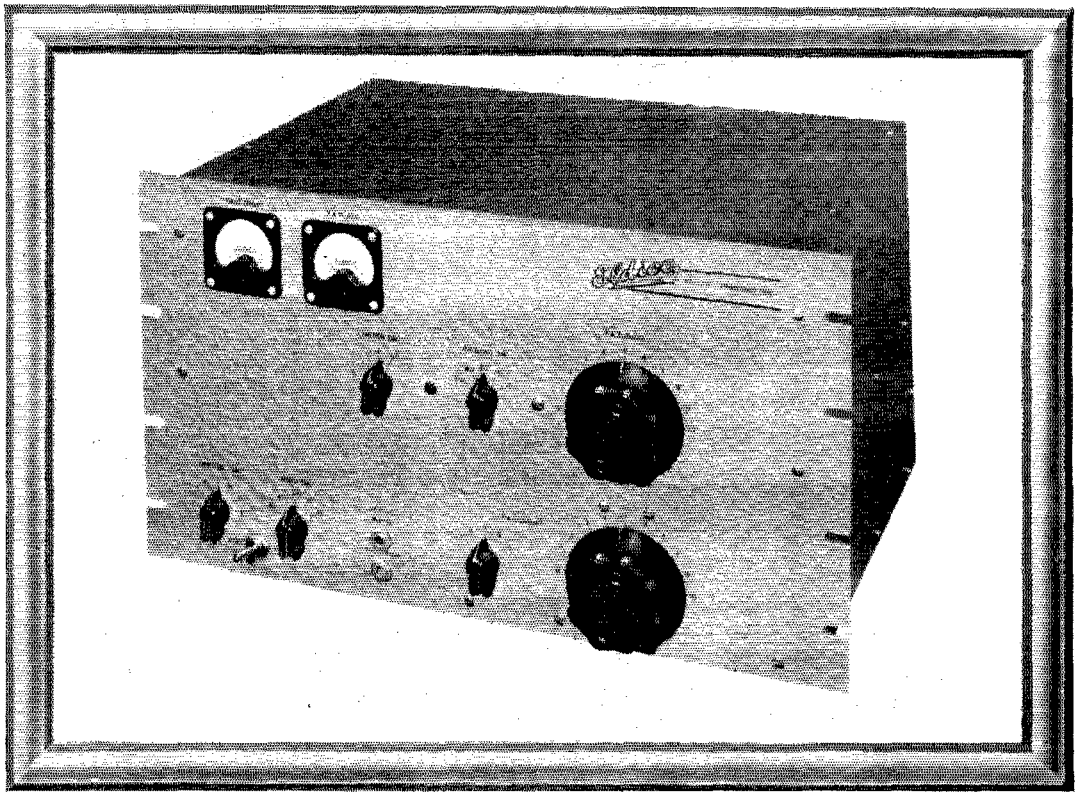

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(*Continued from page 88*)

News we note the coming of the Phil Rand Show May 1st in Pittsburgh. Check with the Pittsburgh gang for details as this is well worth attending. We hear that we are losing KWA and JSH to New York. Good luck to you both and we hope to be hearing you on from there. Traffic: (Feb.) W3NRE 243, NCD 112, GEG 82, UHN 71, NUG 62, KUN 38, UVD 4, KNQ 2, MIZ 1. (Jan.) W3GEG 163.

CENTRAL DIVISION

ILLINOIS — SCM, H. F. Lund, W9KQL — Section Nets: ILN (c.w.) 3515 kc.; IEN ('phone) 3940 kc. SEC: HOA. PAM: UQT. RM: BUK. ZST, JPR, and CFV were elected president, vice-president, and secretary, respectively, of the Bloomington Club. USA again is heard on the bands from 5th Army Hq. and reports into ILN. CIB has eliminated his key clicks. YFV is proud of a new 40-foot pole. OKI has a new 20-meter beam headed toward Europe. JYI is a newcomer to mobile. DIU entertained the North Suburban Club with his homemade pipe organ. FKC was seen putting up a giant vertical for the 7-Mc. band. ZPK advises that a full kw. isn't needed on s.s.b. so he is rebuilding for 200 watts peak. NFR finished a new electronic keyer — unfortunately a resistor blew up and ripped out half the parts. NHD has new automatic garage doors operated with supersonic wave; local dog whistles trip the mechanism at night. WFJ is the call of the Midway Radio Club. KQL is trying to eliminate a 50-microvolt signal in Channel 5. 4LVE visited UZP. OUF is a new licensee in Lyman. PPM made Gen. Cl. and is waiting for red tape to clear his ticket. Traffic: W9CSW 343, YIX 104, STZ 98, SXL 75, OKI 61, SYZ 54, LXJ 46, BUK 34, PHE 24, KQL 21, W6CIW/9 17, W9USA 16, DOR 4.

INDIANA — SCM, Clifford C. McGuyer, W9DGA — TG has a new grandson. IRCC worked hard for the call-letter license plates. OFW is a teacher. New officers of the Tippecanoe ARA are LBE, pres.; SAR, vice-pres.; AYV, secy.; and R. Thomas, treas. The New Castle ARA has affiliated with ARRL. QLW received Public Service Award. ORZ is active on 2 meters. PUV is experimenting with 160-meter antennas. New Novices in Gary are WRP and VVC. GRA is editor of *Short-Skip*, the paper of the Lake County ARC. HZL has Adv. Cl. license. KXB has tri-band converter. EGQ is off the air because of operational troubles. UB reports progress on 147.3-Mc. C.D. Net. GUX had a nice write-up in the Gary *Post-Tribune* about overseas traffic. JLV reports the Crawfordsville group is forming a club. UNT ran tests on 2 meters using TV antennas. NTR is attempting to use a box kite for a vertical ¾-wave antenna for 7 Mc. KLR and ORZ keep nightly schedules on 144 Mc. over a distance of 95 miles. KLR uses a barometer to check openings on 144 Mc. New appointments for ORS are HLY and SWM; for OPS, UMS, ERB, and OFW; for OBS, RDJ; and for OES, MBL. HLY is manager of a farm store. DGA has a new Chevrolet. If you QSO TG ask him about the "QIN Rifle Club." WN9WQQ is new in Evansville. PQR has 150 watts on the c.w. bands. RVB is editor of the *Tri-State Sparks*. IZC is rebuilding. DKR is putting in lots of overtime. ZIB has 2-meter f.m. unit. STC now is Gen. Cl. HLY is a member of QIN and RFN. UQP won a crystal at the FWRC banquet. HRH now is on 147.3 Mc. FMJ has WAS and won a "Trivit" at the FWRC banquet. Van would like to know what it is. NH made post-war WAS on 160 meters, and has new 60-foot poles installed. QYS dropped the "N" from his call. SWM has worked 46 states with 25 watts. YWE says he will make BPL yet. BKJ reports IFN traffic as 179. The IFN members should be congratulated on their fine work under some very adverse conditions. RBX is on 147.3 Mc. FYM is improving his rig. GRN has coaxial stacked dipoles on 147.3 Mc. FSA now works for BSY. JUJ reports her traffic total as 2446. HDB vacationed in Florida. KLR has new 2-meter beam. JBQ reports RFN traffic as 133. A new call in Muncie is WN9WRO, 12 years old, who ground his own crystal. NZZ received Special Citation from the 1952 Edison Radio Amateur Award. LZI and DKS visited UMS and DGA. Traffic: (Feb.) W9JUJ 2446, NZZ 512, QLW 500, YWE 427, TT 276, TG 217, JBQ 156, BKJ 120, PPS 82, CMT 74, KDV 66, UMS 62, DGA 61, FZW 50, ERB 48, DOK 45, WBA 45, SWM 42, NTA 35, HLY 28, RBX 27, OLX 22, FSA 21, BDP 19, FMJ 18, GUX 18, ZIB 16, KLR 13, DKR 11, SKP 11, MUR 10, FYM 8, IFR 8, NTR 8, EUC 6, IZC 5, AZJ 2. (Jan.) W9DHJ 78.

WISCONSIN — SCM, Reno W. Goetsch, W9RQM — SEC: OVO. PAM: ESJ. RMs: IQW and SFL. 'Phone Net (BEN) meets on 3950 kc., 6 P.M. daily. C.W. Net (WIN) meets on 3625 kc., 7 P.M. daily; slow-speed 6:30 P.M. Mon.-Fri. Mobile and c.d. frequency is 29,620 kc. Net certificates (BEN) were issued to BSR, LUF, VMZ, and YSZ. Congrats to FCF, who made BPL via originations plus deliveries. CXY took part in the YL-OM Contest. LSK is concentrating on c.w. while his brother, OPS, is trying 'phone. UCR is Net Mgr. of the WIN slow-speed net. UNJ is active in WIN, QMN, DON, and Hit and Bounce Nets. SDK is working on antennas with an eye for DX. SAA has 32V-3, 75A-2, and 20- and 10-meter rotaries 55 ft. high. The TVI lecture by 1ICP, of ARRL Headquarters, at Green Bay, was sponsored by Green Bay Mike & Key Club with more

(*Continued on page 88*)

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than 100 in attendance. NTD is going to a kw. Green Bay AREC has 28-Mc. walkie-talkies in operation. VLL is operating portable in Detroit with 10 watts. FLARC has established a TVI committee in Madison and also enjoyed the TVI lecture by IICP. FUS has been active on 4-, 7-, and 14-Mc. 'phone. RKP has 84 countries confirmed and is looking for more. IXA is active again. A TVI committee has been established in Green Bay by the new v.h.f. club. We regret to report SMP as a Silent Key. ONV is attending Lawrence College. The Lakeshore Club at Sheboygan now is affiliated with ARRL. KXK tried out 'phone on 4, 7, and 14 Mc. On 144 Mc.: GFL worked AFT, PYM, LEE, GJK, FAN, LJV, SDH, and OMO. LEE skeds GFL at 2000 CST with average S6 signals over the 135-mile path. How about joining them? WN9WPT is on from Greenwood. EYN is playing with the one-eyed monster. WVRA Emergency Corps provided mobile communications and transportation for Red Cross "Pay or Play" fund drive program. Traffic: W9ESJ 238, FCF 209, CXY 170, ODD 74, MQV 69, IQW 64, KZZ 52, LSK 40, UCR 34, UNJ 34, DR 32, SFL 19, SDK 18, ERW 17, HDV 15, SAA 15, EIZ 10, ONV 9, VLL/8 8, OVO 5, FUS 4, IXA 4, KXK 4, RQM 4.

DAKOTA DIVISION

NORTH DAKOTA — SCM, Everett E. Hill, WØVKP — The North Dakota Hamfest will be held this year in Jamestown July 12th. Let's give the Jamestown Club a wonderful turnout. Information may be obtained from Ken Rich, 312–9th Ave., S.E., Jamestown. USY reports IKZ is building a new final with 211s, WSL is building an 813 linear amplifier, HNR owns a 183-D, and HNW is working on new antennas. GSC has a new all-steel 100-foot tower. GZD went to CAA teletype school in Oklahoma. Field Day is not too far away. Let's get the plans going and get our State listed in the score columns. New receiver-owners include MEK with 183-D and YRD with HRO-60. VLL demonstrated ham radio to the Belmont School in Grand Forks for the P.T.A. Your SCM encourages membership and participation in MARS. Contact him for information and application blanks. Traffic: WØNMV 54, LHB 39.

SOUTH DAKOTA — SCM, J. W. Sikorski, WØRRN — SEC: GCP. PAM: UVL. RM: OLB. Southeastern South Dakota amateurs participated in the first c.d. communications in the State when they assisted the Air Defense Command in a practice exercise. Stations acting as plane movement observers were MPQ, NJQ, PHR, BLZ, ZIQ, UCX, DTB, BQG, HWS, ZRA, BQS, AYD, and MMQ. SFARC station ZWY was set up in the ADC filter center and acted as NCS. GCP returned from vacation and promptly blew an 813. He is rebuilding and operating a 25-watter in the meantime. New officers of Mitchell ARC are SDE, pres.; EYB, vice-pres.; KYL, secy.-treas.; and GCP, act. mgr. UVL's TT transmitter is operating FB, but he still is unable to find a printer. GWH, formerly of Sioux Falls, has a new jr. operator. Hot Springs ARC is remodeling a building donated by the city for club quarters. Traffic: (Feb.) WØOLB 165, PHR 55, YQR 36, BQS 22, DTB 18. (Jan.) WØUVL 206, YQR 89, BQS 8.

MINNESOTA — SCM, Charles M. Bove, WØMXC — Asst. SCM: Vince Smythe, WØGGQ. RMs: DQL, RPT. PAMs: JIE, UCV, HEO. SEC: BOL. GGQ has been appointed as Assistant SCM to help in coördinating the emergency and traffic set-up in this section. We do need someone to volunteer as Section Emergency Coördinator, as BOL is resigning. The Mobile Amateur Radio Club of Hennepin County is buying and equipping a panel-type truck complete with transmitters, receivers, gas-generator and so on. It will operate on 2, 6, 10, 40, 75, and 160 meters. This equipment will be used for Field Day and in emergencies. EPJ is leaving for the West Coast to live. The Rochester Radio Club now has three 6-meter mobile units for civil defense. IMG now is operating on 2 meters. K6EA visited in the Twin Cities for a couple of days with PKO as his host. The Mobile Amateur Radio Corps put on an emergency demonstration for the Boy Scouts called "Operation Zero." The Civil Air Patrol aided in this demonstration. FIT is de-TVIing his new rig. WVT now is a proud grandpa for the first time. TJA is the new owner of a 75A-2. LWH now is in Joliet, Ill., and has a new call, 9LY. The Minneapolis Radio Club has a TVI committee already working on TVI complaints. The St. Paul Radio Club also has a committee ready to go. 75 meters was open for DX and some of the gang worked a few ZLs. DSF now is DL4AY, located in the French Zone of Western Germany. Traffic: WØITQ 756, QYZ 558, WQM 178, DQL 148, SWB 123, UCV 118, FDS 107, JIE 74, GTX 58, RPT 55, CXM 49, RXL 47, HEO 45, CQY 44, TJA 40, HFY 37, CID 30, GGQ 26, BUO 25, KNR 23, DYD 18, MXC 16, BZG 15, FYT 15, CTW 11, K6EA 9, WØFIT 4, JNC 4.

DELTA DIVISION

ARKANSAS — SCM, Fred E. Ward, W5LUX — Well, Arkansas now has auto tags for the hams, and as soon as

(Continued on page 90)

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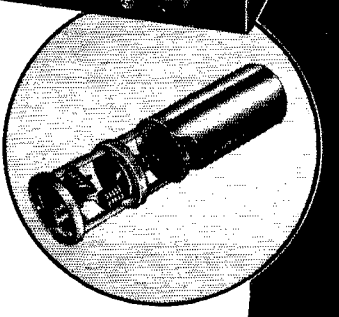

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CAPACITORS, INDUCTORS, SOCKETS, INSULATORS, PLUGS, JACKS, DIALS, AND PILOT LIGHTS

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we learn the details we'll pass them along to you in this column. Our thanks to everyone who helped to get the job done. UJW has new Extra Class ticket. DRW writes he has new mobile rig going with 2E26 final. He also advises you to use underground antennas if you live in a TV fringe area. LUX is working on a community antenna so the TVI may be licked that way also. BAB has new 813 n.f.m. rig. ICS is playing with s.s.b. OXU is working 80 meters and still having lots of trouble with a leg that was broken in an accident. WUH reports a club at Searcy has been organized with 11 members. Officers are PHP, pres.; UZT, vice-pres.; UZU, secy. FMF has done a real job with his code class; 6 members now have ham tickets. LUX visited VAE and KKV at Batesville, had a nice time, and saw some fine ham rigs. Traffic: W5EA 26, FX 7.

MISSISSIPPI — SCM, Norman B. Feehan, W5JHS — New appointee is ZVO as OPS and OO for 'phone. RMC is back in the States and will be stationed at Castle AFB, Orlando, Fla. UTK has a new Viking IL TIW and NUV are on with new 813 rigs. SKB now is mobile. UXJ, JR, YCB, USI, UOO, VQE, SNR, and SMD are new members of the Hurricane Net. K5FBB has made BPL again. The Meridian Club meets the 1st Fri. of each month. The Gulf Coast Club has reorganized with a large membership and plans for big things. BZG is chief operator at OQP. Bill holds two calls. OQP is located in the Post Office at Holly Bluff. TXK has a new Globe Scout on the air. ANP has emergency rig all ready to go. NYV is doing a fine job with his mobile unit. Let's hear from more of the mobile units in the State. Be sure and register all mobile units with your SEC. YOZ is anxious to hear from you. Traffic: K5FBB 970, W5JHS 66, RIM 41, DEJ 1.

TENNESSEE — SCM, Mark M. Bowelle, W4CXY/WLG — SEC: NJE. RM: AGC. PAM: PFP. The gang set a record this month with three stations, PL, PFP, and PHQ, making BPL. PL had his largest total since this SCM has had the records and reports that 93 per cent of his traffic was from or to GIs overseas. The 3980-kc. 'phone net has an average QNI of 40 three days per week and the 3635-kc. c.w. net has an average of 14 daily except Sun., with a traffic average of nine per session. WN4WXH/4 is directing a Novice net on 3749 kc. Mon., Wed., and Fri. at 1700 CST and invites all interested Novices to QNI. An orchid to PQP, who has a perfect attendance record for all 200 times that the Davidson County Emergency Net has been QND. The Net has a roster of 37 with an average QNI of 20. The Oak Ridge 50.7-Mc. Emergency Net, directed by NDE, is the proud owner of a complete station all installed and ready to go with the compliments of the local c.d. organization. IWV/WLH, with Helen at the mike, is one of our leading YL traffic stations and, we predict, will be heard from more and more in the months to come. HFO has moved to Martin, making the second ham in Weakley County, FLW being the other. TYU and HIH put on some two-station emergency work on Feb. 14th when snow took out the land lines into Gatlinburg. UDS got his 20-w.p.m. Code Proficiency certificate and is beating out some nice DX with 40 watts. Traffic: W4PL 3495, PFP 507, APC 284, YIP 190, SCF 137, PHQ 123, OGG 122, IIB 111, TYU 89, IWV/WLH 72, CXY 67, WQW 50, NPS 48, AGC 47, WAX 37, WXH 17, RHO 10, RMJ 5, PMR 4, FLW 2.

GREAT LAKES DIVISION

KENTUCKY — SCM, Ivan C. Kelly, W4TUT — From OET comes a detailed report of the new mobile club, RAMS, which recently was activated in Louisville with 22 members. MGT really is getting around setting up RACES; also doing a swell job as SEC. RYL keeps schedule regularly with YDN. TAV now is OBS. Erlanger has a new OPS in SMU. RFI has a new Viking II, YGS likewise. KRY is active again with Collins V-III. PSE, Asst. EC, gave a most detailed report. JTB has rebuilt and is on again. KKG is doing transistor experimentation. CDA says all is quiet his way. JUI reports 80 per cent of his time is spent experimenting. UWA added two more states with his 13 watts. MFI and VP are on s.s.b. JPP came home from Florida with gear, and KLP has left. OXN is proud of a new pair of 813s. RRD soon will be a W2. Ex-DL4SH now is at Ft. Knox. TYP is Columbia outlet on AREC. Organizational certificate holders are supposed to report each month to the SCM. If you are out of station activity report cards your SCM will take care of that. Kentucky's state-wide report can be only as good as the reports which are sent in. SXP monitors consistently. VNJ uses antenna for trot line on Lake Cumberland. The Kentucky Ham Reunion at Mammouth Cave will be held the third Sunday in June as usual. TFK and CMP already are making the plans. Traffic: W4TAV 590, WHC 585, K4WBG 87, W4CDA 38, SMU 11, RFI 7, UWA 5, JUI 4, KKG 4, SXP 2.

MICHIGAN — SCM, Fabian T. McAllister, W8HKT — Asst. SCMs: Joe Beljan, 8SCW; Bob Cooper, 8AQA; Mickey Wills, 8CPB. SEC: GJH. By the time this goes to press most of the boys and girls will be planning their Field Day activities. Of all the contests held during the year Field Day is the great final end-of-the-season splurge for most of us. A few hours devoted to intelligent planning will pay off handsomely when the final scores are computed. NOW is the time to get the Field Day rig in order, and to perfect the operational details involved. For instance: How many operators are actually needed, how long a watch should each operator stand, who should keep the log, who checks for duplicated contacts BEFORE the operator has wasted precious minutes on the duplicates? Make your plans NOW; you'll see how much easier it is. Michigan Civil Defense Headquarters finally has come through with a State C.D. Communication Plan. Much credit is due GJH, our SEC, for his efforts in working out this plan with State C.D. officials. Incidentally, we still have vacancies in our County EC ranks. The Grand Rapids Amateur Radio Assn. has just wound up its 6th Annual Mid-Winter Hamfest and is to be congratulated on the fine, smooth-running program which drew hams from every section of the State. RJC (with his traffic totals!) sadly opines that erratic conditions are cutting into his overseas traffic. NOH reports 2-meter activity picking up in the Grand Rapids Area, with EVP, YCI, ALD, and DTP having recently joined the gang. FGB made his initial 40-meter 'phone contact by working a mobile who was on his way through town. FSZ runs 450 watts all bands, and no TVI. TIC completed new 813 rig and is agreeably surprised at the results. 9VLL/8 moved into the Detroit Area from Wisconsin for a few months. 4YW (ex-8NQ) is heard on QMN occasionally and complains that Florida conditions are not too good; too many "furriners." KOX has graduated from the Novice ranks. CPB is on the move again, but keeps his skeds with the boys in the Arctic. DQL reports in from Fort Monmouth, where he is getting wised up on radar. Traffic: (Feb.) W8RJC 856, ILP 181, SCW 169, NOH 124, GTM 118, FGB 102, URM 98, ELW 85, ZLK 74, QIX 65, JYJ 50, HKT 48, NUL 45, AUD 36, SJF 31, TBP 31, COW 28, KOD 26, FFG 23, FSZ 17, UKV 15, TQP 13, AQA 12, EGI 10, FX 9, ENX 8, TIC 8, JUQ 7, PUV/8 3, W9VLL/8 3. (Jan.) W8ZGT 1037, FLM 99, CPB 54, TQP 28, YKC 26, AQA 18, FBV/8 17, TBP 13, KOD 6, ZEE 5, PUV/8 3.

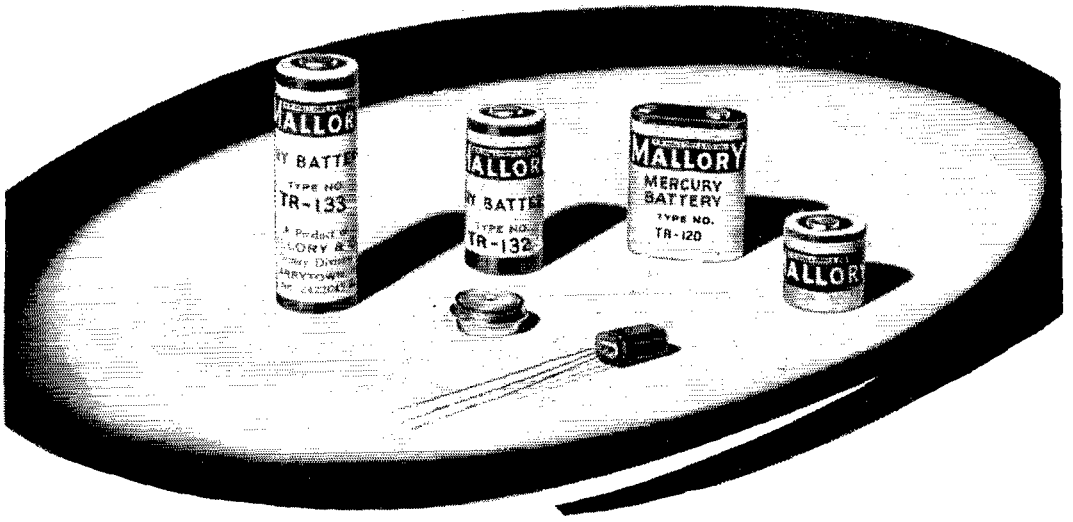
OHIO — SCM, John E. Siringer, W8AJW — Asst. SCMs: C. D. Hall, 8PUN, and J. Erickson, 8DAE. SEC: UPB. PAM: PUN. RMs: DAE and PMJ. FYO registered the only BPL during February. YEG and HVA are newly-appointed ECs, JAR has been made an ORS, and DL now is an OO Class I. RO is now QSOing European DX on 20 with 25 watts c.w. DAE, BN Chief, is recovering nicely and should be back in the harness soon. PMJ feels that a supplementary BN should be operated on 160-meter c.w. CTZ was elected Alternate Director of TCPN for the 8th call area, while LMB was elevated to Director and Chairman. YGR and DAE were heard giving the gals a break during the YL/OM Contest. JAR has been issued a BN certificate. BN will be vacationing in Florida during the coming month. GDQ has been heard in England on 40-meter 'phone. LBH is moving to Shreveport, La. The West Park Radiops held a successful auction on Mar. 9th. According to *Ether Waves* of the OVARA, GJG is rebuilding his rig, JJW lost his beam in a recent windstorm, and UOD is using a T2FD on 40 meters. Springfield's *Q5* tells us that they're going to be tough to beat come next Field Day. OKB was elected chairman and he already has the situation pretty well whipped into shape. CARA's *Caravscope* states that HHM is constructing a super kw. rig known as "Atomic Pile #KW8E," that IUS has been working KZ5s from his mobile wagon, that IJ is conducting weekly code lessons on 29 Mc. on Fridays at 2000, and that WAB is relocating in Tiffin. *Shack Gossip*, out of Toledo, informs us that BBO and HUX are going back on 2 meters, YNA now is 5YSH, and FIC's XYL presented him with a baby daughter. IJL's XYL contributed the monthly recipe — brown sugar cookies. Dayton's *R-F Carrier* states that HPJ has moved to Rome, N. Y., and FHJ to Biloxi, Miss., GQ is the new chairman of the activities committee, and HHR is in the process of developing an antenna farm. At the time of this writing the DARA's Hamvention is shaping up beautifully and all indications are that a great number of people are going to indulge in an unforgettable experience. The Cincy *Mike and Key* mentions that the GCARA will hold its election at the next meeting, and QBJ and 4PCT gave interesting talks at the previous club meeting. PBX underwent an emergency appendectomy and is recovering nicely. Our sincere sympathy to ZOF, who lost his father, and to DHF, whose wife recently passed away. PM took part in the February F.M.T. FJR has received confirmations from more than 100 countries. (Not bad for a 16-year-old high school youngster.) Traffic: W8FYO 523, UPB 207, RO 122, DAE 107, PMJ 92, LMB 83, YGR 74, JAR 60, AL 57, BN 30, DMJ 24, KFB 21, AJW 17, CTZ 15, WE 14, DG 13, GDQ 9, GZ 9, RN 6, LBH 3, MGC 2, BUM 1, TLW 1.

HUDSON DIVISION

EASTERN NEW YORK — SCM, Stephen J. Neason, W2ILI — SEC: RTE. RMs: TYC, KBT. PAMs: IJG, K2CA. ANB has his three-element 20-meter beam working at last. John is working on teletype and the next project is 3.8-Mc. mobile. New officers of the AARA are PGV, pres.; LXP, vice-pres.; WN2ONE, secy.; YXE, treas.; ILI, AAO, GM, and JQI, directors. CFU is a new member of the OTC; Warren has held the call for 23 years and has enjoyed every minute. New officers of the IBM Radio Club are MHE, pres.; K2BEK, vice-pres.; JFB, secy.; and K2BAR, treas. MHE thinks that the 7-Mc. 'phone band is FB and has 50

(Continued on page 92)

MALLORY HAM BULLETIN



Mallory Mercury Battery-Transistor combination powers new pocket-size Primary Frequency Standard

Expected battery life: five years or more

The term "miniature" is no longer adequate to describe modern electronic design technique. In the race toward smaller and more compact electronic gear the words "sub-miniature" somehow seem more appropriate.

For example, information was released recently by one of the government laboratories that a pocket-size Primary Frequency Standard had been designed and built. Consisting only of a 100 Kc. quartz crystal, a Mallory Mercury Battery, a transistor, and a few miscellaneous parts, this instrument exhibited an accuracy and stability comparable to WWV itself, yet measured less than 1½ inches in diameter by 7 inches long. Crystal ovens, special temperature compensators, heavy power supply components, and even dependency upon the utility company electric line were eliminated completely.

However, the most spectacular bit of information learned about this little gadget, was its expected ability to operate for a period of 5 years or more in normal service without replacing its battery!

Spectacular? Yes!... but found perfectly possible when the transistor and the Mallory Mercury Battery were used as a team. The extended shelf-life and constant voltage characteristics of the Mercury Battery complement the technical advantages of the transistor perfectly.

Unquestionably the Mercury Battery-transistor combination has become a powerful stimulus to the imaginations of professional electronic design engineers everywhere . . . and it is probable that the amateur, too, has indulged in a little day-dreaming along this line. If so, now is the time to take those ideas in hand and make something of them. We understand that transistors are now available at moderate cost from many parts suppliers. And of course, Mallory Mercury Batteries are available in a variety of sizes and shapes from the Mallory Distributor near you. Why not see him today for more information; or a list of Cells available, plus technical characteristics, will be mailed to you upon request. Write to P. R. Mallory & Co., Inc., Box 1558, Indianapolis 6, Indiana, and ask for Mercury Battery information.

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MALLORY

per cent of the QSLs required for WAS. Congrats to LRW, who won first place and the three-year course in the recent MARS Contest. Marce expects to be very busy on the traffic nets. MRQ is experimenting on a 7-Mc. beam. AWF, NEV, and CJS have new Gonset Communicators. ILI makes BPL. YOK has a new Viking II. VP is very active on NYSEPN. RTE is a new member of the OTC; Ted has been a ham for 30 years or more. With much regret we report the passing of THI. NYS meets on 3615 kc., 7 P.M.; NYSS on 3595 kc., 8 P.M.; NYS on 3980 kc., 6 P.M. Your SCM and SEC were guests at a recent informal AREC-c.d. meeting in Zone 3 at Newburg. Other ARRL officials present were VP, PCQ, and IJG. The meeting followed an excellent dinner at the Hotel Washington. PCQ was in charge. C.d. directors from several counties were present. A better understanding of the problems at hand as well as the relationship of AREC-c.d. was the result. Plans are under way for a section meeting to be held sometime in May at Poughkeepsie. The Albany County AREC Net has resumed operation on 3525 kc. at the usual time Sun. A.M. Traffic: (Feb.) W2TYC 254, EFU 128, ILI 127, AAO 44, APH 25, CFU 23, VP 17, HEI 13, MRQ 5, ANB 2. (Jan.) W2LRW 30.

NEW YORK CITY AND LONG ISLAND — SCM, George V. Cooke, jr, W2OBU — Asst. SCM: Harry Dannals, 2TUK. SEC: KTF. RM: VNJ. PAM: YBT. The NYC-LI 75-meter section 'phone net now keeps schedules daily on 3910 kc. at 8:30 P.M. Mon. through Sat. Net Control is alternated nightly and an average of 8 stations are reporting in. Traffic has increased and with a new net established between 146.8 and 147.3 Mc. at 2000 nightly the 'phone nets are really doing a fine job. The Sunday 75-meter 'phone net, operating on 3910 at 1000, now has built up to an average of 18 stations QNIing and coverage in the section is progressing. The North Nassau Radio Club has attained its affiliation with the League and is off to a good start with active programming at its meetings, which are held the 2nd and 4th Tues. of each month at the Roslyn High School. Seems like most clubs in the section are making big plans for Field Day and it promises to be the best ever in attendance and scores. The Nassau Radio Club, which holds meetings in East Rockaway, is keeping members very active by holding Novice, Old-timer and auction nights. SNO, a Nassau Club member, is also 1WSZ. ZUC sure did an FB job organizing and operating the Garden City c.d. group. BTA has upped power on 2 meters; Hal now has 250 watts perking. New members of the Nassau Club are KN2CMV and CQP. KEB can now be found on 40-meter c.w. after operating 144 Mc. for so long. FI, Nassau EC, KFV, and QBR are turning in a bang-up job operating the county c.d. control station, from which 67 zones in the county must be covered. The New York Radio Club is sponsoring code and theory classes at the Gompers Evening High School in Manhattan Tues. and Thurs. 7 to 9 P.M. The Club has added IHE, GSE, CTP, and K2ABW as new members. K2BVV, ABV, BYW, and AMP have formed a new club in Amityville, known as the Amateur Radio Society of Amityville Memorial School, with an active membership of 12. The Club is sponsored by LR, president of the School Board, and is looking for contact with other L.I. high school groups. Contact KN2AMP for information. KTG, just discharged from the Army at West Point, has a new Viking II on the air. VAK has received his Extra Class ticket. ENW has built a quadruple omnidirectional antenna for 2 meters, pumping 10 watts into it from a 2E26, and says it's fine. JZX has been appointed OPS and is turning in nice traffic scores. KDO has a new shack in the basement and is really struggling for the last 3 states for WAS. RWQ finally completed 4–65A p.p. amplifier. Look out DX! IDK maintains 8 net schedules weekly and operates into 6-meter Suffolk County c.d. net. PAA, an OES appointee, now has a 2C40 on 2400 Mc. VNJ, RM for the NLI Traffic Net which meets Mon. through Fri. on 3630 kc. at 1930, reports an increase in members and coverage, and is active in the 14-Mc. DXN Net. ZRA changed QTH to Long Island and the Brooklyn Radio Club elected JSL as treasurer to replace him. Traffic: (Feb.) W2VNJ 698, JZX 446, LPJ 402, BO 385, EC 127, GXC 115, GP 112, IDK 103, DIC 82, LEO 52, LGK 42, PF 36, OBU 28, KFV 22, UXY 20, BQM 11, WDT 11, YBT 11, EEY 5, IVU 5, BMK 2, IRK 1. (Jan.) W2LGK 52.

NORTHERN NEW JERSEY — SCM, Lloyd H. Manamon, W2VQR — SEC: NKD. PAM: CCS. RMs: WCL and NKD. CWK relayed urgent traffic from a Finland amateur to the Red Cross, Washington, D. C., requesting availability of certain drugs to be shipped to aid a patient in Germany. GPV is building all-band c.w. rig for Field Day operation using 6146 final stage. HJD is active in TVI committee work. New RVRC members are Dan VanOrden and Ray Hoffman. Nine RVRC members journeyed to the Tri-County RC meeting to hear the SCM give the latest dope on RACES. BVJ is gathering gear for 420 Mc. LKG, Bayonne YL, an electronics engineer, now is General Class. Look for her on 80-meter c.w., fellows. Technician Class JZS is working hard to get that 13 per for General Class. KN2BTM is using 3S4 tube on 80-meter c.w. with 0.7 watts input and works them. He should try a transistor. BVK now is General Class. The GSARA meets the 2nd and 4th Wed. at the American Legion Hall, Route 35, Eatontown. There always is a good program of speakers and guests are welcome. The Club plans to utilize two additional transmitters on 40- and 15-Mc. 'phone for Field Day. DME is making colored shots of all GSARA members' stations. If you have not been visited by DME as yet, please call him. NIE, the section's No. 1 mobile marine man, is busy outfitting the radio room on his Richardson Cruiser. Look for him mobile marine on 75- and 10-meter 'phone. The Bergen County C.D. Net set a new activity record on March 5th with 133 stations checking in. The Passaic County C.D. Net has grown to a total of 17 active stations. This gives C.D. Area 1 a total of 150 active stations on the 10-meter net. DXD is on a trip to England and India. HXP is busy organizing RACES in his town. CUI again made BPL. ZT, OO, logged 33 violations during the February 6–7–8 DX Contest. Sixteen stations were logged out of the band and 16 more with side bands splashing out of the band. Better watch it, fellows. JKH reports very poor band conditions at his QTH during the DX Contest. ZPD is working on new modulator. The Ocean County Amateur Radio Assn. held a very successful annual dinner on March 7th. By the way, gang, the Annual Old Timers Night will be held this year on April 25th, at the Stacey Trent Hotel in Trenton. Will look for you all there. CJX is off the air with transmitter trouble. K2BCK has a brand-new daughter. He reports 15-meter activity but says 40-meter 'phone is too congested. NKD has single 6146 on all bands. EBK and CCS are building s.s.b. rigs. HIA is active in Middlesex County AREC Net on 147.12 Mc. Traffic: W2CUI 561, CCS 390, DXD 172, EAS 148, NKD 75, K2BCK 50, W2CJX 12, GVZ 10, HIA 10, CFB 9, NIY 9, HXP 3.

MIDWEST DIVISION

IOWA — SCM, William G. Davis, WØPP — TLCN has two new members in Newton, BSQ and OZO. NFL now is in Germany. YKS is back on TLCN after whipping TVI. RFT is home after a couple of cruises in the Merchant Marine. The Waterloo Club has held two successful hidden transmitter hunts. The Sioux City Club has been having some good demonstrations of 2-meter work with the c.d. angle in view. CXN is building new exciter to whip TVI. POY is too busy putting up TV antennas to get in any hamming. AHQ is back home after a session in the hospital. The Sioux City Club is protected against lawsuits at Field Day events by an insurance policy. Most of the Club's Novices and Technicians have graduated to General Class. III, YTA, and HVJ have been maintaining weekly skeds on 2 meters. CYL, NWF, and HOE also are on 2 meters. NTB has moved his rig into a new upstairs room and now has a swell shack. The Esterville gang has organized a club but has not elected officers as CQS and MIM are the only licensed hams there. However, classes are being held for 12 members and as soon as some more get their tickets organization will be completed. Bob Sterenborg, sales manager of KLIL and a former high-speed Signal Corps operator, takes care of the code. DLD has set up shop at Belmond. WLY has upped to 400 watts. Traffic: WØSCA 1170, BDR 1081, BQJ 293, PZO 202, CZ 173, QVA 89, YTA 85, BBZ 51, BVE 45, ERP 32, BLH 29, NWF 28, ILY 16, NYX 13.

KANSAS — SCM, Earl N. Johnston, WØICV — SEC: PAH. RM: KXL. PAM: FNS. We're happy to announce another new club in Kansas, the Sekan Radio Club, which was formed in Chanute March 5th with NXJ, pres.; IFR, vice-pres.; FNS, secy.-treas.; and NXJ, act. mgr. Membership will come from amateurs in that part of the State and meetings will be held in various towns so all may have a chance to attend. Contact FNS for dates and meeting places. The Johnson County Radio Amateurs Club has incorporated and held an election of officers recently, with DEL elected pres.; IIJ, vice-pres.; LQV, secy.; and NZP, treas. Committee chairmen are LPA, activities; WMH, publicity; KGK, technical. GHR has new Collins 32V-2 and 75A-2. The Missouri Valley Net meets at 2100 Mon. GZI is back in Gardner with 500 watts all bands. NBL is a new station in Olathe. LWB, TLA, WEV, ZLW, and DRB are all very active now. The Atchison Amateur Radio Club is forming a club net. Election of officers recently held resulted in IWS as pres.; EBB, vice-pres.; and TUH, secy.-treas. ITJ and HID recently received their General Class tickets. FUF made BPL the hard way. Traffic: (Feb.) WØFUF 505, BLI 160, BET 55, WMQ 44, YFE 27, YOS 23, ICV 18, FEO 17, BEO 16, CWG 16, FSE 16. GZI 10, FJK 9, GHR 8, EBB 7, VBQ 7, DWX 6, DZR 4, IUB 4, LIX 4, ZUX 2, DTN 1, GVI 1, KEN 1. (Jan.) WØYFE 19.

MISSOURI — SCM, Clarence L. Arundale, WØGBJ — SEC: VRF. PAMs: AZL and BVL. RMs: OUD and QXO. On February 11th, Missouri lost two of its old-time hams when SOO, of Kansas City and LTY, of Sedalia, passed away. On February 13th, the Ozark Area Boy Scouts called a test mobilization. EBE and HUI acted as NC and cleared the traffic and reports from the many assisting amateur radio stations in the area. The St. Louis Amateur Radio Club held a Valentine Dance at O'Connel's Shack on February 14th at which about 35 couples attended. LLN and 8BP carried on a six-week schedule on 14,220 kc., at 2200 CST, and found that 50 to 100 per cent copy could be made on about 80 per cent of the schedules. QMF originated a radiogram to an overseas service man and it was delivered

(*Continued on page 94*)

IDEAL FOR MOBILE *Eimac* 4-65A

AN EVER INCREASING NUMBER of amateur radio operators are finding that they can take Eimac quality on the highways with them by employing Eimac 4-65A radial-beam power tetrodes in their mobile transmitters. Physically and electrically the 4-65A is ideal for mobile. It is small, compact, rugged, radiation cooled; has a high power gain and requires low driving power and simple circuit design. But one of the best of many features is that through application of filament and plate power simultaneously warm-up periods are eliminated. Also there is no costly battery drain during stand-by periods because the thoriated tungsten filament heats instantly. Although the smallest of Eimac's complete tetrode line, it contains the Eimac specialties of non-emitting Y3 grid wire, *pyrovac** plate, input-output shielding and thoriated tungsten filament.

TYPICAL MOBILE OPERATION

Plate modulated radio frequency amplifier.

DC Plate Voltage	600 volts
DC Screen Voltage	250 volts
DC Grid Voltage	—100 volts
DC Plate Current	117 ma
Driving Power	2 watts
Plate Power Input	70 watts
Plate Dissipation	20 watts
Plate Power Output	50 watts

Investigate the possibilities of the Eimac 4-65A on the new 40 meter phone and other bands by writing our Amateurs' Service Bureau for additional information.

Eimac TUBES REG. U.S. PAT. OFF.

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within 24 hours. Previously, two cablegrams had failed to reach the individual advising of the illness of his mother. IBZ is on 40 meters with an 807 final and 75-A1. QDF is building a 40-meter ground-plane antenna. HJC has completed his new 125-watt rig in a beautiful console cabinet. BVG, DRP, and NDS have built walkie-talkies. The Early Bird Net handled 546 messages during February. Traffickers Club certificates have been issued to BVL, CPI, EBE, HUI, JXJ, and NNH. BPL certificates go to CPI, QXO, and JXJ. ETW, while on a Florida vacation, helped 4DUG handle traffic at the Florida State Fair. PTG has been modulating the sound system at the local theatre. Traffic: (Feb.) WØCPI 1040, QXO 663, JXJ 559, BVL 405, CXE 172, GAR 143, KØWBD 140, FAT 88, WØHUI 71, ZLN 50, CKQ 44, EBE 36, GBJ 34, QMF 29, JSR 24, TGG 18, OUD 17, PTG 17, IQY 16, RIK 16, BAF 11, BUL 4, ETW 3, BPD 2, CIA 2. (Jan.) WØWIS 12, PTG 8, ETW 7.

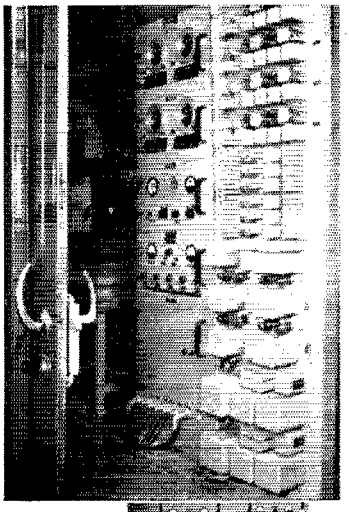
NEBRASKA — SCM, Floyd B. Campbell, WØCBH — Asst. SCM: Thomas S. Boydston, ØVYX. SEC: JDJ. PAM: EUT. RM and NCS 'Phone Net: VYX. C.W. Net: LJO. Asst. NCS C.W. Net: SAI and RDN. WNØMAO is sweating out his Conditional Class ticket. RDN now is on 3.5 Mc. with 250 watts to half-wave center-fed antenna. DOE finally got Vermont for WAS on 7 Mc. The Cobtown Net, at North Platte, meets nightly on 28,720 kc. NET is a new member at North Platte. CC now is s.s.b. BZS is sporting a 10-meter rig and is trying for 40 meters also. LJO, RM for C.W. Net, reports an average attendance of 12 and a total of 80. SAI is NCS for C.W. Net on Tues. and RDN is NCS on Fri. RDN has a pair of 812Hs and is running 300 watts. FQB now has a Viking II, having traded in his Stancor 202A. AIN is doing a little repair work on his VFO and rig. The Grand Island and Lincoln Clubs have sent in their applications for ARRL affiliation. The Lincoln Club is working very hard to try and put on the 1953 Midwest Division Convention and needs help from anyone interested. JDJ has renewed his SEC appointment. RGK has joined the s.s.s.b. gang. ODB is on 40 meters after all these many months. AUH is collecting parts for new rig using 829B. Traffic: (Feb.) WØTOD 2064, RDN 228, FQB 129, VYX 64, KØWBF 52, WØSAI 46, KDW 36, FMW 32, CBH 29, YSK 29, ZJF 25, LJO 19, UVQ 16, DHO 14, QOU 11, KØFBD-8, WØAUH 8, HQQ 8, BEA 7, HTA 7, ERW 6, JJO 6, KWQ 6, THF 5, KXD 4, CC 3, AIN 2, DGX 2, EGQ 2, IAY 2, WNØMAO 2, WØPGA 1. (Jan.) WØRDN 33, KDW 31.

NEW ENGLAND DIVISION

CONNECTICUT — SCM, Roger C. Amundsen, W1HYF — SEC: LKF. PAM: FOB. RM: KYQ. CN-3640, CPN 3880, CEN-29.6. SJO is out front with a total of 475. The v.h.f. shindig held in Hartford Feb. 21st, with HDQ, AOH, LKF, QVF, and LIH as speakers, was a highlight of the month. 2VMX/1 is rebuilding. ORP is working DX on 80 meters. UNG is on 40-meter 'phone. RFJ is after OES. RRE is trying T2FD antenna. EFW is busier than ever at the bank and in CAP. EMF is on 4 bands. WPO is trying for DXCC. TNX visited KV4-Land. KYQ got out an FB bulletin for CN and is planning CN/CPN get-together. RRE is new OBS. TD renewed OBS appointment, EFW renewed ORS and EC. 5ANZ visited Ridgefield and reported on the National Convention to be held in Houston in July. SFY broke his toe. HYF visited ODW, DBM, RRE, KYQ, APA, EMF, and FMU. Once again I must mention that for this space to be filled up I must receive some news from you, so keep it coming. WN1WVI is in Med. Corps at Camp Gordon, Ga. KP4JM visited Bridgeport. Traffic: (Feb.) W1SJO 475, KYQ 281, AW 110, RRE 107, CUH 102, AYC 73, BDI 63, QJM 50, FOB 48, EMF 40, NBP/WBO 32, RFJ 26, HYF 24, LV 24, LIG 10, BVB 9, KV 9, ODW 4, TNX 2, UNG 1. (Jan.) W1AYC 186, EMF 62.

MAINE — SCM, Orestes R. Brackett, W1PTL — SEC: BYK. PAM: OLQ. RM: LKP. Pine Tree Net meets on 3596 kc. at 1900 Mon. through Fri. Sea Gull Net meets on 3960 kc. Mon. through Fri. Because of band conditions during the times that the above nets operate it has been very difficult to carry on as the Net Control Stations would like so hope that you who are new on 75 meters will bear with the gang and when things get back to normal I am sure that you will find net operation not only very informative but very interesting. At the beginning of Daylight Saving Time the Sea Gull Net will be closed for the summer. At this time I would like to say that I (W1PTL) am not going to run said net after that time, so anyone in the State of Maine who wishes to try it is asked to please let me know so it can be taken care of by the PAM. I want to say that with the opening of the 75- and 20-meter bands to holders of Conditional and General Class tickets the gang is doing a very splendid job and I want to congratulate all the boys on the nice signals and the nice procedure they are using. VBU, of Madison, now is ready to work 4UES. KZ5GS, ex-W1QDO, would like the boys to get in touch with him on 20 meters. He is usually listening around 14,220 kc. He listens from 5:00 P.M. until the band goes out and Sat. afternoons and all day Sundays. Traffic: W1LKP 218, OHT 111, EOP 57, PTL 43, BX 33, BTY 31, OLQ 20, SEJ 14, VV

(Continued on page 96)



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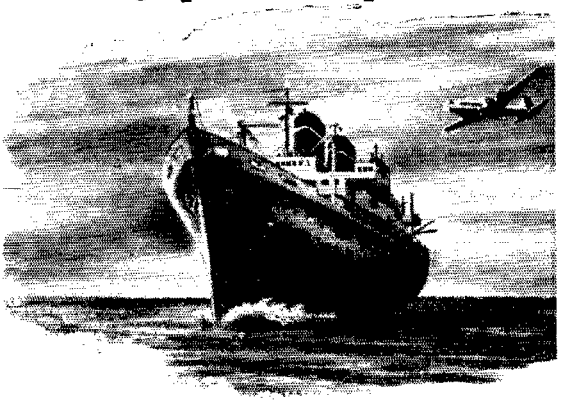

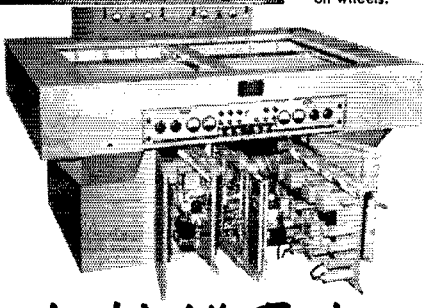

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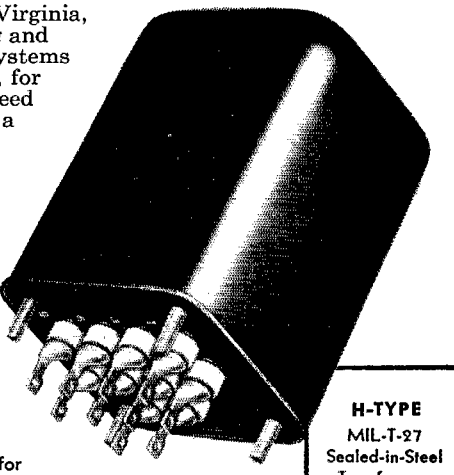

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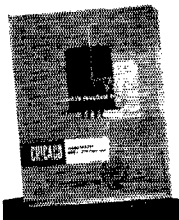

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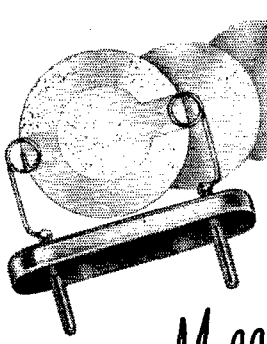
EASTERN MASSACHUSETTS — SCM, Frank L. Baker, jr, W1ALP — Appointments endorsed: DDC Ayer, BHW Chelsea, JJY National Guard Emergency Comm. Plan as EC; HIL as OPS; JJY and TVZ as ORS; CTR as OBS. New appointments: TNK as OBS, AOG as ORS, MD as OPS. Heard on 28 Mc.: LIB mobile, TJD, TEO, MJO, QPH, VMD, UIL mobile, and UIE. KKP, GOU, KLC, ML, VUH, and ADL are on 14 Mc. ADL is on 144 Mc. VIK has TBS50-D on 80 and also is on 144 Mc. WC and JKR are on 3.8 Mc. K2BX, ex-1QVP, is on 3.8 Mc. and has a sked with OKK. Sorry to have to announce the death of GBY. New officers of the Hingham Radio Club are BW, pres.; DMS, vice-pres.; ONV, secy.-treas. The Brockton Radio Club held a swap and auction. The Eastern Mass. Club had talks by Bill Holdrick and AOH. The South Shore Club had an FCC night with Mr. Hallenstein and an auction with AKY at it again. The Quannapowitt Radio Assn. had a talk on Transmission Lines by KVQ. PYT, Ipswich EC, reports that they have a new c.d. director and a net with JOJ, VJM, and HHG. DDC is in Region 9 Radio Club on c.d. set-up, along with IPZ. Attention all hams: The Eastern Mass. and South Shore Clubs have voted to put on the Boston Hamfest sometime in the fall. WVL has his General Class now. HWE is back on the air. WN1WMI is on the air with an S38 BC-457 on 80 and a rig on 2 meters. UTH says they have a new teen-age net on Sat. at 1830 on 7175 kc. WAG, Taunton EC, is on 160-, 80-, and 40-meter c.w. BGW is active on fsk teletype on 3.5 Mc. EMG and NUP say conditions on 80 have been poor. LM is fixing up the shack. IBE is active in nets and is a member of MARS. Braintree Radio Club will hold its 2nd annual banquet in April. BB, busy on 160-meter DX tests, worked OH3NY and ZC4XP. TNK is building radio-controlled speed boat. EXH is on 20-meter c.w. most of the time. TVZ tried 40-meter c.w. WXC has a rig on 20, 40, and 80 and worked 23 states on 80-meter c.w. WN1WNR is going after General Class license. The T-9 Radio Club held a meeting at HMC's QTH in Peabody. VVZ has an S40AU and TBS50D on the air. BB was heard on 1.8 Mc. by ZS3K. WKN is the call of the Old Colony Amateur Radio Assn. in Foxboro. New officers are LNN, pres.; SE, vice-pres.; SUR, secy.; TQF, treas. The Club held an auction and had a Novice Open House with 55 persons present. Anyone in that area needing help should contact SUR. In the monthly c.d. test the following towns were on the air: Somerville, Medford, Malden, Melrose, Wakefield, and Reading in Sector 2 of Region 5. Also in Sector 5 Hingham, Weymouth, Quincy, Cohasset, Dedham, Randolph, Norwood, Milton, and Westwood were on. BL and ADL were at Region 5 at Mattapan. The Southeastern Mass. Amateur Radio Club of New Bedford had a talk by KHV on a rig he designed. WGN has a vertical antenna on 10. LAZ's 600 watts gets out. UID is looking for invisible antenna for 80. TZU is mobile on 10. WU is using 600 watts on 40-meter 'phone. SSS likes c.w. but gets on 'phone some. QJ handled some messages from Canada with his 12-watter. JJY has been appointed as one of the Military Aide-de-Camps to Governor Herter. JNV has applied for OO appointment. WN1WJZ has worked out a crystal transmitter that will be used with their TR-4s. On the last drill CMW, MQB, HFJ, BDU, OIR, DJ, NMX, PBX, SBT, QUX, GGP, LVA, BB, TQT, and many XYLs were on. MSH has a Viking transmitter. FVD and WK are putting 10-meter mobile rigs in their new cars. QZO will do the same. VVZ is new East Bridgewater EC. Traffic: W1EMG 408, NUP 322, TY 176, JCK 97, AVY 82, LM 65, IBE 53, AKN 14, BY 13, CTR 13, RDV 12, RSE 10, WU 10, BB 8, TNK 7, AOG 5, QJ 4.

WESTERN MASSACHUSETTS — SCM, Roger E. Corey, W1JYH — SEC: KUE. RM: BVR. PAM: RDR. WMN meets at 7 P.M. Mon. through Fri. and WMNS at 8 P.M. Mon., Wed., and Fri., 3560 kc. New officers of the Univ. of Mass. RC are UKP, pres.; RVT, vice-pres.; UJF, treas.; VSX, pub. mgr.; TAY, secy. Region 9 ARC sponsored a v.h.f. night with HDQ drawing a crowd of over 100. STR has returned to our section from New Jersey. DRE is active on 50 Mc. RLQ and UKR took part in the YL-OM QSO Party. EOB, former SCM and one of the section's most active members, now is working in Danielson, Conn., and is looking for a home there with good antenna possibilities. VNN has his General Class license. RVW, KUE, VNH, OBQ, NLE, RRX, RFU, CCH, and PHU attended the annual v.h.f. get-together in Hartford. MNG enjoyed a two-week jaunt to Florida. TVJ is after DX on 3.5 Mc. UVI, like most traffic men, has found that break-in is a must for efficient traffic work. BDV is experimenting with a multi-purpose test instrument made from junk-box parts which will check anything from modulation to key clicks. The high traffic totals of BVR and MGE are a result of the Greenfield High School's trip to Washington. Yes, they all sent messages home. CLX leads the section in countries worked. JYH has new crystal converters built for 15, 10, and 6 meters. OBQ is tabulating his v.h.f.-u.h.f. propagation observations. WEF has his General Class ticket and is already on 75-meter 'phone with ten watts of a.m. KFV has been trying to untangle his dots and dashes with an automatic key. RDR and LIB are frequent Net

(*Continued on page 98*)



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Control Stations on the New England 'phone net. TTL and KUE have new grid-dip oscillators. Traffic: W1BVR 229, MGE 76, TVJ 55, DVW 48, HRV 41, JYH 26, EOB 20, MVF 18, TAY 18, RLQ 10, HRC 5, BDV 3, MIND 2, UVI 2.

NEW HAMPSHIRE — SCM, Carroll A. Currier, W1GMH — SEC: BXU. RM: CRW PAM: UNV. TRM has a Collins 75A-1. The Concord Brass Pounders will sponsor the New Hampshire State Convention this fall. UNV has accepted the PAM appointment. A Hillsboro County Net has been started on 29 Mc. at 1900 Fri. What about calling in? TA is trying out s.s.b. The Port City Club has six Novices and a Technician. LCD, TDJ, and AIJ have birthdays on the same day, and get together each year. Boy, what QRM there is on that night! Is there any appointment that you are interested in? If so, please drop me a line. Welcome to SCC back from Service. He has a Viking II on the air with an SX-71. BFT has Certificate #1 as YL Century award. AOQ and TTU both have 72-As with 32V-3s. The Mike and Key Club has held code and theory classes all winter and has three Novices as a reward for its efforts. QHS is on 10 meters with a good signal. Now is the time to get that gear out for the coming Field Day. Will those having certificates due for endorsement please send them in? We want to keep them all active. Our sympathy to RET in the loss of his father. Traffic: W1GMH 51, QJX 27, POK 19, CDX 10, UNV 4.

RHODE ISLAND — SCM, Merrill D. Randall, W1JBB — SEC: MIJ. RM: BTV. PAM: BFB. The RIN meets Mon. through Fri. at 7 P.M. EST on 3540 kc. The R. I. c.d. net meets Sun. at 10 A.M. on 3993 kc. The PRA visited NCRC in a body, led by its president, SGA. R. I. RO, NZR, brought the combined group up to date on the latest RACES information. The N. E. Tel. and Tel.'s microwave demonstration, ably presented by HXS and GAC, was put on before many Rhode Island and Massachusetts amateurs at the NCRC clubhouse. If any of you get the chance, see this demonstration. 2EEB is coöperating with RIN in clearing traffic to Western N. Y. for the sailors at NS, Newport. Thanks, Don! WVQ has joined the Newport c.d. net. If this column seems to be all NCRC and PRA, it's because we haven't heard from the rest of you! Traffic: W1BTV 28, BBN 25, OIK 16, TGD 11.

VERMONT — SCM, Raymond N. Flood, W1FPS — SEC: JEN. PAM: AXN. RM: OAK. Asst. RM: TAN. OAK now is on 40-meter c.w. Hope she doesn't forget 80! Ann says 29 different stations reported into the Vermont Net in February. RSG sent a card saying he is sorry he can't report into VTN because of DX. Charlie now is signing the call FI8AG! SAT has a new Collins kw. rig. RWX is sporting a Collins 32V-3. AVP is back on the air after a long illness. DAQ is home with a bum foot. Our SEC is resigning. Applicants for the job, please write to me at once. Traffic: W1RNA 263, OAK 94, NDB 37, IT 31, AVP 29, BJP 24, FPS 15, ELJ 12, TAN 9.

NORTHWESTERN DIVISION

IDAHO — SCM, Alan K. Ross, W7IWU — Craigmont: RSZ has applied for AREC membership and is using a WRL Globe Scout on all bands. AREC members not directly under a local Emergency Coördinator are urged to contact their nearest EC. Present Idaho ECs are OQT Twin Falls, IDZ Lewiston, EYR Caldwell, KOG Grangeville, FIS Coeur d'Alene, BDL Pocatello, FT Heyburn, HAH Burley, ETU Nampa, ELH Moscow, PTI Kellogg, and JKB Boise. Twin Falls: The call of the Snake River Keys and Mikes Club is SWS, operating on 75 meters. Burley: HAH relayed 22 and delivered 1 on contact with KH6USA. FAJ has applied for OO appointment. Lewiston: OWG has a '53 Olds but the XYL says no holes in the new car. OOW traded his NC-240D for a 75A-1. Boise: New EC is JKB. The local net meets on 29.5 Mc. each Sun. evening. Boise, Meridian, and Nampa now work each other on 2 meters. Traffic: W7HAH 45, FIS 17.

MONTANA — SCM, Edward G. Brown, W7KGJ — New officers of the North Montana Radio Club are SFK, pres.; PYZ, vice-pres.; PAF, secy.; and QAK, public relations. Meetings are held the 3rd Sun. of each month. New calls are SJH Dutton, SJG Cut Bank, and QFT Shelby. NJZ has moved to Conrad. ONI, of Brady, has been conducting code and theory classes. The 160-meter net is in operation with 18 members and meets each Sun. at 1 P.M. FGB, of Livingston, reports plans are being made to revive the Old Faithful Radio Club. KJX is installing 10-meter mobile and RYZ is planning to do the same. FGB has 10-, 20-, and 75-meter mobile. RYZ is taking a radio course at Fort Benning. LUE has modulator for his Bendix TA12. LPL is building new rig around BC-610 tuning units. Officers of the new Great Falls Radio Club are NBB, pres.; Dr. David McKay, vice-pres.; QQL, secy.-treas.; and RIL, act. mgr. The Club has 24 charter members. Traffic: W7FSK 6 OPM 6.

OREGON — John M. Carroll, W7BUS — ONM leads again with BPL for both January and February. His January total was 816 and February total was 956, all overseas traffic. AWI also made BPL with a total of 461, including 255 originations plus deliveries. AWI reports all his traffic is of an emergency nature. PPG reports the

(Continued on page 100)

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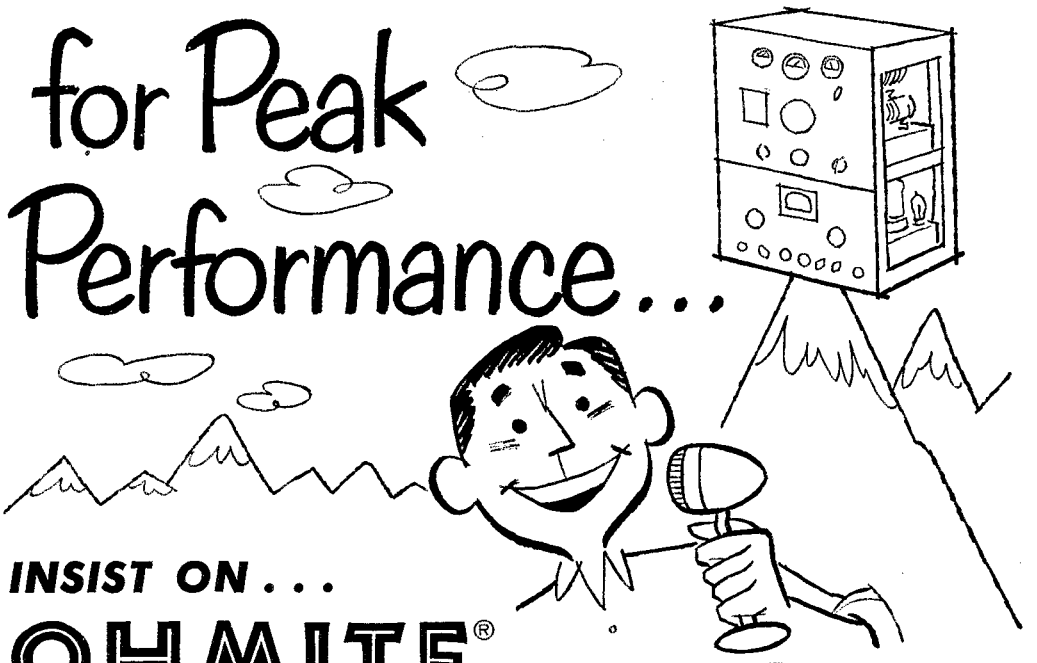

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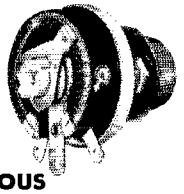

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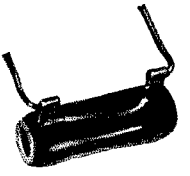

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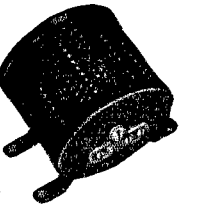

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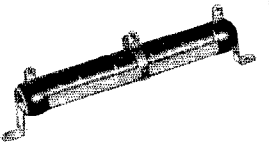

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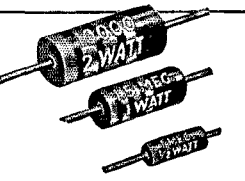

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Cascade Net on 29.2 Mc. is very active and steadily increasing. PRA reports he is consistently checking into three nets, OSN, OEN, and Cascade Net. AJN reports his activities besides regular OBS schedule, include MARS and Cascade Net. RQN reports new club officers for Astoria as follows: PJK, pres.; RQN, vice-pres.; QJC, secy.-treas. Traffic: (Feb.) W7ONM 956, AWI 361, HDN 158, PPG 95, MQ 8, PRA 5. (Jan.) W7ONM 816.

WASHINGTON — SCM, Laurence M. Sebring, W7CZY — SEC: BTV. RM: FIX. PAM: NRB. PGY is building an all-band transmitter. OZG has a 1-kw. a.m. and s.s.b. rig under construction. VI is using a converted ART-13. BG, RTQ, and PGY are doing fine jobs as NCS on the Sound Traffic Net. IGM is on 20 meters, but is finding many new TV sets in the neighborhood. GAT received his Advanced Class ticket a few days before they went out of style. KCU and HNA are active on WSNet. WSNet is planning to change to 3575 kc., average QNI for the month 15.95, and average traffic per session 9.9 messages. ETO works out on 40-meter 'phone OK. AIB worked over his TCS-13 transmitter. NWP has a VFO and works out better than with crystal. PYV checks into WSN and RN7 regularly. PUL worked FP8, LU5, and YV5 with his TBS-50D. CWN works in the garden. SOX-DL4AY has worked 87 countries in the past six months, using 32V-3 and "V" beam. DYD, KGQ, KO, PED, PQS, TCD, and BYK have a 6-meter net at 1830 daily. FGQ is the new EC for Spokane County. GBU and PXA visited FFD and AIG. PPM is attending WSC. JKF got into the hot stuff at KHQ-TV and landed in the hospital. SBA, who is chairman of the Spokane TVI Committee, gave a talk over station KHQ about the amateur's side of TVI. OZZ joined the Silent Keys. Traffic: W7BA 1125, FIX 336, PGY 335, CZX 281, PYV 202, KCU 130, BG 53, FRU 39, RTQ 28, AMC 27, RXH 19, AIB 18, ETO 18, OE 18, QUO 16, NMT 14, ZU 11, NWP 8, RDL 7, BLX 6, SKT 6, HNA 5, APS 2.

PACIFIC DIVISION

HAWAII — SCM, John R. Sanders, KH6RU — HARC continues to expand plans for the big Honolulu Convention scheduled for Aug. 15th. Plan now to be on hand! The Honolulu Mobile Club QSO Contest was won by W4RVX/M. KH6BN/M was runner-up. The newly-organized Windward Amateur Club meets in Kailua once a month. Active at the opening gun on 7-Mc. 'phone were YL, GG, IJ, AGB, and RU. The Honolulu clubs turned out in force to assist with the civil defense mock tidal wave drill "Eversharp II." AHQ, the Barbers Point Club, has a new 75A-3. W6UWL/KH6 traffics the mainland for the Service personnel at Kaneohe Air Station. KA8AB is building an s.s.b. rig. Try to get your reports to the SCM during the first week of the month, fellows. Most of them are reaching me too late for the publication deadline. Traffic: (Feb.) KA7LJ 831. (Jan.) KA2US 1584. (Dec.) KA7LJ 1862.

NEVADA — SCM, Ray T. Warner, W7JU — SEC: HJ. ECs: KOA, LGS, NWU, NRU, OXX, TJY, VO, and ZT. OPS: JUO. Nevada State frequencies are 3660 and 7225 kc. The Las Vegas-Boulder City hams keep their nightly party line going on ground-wave of 28.75 Mc NRU is newly-appointed EC for White Pine County PCH, of Elko, advises KOA is active in c.d. PEW is a new ham in Elko. A flood of protest letters from hams poured on the Legislators in Carson City after a bill was introduced which would nullify our ham license-plate bill. Hams throughout the State are concentrating their 40-meter 'phone activities on our old state net frequency of 7225 kc. DVJ, OBW, and JU are active on 2 meters. HJ has his new Viking II about ready for the smoke test. Nevada skeds for WAS continue to work out well, with KJQ working an FF8 and VP8 to make them WAS.

SANTA CLARA VALLEY — SCM, Roy I. Couzin, W6LZL — The main topic in February was the license plate bills before the Senate and the Assembly at Sacramento. Post cards and letters to your respective Senators and Assemblymen will go a long way to impress upon the minds of the legislators that we are doing a public service. BJS was a recent visitor at SYW's shack. SYW now is AF6SYW. YHM's 4E27 is holding up very well with no TVI kicks yet. He has had his TCC appointment confirmed by 1NJM. WMM had a great time in the CD Party. SKX said "I do" and is moving to New York. NTQ put up the antenna described in November *RCA Ham Tips* and it's working fine 80 through 10. HC reports in with light traffic and a complaint of not enough days. MMG is working a little DX on the low end of 40 in the early morning hours. QIE has a pair of 4-65As fired up on 144 Mc. Antenna is two extended half-waves in phase. He also has a new 6-meter rig. AMH now is active on 160- and 75-meter 'phone. DPE now is active on 80- and 40-meter c.w. QYR/UYG is gathering, by devious means, empty frozen orange juice cans, to build a 60-foot vertical. AIT has 40 watts on and handles a little traffic. The NPEC had as guest speaker, at its first meeting, Mr. Sloan from FCC. At its second meeting the guest was Mr. John Reinartz, K6BJ, from Eimac. The SCCARA had as guest speaker Mr. John F. Honey, head of Communications

(*Continued on page 108*)

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Here's the "Ideal" xmtr you have been waiting for — The SONAR SRT-120 — designed by a ham — priced for the ham — and engineered for commercial performance. The SRT-120 band switches faster than many receivers — switch and tune the final — THAT'S ALL. Changing crystals or using the VFO is just as simple. Here is a rig that has real versatility — 120 watts cw or 100 watts phone (ccs rating) — fixed or mobile (separate cabinet available for permanent mounting in your car) — operate with the confidence that TVI suppression is excellent — compact in size (14 x 8½ x 8), six bands, with an extra provision for 160 or a CD assignment — complete meter switching from front panel — crystal or VFO — all you want in a medium powered rig — complete with all tubes: 12BV7 Osc. multi, 12BY7 Buffer multi, 9903/5984A straight thru final, 2-6CB6 speech, 12AT7 driver, PP 6L6GA class B mod., OA2-VR, 6AQ5 keying. Power required 6.3 VAC at 6A, up to 600 VDC at 350 ma. max. Also available for 12 volt operation.

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COMPARE AND YOU'LL INSIST ON SONAR.

Research Laboratory, Stanford University, who spoke on "The Good Side of Single Sideband Operation." Traffic: (Feb.) W6YHM 599, HC 19, MMG 16, AIT 3. (Jan.) W6AIT 12.

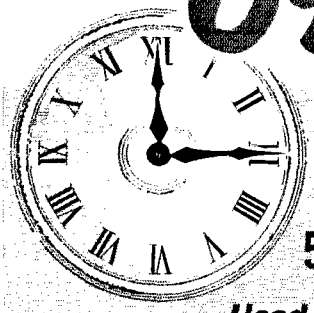
EAST BAY — SCM, Ray H. Cornell, W6JZ — Asst. SCMs: Guy Black, 6RLB, and Harry T. Cameron, 6RVC. SEC: WGM. RMs: IPW, JOH. RVC and WGM have swapped jobs. Harry has been plagued with illness in the family for a couple of years. He has done a swell job as SEC. Jay brings a lot of energy and experience to the AREC. The CCRC is revising rules for the Field Day award. Pacific Division clubs who are not members may compete. Write to ZBS for details. SARO is a new member of CCRC. The Club had its first hidden transmitter hunt of the year in March, with UHM hiding the rig. The Skyriders Club met at NCL's QTH in February with a good turnout. NXH, PSL, HWV, MMK, and 4YFU/6 were visitors. The Club's Net meets every Wed. at 2000 on 28,560 kc. with everyone, including *you*, invited to QNI. HNX heads the TVI Committee for NBARA. JDO is new Field Day chairman. F. D. exercises will be held on Mud Flat from Dutton's Landing. ZZF is communications chairman for Vallejo Red Cross. AFC and ZHU are checking in on the 6-meter C.D. Net. WXU is on 75 and 20 meters from Sonoma. LIL holds new OPS appointment. YDI renewed ORS appointment. MXQ is heard on 40-meter 'phone. So. Alameda Co. c.d. is holding regular drills every other Tues. evening with an ideal set-up but needs help. If you can copy c.w. 20 to 25 w.p.m. on a mill solid, or can handle TTY at 40 w.p.m., or you just want to help by running messages or handling the telephone, call LO 2-1803 and tell Bob Shrader you are available. DUB is on 40 with T2FD antenna. TT has the contest gleam in his eye again. PB is eyeing the DX Club trophy for high 'phone and c.w. scores. Among those heard at the opening of 40-meter 'phone were LDD, TT, GIZ, and PYH. PYH scored 49,000 points in the 'phone DX contest but VVZ shaded him with 58,000 points. ELW is doing an FB job on the TVI committee. TI has TVI on the run. PSV moved to new QTH. PWR is on the East Coast on business. ØCPJ, now in Berkeley, specializes in 2 meters and hi-fi. VNH answered the draft call. JHV is attending College of S. F. JEE is active in Presidio Radio Club. GGC and the XYL enjoyed Yosemite trip in February. BMY beat out CTH at Mobileer's Field Trial Feb. 22nd. K6AY is mobile expert for PT & T. QT has been making real fast time to the snow country, according to the California State Highway Patrol. CX has printed a swell Mobileer's Call Book. Traffic: W6IPW 265, JOH 172, HHX 65.

SAN FRANCISCO — SCM, R. F. Czeikowitz, W6ATO — JU 7-5561. SEC: 6NL. PL 5-6457. *Eureka Area*: EC: SLX. Again this month GQY makes BPL with a traffic total of 518. Thanks to CWR for the following news: EQQ and AEY have new shacks. PKJ and BWV are working 75-meter 'phone, while KTV works 80-meter c.w. ZSE, FYY, BME, and SLX are busy with EC work. LE has his 10-over-20 beam up. TEX has a Globe Scout running 50 watts to a folded dipole. TJA is using a long wire, and BJO has a quarter-wave for 80 (vertical?). WN6PYL has requested a Conditional Class exam and has ordered an Eldico TR1. JTD is building a new 10-meter beam. Television is due in Eureka in October. The Humboldt Amateur Radio Club meets the 2nd and 4th Fri. in the YMCA rooms, Municipal Auditorium, entrance on "E" St., Eureka. *Marin Area*: EC: KNZ. Tamalpais Club EC: ZUB. Congratulations to the newly-elected officers of the Marin Radio Club, BKH, pres.; TIJ, vice-pres.; Stan Schlobaum, secy.; and RQT, treas. Attendance is increasing, and four new members have been added. The Club participated in the c.d. drill, LUM and BKH working with the local Corte Madera authorities. All are welcomed to the AREC net Sun. mornings at 1030 on 3900 kc. The Marin Radio Club meets the second Fri. in the American Legion Hall, Larkspur. The Tamalpais Radio Club meets the 3rd Fri. at the home of OZC, 7 Loma Ave., Tiburon. *San Francisco Area*: EC: BYS. BIP, an ORS, has again moved back to San Francisco and resides at 726 Holyoke St. Congratulations to Nick Chames on his new call, KN6ACN. HJP, Major Art Monsees, USAF, reports from Germany that he is knocking off DX from Western Germany under the call DL4AY. His equipment is a Collins 32V-3, a 75A-2 receiver, and a "V" beam antenna which, and I quote, "of course, is oriented for San Francisco." The SFRC had the pleasure of hearing an extremely interesting talk by Mr. Lee of the Stanford Research Institute on "Miniaturization, and Automatic Manufacturing of Printed Circuits and Components." The San Francisco Naval Shipyard Radio Club has provided an interesting history of the SFNSYRC, from which the following highlights are taken: Organized in 1946, it is thought to be the first all-civilian radio club within the Naval establishment. CXO, the National Red Cross station, is licensed to this club, as well as SFT, which is actually located within the Navy Yard, on the 8th floor of Building 231. Complete facilities are in operation for teaching theory and code, as well as station operation, two nights each week, with BYS as head instructor. Membership is restricted to those who work in the Naval Shipyard. Equipment at SFT includes, in part, a BC-610, an ART-13, BC-640 and TCS

(*Continued on page 104*)

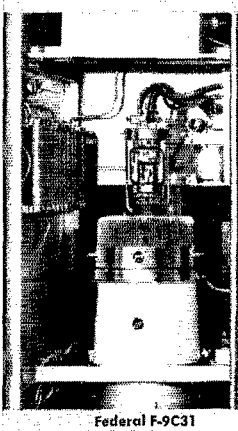
CANADIAN BROADCASTING CORPORATION NOW AT...

69,000 HOURS



WITH 3 *Federal* 50 KW POWER TRIODES

Used in 18-Hour Daily Runs!



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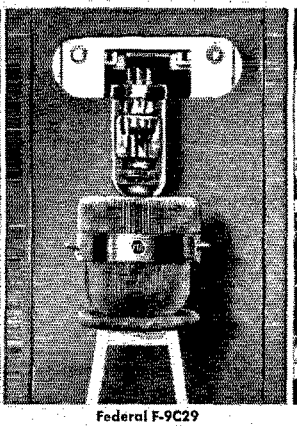

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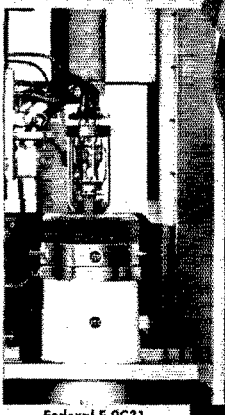
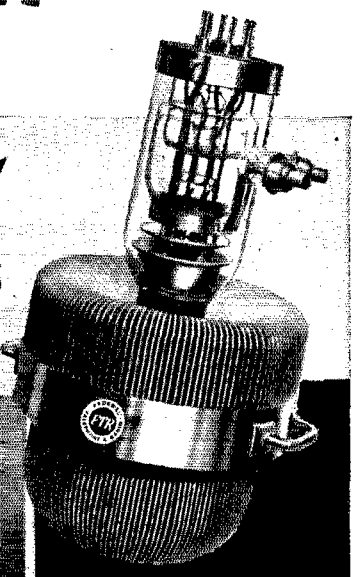


Federal F-9C31
25,629 HOURS
Still in Service



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Behind the long performance of these 3 tubes is Federal's pioneering in the *multi-strand thoriated tungsten filament,* which permits hairpins to expand *individually* . . . eliminates stresses which might be conducive to filament warping.

Cathodes of this type provide lower operating temperatures . . . keep components cooler, more durable. Because *less* filament power is consumed, tube life is *longer* . . . operating costs are *lower.* The power saved per-tube-per-year equals the price of a *new* tube!

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transmitters, Super-pro and BC-342 receivers, and code training school facilities. The San Francisco Radio Club meets the 4th Fri. at 71 Lakeshore Plaza, opposite 34th Av. and Sloat. The Highfrequency Amateur Mobile Society meets the 2nd Fri. at the Red Cross Bldg., 1625 Van Ness Ave. *Santa Rosa Area*: EC: LOU. The SCRA meets the first Wed. in the Board of Supervisors Room. County Court House, Santa Rosa. Traffic: W6GQY 518, GCV 52, ATO 9.

SACRAMENTO VALLEY — Acting SCM, Willie van de Kamp, W6CKV — New officers of the Mt. Shasta Amateur Radio Club are KFI, pres.; FXI, vice-pres.; WN6NQA, treas.; WN6SOP, secy.; HRF, custodian. ARR has been appointed EC. MTN will hold a roundup in Mt. Shasta June 27–28. OOP moved to Yreka. New officers of the Shasta Co. Radio Club of Redding are SXF, pres.; KTF, vice-pres.; OJB, secy.-treas. AVZ has been appointed OBS. JDN is trying for commercial tickets. TSR is building all-band portable. WN6PZG reports in. Traffic: W6JDN 25.

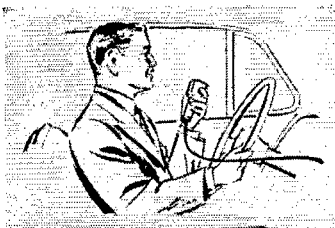
ROANOKE DIVISION

NORTH CAROLINA — SCM, J. C. Geaslen, W4DLX — SGD, at Fuquay Springs, is all decked out with a new 75A-1 Collins receiver and reports she has worked 100 YLs for YLCC, but is sweating out confirmations on a few. YN, from Wrightsville Beach, is on 75 meters from new QTH. Congratulations to NGO Murphy, DPF Asheville, and CPK Brevard, and all the gang in the area for their work during the ice storm. The SCM would like to take this opportunity to express his views on the subject of the new regulations. We have them and must learn to live with them. We amateurs of a greater number of years of experience and knowledge have a duty to perform. If we, in our hobby, as in all other walks of life, cannot pass on to the coming generation what we have learned, we have failed to justify our very existence. Just building a rig or receiver for them teaches them little or nothing. By helping them to learn to use formulas and methods of arriving at the answers to their problems we will be giving them something to use to work out future problems. Help guide their hands with tools and construction methods and they can take pride in the fact that they did it themselves, with just a little help. The sooner this is done, the quicker all signals and band conditions will improve for the enjoyment of us all. Traffic: W4AKC 236, RRH 113, PIC 70, BDU 42, SGD 30, DLX 20, QDA 6.

SOUTH CAROLINA — SCM, T. Hunter Wood, W4ANK — UTZ has a Viking I on 160 meters and is building a 250-watter. UFP has a Meissner 150B on from Hartsville and works the 20-watt rig from school in Columbia. UED has a Harvey-Wells TBS-50 on 160 meters. VJI is acquiring a 10-meter beam. SVZ is working out on 10 meters with his 4–20 with 35 watts input. WIL is a member of MARS. TTH is running 300 watts n.f.m. on 20- and 75-meter 'phone. FM finds reduced power is fun and eliminates his TVI. The Piedmont Amateur Radio Club, Spartanburg, now is an ARRL affiliated club. 1NMK is on 75 meters from Clemson. NTD is the new EC for Rock Hill and TTG is new Orangeburg County EC. UFP is an Official Relay Station. 4DCE/KG6 now is KG6AEP and is looking for the South Carolina gang on 14 Mc. and 7-Mc. 'phone and c.w. from Guam. Capt. Countryman, 3HH, has been transferred to Charleston. Cdr. Cook, 3MVO, now is located in Charleston. Another attempt is being made under the leadership of HWZ to obtain South Carolina license plates. The increased outlets on the S. C. nets will provide better emergency preparation. Register your station for emergency use with your EC or the SEC, DX. Traffic: W4ANK 775, FM 5.

VIRGINIA — SCM, H. Edgar Lindauer, W4FF — We mourn the loss of TE to the fraternity of Silent Keys. For the first time in Virginia's history three stations SHJ, KRR, and JOT made BPL in one month and contributed to more than half of the all-time traffic total of 3141. The "esprit de corps," the main and basic reason for these accomplishments has been amply expressed by SHJ and I quote, "In paging through the past six months net reports . . . Virginia has been leading in attendance in 4RN since Aug. 1952; 4RN was 100 percent QNI in EAN during Sept. and Dec. 1952 and again in Jan. '53. (This is notable as it has been over a year since 4RN has maintained such a record.) The fine support given the 4RN mainstays AKC (N.C.) and ANK (S.C.) by Virginians IJK, NF, TVI, UHG, UWS, MWH and others is largely responsible. Turnout of this section is always amazing. Last CD (c.w.) 45 high scores listed 8 Virginians. This is roughly 18 per cent. 'Phone contest reflected similar comparisons. Percentage-wise per ham capita I doubt if any section can top us in SS, DX, CD, or other contests QNI. We sure have a bang-up organization here and I'm proud to be a part of it." New members of VFN are STY, TGD, WAB, LNX, POB, and ZBU. VFN now meets at 7 P.M. PARC officers are VEP, pres.; MT, vice-pres.; UHG, secy.; UM, treas. N4WDY, sgt. at arms. YHD/1 is president of Mass. Inst. of Tech. Radio Club operating at W1MX, also QNI from Leesburg. PVRC officers are NTZ, pres.; 3JTC, vice-pres.; NF, secy.; WBC, treas. ESK looks like the W/VE

(*Continued on page 106*)



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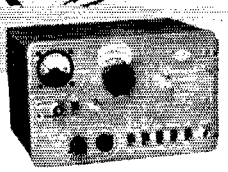


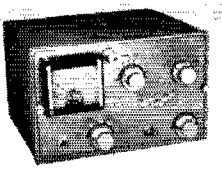
Gonset 3016 "Commander"

All-band phone-CW xmitter for under-dash mount. Covers 1.7 to 54 mc continuously. With plug-in coils for 80, 75, 40, 20, 15 and 11-10 meters. Up to 50 watts input on CW, 35 watts on phone. Complete with tubes and 2 plug-in coils; less crystal, mike and key. Requires 300 v. DC at 200-225 ma and 6.3 v. at 3.15 amps. Shpg. wt., 8 lbs.
98-041. Net.....**$124.50**

VFO 3020 Tuning Head for VFO control on 75, 20, 15 and 10 meters. Shpg. wt., 3 lbs.
98-042. Net.....**$29.95**

"Super-Six" Converter

Covers 75, 40, 20, 15, 11-10 meters, and 19 and 49 meter bands. For use with any 1430 kc receiver. Supplied complete with tubes. Shpg. wt., 5 lbs.
84-913. Net.....**$52.50**



Babcock MT-5A D-X Mitter

Deluxe mobile transmitter; 2 ranges, 3.5-7.3 mc, 14.0-30 mc; covers 80, 40, 20, 15, 11-10 meters. Choice of 4 crystals, 2 in each range. Easily modified for CW. 35 watts input with power supply below. Use with single-button carbon mike. Requires 425 v. DC at 250 ma., 6 v. at 2.75 amps. With tubes; less mike and crystals. Shpg. wt., 12 lbs.
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PS-4A Mobile Power Supply. Operates from 6 v. DC. Shpg. wt., 15 lbs.
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LS-1 2-Band Antenna Tuner. Use with 8-ft. whips. Easily pre-tuned for 10 and 75 meters. Built-in 6 v. relay selects proper section of tuning unit. Shpg. wt., 7 lbs.
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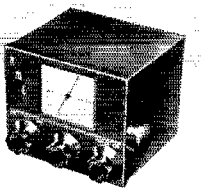

RME MC-55 Converter

5-band coverage: 10-11, 15, 20, 40, 80 and 75 meters. High sensitivity; 3-gang tuning; noise limiter; 4 tuned circuits in IF output. Complete with tubes, cables, underdash brackets. Requires 150-250 v. DC at 30 ma and 6.3 v. at .92 amps. Shpg. wt., 6 lbs.
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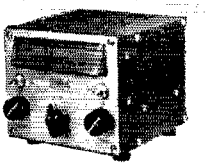
RME MC-53 Converter

Similar to above, but covers 2, 6 and 10-11 meters. Complete with tubes. Shpg. wt., 6 lbs.
98-031. Net.....**$66.60**



Sonar MR-4 Receiver

Ideal compact mobile set covering 3.5-4.0 mc, 7-7.3 mc and 14-14.4 mc (80, 75, 40 and 20 meters). Unusual sensitivity, 1 mv for 1½ watt of audio; ANL; BFO for single sideband reception; temperature-compensated oscillator; edge-lighted dial. Very rugged construction. Requires 200-300 v. at 60-100ma and 6.3 v. at 2.4 amps. Coax antenna input. Complete with tube and universal mounting bracket. Shpg. wt., 6 lbs.
98-783. Net.....**$89.95**

MOBILE ACCESSORIES

Dow Coax Relays for coax antenna changeover. Handle up to 1000 watts. Simultaneously operates external SPDT switch (below) for opening receiver B+ when transmitting.
75-798, for 110 v. AC, **$10.50. 75-797,** for 6 v. DC, **$9.50**
75-799. SPDT Switch. Actuated by relay.....**$1.00**

Electro-Voice Carbon Mike. Response 100-4000 cps. Output, −50 db. With 5-ft. cable. **99-587**.....**$9.70**

Johnson Viking Mobile Kit

Up to 60 watts input on 75, 20 and 10 meters. Complete bandswitching; gang tuning; 4-position crystal selector, additional position for external VFO; output matches 52-ohm coax. For use with any type mike. Requires 600 v. DC at 200 ma, 6.3 v. at 3.75 amps. All parts and cabinet supplied; less tubes, crystals and mike. Shpg. wt., 16 lbs.
98-056. Net.....**$99.50**

Elmac A54 Xmitter

For mobile or fixed station. Up to 50 watts input, phone or CW. For 80, 75, 40, 20, 11-10 meters. VFO and Pierce crystal osc. Requires 6 v. at 4.5 amps, 500 v. DC at 225 ma. With tubes; less crystals and mike. Wt., 17½ lbs.
98-087. For carbon mike. Net.....**$143.00**
Model A54H. As above, but for use with crystal or dynamic mike. **98-088.** Net.....**$153.00**
PSA-500 Power Supply. Delivers 375 v. DC at 250 ma, 6.3 v. AC at 5 amps. For 115 v. 60c. AC. 19 lbs. **98-086**.....**$39.50**

Prompt Shipment from Stock!

FREE 236-Page Buying Guide

Refer to your ALLIED Catalog for everything in station gear. If you haven't a copy, ask for it today.

NEW AMATEUR EQUIPMENT RELEASES

Bud CPO-128 Codemaster

Serves as code practice oscillator, CW monitor and modulation monitor. Has built-in speaker; handles up to 20 headsets; any number of keys may be connected in parallel for group code instruction. As monitor connects to small RF pick-up loop adjacent to xmitter stage. For 110-120 v. AC or DC. Shpg. wt., 5 lbs.
73-044. Net.....**$14.19**
CPO-130 Codemaster. As above, but without built-in speaker. **73-045.** Net...**$12.94**

Gonset "Communicator"

Complete 2-meter Amateur phone station in one portable case—for battery or AC operation. Delivers 5 to 7 watts output on AM phone; receives with a highly sensitive superhet. Has 19" whip for receiving and xmitting. 10¼ x 9¼ x 7". Complete with tubes; less mike and 8 mc crystal. For 110-120 v. 50-60 c. AC or 6 v. DC. Wt., 24 lbs.
84-912. Net.....**$199.50**

Terms: the best in all Hamdom—ask for the details.

Trade-ins: we'll make you the kind of deals that are FB for you.

ORDER FROM ALLIED RADIO
833 W. Jackson Blvd., Chicago 7, Ill.

winner in the 'phone DX Contest with 202,000 points. KRR is pinch-hitting for KFC as NCS. RVO now is 3USW. Don't forget the QSO Party May 10th. See you there. Traffic: W4SHJ 563, KRR 550, JOT 518, UWS 281, FV 201, KFC 153, GR 110, PYN 100, KX 81, MWH 77, JAQ 71, FF 70, KRX 46, NV 43, UHG 36, VQZ 34, JAU 29, KSW 24, AKN 20, PWX 20, CFV 17, OWV 17, RJW 14, TYC 12, GQL 16, LW 9, LK 8, IYI 7, WAB 6, JUJ 4, WBC 4, YHD/1 4, SPE 2.

FOURTH ANNUAL VIRGINIA QSO PARTY MAY 10TH

A QSO party, open to all Virginia hams, will be held between the hours of 1:00 P.M. and 9:00 P.M. EST, Sunday, May 10, 1953. Every licensed amateur in Virginia is urged to participate, if only for a few QSOs, in this affair!

Bands: 3.5 Mc., 7 Mc., 28 Mc. No power limit, or mode restrictions in this get-together. Objective will be to contact as many fellow Virginians in as many different Virginia counties as possible during the eight-hour period, exchanging certain information with each station worked. Stations may be worked only once on each band (regardless of mode used) but they may be worked again on a different amateur band.

Contest call is "CQ Virginia" on 'phone, "CQ VA" on c.w.

Information to be exchanged in each QSO is to consist of the following items: 1. Number of QSO (in the party). 2. Your call. 3. Your RS or RST report to station worked. 4. Your county. 5. Your name or nickname. For example . . . W4FF might send the following message on his third QSO in the party: "NR 3 W4FF 589X FAIRFAX LINDY."

SCORING: Each message sent counts 1 point and each one received, 1 point. Two points, therefore, are possible from each QSO. Multiply total number of QSO points by number of different Virginia counties contacted in course of party for final score.

The following frequencies are suggested as rallying points during this affair: 3550-3600 kc.; vicinity 3680 kc. (VN frequency); vicinity 3835 kc. (VFN frequency); 3900-3950 kc.; 7050-7100 kc.; 28,800 to 29,000 kc. (c.w. and 'phone). Use the v.h.f.s., too! Mobiles have a chance to shine!

There will be prizes for winners. All Virginia hams, except SCM and members of the contest committee on awards, are eligible for awards. All logs should be mailed to SCM before June 1st. Send in your log whether you have one QSO or a dozen! Scores will be announced in the Virginia Net bulletin (a copy to each participant submitting a log) and the winners in *QST*.

WEST VIRGINIA — SCM, John T. Steele, W8MCR — 3AAX visited with GEC and EVR. CCF, PQQ, EUZ, JHG, ZJS, GEC, and EVR met with members of the State Legislature trying to get support for a bill to authorize issuance of call letter license plates. Result — the plea went into committee but the amateurs were advised they have to purchase their own stencils. All interested get in touch with EVR at Belle, W. Va. YPR, our SEC, advises that complete copies of the proposed c.d. plan for our State will be mailed to any individuals or clubs who send him their addresses. PQQ worked 39 countries and WAC on 80-meter c.w. in 2½ weeks. He got TA3AA for his Asian contact HZA also reports a nice batch of DX on 80 meters. GEC has his new rig going on c.w. with a brand-new Sonar VFO in the front end. VCA is rebuilding. ETF is bury chasing Indians. The traffic total for the 'phone net was 112; for the c.w. net 93. Traffic: W8AUJ 861, HZA 40, GEP 32, ETF 26, DFC 12, GGC 8.

ROCKY MOUNTAIN DIVISION

COLORADO — SCM, Karl Brueggeman, WØCDX — SEC: KHQ. The Darnet has had some very nice drills in the last month using the new 2-meter portable equipment. The Net still needs operators and since Novices can operate the 2-meter equipment, it would be good experience in case of an emergency. KHQ had a lot of trouble with his rig and finally found the cause. It was a couple of unsoldered connections. Hi. Don't forget the Rocky Mountain QSO Party that will take place on May 16th and 17th. CVP has a new super mobile rig and ICX has a new Globe Champion on 10 and 160 meters. RCU, temporary chairman of the Colorado Springs TVI Committee, is the subject of two TVI complaints. EYN has a new all-band mobile. CVP discussed the antennascope and antenna problems at the El Paso Radio Club meeting in February. LCE finally got his new 160-meter antenna working. WLN is the new president of the Denver Radio Club replacing IC, who resigned to become our Rocky Mountain Director. Congratulations

(*Continued on page 108*)

HARVEY HAS THE MOST COMPLETE STOCK OF MOBILE GEAR

25th ANNIVERSARY YEAR

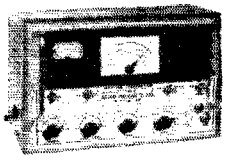
The New **ELMAC PMR 6-A**

Portable Mobile Receiver

A complete 10-tube dual conversion, communications receiver. Provides coverage of 6 bands from 10 to 80 meters as well as broadcast and 160 meter band.

Dimensions: 4½" high, 6" wide, 8½" deep. Weight: 6½ lbs.

Complete with tubes.....$134.50
(less power supply)



ELMAC A54

Under-dash Mobile Xmtr.

Measures: 7½" x 7½" x 12"
Weighs: 14½ lbs.

Covers 10, 20, 40 and 75 meter bands.

For Carbon Mike Input $139.00
For Dynamic or Crystal Mike, 149.00
Power Supply, 110 volts AC, 39.50

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Harvey Carries Complete Stocks for Immediate 'Off-the-Shelf' Delivery

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SINGLE SIDEBAND EQUIPMENT
By Central Electronics, Eldico, Millen and others.

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All makes and types
TRANSISTORS, GERMANIUM DIODES, SUBMINIATURE TUBES
ETC.

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SPRAGUE NON-INDUCTIVE RESISTORS
For Rhombic Antenna Termination, and other applications:

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CAMBRIDGE THERMIONIC COILS

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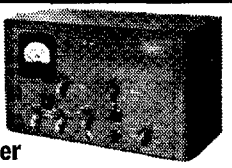
Brand New Model 425
WESTON RF AMMETER
3½ dial, non-glare glass.
Range: From 0 to 2.5 mps.
Special $8.95

A HARVEY SPECIAL
#7 Stranded Wire

Heavy Duty Rubber Covered — Tinned. Ideal for Hooking Up Mobile Supplies. 50-foot lengths.....each $4.95

NOTE: In view of the rapidly changing *market conditions, all prices shown are* subject to change without notice and are Net, F. O. B., New York City.



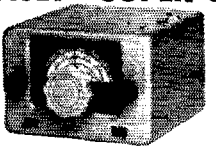
SONAR Model SRT-120 Transmitter

For mobile and fixed location operation. Has band-switch for 80, 75, 40, 20, 15, and 10 or 11 meters, plus spare position for any future band. Has provision for two crystals or external VFO head. Final amplifier *employs the new Amperex 9903/5894A* tube. Power input is 120 watts on CW, and 100 watts on phone. All circuits metered. Power requirements: 600 volts dc at 350 ma, and 6.3 volts at 6 A.

Complete with Tubes.....$198.50
External VFO Head..... 19.50

SONAR MR-4 Receiver.....$89.95

GONSET "SUPER 6"



Six Band Amateur Converter

A compact converter covering 10, 11, 15, 20, 40, and 75 meter phone bands. Also covers 6 mc. (49 meter) and 15 mc. (19 meter) short wave broadcast bands. Uses 6CB6 low noise rf stage, with panel controlled antenna trimmer, 6AT6 triode mixer, 6C4 modified Clapp oscillator, and 6BH6 IF stage.

Complete with Tubes.....$52.50

GONSET "COMMUNICATOR"

A complete two-way station for 2 meter band operation. Suitable for mobile or fixed location use. Receiver is a sensitive superheterodyne with built-in noise clipper circuit and 6BQ7 Cascode rf stage. Transmitter uses 2E26 in final 15 watts input. Employs 8 mc. crystals for stability, and has a range of over 100 miles. Operates on either 110 volts AC or 6 volts DC. Weight approx. 16 pounds.

Complete with Tubes (less crystal *and microphone)* $199.50

Also available for commercial or airport Unicom applications.

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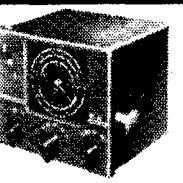
The New Model MC-55



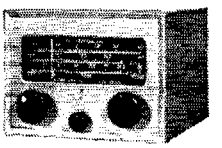
RME MOBILE CONVERTER

Covers all ham bands from 10 through 80 meters in five ranges. Sensitivity on all bands is 1.25 microvolts. Operates with antenna input impedance of either 50 or 72 ohms. Separate input connector permits use of regular antenna when control knob is in position for broadcast reception. Requires only 150-180 volts at 25 ma. Four tuned circuits in i.f. output stage provides high signal-to-noise ratio. Output frequency is 1550 Kc.

Complete with Tubes (less power supply)..... **$69.50**

MORROW CONVERTERS

The latest in Mobile Converter ... Easy to operate ... Sturdy construction for long, trouble-free service.



Model 5BR
For 10, 11, 15, 20, 40, 75, and 80 meters. **$74.95**

Model 3BR
for 10, 20, and 75 meters..... **$64.95**

The New VFO
for your Harvey-Welles Bandmaster

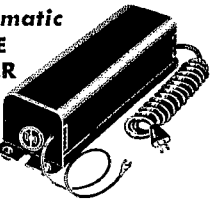
Fully efficient on all bands occupies no extra space. **$47.50**

HARVEY-WELLS Bandmaster Model TBS50

Senior Model.....$111.50
Deluxe Model..... 137.50

G.E. *Automatic* VOLTAGE STABILIZER

SPECIAL $ 8.95



Provides constant 115-volt output with an input variation of from 95 to 130 volts. Stabilization is held within 1%. Rating is 30 vA, 60 cycles.

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to FKY on his appointment as OES and to LCE on his as OBS. CYT had a bad accident with his mobile and is off the air getting the old bus back in shape. BON has a new Elmac and a new car to go with it. The plans for the coming convention at Estes Park are shaping up and this one promises to be the best yet. See you there. Traffic: WØKHQ 777, EKQ 417, LCE 1.

UTAH — SCM, Floyd L. Hinshaw, W7UTM — WN7-RNW is a new Supporting member of the AREC in Ogden. JPN and JOE gave an interesting demonstration of single sideband technique at the February meeting of the UARC in Salt Lake City. Novice SPD has a new Viking II and is running the limit. UTM has a new hetrodyne exciter — results, *no chirp!* RCP is new EC for the Cedar City Area. There are openings in all League appointments in this section, and it is hoped more of you will send in your requests. Traffic: W7UTM 273.

ROCKY MOUNTAIN DIVISION QSO PARTY

All amateurs in the Rocky Mountain Division and surrounding states are cordially invited to take part in the First Annual QSO Party for the purpose of making and renewing acquaintances and of publicizing the Division convention to be held at Elkhorn Lodge, Estes Park, Colorado, June 20 and 21, 1953.

Rules: 1. *Time and dates:* Begins 0800 MST May 16th; ends 2300 MST, May 17, 1953. 2. *Where:* All bands. Suggested gathering places: C.W. 3690-3710, 7170-7180 kc.; 'Phone, 3880-3900, 7240-7260 kc. Use other bands, too. 3. *General call:* C.w., "CQ RMD"; 'Phone, "CQ Rocky Mountain Division." 4. *Contacts Permitted.* You may work for credit the same station once on each amateur band, i.e. one contact credit will be given for a QSO anywhere in the band 3500-4000 kc., either 'phone or c.w., and one contact credit for QSO in the band 7000-7300, etc. No cross-band QSOs will be counted. 5. *Exchange:* Each party to a contact will give his name, location and whether registered at the convention ("yes," if registered, "no," if not). 6. *Scoring:* Score 1 point for complete information sent and 1 point for complete information received, a total of 2 points for each complete contact. 7. *Reports:* Logs must show time, date of QSO, call of station worked and information received. Total your score, give your name, location and whether registered at convention, and mail to your SCM (see page 6 of this *QST* for address) postmarked not later than May 24, 1953. 8. *Prizes:* First, free de luxe treatment at convention for one person, registration, meals and room with bath; second, free registration and meals for one person; third, free registration for one person.

Send your convention registrations to W. M. Reed, WØWRO, 1355 East Amherst Circle, Denver 10, Colorado.

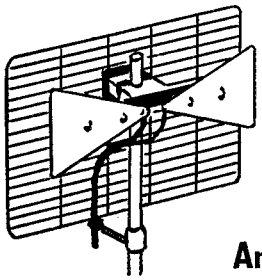
SOUTHEASTERN DIVISION

ALABAMA — SCM, Dr. Arthur W. Woods, W4GJW — TKL reports that in Huntsville LHW, NKX, BPL/4, and RQS/4 are mobile on 75 meters. Huntsville 'phone frequency is 3825 kc. RNX has received OBS appointment. DXB answers AENP regularly using a Command transmitter but is building a 150-watt rig. May 31st is the date of the Hamfest in Mobile, Ala. GCZ has new 500-watter and NC-183D. VCC, AXU, and OKJ are on 144 Mc. in Oneonta. WOF and TKL are on 144 Mc. in Huntsville. QAT has new 350-watt rig. VDK and VDL, who are visually handicapped, operate a husband-and-wife ham team using a Viking and a 183D. UCK claims to have an all-band, 100-watt mobile rig! The Birmingham Mobile Emergency Net continues strong and reliable, with all sections of the city well covered by the new 100-watt rig at TRM in the City Hall with a ground plane atop the penthouse 12 stories high. FSW reports a new flurry of TVI complaints when one station moved from Channel 4 to 6. GJW has new Super Six working into a Motorola P69-18 in the Olds. All are requested to investigate possibilities of using 160 meters for mobile operations now that QRM has become so insuperable on 75 meters.

EASTERN FLORIDA — SCM, John W. Hollister, jr., W4FWZ — February was a month of big fair traffic but very few reports were received from the gang. A regional CDC meeting was held for three days in Jacksonville on communications. RACES was taken apart by FWZ for the purpose of getting the idea over to use the ECs as Radio Officers. BPL for February was made by our regulars, DRD and PJU. If you haven't sent me information on your CDC connections, please do so. Daytona: RWM was appointed head of local civil defense. Jacksonville: UHY is getting c.d. field rig building program under way a la Detroit

(*Continued on page 110*)

RADIO SHACK IS READY FOR UHF ... are you?

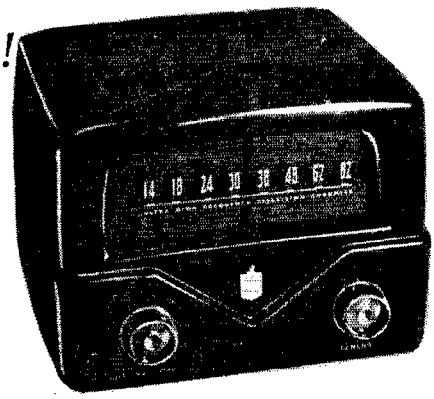


PROVEN IN USE!

NEW! For UHF

Amphenol BO-TY Antenna

New uni-directional ALL-CHANNEL UHF antenna provides high gain on all the UHF channels. Designed by the same reliable Amphenol engineers who originated the famous Inline VHF antenna. Sturdy screen reflector improves directivity and overcomes multi-path reflections. Easily installed; may be stacked for additional gain in fringe areas. List $7.75.
Order No. 29-062Q .....Net price $4.56
Amphenol TUBULAR twinlead — best for UHF!
Order No. 30-334Q .....100 ft. $4.88



MALLORY UHF CONVERTER

Field tested and approved by experts as the ONE converter for VHF-TV sets that's *really* first rate. No complicated wiring — plug in power line and antenna leads and you're ready for UHF without disturbing your present VHF-TV reception. One knob tuning with the incomparable Mallory Inductuner. Mahogany plastic cabinet 9 x 7 x 6¾". Ship. wt. 7½ lbs. List price $42.95. WE ARE DELIVERING NOW!
Order No. 36-480F.....Net $31.88

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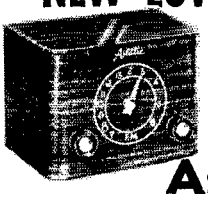
WITH SUPERIOR INSULATING CHARACTERISTICS

16-307Q	☐ CLEAR PLASTIC
16-305Q	☐ CHROME ALUMINUM
16-306Q	☐ GOLD LEAF
16-301Q	☐ CHINESE RED
16-303Q	☐ ROYAL BLUE
16-302Q	☐ BRIGHT GREEN
16-304Q	☐ LEMON YELLOW
16-308Q	☐ PURE BLACK
16-300Q	☐ PURE WHITE
16-309Q	☐ PURE GRAY

PLASTIC OR ALUMINUM $1.11 ENAMELS $1.23

Spray painting at its best and cheapest! No brushes, mixing or messy storage problems. Perfect for chassis, antennas, shacks, shops, all home uses! Each can has built-in mixer. Just shake and spray! Test laboratory found this superior to other famous brands in insulating characteristics! Immediate delivery! Please order by number.

NEW LOWER PRICE!



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$9.95

Astatic BT-1 TV-FM BOOSTER

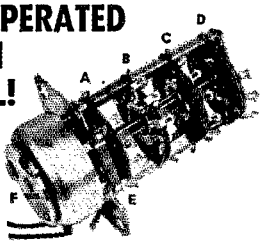
and R9er-type 2 meter PRESELECTOR!

Brand new, in factory sealed cartons, the BT-1 carries a $29.95 list price. Tops for TV and FM, it also makes a fine preselector for the amateur 2 meter band and all transport, marine, air, taxi, gov't stations within its continuous tuning range of 52-216 mcs. Built-in power supply, Mallory inductuner, 6AK5 tube. Either 72 or 300 ohms in and out. 4¾ x 6⅜ x 4¾". Ship wt. 5 lbs.
No. 36-601Q .....Sale price $9.95

AMAZING SOLENOID-OPERATED MULTI-WAFER SWITCH FOR REMOTE CONTROL!

REG. $7.25 **$3.95**

PARTICULARLY APPLICABLE TO MOBILE EQUIPMENT



6V DC multi-circuit wafer switch literally obsoletes manual switching. Either stepping or rotary selective action. Control wafers A, B and C are 1 pole 6 position; wafer D is DPST. Resistance ½ ohm DC. 25 degree rotary stroke requires 6V DC @ 10 A for .03 sec. 4½ x 2½ x 2½". Shipping wt. 1 lb. Pictorial schematics included.
Order No. RQ-4519 .....$3.95

WHEN ORDERING, enclose enough to cover postage. Any overpayment will be promptly refunded. COD orders (minimum $4.00) must include 20% down payment.

"HAM" WANTED! Full time opportunity with the largest firm of its kind in the East. Good future for CORRESPONDENT to answer queries from other amateurs. Must be licensed, and able to type neat, understandable letters. Send your application to Mr. R. E. Lewis.

RADIO SHACK

CORPORATION

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model. UHE is using a TCS-8 on his 38-ft. cruiser. Jacksonville F.D. headquarters will be the summer home of RTJ. Antenna poles are going up. ASR now is K6AAK. YO is running a gallon with HRO-60 to bring 'em in. SOX is working all bands with Viking. FJC reports DX on 20-meter c.w. and 'phone. RQN is skippering the MARS 'phone net that was under KJ's able hand. Miami: TYI cured his TVI and still is working on WAS. WN4WYR reports the following: The Pelican Net changed to Flamingo; MVR has been nominated as EC; the Flamingo Net Hamfest went over big with well over 107 having fun. St. Petersburg: HUY reports 6 new mobiles appeared in February. Sarasota: TFP wants propitch motor for beam and Asia for WAC plus Delaware for WAS. BU has been appointed Director of local c.d. USNR, on 72 Mc., provided communications for Sarasota Pageant Parade. LMT reports that FEPN handled 322 messages in February, 215 in January. Tampa: JFH, NCS for 3675-kc. net, uses Command gear with Windom antenna and is planning 833 s.s.b. Umatilla: AYV says if interested in 144 Mc., contact him. Nat skeds 2OQI/4 on 144. New ECs: Lakeland, VIE; Fort Lauderdale, LTG. Welcome to GU at Opa Locka with his 6146 into a Windom antenna. Traffic: W4PJU 848, FPC 453, PZT 329, DRD 314, LMT 150, WS 123, JFH 104, FWZ 103, KJ 41, TKD 26, RWM 22, TFP 8, IM 5, TVX 5, SVB 2, MLS 1.

WESTERN FLORIDA — SCM, Edward J. Collins, W4MS/RE — SEC: PLE. DAO is hot on 75. PJP/4, at Saufley Field, is putting out a mean kw. sig. UQZ tried 7-Mc. 'phone. UUF has Viking going FB and also works 144 Mc. HIZ is monitoring 144 Mc. PQW put up a vertical on 10 meters that increased the 10-meter range to mobiles plenty. HJA has to move all the gear to a new Chevvy. UTB is trying loops for locating hidden transmitters. VCB reports WAS on 20- and 40-meter c.w. KG6ADX's dad passed his Novice Class exam. WN4UYS is going up for General Class license. WN4YFF has new HRO-50T1. SZH has forsaken all but 75 meters. VMV has put in an appearance with 500 watts on 20 meters. RKH keeps the gang posted on EARS activities. UXW is still around and we retract last month's transfer notice. OMN handled the Governors-to-President Relay message from Tallahassee. OWN sticks to 40-meter c.w. VR sticks with c.w. even though he works in a b.c. station. BKD looks at Peek-a-boo box. PAA joined the 75-meter gang. RZV is Net Control for the Dagwood Net which meets every A.M. on 3935 kc. PTK-TTM are heard on 75 meters. NOX-NYZ have been heard on 40-meter 'phone. 9CGO/4 has moved to Ft. Barrancas, Fla. MS is working 20 meters and experimenting with ham TV. There now are 43 members of the American Amateur Television Society for the promotion of ham TV. Traffic: W4RZV 55, MS 8.

GEORGIA — SCM, James P. Born, jr., W4ZD — The Kinnohoochee Amateur Radio Club's Hamfest will be held May 31st at Lithia Springs, Ga. A Johnson Viking II will be given to some lucky attendant. EGK was guest speaker at the Confederate Signal Corps March meeting and made an interesting talk and gave a demonstration on single sideband receiving and transmitting equipment. The Confederate Signal Corps has formed a c.w. Novice net which meets at 0830 EST on Sun. and 2000 EST on Wed. on 3735 kc. WIX is NCS and requests that Novice stations interested send him a radiogram or drop a card to P.O. Box 691, Municipal Airport Branch, Atlanta, Ga. We are saddened to learn of the death of TNT. He was active in club and net activities in Atlanta and Griffin and his passing was deeply felt by all of us. DV has a new Collins 32V-3 and is active on 7-Mc. 'phone. YNT is a new ham in Augusta and has a TBS-50 on all bands. K4WAR has rebuilt his 28-Mc. beam which was damaged by high winds. WKP has a 65-foot windmill tower with a new 28- and 14-Mc. beam, also new antennas for 7 and 3.85 Mc. WKP has organized a Junk Collectors' Club which meets once a month at his home. Avoid loss of appointments, check your expiration date now. Traffic: W4USA 1366, K4WAR 1196, W4ACH 47, FBH 34, ZD 29, MA 26, OPE 4.

WEST INDIES — SCM, William Werner, KP4DJ — SEC: KP4HZ. CP, our OBS, cut down his transmissions from daily to every other day on 3925 kc. at 7 P.M. MV, an old-timer, is back on with ART-13. FAA, MARS at Ramey, is changed to FAC. BR is back on after a long absence. 4X4CR, of Haifa, Israel, was a guest at the PRARC meeting. VP6SD visited us while on the way to Canada. W6DFY, of Los Angeles, is vacationing in KP4. KD repaired speech amplifier. PW, MS, RA, and DJ are a committee assisting the Senators to push the call-letter license-plate bill. CB and CX attended the IRE Convention. RC blew modulator and now is hot on c.w. RC and CX are planning s.s.s.c. for 75. DJ proved to himself that dipoles have zero radiation off ends. DV is busy with ground wave and hamfest arrangements. MS vacationed at Lake Coanillas. RA made a short trip to Washington and New York. RD is active on 75-meter 'phone using a Globe King. WP4RE now is KP4RE. CO2AM/CO2XX now is located permanently in KP4. NL, HZ's sister, is on 75 meters with V70D final. RA is prepared for TV with de-TVIed 32V-1. USA, WAB, FAC, UC, and CP meet the Armed Forces Amateur Radio Net daily at 4 P.M. on 3925 kc. KV4AA forwarded the GPR message via W3IL. Traffic: KP4DJ 3.

(*Continued on page 112*)

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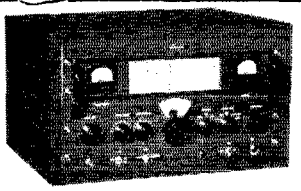

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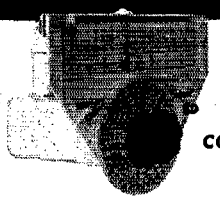

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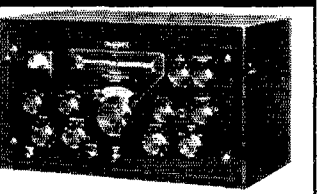

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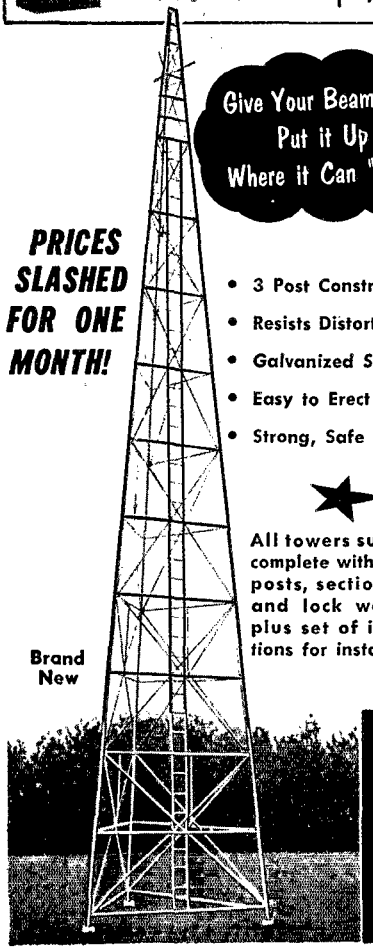

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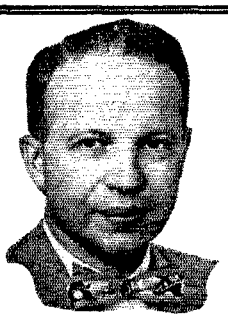
SOUTHWESTERN DIVISION

LOS ANGELES — Acting SCM, Howard C. Bellman, W6YVJ — Asst. SCM, William Coe, 6KWQ. PAM: QR. RMs: FMG, FYW, GJP, and JQB. Acting SEC, until an EC meeting is called, will be YVJ. I have nothing but a deep sense of gratitude to the many people who went out of their way to welcome the new SCM. Thanks especially to our Director, KW, and to the ex-SCM, ESR. The San Luis Obispo Amateur Radio Club is applying for ARRL affiliation, says LB, pres. My first official act was to return ORS and OBS appointments to WII. Other new appointees are NTN as EC for Pasadena, KWQ as Asst. SCM, and BMM as OES. ESR makes ORS, CNP is OO, Class III/IV, and WOO is OO Class IV. The L. A. Radio Club Council will run the convention. PIB sure is hot on license plates. NCA has a 30-w.p.m. sticker. WN6OBZ, a YL, is a potential teen-ager net victim. UGA will send Official Bulletins on 7250 kc. on the same sked as his old 3840-kc. transmissions. NJU has a new Viking II. He and KPM, ORS, HII, and NSV are planning for Field Day on Mt. Pacifico. OAY has 22 states now and Viking II and nice 7- and 21-Mc. DX. Speaking of DX, AM says preliminary tests tell that AM, plus HX, BXL, CUF, KPC, and QMC, had 102 country multipliers with a score of more than 100,000. CMN is back on the air. IHD is rewiring the rig sans TVI, he hopes. COZ reports CCD is headed for the Air Force, JMY is building, DGB has been bitten by the photography bug, the "Knucklehead" Picnic held at San Dimos Park Mar. 8th was a big success. QE's son was home from Europe for a visit. GAE has moved. EPL is Ad. Class. KYV wants the world to know his is a one-operator station. GJP has new business, new rig and new LSN net member, YVJ. Let's all report via radio. CK is doing a bang-up job as Official Observer. BHG operates all bands. CBO, YVJ, and SCR participated in the February Frequency Measuring Test. HKD likes a disc-cone antenna on 2 meters. FYW, a real regular, reports that MSG, Paso Robles, has 3 RTTY contacts. POD is back on the air. IWX, reporting for Region 9 C.D., says it is up 50 per cent over January. PMJ is a new club station in Reg. 9 C.D. Radio Council. PWZ seems too happy about moving to Florida. He'll be back. LYG serves tea and crumpets. DPL is a ripe 16. Oh, happy day! He is a good "man," OBS, ORS, CP 30 w.p.m., RCC, etc. BUK has rig on 80 meters. MU says 10 meters is in the hands of the embalmers. VRF says ZSL was picked as EC by the Antelope Valley Radio Club. A club is being formed at Lockheed. The name abbreviated is LARK. It has a potential of 600 members. MLZ, ex-president of NBARA and CCRC, is chairman. 4LMF flew in for a meeting. Novice 6TCO says N1RRA/F sends good code practice 8 to 10 P.M. Mon. through Thurs., 2096 kc. They will help you correct copy. Old kilowatt ESR has "alligators," not bugs, in the final. Sam will live near the beach. ZRZ is waiting for membership certificate to get OBS on 20 meters. HPV applied for Class III and IV Official Observer appointment. The Pacific Div. Bendix Av., Dev. Lab. boys are forming a club in Burbank. We sure hope PIB and his license-plate efforts are rewarded. Traffic: W6KYV 2314, GYH 482, K6FAJ 371, W6PWZ 170, FMG 146, ESR 140, BHG 121, HLZ 114, LYG 91, NTN 80, GJP 76, BLY 55, YBF 53, NCA 41, DPL 35, FYW 35, CDU 29, LQZ 28, HIF 26, COZ 19, YCF 19, UGA 15, HKD 12, CK 7, AM 6, CBO 4, WII 2.

ARIZONA — SCM, Albert Steinbrecher, W7LVR — Asst. SCMs: Kenneth P. Cole, 7QZH; Dr. John A. Stewart, 7SX. SEC: OIF. RM: JGZ. PAM: KOY. Arizona 'Phone Net: Tues. and Thurs., 7 P.M., 3865 kc. Arizona C.W. Net: Mon., Wed., Fri., 8 P.M., 3515 kc. Phoenix Net: Tues. and Thurs., 7 P.M., 29 Mc. Tucson Net: Nightly, 8 P.M., 29 Mc. Arizona 6&2 Net: Nightly, 7 P.M. Arizona MARS: Tues. and Thurs., 9 P.M., 4025 kc. Arizona Restricted Speed C.W. Net: Mon., Wed., and Fri., 8 P.M., 3700 kc., 8–12 w.p.m. Arizona Day Net: 7265 kc. There will be an Arizona Statewide Hamfest at Montezuma Well, near Rimrock, on Sat., May 9th. All amateurs in the State are invited. Listen on 3865 Arizona Net for further details. Gert Pond, KOY, has been appointed Phone Activities Manager for Arizona. Contact her for any information regarding 'phone nets. The Sahuara Radio Club had an FB picnic in Paradise Valley, attended by the following: PWU, MID, LBN, MJN, LQB, MAL, KWB, MAE, LKT, and KOY. The OPRC had a most interesting program by HUV on his new type experimenal antenna for 80 meters. Appointees: Please send in your station activities reports. Traffic: W7KOY 106, QFQ 60, LVR 31.

SAN DIEGO — SCM, Edgar M. Cameron, jr., W6FJH — Asst. SCMs: Thomas H. Wells, 6EWU; Richard E. Huddleston, 6DLN; Shelley E. Trotter, 6BAM. SEC: SK. Asst. SECs: WYA, FOP. RM: MUE. EC: DEY. DLN sends in a terrific line-up of activity from the El Centro gang. Active there are CQW, FLD, UQI, LVN, NKR, QKY, YES, GYL, AMJ, and DLN. QUS's son WN6TMS is doing very well running 50 watts. UQI furnished a one-gallon rig for use at the clubroom of the Imperial Valley Amateur Radio Assn. NSK has shifted QTH from the Coast to the arctic clime of Barstow. DEY, EC, says more than 70 showed up at the last meeting of the Orange County Club, including Director KW and BRC of the Long Beach

(*Continued on page 114*)



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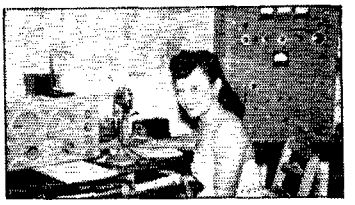

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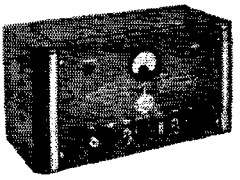

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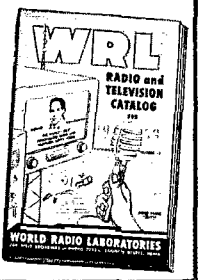

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Club, who gave an FB talk on remote control. A speedy recovery to JAN, and more power to Asst. ECs HJG, GBM, and OZO, combining their best c.d. efforts with DEY. Drill frequency up in Orange County paid off for DEY when he was involved in a four-car collision; ZE came to the rescue. That's mobiling in action! TIK will raise both chickens and rhombics. An FB ARRL TVI film was shown at the last PRC meeting, held in Carlsbad and attended by 28, including Ben, of IAB. The gang at IAC is planning a big dance at the school; QBM is going West on General Class c.w. test coming up; QBN is losing his hair from studying the 2nd-class 'phone elements; the fellows and YL WN6USS are pounding the life out of 3702 kc. at IAC. CHV worked in the DX Contest. BAM is on 21 Mc. The 75-meter San Diego AREC Net roll call is running close to 60 check-ins now; JPM, in Fallbrook, is checking in the northern area. San Diego mobiles held a Sunday morning breakfast with AD as an honored guest. From SK we learn that during the recent test 18 were alerted and mobilized in the San Diego Area; NBJ sparked the gang, assisted by EWU and WYA. SK coördinated on 75 in the Glider Meet drill. All ate well and had fun at the Helix Club gathering. Traffic: (Feb.) W6IAB 4323, YDK 478, IZG 201, ELQ 168, MUE 100, FCT 19, CHV 5, IAC 5. (Jan.) W6YDK 497. (Dec.) W6ELQ 459.

WEST GULF DIVISION

NORTHERN TEXAS — SCM, William J. Gentry, W5GF — Asst. SCM: Thomas B. Craig, 5JQD. SEC: QHI. RM: BKH. PAM: IQW. RUM lost a finger. Sorry to hear this. WHG worked his first XE. UZM is the proud owner of a new HQ-129X. SRQ informs us he is busy painting but still has time for traffic. K5NRC, on daily 1000 to 1430 during week days, needs some more traffic. AWT is trying to work 40-meter 'phone. The South Plains Amateur Radio Club has elected the following officers: KPJ, pres.; SZQ, vice-pres.; PTK, secy.; JQD, chairman of TVI. AWT handled 5 messages, which your SCM overlooked reporting in the totals. BVG is sporting a new Buick Super plus a de luxe ham shack. Did you say you had an oil well? We would appreciate hearing from more of the amateurs. Let's have your activity reports. Traffic: W5BKH 358, QHI 280, PAK 250, VRY 49, CF 44, K5NRC 38, W5PXI 35, SRQ 30, HBD 20, JQD 19, UZM 19, ARK 9, ROH 9, VFH 9.

OKLAHOMA — SCM, Jesse M. Langford, W5GVV — SEC: AGM. RM: MQI. PAMs: SVR and ROZ. AGM, HXT, and EHC are in the planning stage for single sideband. 7HON is operating mobile from Tinker AFB. RDI is building a modulator with a cathode-follower driver. GGK is working on new exciter. TFP has been designated EC for 40-meter 'phone in Oklahoma County. IKN will be back on the air soon with a pair of 807s. The Beckham County gang has organized and has named the new club the Northfork Radio Club. Officers are FRB, UIW, and DGK. The Sand Springs Club now is affiliated with ARRL. TNV is Advanced Class. A new amateur in Sand Springs is TNV. IER is in the process of de-TVIing the rig. MFC is rebuilding. The Lawton-Fort Sill Club had its annual dinner Feb. 15th with an excellent program and plenty of prizes. Civil defense certificates were given to the Lawton-Ft. Sill Emergency Corps members. UCT is operating 80- and 40-meter c.w. The car tag license-plate bill took a setback but it looks like Bill Humphries and the Oklahoma City gang might salvage something out of it. CKQ has been the wheelhorse for the license tag bill the last two years and has done a grand job. Director Middleton's newsletter has been received and Mid is to be congratulated on getting to this Division in such fine shape the information that has long been needed. Send in applications for ORS or OPS appointment if you qualify. ORH and QNK are new OOs. NGE, ITF, and TKS are new OBS. Traffic: (Feb.) W5GZK 167, SWJ 162, ROZ 147, MRK 104, MQI 99, MFX 63, PA 60, ORH 55, KY 52, QAC 50, GVV 42, OQD 34, PML 32, TEI 22, GVS 12, SVR 11, TFP 11, EHC 6, NWJ 6, RST 6. (Jan.) W5PA 15.

SOUTHERN TEXAS — SCM, Dr. Charles Fermaglich, W5FJF — FJF has been reëlected SCM and is building a new kw. rig. E. B. McIntyre, now 8GXZ, sent a card. NHB is completely TVI-proofing the rig and is putting it on all bands. He is active on CERN and HEM. MN seems to be working harder than ever — he sends in a report every month. Sure wish some of the rest of you would send in some dope. WN5WXJ reports that there is lots of activity on 160 meters down his way and most of the fellows there belong to GCARC. They are BD, BGR, BVF, NSK, OGG, PTV, TOM, TRE, UUK, UMY, VUS, and VWF. ULN was fixing WFO's Viking so he was on for a while. WN5WXJ reports some hams in Texas City are WVI, YBL, WN5WVJ, WN5WVK, and WN5WXQ. VXQ is home in Lafayette, La. Jiggy, Tom, WVI, and WVJ are 15 years old; WVK and YBL are 14. SAH, San Antonio, has entered the U. of Texas where he is majoring in electrical engineering. UMY has moved to a new QTH and has organized the STX C.W. Net. He reports for the Brazoria County ARC. The BCARC is working on ARRL affiliation. UMY is active in AF MARS. STEN, STX, and NTX. K5FKF made 1776 ham contacts and 552 MARS contacts in February. RFG called

(*Continued on page 116*)

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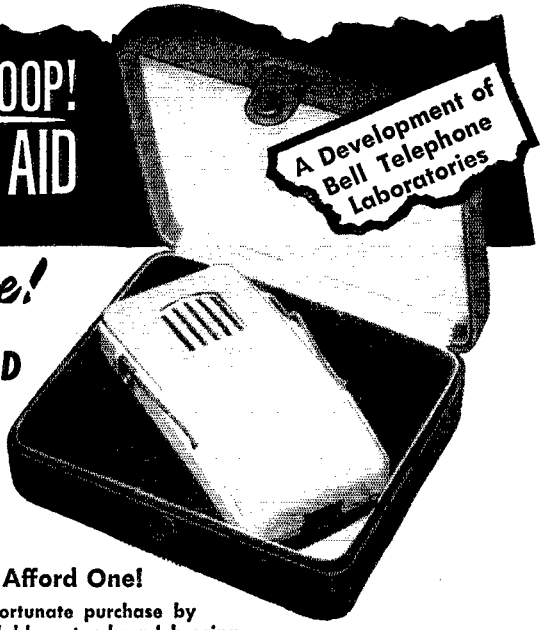

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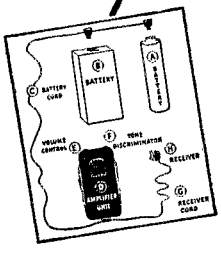

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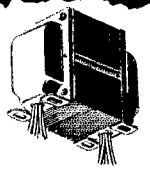
Unbelievable! But a fortunate purchase by Lafayette makes available a top-brand hearing aid regularly priced at $185.00 for only $24.50. Because of our low price we may not advertise the name but you will recognize the high quality of the manufacturer the moment you see it. Excellent as a spare aid, and a real opportunity if you could not afford one before. Brand new, packed in original manufacturer's jewelled case as illustrated. Supplied with receiver, receiver cord, battery cord and plug (less batteries). Order sample immediately. In lots of 3, $23.50. Uses Burgess XX30E and 8R batteries at $1.55 per set.



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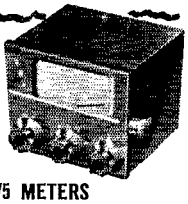
DUMONT 275 MA. POWER TRANSFORMER FOR TV-RADIO OR AMPLIFIERS

LIST PRICE 24.00

SPECIAL PRICE 5.75

PRIMARY 110V; high voltage secondaries deliver 850 volts CT at 275 MA and 760 volts CT at 175 mil; filament windings are 6.3 volts at 1.5 amp. and two 5 volt windings at 3 amp. each. Dumont Part No. 20D-11204 (P7AI). Exact duplicate replacement for Model RA102, Shpg. Wt. 23 lbs.

RME MC-55 5-BAND MOBILE CONVERTER

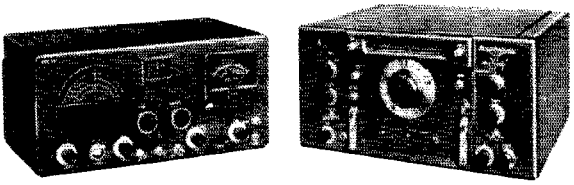


FOR 10-11, 15, 20, 40 AND 75 METERS

RME is proud to bring hams a new mobile converter designed for coverage of FIVE bands. With the opening of 15 and 40 meters to phone operation, the MC-55 is all ready to do a superlative job on those bands as well as 10-11, 20 and 75 meters.

MC-55 Net $69.50
MC-53, for 2, 6 and 10-11 Meters..... 66.60
MC-57, for 10, 20 and 75 Meters..... 64.50

LAFAYETTE — HEADQUARTERS FOR COMMUNICATIONS RECEIVERS



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S-40B	119.95	NC 125T	149.50
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SX-62	299.50	HRO 60	483.50
SX-71	224.50		
SX-73	975.00	HAMMARLUND	
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WE CARRY A COMPLETE LINE OF E. F. JOHNSON AMATEUR GEAR!

JOHNSON VIKING II..... 279.50
NSON Mobile Transmitter Kit (less tubes) 99.50

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BOSTON, MASS.	110 Federal St.

your SCM recently when he was in Houston and we had an FB QSO. Hope the rest of you will contact me when in and around Houston. Fellows, most of you have received a letter from me by now (*HARC News*) concerning the 7th Annual ARRL National Convention to be held in Houston July 10-11-12. It will be a good time to meet new friends and see long-standing ones. There will be many very fine prizes, technical talks by outstanding authorities, and plenty of social affairs. Send in your registration now and get in on the complete ham station to be given away for pre-registration. Traffic: K5FKF 2399, W5MN 586, QFA 53.

NEW MEXICO — Acting SCM, R. J. Matthias, W5BIW — For several years the amateurs in the State of New Mexico have been trying to get legislation passed for call-letter license plates. The Bill has passed both Houses of the State Legislature and now needs only the signature of the Governor of the State to make it law. Many amateurs in New Mexico deserve credit and we are especially grateful to MYI, KCW, Francis Gormley, and other members of the Santa Fe Radio Club for the assistance they rendered in making personal contacts with members of the State Legislature in our behalf and for handling the hundreds of messages from the amateurs in the State to the Senators and Representatives there in Santa Fe. The date for the Amateur State Picnic is now tentatively set for the week end of May 24th. It will be held in Roswell. We understand the Pecos Valley Radio Club is making so many interesting plans for this affair that it promises to be one we cannot afford to miss.

CANADA

MARITIME — SCM, A. M. Crowell, VE1DQ — SEC: FQ. EC: EK. RM: OM. PQ did quite well in the DX Contest. DQ has completed the Clapp VFO/f.m. unit and has it on 14-Mc. 'phone. HARC Activities Comm. for the coming year consists of RY, chairman, DB, WD, LY, and LZ. Both HD and HC have been on 420 Mc. ET has been working the Halifax gang from the new noise-free QTH in the country. LY, new OPS, has been quite active on the Maritime 'Phone Net. Glad to hear KK is recuperating and will be on soon. LT is on 28 Mc. for the odd contact. We hear that GH has built a tape recorder. VE3CRW was a recent visitor to Halifax. BC and WL have been on 21 Mc. week ends with spotty results. EK and QX were active in the DX Contest. OM has been giving DB some tips on the finer points of 'phone operation. Conditions on 3.8 Mc. have been only fair with the Maritime Net. Long skip and VE2 QRM have been giving some trouble We wish the boys who work close to nets would be good enough to cooperate so that QRM would be avoided JD continues good work as OO HC now has a Panadaptor, according to latest reports. Congrats to QZ and his XYL on the arrival of a new jr. operator. Traffic: (Feb.) VE1FQ 231, VO6U 94, VE1LY 57, VO6B 49, VE1OM 43, VO6N 23, VO6R 9, VO2A 7, VO6AD 7, VE1DB 2. (Jan.) VO6B 46.

ONTARIO — SCM, G. Eric Farquhar, VE3IA — Hobby fairs in Toronto and Tampa provided much material for the high traffic totals of the section this month. It is with pride that we announce the issuance of a BPL certificate to the Nortown Radio Club of Toronto. Through this column NG, the Club's president, extends deep thanks to the OSN, MLN, QON, and TXN nets, and all who assisted in moving traffic from the International Hobby Fair held in Toronto. DGZ now is operating under WI, the newly-assigned call. AUU is new Belleville EC. Welcome to the Dryden Radio Club as an ARRL affiliate. DOC uses walkie-talkie with success in the AREC. The Hamilton Emergency Corps received fine mention in the Red Cross annual report. BSW, now Class A, received 20-w.p.m. endorsement sticker. Members of the Mohawk and Hamilton Clubs conducted emergency practice in the field. May we suggest you watch the Hamfest Net on 3750 kc. Sun. at 0900 for up-to-the-minute details on the Sixth Northern Ontario Hamfest to be held in June. The Hamilton Club, under the call DC. is official holder of the Marconi Company trophy. Presentation was made by Mr. Finkel on behalf of the donor, who brought a message of greeting from the company's president. Winter WX held up work at the QTH of EAB on slot antenna on 144 Mc. BUR ran up a nice traffic total despite QRL business. VD has fun with five watts. AVS is rebuilding and trying to snag Nevada. DFE now is an RCC member. AZH and BTQ are newly-appointed ECs of Picton and Trenton, respectively. BZM now is stationed at Fort Nelson, B.C., and looks for contacts from his section on 7160 kc. Traffic: (Feb.) VE3BRR 627, ATR 243, BJV 233, BUR 197, IA 172, NG 125, EAU 117, WY 116, GI 87, NO 49, IL 46, DGZ 44, KM 44, AJR 38, AUU 14, DQA 6, BSF 4, VD 4, DFE 2, SG 2. (Jan.) VE3EAU 25, PH 6, DOC 1. (Dec.) VE3EAO 24, DOC 6.

QUEBEC — SCM, Gordon A. Lynn, VE2GL — AKJ is operating portable W1 from Springfield, Mass., and is looking for VE2 contacts. The Montreal Amateur Radio Club held elections and AGF is new president, with XZ vice-president. AGF has RTTY receiving set-up operating and now is concentrating on the transmitting end of it. AKT has had 40-meter RTTY QSOs. BK still spends most

(*Continued on page 118*)

LOOK STEINBERGS LOOK

IMMEDIATE DELIVERY

Single Sideband Exciter SS-75

Check these specifications and you'll see why the *SS-75* is now the one piece of equipment that places all the advantages of single sideband at your finger tips:

★ **Built-in stable VFO, with voltage regulation.**

★ **Carrier injection to receiver antenna terminals . . . tune in SSSC signals the same as AM, no other gadgets necessary.**

★ **Illuminated VFO tuning dial provides 31 inches of band-spread *3800–4000 KC in 4 bands, with 5 to 1 gear reduction.***

★ **Built-in voice control and receiver disabling circuit. Also *provides for break-in CW operation.***

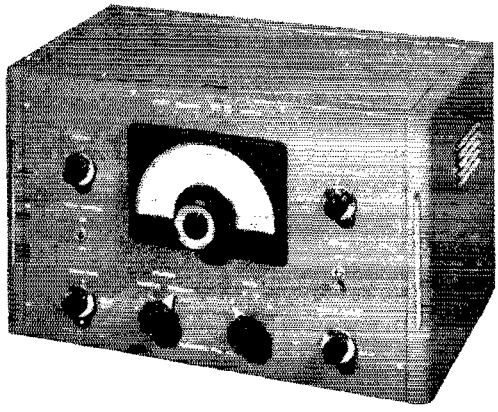
★ **Specially designed crystal filter network for maximum stability and reliability.**

★ **Carrier injection to transmitter available for working single sideband WITH CARRIER, for tune-up adjustments, or CW.**

★ **10 watts ouput, with additional 807 socket for up to 100 watt operation with external power supply.**

★ **Handsome grey crackle cabinet, chrome trimmed, 20" x 12" x 12". Complete with 12 tubes, including one 807, operating manual.....$245.00**

Frequency conversion mixer for 40–20 meters, rack mtg. 3½" x 19" less power supply..... 75.00

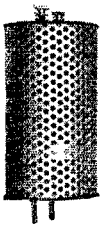


WRIGHT T-R SWITCH

For break-in operation on CW, AM, or SSSC. Use one antenna for transmitting and receiving. *It's instantaneous!* No moving parts, no power needed to operate. Coax fitting for connections to feeder and receiver. Will handle 1 Kw. With 75 meter plug-in coil.. **$9.95**

Extra coils **$1.75** per band

JCT MINI-PACK PLUG-IN POWER SUPPLIES



Here's the answer for a good, compact, low-priced power supply for small receivers, oscillators, monitors, bias supplies, relay power, etc. Just plug into 110 volt AC outlet.

MODEL R: 108 volts, 20 ma., regulated by OB2, selenium rectifier, filter network.

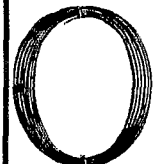
MODEL P: 320 volts DC at no load, 250 volts at 40 ma. max.

Heavy perforated steel case, 2⅜" dia., 4½" high. Either model..... **$7.50**

ELMAC-A54 Under-dash Mobile Xmtr.

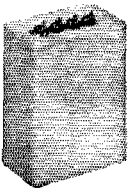
VFO or Crystal control. Direct-reading VFO on all bands—75 20, 11, 10 • Plate modulation • Completely band-switching fone or CW. • 50 Watts max. input. Power required: 300–500 V.D.C. at 250 ma., 6.3 V AC or DC at 4.5A. • Uses 3-6AG5, 6AR5, 6C4, 12AU7, 2-6L6G, 807 (included). • Only 7½" x 7½" x 12", 14½ lbs.

For carbon mike input	$139.00
For Dynamic or crystal mike	149.00
Power Supply, 110 Volt AC	39.50
ELECTRO-VOICE 210 Mobile Carbon Mike	17.10
ELECTRO-VOICE 600D Mobile Dynamic Mike	23.10



PHOSPHOR BRONZE AERIAL

125 ft. of the finest aerial wire obtainable. 42-strand phosphor-bronze with linen center. Will not stretch, very high tensile strength, diameter approximately same as No. 14 copper, very flexible. Excellent for transmitting or receiving antenna, control cable, guy wire. Regular list $4.95..... **90¢**



8/8/8 MFD. 500 V. D.C.

Triple 8 mfd. 500 working volt D.C. oil-filled condenser, common negative, solder terminals, hermetically sealed. 5" x 3⅜" x 2¼" **$1.95**

MINIMUM ORDER $2.00. Send 20% deposit with COD orders. Please include sufficient postage or instruct us to ship by Express Collect. Overpayment will be refunded by check.

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Your order will receive my personal attention and will be shipped the same day order is received. We distribute all top-flight amateur lines . . . let us know what you need.
73, Jule Burnett W8WHE

of his available time getting rid of TVI but manages to handle a little traffic. LU and DQ are back on the air after long lay-offs. DR has been appointed Asst. EC of Pointe Claire and skeds PQN, TRN, and QEN, as well as a score of SM stations on 20 meters each Sat. morning. Phyl, the XYL of CA, has returned home from the hospital, where she has been since the middle of February, but will be convalescing for several weeks before resuming ham radio. EC manages to keep Trois Rivieres on the air with skeds to AEM, AGP, AGU, AOB, and ASP on 3.6 Mc. and VE and ZG on 144 Mc. It is requested that club secretaries or others interested send me the name of their clubs together with their mailing addresses. IS's call has been changed to OR. It is again necessary to request that reports be sent me in order that this column may appear. Traffic: VE2DR 45, CA 21, G1, 11, BK 3.

ALBERTA — SCM, Sydney T. Jones, VE6MJ — MQ and GW now have their Class A 'phone. PE has purchased a mike and will be on 'phone real soon using n.f.m. ZA has chalked up several good contacts on 7 Mc. Congratulations to FB and his XYL on the arrival of a daughter. We hear that WO is building a real FB 'phone rig. SN is going plate modulation. EY has acquired some nice test gear. EP is building a new frequency meter. LI is active on the net again. HX has completed an n.f.m. unit and is active on 3.8- and 7-Mc. 'phone. YZ is holding forth on Trunk Line "I" but reports conditions have been poor. WC reports the same on the Maple Leaf Net. We are sorry to report that EA has been confined to the hospital but sincerely hope that by the time this report is in print Roy will be very much improved. CP is going for a little more power by the looks of the power supply equipment acquired. ZR had a go at the c.w. DX Contest but found conditions very poor. NA visited Edmonton in connection with the Broadcast Engineers' Convention. Traffic: VE6HM 83, WC 68, OD 61, YZ 31, MJ 10.

BRITISH COLUMBIA — SCM, Wilf Moorhouse, VE7US — The BCARA is after license plates through new Government MLAs. Some discussion has been raised re a Western Canadian Director, also a Canadian ARRL. The League position of many years standing has been for such separate organization but when of demonstrated strength and established finances. However, this writer suggests that we cannot and would not support a separate Canadian organization with its attendant costs. Politically the two as one can do more for Canadian hams. Viz: CAROA, AFARS. Novices, etc., present no problems (QRM) to anyone used to working 20, etc. QV is rebuilding. JB and LP are too busy with TV. QC is doing a good job of AREC net management. AMJ becomes EC for District 6 with AA as EC for District 7, replacing JB and ALJ. DH reports from Nanaimo. BF is mobile with ATR-5 and "Bay" mount. US is mobile with original gear. ALL has gone TV. AHF, TT, and AIW also are active on 75. BF installed 40-meter ground-plane vertical. DH may go higher power. AMS puts out the usual strong signal. PO is busy man in Victoria. Other Victoria stations are XZ, KA/7, AAZ, CB, ACM, WL, EB, MT, ABU, GL, PX, AD, all heard on nets. AKN and AAZ visited Nanaimo separately. 20-meter groups still are going strong but some of these have actually appeared on 75. TVI is stalking most hams but a grid-dipper will find those resonant circuits. If there are no resonances in the TV spectrum then there is very little trouble even without shielding. BV now is in Victoria. FP, KQ, AAJ, FS, CO, AFC, and DB were heard during February. Traffic: (Feb.) VE7QC 140, DH 12. (Jan.) VE7DH 9, CX 5, AOB 4, AKI 2.

MANITOBA — Acting SCM, Leonard E. Cuff, VE4LC — On behalf of all the hams in this section we extend the very heartiest of congratulations to Jimmy Watt, who has achieved his great ambition against terrific odds, and is a fully licensed ham with the call VJ. AU is using 304TL in the final. RO has WAC and worked 61 countries on 21 Mc. CI is sporting new Pontiac. HL has new GDO, electronic key, and D-104 mike. CJ is active again after a long lay-off, using 810 final with n.f.m. and logarithmic compressor. AV, of Lauder, can now be heard on 3759 kc. DL is busy these days running 12 watts s.s.s.c. on 20 meters. To the best of our knowledge Reg is the first in this district to be active with single sideband. AZ, of Roland, can be heard from BD's QTH at Deloraine. RV has new Gonset Commander. BL is building an electronic key. NT has acquired SX-42 receiver and expects to be active on 20 meters. 5CU, ex-4CS, is now at Melville, Sask. WS has new 250-watt all-band transmitter. KN and OM, Les, were recent visitors at the QTH of JQ and GV in Minnedosa. ER has licked his BCI problem by using n.f.m. SR may be heard consistently with his 100-watt mobile on 20 and 75 meters. My thanks to KN of the BARC for the forwarding of many of the above news items. How about some news items from the rest of you? Traffic: VE4HL 110, CE 6, KN 2, MX 2, BD 1.

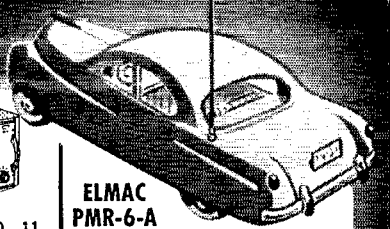
SASKATCHEWAN — SCM, Harold R. Horn, VE5HR — February 9th saw 24 hams gather at Tisdale for a banquet meeting. FS and IC were in charge. The Annual Saskatchewan Hamfest to be held June 27–28 at Lake Waskesui was discussed along with other matters, including ARRL, AREC, SARL, and working conditions on the nets. HR, FY, and GR from Saskatoon, DN, MM, and MQ from

(*Continued on page 120*)

TERMINAL LEADS IN MOBILE EQUIPMENT

BIGGEST VALUES IN TOWN!

Everything for the Car and Home Base!



MODERN MOBILE MIKES by ELECTRO-VOICE

All feature high speech intelligibility, ruggedness, press-to-talk switch for operating relay and are provided with handy mounting bracket.

208—Low cost, S. B. carbon, close talking, noise-cancelling Differential type....9.70

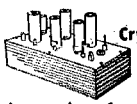
210—S. B. carbon, extra rugged, high articulation. 16.76

205—Like the 210, but with Differential feature 20.28

600-D — One of the best, Dynamic, choice of high or low impedance. 22.64

602—Like the 600-D, but with Differential feature. . . 26.46

TECRAFT Crystal Controlled CASCODE CONVERTER



Low noise, 1 microvolt gives 20 db quieting, high sensitivity, 0.1 microvolt provides a signal 6 db over noise level. The ultimate for top performance. Power supply of 150 to 250 volts required.

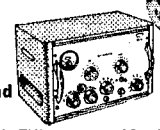
CV-2 — 144-148 Mc. 42.50

CV-10—10 & 11 Meters 37.50

FOR THE SHACK

Hallicrafters HT-20 transmitter, 100 watts, TVI suppressed. Continuous coverage from 1.7 Mc. to 30 Mc. with full band switching. Choice of 10 crystals. Less microphone and crystals 449.50

New SONAR SRT-120 Multi-Band XMTR



A compact TVI-suppr. 10, 11, 15, 20, 40, 75 and 80 meter all-purpose transmitter measuring only 8½x8½x14" packing 100 watts phone or 120 watts CW. Suitable for mobile or fixed station with selection of power supply.

SRT-120—With tubes, less power supply 198.50

SRT-120-M—In 8x8x10 mobile cabinet 198.50

PS-500—115 volt AC power supply 49.50

PS-501—115 V pwr supply with built-in push-to-talk relay and circuit.. 59.50

SRT-120-P—The SRT-120 and PS-501 in single handsome cabinet 279.50

V-120—A VFO for all above transmitters 19.95

MR-3—Receiver for 10-11-20-75 meters ... 89.95

MR-4—Receiver for 20-40-75-80 meters ... 89.95

All other SONAR products in stock.

ELMAC PMR-6-A

6-Band Receiver

Elmac has designed this receiver to be the finest possible in its class without regard to cost. Dual conversion, ten tuned circuits, six bands covering all the amateur bands from 10 meters thru 160 meters plus the broadcast band, less than 1 microvolt to produce 3½ watts audio output, effective noise limiter and many, many other features.

PMR-6-A—Less power supply 134.50

PSR-6—6 Volt power supply 24.50

PSR-12—12 Volt power supply 24.50

PSR-116—115 VAC power supply 24.50

COMMUNICATIONS RECEIVERS

NATIONAL SW-54	49.95
NATIONAL NC-125	149.50
NATIONAL NC-183D	369.00
NATIONAL HRO-Sixty	483.50
HALLICRAFTERS S-38	49.50
HALLICRAFTERS S-40B	119.95
HALLICRAFTERS S-53A	89.95
HALLICRAFTERS S-76	179.50
HALLICRAFTERS SX-71	224.50
HALLICRAFTERS S-81	49.50
HALLICRAFTERS S-82	49.50
HAMMARLUND HQ-140X	264.50

ELMAC A-54 TRANSMITTER

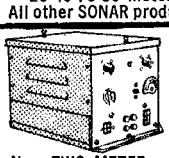
A-54 is an excellent mobile or fixed station transmitter. Only 7½ x 7½ x 12", will tuck away anywhere but can take a husky 50 watts input. Bandswitching provides 10, 11, 20, 40, 75 and 80 meters. VFO-xtal selector switch provided.

A-54—Carbon mike input 139.00

A-54H—Dynamic or crystal mike 149.00

PSA-500—115 VAC power supply 39.50

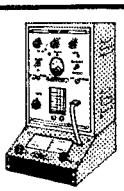
ROBERT DOLLAR Model 222



New TWO METER quality mobile transmitter. With tubes, less crystal, mike and power supply. 89.50

Model 226—Companion receiver. 99.50

HARVEY-WELLS



VFO now available for your BANDMASTER Transmitter! High stability Clapp type 6AG7 voltage regulated oscillator. Six bands — 10, 11, 15, 20, 40 and 75-80 meters. May also be used with other transmitters. About 300 volts @30 Ma. and 6.3 V @0.65 Amps required for power.

BANDMASTER VFO 47.50

Bandmaster Senior Xmtr 111.50

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APS-50—115VAC Power supply 39.50

DPS-50—6 volt Dynamotor 87.50

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Mobile remote control panel 22.50

Rack panel, 12½x19", mounts Bandmaster and APS-50 ..... 5.75

AMPHENOL Folded Dipole Amateur Antennas

again available. Each antenna has 75 ft. 300 ohm lead-in. Flat-top portion is #16 copper-clad steel twin-lead. With instructions.

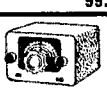
139-010	10 Meters	5.24
139-020	20 & 15 M.	5.88
139-040	40 Meters	7.64
139-080	80 Meters	11.03

JOHNSON Viking Mobile Kit

A mobile powerhouse, up to 60 watts. Band-switching, 4-position crystal selector, fully metered and with many other outstanding features. 240-141 KIT, less tubes, crystals, microphone and power supply. 99.50

This kit as well as the famous Viking I, Viking II and VFO are available wired and air-tested, or unwired but with tubes, etc. Write W2BUS for special prices.

GONSET "SUPER SIX" CONVERTER



Covers 10, 11, 15, 20, 40 and 75 meters. Compact, stable, highly sensitive 52.50

TERMINAL carries all GONSET products. Hams with Tri-Bands or Supers who have acquired 12 volt cars, write W2BUS for free modification instructions.

GONSET "COMMANDER"

Powerful mobile 35-50 watt transmitter covering 1.7 to 54 Mc. Not a kit. With tubes, less pwr. supply. 124.50

GONSET VFO for Commander 29.95

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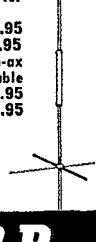
Antennas cut for middle of band unless otherwise specified — write W2BUS for the dope and quotations on beams, multi-element vertical or horizontal polarized hi-freq arrays, etc.



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Prince Albert, along with closer points, made it a worthwhile affair. KQ and his XYL have left for VE3-Land. CE with a son and MQ with a daughter are to be congratulated. TE will be heard on s.s.b. soon. VB has our best wishes for a speedy recovery after a serious accident with a roadgrader. FG, as OO, reports fine coöperation from those he has contacted with faults. Your rectification and help will make for better signals on the bands and make the position of OO a happy one. BZ reports that AREC is slow and he would appreciate hearing from all ECs with latest information on doings in your area. Traffic: VE5GI 42, TE 36, BV 26, HR 25, JW 14, DS 9, FG 8, WH 8, VL 4, BZ 2, DD 2, QL 2.

BRIEF

Following publication of the Sixteenth ARRL Field Day Results in December 1952 *QST*, it was brought to our attention that the seven-transmitter entry of the Associated Radio Amateurs of Long Beach, K6EA/6, had not been listed. A check of FD files indicated that the K6EA/6 log together with several mobile entries which were to have been credited to the Association's aggregate mobile score failed to reach ARRL Hq. Duplicate copies of logs have been submitted and we are pleased to credit A.R.A.L.B. officially with a score of 6840 points earned by 26 operators who made 760 QSOs. This score gives the Long Beach group second place in the seven-transmitter category. The additional points substantiated by duplicate mobile entries from W6LSN/6 (3564) and W6GAU/6 (891) puts A.R.A.L.B. on top in the aggregate mobile listing with a grand total of 8492. W6LSN's mobile score topped by a wide margin those of all other Class C entrants. Congrats to the Long Beach gang on a fine FD performance!

Strays

Similarities are often confusing. Compare 15-year-old Lee Shoblom, KN6ADA, with another lad of the same age in the same area — Larry Sjoblom, KN6AEG — whose last name is pronounced Shoblom, too. — *W6FJH*

—•••—

G3GVF and G3HCU, located approximately 35 miles from London, offer to provide lodgings for W/VE amateurs attending the Coronation. First four come, first served.

—•••—

When your only neon bulb succumbs in a fatal skirmish with gravity, W1UXS suggests a VR-tube as an emergency r.f. indicator. You may have to peer carefully to observe the glow.

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High-power transmitting tubes with thoriated-tungsten filaments were thought quite impractical a few short years ago. While thoriated-tungsten filaments require 60 to 70 per cent less filament power than conventional types, have a 10-to-15-times greater electron-emission efficiency and operate at temperatures lower by 500 to 600 degrees Centigrade, engineers had long been baffled by the deactivation of such filaments at plate potentials in excess of 5000 volts. In recent years, however, design engineers have beaten this problem to such extent that a variety of these "impossible" tubes are now giving excellent performance. — *RCA Victor News*

—•••—

VE3GG, advertising in the Toronto *Daily Star* to dispose of gear from the estates of hams deceased, was jolted when the printed word came out *diseased*. The ad drew many replies, all assuring VE3GG that the writers wouldn't touch the stuff with ten-foot poles.

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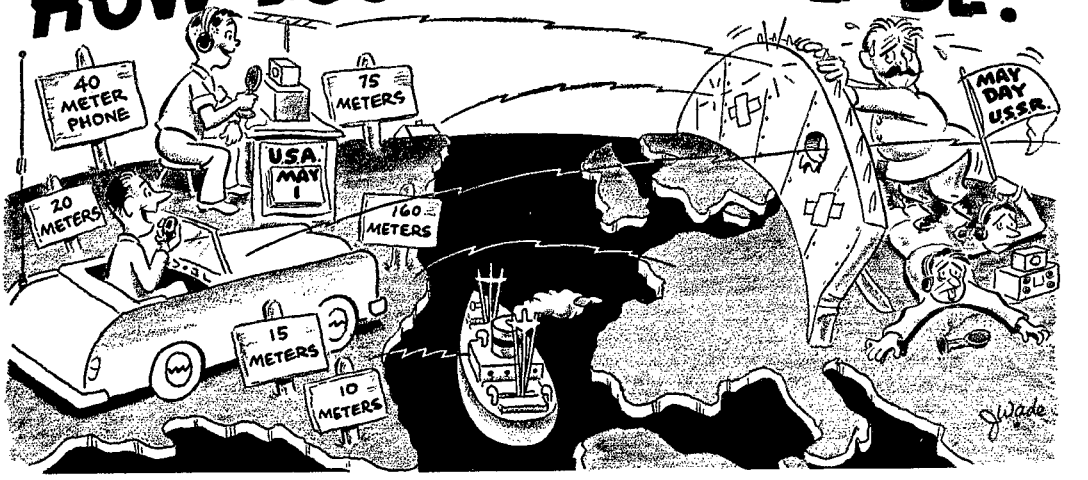

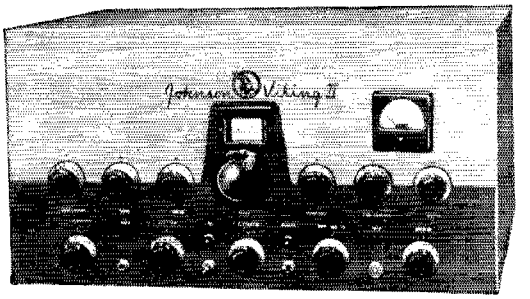

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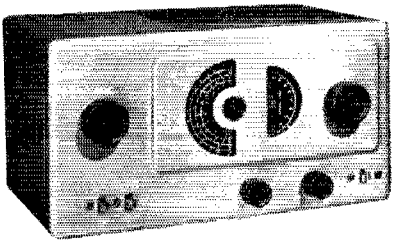

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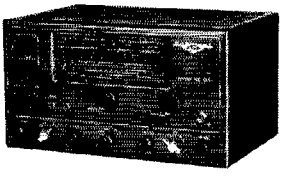

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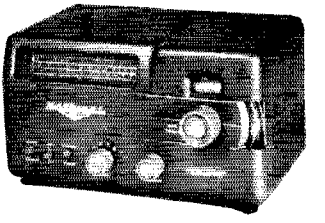

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Modulator

(*Continued from page 23*)

cept keying, are performed by the switch on the modulator unit. The "Test-Operate" switch on the transmitter should be left permanently in the "Operate" position. Both power supplies run continuously, and the power switch controlling the 6X5GT heater transformer in each unit should be turned on sufficiently ahead of the power transformer to allow the 6X5GT heaters to attain temperature before the 5V4GT, for the reason mentioned in the November article.

The key may be left permanently in the jack on the transmitter, in contrast to the arrangement used in the original transmitter circuit.

For 'phone operation, the r.f. amplifier loading should be adjusted for a cathode current of 120 ma. with the grid current adjusted to 2 ma. This value of grid current gives the best linearity. Since the 6146 must be operated at reduced input for 'phone (plate input rating 67.5 watts) the carrier power output is somewhat less than is obtainable with c.w. operation where a higher input is permissible. Measured power output at 14 Mc. with the operating conditions above was 42 watts.

6146 Amplifier

(*Continued from page 35*)

All power wiring is done with shielded wire and the disk by-pass condensers are applied as recommended in the TVI chapter of the *Handbook*.

The two tuning controls should be centered 1⅛ inches from the edge of the box. The photos show the box orientated so that the tubes are in a horizontal position, because in this position the controls fit more satisfactorily into a panel pattern including the VFO and multiplier units. However, the unit may be used with the tubes in a vertical position. In this case, it would be well to perforate the case with holes (not larger than ¼ inch) in the area above the tubes. The assembly is fastened in the box with screws through the mounting feet of the tuning unit.

Operation

The circuit of Fig. 1 shows two methods of wiring up the power plug. P_1 is wired up for c.w. operation only, while P_2 is wired up to provide for either c.w. or plate-screen modulation. The audio choke, L_5, is used as described in the *Handbook* chapter on amplitude modulation. If desired, the meters shown may be replaced by the usual metering resistors and a single meter switched to read either grid current or plate current.

As operated here, the VFO, Bandbox multiplier and the 6146 screen, as well as all heaters, are operated from a single 120-ma. 375-volt supply (350-volt 120-ma. transformer with condenser input). A separate 600-volt plate supply is required for the 6146. The pin-jack input and out-

(*Continued on page 124*)

Uncle Dave's Radio Shack

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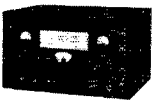
COLLINS 32V-3
TRANSMITTER



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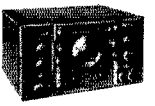

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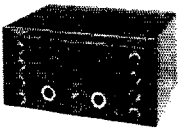

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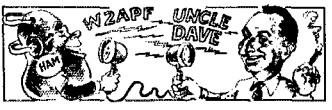

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put terminals of the Bandbox were replaced by shielded 'phono jacks. All three units were mounted on a single large chassis. The VFO output and Bandbox input terminals were connected with a 12-inch piece of RG-59/U and the Bandbox output and amplifier input jacks with another piece 7 inches long. The cable to the amplifier should be limited to this length; otherwise, the added capacitance of the cable may not permit retrimming of the Bandbox circuits to resonance. The Bandbox gives more than adequate drive on all bands, with the VFO screen connected to the tap between VR tubes; i.e., 105 volts. The exciter unit should always be detuned to bring the grid current to the 6146 under load to 3 ma. The Bandbox circuits have sufficient cathode-resistor biasing to permit off-resonance operation without danger of excessive dissipation.

When the common low-voltage supply is turned on and the key closed, the 6146 screen, under excitation will draw more than normal current until plate voltage is applied and the plate circuit loaded to normal rating (115 to 150 ma. 'phone and c.w, respectively). Although the screen dissipation does not run to dangerous proportions, the amplifier should not be operated without plate voltage and load any longer than necessary to tune up the exciter.

When first tuning up the amplifier plate circuit, the tuning of the multiband tuner should be checked with an indicating wave-meter or a grid-dip oscillator to make sure that it is tuned to the desired band. The control should then be marked with the setting for each band, since otherwise it is not too difficult to get tuned up on the wrong band — the 6146 is a good frequency multiplier! The unit should be fed to the antenna through the usual link-coupled antenna tuner fitted, if necessary, with a low-pass filter in the link line, as described in the TVI chapter of the *Handbook*.

Silent Keys

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

ex-W1BFF, C. W. Kieft, Middletown, Conn.
W1GBY, Elmer M. Lantz, South Lincoln, Mass.
W2CEZ, Martin G. Jones, Rochester, N. Y.
ex-3CP-3FJ Edward P. Knowles, Trenton, N. J.
W3NQF, William G. Atkin, jr., West Grove, Pa.
W3OWI, Ignatius L. Byrne, jr., Philadelphia, Pa.
W3RLW, Joseph J. Barr, Farrell, Pa.
W4TE, Albin E. Burnett, Suffolk, Va.
W4TNT, Charles E. Newton, jr., Griffin, Ga.
W4VXY, Robert B. Thompson, Orlando, Fla.
W5MRR, Aubrey W. Williams, Bryan, Texas
W6LS, Leo Shepard, La Canada Calif.
W7LYA, Elmer R. Walker, Newport, Wash.
W8HN, Francis H. Trower, Dearborn, Mich.
W8SJY, George J. Heintz, Flint, Mich.
WØHSW, George E. McHarg, Brooklyn, Iowa
WØLTY, Herbert L. Pendleton, Sedalia, Mo.
WØSOO, Harry V. Eyring, Kansas City, Mo.
OQ5AS, Edmond De Mey, Stanleyville, Belgian Congo
VP6ZI, Roderick D. Stewart, Bridgetown, Barbados

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Hallicrafter S72L $119.95; S72	*109.95*
Hallicrafter SX71 $224.50; R46	*19.95*
Hallicrafter SX73 $975.00; SX62	*299.50*
Hallicrafter HT20 xmitter	*449.50*
National SW54	*49.95*
National NC125	*149.50*
National NC183D	*369.50*
National HRO Sixty	*483.50*
Hammarlund SP600JX $985.00; HQ129X	*239.50*
Johnson VFO kit (wired $17.00)	*42.75*
Johnson mobile xmitter	*99.50*
Johnson Viking II (wired $57.00)	*279.50*
Gonset xmitter $124.50; Gonset Super 6	*52.50*
Gonset Communicator	*199.50*
Morrow 3BR $64.95; 5BR	*74.95*
Elmac A54H $149.00; Elmac A54	*139.00*
Elmac PMR6A mobile receiver	*134.50*
Harvey-Wells VFO	*47.50*
Harvey-Wells Deluxe $137.50; Senior	*111.50*
Lysco 600S $189.95; Lysco 600	*143.95*

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"LARGEST DISTRIBUTORS OF SHORT WAVE RECEIVERS"

Single Sideband

(*Continued from page 44*)

justing for a circular pattern with the two r.f. circuits connected to the 'scope deflection plates. Although the article points out that this gives only an approximate setting for the r.f. that must be touched up after disconnecting the 'scope, apparently a few fellows fail to touch up the r.f. phasing later on. We take this opportunity to remind them that the final r.f. phasing must be done by observing the output of the exciter and not with the 'scope connecting to the r.f. phasing circuits.

75- and 40-Meter S.S.B. Operation

To simplify two-band operation with his 450-kc. crystal-filter exciter, Ralph Porazzo uses the double-conversion system shown in Fig. 2. A block diagram is shown at A, illustrating the dual

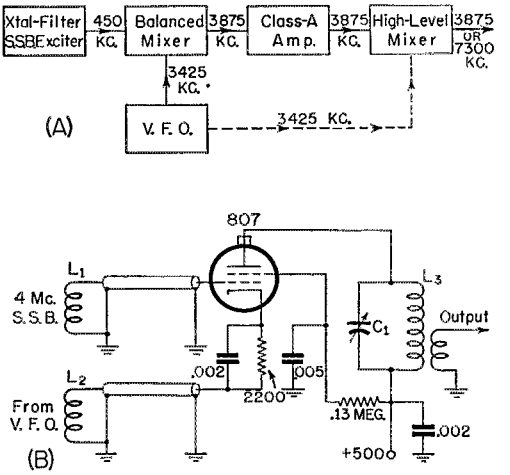

Fig. 2 — WØLLW simplified band-changing between 75 and 40 with his crystal-filter s.s.b. rig by using the same VFO in two different parts of the circuit, as shown at A. The high-level mixer circuit is shown at B. C_1 is large and tunes to either 75 or 40 with the same L_3 — L_1 and L_2 are 3- or 4-turn links.

injection of the VFO. The output of the high-level mixer is tuned to the desired band.

The circuit of the high-level mixer is shown at B, and is self-explanatory. It is essentially the same as that described by W6EDD in this column in the February issue of *QST*. With a system like this, if the lower sideband is obtained on 75 it will also be available on 40. — *B. G.*

News

(*Continued from page 51*)

visual aids and publications, as well as helpful suggestions to hundreds of club and individual groups seeking to publicize amateur radio by this means. Here, effective planning is important, the important factor being to avoid overcrowding the display. You have all seen effective advertising in large national magazines in which a pic-

(*Continued on page 128*)

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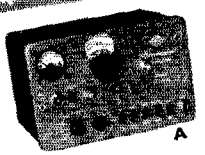
A


B

GONSET AMATEUR EQUIPMENT

3016 "COMMANDER" TRANSMITTER

Fig. A. Multi-band transmitter covering 1.7 to 54 mc continuous. Power requirements: 300 volts DC at 200-225 ma (phone) and 6.3 volts AC or DC at 3.15 amp. 35 watts input on phone, 50 watts on CW. Provision for all conventional feed lines. Tubes: 6AG7, 6146, 12AT7, 2-6AQ5. With tubes and two high Q final tank coils for 10-11, 15, 20, 40, 75 and 80 meters. Final coils for other frequencies available on special order. 8 lbs. **124.50**
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New! Fig. B. "Super Six" Converter. Covers 10, 11, 15, 20, 40 and 75 meter bands. High stability and sensitivity. Gray case, 3½ x 5¼ x 5¼". Shpg. wt., 5 lbs. **52.50**
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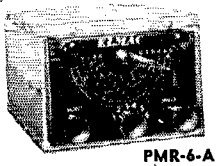
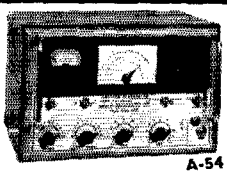

PMR-6-A


A-54

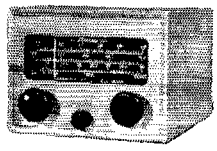
ELMAC PORTABLE UNITS

***New!* Model PMR-6-A Receiver.** 10-tube dual-conversion unit. Covers 10, 15, 20, 40, 75, 80 and 160 meter bands as well as the broadcast band. Requires 6 volts AC or DC at 3.3 amps and 250 volts DC at 90 ma. Gray cabinet, 4½x6x8½". Wt., 6½ lbs.
97F500. NET..... **134.50**

Model A-54 Transmitter. 50 watt unit for 80, 75, 20 and 11-10 meters. Temperature compensated VFO. Requires 6 volts at 4.5 amps and 600 volts DC (max.) at 225 ma. Gray cabinet, 7½x7½x12". 17 lbs.
97F180. NET..... **139.00**

Model A54H. Similar to above, but for use with crystal or high impedance dynamic microphone.
97F181. NET..... **149.00**

New! MORROW 5BR 5-BAND CONVERTER



High gain superheterodyne tuner for use with auto radio for the reception of 10, 15, 20, 40, and 75 meters. Features RF amplifiers and mixers to improve image rejection ratio. Calibration accuracy, better than 1%. 1525 kc output. Has 1 microvolt sensitivity on all bands. 3 gang tuning condenser with tuning ratio of 20:1. Powered by receiver—requires 6 volts and 100 volts DC at 16 ma. Size, 4x5½x6½". 5 lbs.
97F118. NET..... **74.95**

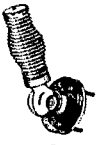
MASTER MOBILE ANTENNAS AND MOUNTS


A

Fig. A. All-band Antennas. Rugged and versatile antennas for operation on all Amateur bands from 10 through 80 meters. Heavily chrome-plated for beauty and durability. Center-loaded for maximum efficiency. Supplied complete with coil for 20, 40 or 75 meters. Operates on 10 meters by shorting out coil. Easily installed — fits any mount with ⅜" S A E female thread. Highest quality workmanship and materials. Coils are easily interchangeable. Overall length, 8', 10". Less mount. Shpg. wt., 3 lbs.
92F300. With 20 meter coil.
92F301. With 40 meter coil.
92F302. With 75 meter coil.
NET EACH..... **8.58**


B

Fig. B. Whip Antennas. Finest stainless steel whips for maximum flexibility and strength. ⅜" threaded studs fit all mounts. Shipping weight, 3 lbs.
92F306. Model 100-90S. 90". **NET**.... **5.10**
92F307. Model 100-96S. 96". **NET**..... **5.15**


C

Model 118 Coaxial Kit. Converts all body mounts above to coax input. Provides an excellent match for 72 ohm coax line without the need for supplement matching. Shpg. wt., 1 lb.
92F320. NET..... **98c**

MASTER MOBILE MOUNTS

Sturdy mobile mounts for all types of installations. Available for body or bumper mounting with straight or double tapered springs. All are tapped for ⅜" antenna or extension studs. Swivel base types are excellent for cowl mounting. With hardware. Wt., 3 lbs.


D

92F322. Fig. C. Model 132XC. Heavy duty body mount with coax fitting for whip antennas. Has adjustable split ball swivel. Built-in coax connector. **NET**..... **9.65**

92F316. Fig. D. Model 140X. As above but with extra heavy duty spring. **NET**..... **7.50**

Order from Department T-5

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223 W. MADISON STREET — NEWARK ELECTRIC COMPANY — CHICAGO 6, ILLINOIS

ture and a few words forcefully told the story. Apply these principles in your exhibit and you will attract crowds. And more important, you will have left them with a lasting impression.

In preparing displays, try to adopt a central theme such as "International Friendship Through Amateur Radio" or "Amateur Radio Serves the Community" and then build your display around that theme. In the latter instance, you might show a map of your city or community with amateur stations pinpointed to simulate a network of emergency stations spread throughout the area to serve the populace in time of disaster or civil need. An amateur or club group undertaking an exhibit project may obtain a quantity of the Novice promotional booklet, "You Can Be There," from Hq. for distribution to the public.

The show exhibit or display can be accomplished by enlisting the aid of a local bank or merchant and preparing an effective display for the show window. Many stores and utilities often donate window space to civic and hobby groups telling their story to the public.

Publicity can be carried a step further. Not all of us are competent speech makers, but with the assistance of the ARRL prepared speech on amateur radio, free on request, and your own familiarization with the hobby, there are good opportunities to address local civic clubs. Amateur radio is a fascinating hobby to us — it can be just as fascinating to the average citizen businessman. Working DX may be our primary interest in amateur radio and as such a commonplace event, but some of our experiences in talking with the world coupled with a general picture of amateur radio makes engrossing listening.

Hq. has more helps available, free on request. One is a sample interview on amateur radio, a compilation in question-and-answer form of usual discussion with newspaper or radio men seeking background information on amateur radio. If you expect to be doing any contact work with the radio or press, you should certainly have a copy of the interview. You'll find that it's an excellent source of statistical information on such subjects as the number of licensed amateurs, the average investment in a station and the average age of amateurs in this country. Another mimeographed pamphlet, available on request from Hq., is the sample broadcast script. The text of this script is applicable to a radio or television program, and is so arranged as to utilize 30 minutes in its complete form or 15 minutes when certain subparagraphs are eliminated.

Local Scout groups and other boy and girl youth organizations provide fertile ground to further publicize the scientific hobby of amateur radio, a hobby which can lead to interesting careers in electronics and communications.

This whole business of publicity is a selling job. Put yourself in business to sell amateur radio. By so doing you will benefit as an individual amateur, your club will benefit as the local representative group of amateurs and amateur radio will benefit as a whole.

ON A **SOLID** FOUNDATION!

Before a mason can lay up a brick wall he has to put in several years learning the trade, and so it goes with any calling.

Fortunately, the beginner in amateur radio who is aiming for his Novice ticket as the Gateway to Advanced Amateur Radio need not have to contemplate long years ahead before he can enjoy this fascinating and useful hobby and ragchew with the best of them.

The wise beginner will take advantage of the "package offer" we describe here. It consists of four of our publications which help to start him off on the highway to hamming:

- HOW TO BECOME A RADIO AMATEUR
- THE RADIO AMATEUR'S LICENSE MANUAL
- LEARNING THE RADIOTELEGRAPH CODE
- OPERATING AN AMATEUR RADIO STATION

These four books should provide all the necessary information toward the coveted ticket and enviable privilege of going — and staying — on the air.

The four books, available at your dealer, **$1.25**

The AMERICAN RADIO RELAY LEAGUE, Inc.

WEST HARTFORD 7, CONN.

SS Results

(Continued from page 57)

New Mexico

W5QNZ....113,470- 813-70-B-40
W5TOU.....82,335- 502-66-A-37
W5VRP.....59,895- 367-66-A-40
W5CA.....43,391- 278-63-A-15
W5KWP....35,269- 249-57-A-25
K5WSP [12]....22,631- 216-53-B-12
W5NID.....12,189- 120-51-B-16
W5UWA.....8208- 115-36-B-11

CANADA

Maritime

VE1AR.....78,913- 539-59-A-37
VE1BK.....72,128- 488-59-A-40
VE1CM.....37,440- 290-52-A-30
VE1CU.....31,200- 223-56-A-27
VE1KB.....7515- 104-29-A-18
VO6N.....7263- 83-35-A-40
VE1DB.....3570- 61-30-B- 7
VO6U.....956- 24-17-A- 7
VE1IN.....805- 23-14-A-13
VE1ZR.....575- 23-10-A- 6

Ontario

VE3AWE....86,288- 531-65-A-36
VE3AGX....83,164- 500-67-A-40
VE3EAM....58,660- 419-56-A-38
VE3ACB....51,925- 310-67-A-33
VE3DBP....48,600- 362-54-A-37
VE3BBR....43,526- 329-53-A-33
VE3BXF....42,038- 287-59-A-37
VE3EU.....39,204- 297-66-B-33
VE3AUU....32,231- 299-45-A-31
VE3EAU....22,396- 220-41-A-33
VE3BDE....23,040- 258-36-A-28
VE3SR.....22,287- 165-69-B-12
VE3QE.....19,565- 182-43-A-19
VE3BUR....19,493- 171-46-A-12
VE3YV.....15,620- 178-44-B-23
VE3DNK....14,609- 205-29-A-36
VE3BSW....11,350- 116-40-A-17
VE3BJV.....9265- 110-34-A-21
VE3DME.....7990- 96-34-A-22
VE3BJI.....7560- 110-28-A-24
VE3BVI.....7169- 80-37-A-21
VE3DRD.....7053- 97-31-A-19
VE3PB.....3124- 60-21-A-13
VE3DN.....2818- 49-23-A-11
VE3AIK.....2250- 50-18-A- 9
VE3DQX.....1780- 46-16-A-14
VE3DFE.....1700- 40-17-A-20
VE3AVS.....1584- 38-23-B- 7
VE3DPG.....1466- 37-17-A-19
VE3DRX.....1440- 38-16-A-15
VE3DPR.....70- 7- 4-A- 4

Quebec

VE2OL.....44,318- 311-57-A-28
VE2MU.....14,316- 125-46-A-16
VE2SD.....12,168- 160-31-A-25
VE2DR.....11,588- 103-45-A- 8
VE2XR.....7500- 121-25-A-18
VE2AMH....3072- 65-24-B-21
VE2ADW.....845- 27-13-A- 4
VE2AQW.....30- 4- 4-A- 2

Alberta

VE6MA.....47,043- 307-62-A-38
VE6DU.....19,146- 145-53-A-29
VE6QZ.....15,648- 176-48-B-34
VE6IZ.....3863- 82-30-A-10
VE6GJ.....2220- 38-24-A- 4

British Columbia

VE7JO.....51,150- 310-66-A-21
VE7YR.....40,125- 268-60-A-37
VE7AC.....21,304- 207-56-B-26
VE7ABQ.....325- 13-10-A- 2

Manitoba

VE4ER.....10,665- 119-45-B-19
VE4GB.....9315- 105-45-B-21
VE4PK.....3625- 50-29-A-11

Saskatchewan

VE5QZ.....98,460- 547-72-A-38
VE5BB.....31,706- 227-57-A-28
VE5LV.....26,220- 186-57-A-40
VE5EH.....18,815- 182-53-B-13

[1] W1SWX, opr.
[2] W4SON, opr.
[3] W2LEO, opr.
[4] WØSZZ, opr.
[5] Hq. staff, not eligible for award.
[6] W1VGX, opr.
W7IIS, opr.
[8] W6VWF, opr.
[9] W6CUF, opr.
[10] W5LIU, opr.
[11] W3UIF, opr.
[12] W3MCG, opr.

'PHONE SCORES

ATLANTIC DIVISION

Eastern Pennsylvania

W3BET.....27,136- 257-53-B-27
W3HA.....21,168- 147-48-A-18
W3NAB.....20,976- 152-46-A-35

Md.-Del.-D. C.

W3KDD.....27,872- 208-67-B-27
W3AYS.....22,575- 151-50-A-18
W3MAX.....20,769- 151-46-A-30
W3RFW.....9135- 106-29-A-12
W3FQB.....231- 11- 7-A- 2
W3OYX.....135- 10- 5-A- 3
W3GRF.....36- 4- 3-A- -
W3QKO (WIRJN W2EZZ W3QLN QND SXN SZP) 4290- 72-30-B- -

Southern New Jersey

K2AER.....4992- 64-26-A-18

Western New York

W2ICE.....29,376- 230-64-B-19
W2GSS.....24,435- 183-45-A-21
W2PJM.....19,886- 163-61-B-27
W2ZUR.....3975- 53-25-A- 8
W2CZT.....3240- 54-30-B-13
W2UTH.....1326- 26-17-A- 5

Western Pennsylvania

W3LXE.....46,735- 361-66-B-38

CENTRAL DIVISION

Illinois

W9NDA.....91,728- 638-72-B-36
W9FVU.....16,146- 117-46-A-25
W9IFA.....14,076- 102-46-A- -
W9QJR.....12,549- 135-47-B-18
W9ZYL.....2296- 41-28-B- 8
W9KWT.....112- 8- 7-B- -
W9KLD.....12- 2- 2-A- 1

Indiana

W9RZS.....9400- 100-47-B-23

Wisconsin

W9RBI.....41,481- 210-66-A-19
W9LXY.....27,803- 170-55-A-33
W9TPT.....27,420- 230-60-B-27
W9JBF.....15,228- 109-47-A-10
W9KJM.....2916- 54-27-B-17
W9OVO.....2808- 52-27-B- 4
W9FTY.....2046- 31-22-A- 9
W9NRP.....1320- 22-20-A- 5
W9CFP.....735- 18-14-A- 5
W9DTE.....128- 8- 8-B- -

(Continued on page 138)

W9BSR.....50- 5- 5-A- 1
W9FDX.....27- 3- 3-A- 1
W9IQW.....18- 3- 2-A- –
W9HHX (W7MMI W9NFG IRJ MNI JRW)
34,710- 270-65-B-37

DAKOTA DIVISION

South Dakota

W0PRZ.....74,520- 350-72-A-30
W0JLI.....2376- 33-24-A- 5
W0RRN.....1840- 40-23-B- 6

Minnesota

W0EDX....108,972- 505-72-A-39
W0BRA.....4- 2- 1-B- 1

DELTA DIVISION

Arkansas

W5QKQ.....11,045- 100-37-A-21

Louisiana

W5KC.....42,494- 252-57-A-27

GREAT LAKES DIVISION

Kentucky

W4KZF.....71,379- 361-66-A-39
W4SUD.....27,384- 248-55-B-29
W4IYH.....50- 5- 5-B- –

Michigan

W8VQD.....40,020- 230-69-B-36
W8URM.....7059- 92-39-B- 7
W8MNQ.....6422- 88-38-B- 8
W8FGB.....5859- 63-31-A- 7

Ohio

W8AJW.....56,826- 287-66-A-25
W8PBX.....14,640- 122-40-A-19
W8OAC.....13,818- 150-47-B-22
W8ZXC.....8557- 103-43-B-17
W8QAD.....7560- 63-40-A-13
W8PCS.....6426- 63-34-A- –
W8LPD.....4872- 56-29-A- 3
W8BIM.....4320- 60-36-B-11
W8BFH.....4200- 56-25-A- 8
W8FNX.....2808- 52-27-B- 6
W8LBH.....1092- 26-21-B- 8
W8DNJ.....798- 21-19-B- 3
W8NFD.....50- 5- 5-B- –
W8ET.....6- 2- 1-A- 1
W8HJH.....6- 2- 1-A- 1

HUDSON DIVISION

Eastern New York

W2SZ[1].....32,860- 265-62-B-28
W2MHE.....3528- 49-24-A- 7

N. Y. C.-L. I.

W2NSD.....46,242- 367-63-B-34
W2BWC.....15,706- 151-53-B-14
W2BQM.....12,036- 118-34-A-15
W2AIW.....3025- 61-25-B- 7
W2NNH.....585- 20-10-A- –
W2BNX/2.....405- 45- 3-A-12
W2TUK/2.....210- 10- 7-A- 1
W2WVU.....210- 10- 7-A- 4
W2KFV.....198- 30- 3-A- 4
W2IHE.....144- 12- 6-B- 5
W2KEB.....102- 17- 2-A- 2
KN2BIC.....84- 14- 2-A- 4
W2ODB.....81- 27- 1-A-10
W2QAN.....63- 7- 3-A- 2
W2IBQ.....39- 13- 1-A- 3
W2GIO.....21- 14- 1-A- 4
W2ONG.....18- 6- 1-A- 4
W2LGK.....12- 4- 1-A- –
W2EEY.....12- 2- 2-A- 1
W2KHJ.....12- 2- 2-A- 1
W2KAE.....9- 3- 1-A- –

Northern New Jersey

W2JKH.....42,480- 240-59-A-37
W2JJI.....20,139- 208-49-B-36

MIDWEST DIVISION

Iowa

W0ENS.....23,912- 214-56-B-26
W0BMY.....250- 13-10-B- 5

Kansas

W0ERB.....19,992- 188-56-B-31
W0YZL.....8480- 107-40-B-11

Missouri

W0BCF.....60,705- 432-71-B-34
W0DPO.....11,280- 96-47-A-17
W0BVL.....9944- 114-44-B-11
K0FAY.....60- 6- 5-B- 1
W0FLN (W0AJE ETW BYF GFF).....3234- 52-33-B-13

NEW ENGLAND DIVISION

Connecticut

W6YYM/1[2].....5304- 68-26-A- 8
W1MRJ.....2800- 52-28-B-11
W1AW[2,3].....784- 25-16-B- 2

Maine

W1PGZ.....29,928- 259-58-B-25
W2MQB/1.....3948- 71-28-B-12

Eastern Massachusetts

W1JEL.....38,430- 309-63-B-38
W1LXJ.....23,091- 179-43-A-22
W1AO.....10,500- 150-35-B-24
W1JNX.....7920- 88-30-A-18
W1OTH/1.....5103- 64-27-A-13
W1AQE.....1935- 43-18-A- 5
W1PKV.....495- 15-11-A- –

Western Massachusetts

W1LIB.....10,710- 119-36-A-17
W1TCM.....5037- 74-23-A-11
W1MNG.....2886- 56-26-B-11
W1JYH.....2037- 36-19-A- 2
W1PHU.....1998- 37-18-A-10
W1CJK.....18- 3- 2-A- 1
W1VBG (W1SRB)
459- 17- 9-A- –

New Hampshire

W1BFT.....38,802- 223-58-A-19
W1CVK.....216- 12- 9-B- 2

Rhode Island

W1TRX.....27- 3- 3-A- 1

Vermont

W1RNA.....9750- 125-39-B-24
W1UDU.....208- 14- 8-B- 8

NORTHWESTERN DIVISION

Alaska

KL7AON....19,743- 154-53-A-18
KL7WC.....2240- 40-28-B- 3

Idaho

W7NGA.....11,070- 112-36-A-33

Montana

W7NPV.....6960- 58-40-A-23
W7FEE.....3- 1- 1-A- –

Oregon

W7GHB.....6195- 61-35-A-13
W7MLJ.....4352- 65-34-B-10

Washington

W7HAD.....48,351- 342-71-B-35
W7EYD.....31,146- 179-58-A-17
W7IYK.....11,417- 117-49-B-24

PACIFIC DIVISION

Hawaii

KH6MG.....29,890- 245-61-B-21
KH6IJ.....8448- 132-32-B- 5

Nevada

W7JUO.....16,182- 140-58-B-20

Santa Clara Valley

W6CFM.....4550- 65-35-B-10
W6QYR.....4350- 50-29-A- 8
W6WMM.....18- 3- 3-B- 1

San Francisco

W6CBE.....10,388- 108-49-B-23
W6ATO.....4200- 55-40-B- 6

Sacramento Valley

W6VBI.....17,442- 171-51-B-32

San Joaquin Valley

W6LDI.....1071- 21- 17-A-3

(*Continued on page 134*)

ROANOKE DIVISION

North Carolina

W4HUW	44,940-	321-70-B-40	
W4KE	120-	8- 5-B-	1

Virginia

W4NTZ	24,827-	207-61-B-23	
W4KMS	13,616-	148-46-B-25	
W4YEA	10,286-	139-37-B-22	
W4KVM	5904-	62-32-A-	6
W4KFC	2070-	30-23-A-	1
W4WKQ	216-	12- 6-A-	1

West Virginia

W8PQQ	15,312-	133-58-B-10	
W8QHG	8190-	120-35-B-15	

ROCKY MOUNTAIN DIVISION

Colorado

WØYMP	20,909-	133-53-A-21	
WØFKY	11,907-	81-49-A-17	
WØPNK	1898-	37-26-B-	8
WØBWJ	1425-	32-19-A-	6

SOUTHEASTERN DIVISION

Alabama

W4CYC	42,147-	335-63-B-25	
W4HA	3078-	57-27-B-	4
W4UJJ [4]	1518-	33-23-B-	3

Eastern Florida

W4PJH	83,283-	391-71-A-29	
W4AYX	11,622-	149-39-B-39	
W4TRA	9009-	77-39-A-20	

Georgia

W4SCU	15,390-	135-38-A-27	

SOUTHWESTERN DIVISION

Los Angeles

W6OGZ [5]	99,684-	703-71-B-39	
W6AM	76,183-	542-71-B-37	
W6OKD	15,509-	108-49-A-29	
W6NWS	3456-	76-16-A-20	
W6BJU [6]	1120-	28-20-B-	2
W6NJU	279-	31- 3-A-	7
W6MYG	29-	10- 1-A-	2
W6HOA	2-	1- 1-B-	1

Arizona

W7PUM	96,255-	465-69-A-33	

San Diego

W6CHV	61,620-	316-65-A-35	
W6TJN	336-	14- 8-A-	2

WEST GULF DIVISION

Oklahoma

W5ORH	30,723-	274-57-B-28	
W5EIO	2394-	38-21-A-	6

Southern Texas

W5KBU	40,548-	221-62-A-34	
W5HQR	21,780-	115-44-A-20	
W5UBN	21,648-	176-41-A-31	
W5RID	3300-	44-25-A-11	

New Mexico

W5MYI	51,188-	266-65-A-37	

CANADA

Maritime

VE1CM	2808-	40-24-A-	6

Ontario

VE3RM	6191-	76-41-B-	8
VE3AK	4234-	73-29-B-17	

Quebec

VE2IZ	11,679-	115-51-B-36	
VE2ADW	3-	1- 1-A-	1

Alberta

VE6DU	3-	1- 1-A-	1

British Columbia

VE7VT	9594-	82-39-A-24	

Manitoba

VE4JK	8008-	91-44-B-20	

[1] W2UGV, opr.
[2] Hq. staff, not eligible for award.
[3] W1WPR, opr.
[4] W5ONL/4, opr.
[5] W6FRW, opr.
[6] W6CUF, opr.

R.A.C.E.S.

(*Continued from page 68*)

The FCDA plan, on the other hand, while also concerned with avoidance of interference, puts more emphasis on national aspects of RACES by assigning nationwide liaison frequencies for specific c.d. services, so that all units of such services will have a common meeting frequency, regardless of their home territory. (FCDA points out the possibility of mutual aid and mobile support units coming by flat car from points hundreds, even thousands of miles away.) It designates certain blocks of channels of the RACES segments to certain purposes; and it bases most allocations on f.m. in view of its advantages in mobile work. This latter in particular is considered by opposing amateurs to be unrealistic of the present capabilities of the amateur service in implementing RACES.

Collaboration

Ever since the advent of RACES, and before, ARRL has maintained close contact with officials of FCDA and FCC. Relations have been cordial and coöperative. We have listened, on the one hand, to amateurs insinuating vile government plots to deprive us of our frequencies; and on the other hand, to government expressions of dis-

(*Continued on page 136*)

appointment and skepticism concerning the role and ability of the amateur. There is the usual tendency for everybody to look out for his own interests first, sometimes even to the extent of losing sight of the end objective: the best possible civil defense-amateur radio emergency service. To have amateurs and government lose cordial contact with each other on the matter of RACES would be disastrous, and we do not intend letting this happen. In addition to personal visits, telephone calls and correspondence, ARRL representatives have attended two lengthy FCDA conferences at the National Civil Defense College, and FCDA conferences in Boston, Cleveland, Chicago, Denver and Seattle. While the League policy in regard to RACES is fixed by responsible ARRL officers, and ultimately by your Board of Directors, there is little danger that the situation will get out of control. It is not possible to obtain results that are satisfactory to all service-minded amateurs, but it can be said that we have fared well, and that the amateur's role is generally recognized in official circles as a most important one.

* * *

A series of *QST* articles on the subject of RACES is hardly enough. We aren't through yet. There is much to be done, for the task of preparation for civil defense communications is an arduous and complicated one. There are many factors involved that are foreign to most of us. We suggest you "keep tuned" to the "Operating News" department of *QST* for further information, and to W1AW bulletins for any important developments. Meanwhile you can help, if you will, by investigating the civil defense situation in your own home town and, if nothing has been done toward integrating the amateurs into the communications program, by interesting yourself actively in this present-day operating phase of our amateur service.

YL News & Views

(*Continued from page 63*)

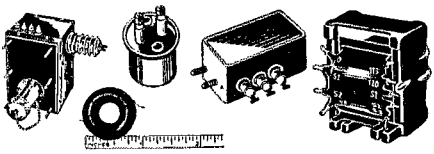
W2NIY	3,360	—	—
W4KL	2,800	—	—
W1AW	2,660	—	—
W9CMC	2,660	—	—
W8AQ	2,520	—	2,520
W3FSP	2,380	—	2,380
W1BFB	2,160	2,160	—
W4KX	1,920	—	1,920
W8FRD	1,920	—	1,920
W3BET	1,870	1,870	—
W3QLW	1,800	—	—
W3HJT	1,800	1,800	—
W3FYS	1,560	—	1,560
W4HUW	1,500	1,500	—
VE3ATR	1,320	—	1,320
W1JYH	1,260	1,260	—
W3CDG	1,100	—	1,100

These are the official results received from YLRL Vice-President W3JSH. W3QPJ, Kay, helped Dottie in the task of log-checking.

(*Continued on page 138*)

FREED

TRANSFORMERS



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Filter Reactors	Vibrator Transformers
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Low Pass Filters	Output Transformers
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Self-contained and A.C. operated with electronically regulated supply. 1 megohm to 2 million megohms.

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NO. 1110A Incremental Inductance Bridge

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NO. 1140 Null Detector Amplifier

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NO. 1250 Decade Condenser

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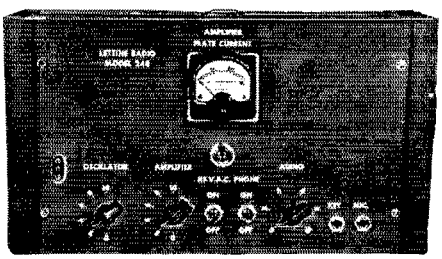

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TRANSMITTER WITH MOBILE CONNECTIONS AND A.C. POWER SUPPLY

This outstanding transmitter has been acclaimed a great performer throughout the world. It is excellent for fixed station, portable or mobile operation. Even if you have a transmitter of your own you can't afford to miss this wonderful buy, direct from our factory, ready to operate.

The 240 is a 40 to 50 watt Phone-CW rig for 160 to 10 meters, complete with: (8 x 14 x 8) cabinet, self contained A.C. power supply, MOBILE connections, meter, tubes, crystal and coils for 40 meters. Tubes: 6V6 osc., 807 final, 6SJ7 crystal mike amp., 6N7 phase inverter, 2 6L6's mod., 5U4G rect. Weight 30 lbs. TVI instructions included. 90-day guarantee. Price $79.95.

$25 deposit with order — balance C.O.D.

80, 20, 10 meter coils $2.91 per set. 160 meter coils $3.60.

Also for CAP, Broadcast, MARS, Marine, State Guard, Novice.

LETTINE RADIO MFG. CO.

62 Berkeley Street — Valley Stream, N. Y.

When the Hamilton Amateur Radio Club (Ontario, Canada) was awarded a trophy by the Marconi Company for having the highest Canadian Field Day score, VE3BTE, Rose Hallifax, was unable to attend the presentation ceremony. However, in recognition of Rose's fine amateur record and courage, company officials later brought the trophy to her home where it will remain at her bedside. An active amateur until she became seriously ill a year ago, she was especially fond of contests and Field Day operation and has several certificates and awards to testify to her efficiency. Rose is very proud of the honors she has received — amateurs and all those who know her are very proud of her.

Keeping Up With the Girls

Some kind of record was made when W1TUD, Alice, and W4WYY, Myrtle, checked into the N.E. YLRL Net at seven in the morning recently — both girls have seven young junior ops! . . . "Ham in Pigtails" is how ten-year-old WNØNCB, Jean, of Pueblo, Colorado, depicts herself on her QSL. . . . VE6MP has been experimenting with antennas on Forty, but Maude proceeds cautiously because transmitting tubes are dear in her small town (Chancellor, Alberta — pop. 35). . . . KL7AUL, Carmelita, is on single sideband on 75 and 20. . . . W2PBI of N. Y. C. made DXCC, WAC, WAS, BERTA and WBE, all on ten 'phone with 75 watts. This same distinction can be applied to Jerry's OM (W2YYL), too. . . . W9DXX, Alice, and W9MYC, Gladys, are the only two YLs amid some 100 stations in the Chicago area in the Fixed-Frequency 147.5 Mc. Net. . . . Historian for the Knights of the Kilocycles, OM W4HGO, reveals that his organization boasts four "Lady Knights" — W4AGB, Ellery; W4HWR, Hilda; W4MKP, Jane; and W5LGY, Helen.

YL Convention

The Third Annual W9 YL Convention will be held May 22nd and 23rd in Mishawaka, Indiana. Meetings, lectures, luncheons, tours, a banquet and dancing are on the program. YLs from *all* call areas are invited. For further information, please contact Convention Chairman Julia Morgan, W9LRT, 138 Monmoor Ave., Mishawaka, Ind.

—•••—

The W9 YLRL District Chairman, Grace Ryden, W9GME, is an organizer and some 85 YLs in the Chicago area can prove it. Grace has brought them all closer together by organizing the first YL club in Chicago (Ladies Amateur Radio Klub) and initiating the first W9 YL net on ten meters. Now she's making plans for a Chicago YLRL unit. When not busy with club work or on the air, Grace enjoys experimenting with antennas and keeping her station in good repair. Her OM, Jim, is not a ham, but Grace claims he's adept at holding up antennas!

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The Collins 75A-3
With Mechanical Filter

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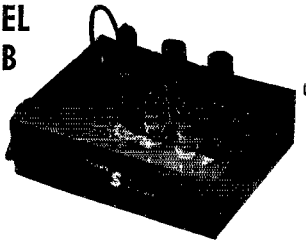
MODEL RC-1B



$45.00 NET

(Complete, with power supply, crystal and all tubes)

Converter for any one band, complete with built-in power supply, crystal, tubes, output cable and input fitting for 52, 75, or 300 ohm line, $45. Now available at leading distributors. Specify band and input impedance when ordering.

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For further information, write Dept. Q-4

SUMMIT ELECTRONICS LABORATORIES, INC.

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Novice Round-up

(*Continued from page 73*)

HUDSON DIVISION

Eastern New York

KN2BUI.....2400- 86-25-39
KN2AJN.....189- 11- 9- 1
KN2BNI.....176- 12- 8- 5
KN2BBJ.....66- 11- 6- 9

N. Y. C.-L. I.

KN2BUN.....1596- 61-21-34
KN2BYW.....864- 57-12- 6
WN2MBT.....637- 39-13-21
WNØKBL/2.....406- 29-14-16
KN2AFV.....297- 23- 9- 4
WN2NUC.....168- 14- 7- 3
KN2AAO.....132- 7- 6- 4
KN2AFX.....96- 12- 8- 2

Northern New Jersey

WN2OHS.....1520- 60-19-16
KN2AFQ.....732- 46-12-15
KN2BOF.....224- 18- 8- 6
KN2BPP.....54- 9- 6-24

MIDWEST DIVISION

Iowa

WNØMGN.....90- 18- 5-40
WNØLBC.....12- 2- 1- 2

Kansas

WNØKPZ.....330- 23-10-10

Missouri

WNØMRQ.....216- 24- 9-19

NEW ENGLAND DIVISION

Connecticut

WN1VNX.....1995- 75-21-37
WN1UVV/1.....390- 14-10- 3
WN1VVH.....63- 6- 3- 3

Eastern Massachusetts

WN1WLW.....1995- 75-21-37
WN1WLZ.....1660- 63-20-18
WN1VUW.....1460- 58-20-23
WN1WAI.....750- 35-15-14

Western Massachusetts

WN1WDW.....1206- 52-18-19
WN1WEF.....1020- 40-17-14
WN1WDX.....350- 30-10- 6

Vermont

WN1WFK.....84- 11- 4-10

NORTHWESTERN DIVISION

Idaho

WN7SGS.....120- 20- 6-36

Washington

WN7RMP.....330- 23-10-30

PACIFIC DIVISION

Nevada

WN7SNP.....32- 6- 2-10

Santa Clara Valley

WN6SAW.....1170- 80-13-22

East Bay

WN6SJC.....264- 33- 8-11

Sacramento Valley

WN6QAC.....363- 23-11- -

San Joaquin Valley

WN6RXO.....676- 52-13-30
WN6RUJ.....546- 27-13- 3

ROANOKE DIVISION

North Carolina

WN4WXZ.....2075- 73-25-12
WN4WEL.....1144- 42-22-32
WN4WDB.....1100- 45-20- 6
WN4WNB.....1050- 50-21-25
WN4WFC.....352- 17-11-18

Virginia

WN4VQY.....2418- 78-26-30

SOUTHEASTERN DIVISION

Georgia

WN4WRY.....57- 4- 3- 4

SOUTHWESTERN DIVISION

Los Angeles

WN6SJR.....273- 39- 7- 7
WN6SDY.....135- 27- 5- 6

Arizona

WN7RUK.....3872-121-32-33
WN7SUI.....90- 18- 5- 8

San Diego

WN6KJR.....1282- 52-19-33

WEST GULF DIVISION

Northern Texas

WN5VNW.....1150- 50-23-37

Oklahoma

WN5WDK.....36- 6- 6- 2

New Mexico

WN5YBJ.....972- 44-18-19
WN5WYF.....132- 12- 6- 3

Answer to QUIST QUIZ *on page 72*

Discounting 160-meter operation, B is right. The radiation from a wire longer than about ¾ wavelength tends to be more and more off the ends of the wire, so the balloon-supported antenna of this length would shoot most of its radiation upward. This would be useful on the lower frequencies during the day, but no great improvement over a horizontal antenna near the ground. A vertical antenna not over 0.6 wavelength long, with its base near the ground, is a good one, but it is a one-band affair.

MORE WATTS PER DOLLAR

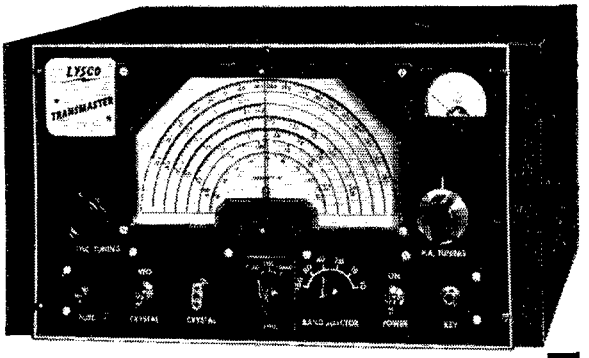
WITH **LYSCO**

MODEL **600-S**

TVI SUPPRESSED

PHONE/CW TRANSMITTER

LARGE **VFO** DIAL



FULLY CALIBRATED

The LYSCO Model 600-S, designed for 160, 80, 40, 20, 15, 10 meter operation, is a 35 watt, TVI Suppressed, clamp tube modulated, VFO/crystal, phone and CW transmitter, with the final working straight thru on all bands. The oscillator is a series tuned "Colpitts" circuit. The Clamp tube modulator used in the 401 Clampmaster is built in. The large dial gives ample spread on all bands and is illuminated for easy readability. This is the Novice's dream — ample wattage for good contacts and later for driving any powered final.

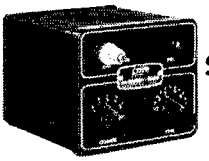
Tube lineup: 6AG7 osc: 6AG7 buff-Doubler: 807 Pwr. amp: OD3 VR: 5U4G rec: 6SJ7 sp. amp: 6SN7GT sp. am-audio rect: 6V6GT Clamp Mod. A complete, ready to go transmitter for the low price of only . . .

$189.95 NET

LYSCO MFG. CO. INC. HOBOKEN, N. J.

LITERATURE FREE ON REQUEST TO DEPT. Q

MODEL 50 ANTENNA COUPLER



$14.50 Net

Here is the answer to getting the soup up where it belongs — in the antenna. The Model 50 will load any long wire, 50 ft. or longer. 75 Watts max. pwr., 5 position switch for coarse tuning and condenser for fine tuning, neon indicator, compact 4" x 3¼" x 5". Ideal for Model 600-S or any low powered rig.

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. . or trade that Collins, Johnson, Hallicrafters or National piece of radio gear be sure to get our prices. Our service cannot be beat. Remember the name—

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Ward J. Hinkle, W2FEU, *Owner*

Remember also—Our telephone number is 73

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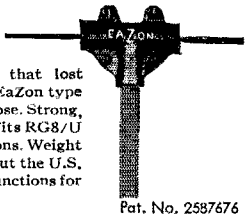
EaZon



Correct matching will put that lost power into the antenna. The EaZon type 3WA is designed for this purpose. Strong, easy to install and foolproof. Fits RG8/U or any coax of similar dimensions. Weight 4 ozs. Satisfied users throughout the U.S. Types 3W and 4W are ideal junctions for stubs or harmonic traps.

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Type 3WA	(*see cut*) Antenna Match	$4.60 *Net*
Type 3W	Tee Junction	3.00 *Net*
Type 4W	Cross Junction	3.60 *Net*

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A-27

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Telephone: FReehold 8-1880

CP

Correspondence

(Continued from page 75)

Junction, completely out of the disaster area, is now back in circulation) is to be deplored for two reasons: first, it has interrupted the flow of vital intelligence and disturbed the sequence in which other stations have been asked to stand by with their traffic; second, he is likely not ever to be called on to expedite traffic because his methods fail to inspire confidence and his operating procedure has not been advantageously displayed.

Constructively, what must we do? (1) Invest absolute authority in the NCS. (2) Listen before transmitting. (3) Zealously maintain the Golden Rule with others who seek to use the frequencies. (4) Confine our assistance to listening only, except when the NCS calls for help. (5) Concede our mistakes and try to do better the next time.

— *Arthur W. Woods, M.D., W4GJW*

411 Lee Street
Bristol, Va.

Editor, *QST:*

. . . I have noticed several times since I have been on the air the brashness of some amateurs who, operating in nets, have taken it on themselves to not only ask, but tell other amateurs not operating in their net to please QSY as "this is the ——— net frequency and you are QRMing a traffic station." I want to know by what authority these net control operators and net station operators take it on themselves to ask or tell a non-net amateur who happens to be operating on their net frequency to QSY. To the best of my knowledge, amateurs waive claim to any specified frequency in the application form for operator/station license. In the event of an emergency, I wouldn't hesitate to QSY or QRT, but just for routine message handling, I would say that the nets can get the traffic through the best way possible under the circumstances, without encroaching on my rights, or the rights of any other amateur. I have had occasion to work in traffic nets and handle messages, but I never took it on myself to ask or tell a QRMing station to QSY. I feel that the other fellow has as much right to that frequency as I do and if there is to be any QSYing, I'll do it. With the bands open wide to 'phone for General Class licensees, a fellow just can't QSY when asked or told because he is, in all probability, going to get in worst QRM. So I say . . . net operators and control operators, remember, you waived claim to any specified frequency when you got your ticket or renewal, so mind your manners.

— *William S. Kilgore, W4WRH*

SLOSH!

Navy No. 138
c/o PM, New York

Editor, *QST:*

Your article on Lunar DX in the March *QST* was about as interesting as a wet mop. Why not have more articles on technical subjects such as s.s.b. and TVI instead of such junk?

— *Don McEwan, W3RSF*

QRM

3145-A North 48th St.
Milwaukee 16, Wisconsin

Editor, *QST:*

Your editorial in the March, 1953, issue sounds good until I listen in the 80- and 40-meter 'phone bands. It sounds to me as if the FCC has been too busy to count all of the amateur licenses they have been issuing. Out here in Wisconsin I could swear that I can hear at least 110,969 on 3950 kc. alone!

— *Charles Kaetel, W9SNK*

A.R.R.L. QSL BUREAU

The function of the ARRL QSL Bureau system is to facilitate delivery to amateurs in the United States, its possessions, and Canada of those QSL cards which arrive from amateur stations in other parts of the world. Its operation is made possible by volunteer managers in each W, K, and VE call area. All *you* have to do is send your QSL manager (see list below) a stamped self-addressed envelope about 4¼ by 9½ inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner. For a list of overseas bureaus see p. 62, Dec., 1952, *QST*.

W1, K1 — J. R. Baker, jr., W1JOJ, Box 232, Ipswich, Mass.
W2, K2 — H. W. Yahnel, W2SN, Lake Ave., Helmetta, N. J.
W3, K3 — Jesse Bieberman, W3KT, Box 34, Philadelphia 5, Penna.
W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.
W5, K5 — Oren B. Gambill, W5WI, 2514 N. Garrison, Tulsa 6, Okla.
W6, K6 — Horace R. Greer, W6TI, 414 Fairmount St., Oakland, Calif.
W7, K7 — Mary Ann Tatro, W7FWR, 513 N. Central, Olympia, Wash.
W8, K8 — Norman W. Aiken, W8LJS, 701 East 240th St., Euclid 23, 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 — Austin A. W. Smith, VE2UW, 6164 Jeanne Mance, Montreal 8, Que.
VE3 — W. Bert Knowles, VE3QB, Lanark, 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, 329 15th St., North Lethbridge, Alta.
VE7 — H. R. Hough, VE7HR, 1330 Mitchell St., Victoria, B. C.
VE8 — W. L. Geary, VE8AW, Box 76, Whitehorse, Y. T.
KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.
KZ5 — P. C. Combs, KZ5PC, Box 407, Balboa, C. Z.
KH6 — Andy H. Fuchikami, KH6BA, 2543 Namauu Dr., Honolulu, T. H.
KL7 — Box 73, Douglas, Alaska

FEED-BACK

The "All-Purpose Super-Selective I.F. Amplifier" (March, 1953, page 23) carried a wiring-diagram error that could confuse anyone who was following the text closely. In Fig. 3, the leads to the No. 7 pins of the two 12AU7 detector tubes were inadvertently reversed. C_{62} and R_{32} should connect to Pin 7 of the lower 12AU7 detector tube, and the lead from the arm of R_{38} should run to Pin 7 of the upper 12AU7 detector tube. The unmarked resistor running to C_6 is R_7.

COMMUNICATIONS RECEIVERS

LOW PRICE: We just made an exceptional purchase in communications receivers designed for the United States Coast Guard. SPECIAL!

KIT PRICE EACH **$59.50**

Contains All Components

200 KC. to 18 MC. in 6 BANDS A.C. or D.C.

FEATURES
Push-pull Audio Output, 2 Watts • Amplified AVC • Crystal Filter • Voltage Regulated Oscillator Supply • High Sensitivity (3MV) • Noise Limiter • Beat Frequency Oscillator • Air Tuned RF Trimmers • Permeability Tuned I. F. Transformers • Phone Jack Disconnects Speaker

FRONT PANEL CONTROLS
Tuning • RF Gain • Audio Gain • BFO ON-OFF • AVC ON-OFF • BFO Tuning • Power ON-OFF • Standby • Noise Limiter ON-OFF and Control • Antenna Trimmer • Crystal Filter ON-OFF • Selectivity • Crystal Phasing • Vernier Scaled Dial Face

11 TUBES plus
Selenium Rectifier • 3-6SG7's • 1-6SB7Y • 1-6H6 • 1-6F57 • 2-6SL7GT's • 2-25L6's • 1-VR75

ORDER TODAY, there will never be another buy like this one!

WIRED PRICE EACH $89.50 • 25% DEPOSIT BALANCE C. O. D.

BOULEVARD ELECTRONICS, INC. DE 2-4458
808 10 W JACKSON BOULEVARD • CHICAGO 7 ILLINOIS
RADIO AND TELEVISION SUPPLIES

AN/APR-4 COMPONENTS WANTED

In any condition. Also top prices for: ARC-1, ARC-3, APR-1, APR-5A, etc.; TS-34 and other "TS-" and standard Lab Test equipment, especially for the MICROWAVE REGION; ART-13, BC-348, BC-221, LAE, LAF, LAG, and other quality Surplus equipment; also quantity Spares, tubes, plugs and cable.

ENGINEERING ASSOCIATES
434 Patterson Road **Dayton 9, Ohio**

HAM COUNTERMAN ★

Ham wanted by large Northern New Jersey electronic distributor to work as radio parts counterman. Large ham business. Excellent opportunity for right man. Inquiries held in strictest confidence.

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SPEED UP Your RECEIVING with G-C
Automatic Sender
Type S
$24.00 Postpaid in U. S. A.

Housed in Aluminum Case Black Instrument Finished. Small—Compact—Quiet induction type motor. 110 Volts—60 Cycle A.C.

Adjustable speed control, maintains constant speed at any Setting. Complete with ten rolls of double perforated tape. A wide variety of other practice tapes available at 50c per roll.

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STRATFORD • **NEW JERSEY**

XTALS FOR ALL PURPOSES!

LOW FREQ.-FT 241A for SSB, lattice filter, ½" spc. 54th or 72nd harm channels listed by fund. Fractions omitted.

374	395	418	487	511	400	464		
375	396	419	488	514	440	466		
377	397	420	490	515	441	468		
379	398	422	491	516	442	470		
380	401	423	492	518	446	472		
381	403	424	493	519	447	474		
383	404	425	494	520	450	475		
384	405	426	495	522	452	476		
385	407	427	496	525	461	477		
386	408	431	497	526	462	479		
387	409	433	498	530	463	480		
388	411	435	503	531	99¢ ea.			
390	412	436	504	533	10 for $9.00			
391	413	481	506	537				
392	414	483	507	538				
393	415	484	508					
394	416	485	509					

49¢ each. 10 for $4.50

SCR. 522 2 banana plugs ½sp ½" sp. ¾" spc.

5910	2030	2435						
6370	2045	2442						
6450	2105	2532						
6470	2125	2545						
6497	2145	2557						
6522	2155	3202						
6547	2220	3215						
6610	2258	3237						
7350	2280	3250						
7580	2282	3322						
7810	2290	3510						
$1.29 each	2300	3520						
	2305	3550						
	2320	3580						
	2360	3945						
	2390	3995						
	2415							

Add 20¢ for each 10 xtals or less for postage and handling

$1.29 ea.

FT243-½" spc

4190	1015	5940	6640
5030	1129	5973	6673
5485	2045	6273	6706
6040	3735	6306	6740
6073	5305	6325	7440
6106	5677	6340	7506
6140	5706	6373	7506
6173	5725	6406	7540
6175	5740	6450	7573
6206	5760	6473	7606
6773	5773	6475	7640
6873	5800	6506	7650
6906	5806	6540	7673
7740	5825	6573	7706
7773	5840	6575	7973
7806	5850	6600	8240
7840	5873	6606	8250
7873	5906	6625	8273
7906			
7940	99¢ each		
49¢ each	10 for $9.00		

SPECIAL—200KC in Holder—½" SPC.....	$1.95
35MMFD Double Spaced Var. Cond..3 for	1.00
Telegraph Key—knee mount.....	.75
Elevator Servo Amp. with tubes.....	3.95
Navy CW Xmtr. 85-105MC less tubes.....	2.50
Ant. Relay Unit—BC442A.....	3.95

NOTICE TO ALL HAMS: TRADE IN your used communications gear on new Hallicrafters, National, RME, Hammarlund, Sonar, Elmac, Gonset, Etc. equipment. Write for FREE ESTIMATE, attention "Pick" — W3PPQ.

SUN PARTS
DISTRIBUTORS
520 10th ST. N.W. • WASH. 4, D.C.

Armed Forces Day

(*Continued from page 84*)

The Pentagon, Washington 25, D. C. Time and call sign of the station copied should be indicated as well as the name and call sign of the amateur concerned.

Military-to-Amateur Test

Military stations AIR, NSS and WAR will be on the air between 1800 and 2400 (EST) on May 16, 1953, to contact and test with amateur radio stations. The military stations will operate on spot frequencies outside the amateur bands as follows:

Station	*Frequencies (kc.)*
AIR (Air Force Radio Washington)	3497.5 (A1), 7635 (A3), 14,405 (A3).
NSS (Navy Radio Washington)	4015 (A1), 7375 (A1), 14,385 (A1).
WAR (Army Radio Washington)	2220 (A3), 4085 (A3), 6997.5 (A1).

Contacts will consist of brief exchanges of locations and signal reports. The military stations are not permitted to handle traffic nor exchange messages. Amateurs are requested to refrain from asking for this service. Prompt and courteous operating practices will make it possible for the military stations to contact the largest number of amateur stations. Each military station will send a QSL card to each amateur station worked.

Warning! In both the 1951 and 1952 exercises, a few amateurs operated on the military frequencies rather than in the amateur bands. *No authority exists for amateur operation outside the amateur bands during this test.* Similarly, amateurs affiliated with MARS or USNR networks which drill on military frequencies are not authorized to use the military frequencies for purposes of these Armed Forces Day exercises. *AIR, NSS and WAR will limit contacts to amateur stations in the amateur frequency bands.*

Each CQ by AIR, NSS or WAR will indicate the frequencies on which each will listen for replies. These frequencies normally will be in blocks of 50 kc. For example: "CQ CQ CQ DE NSS NSS NSS ANS 3550 to 3600 KCS." Novice frequencies will be accorded the same attention as is given the remainder of the amateur bands. It is hoped that more Novices will participate this year than did in 1952.

M.A.R.S. BULLETIN SCHEDULE

The MARS Headquarters Station WAR/AIR, located in the Pentagon, Washington 25, D. C., sends a weekly transmission of general interest to all MARS members every Monday at 2000 and 2300 EST on 3497.5, 6997.5, 14,405.0, 20,994.0 and 27,994.0 kc.

These transmissions, which generally consist of about 60 to 100 groups, are transmitted at 25, 20 and 15 w.p.m. Beginning the first Monday in April and the first Monday each month thereafter a broadcast at 55 w.p.m. will precede the regular transmission speeds.

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.

(3) The Ham-Ad rate is 30¢ per word, except as noted in paragraph (6) below.

(4) Remittance in full must accompany copy. No cash or contract discount or agency commission will be allowed.

(5) Closing date for Ham-Ads is the 25th 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 and is placed and signed by a member of the American Radio Relay League. 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, if by a member of the American Radio Relay League take the 7¢ rate. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising by him 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.

(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., 719 World Bldg., New York City.

MOTOROLA used communication equipment bought and sold. W5BCO, Ralph Hicks, *204 E. Fairview, Tulsa, Okla.*

SUBSCRIPTIONS. Radio publications. Latest Call Books, $3.00. Earl Mead, Huntley, Montana. W7LCM.

QSL's-SWL's Meade WØKXL, 1507 Central Avenue, Kansas City, Kans.

QSLS, SWLS. Samples, 10¢. C. Fritz, 1213 Briargate, Joliet, Ill.

QSLS: Fluorescent QSLs radiant and glowing with quality-control. QSLS Kromekote three colors and up. Rainbow maps. DX QSLS. Samples rushed. 10¢. Uncle Fred. Box 86, Lynn, Pa.

QSL Samples 10 cents, Minner, W1SQF Press, Candia, N. H.

WANTED: Cash or trade, fixed frequency receivers 28–42 Mc. *W9YIV, Troy, Ill.*

QSLS, SWLS. High quality. Reasonable prices. Samples. Write to Bob Teachout, W1FSV, 204 Adams St., Rutland, Vermont.

WANTED: Marconi multiple tuner, coherer, spark coil, magnetic detector, etc.; DeForest responder, coherer and other early equipment; Marconigraphs, Modern Electrics; Electrical Experimenter and early Call Books and text books of wireless. Franklin Wingard, Rock Island, Illinois.

MICROWAVE test equipment wanted. Weston Laboratories Inc., of Weston 93, Massachusetts, will make you a high cash offer on any microwave test equipment, particularly such numbers as: TS-13, TS-120, TS-45, TS-35, TS-147, etc. To those more interested in trading, we offer any new standard ham item or a combination of cash. *Write giving full description for prompt reply.*

WANTED: All types of aircraft radios, receivers and transmitters. Absolutely top prices. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

WANTED: Top prices paid: Navy selsyns 1 DG, 1F, 1CT, 5CT, 5D, 5DG, 5G, 6G, 7G, etc. and BC-348, BC1221, AN/ART-13, AN/-ARC-1, AN/ARC-3, RTA-1B, AN/APR-4. Electronic Research, 719 Arch St., Philadelphia 6, Penna.

WANTED: BC610 or BC610 parts or components. State price and condition by letter. C. Porter, 8545 11th Ave., Silver Spring, Maryland.

WANTED: Selsyns and syncros. Top dollar paid. Write full descriptions to: Box 84, Babson Park 57, Massachusetts.

CRYSTALS — Those hard-to-get spot amateur freqs. 1.8 to 7.4 Mc. $2.50. Pennsylvania Crystal Co., R 2, Knox, Penna.

BEAT TVI. One 7" television receiver, $35.00. One 10", $50. Excellent as monitor, other uses around shack. W4API, Spitz, 1420 South Randolph, Arlington, Virginia.

WANTED: BC348 receiver. State price and condition. Write to R. Wegelin, 410 Cedar Str., N.W., Washington, D. C.

WANTED: AN/ARC-1 or AN/ARC-3 or components. Write to J. Durrant, 5526 Parkland Court, Apt. 202, Washington, D. C.

WILL pay cash for used receiver. Box 4, Kearney, Nebraska.

QSL samples. Dime, refunded. Roy Gale, W1BD, Waterford, Conn.

SELSYNS or synchros wanted: Navy or Army ordnance 60 cycle types. Will pay $35.00 each for 1DG, 1DF, 1CT, 1G, 1F; $25.00 each for 5DG, 5G, 5F, 5CT; $20.00 each for 5D, 6G, 6CT, 6DG, or sizes 7. Subject to inspection. Other types advise. Also want: Autosyns, Servo Control motors, PM motors, inverters, tubes and other electronic components. Electro Sales Co., Inc., 50–58 Eastern Ave., Dept. Q, Boston 13, Mass.

QSL Cards?? Amer ca's finest and largest variety super-gloss QSL samples, 25¢, One-day service! Sakkers, W8DED, 53 East 7th, Holland, Michigan.

WANT *QST*s older than 1920. Have 200 copies from 1932 to 1953 at 25¢ each. WØMCX Jablonsky, 1022 No. Rock Hill Road, Rock Hill 19, Mo.

SELL: Webster 78 rpm record-changer with G.E. magnetic cartridge, permanently mounted in portable carrying case, $15.00. Columbia LP turntable and tone arm, $6.00. G.E. SPX-001 preamplifier for magnetic cartridges, $5.00. Original cost of above equipment over $75.00. John E. Cann, W1RWS, 316 Westpoint Terrace, West Hartford, Conn.

PRECISION-made, custom built antennas for all bands . . . literature available. Antenna, Incorporated, Wakefield, R. I.

FREE list. Used Collins, Elmac, Hallicrafters, Hammarlund, Harvey-Wells, Lysco, National, RME, Sonar, etc. Lowest prices. Liberal trades. Dossett, W9BHV, 855 Burlington, Frankfort, Indiana.

WANTED: ART-13 transmitter and parts. Write B. Spivey, 7013 Rolling Road, Chevy Chase, Md.

QSLS *two colors, $7.00 a thousand. Samples. 10¢.* VE3LG, G. LaFleur, 25 Queen Mary St., Ottawa 2, Canada.

YOUR Call Letters engraved in beautiful black plastic: white letters, Plexiglass base. Delivery about 6 weeks, only $2.50. Cash, check, money order. Rocky Mountain Engraving Co., 3813 Calle Dell Monte, Albuquerque, N. Mex., W5THS, Larsen.

FOR Sale: *HT-17 as new, MK-2* converted, *XE-10*, mimeograph, typewriter, RCP-447 VOM, 17½" Bud rack cabinet, meters. Stamp for list. Samkofsky, 527 Bedford Ave., Brooklyn, N. Y.

FOR Sale: 75A1 ser 1267. Like new. $275.00. 40 and 75M, ARC5 TX and RX, like new. Crystals, meters, etc. W6NDB, 4800 Lee St., La Mesa, Calif.

KILOWATT fone xmitter, professional type, rack and panel, extras no shipping. Complete: $250.00. W2UVP, Swan, 44 Pewter Lane, Hicksville, L. I., N. Y.

"NEW Type" ten meter ground-plane antenna. Results guaranteed, it, $14.95. Plans, $1.00. W5UKC, Yates, 4402 Sinclair, Austin, Texas.

I will give *away section 1, 2, 3, and 5 of the* C.R.E.I. *home study* course to some deserving person with a real interest in radio engineering, but no chance for schooling. Write me your situation. Fred L. Jones, WØSTM, 704-E South Mulberry St., Ottawa, Kansas.

COUNCILOR wanted, for Maine boys' camp for summer. License required operate ham voice station. 20 years minimum age. Healy, 18 Floral, Hastings-on-the-Hudson, N. Y.

WANTED: Dynamotors, all sizes and ratings: tubes, all types (transmitting and receiving) crystal diodes, microwave gear, frequency meters, test sets, cameras, government surplus. I buy and sell and swap as well. M. C. Blumberg, 107 Liberty St., New York 6, N. Y.

$700 value imported Hertel & Reuss monocular compound microscope with 5X, 8X, and 12X oculars; 10X, 50X, and 100X oil-immersion objectives; right-angled vernier mechanical stage on 360 degree calibrated platform; sub-stage condenser with iris diaphram shutter and dark-field condenser. Guaranteed superior condition. Swap for a Johnson Viking II with VFO or Collins 32V. All inquiries answered. Captain Atherton, W4RVE, Crime Laboratory Camp Gordon, Georgia.

SELL: Grid dip 3.5–150 Mc. $10.00. 10 meter converter, $10.00; ARC–5, 550–1500 KCS, $20.00 Deane, W6RET, 550 So. "G", Oxnard, California.

MOBILE rig: Motorola FMT3J-DMS xmitter with control pane and mike; Motorola P-69-13 receiver; Motorola P8263B speaker; 132XC Master Mobile Mount; 8 ft. stainless steel whip; Mallard *base load coil; S-29079 alternator with Hoyt ampere meter. This is a* complete setup and all guaranteed to be in excellent condition, ready to install. Cost $499.50. Will sell with choice of either Mallard converter or Gonset Tri-Band for $425.00 F.o.b. St. Louis. Will crate for shipment. Jule P. Miller, 1401 Arcade Building, St. Louis, Mo.

FOR Sale: Sola constant voltage transformers, 115 volts output. 30 VA, $6.00; 120 VA, $12.00; 500 VA, $27.00. H. G. Radcliffe, 1013 West High St., Petersburg, Va.

MOBILE installations made, auto receivers modified, whip antennas tuned, noise suppressed. High power final amplifiers and modulators for your Viking or 32V, built to your specifications. Worster, W2HTW, 121 Elder Ave., Bergenfield, N. J.

FOR Sale: Hallicrafters S40 receiver, used. Pick it up, $35.00. Alfred L. Allee, W2KOF, East 30, Glen Avenue, Paramus, N. J.

SELENIUM Rectifier and transformer Kit 0-28VDC/1 Amp, $28.98; power supply kit, 350WVDC, transformer, tube, choke, condenser, $3.69; Diodes 1N34, ten for $5.98; sell your surplus tubes, equipment and cameras. Free Tabogram. "TAB", 111 Liberty Street, New York City 6, N. Y.

COLLINS 32V2, $485.00, extra 4D32, $15.00. Hot ten meter receiver double conversion, 13 tubes, no surplus, $55.00. Clarence Leverington, 5076 Arlington Ave., St. Louis 20, Mo. WØYZO.

WANTED: Viking 1 transmitter and NC-183 receiver. Must be in good condition. State price in letter. O. H. Nance, O. D. WN5WBY, Box 313, Lamesa, Texas.

TRANSMITTER: 180W, A.M., similar to Globe Champion, coils for 20 and 10 meters. Write for details, photos; $225.00. Also plug-in coils "signal shifter "; $30.00. W7MUI/9, c/o W9GFC.

SELL transformers: 4000/3000 VCT 500 VA, $20.00; 1700 VCT 300 ma, $10.00; 1200 VCT 200 ma, $7.00; 2900 VCT 1.85 KVA, $25.00; 2 units 3200 VNCT, 300 Ma, pair, $18.00; 2000 VCT 250 *ma, $6.00; also filament and mod. transformers, chokes,* cabinets, tubes, meters, 522, other surplus. Prices F.o.b. Camp Hill, Penna. W3JYU, Fred Hassenplug, 21 South 29th St., Camp Hill.

SACRIFICE: 3 used VFO short wave machines, metered, for sale; 300 and 500 watt; conversion to transmitter simple; also 1 used 3200 volt CT power transformer; best reasonable offer accepted for any or all items. KN2BTF, Koenig, 72–25 136th St., Kew Garden Hills 97, Long Island, N. Y.

WRL Globe King, like new, with break-in. $400.00. Reason for selling: need the money. Rev. E. K. Bryant, WØCWC, 1059 21st Ave., Longview, Washington.

CLEARING out accumulated parts and equipment. Transmitters, receivers, VFO, power supplies, surplus gear, tubes, transformers, etc., Bargain prices. Send for list. Clarence Hartneck, WØGBZ, Lakefield, Minn.

RBL3: Navy receiver, 15 Kcs, 600 Kcs, $65.00. In good condition. NRI radio, TV course, 100 lessons, good condition, $20.00; complete CREI radio and broadcast engineering course, 18 binders, over 80 lessons (1948). In good condition, $35.00. Bob Abernethy, W2PQY, 120 Frederick Ave., Babylon, N. Y.

SELL: Command xmitters: 3-4 mc., good, used; $15.00 with some spare parts. Push-pull modulator, unused, $9.00 with dynamotor. VHF, used 10 hrs., $18.00. New spare 832A, $4.00; ARR-7 rcvr. (airborne SX-28A), 0.55-42 mc., $95.00 with manual. O. L. Updike, Jr. W4LAM, 1848 Winston Road, Charlottesville, Va

SUPER-PRO BC-794 with speaker. HT-18. WRL exciter. Will sell at highest offer. M. G. Arthur, WØCHM, Route 1, Box 215E, Boulder, Colo.

SX-71, $130.00. Ship collect to sender of first check received. Want HRO 60 or 75A2, perfect condition. Give complete description, best price. Need 1 kw RCA mod. xfrmr with screen winding for PP813. E. N. Griffin, W2MJA, 131 Hillcrest Dr., Packanack Lake, N. J.

FOR Sale: Complete station. Viking II, Viking VFO, HRO50T1 complete, low-pass filter, coupler, D-104 mike, extras. Best offer over $680.00. W. F. Corbett, KL7AJQ/W4 1204 Blaine Drive, Alexandria, Va.

QSL'S! Interesting samples, 10¢. Tooker Press, P.O. Box T, Lakehurst, N. J.

SELL: SAM s Fotofacts, 1 to 60 in binders. Like new, $110 value for $75.00. E. Treadwell, W2FID, RFD Wappingers Falls, N. Y.

KNIGHT wire-recorder. Excellent condition. $75.00. Modulator 807's, capable of modulating 200 watts. Rack mounted, $45.00. Dual power supply, 300 volts regulated, 800 volts 300 mills. $45.00. Fred A. Gerdes, W5NUN, Tucumcari, N. M.

SELL: Collins KW-1 kilowatt phone-c.w. transmitter. $2,000 cash and carry. W6QVB, Topanga, Calif.

WANTED: Any manufactured commercial or amateur apparatus made before 1920; QST's, Wireless Age, Electrical Experimenter, Modern Electrics, Marconigraphs, all before 1920, especially need Marconi tuners 106, 112A, WSA IP76, Year Book of Wireless Telegraphy 1916, 1917, 1919, 1921. Please describe items in detail and price wanted. Louis Rizoli, W1AAT, 100 Bay View Ave., Salem, Mass.

TROUBLE obtaining ham parts or equipment? Have you contacted New England's largest and fastest-growing ham supply house? We trade equipment; write for latest used equipment list. We offer terms; write for details on our extended credit time payment plan. Nine of our personnel are active, licensed hams. Contact W1BFT (Carl) at Evans Radio, Concord, N. H.

FOR Sale: RME-84. Use as fixed or mobile. In excellent condition. $60.00. Greg Held, WØKJE, Griswold, Iowa.

SELLING out WRL Globe King, Hammarlund HQ-129X, $475.00. W2TCG.

CANADIANS: Selling complete station, 250 watt c.w. 125 watt fone, HQ-129X receiver, meters, accessories, in excellent condition. Full particulars on request. A. B. Morgan, VE3OI Box 308, Belle River, Ont., Canada.

SALE: Brand new, never used, factory built Meissner EX9-1090 signal shifter, $95. 10M 65 watt mobile rig, complete with all accessories and Elcor 6 volt dynamotor, $68.00; 10M whip and base, $10; 125 watt modulator, like new, $75. W4OSN, 7136 Lone Oak St., Spartanburg, S. C.

WANTED: BC-645 I.I.F. units. State price and condition. Andy Andros, WØLTE, 249 No. 48th Lincoln, Nebr.

WANTED! New or excellent used ARC-1, ARC-3, ART-13, BC-312, BC-342, BC-348, J-68, TCS-7, APR-4, nearly all TS numbers. Can also use many parts of these. Write best price and description. Possner Co., 1223 Venice Blvd., Los Angeles 6, Calif.

SELL your microwave test equipment and communications equipment to Weston Laboratories, Inc., Littleton, Massachusetts. Highest cash prices offered or trade for new ham gear.

SELL complete all-band station: FRC-1 transmitter, 813 final, 811s modulators, speech compression, built-in 10 tube receiver. Final driven by Collins 310B-1. The works for $450.00. HF 10–20 converter, two months old, $65. HQ-120 receiver, just aligned and retubed, $95. Combination unit composed of Hewlett-Packard model 205AG audio signal generator with instruction book, BC221 with crystal and book, and Ferris signal generator, no book. Unit covers 0 cycles to 175 mc. All mounted on aluminum panel 35" x 11" x ¼": $295. W7MID.

DELUXE QSLS. Petty, W2HAZ, 17 Southard, Trenton, N. J. Samples 10¢.

TRADE: Precision manufactured in an optical laboratory. Complete set of optics for astronomical telescope. Want: Ham gear mobile or fixed. C. W. Galbreath, W5WZX/6, 434 Grand Ave., Monrovia, Calif.

SELL or swap: Kilowatt modulator and power supply, best offer. Want: HQ-129X, HRO or SCR522. W1, W2, W3 deal only. W2BZR, Box 273 Chatham, N. J.

10, 15, and 20 meter beams, aluminum tubing, etc. Perforated aluminum sheet for shielding. Radcliff's, Fostoria, Ohio.

SELL: 30-watt transmitter, ideal for novice, built from "How to Become a Radio Amateur". Complete with power, tubes, and xtal. Best offer takes it. Robert Slutsky, W2GKT, 184 Water St., Perth Amboy, N. J.

FOR Sale: RME VHF-152-A converter, like new; not a scratch; in tip-top condition. Goes to best offer. Dave Smith, KN2CHS, 5 Butler Road, Scarsdale, N. Y.

FOR Sale: Collins 30K-1 transmitter, $1400. Excellent condition. Complete mobile rig, 10-meter Subraco xmitter, Gonset Tri-band converter, power supply (Carter dynamotor), cables, antenna whip and mount, microphones. Mobile rig sold complete only, $150. 2-meter W1KIM converter, $50.00. SCR522 2-meter transmitter; best offer. 4-element 10-meter UHF Resonator beam, $25.00. 6-element 2-meter beam, $18.00. K2BQ, 83 Lookout Circle, Larchmont, N. Y.

SELL: CREI Advanced Practical Radio Engineering (56 lessons) plus Specialized Aeronautical Radio Engineering (15 lessons), both for $55. James Collier, W2OPJ, 57 Chapel Ave., Buffalo 25, New York.

WANTED: One Elmac 4–250A; please state condition and price. R. E. Blodgett, Holmesbrook Road, RD1, Basking Ridge, N. J.

NEW Simpson 0–1 DC milliameter, $5.25; six 807's, $7.50; 3GP1A $3.50; 5BP1, $4.00; 3E29, $10; 3BP1, $5.25. Will sell altogether or separately, shipped postpaid. W2RUK, 3½ Hulbert St., Auburn, N. Y.

SALE: HT-17 25-watt rig with 40 M 80M coils, meter, $37.50 Freight paid. W9GBP.

SCR522s, complete with tubes and 24 volt dynamotors, $42.50. Dynamotors alone, $3.95. Control boxes, $1.95. BC1206B Beacon receivers with tubes, $3.95; BD-77 dynamotors, 12-volt, $8.95; 304TL tubes, new, $3.95. Kennedy, 4511 N. 8th Street, Phoenix, Arizona.

BC-221AH frequency meter, 110v power supply self-contained' VHF Harmonic amplifier added (does not upset original use), complete with calibration book and retractable cord ear-phone. Spare crystal. Best offer. W4NXE, 1111 Harrington Road, Elizabeth City, N. C.

W2AOA Print: Quality QSL/SWL cards. 10¢ samples. Doscher, Box 54, Goshen, N. Y.

FOR SALE: 900 watt phone/cw transmitter VT-127A's final, 810 modulators. Reasonable. Also Eico 'scope, 5", $40; Simpson signal generator, model 479, like new, $195. Multitester R.C.P., Model 450, $12; Stromberg Carlson "New World" console, coat $500, 1949, sell $90. Also assorted tubes, etc. Everything guaranteed. W2FUR, 24 Olsen St., Valley Stream, L. I., N. Y.

SELL: Bird 72–2 Coaxswitch, $25. Will swap. W6UO.

SELL: 1947, '48, '49 QSTs $2.50 year, parts of '45 and '46. W.E. 2KVA 90–120v autoxfrmr, $10. Twin Trax 7 ips tape mechanism, $70. Zenith table AM radio, 3-speed fono $50. W3SEQ, Washington, Appleton 7–8191.

SELL: BC-459-A, unmodified, complete with tubes and crystal, $15.00. Want: ART-13 and parts for ART-13. W1VPW, Box 72, Revere, Mass.

FOR Sale: Johnson Viking I, 4D32 final, TVI kit, $250.00. Cash and carry. W. J. Phillips, 718 East 10th St., Ocala, Florida.

MILL: Royal portable, Western Union keyboard, like new, $25.00. D. C. Strawn, W6AXN, 8152 Virginia Ave., South Gate, Calif.

TRADE: Brand new Spaulding golf clubs, nine irons and three woods, never used. Want: good receiver. Anyone interested? W3PVZ, 300 Third Ave., Burnham, Penna.

RELAYS, 6VDC, SPDT, 3/$1.00. R. Forward, 904 Highland Drive, Silver Spring, Maryland.

SELL: PE101-C, modified, new, $8.00; SOJ #3, $19; Heath V6-VTVM, $37. All are F.o.b. Back issues QST, Radio News, CQ. 40 ea. P.P. Marshall, 455 Washington Ave., Dumont, N. J.

SELL: 1952 Viking I and 1946 RME-45. Bill Johnson, WNØLGE, Gilman, Iowa.

HALLICRAFTERS HT-9 transmitter, all-band phone/cw, in perfect condition, $190. N. F. Doyle, ex-W2SCL, 2965 Cambridge Rd., Wantagh, N. Y.

WANTED: TR-4s and HV/75s. W1BB

BARGAINS: New and good clean reconditioned Collins, Hallicrafters, National, Hammarlund, Johnson, Elmac, Gonset, Morrow, Babcock, Harvey-Wells, RME, Millen, Lysco, others. Reconditioned S38, $29.00; S40A $69.00; SX43, $119.00; S76, $129.00; SW54, $35.00; NC57, $69.00; HFS $99.00; NC125, $129.00; NC173, $149.00; NC183, $199.00; HF-10–20, $49.00; VHF-152A, $59.00; RME45, $89.00; HQ129X, SP400X, SX71, SX42, SX62, S47, S27, SX24, NC200, NC240D, HRO7, HRO50 HRO50T1, HRO60, NC183D, 75A1, 75A2, 32V1, 32V2, many others. Reconditioned equipment shipped on trial. Easy terms. Write for free list. Henry Radio, Butler, Mo.

BARGAINS: Extra special: Motorola P-69–13 mobile receivers, $29.50; Globe King, $315.00; HT-9, $199.00; HRO-50, $275.00; HRO-7, $199.00; Collins 75A1, $275.00; HRO-5T, $175.00; SX-71, $169.00; SX-42, $189.00; SX-43, $129.00; HRO Senior, $119.50; RME 2–11, $99.50; RME-45, $99.00; Meissner EX shifter, $59.00; S-40A or SX-16, $69.50; VHF-152, $49.00; HF 10–20 $59.00; Globe Trotter, $69.50; MB611 Mobile transmitters $19.95; 90800 exciter, $29.50; DM-36–10 meter converter, $19.50; XE-10, $14.95; Gonset 10–11 converter, $17.50, and many others. We need used receivers: We give highest allowances for S20R; S-40A, -B; NC-57; NC-100; NC-125; SX-24; SX-25, HQ-129X and similar receivers. Free trial. Terms financed by Leo. WØGFQ. Write for catalog and best deal to World Radio Laboratories, 740–44 West B'way, Council Bluffs, Iowa.

FOR Sale: Collins 30-K1 transmitter with companion 310A exciter. In excellent condition. Collins 35C lo-pass filter installed. Best offer above $950.00 F.o.b. Dallas. J. N. Moyer, W3EWJ, c/o Collins Radio Co., 1937 Irving Blvd., Dallas 2, Texas.

BUD Audio oscillator, $6.00; Gardiner tape machine and ten tapes, $10.00; Electro-Voice 600-C microphone, $8.00, 24 volt dynamotor, $5.00; 3GP1, 2AP1A, 2–814s, 829B, all new; best offer. Write to W2KQI, 4407 Scenic Drive, Nashville, Tenn.

COMPLETE 40 meter station: BC459 xmitter (chirpless), BC455 rcvr; H.V. and L.V. regulated supplies, each in separate Bud CA1750 cabinet. Plugs, multiconductor cables (no loose wires); keying relay, spare xmitter tubes. Excellent condition. Also 80-meter BC454 rcvr. Everything $65.00. Ernie Witkin, W3DLQ, 6801 Eleventh, Phila., Pa. LI 8–7732.

WANTED: Bandswitching transmitter preferred, and receiver. Also want test equipment. George Laine, 222 E. 7th St., Brooklyn 18, N. Y.

SELL: AR-88-LF, less speaker, with front panel crystal phasing. Make an offer. VE3AZL, 245767 f/s J. E. Paterson, RCAF Station Clinton, Ont., Canada.

SELL: Collins 32V2 with NBFM adapter, $485.00. New condition and appearance. D. S. McClung, K6CL, 5208 Electric Avenue, La Jolla, Calif.

TRADE new Stancor 203-A mobile transmitter for 8 mm movie camera or what have you. W8QBR, Tupaney, 2036-25th Street Detroit 16, Mich.

FOR Sale: Browning FM modulation monitor MD-25, $225.00. Lampkin Lab 105 micrometer frequency meter, $150.00. Like new. F.o.b. Newcomerstown, Ohio. Walter N. McPherson, 551 South River St., Newcomerstown, Ohio.

COLLINS 310B-1/3 exciter, like new, unmodified. Has one final PA coil and low frequency ant. coil. This is the unit which has the built-in antenna tuner. Make your best offer. Also have excellent Gardiner model S sender, $14.00. Ernest S. Lewis, W4MZT, 313 20th St., Knoxville, Tenn.

FOR Sale: Complete station, 350 w 813 final, Bud cabinet; neatly built; 20–80–160 meter coils; Elincor antenna tuner, 12 pr xtals, Cardax mike, 1. Super Pro receiver in cabinet, with 3" 'scope and spkr., and photo on request. Phil Summers, W8ERW, 410 Maple St., Delphos, Ohio.

AHOY, any of you maritime mobile hams or fixed station landlubbers know where the Mystic Marine Museum can locate a portable amplifier in control box? QSO B. M. Steers, Marine Museum, Mystic, Conn.

SELL: BC474 Rec-Trans, $50; new 6J4s, $3.00 each; PE103 new, $25.00; Gonset noise clipper, $5.00; SX28A with speaker, $150.00; E6B computers with case, $5.00; transmitter Sparton-Waller, new, 813 final, TZ40s modulators, 7 relays, 24VDC, two tanks, 150 watts, less tubes and power, $30.00; Trans-Recvr Airadio, 12 and 24 VDC, tubes and power, no cable or case, $25.00; *QSTs* 1941 to 50, $2.00 per year; BC610 crystals, 2030 to 3580 Kc., $1.00 eac. Al Livingstone, 12–01 Ellis Ave., Fair Lawn, N. J.

WANTED: "RCA-KW" modulation transformer with screen winding. State price, condition, etc. "Judge" Glanzer, WØLMB, Bridgewater, So. Dakota.

WANTED: Workshop 20-meter beam. Must be in A-1 condition, complete, with original instruction sheets. Dr. A. S. Sanchez, W4TOW, Eatonton, Georgia.

TRADE: 2¼ x 3¼ Speed Graphic Anniversary camera. Lots of extras. Want good receiver: Harvey-Wells Bandmaster Deluxe. Fred Kloepper, WØFON, Lawrence, Kansas.

SELL: Harvey-Wells TBS-50D transmitter with power supply, adapted Johnson Viking VFO, and Stancor clipper-filter, $150.00, originally $230.00 Eldico 2-meter transmitter kit, new, still unwrapped, $45.00. RME Converter 152A with barely 5 hours service, $75.00. James Hartshorne, W2RKG, 259 Veterans Place, Ithaca, N. Y.

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SELL: Gonset 3-30 Mc. converter, complete with tubes, $25.00. W6DOT, Pera, 27 Gaviota Way, San Francisco 27, Calif.

SELL: 2000 issues of *QST*, from 1920 to date. Single copies 20¢, min. $1.00, yearly $1.50 per year. All postpaid. W. L. Holst, W9MD, 2553 Winnemac Ave., Chicago 25, Ill.

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WANT printer for TC-7-B or Model 15 teletype. Also need 6 or 24 volt stepping relays. Sell Western Electric 106A Selector Set with cables, control unit and crystals and handset for mobile telephone operation. Hugh Morris, 312 W. 40th Street, Indianapolis, Ind.

RTTY. An amateur teletype, monthly bulletin, $1.80 per year, available from Southern California Radio Teletype Society, 3769 East Green Street, Pasadena 10, Calif.

SELL: Hallicrafters SX-42, like new, with special Peerless Hi-Fi output transformer. Operation and maintenance manuals included. Used very little as had other sets. Only $195.00. Dwight Baum, W6FRB, 1011 Oak Grove Ave., San Marino, Calif.

FOR Sale: Complete single sideband transmitter, pair 811's final, $150.00 or best offer. 500 volt power supply, one 852 tube, one 832A tube. Make offer. W3PKI, 737 Pine Street, Steelton, Penna.

TRADE: BC-645AU, unconverted, pair Eimac 50(75)Ts unused in original boxes, 200 microammeter, Lab type 0–15 microammeter cased. Want: VOM, VTVM, xtal mike preamplifier. M. Tanenbaum, W2AQ, 1535 E. 8th St., Brooklyn 30, N. Y.

HAMFEST reminder: June 7, 1953, Starved Rock Radio Club invites everyone to join in the fun. We will not forget the Novices and ladies. See April Ham-Ads for details or QSO W9MKS on 75 'phone. W9QLZ, Utica, Illinois.

CRYSTALS — Cables, new band edge crystals for 80 and 40 meters 'phone and cw, FT-243 holders, $1.80 ea. Also six cables for PE-103A; BC-654-A connection and four cables for BC-223-A transmitters, $2.75 each. Have new marine frequency crystals for all coastal and ship channels, $3.75 each. W6KEG, 2142 Parkway Dr., El Monte, Calif.

SELL: NC-183-D with speaker, $299.00; Telrad 1000–100–100 Kc frequency standard, $19.50; Millen Variarm VFO, $19.50; Gonset 6-meter converter, $14.50. Sixty xtals, 50¢ to $1.50 each. Paul Fracker, W8QOH/4, RFD 15, Box 64 Cincinnati 36, Ohio.

TRADE new TG-10 code machine with tapes. Want oscilloscope 7 inch TV, $40, 10 in. $50. W4API, 1420 South Randolph, Arlington, Virginia.

SELL: Novice transmitter and power supply, input 35 watts p. 27 May '52 *QST*, with Novice crystal and key. Power supply 375VDC, 160 Ma., 6 and 24 v. Filament windings, $50 f.o.b. Princeton, N. J. Need: T-17 mike and Gonset 10–11 converter. Tom Dorf, K2BPS, Mercer Road, Princeton, N. J.

CLEANING shop — no junk — priced to sell. Postal for list. W4MVM, Molyneux, 8421 8th Ave., No., Birmingham 6, Ala.

QSLS: "Brownie," W3CJI, 3110 Lehigh, Allentown, Penna. Samples 10¢; with catalogue, 25¢.

SELL: Shure model 708 crystal microphone; list price $27.50; absolutely never used, $12.00. J. Rando, 663 Crescent Ave., Bronx 58, NYC, N. Y.

FOR Sale: National NC-108 FM receiver; like new, factory realigned. W1OZ, 920 Cambridge St., Cambridge, Mass. Tr. 6-9031.

QSLS-SWLS, as low as $1.50 per color. Samples dime. Stronberg, P.O. Box 151, Highland Station, Springfield, Mass.

COLLINS: 310-B, 25 watt exciter, $225.00; NC-183, $250.00. Both like new. Van Sickle, W9KJF, 1320 So. Calhoun St., Ft. Wayne 2, Indiana.

STATE Map postcards for QSL, QTH, WAS confirmations, Ward-Sharp, 56 Kendall Avenue, Rutland, Vt.

VHF 2-meter converter, crystal controlled, wired $12.00; transmitters, 15 watts 'phone, pre-assembled kits, $34.50. LW Electronic Laboratory, Route 2, Jackson, Michigan.

QSLS, high quality only. Quick delivery. Samples, 10¢. John Dortch, W4DDF, Jocelyn Hollow Road, Nashville, Tenn.

SELL: 21A printer, $50; #12 page printer, $65.00; BC-1031 panoramic adaptor, $75.00; BC-639 with RA-42, $150.00; LM Freq. meter with modulation, $75.00; Want Collins 32V2, ART-13, ARC-3 receiver. Will trade. Tom Howard, W1AFN, 46 Mt. Vernon St., Boston 8, Mass. Richmond 2-0916.

FOR Sale: RME-VHF-152A converter, $50. GE cathode ray oscilloscope, CRO-3A, $50. Both perfect, used only 10 hours. L. Swart, Fernwood Trail, Mountain Lakes, N. J.

T2FD antenna resistor, 400 ohm non-inductive, $2.49; Power supply kit, 350WVDC/60ma., transformer, tube, choke condenser, $3.69; Diodes 1N34, 10 for $5.98; sell your surplus tubes and equipment. Free Tabogram. "TAB" 111 Liberty Street, N.Y.C.

WANTED: VFO, 'phone/cw xmitter. Write now to W2MBT, Box 168, Center Moriches, N. Y.

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HANDBOOK: First edition 1926! "200 Meters and Down", 230 issues of *QST* back to 1926, not all years complete. Will swap for used receiver. Come and get them. W2JV, Nutley, N. J.

MILLEN Exciter, like new, tubes, coils 10 through 80, $25.00 W6HGW, Crow, 901 Robertson Way, Sacramento 18, Calif.

FOR Sale: Motorola T-69–20A transmitter, coils for 10 and 20, with matching 6V power supply interconnecting cables and control head. Gonset Tri-Band converter. Gonset noise limiter. Master Body mount, 8' whip and 20 meter Mallard coil, heavy duty antenna relay, $120 complete, all in excellent condition. Will sell separately. Herbert S. Reed, W2EGQ, 329 Cook Ave., Middlesex, N. J.

WANTED: ART-13, ATC, transmitters and parts, ARC-1, ARC 3, APR-4, APR-5, APN-9, BC-348, BC-312, BC-224, BC-342, BC-939, BC-1306, GN-58, PE-237, RA-62, RA-34, TCS, BC-611. Will trade for ham equipment, teletype printers or cash. Alltronics (Arrow Appliance) Box 19, Boston 1, Mass. Tel. Richmond 2-0916.

375 Watt all-band xmitter (new 4-125A) partially built, all components included (PP 509-12 12th Edt. Radio Amateur's Handbook) $80. 3000 volt 300 Ma. power supply, complete for above, $50. Marmax (never used), 1 Kw. Rothmann Modulator, $40. All for $150.00 or will trade for Gonset Triband and HRS. F.o.b. Ritzville, Washington. Al Boaz, W7PVG, Box 151, Ritzville, Wash.

WRL 400-A, used 30 hours, with coils for 10–20–40 and spare set tubes, in perfect condition. Bud VFO with coils 10–20–40. JT-30 Astatic mike Millen 92101 preamplifier, HQ129X receiver new, with speaker, Bud tuner for WRL, Simpson 240 Hammeter, ten-meter three-element wide spaced beam, Simpson wavemeter, modulation indicator, Model 380, Amphenol 40 meter antenna and so forth. A complete station in perfect condition, no junk, and all practically new. Will sell individually or as one unit. All inquiries answered. W9MQT, Teige, 1041 Jackson St., Marinette, Wis.

WANTED: Position for fully qualified radio telegraph-telephone operator-technician. College graduate. First class commercial license. Eleven (11) years experience. 35 years old. Married and three children. Non-drinker. John P. Trent, KL7DG, P.O. Box 921, Spenard, Alaska.

SELL: Collins 75A-2 receiver, less speaker, $320.00. Guaranteed perfect. For complete details write to A. H. Hardwick, W2VQ, 391 Tremont Place, Orange, New Jersey.

FOR Sale: Best offer takes any or all regardless; BC-221 with modulation, original calibration book, AC regulated supply; BC-459, metered, de-TVI'd, AC regulated supply; Millen R-9'er; 1-134 5" 'scope; Masco 17 watt amplifier, two speakers in carrying case; Sylvania electronic switch and square wave generator; RCA voltohmyst, Jr.; WØLFR, 8036 Glenwood, Overland Park, Kansas.

FOR Sale: Ten meter Hy-Lite beam and Radiart Telerotor, $35.00. W1LFU, 222 Washington Ave., West Haven, Conn.

SX-42 with speaker, $165.00. RCA XT3008 stepdown transformer, PRI 440 or 220V Sec 230 or 115V 600Kva $8.00. New RCA 828 tubes, $3.00; G-E 1 mf 6000v Pyranol capacitor, $3.00; Db meter, $4.00; UTC S57 866 fil transformer, $3.00; Stancor P6124 stepdown transformer 220 to 110V, 1000 W, $9.00; F15U filter, $2.50. All F.o.b. North Plainfield, N. J. Joe Harms, 225 Maple Ave., North Plainfield, N. J.

GRID dip meter (Alvaradio) 7 coils, accurate, well-made single unit with meter. Original instructions. First $15.00 takes it. W3TNX, Groff, 5702 Beacon St., Pittsburgh 17, Penna.

NOW! Continuous speed adjustment for your bug. Chrome plated attachment, $2.50 postpaid. State make and model of bug. F. J. Schwab, W8YCP, 3500 Kingshighway, Dayton 6, Ohio.

SWAP: For complete ARC/3 in good condition, ARC/1, ART/13, BC-348, BC-342, etc. wanted. A. F. Zaleski, 336 Ellery Ave., Newark, N. J.

SELL: Mobile rig, Subraco MT-15 10m xmitter, $50.00. Gonset Triband conv., $30.00. 60 amp. DC car generator with regulator, $25.00. Hallicrafters HT-6 xmitter, $85.00. W. Schroeder, W2OED 78–34 160 St. Flushing, L. I., N. Y.

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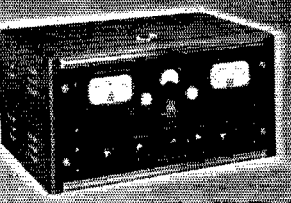

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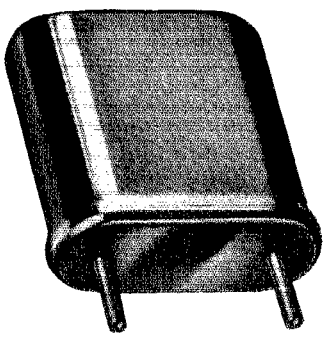

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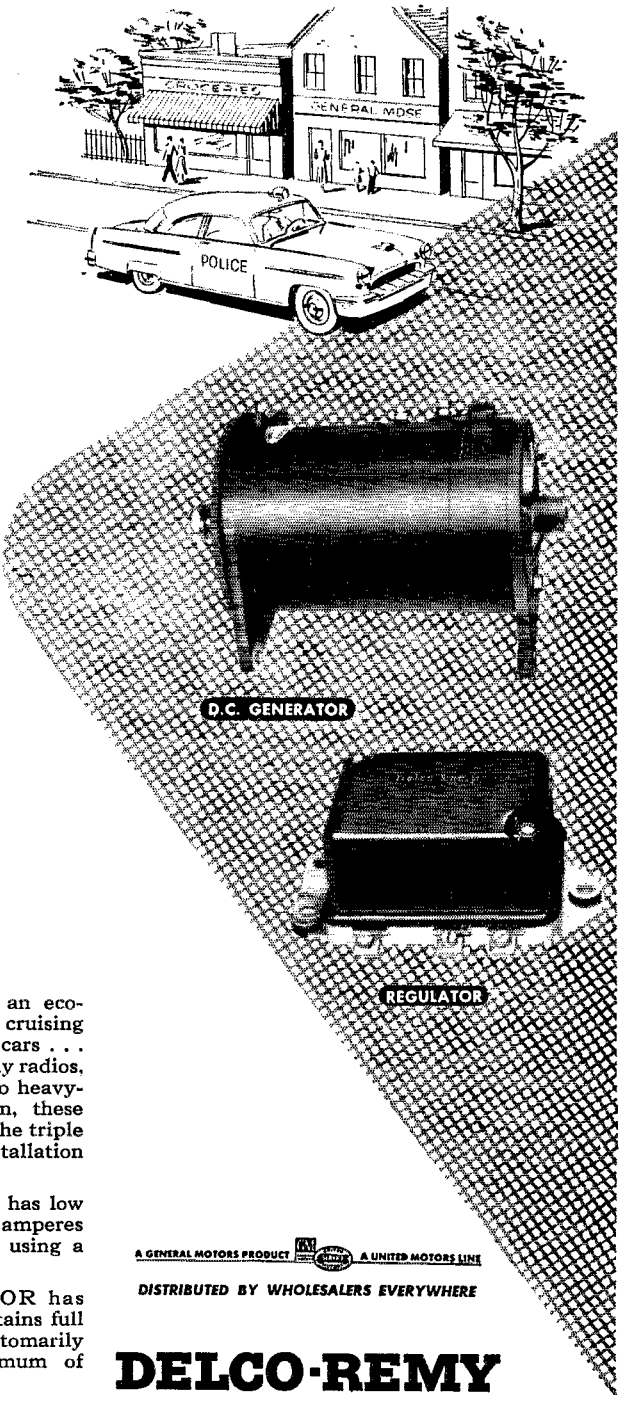

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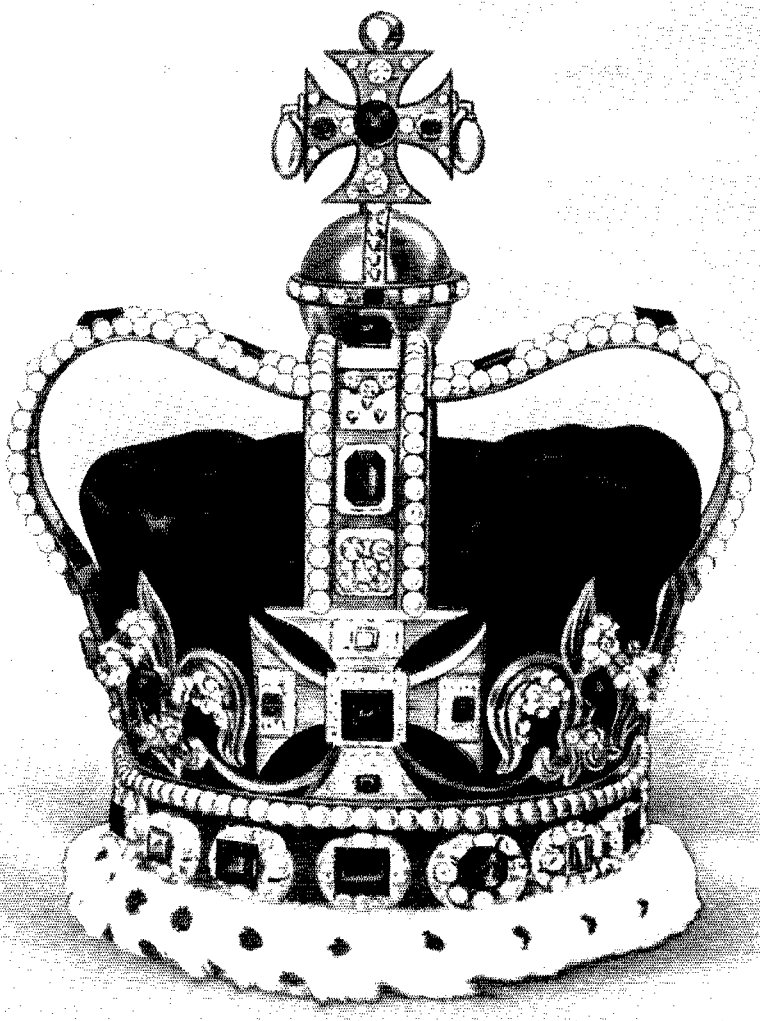

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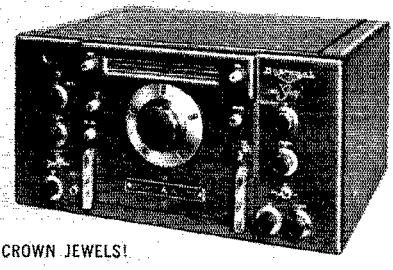

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