September, 1951
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QST

devoted entirely to

amateur radio

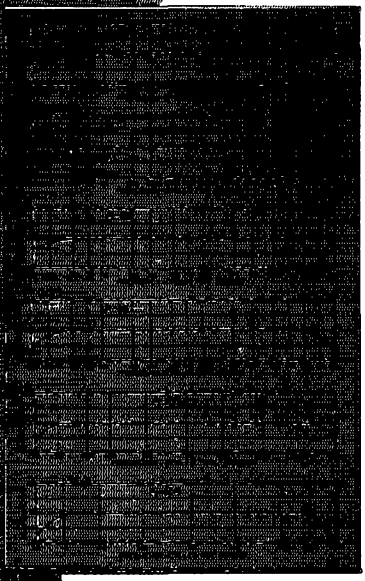
PUBLISHED BY THE AMERICAN RADIO RELAY LEAGUE

ULTRA COMPACT UNITS...OUNCER UNITS

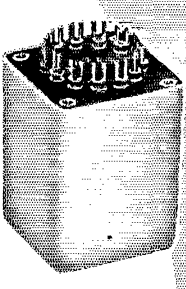
HIGH FIDELITY . . . . SMALL SIZE . . . . FROM STOCK

UTC Ultra compact audio units are small and light in weight, ideally suited to remote amplifier and similar compact equipment. High fidelity is obtainable in all individual units, the frequency response being ± 2 DB from 30 to 20,000 cycles.

True hum balancing coil structure combined with a high conductivity die cast outer case, effects good inductive shielding.



Type No.	Application	Primary Impedance	Secondary Impedance	List Price
A-10	Low impedance mike, pickup, or multiple line to grid	50, 125/150, 200/250, 333, 500/600 ohms	50 ohms	$16.00
A-11	Low impedance mike, pickup, or line to 1 or 2 grids (multiple alloy shields for low hum pickup)	50, 200, 500	50,000 ohms	18.00
A-12	Low impedance mike, pickup, or multiple line to grids	50, 125/150, 200/250, 333, 500/600 ohms	80,000 ohms overall, in two sections	16.00
A-14	Dynamic microphone to one or two grids	30 ohms	50,000 ohms overall, in two sections	17.00
A-20	Mixing, mike, pickup, or multiple line to line	50, 125/150, 200/250, 333, 500/600 ohms	50, 125/150, 200/250, 333, 500/600 ohms	16.00
A-21	mixing, low impedance mike, pickup, or line to line (multiple alloy shields for low hum pickup)	50, 200/250, 500/600	50, 200/250, 500/600	18.00
A-16	Single plate to single grid	15,000 ohms	60,000 ohms, 2:1 ratio	15.00
A-17	Single plate to single grid 8 MA unbalanced D.C.	As above	As above	17.00
A-18	Single plate to two grids. Split primary	15,000 ohms	80,000 ohms overall, 2.3:1 turn ratio	16.00
A-19	Single plate to two grids 8 MA unbalanced D.C.	15,000 ohms	80,000 ohms overall, 2.3:1 turn ratio	19.00
A-24	Single plate to multiple line	15,000 ohms	50, 125/150, 200/250, 333, 500/600 ohms	16.00
A-25	Single plate to multiple line 8 MA unbalanced D.C.	15,000 ohms	50, 125/150, 200/250, 333, 500/600 ohms	17.00
A-26	Push pull low level plates to multiple line	30,000 ohms plate to plate	50, 125/150, 200/250, 333, 500/600 ohms	16.00
A-27	Crystal microphone to multiple line	100,000 ohms	50, 125/150, 200/250, 333, 500/600 ohms	16.00
A-30	Audio choke, 250 henrys @ 5 MA 6000 ohms D.C., 65 henrys @ 10 MA 1500 ohms D.C.			12.00
A-32	Filter choke 60 henrys @ 15 MA 2000 ohms D.C., 15 henrys @ 30 MA 500 ohms D.C.			10.00



TYPE A CASE
1½" x 1½" x 2" high

UTC OUNCER components represent the acme in compact quality transformers. These units, which weigh one ounce, are fully impregnated and sealed in a drawn aluminum housing ⅞" diameter... mounting opposite terminal board. High fidelity characteristics are provided, uniform from 40 to 15,000 cycles, except for 0-14, 0-15, and units carrying DC which are intended for voice frequencies from 150 to 4,000 cycles. Maximum level 0 DB.

OUNCER CASE
⅞" Dia. x 1⅛" high

Type No.	Application	Pri. Imp.	Sec. Imp.	List Price
0-1	Mike, pickup or line to 1 grid	50, 200/250 500/600	50,000	$14.00
0-2	Mike, pickup or line to 2 grids	50, 200/250 500/600	50,000	14.00
0-3	Dynamic mike to 1 grid	7.5/30	50,000	13.00
0-4	Single plate to 1 grid	15,000	60,000	11.00
0-5	Plate to grid, D.C. in Pri.	15,000	60,000	11.00
0-6	Single plate to 2 grids	15,000	95,000	13.00
0-7	Plate to 2 grids, D.C. in Pri.	15,000	95,000	13.00
0-8	Single plate to line	15,000	50, 200/250, 500/600	14.00
0-9	Plate to line, D.C. in Pri.	15,000	50, 200/250, 500/600	14.00
0-10	Push pull plates to line	30,000 ohms plate to plate	50, 200/250, 500/600	14.00
0-11	Crystal mike to line	50,000	50, 200/250, 500/600	14.00
0-12	Mixing and matching	50, 200/250	50, 200/250, 500/600	13.00
0-13	Reactor, 300 Hys.—no D.C.; 50 Hys.—3 MA. D.C.,		6000 ohms	10.00
0-14	50:1 mike or line to grid	200	½ megohm	14.00
0-15	10:1 single plate to grid	15,000	1 megohm	14.00

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A fine commercial record as a sweep-amplifier in TV accents the 6AV5-GT's dependability. Engineered for stamina, the tube is an even better performer as a result of G-E precision manufacture—plus rigorous G-E tests that assure quality in the finished product.

High-perveance design gives the 6AV5-GT efficiency which—added to its reliability—makes the type your first choice for mobile rigs. Very substantial plate current may be obtained with low plate and screen voltages. Actually, voltages as low as 100 v will operate the tube at close to full input. This means that a couple of 45-v batteries, or an auto-radio power supply, are all you need to fire up the 6AV5-GT.

See your G-E tube distributor! He'll show you the tube, and will be glad to quote its economy price. The 6AV5-GT is decidedly a "best buy" in dollars and cents! *Electronics Department, General Electric Company, Schenectady 5, New York.*

6AV5-GT

D-c plate supply voltage	550 v
D-c screen voltage	200 v
Plate dissipation	11 w
Screen dissipation	2.5 w
Plate current	100 ma

● Weigh a fingerprint? G.E. can do it. In manufacturing G-E tubes, super-sensitive scales—reading down to 1/100,000 of a gram—weigh 8-inch lengths of heater wire. The wire is so small that weight, not size, must be measured in order to check diameter. G.E.'s special scales thus can spot size variations as slight as *one millionth of an inch!* Such microscopic accuracy is needed to maintain the temperature and current characteristics of heaters, which wire size controls. . . . Tubes *uniformly* good—General Electric brings them to you by means of costly, advanced equipment that sets the pace for the industry!

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GENERAL ELECTRIC

184-KA9

32V-3

Basically, the new Collins 32V-3 is the same as its predecessor, the 32V-2: a VFO controlled, bandswitching, gang-tuned amateur transmitter rated at 150 watts input on c-w and 120 watts on phone. It differs mainly in its added provisions for reduction of television interference.

The cabinet of the 32V-3 has no lid, and for adequate ventilation has quarter-inch perforations instead of slots, thus eliminating two types of leakage paths. Even the hand-hold at each end is lined.

Two pull handles have been added for easy removal of the panel and chassis for servicing, after taking out four screws at each side. When firmly screwed in place, bare panel metal makes proper electrical contact with bare cabinet metal.

In addition to having the r-f shielding used in the 32V-2, the entire r-f section of the 32V-3 has been completely enclosed in a second shield.

Low pass filters have been added in the following outgoing leads: both sides of the a-c power line; external antenna change-over relay; two in the receiver disabling circuit; two to each meter; at the microphone connector and at the key circuit.

The side-tone oscillator and the receiver muting circuit have been eliminated due to the excessive cost of additional filtering.

Though it is unsafe to make delivery promises in these uncertain times, our production schedule calls for the beginning of shipments of 32V-3 transmitters in September (of this year), and we expect to meet that schedule if there is no worsening in the world situation. Price to be announced.

For the best in amateur equipment, it's . . .

COLLINS

COLLINS RADIO COMPANY, Cedar Rapids, Iowa

11 West 42nd Street, NEW YORK 18 **2700 West Olive Avenue, BURBANK**

QST

SEPTEMBER 1951

VOLUME XXXV • NUMBER 9

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West Hartford 7, Connecticut

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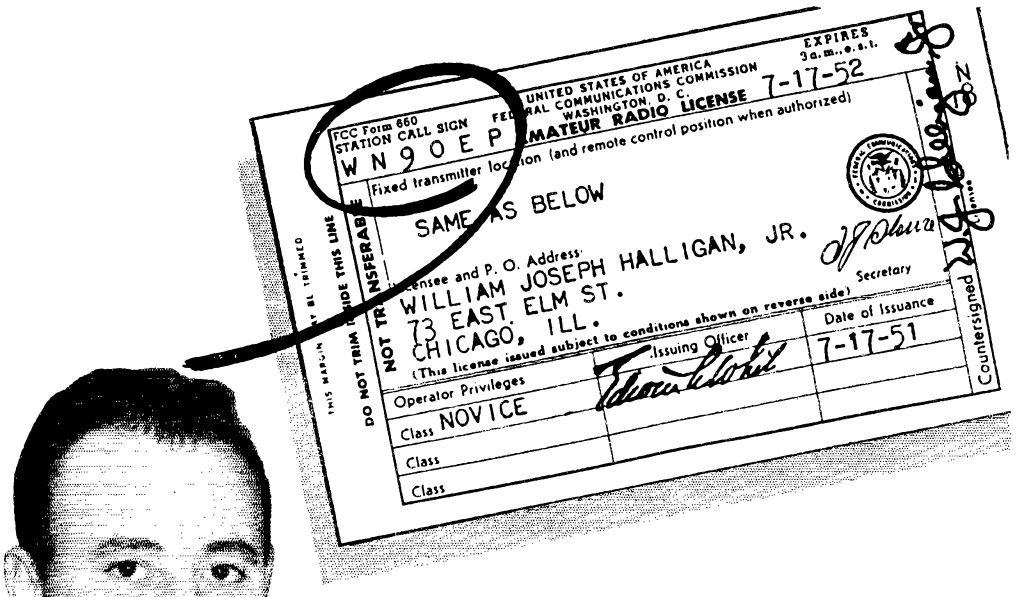

"Hey! Look Who's a Novice!"

"You can't imagine all the kidding I've taken from all the Hams here at Hallicrafters. How come, they said, that 'The Biggest Ham Shack in the World' contains a guy who doesn't own one of those coveted "FCC cards"?

"Now, I Tell 'em: Just call me WN9OEP!"

Bill

Bill Halligan, Jr.
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Communications Division
The Hallicrafters Company.

P.S. "We are so excited about the development of Novice Class operators that we're going to give ten new Hallicrafters S-76 receivers FREE to the first ten novices to work all states after September 8, 1951, *and* to obtain their General or Conditional Class licenses. In addition, every other novice who completes the above before a specified date (to be announced next month) will receive a prize. You must start as a novice but all your QSOs count, so get going!"

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"The Biggest Ham Shack in the World!"

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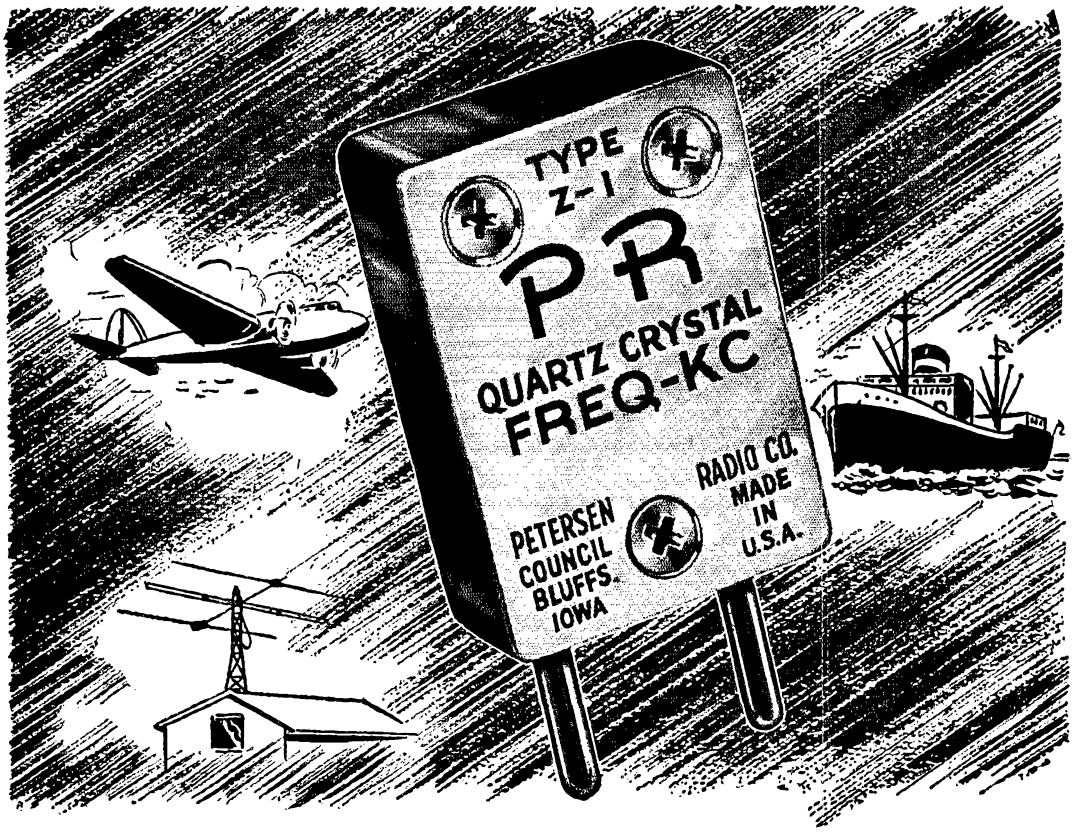

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Section Communications Managers of the ARRL Communications Department

Reports Invited. All amateurs, especially League members, are invited to report station activities on the first of each month (for preceding month) direct to the SCM, the administrative ARRL official elected by members in each Section. Radio Club reports are also desired by SCMs for inclusion in *QST*. **All ARRL Field Organization appointments** are now available to League members. These include ORS, OES, OPS, OO and OBS. Also, where vacancies exist SCMs desire applications for SEC, EC, RM, and PAM. In addition to station and leadership appointments for Members, *all amateurs* in the United States and Canada are invited to join the Amateur Radio Emergency Corps (ask for Form 7).

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THE AMERICAN RADIO RELAY LEAGUE, *INC.*,

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

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

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

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

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

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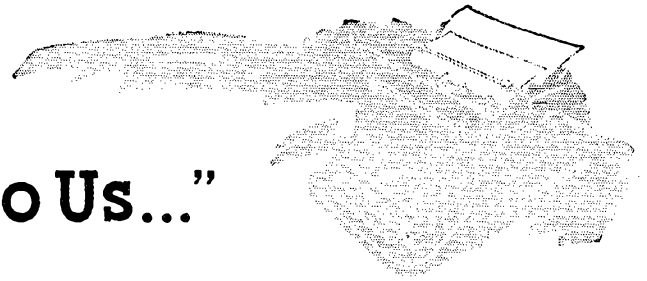


"It Seems to Us..."

YOUR PRIVATE ELECTRIC CHAIR

Twice in the past four months black borders have marred the pages of *QST* as sudden death in the form of high-voltage electricity ended the lives of radio amateurs as they worked with their rigs. And it was just thirteen years ago this month that death by accidental electrocution ended the brilliant career of Ross A. Hull, editor of *QST* and *The Radio Amateur's Handbook*. Since then, *QST* has all too often carried news of similar tragedies. In this issue, for the third time this year, we are obliged again to record the death of an amateur, electrocuted by his own transmitter.

Interlocks, fuses, circuit breakers — familiar items to all, incorporated in some rigs, forgotten in others, ignored in many. All too often the amateur operator tends to discount the lethal weapon which is his power to control. Wire it up, trouble-shoot, put it on the air. Just a black box or a large cabinet. "My rig," you say — it can also be your private electric chair, your one-way ticket up the road of no return. As one amateur said not too many years ago: "The wiring arrangements of too many ham transmitters are not so well suited for the label 'Underwriters Approved' as for the version 'Undertakers Approved.'"

At Headquarters we have always been aware of the potential danger existent in an amateur transmitter. Sometimes because of the poor placement of parts, the wiring of the transmitter or the accessibility when changing coils or making adjustments; sometimes because of the human failure of not respecting the product of your own hands, the solid, unthinking machine that can kill you just as easily as a bullet or a car. We're not kidding, fellows. Our files are bulging with stories — many of them have been in *QST* — relating the unhappy fate of amateurs who got too careless in the construction of their equipment, in their actions with that equipment.

And what about the others in your family? In three recent deaths of amateur radiomen by accidental electrocution, members of the immediate family were present — in all three cases, young children. They too could have received a fatal shock by rushing blindly to the rescue of a human body charged with high voltage electricity.

We've talked in generalities. Let's get down to cases. Even the most experienced amateurs, men who are in the game professionally too, can sometimes make that one mistake which spells sudden death. A prominent DX man came close to meeting such a fate some months ago when his hand came across high voltage in an experimental set-up, wired to his regular rig's power supply but not protected, as that rig was, by interlocks. Fortunately, he had one side of his hand grounded so that the charge didn't pass through his entire body. Today, seven months later, he is just beginning to regain the full use of that hand. And not too many years ago another well known DX man had an experience which he long remembers. We told you about it once before in the pages of *QST*. Perhaps repetition will help drive home a point. . . .

. . . I was sitting at the receiver listening to the European DX roll in during a contest. Upon hearing a CQ, I decided to change frequency. In doing so I forgot to throw the switch on the 115-volt line and, after making a few adjustments, didn't know the juice was on and got across my 3000-volt final, my right hand on the chassis, my left hand on the antenna feeder. I couldn't let go of the thing and so I was blazing away, until my dad came and threw the switch and pulled me off. When I came to, my whole left hand was shattered, my right hand practically charred and burned crisp, a groove in my chest, my face burned and body full of shock. After calling a doctor a quick call brought the

ALWAYS BE CAREFUL

★ ★ ★

(A) Kill all transmitter circuits completely before touching anything behind the panel.

(B) Never wear 'phones while working on the transmitter.

(C) Never pull test arcs from transmitter tank circuits.

(D) Don't shoot trouble in a transmitter when tired or sleepy.

(E) When working on the transmitter, avoid bodily contact with metal racks or frames, radiators, damp floors or other grounded objects.

(F) Keep one hand in your pocket.

(G) Develop your own safety technique. Take time to be careful.

★ ★ ★

Death Is Permanent!

gendarmes and the blue wagon, and so away to the county hospital where I was confined for nearly two and a half months. For two weeks the doctors were doubtful whether the hand would have to be removed but after a determined effort it was saved — both of them, as a matter of fact. However, the index finger was so badly shattered that after two weeks it fell off; the nail had been completely dissolved while hanging on the tank circuit. The thumb was half of what it should have been, and healed that way. The index finger on the left hand is off to the second joint. The thumb, although very gruesome-looking, is still on the hand but can't be bent. Chest completely healed but scarred all over. Must return to the hospital after the holidays to undergo an operation to increase the spread between index finger and thumb. Missed the national convention, though I pleaded with the doctor to let me have about 32 hours leave; he flatly refused. So all I did was lie around and read books. From the intensity of my own burns the doctors estimated I was on the tank between 23 and 30 seconds, so you can see what really happened. . . .

Shocking? You bet it is — and the same thing can happen to you!

What can you do to prevent a similar occurrence in your own shack? Back in 1939 the ARRL developed a safety code which appeared in a *QST* article. The ABC's of that code are printed in the box you see in the center of the previous page. Your automobile has brakes, a steel-frame body and other safety devices. Does your transmitter have safety devices, too? You drive your automobile carefully, using good common sense. Do you apply that same good common sense when working around your transmitter?

Write *yourself* a prescription for a longer life — "Switch to Safety."

WWV-WWVH SCHEDULES

FOR the benefit of amateurs and other interested groups, the National Bureau of Standards maintains a service of technical radio broadcasts over WWV, Beltsville, Md., and WWVH, Maui, Territory of Hawaii.

The services from WWV include (1) standard radio frequencies of 2.5, 5, 10, 15, 20, 25, 30 and 35 Mc., (2) time announcements at 5-minute intervals by voice and International Morse code, (3) standard time intervals of 1 second, and 1, 4 and 5 minutes, (4) standard audio frequencies of 440 cycles (the standard musical pitch A above middle C) and 600 cycles, (5) radio propagation disturbance warnings by International Morse code consisting of the letters W, U or N, indicating warning, unstable conditions, or normal.

The audio frequencies are interrupted at precisely one minute before the hour and are resumed precisely on the hour and each five minutes thereafter. Code announcements are in GCT using the 24-hour system beginning with 0000 at midnight; voice announcements are in EST. The audio frequencies are transmitted alternately: The 600-cycle tone starts precisely on the hour and every 10 minutes thereafter, continuing for 4 minutes; the 440-cycle tone starts precisely five minutes after the hour and every 10 minutes thereafter, continuing for 4 minutes. Each carrier is modulated by a seconds pulse, heard as a faint tick; the pulse at the beginning of the last second of each minute is omitted.

Coming A.R.R.L. Conventions

NEW HAMPSHIRE STATE

Manchester, N. H., October 6th

The 14th annual New Hampshire State ARRL Convention will be held at the Hotel Carpenter on Saturday, October 6th. There will be speakers on technical subjects, ARRL activities, YLRL, as well as films, displays and contests. Tickets are $1.75 and $2.75. For further information and reservations contact W1QJX, 557 Kelley St., Manchester, N. H., or on the N. H. net.

VERMONT STATE

Brattleboro, Vt., Sept. 16th

The 5th Annual Vermont Hamfest and ARRL State Convention will be held on Sunday, Sept. 16th, in the Community Building, Main St., Brattleboro, Vt. Sponsored by the Tri-County Amateur Radio Club of Brattleboro, the usual good program is planned. Free parking on the north side of the building. Advance registration, $4.50 (deadline Sept. 10th). Banquet tickets (limited quantity) at door, $5.00. For further information and advance tickets write to Hamfest, P. O. Box 78, Brattleboro, Vt.

HAMFEST CALENDAR

DISTRICT OF COLUMBIA — Sunday, September 23rd, 3 to 11 P.M., at Palisades Recreational Park — picnic and hamfest of the Washington Radio Club. Good eats, treasure hunt, mobile gear judging. $1.50 per person. For further information write or 'phone Elizabeth M. Zandonini, W3CDQ, or Ethel Smith, W3MSU.

INDIANA — Sunday, September 23rd, at the Servel Picnic Grounds near Evansville — annual basket picnic and hamfest of the Tri-State Amateur Radio Society. Numerous games, contests, and a demonstration of model airplane radio control by Vernon C. MacNabb, W9FZT, are planned. A transmitter on 29.6 Mc. will guide mobile hams to the get-together.

NEW JERSEY — Sunday, September 9th (rain date, Sept. 16th), at Wallworth Park, Haddonfield — hamfest and picnic commemorating 35th anniversary of the South Jersey Radio Assn. Two- and 10-meter hidden transmitter hunts, games, pony rides are programmed. Mobiles will be guided to the grounds by transmitters on 2, 10 and 75 meters — listen for K2AA.

OHIO — Sunday, September 9th, at Riverside Park, Findlay — another old-fashioned hamfest sponsored by the Findlay Radio Club. Program will include a swap and shop session, auction, and addresses by ARRL Great Lakes Division Director Brabb and Ohio SEC Cartwright. Admission free. Plan to attend!

OHIO — Sunday, September 16th, at Ash Grove, Winton Road, Cincinnati — annual hamfest of the Greater Cincinnati Amateur Radio Assn. Lunch, dinner; hotdogs all day! Admission $1.50 per person at the gate.

OUR COVER

Whether set up under a shady tree, in a hotel room, or in a parked car, the 40-meter portable of Myron Hexter, W9FKC, affords most of the conveniences of a home station. Besides the c.w. rig and batteries, the case also includes a superhet receiver, a built-in power supply for a.c. operation, and provision for vibrator pack or genemotor supply. Full description in an early *QST*.

The Yagi-Dagi

A Practical High-Gain Rotary for 10 Meters

BY A. J. F. CLEMENT,* W6KPC

"The antenna here is a 12-element rotary, consisting of four horizontal 3-element beams fed in phase. There is one 3-element Yagi at a height of 60 feet, two side by side at a height of 45 feet, and a fourth at a height of 30 feet. The center of each driven element would describe points on a vertical diamond." The above "word description" has been given many times by W6KPC in answer to the question, "What in the world are you using over there?"

A glance at the photograph on this page will further clarify the above description of the 10-meter "Yagi-Dagi." The entire array is balanced on top of a 45-foot telephone pole. The rotating mechanism is mounted concentrically with, and on top of, the pole. An 18-foot-long horizontal wooden "main boom" has an all-metal "plumber's delight" 3-element Yagi mounted at each end of it. This main boom is then balanced and bolted to the 18-inch square plate that tops the rotator (prop-pitch motor).

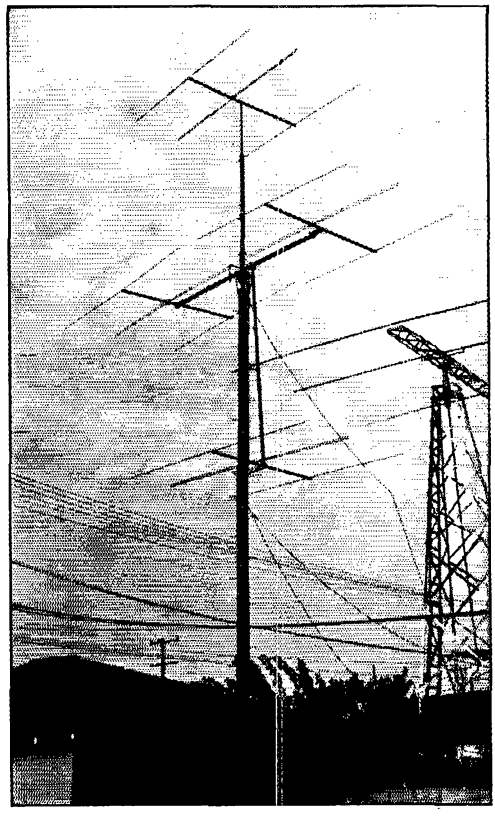
A 4-inch o.d. plywood tube with a dural extension supports the uppermost Yagi 60 feet above the ground and 16 feet above the main boom.

The fourth and lowest Yagi is "hung" on the bottom of a second vertical mast which is offset from the center-line of the pole by a few inches in order that it may rotate around the pole and the pole's "steps." These steps are a nuisance, in that they increase the effective diameter of the pole, but they are very useful and must be tolerated.

Each of the 3-element Yagis is a 0.15D-0.2R affair with a folded dipole as a driven element. Each Yagi is connected through a halfwave line to a pair of stand-off insulator terminals mounted near the center of the main boom. A quarter-wave transformer then connects this junction point to the transmission line.

At this point you may ask, "But why would a person build such a beam?" or, "What are its advantages over a good 3- or 5-element beam at the same height?" The author embarked on this project for several reasons. In the first place, most 10-meter men will admit that the band really seems to be going to pot, so to say. This, of course, is due to the long-term sunspot cycle which, at the present, isn't too kind to the higher frequencies. In order to "get through," one must have power gain and a low angle of radiation. It is well known that "stacking" antennas (about one halfwave apart, one above the other) will most assuredly lower the angle at which the *maximum energy* is radiated. The radiated beam also becomes more intense as it is squashed into a smaller, flatter, solid angle. Placing antennas side by side (collinear arrangement) will tend to pull the beam in on each side. In other words, the beam becomes narrower and still more intense as it is again squashed inward from the sides. The combined effect of the vertical and horizontal stacking is somewhat like holding a round balloon against a board and squeezing it from top, bottom and both sides. It just has to go forward!

The author felt that by stacking the antenna 3 bays high the point of diminishing returns would be reached, so far as lowering the angle of radiation is concerned. It was also reasoned that most of the energy should be radiated from as high up on the mast as possible (thus raising the *effective height* of the array as a whole). This last thought dictated that only one-fourth of the energy be allowed to flow into the bottom bay, hence only one Yagi was placed here, although it would have been easy to have two, side by side.



The "Yagi-Dagi," the 12-element 10-meter beam at W6KPC, seems to tower over the 3-element 20-meter beam in the background.

*11935 Wagner St., Culver City, Calif.

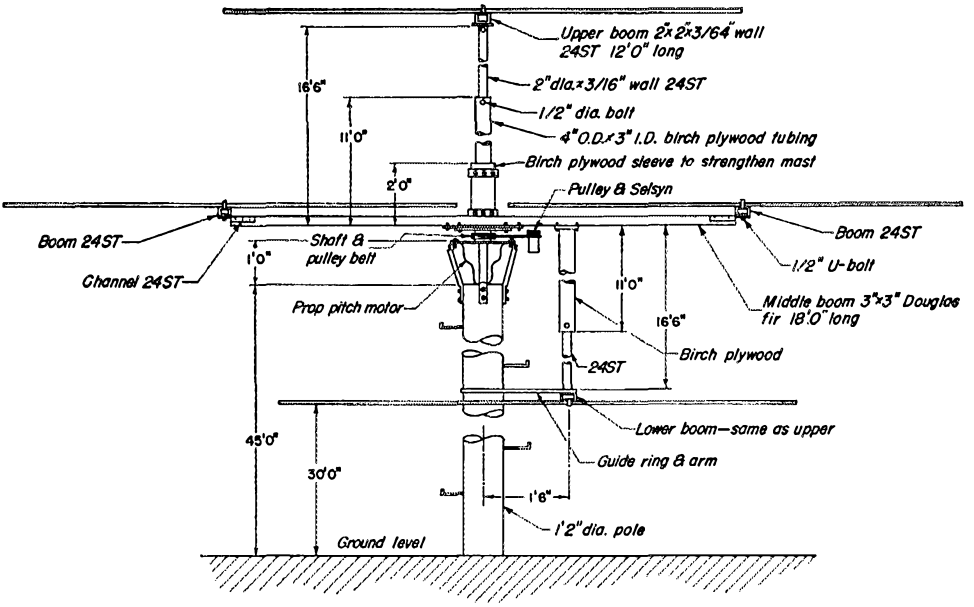


Fig. 1 — Mechanical details of the "Yagi-Dagi" 10-meter beam.

You may ask now, "Why not two Yagis, side by side, at the upper 60-foot level?" Again I reiterate that this is a *practical* beam within the realm of a ham's pocketbook. Wind loading makes it imperative that this upper section not be too cumbersome. So, after considerable cogitation, it was finally decided that this diamond-shaped array would yield the greatest results consistent with the simplicity desired.

Building the Beam

Excitement began to mount as the author gathered surplus tubing and began to fill the meager back yard with 3-element beam antennas. The small telephone pole was delivered and set by two nonchalant men in a small truck equipped with an "A" frame. The author lost several pounds of blubber digging that 7-foot hole into the hard adobe that passes for soil in these parts. An excited neighbor rang the front doorbell and when the door was opened he said, "Do you know what is going on in the rear of your property?" "No," replied the author, hoping to have some fun with his good neighbor.

"H———, man, it's getting to where a man doesn't have any private rights any more; why those simple-minded knotheads from that blankety telephone company have not only torn down your back fence but they have actually started setting a pole just inside your lot line! By George, I saw it with my own eyes!" The author didn't have the heart to carry the joke any further, and when the man was told the truth he sort of drooped and walked away, muttering to himself. The pole stood there a few weeks, bare. Another neighbor actually walked several of his friends down the alley to *prove* to them that this "odd-ball" neighbor actually did own his own private telephone pole!

Fig. 1 will show many of the constructional details of this array. The top mast is a full cantilever, supported only by the hollow shaft of the standard "prop pitch" motor. The upper mast and Yagi assembly was hoisted into place with a block and tackle, which was fastened to the upper end of a 15-foot gin pole. The bottom of the gin pole was lashed to the two upper steps of the telephone pole. The author disassembled the said motor and carefully computed the amount of bending, in inch lbs., that the mechanism would take without failure. The main bell-

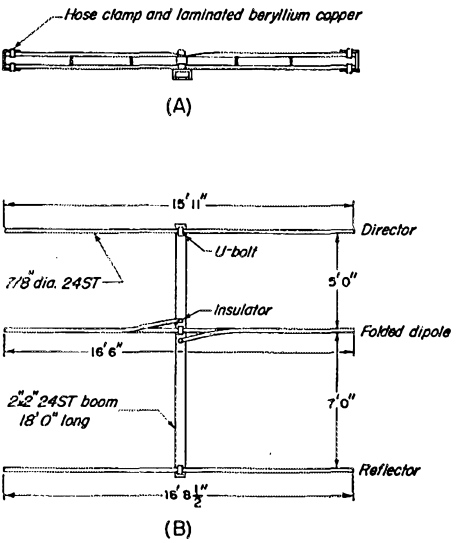
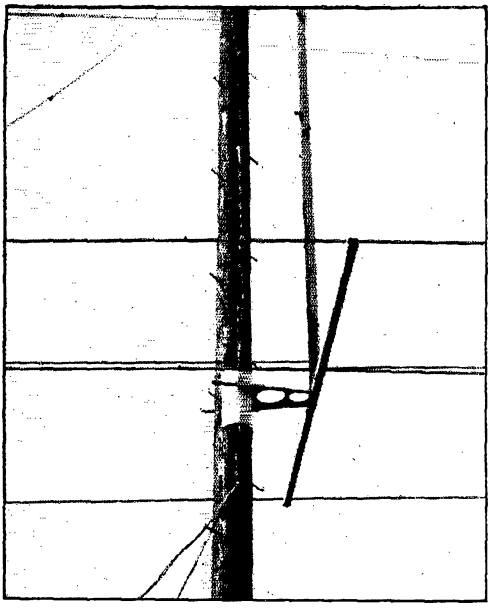


Fig. 2 — Details of the individual Yagi antennas. An end view of the boom, with folded-dipole details, is shown at A. A plan view of the Yagi is shown in B.



A close-up view of the bottom Yagi shows its support and the guide ring that keeps it clear of the supporting telephone pole.

♦

gear was even checked for hardness to determine the maximum allowable stress it would stand. After this was done, the amount of wind loading was computed for the upper mast and its attendant Yagi. This computation assumed a wind velocity of 60 miles per hour. The amount of bending moment produced at the motor (it is a maximum at the *bottom* of the upper mast) was found to be within the limits that the motor could stand, so the assembly was considered to be safe. To be absolutely safe, however, a safety cable was placed around the upper mast about two feet above the motor. The other end of this 3/16-inch stainless steel cable was fastened to the telephone pole just below the motor.

The center of the wooden boom is fastened to the 18-inch-square plate with two 5/16-inch bolts. The plate is bolted concentrically to the flanged extension of the motor's shaft. This plate is made of 1/4-inch-thick dural plate, with a 3½-inch central hole cut out to accommodate the hollow shaft of the prop-pitch motor.

The mast that hangs downward from the prop-pitch motor is 16½ feet long and identical to the upper mast. It is clamped to the horizontal wooden boom at a point that is about 18 inches away from the center-line of the prop-pitch motor. This allows the lower mast to swing around the pole in a 3-foot diameter circle as the array is rotated. This gives the lower vertical mast adequate clearance from entanglement with the telephone pole's steps.

The boom used for each Yagi was a 12-foot piece of lightweight 2-inch 24ST square tubing. The elements were fastened on with cadmium-plated "U" bolts, in typical plumber's-delight fashion. The driven element is a folded dipole spaced 2 inches; and the input impedance of each Yagi is about 130 ohms. The four Yagis are effectively paralleled when connected through their halfwave transformers. The paralleling of the four 130-ohm impedances gives an impedance of 32 ohms at the junction point. A pair of RG-8/U cables of quarter-wave electrical length were taped together to form a 100-ohm quarter-wavelength transformer between the junction point and the 300-ohm line that goes into the shack of W6KPC.

The usable bandwidth of the system was found to be about one megacycle. The design center frequency was made 28.35 Mc., on the theory that the antenna would primarily be used as a "listening device." The standing-wave ratio turned out to be 1.12 at 28.35 Mc. It is about 1.25 at 28.505 Mc., the author's favorite transmitting frequency. The entire array shows a front-to-back ratio of about 27 db. and a forward gain of 12 db.

The old proverb of "the proof of the pudding is in the eating" aptly applies to antennas. During the fall of 1950, at the time when the 10-meter band was already well on its way into the doldrums, SVØWB in Athens, Greece, reported the signal Q5-S9+20 db., while XZ2KN in Rangoon, Burma, gave Q5-S9-plus-plus!

The author is indeed grateful to his various friends who aided him in this project. John S. McLane painstakingly prepared the original drawings. W6AKQ, W6EKM and W6WWW helped at the ground end of the block and tackle. The author forgives the said gentlemen for their various and sundry kibitzing remarks while he struggled, in several awkward positions, atop the pole.

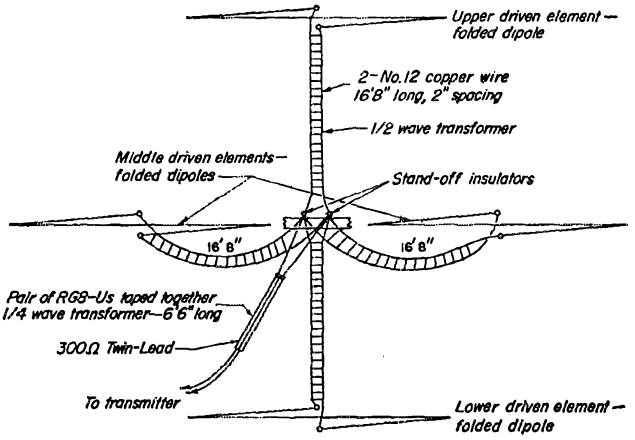


Fig. 3 — Electrical details of the "Yagi-Dagi."

QRI? QSD? QRS! de WN2???

BY FRED MYERS *

It was a little bit disconcerting. And when I say "a little bit" that's just an especially striking outbreak of the character trait that made me keep my money in a 2 per cent savings bank in 1928–29 and has made me stick to one wife all these years. What I mean is, the statement is conservative. Darned conservative!

But, there! You, of course, don't know what I'm talking about. Well, I'm talking about the Novice license examination.

Here's what happened.

I must explain that I am a father . . . a middle-aged father with a boy in college (if he's not in the Army by the time this gets printed), a boy in junior high school, and two younger girls.

Bob, the junior high schooler, is some sort of a mechanical genius. What sort, I won't now discuss. Suffice it to say that our cellar workbench has for years been so deeply littered with parts of old alarm clocks, dismantled electric trains, and abandoned lawnmowers that on many occasions months have passed before I could get space to do any tinkering job that my wife wanted done.

Some time along about last November I began to notice that among the mainsprings, hairsprings, balance wheels, and broken gears there were some radio tubes (which I readily identified as such) and a quantity of other items which I did not learn, until much later, to identify as fixed and variable condensers, resistors, coils, r.f. chokes, etc.

"How come?" I asked Bob, after a fast look at the living-room Zenith disclosed no damage there.

One of the neighbors had given him an old table radio that had long since emitted nothing but squawks, he said, and he was trying to find out "how a radio works."

"You'll never find out much about a radio by just looking at the insides of it," I said.

I knew that this was true, because I had myself many times looked inside a radio and *I* had learned nothing.

"Come on upstairs," I said, "and let's see if we haven't got a book of some kind that will throw a little light on the principles of this gimmick."

Surprisingly enough, Bob demurred only slightly at this switch from laboratory to library. We found, in the attic, an old physics textbook, used in high school by my older boy, with a chapter on "How Radio Works." Father and son sat down together at the dining room table to master the mysteries of electronics. It made a pretty picture. Bright young lad eager for knowledge. Conscientious father, sharing son's interests. Comradeship between two generations.

The only thing wrong with the picture was that in about five minutes, or slightly less, Bob politely told me that he had a long-standing date with a boy up the road and would have to leave. He did.

But I, having gone overboard in expression of a burning desire to learn how a radio works, was a bit stuck with it.

"Very well," I said, with what I hoped would be understood as a tone of gentle reproof. "But *I* am going to go ahead and *learn* something."

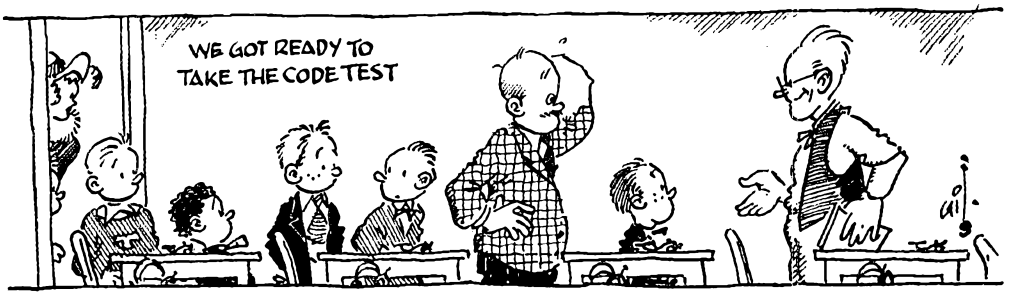
Well, the short of it all is that I did learn something. Not much. In fact, darned little. But I got interested. The textbook made it all sound so simple. You put some electrons in *here*, they run around through a circuit, climb up a wire to an antenna, kick up a wave that goes splashing off through space — a transmitter! You stick a receiver in the path of this wave, the wave bowls over a new batch of electrons, said electrons run around through a circuit that leads into a loudspeaker — and there you are!

I took the textbook downstairs. I laid the open book beside the inverted and partly dismantled receiver on the bench.

I picked up a screwdriver. . . .

Well, practically next thing I knew, it was 9 A.M. of July 2nd, some seven months later, and

*Tinker Hill Road, Pine Plains, N. Y.



I was in the "Operator Examination Room" of the FCC offices in New York City, ready (I hoped) to take the examination for a Novice license. The room was crowded. The examiner had just shouted my name.

And it was, as I said some time back, disconcerting and upsetting because I seemed to be the only person in the room over 12 or 13 years of age, with the exception of two women obviously present in their professional capacities as mothers. The examiner called six other names behind mine. The owners of the names followed me to the desk. They turned out to be six tots who, by stretching things only a little, might have been my grandsons. I gave the one next to me a feeble smile. He silently reproved my levity with a glance that said plainly that this was a serious occasion. I wiped the smile off.

The room had suddenly fallen quiet. At my back I felt the concentrated eyes of the roomful of small fry and the two mothers.

The examiner led us to a row of small tables in an adjoining room, each table equipped with a pair of headphones and a key. A long-latent instinct propelled me to the desk farthest from the examiner, mere inches ahead of a like-minded but laggard lad of 10 or 11 years.

The examiner gave each of us one sheet of blank paper.

"Write your name at the top," he said, and disappeared.

I wrote my name and then I put on the 'phones. So did all the boys ahead of me.

Almost instantly the 'phones started saying dididididididit, and then didididah, didididah, didididah. I began writing down the Vs and was shaking only slightly when a B followed the Vs, a U the B, an I the U, an L the I, and a D the L. B-U-I-L-D! It was a word and I had got it all! I relaxed a little, for the first time since rising at 6 A.M., and kept going.

"Pretty soon they'll slip in some numbers and some punctuation marks," I cautioned myself. I almost wrote a figure 1 for a J because I was so sure that presently something that sounded like didahdahdah would turn out to be a tricky didahdahdahdah.

But the oscillator out in the next room just kept beeping out five- and six-letter words at exactly 25 letters per minute — spaced exactly the way W1AW does it — until, finally, it said "didahdidahdit" and stopped.

I was almost disappointed. No numbers. No code groups. No punctuation signs. Only straight words. I exhaled — deeply.

The boy ahead of me turned around.

"Say," he asked, anxiously, "did you get much?"

Modestly, I told him that I thought I got it solid.

He glanced at my paper.

"Oh! he cried. "Was there supposed to be words?"

I said there was — were.

The kid suddenly looked really miserable. He swallowed several times before he thrust his own paper before me.

"I didn't get any words," he said.

He hadn't. A glance showed that he had been far from ready for the test. Before I could think of any comfort for him the examiner came swiftly down the line, collecting papers.

"Keep your seats," he said.

The boy ahead turned around and sat stiffly still. Ahead of him I could see the other boys exchanging comments but could not hear what they said.

In about three minutes the examiner was back. He pointed at the boy who had not got any words and shook his head. He pointed at a boy in the second seat from the front and again shook his head. Both boys left.

The examiner placed what looked like a large card on the desk of the boy in the first seat. The boy started tapping the key on the desk. The examiner leaned against a near-by pillar and seemed to be concentrating on watching the liner *Caronia*, visible in the Hudson through the office windows. He let the boy send for perhaps two minutes. Then he reached for the card and again shook his head. The boy left.

Slowly the examiner worked down the row of desks toward me.

Twice he took back his fateful card without the fatal headshake.

Then he failed the boy two desks ahead of me.

And then he dropped the card on my own desk.

As in the receiving test, I quickly saw, the FCC was asking only for ability to handle five- and six-letter words.

I surreptitiously wiped my damp right hand on my pants leg and grasped the key. Buck fever muffed the first letter for me but I bulled along sending at very slow speed. The examiner might

have been still watching the *Caronia* or he might have gone out for coffee and cake. I wouldn't know. I was so absolutely concentrated on the little letters in front of me that I doubt that I would have heard an explosion in the next room. It seemed to me that I sent for a very long time, but it probably was no more than one minute.

The examiner suddenly picked up the card. I held my breath.

The examiner walked away. *No head shake!* Whoo!

There were only three left of the original seven who had sat down at the little tables. And I was one of them. The two remaining boys and I exchanged quick glances of restrained pride and mutual respect. Words were unnecessary.

Before we could relax, however, back came the examiner. To each of us he gave a white envelope. The envelopes were sealed. Instructions about how to answer the "multiple-choice" type of question, always used in FCC examinations, were printed on the outside of the envelope. I read the instructions and then tore the envelope open and got to work.

The questions were, even to me, easy. It is not too difficult to guess that kc. is not an abbreviation for megacycles or milliamperes but is, probably, intended to stand for kilocycles. I got through four printed pages of such questions in about ten minutes.

Finished, I gathered up the papers and took them to the examiner in the outer room. My now old friends, the two surviving boys, still were at work. The examiner bade me be seated.

I smoked a badly needed cigarette. The examiner beckoned.

"Okay," he said. "You'll hear from Washington in about a month."

"I passed?" I said.

"Yeah," he said.

And that was that. I went downstairs and stopped at a drugstore and had coffee-and. I felt good. I still do.

Whether the last two boys who were tested with me made the grade, I don't know. Wish I did. When four out of seven are knocked off, whether in a battle or in an FCC examination, the survivors have something in common.

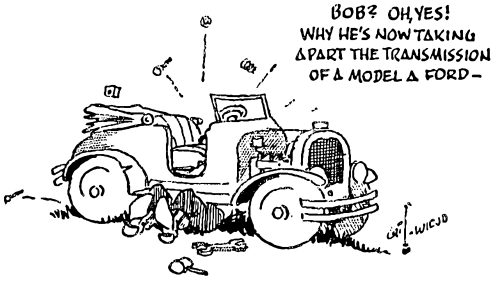
Perhaps it might be helpful to other aspirants for the Novice license if I descend, for a moment, to a bit of serious comment.

The "theory" part of the examination is easy. If you learn the answers to the questions given in the article on "How To Pass the Novice Exam," in the June *QST*, or in the new *ARRL License Manual*, you just can't miss. Personally, I think that this part of the test is too easy, even for Novices. The ability to answer these questions implies no ability to operate a transmitter that couldn't be taught to anyone in five minutes.

You do have to be decently certain of handling 5 w.p.m. in the code, however, and *QST*'s advice to work up a receiving speed of 7½ or 10 w.p.m. before going in for the examination is certainly sound. That examiner's head is awfully loose on his shoulders — it shakes from side to side very easily.

I got almost all of my own code practice by listening to W1AW. It would have been a help, I think, to have had an automatic sending machine but W1AW was enough to bring me through. I don't know what the experts would say, but it seems to me that if one listens often to W1AW's perfectly-formed code, and knows how the characters should sound, most Novices will not have much trouble in learning to send at slow speed.

Now, while I'm waiting to "hear from Washington," I'm going to try to finish up the 30-watt transmitter described in that most wonderful piece of literature, *How To Become a Radio Amateur*. My primary ambition in life, at this moment, is to be all set to start adding to the QRM on 3725 kc. (I already have the crystal) in about 60 seconds after the postman brings me the FCC's GA.



Bob? Oh, yes! Why he's now taking apart the transmission of a Model A Ford that he got from another neighbor.

I'm not going to try to interest him in what any book says about the matter.

I *know* I'm not cut out to be an automobile mechanic!

EXACTLY . . . EXCEPT

I need a test outfit —
  I'll build it for me.
Build it exactly
  As per *QST*.

The parts that are called for
  Don't seem to be found
And so the test gear
  I build around

The parts that I do have.
  Not quite but almost
What *QST* calls for
  But e'en then I can boast

Except for some changes
  (A mere thirty-three) —
It's built "just exactly
  As per *QST*."

— *W3QAG*

Converting RCA M1-7800 Police Transmitters for 28-Mc. Mobile Use

Adapting a Surplus Police Unit To Fill Amateur Needs

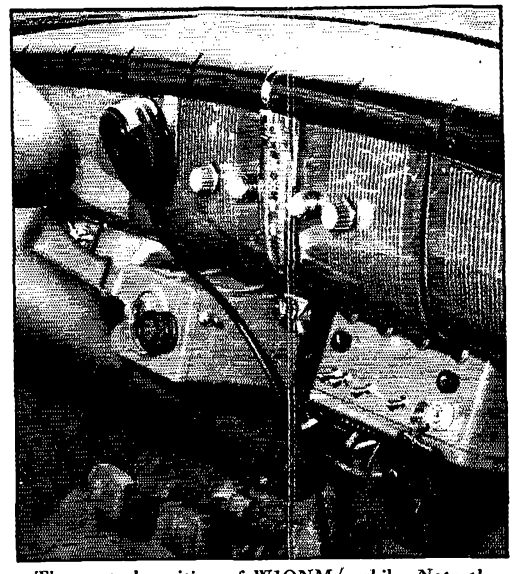
BY WARREN CHASE,* W1QNM

PROBABLY the least expensive way of going mobile these days is to acquire cast-off police rigs and rebuild or convert them for amateur service. One of the most widely-available is the RCA M1–7800. It is an obsolete design, and consequently can be picked up for a very nominal figure, but it can be revamped to do an excellent job for the 10-meter mobile enthusiast.

Some of the exceptional features offered by these units are as follows: The power supply is a Pioneer Gen-e-motor of excellent quality. Today's net cost for this unit alone is around $90.00. The base of the dynamotor contains all the filters, starter relay, fuses, etc., necessary and requires only a few minor changes. The output is 375 volts at 250 milliamperes and is well filtered. The transmitter is housed in a heavy-gauge steel cabinet equipped with wing nuts to lock it to the bottom plate which in turn is bolted to the trunk floor. It is strong enough to withstand the weight of baggage or even trunks, which is more than can be said for most of the amplifier foundation units available today. The front panel and the chassis slide out easily for servicing. The transmitter is built like a battleship and uses the best of components, many of which can be employed in the conversion. The transformers are heavy-duty design and well shielded. The microphone circuit is completely filtered and can be used with few changes. One of the de luxe features is the remote control circuit which includes a telephone handset, pilot lights, sidetone monitor and several methods of control. The efficient system for locking the variable condensers has been a blessing on the back roads of Vermont.

In addition to the transmitter and dynamotor units there is a single-channel a.m. receiver with its own dynamotor power supply plus the regular police aerial. Our car came equipped with a good broadcast set so we decided to relegate the receiver to the junk box. The dynamotor is, however, ideally suited for use as the power supply of an emergency receiver. Unfortunately, my purchase did not include the remote cables and handset as one of the police officers had sold them to a junk man. It would have been much easier to use the original remote control system with a few changes than build up an entirely new one.

Where there are several units to pick from, it is prudent to examine them carefully for signs of old age, water damage or abuse. Remove the bells from the dynamotors and notice the condition of the commutators. A dark brownish color is a good sign. Look for excessive wear in the segments where the brushes make contact. Note the condition of the brushes, and check the bearings for end play. Look out for commutators that have been cut down too far, leaving only a small amount of copper in the segments. As a rule, these dynamotors are not badly worn, and damage is more often caused by moisture or overloading than by long use. If you are not allowed to open the units for inspection just pick the newest-looking one and the chances are you won't go too far wrong. This same line of inspection can be applied to the transmitter unit, looking for evidence of excessive heating in the form of smudges on the parts or interior of the case. The cables should be checked very carefully for signs of road salt corrosion, chafing and breaks in shielding.



The control position of W1QNM/mobile. Note the key-operated energizing switch, eliminating unauthorized operation of the radio equipment.

One glaring fault of this transmitter is the battery drain of 35 amperes for a power input to the final of only 12 to 17 watts! The filaments draw 13.75 amperes continuously. This can be corrected only by a completely-new transmitter design. A straightforward circuit was decided upon, consisting of a 6AG7 modified Pierce oscillator driving an 807 power amplifier. The audio section was changed to a 6J5 driving two 6V6s in push-pull. Thus, the filament drain was dropped from

*Chief Engineer, WDEV, Waterbury, Vt

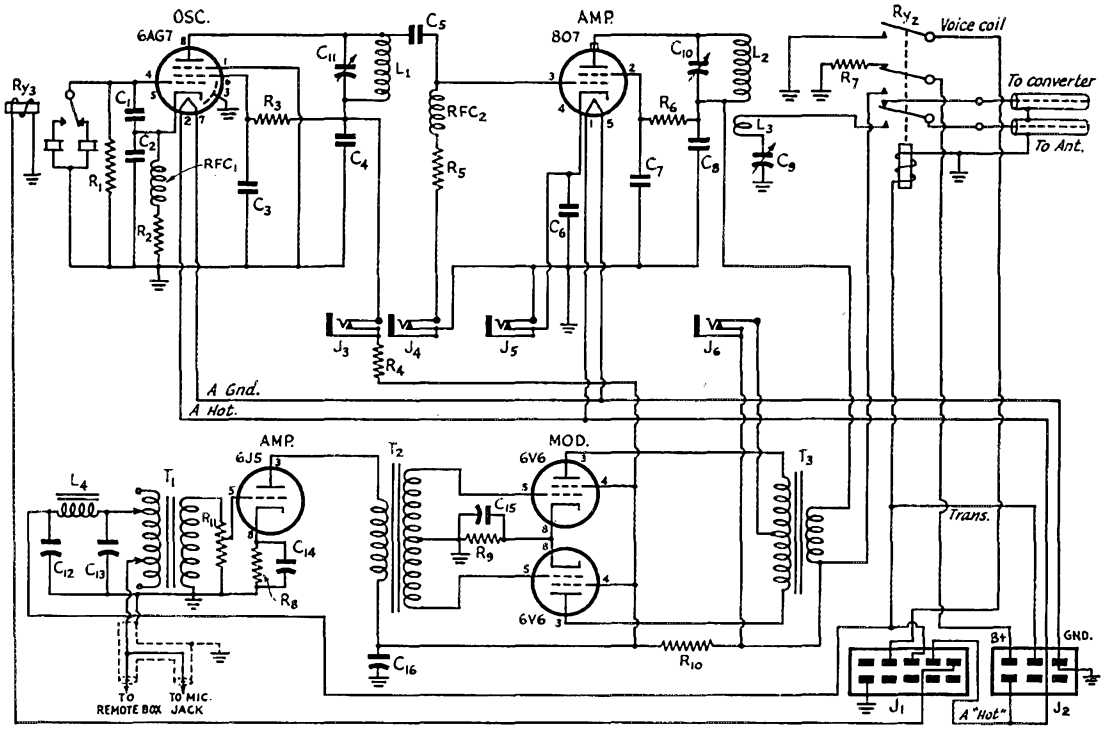


Fig. 1 — Schematic diagram and parts list for the converted RCA M1-7800 police transmitter.

C_1 — 10 $\mu\mu$fd.
C_2 — 50 $\mu\mu$fd.
C_3, C_6, C_7 — 0.002 μfd.
C_4* — 0.001 μfd.
C_5*, C_8* — 0.0001 μfd.
C_9* — 75-$\mu\mu$fd. variable, part No. 111.
C_{10}* — 50-$\mu\mu$fd. variable, part No. 112.
C_{11}* — 75-$\mu\mu$fd. variable, part No. 110.
C_{12}* — 14 μfd., part No. 173.
C_{13}* — 0.25 μfd., part No. 167.
C_{14}, C_{15} — 25 μfd., 25 volts.
C_{16} — 8 μfd., 450 volts.
R_1 — 75,000 ohms, ½ watt.
R_2 — 500 ohms, 1 watt.
R_3 — 60,000 ohms, 1 watt.
R_4 — 100 ohms, 10 watts.
R_5 — 47,000 ohms, ½ watt.
R_6 — 25,000 ohms, 10 watts.
R_7 — 0.1 megohm, 1 watt.
R_8 — 500 ohms, 1 watt.
R_9 — 450 ohms, 10 watts.
R_{10}* — 4700 ohms, 20 watts, part No. 160.
R_{11} — 0.5-megohm potentiometer.
L_1 — 6 turns, 1-inch diam., 1½ inches long. (Make from part No. 127.)
L_2 — 8 turns, 1-inch diam., 1½ inches long. (Make from part No. 126.)
L_3 — 2½ turns insulated No. 12 wire.
L_4* — Microphone filter choke.
J_1* — 10-prong female chassis fitting.
J_2* — 6-prong male chassis fitting.
J_3*, J_4*, J_5*, J_6* — Jack strip.
P_2* — 6-prong male chassis fitting.
RFC_1, RFC_2 — 2.5-mh. r.f. choke.
Ry_2 — 3-pole double-throw 6-volt relay, part No. 121.
Ry_3 — S.p.s.t. 6-volt relay.
T_1 — Part No. 122.
T_2 — Part No. 123.
T_3 — Part No. 124.
* Original RCA parts.

13.75 to 2.75 amperes. Although there is some mismatch changing from Type 46 tubes to 6V6s, the quality did not seem to be impaired using the original transformers.

Here We Go . . .

First remove all the wiring and all parts except the following: microphone transformer, driver transformer, modulation transformer, jack strip, Jones male chassis connectors, antenna relay, and the shielded partition on the top of the chassis. Remove the tube sockets, both subchassis, all resistors and wiring. Remove the variable condensers *111*, *112* and *114*. These are plainly marked on the chassis. Remove the crystal socket as the audio gain control is to be mounted on a plate which in turn is bolted over the hole. The sockets for the 6V6 tubes go in place of the 46 sockets and the 6J5 socket replaces the 47 socket. Mount an octal socket or crystal holder in place of the 1610 oscillator socket. An octal socket for the 6AG7 goes in place of the first I.P.A. 1610 socket. Leave the second I.P.A. 1608 socket empty. The 807 socket must be submounted on extension bolts to lower the tube enough to clear the top of the cabinet. Mount a shield around the 807 that will cover the tube elements at least halfway up the plate. The microphone transformer (*122*) will have to be removed temporarily for access to the driver transformer terminals. Install a microphone jack in the front panel under the power cable receptacle. This should be wired in parallel with the remote microphone connector, a chassis-type single-contact connector which can

be conveniently mounted alongside the jack.

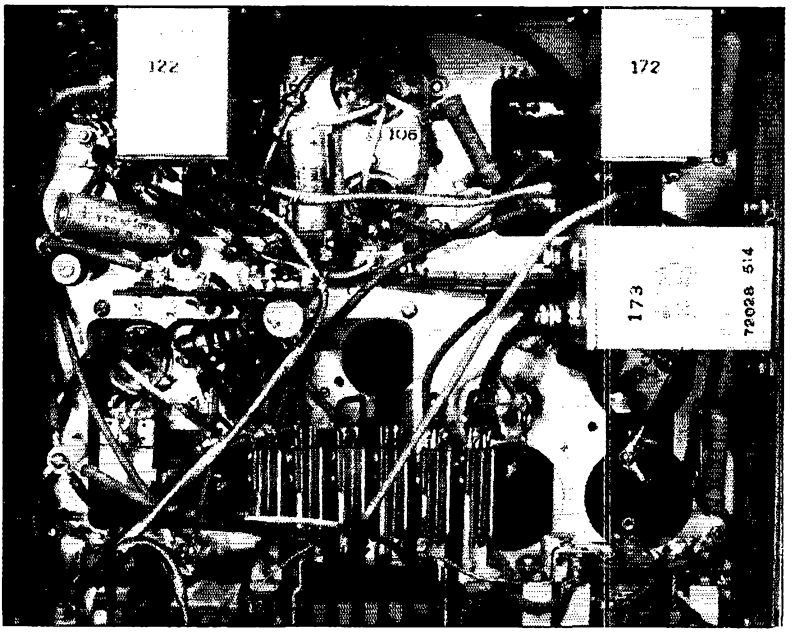
At this point we need a small aluminum or steel box about 4¾ inches by 3½ inches by 3 inches to enclose completely the oscillator tank condenser, coil and plate by-pass condenser. Cut small holes in the front for the screwdriver adjustments of the oscillator tank condenser. The main purpose of this box is to shield the tank circuit from the bottom as well as the sides so it is necessary to remove the tank condenser and mount it inside the box. Small r.f. feed-through insulators are fine for this purpose. Be sure the rotor as well as the stator is above ground. The oscillator tank coil will be part *127* changed to 6 turns 1 inch in diameter and spread to 1½ inches in length. The only real problem encountered was the mounting of the condensers on the 807 subchassis, space limitations being the stumbling block.

It was decided to use the Faradon condensers wherever possible and in some cases it was necessary to compromise slightly on the values desired with those on hand. For the plate by-pass use condenser *154* which is a 0.0001-μfd. Faradon. Mount the plate by-pass first on the underside of the bakelite panel using a bolt long enough to go through the condenser, the bakelite and into the tapped hole in the tank condenser. Ground the other end to a lug placed under one of the corner posts. Mount the screen by-pass over this condenser, using the ground connection as the support. The B+ will connect directly to the plate by-pass, thus feeding the tank circuit in series. The screen-dropping resistor, R_6, can be mounted on the end panel of the main chassis directly under the screen by-pass. The tank coil for the 807 can be coil *126*, removed from the first I.P.A. This has 8 turns about 1 inch in diameter and should be stretched to 1½ inches in length. It will mount on the same brackets the original final coil used. A feed-through insulator should be installed through the main chassis about 1½ inches from the front panel just above the antenna changeover relay. A 1-inch stand-off insulator mounted on the front panel will hold the antenna tuning link. One end mounts on the stand-off, the other on a feed-through insulator which at this point should be installed in the partition. Mount this feed-through 1½ inches back from the front panel and down from the top of the partition 1¼ inches.

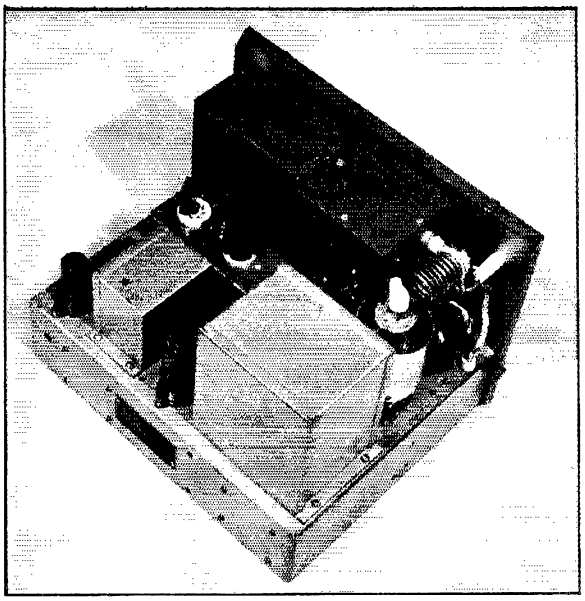
On the opposite side of the partition mount a small box about 4 by 4 by 2 inches, flush with the top of the partition. This will contain the variable condenser (*111*) which is to tune out the inductive reactance of the link. Mount it with the rotor grounded and the screwdriver adjustments facing the front panel. Drill two holes through the front panel and the front of the box in line with the adjustment screws. This will give easy access to the adjustments for tuning up.

It will be much easier to wire the oscillator before the subchassis is replaced. Between the front edge and the crystal holder mount the crystal-changing relay. In the oscillator section the plate by-pass condenser should be mounted above the chassis in the metal box enclosing the oscillator tank. The feed will go through the base and the bottom of the box. As it would be difficult to use such physically large condensers as the Faradons, some of the new small types should be used in the oscillator section. Make all leads as short as possible, and use one common grounding point.

After the oscillator section is wired and the subchassis is mounted, the filaments should be wired. Use at least No. 10 stranded wire with good insulation. Voltage drop in the filament circuits should be kept to a minimum. It is advisable to wire both legs of the filaments and not



Bottom view of the 10-meter mobile transmitter of W1QNM.



The converted RCA police transmitter and dynamotor used by W1QNM for 10-meter mobile work.

depend on chassis returns in the transmitter.

Next we turn to the audio section. Starting with the secondary side of the modulation transformer wire up as in the diagram, working backward toward the 6J5 tube. It is necessary to wire the driver transformer before reinstalling transformer T_{122} as it will block access to much of the wiring. The bakelite terminal board should be reinstalled between the edge of the chassis and the driver transformer, and used for mounting the oscillator screen-dropping resistor and R_8 and C_{14} of the 6J5 cathode circuit. The microphone input circuit is a simple low-pass filter network. No voltage is impressed on the microphone except during transmission. After the rig is fired up it will be necessary to adjust the primary taps on the microphone transformer for maximum output together with good tone quality. It is a good idea to shield all grid and low-voltage leads, to prevent hum pick-up if the rig is ever to be operated from an a.c. supply.

Now that we have the three basic sections wired, it is only necessary to connect them up. The coupling condenser, C_5, is mounted on the top of the chassis on a stand-off insulator, between the oscillator subchassis and the hole already in the partition. This is convenient as RFC_2 can be mounted through the hole that is already in the main chassis. R_5 can be mounted under the chassis adjacent to this same hole. Next, wire in the various circuit jacks, following the polarity indicated in the schematic. In wiring the antenna relay do not forget R_7 which is necessary to bleed off the dynamotor while it is coasting to a stop. This completes the transmitter wiring.

The dynamotor requires only minor changes. Change the wiring of the starting solenoid and the six-prong Jones plugs to agree with the diagram. Filament-dropping resistor R_1 can be removed or shorted. In the same circuit, install the filament switch followed by a fuse. A s.p.s.t. bat-handle switch can be used for this purpose, mounting it on the end of the dynamotor beside the Jones plug. Now mount a similar switch on the opposite side of the Jones plug for the "Transmit" switch.

The remote control system which comes with the units is complete in itself and offers a wide variety of applications. Any one of the several hook-ups described in the instruction manual can be employed or something original can be designed. The remote control used here has some decided advantages and might be of interest to others. The control box consists of a "C" battery box with cover from an old Atwater Kent battery radio. It is approximately 3 inches deep by 8 inches long by 4 inches high, with a flange around the base.

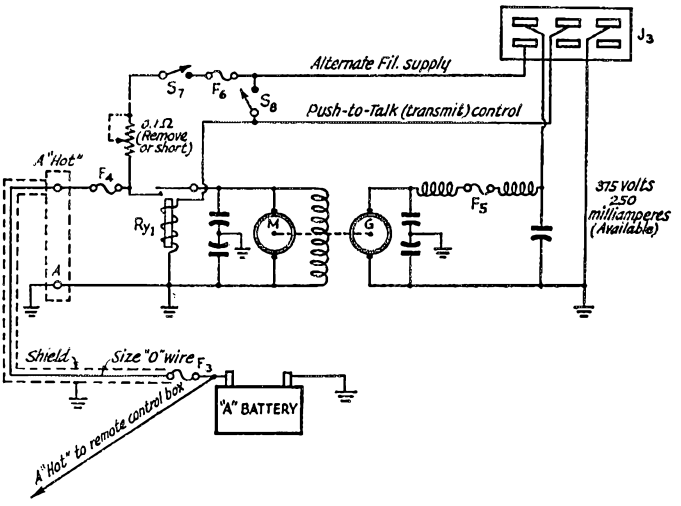


Fig. 2 — Details of the dynamotor unit and associated circuits used with the converted police transmitter. When no designation is given, the parts are left as in the original unit. Switches S_7 and S_8 provide filament and starting control from the trunk position.

F_3 — 30-amp. Fusetron, mounted on firewall.
F_4* — Part No. 503.
F_5* — Part No. 504.
F_6 — 20-amp. cartridge fuse and mounting.
J_1* — 6-prong male chassis fitting.
Ry_1* — Part No. 502.
S_7, S_8 — S.p.s.t. toggle switch.

* Original RCA parts.

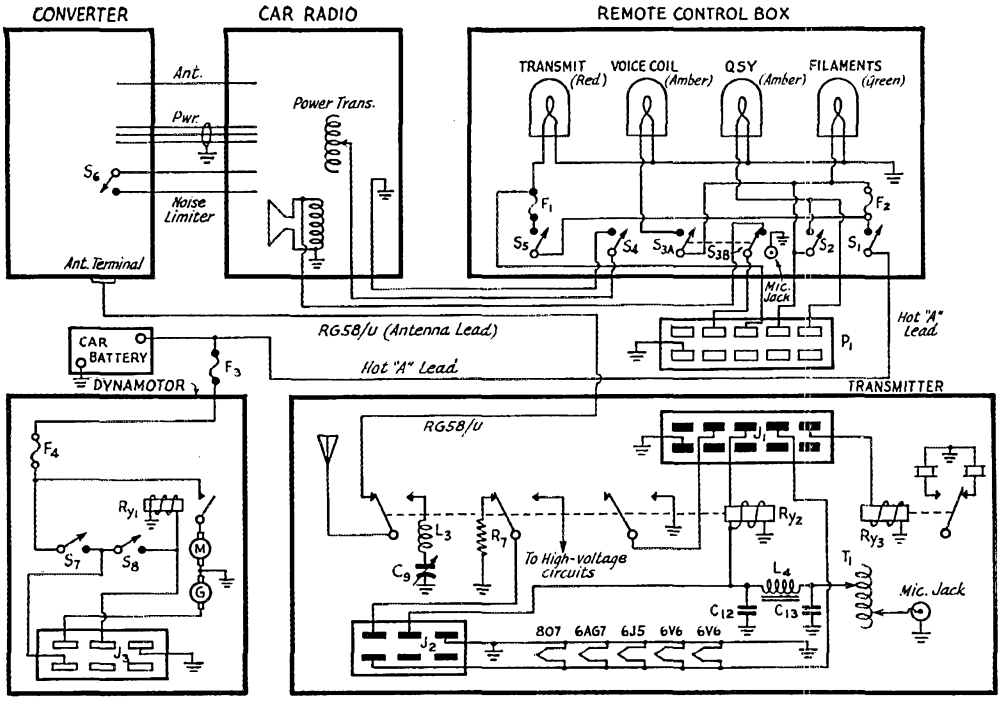


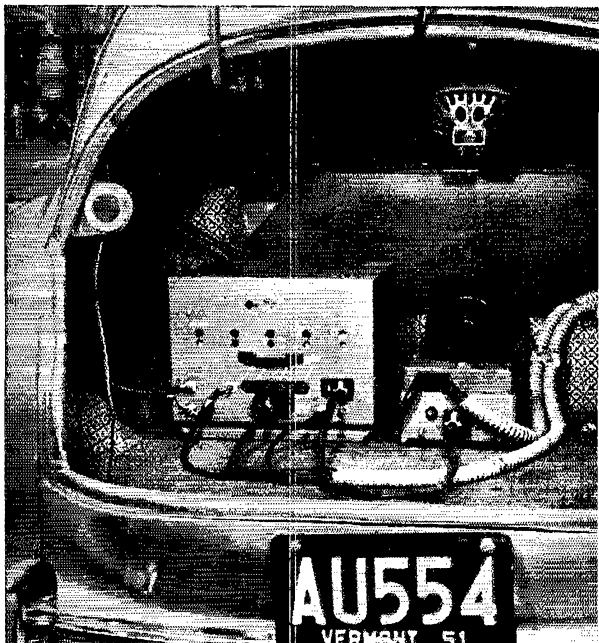
Fig. 3 — Control circuits for the 10-meter mobile station. Heavy lines indicate separate units. P_1 is on the end of the cable between the control position and the transmitter unit. The interconnecting microphone cable is omitted from this schematic for the sake of clarity.

A useful feature seldom seen in amateur mobile rigs is a lock-and-key type filament switch purchased from an automotive supply house. The filament circuit has a green jewel pilot indicator and all circuits are so wired that the switches in the front and in the trunk can not be left in the "on" position without indication; double insurance against a run-down battery.

The QSY switch lights the amber-jeweled pilot light and actuates the crystal relay. If the crystals are a few kilocycles apart, the shift can be made without retuning. The third switch from the right is a d.p.d.t. bat-handle toggle switch which disables the voice-coil grounding circuit of the changeover relay, making it possible to monitor your own signal. An amber-jeweled pilot is the indicator. The fourth switch from the right cuts the B— of the receiver and converter, saving about 6 amperes battery drain. This could have been done with a relay but a switch allows silencing the receiver instantly without putting the transmitter on. The switch on the extreme left with the red-jeweled pilot is the "Transmit" switch, supplying voltage to the antenna changeover relay, the microphone and the dynamotor starting solenoid. Note here that the relay and filament supply voltage come through the firewall direct from the battery, saving some wiring, compared to the conventional method of picking up filament voltage from the main dynamotor supply cable in the trunk. The transmit switch can be connected in parallel with a push-to-talk switch on the microphone if desired.

The main supply line to the dynamotor is No. 0 insulated copper cable. It is fed through 1-inch Greenfield flexible conduit for protection against road salt, chafing, etc. A fuse block is placed on the fire-wall near the battery, and another fuse

(*Continued on page 102*)



Interior view of the converted transmitter, ready for operation on 28 Mc.

Receivers for Radio-Controlled Models

Features and Comparisons of Lightweight Units

BY WALTER A. GOOD,* W3NPS, AND WILLIAM E. GOOD,** W3LQE/2

THE airborne receiver undoubtedly offers the most fascination of any part of the radio-controlled model aircraft. The extreme emphasis on light weight, including batteries, immediately eliminates superhet receivers, heater-type tubes, and other heavy approaches. As a result of the severe requirements, all of today's receivers are of the superregenerative type, and most of these have been optimized in a direction usually not considered for communication. That is, they are designed to give the maximum plate-current change upon the receipt of a carrier signal. A discussion of four distinct types of receivers, including their relative merits, follows below.

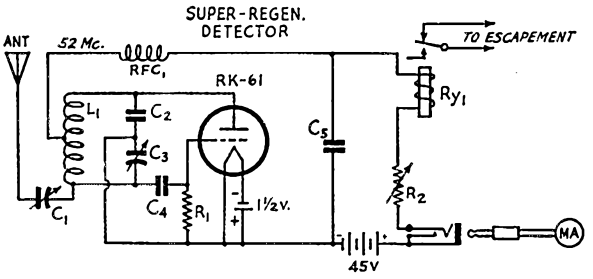


Fig. 1 — Lightweight superregenerative receiver for radio-controlled models, using the RK-61 gas triode.
C_1, C_3 — 30-$\mu\mu$fd. mica or ceramic trimmer.
C_2 — 15-$\mu\mu$fd. ceramic.
C_4 — 100-$\mu\mu$fd. ceramic.
C_5 — 0.05-μfd. 100-volt paper.
R_1 — 2.7 megohms.
R_2 — 10,000-ohm midget variable.
L_1 — 10 turns No. 16, 7/16 inches i.d., double spaced, center-tapped.
RFC_1 — 70 turns No. 34 enam., 3/16-inch diam.
Ry_1 — 5000-ohm sensitive relay.
MA — 0–5 milliammeter, for test only.
ANT — 28 inches long.
C_3 should be adjusted for maximum idling plate current. Squeeze L_1 for desired operating frequency. If desired, 65 volts can be used for the plate supply, with Ry_1 an 8000-ohm relay and R_2 = 25,000 ohms.

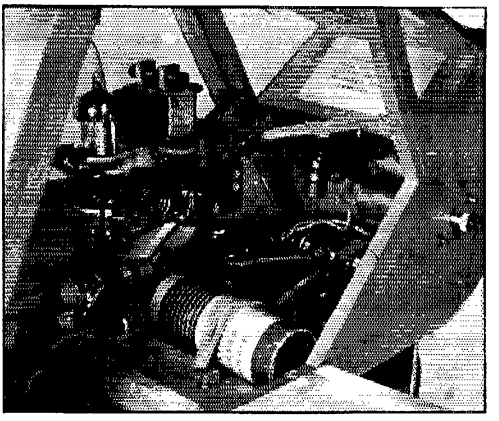
Gas Triodes

The lightest weight single-channel receiver is that using the subminiature RK61 gas triode. This special tube, made by Raytheon, has the cooperative property of acting like a thyratron or a hard triode, depending on the conditions. In the superregenerative circuit shown in Fig. 1, the idling (no-signal) plate current is 1.5 ma. and the tube shows gaseous conduction. Upon receipt of a carrier the plate current drops to 0.1 ma. and the discharge disappears. It is this change in plate current through the relay coil that operates the relay and thence the controls. With this receiver a complete, reliable, single-channel control can be had for a weight of seven ounces. The principal disadvantages to the gas tube are its short life (3 to 100 hours) and the variable adjustments required during its gradual deterioration. Also, it is unable to operate consistently at amateur frequencies above 54 Mc. The *RC* "squegging" type circuit shown in Fig. 1 was refined by E. J. Lorenz and is typical of many others in common use.

The second type of receiver, in Fig. 2, uses a vacuum triode and a quench-oscillator coil and was developed primarily by the authors. When the proper relationship exists between the quench voltage and the r.f. voltage, the circuit is capable of large changes in plate current. Typical idling current is 5.0 ma., with a drop to 3.0 ma. with a carrier signal. One-half of a miniature 3A5 serves as the triode tube. The main advantage of this receiver is its long life and reliability. Adjustment of antenna length to give proper loading for best results is somewhat critical and is considered a disadvantage.

The third type of receiver, in Fig. 3, is an unusual combination of both the *RC* "squegging" and the *LC* "quench" oscillators. It is a development of George Fathauer and is being marketed by Vernon MacNabb[1] as the first radio

[1] Vernon C. MacNabb Co., 915 Westfield Blvd., Indianapolis 20, Ind.



A close-up view of the receiver and batteries mounted in the cabin of the "Rudder Bug" (see page 13, Aug. *QST*). The rubber bands serve as a shock and vibration mount for the receiver, and they also serve as lightweight clamps for the batteries on the floor.

*9802 Howard Ave., Bethesda, Md.
**Woodchuck Hill Road, Jamesville, N. Y.

control equipment on the 465-Mc. citizen's band. It has simultaneous oscillations occurring at 100 kc. (*RC*), 400 kc. (*LC*) and the 465-Mc. r.f. With no signal, the idling plate current remains low at 0.2 ma. Application of a carrier causes the plate current to rise to about 1.0 ma. This is the only superregen known to the authors that idles at a low current and raises with signal — a real advantage when battery life is considered. The tube is a subminiature triode, 6K4, which has a 6-volt 150-ma. heater that requires more batteries than the other sets. A small loop antenna is used, around the base of the receiver.

The fourth receiver, in Fig. 4, is a three-tube model developed by Rockwood.[2] It has one superregen stage, one voltage amplifier stage, and one

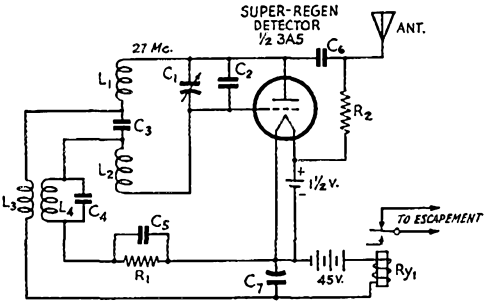


Fig. 2 — The 27-Mc. r.c. receiver of W3NPS.

C_1 — 7-$\mu\mu$fd. ceramic trimmer.
C_2, C_6 — 39-$\mu\mu$fd. ceramic.
C_3 — 470-$\mu\mu$fd. mica or ceramic.
C_4 — 1500-$\mu\mu$fd. mica.
C_5 — 0.01-μfd. paper or ceramic.
C_7 — 0.1-μfd. paper.
R_1 — 12,000 ohms.
R_2 — 15,000 ohms or less. Required only if idling plate current too low (below 5 ma.).
L_1, L_2 — 10 turns No. 22 enam., close-wound on 1-watt 1-megohm resistor.
L_3, L_4 — Quench-frequency coil (National OSR with can removed).
Ry_1 — 2400-ohm sensitive relay.
ANT — 3-foot wire.
Idling plate current: 5.0–5.5 ma.; with signal: 3.0–3.5 ma.

power amplifier stage. Of course, the design objective of this receiver is to get as much audio power to the reeds as possible, and thus this receiver is different from the other three. Reports indicate excellent reliability of the three-tube receiver, with the only real disadvantage being the weight of the receiver and batteries compared to the other sets.

Table I is a summary of the characteristics of the four types of receivers discussed above. The final column lists the complete weight for single-rudder control systems.

Transmitters

Fortunately, the ground transmitters have not presented as tough a problem as the receivers. Low power is the keynote, with dry batteries as

[2] See Good and Good, "Radio Control of Model Aircraft," August, 1951, *QST*, for a description of the Rockwood control system. It uses resonant reeds for multiple-channel operation with a single carrier frequency.

The MacNabb receiver operates on 465 Mc., the "citizen's band." The metal loop at the bottom is the receiving antenna — the vane-tuned inductance can be seen to the left of the tube.

the favorite supply. A simple push-pull oscillator with a 3A5 twin-triode taking about four watts input seems to be typical. This results in about one watt of r.f., which is adequate for solid control to one-half mile range.

On 52 Mc. the transmitting antenna is usually a horizontal folded dipole, while on 27 Mc. a vertical quarter-wave appears to be quite effec-

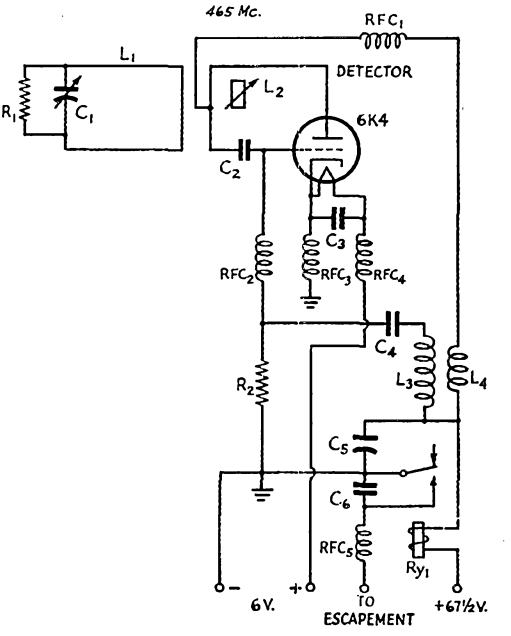
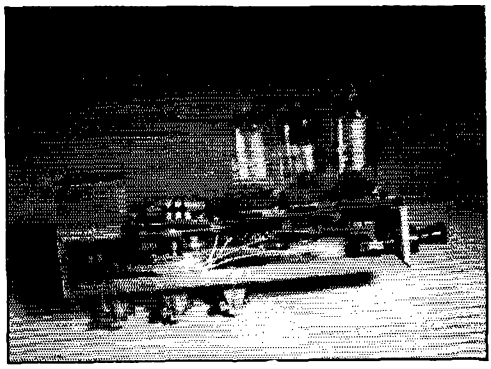


Fig. 3 — Schematic diagram of the receiver used for radio control on 465 Mc.

C_1 — Antenna trimmer.
C_2, C_3 — 20 $\mu\mu$fd.
C_4, C_6 — 56 $\mu\mu$fd.
C_5 — 2 μfd.
R_1 — 68,000 ohms.
R_2 — 6800 ohms.
L_1 — Loop antenna.
L_2 — Single loop, vane-tuned.
L_3, L_4 — 400-kc. quench-frequency transformer.
RFC_1–RFC_5 — R.f. choke.
Ry_1 — Sensitive relay.



The Rockwood 3-channel receiver uses resonant reeds for audio selectivity. Three relays for controlling the servos are mounted below the chassis.

tive. On 465 Mc. a hand-held transmitter (6K4), with a folded dipole and reflector, is pointed toward the plane.

Plane Model

Successful radio control depends heavily upon the plane design as well as on the radio gear. Two planes were shown[2] that are considered typical of present-day practice. Both are equipped with single-channel receivers, escapement rudder control, and motor cut-off. The cut-off is accomplished by a simple three-second thermal-delay element.

General trends in design seem to be toward smaller models with single control and larger models with multiple controls.

Receiver Problem

The writers feel that the receiver design is still the weakest link in the radio control system. None of the four receivers above contains all of the desirable features considered essential. What are the requirements for an "ideal" single-channel receiver? At the risk of some controversy, the writers have listed their requirements below.

1) Weight — The total weight of the receiver, batteries for twenty hours of operation, and rudder control device should be under 16 ounces.

2) Reliability — Should be very high, long life, no change in adjustment with age or battery condition. Antenna length or loading should be non-critical.

3) Freedom from interference — Should not be affected by model's engine ignition and by other signals on adjacent r.f. frequency.

4) Freedom from vibration and landing shock — Should be able to withstand abuse of hard landings, and not be affected by engine vibration.

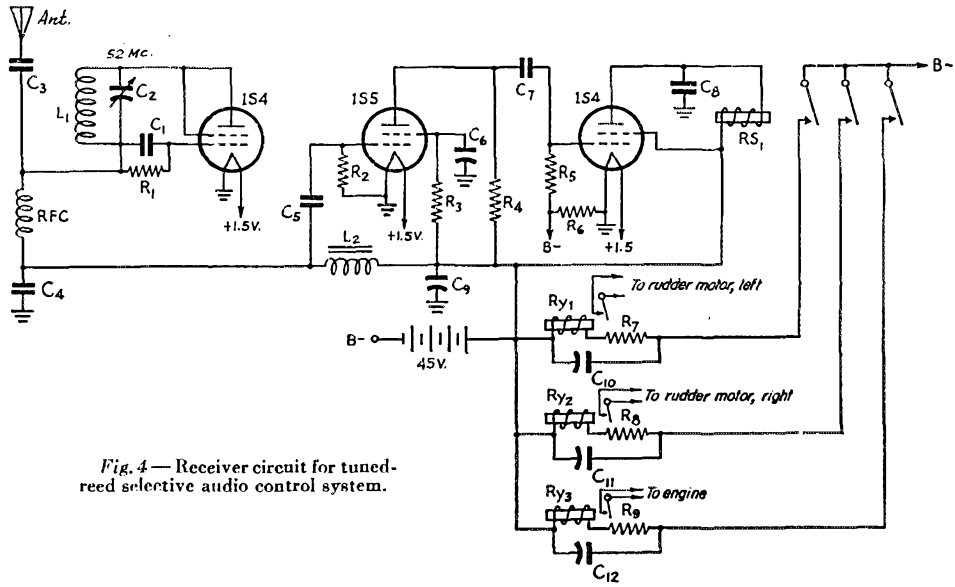


Fig. 4 — Receiver circuit for tuned-reed selective audio control system.

C_1 — 100-$\mu\mu$fd. ceramic.
C_2 — 3-30 $\mu\mu$fd. trimmer.
C_3 — 5-$\mu\mu$fd. ceramic.
C_4, C_5 — 0.01 μfd.
C_6 — 0.02 μfd.
C_7 — 470 $\mu\mu$fd.
C_8 — 0.002 μfd.
C_9 — 25-μfd. 50-volt electrolytic.
C_{10}, C_{11}, C_{12} — 0.25 μfd.
R_1, R_4 — 1 megohm.
R_2 — 4.7 megohms.
R_3 — 3 megohms.
R_5 — 2 megohms.
R_6 — 1000 ohms.
R_7, R_8, R_9 — 15,000 ohms.
L_1 — 16 turns No. 24 enam. wire on ¼-inch form.
L_2 — Audio choke (UTC SO-5).
Ry_1, Ry_2, Ry_3 — 8000-ohm sensitive relay.
RS_1 — Resonant reed unit — headphone-energized.
ANT — 2-ft. wire.

TABLE I
Receiver Comparison Chart

Receiver	Freq. (Mc.)	Type Signal	Plate Cur. (Ma.)		Relay Diff. Cur. (Ma.)	Relay Resist. (ohms)	B Volt.	A Volt.	A Cur. (Ma.)	Flying Weight (oz.)	
			Sig. Off	Sig. On						Receiver	Recv. with Batts. & Servo
Gas Tube RK 61	27 52	carrier	1.5	0.1	1.4	5000	45	1.5	60	2	7
Good Brothers 3A5	27 52	carrier	5.0	3.0	2.0	2400	45	1.5	110	4.5	14
Fathauer-MacNabb 6K4	465	carrier	0.2	1.0	0.8	8000	65	6.0	150	5.5	16.5
Rockwood Tone — 3 Tube	27 52	A.m. with audio tones	4.5	4.5	4.0	8000	45	1.5	250	12 (3-channel)	23

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A kitchen match is bigger than the escapements used in modern radio-controlled model airplanes.

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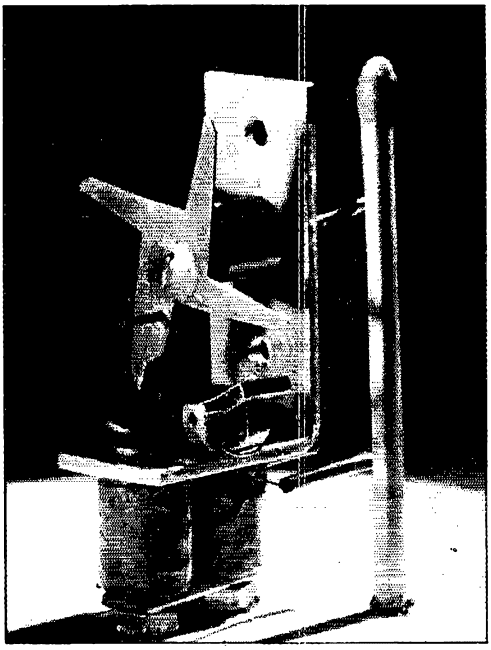


5) Solid reception for all ranges to 2500 feet and all possible attitudes of the plane — This means *really* "solid." A missed pulse at a critical moment may crash your plane.

6) Simplicity — Should use easily obtainable components and be sufficiently simple for a beginner to construct and adjust.

7) Frequencies — 27.2 Mc., 52 Mc., 220 Mc., separately, of course, with special attention to frequencies available to Novice and Technician License holders.

Does this sound too tough? Give it a try and give the modelers a lift. If you need help from the model plane angle, contact your local hobby shop and you'll find many serious modelers who will be more than happy to contribute a plane to a joint radio control effort. Give it a try; you'll like it!

. . . A portable rig using Ford spark coils for power is described by Frank Wilburn, 6EL.

. . . Ratings and operating curves for the new UX210 indicate a promising future for the tube.

. . . Circuit arrangements for effective break-in and remote control are discussed by Assistant Technical Editor John M. Clayton.

. . . The shunting effect of the plate-grid capacity of the oscillator tube is a factor in building a transmitter for 5 meters, advises Boyd Phelps, 2EB.

. . . The current trend in receiver construction is to use individually-shielded r.f. stages to eliminate coil pick-up and interstage coupling.

. . . General Radio is offering 160-meter crystals at $15 each — mountings extra.

. . . Harold P. Westman of the ARRL Information Service gives pointers on converting the popular ET-3619 transmitter to make it conform with current Department of Commerce regulations.

. . . Stephen I. Gilchrist, 8UW, describes a receiver featuring four different detector circuits.

. . . The International Amateur Radio Union has shown a healthy growth during its first year of existence.

. . . Government regulation of radio broadcasting has broken down completely because of the adjournment of Congress without enacting any legislation.

. . . Hidden transmitter hunts have been remarkably successful of late in England, and are recommended as an activity for clubs in this country during the coming season.

The Coffee-Can VFO Sr.

Adding an Inexpensive Power Stage

BY EDWARD HAYWARD,* W1PH

A COUPLE of years ago, I described a cheap and easily-built VFO unit that I and several other hams in the vicinity had been using with good results.[1] The response to the article exceeded all expectations. In spite of the apparent trend to commercial-type gear, it is evident also that there are still plenty of hams who go for the useful little gadgets that can be built in a few hours' time, mostly from parts to be found in the usual "junk box." It doesn't have to be fancy so long as it works well.

Since that time, I've rebuilt, sticking to the same general lines, but improving it here and there and dolling it up a bit. Perhaps the point of greatest interest to most will be the fact that a power amplifier has been added. This stage will take 35 to 45 watts input — enough to put a pretty good signal on the air from the unit itself, or to drive a husky final. Depending upon the tank-circuit values used, the operator has a choice of building the unit for either 80- and 40-meter output or 40- and 20-meter output.

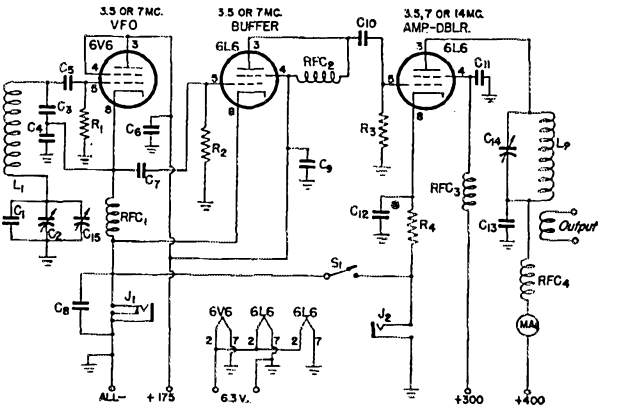
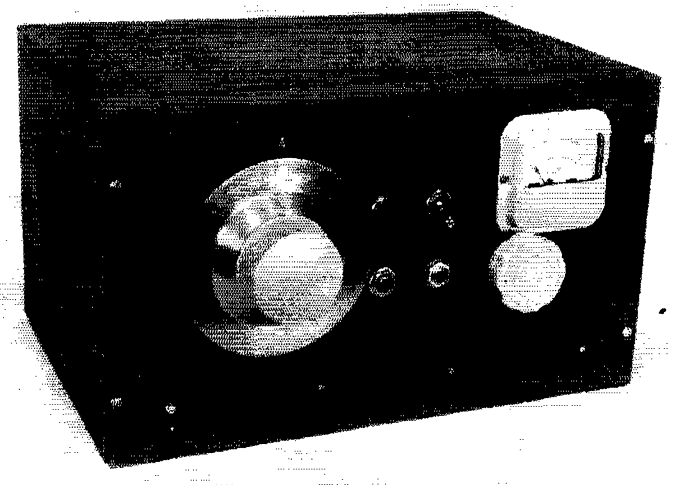


Fig. 1 — Circuit of the improved coffee-can VFO unit.

C_1 — 3.5 Mc. — 200-$\mu\mu$fd. silvered mica.
— 7 Mc. — 50-$\mu\mu$fd. silvered mica.
C_2 — 75-$\mu\mu$fd. midget variable, single-hole mounting type.
C_3, C_4 — 3.5 Mc. — 0.001-μfd. silvered mica.
— 7 Mc. — 150-$\mu\mu$fd. silvered mica.
C_5, C_7, C_{10} — 100-$\mu\mu$fd. mica.
C_6, C_8, C_9, C_{11}, C_{12}, C_{13} — 0.01-μfd. ceramic or mica.
C_{14} — 100-$\mu\mu$fd. midget variable, 0.024-inch air gap.
C_{15} — 30-$\mu\mu$fd. ceramic trimmer, neg. coefficient.
R_1 — 0.1 megohm, ½ watt.
R_2 — 47,000 ohms, ½ watt.
R_3 — 24,000 ohms, ½ watt.
R_4 — 150 ohms, 1 watt.
L_1 — 3.5 Mc. — 12 μh. — 20 turns No. 16 enam., 1½-inch diam., close-wound (see text).
— 7 Mc. — Same as above, but 18 turns.
L_2 — 3.5 Mc. — 25 μh. — 32 turns No. 18, 1¼-inch diam., 1 inch long (National AR17-80-E reduced to 32 turns).
— 7 Mc. — 6 μh. — 18 turns No. 18, 1¼-inch diam., 1 inch long (National AR17-40-E reduced to 18 turns).
— 14 Mc. — 2 μh. — 8 turns No. 16, 1¼-inch diam., ¾ inch long (National AR17-20-E reduced to 8 turns).
J_1 — Closed-circuit jack.
J_2 — Open-circuit jack.
MA_1 — D.c. milliammeter, 200-ma. scale.
RFC_1, RFC_2, RFC_3, RFC_4 — 2.5-mh. r.f. choke (National R-50).

The circuit of the oscillator and buffer stages is essentially unchanged. A negative-temperature-coefficient trimmer, C_{15}, has been added in the Clapp oscillator circuit. This provides a convenient means of setting for the band and compensates for what little drift was experienced with the original unit. With S_1 closed and the key in J_1, all three stages are keyed simultaneously for break-in operation. If you want to put in enough key filtering to give real soft keying, open S_1, put the key in J_2 and key the amplifier only.

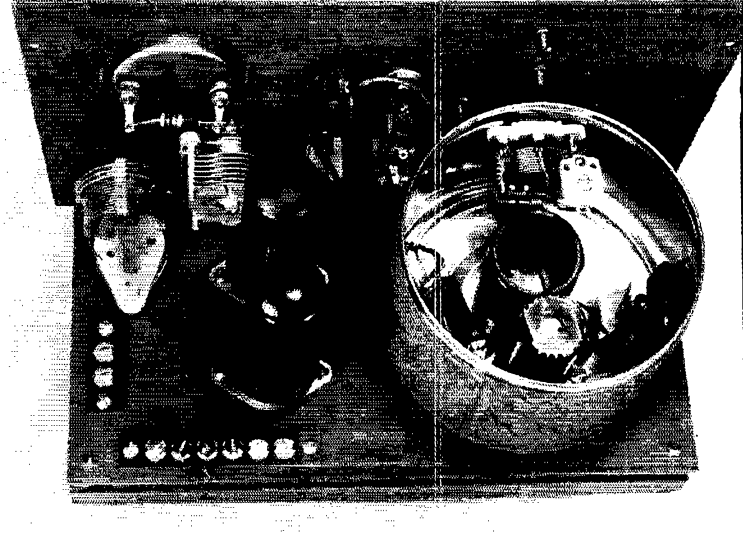
The circuit of the final is simple, requiring but a few additional



The completed coffee-can VFO transmitter installed in its cabinet. The dial sets the oscillator frequency, while the knob resonates the final. The keying jacks, key switch and pilot lamp are in the center.

* 15 Woodbine Terrace, Auburndale, Mass.

[1] Hayward, "The Coffee-Can VFO," *QST*, Aug., 1949, p. 22.



Interior view of the coffee-can VFO transmitter, showing the location of oscillator parts inside the coffee can and the amplifier components to the left. The terminals are for power-supply input and link output.

♦

parts. It is capacitively coupled to the buffer stage, and there is no danger of instability when working straight through at the fundamental because the amplifier input circuit is untuned.

I use the small dual power supply diagrammed in Fig. 2. One section provides 175 volts for the oscillator and buffer, while the other supplies 400 volts for the final. A series resistor, R_2, Fig. 2, takes care of the screen voltage for the final (300 volts). S_2 is provided for cutting off the final while setting the VFO to frequency.

Construction

As in the earlier model, the oscillator components are mounted in a one-pound vacuum-pack coffee can. This makes a cheap but effective shielding enclosure and the soft material can be worked easily with ordinary hand tools. If you don't like the advertising on the can, just paint it over. I used wrinkle varnish.

The oscillator tuning condenser, C_2, is mounted on the wall of the coffee can, far enough down so that it will clear the cover with ease. The trimmer, C_{15}, is soldered to one of the tuning-condenser stator rods, while the padder, C_1, is fastened to the other. The tube socket is then wired up and mounted, opposite the tuning condenser, on 9/16-inch spacers, drilling holes in the can for power wires where necessary. The oscillator coil, L_1, is wound on a form 1½ inches in diameter and 2 inches long. The winding, which is a little over an inch long for 80 meters, should be placed at one end of the form and the turns covered with coil dope. Then the form is cemented to the bottom of the can, centered between the tuning condenser and the tube, with the winding at the top, thus spacing the coil itself nearly an inch from the bottom of the can. The other small components are placed wherever convenient, using insulating tie points for support wherever necessary. Ground connections can be made to the can easily, since the can material takes solder readily.

The oscillator unit and the amplifier components are mounted on a piece of $^{3}/_{16}$-inch Presdwood measuring 6 by 10⅞ inches. Metal can be used, of course, if you don't mind the extra labor. The photograph of the interior shows how the buffer and final tubes and the output tank-circuit parts are placed on the base. The final 6L6 is the one nearer the panel. The tank condenser, C_{14}, is mounted from the base on a bracket. The coil requires a 5-prong tube socket. After the wiring underneath was completed, I mounted the Presdwood on a piece of ¾-inch board of the

(*Continued on page 102*)

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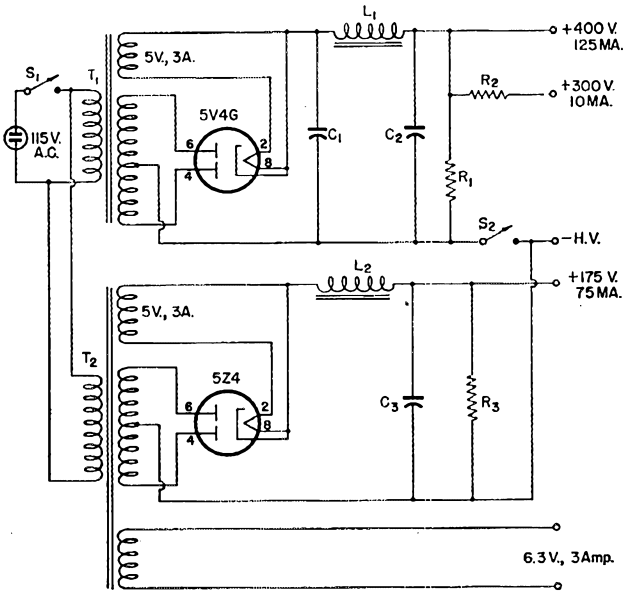


Fig. 2 — Power-supply diagram for the coffee-can transmitter.

C_1, C_2 — 10-μfd. 450-volt electrolytic.
C_3 — 20-μfd. 450-volt electrolytic.
R_1 — 50,000 ohms, 25 watts.
R_2 — 12,000 ohms, 10 watts.
R_3 — 50,000 ohms, 10 watts.
L_1 — 10-hy. 125-ma. filter choke.
L_2 — 10-hy. 75-ma. filter choke.
S_1, S_2 — S.p.s.t. toggle switch.
T_1 — Power transformer: 375–0–375 volts r.m.s., 125 ma.; 5 volts, 3 amp.
T_2 — Power transformer: 250–0–250 volts r.m.s., 75 ma.; 5 volts, 3 amp.; 6.3 volts, 3 amp.

Preventing Breakdown with Antenna Changeover Relays

BY T. A. CONSALVI,* W3EOZ

In 'phone transmission, antenna relays of the fast-breaking type may cause voltages of destructive proportions to develop in a final amplifier plate circuit and its associated antenna circuit, because the antenna relay opens before the plate-supply condensers have completely discharged, thus allowing the amplifier to continue operating momentarily even though the primary power supply has been cut off. The condition is greatly aggravated if a modulation peak occurs at the instant of break.

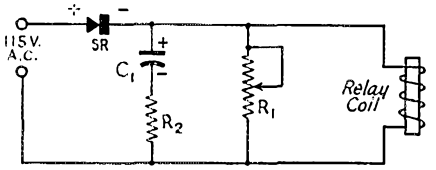


Fig. 1 — Protective delay circuit.
C_1 — 60-μfd. electrolytic.
R_1 — 0.1-megohm potentiometer.
R_2 — 25 ohms (current-limiting resistor).
SR — 150-ma. selenium rectifier.

Irreparable damage can result to the antenna relay contacts through burning and arcing, especially with coaxial-type relays where the contacts are closely spaced. Also, a large amount of r.f. power may be fed into the receiver, resulting in damage to antenna coils and other components. High-voltage breakdown may also occur in shielded links and low-pass filters when these units are in the antenna coupling circuit between the antenna relay and the final amplifier.

An ideal operating condition is one where the antenna changeover relay has a fast make and a delayed break, allowing the plate power to be completely bled off before the relay switches to the receive position. Experience shows that a time interval of approximately 1/10 of a second is sufficient in average cases.

A practical and economical method of adding the required time delay to existing a.c.-operated changeover relays is indicated in Fig. 1. Some experimenting will be required to ascertain the correct values of C_1 and R_1 for a given relay. When the correct value of C_1 has been determined to give more than adequate delay (¼ to ½ second), potentiometer R_1 may be adjusted to set the delay to the desired time. A fixed resistor can replace the potentiometer when the value of resistance that provides the necessary delay action is known. The current rating of *SR* is dependent on the current drawn by the relay coil and R_1 under sustained operating conditions.

As a guide to those who wish to incorporate this delay unit in existing relay systems, component values that proved satisfactory in one case are given with the diagram.

A small piece of Scotch tape or thin gummed paper glued to the top of the pole piece will prevent the armature from sticking when current is removed from the coil. This is needed only in those cases where the pole piece of an a.c.-type relay has a tendency to become magnetized due to use of direct current. When d.c.-type relays are employed R_2 and *SR* are not needed and can be omitted.

*% Barker & Williamson, Inc., Upper Darby, Pa.

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 QSL bureaus, see page 62, June '51 *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 — L. W. May, jr., W5AJG, 9428 Hobart St., Dallas 18, Texas
W6, K6 — Horace R. Greer, W6TI, 414 Fairmount St. Oakland, Calif.
W7, K7 — Mary Ann Tatro, W7FWR, 513 N. Central, Olympia, Wash.
W8, K8 — Walter Musgrave, W8NGW, 1294 East 188th, Cleveland 10, Ohio
W9, K9 — John F. Schneider, W9CFT, 311 W. Ross Ave. Wausau, Wisc.
WØ, KØ — Alva A. Smith, WØDMA, 238 East Main St., Caledonia, Minn.
VE1 — L. J. Fader, VE1FQ, 125 Henry St., Halifax, N. S.
VE2 — 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, 1785 Emerson St., Victoria, B. C.
VE8 — Roy Walton, VE8CZ, Box 534, 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

Curing Industrial TVI

Preventing Radiation from R.F. Heating Machines

BY PHILIP S. RAND,* W1DBM, ARTHUR J. RILEY,* W1MGX, AND J. J. LAMB *

EVERY radio amateur should become familiar with TVI caused by industrial electronic heaters, not only so that he can identify this particular type of television interference on his own TV receiver, but also so that he can help track it down and point out ways and means for curing it. Believe it or not, it can be completely cured.

The offending equipments are basically high-powered r.f. generators used to produce heat in an object during some step in its manufacture. Such a generator is almost identical with a doctor's diathermy machine, except that the latter produces heat in the human body. Industrial electronic heating units may be of the spark-gap type or may use vacuum tube oscillators, and the power input runs from several hundred watts to more than 50 kw., depending upon the size and composition of the part to be heated. They are used mainly on production lines and are controlled by time switches. The time cycle for a typical application might be 30 seconds on and 45 seconds off — although, of course, the exact times depend upon the job and may run as high as 5 minutes on and 30 seconds off. In some plants whole batteries of these units are used with their on and off cycles overlapping. Some plants run two and three shifts of operators so that the units may run twenty-four hours a day. Ground-wave radiation from these machines will cause interference locally, sometimes over an area of several miles, while the sky wave will interfere hundreds and thousands of miles away.

The frequencies used vary widely not only with the type of equipment but also with the type of work being done. For example, units designed to heat metal may operate near the broadcast band or even lower, while a typical soldering unit was measured in the vicinity of 5 Mc. The units under discussion, ten in number, were used for preheating plastic pellets or "preforms" in the Remington Rand Electric Shaver plant in Bridgeport, Conn., and their frequencies were found to range from 25 Mc. to 35 Mc. Thus the fundamental frequencies ranged through the present-day sound and video i.f. channels, as well as the amateur 10-meter band, while the harmonics fell on practically every one of the 12 TV channels, together with the amateur 6- and 2-meter bands.

The reason for digging into this problem was twofold; first, a few consistent complaints by TV viewers in the vicinity of the plant; and sec-

This is the type of machine on which the radiation-proofing described in the text was done. Although contained in a metal cabinet, the shielding was largely ineffective because of many cracks and gaps and no provision for filtering r.f. from the power leads.

* Laboratory of Advanced Research, Remington Rand, Inc., South Norwalk, Conn.

• Probably you won't, in the course of earning your living, have the definite assignment of cleaning up radio interference caused by ISM (industrial, scientific, and medical) equipment. But as an amateur, you may easily find yourself in the position of being called in to help track it down, and to offer suggestions as to how it may be prevented. This article describes an actual case of interference and how it was cured, and will be useful to pass on to people who do have the job of fixing it.

The techniques are those developed in the course of working on ham transmitters to prevent TVI. In case you've overlooked some of them, or haven't yet tackled the job, the article will be equally useful to you in working on your own transmitter. Whether it's a heating machine or a ham rig, the principles are just the same.

ond, the threat of having to purchase new electronic preheaters next year when the new FCC regulations concerning diathermy go into effect. These new regulations in general provide that all such equipment must be operated within the diathermy bands, such as the 11-meter band, or else be operated in a screened enclosure so that the fundamental will not have a field strength in excess of 10 microvolts per meter, 50 feet from the power line, at a distance of 1 mile from the heater apparatus. Furthermore, all spurious radiations, such as harmonics, must be attenuated to the point where no interference is caused to any other radio service — including, of course, television.

Each of the ten "transmitters" consisted of a triode oscillator using either a 1000-T or a 450-TH with 4000 volts on the plate at a plate current of 200 to 500 ma. Each was housed in an aluminum cabinet measuring about 18 inches square and 30 inches high, with the work area on top covered by a grill to keep the operator's fingers from getting burned. A typical unit, before treatment, is shown in one of the photographs.

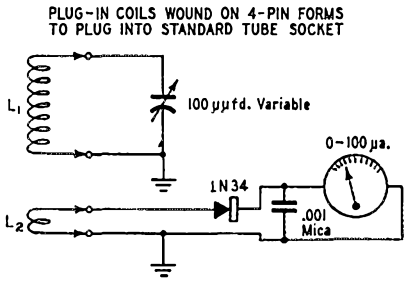
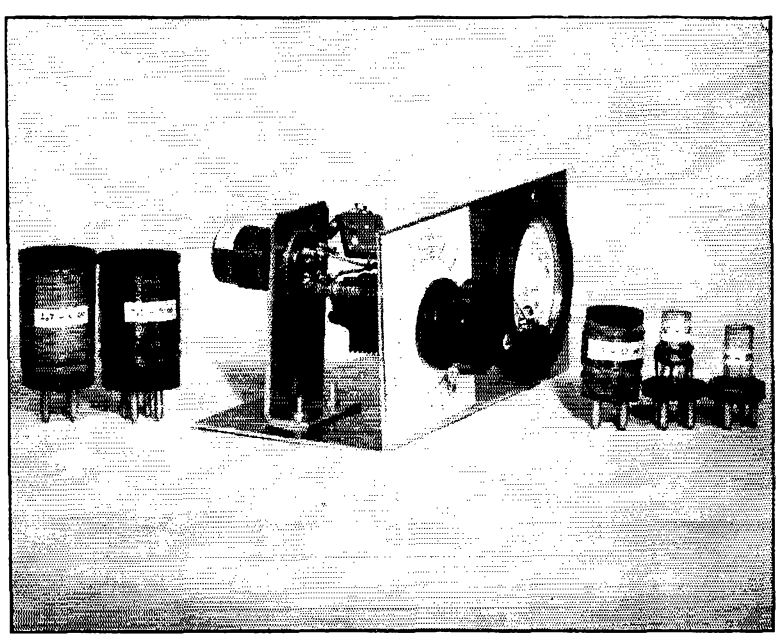


Fig. 1 — Circuit of the wavemeter-leak detector. Winding data for coils are as follows:

Frequency Range	*No. of Turns L_1*	*Wire Size*	*Dia. of Coil*	*Length of Coil*	*No. of Turns L_2*
60–170 Mc.	¾	No. 18 En.	½″	—	1
40–110 Mc.	2	No. 18 En.	½″	1/16″	2
19–55 Mc.	4	No. 18 En.	1″	¼″	2
7–19 Mc.	15	No. 18 En.	1″	⅝″	3
3.5–8 Mc.	30	No. 18 En.	1⅜″	1¼″	4
1.7–4 Mc.	75	No. 24 En.	1⅜″	1⅝″	6
0.650–1.7 Mc.	170	No. 32 En.	1⅜″	1½″	10

Preliminary Tests

It was found that the TVI was much worse on the street carrying the main power lines to the factory than on the other streets in the area, indicating that the power lines were carrying most of the signal. A.c. line filters on the TV receivers had no effect on the interference, indi-



The r.f. leak detector should be familiar to all amateurs, since it is simply an absorption wavemeter with a crystal rectifier and a microammeter. The frequency range should be as wide as possible, to cover frequencies generated in ISM machines.

cating that the r.f. was being received via the TV antenna by radiation from the power lines and by radiation direct from the oscillator. A high-pass filter on the TV antenna helped, on some channels, showing that the TVI was partly caused by the fundamental frequency getting through the TV front end into the video i.f., and partly by harmonics from the oscillators.

The production line was shut down and each preheater run separately while measuring the field strength of the fundamental and the worst harmonics. During this test it was found necessary to place in each unit the usual number of

Typical interference caused by an industrial electronic heater. It is distinguished by the broad horizontal bars and a fish-scale effect in the fine detail of the cross-hatching. The bars result from the 60- or 120-cycle modulation of the straight-a.c. power supply, and the "wiggles" in the cross-hatching are the result of frequency modulation from the same source.

plastic "preforms" so the oscillator would be loaded up to rated plate current. It was observed that each unit drifted, as the "preforms" heated up, as much as several megacycles. The measurements were made in a private home about 150 feet from the preheaters and about 25 feet from the power line feeding the plant. The harmonic intensity was as much as four times the TV signal strength. Twenty-five TV antennas were counted within 200 feet of the plant and approximately 100 TV antennas within 1000 feet.

It is now well known that if a radio-frequency generating device is completely *shielded*, and if *all* the wires leaving the shielded enclosure are effectively *filtered*, no appreciable r.f. will be radiated to cause interference. This applies equally to ham transmitters, signal generators, and diathermy equipment, as well as to electronic preheaters and other such devices. But there are two facts that often are not fully appreciated:

1) A painted sheet-metal cabinet or enclosed relay rack is *not* a shielded enclosure but rather only an attractive looking *dust cover*.

2) Filtering of antenna feeders, d.c. power leads, or an a.c. power line is usually not very effective unless backed up by a good job of shielding to prevent the r.f. from getting on the wires of the other side of the filtering.

A wavemeter equipped with a crystal-diode

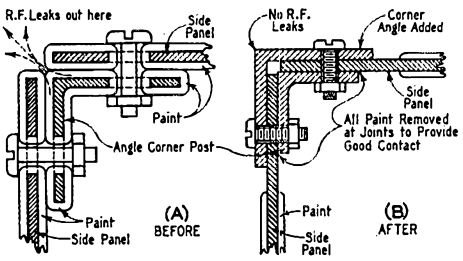


Fig. 2

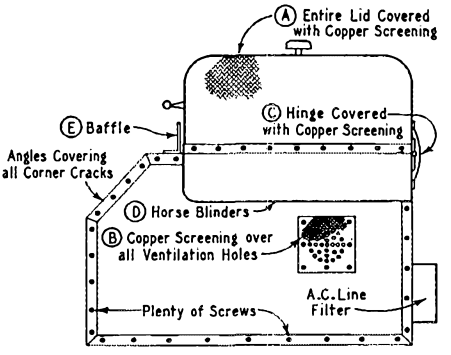


Fig. 3

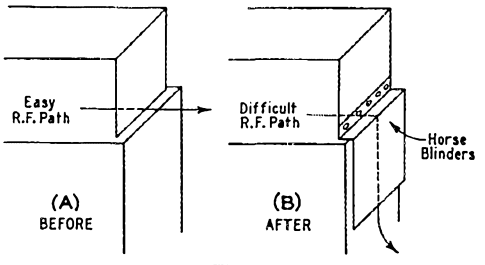


Fig. 4

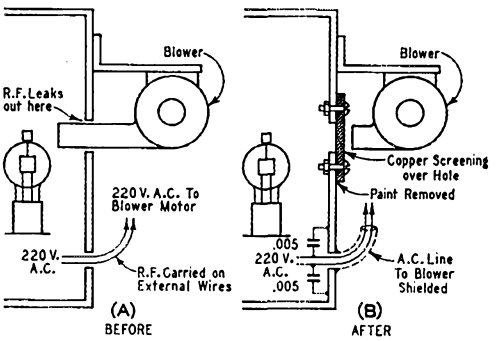


Fig. 5

detector and a 0-100 microammeter is a necessary tool for locating the cracks and holes through which the r.f. is leaking. It may be necessary to build your own wavemeter because it is hard to find a suitable one ready-made. The one shown in the photograph has a frequency range from 650 kc. to 170 Mc. Larger coils can be wound to extend the range to still lower frequencies, if

necessary. The length of the leads between the coil socket and the variable condenser must be kept as short as possible if the meter is to work above 100 Mc. The dial on the condenser can be calibrated for each coil by picking up known r.f. signals from a grid-dip oscillator or a signal generator.

In using an instrument of this type it is only necessary to put in the proper coil and, with the dial tuned to the approximate frequency of the machine, explore the area around the breaks in the shielding, and around the a.c. line. Tune the condenser for maximum reading, but be careful not to get too close to the electronic heater because the meter is quite sensitive and may be burned out. The higher the meter reading, or the greater the distance from the machine at which a given reading is obtained, the more r.f. is leaking out.

With a satisfactory shielding job on the preheater you should not be able to get any reading at all, no matter how close you come to the equipment with the wavemeter.

In general, it is safe to assume that the field strength will be less than 2000 μv./m. at a distance of 10 feet, if you can get no wavemeter readings anywhere on the machine or wiring. If possible, the sensitivity of the wavemeter should be checked. The one shown in the photograph reads 25 microamperes when coupled to a Ferris model 18-D Signal Generator by a one-turn loop, with the Ferris attenuator set for 100,000 μv. output. This check was made at 26 Mc.

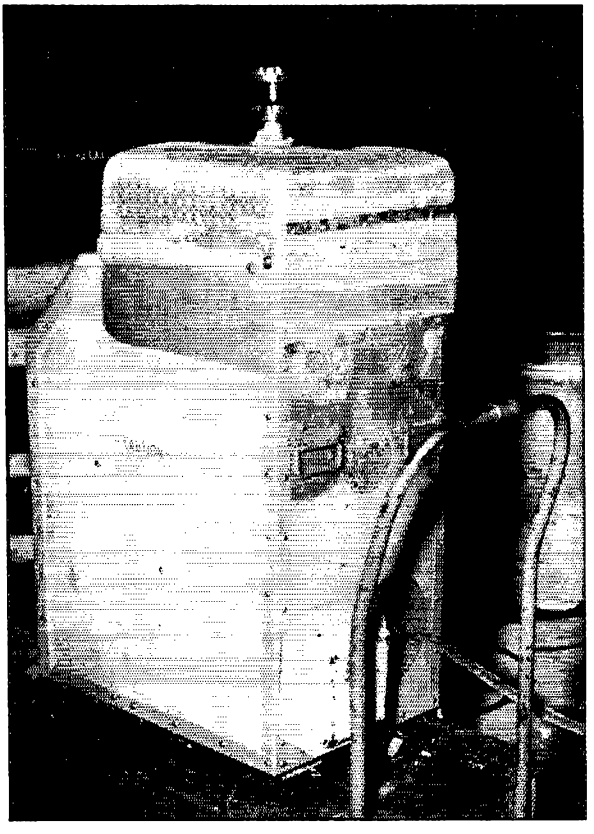
Method of Treatment

In the particular case under discussion preheater No. 5, one of the worst offenders, was selected for treatment. R.f. was found to be coming out of all the cracks and joints in the cabinet as well as from the ventilation holes and through the hinge on the cover. It was especially bad where the nose of the blower protruded about an inch inside the cabinet through a two-inch hole. Removing the side panels disclosed that the "dust cover" was assembled over an aluminum angle frame which had been thoroughly painted. The side panels also had been painted on both sides, and any metallic contact between the two was purely accidental. The sides were screwed on with as few screws as possible and there were cracks up to 1/16 inch in many places. Fig. 2A shows a cross-section of one of the corners. Notice how the panels are held away from the corner angle by the two thicknesses of paint and how the bolts are also insulated from both by the paint. Fig. 2B shows how the situation was effectively corrected, first by removing the paint and second by adding an angle outside the corner to cover the cracks between the panels and the corner angle. Two to three times as many screws were added to insure a good tight-fitting job.

Next, all ventilating holes and open grill work were covered with copper screening, being sure to provide at least a two-inch overlap and attaching the screening with plenty of screws to the metal surface after removing the paint from the area. The screening itself was soldered along the edges to bond the wires as well as to prevent unraveling. This is shown at *A* and *B* in Fig. 3.

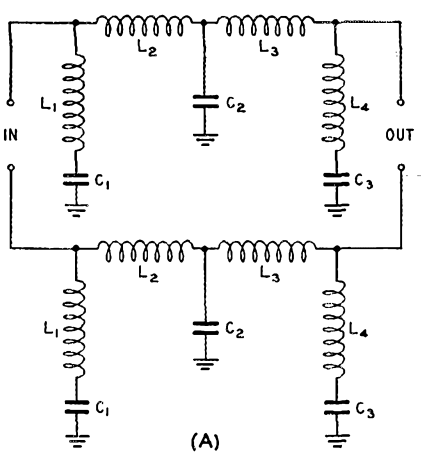
The problem of preventing r.f. leaks around the top cover, which must be opened and closed during each cycle of operation of the machine, was solved by covering the hinge on the rear with screening (*C* in Fig. 3), attaching "horse blinders" to the sides, *D*, and a baffle to the front, *E*. R.f. likes to come out through a crack, as shown in Fig. 4A, but refuses to take the route shown in Fig. 4B. The "blinders" are attached to and move up and down with the cover, while the baffle, Fig. 3E, is attached to the machine and is stationary.

The blower mounted on the side of the cabinet was acting as an r.f. probe



♦

After treatment, the leaks in this machine were plugged so effectively that 150 feet away its radiation could not even be measured by a sensitive field-strength measuring set. The remedies applied are shown in Figs. 2 to 6, inclusive.



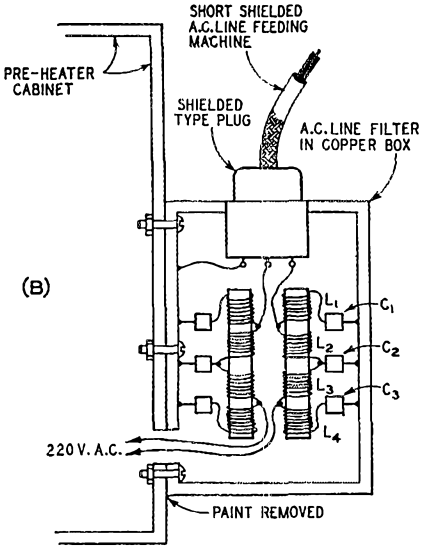


Fig. 6 — Line-filter circuit and method of installation.
C_1, C_3 — 72-$\mu\mu$fd. (75-$\mu\mu$fd. satisfactory) mica.
C_2 — 300-$\mu\mu$fd. mica.
L_1, L_4 — 0.72 μh.
L_2, L_3 — 1.25 μh.
Coil dimensions will depend on conductor size necessary to carry the current required by the machine. For line currents of 15 amp. or less, No. 12 will be satisfactory. In such case, L_1 and L_4 can be 8 turns, 1 inch long, inside diameter $\frac{3}{4}$ inch; L_2 and L_3 can be 13 turns, $1\frac{5}{8}$ inches long, inside diameter $\frac{3}{4}$ inch.

and was conducting r.f. out through the hole into which it projected, Fig. 5A. This was corrected easily by mounting the blower so that the hole could be covered with copper screening, as shown in Fig. 5B, and by shielding and by-passing the a.c. line feeding the blower.

The last remaining detail was to design and install an a.c. line filter to block the last remaining path for r.f. The filter circuit that finally evolved is shown in Fig. 6A, with the method of installation shown in Fig. 6B. A short shielded a.c. line plugs into a conduit carrying the main line. The measured attenuation of the line filter averages 40 db. above 30 Mc., with an attenuation peak of nearly 50 db. at 25 Mc.

Results

After making these changes a check with the crystal wavemeter showed no trace of r.f. anywhere on the outside of the machine. Then the factory production line was again shut down and only the shielded machine was operated. Time after time it was put through its cycle loaded with plastic pellets while the TV receiver 150 feet away was searched in vain on all channels, for any trace of TVI. A Measurements Corp. model 58 V.H.F. Field Strength Meter was connected to the TV feeders and no harmonics could be located — even the 25-Mc. fundamental could not be heard. As a last test the field-strength meter was set up ten feet from the preheater and with a halfwave antenna connected the 25-Mc. fundamental read only 920 μv./m., while the second harmonic read only 35 μv./m. At 80 feet the fundamental read 8 μv./m. and the harmonic could not be heard.

It is interesting to note that one machine (No. 2), although guaranteed to meet the new FCC specifications, did not even come close to the designated frequency and also radiated one of the strongest interfering signals. Each of the ten, all identical, radiated an entirely different amount of fundamental and harmonics. This was undoubtedly due to the poor bonding of the original dust covers because of painted surfaces which varied from machine to machine. Also, the harmonic intensity bore no relation to the fundamental, and it was obvious from watching the TV set that harmonics falling on Channels 7 and 11 were considerably stronger than any of the lower-order harmonics. (The high harmonics could not be measured because the field-strength meter only went to 150 Mc.) The reason for the greater strength of some of the higher-order harmonics is probably that the higher frequencies can leak out through smaller cracks and holes in the cabinet and are radiated more efficiently from shorter lengths of wire and surfaces of the cabinet.

Conclusion

If TVI is to be prevented, the apparatus must be completely shielded either by its own cabinet or by a shielded room. Remember that a pail and a sieve are both made of metal but the pail holds water, while the sieve leaks. Fortunately, a radio shield does not have to hold water, but all cracks longer than an inch and all holes larger than $\frac{1}{8}$ inch in diameter should be covered with metal such as sheet aluminum or copper screening. All metal-to-metal joints must have the paint removed and must make good contact. Bolts and screws fastening panels should be spaced no more than 2 or 3 inches apart. Last but not least, no metal object or wire can be permitted to enter the shielded area without either complete bonding at the point of entry or complete filtering at the base of the wire. The pail of water still leaks until you plug the last hole.

• On the TVI Front

The Dayton Plan for TVI

• We reprint on this page the Dayton (Ohio) Amateur Radio Assn. plan for handling TVI complaints. Appearing originally in the Association's bulletin "R.F. Carrier," the approach is the result of much study and testing by the DARA Interference Committee, Al Dinsmore, W8AUN, chairman.

Dayton hams are more fortunate than their brethren in other localities in that their TVI is mostly of the fundamental blocking type, usually relieved by the installation of a high-pass filter at the TV receiver. The area is served mainly by local TV stations on Channels 5 and 13, the frequencies of which are not in harmonic relationship with the ham bands, and a Cincinnati station on Channel 7, which is affected only by the sixth harmonic of amateur transmitters operating in the high end of the 28-Mc. band.

To All Amateurs in the Dayton Area:

TVI is the greatest threat amateur radio has ever faced. The real cause of our problem has no immediate solution, since the man who pays his money for a poorly designed receiver cannot properly represent his case to the manufacturer, nor to the FCC.

The situation is bad, but it certainly is not hopeless. The inter-exchange of our common experiences with inferior TV receivers has already started to "snowball." The sales of receiver filters speak for themselves. The ever-increasing flow into the FCC of unsatisfactory reports of both interference with and interference from TV receivers will eventually bear fruit.

The Commission's present attitude toward TVI simply amounts to holding the amateur responsible for devising his own cures in each case. In order to coördinate our efforts in the Dayton area, the Interference Committee of the DARA has adopted certain policies and procedures based on tried and proved methods of cure in nationwide TVI experience. These policies are psychologically sound, and psychology is important in handling any subject beyond the public understanding.

The first of such policies is based on the fact that in this area at least 80 per cent of all TVI cases have been cured with a good high-pass filter. This is because several of the possible and common types of interference are removed in one shot. Hence it is the committee's policy to *begin at the TV receiver.*

The amateur transmitter is not to be suspected until there is evidence to support such suspicion. If checks indicate amateur radiation on TV frequencies, recommendations will be made to the amateur. A transmitter filter may be required, or he can dig into the reams that have already been written to help him. This means that the committee, at the present time, is not the least bit interested in checking amateur rigs. Furthermore, and contrary to opinions expressed, the committee is composed of neither master-sleuths nor master-minds. This is just a common sense approach, fellows.

It is clear that the success of this committee depends upon its ability to apply its procedures from the very outset in each case. It was for this reason that the committee established itself with the local telecasting services.

Cases referred to the committee through these channels are fresh cases and easy to handle. In contrast, the cases thus far referred to the committee through amateurs have been difficult to handle. Clashes that occur between the amateur and the complainant are responsible for these difficulties, and can be avoided if at the very beginning the complaint is referred to the committee. These arguments, which make the case more complicated, result from the hams' mishandling of the cases themselves and are the hams' fault.

The independent ham who feels he can handle his own TVI cases without help from the committee starts off by telling the complainant, in effect, that he bought a bum set and it probably needs a filter. The "milk-toast" ham who doesn't like to scream for help observes quiet hours, or wastes a lot of time checking his "sending set," and prolongs the agony with useless tests. The real brave ham who doesn't fear more and more trouble with his neighbors argues for his right to be on the air, and then hides behind his microphone as he makes "broadcasts" about TVI that give ham radio a first-class shiner.

The lack of common sense exhibited on the air by hams who persist in "yakking" on and on about TVI is sometimes worse than that exhibited by the TV-eyer. TVI chatter on the air never accomplishes anything for you, fellows, but it certainly mixes it up for the committee, and when your chickens come home to roost will make it rougher for you.

Incidentally, any ham who has traffic for the committee chairman can relay it along with whatever else he tells the complainant. When the latter finally calls on the committee for help he always unloads the whole works with all the gruesome details.

If you are one of the above hams please don't even mention the Interference Committee. This committee is intended to function as a peaceful intermediary, and is not interested in joining rat-races which defeat its purpose.

Any ham who fully realizes the immense proportions of the present TVI situation, who realizes he cannot alone re-educate the masses in the technicalities of all the various causes of interference, who is anxious to improve amateur-public relations, who believes in the logic of the committee's policies, and who is willing to help make it possible for the committee to operate efficiently will observe two simple rules:

1. When a complaint comes, keep cool. The first thing you do is say politely and very briefly, "There are different kinds of interference, and in order to straighten this problem out the Interference Committee will have to make an investigation. They handle these cases every day. You can call TAylor 1411."

   Anything more that you may say will be wrong.

   Don't agree to call the committee.

   Don't tell him how the committee operates.

   Don't tell him what the committee probably will find.

   Don't tell him the committee is composed of hams.

   Don't promise anything.

   The complainant is sure that you are the one who is wrong. Even if you say you are sorry he takes that as an admission of your guilt. Remember also that what you say into your microphone will be heard too, so forget it when you're on the air.

   If the complainant has real trouble he will call the committee, but let him fight his own battle.

2. Answer all further remarks, accusations, wisecracks and/or assorted profanity with the advice, "Call TAylor 1411." No matter what he continues to say, or how mad it makes you, every time he stops for a breath come in with "TAylor 1411," until he hangs up.

All you are asked to do is to "pass the buck" and then forget it. (This means to keep quiet about it.) Then when the complainant calls the committee, the chairman gets in on the ground floor. There is no ear-bending session to delay remedial action, and the complainant does not have to be beaten into submission. The committee's procedures may be applied promptly, as the sole treatment, and the cure will be painless.

When your TVI is all cleared up with a receiver filter, then "sound off" where it will do some good. Tell the FCC. Tell the manufacturer, the distributor, the dealer. Tell the TV-eyer, if you must. But please, fellows, keep it off the air.

DAYTON AMATEUR RADIO ASSOCIATION
TVI COMMITTEE

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An article in the June, 1951, issue of *Electrical Communication*, technical journal of the International Telephone & Telegraph Corporation, discusses the problems facing *commercial* transmitter engineers in overcoming problems of interference to television receivers. "Suppression of Harmonics in Radio Transmitters," by George T. Royden of the Mackay Radio and Telegraph Co., makes extensive reference to *QST* articles and to the fine work that amateurs have done in developing and applying principles of harmonic reduction. Of particular interest to the amateur fraternity is author Royden's concluding statement, ". . . a lot of trouble can be avoided by arranging for only well-designed television receivers to be sold for use in areas around high-power point-to-point radio transmitting stations."

United States Naval Reserve

License Renewals

The first of the special call signs for amateur radio stations at Naval Reserve activities was issued by the Federal Communications Commission on September 12, 1946. Licenses for these stations are issued for a five-year term and, therefore, will be subject to renewal starting in September 1951.

Commanding Officers of Naval Reserve units should check amateur radio station license expiration dates and make renewal applications at the appropriate time. Application may be filed not earlier than 120 days prior to the date of expiration.

Civil Defense Radio Program

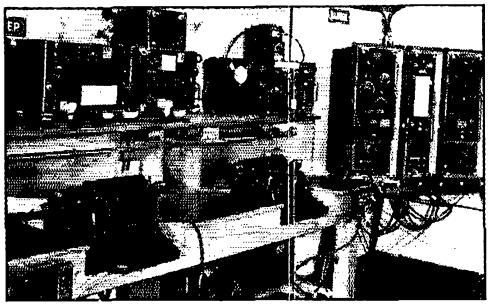
Naval Reserve Training Center (K2NRS), Perth Amboy, N. J., is joint sponsor, in the interest of national and civil defense, of a fifteen-minute radio program to be heard each week-day evening from 11:00 to 11:15 o'clock. The program, which features code practice, started April 16th on station WCTC, New Brunswick, N. J.

Marietta Regatta

Volunteer Electronics Company 4-4 of Marietta, Ohio, coöperated with local radio amateurs to provide a communications network for the 49th Annual Regatta of the Intercollegiate Rowing Association held at Marietta on June 16th. LCDR Carl J. Anderson (W8VZ), electronics officer for VEC 4-4, was in charge of the project and manned the control station aboard the observation train. Other stations were on the referee's boat, at the finish line, and at the boathouses. The network operated on 29.6 Mc., handling some 150 messages between 1:00 and 8:00 P.M. Thirteen college crews participated in the three-race event. Wisconsin won the varsity race, California the junior varsity, and Washington the freshman race.

Here & There

For the past two years Dwight Nichols, W5OUI, has been serving as a volunteer instructor at Naval Reserve Organized Electronics Company 8-6, Eureka Springs, Ark. Although not a member of the Naval Reserve, W5OUI gives of his time and experience to assist the Reserve training program. . . . Add to list of amateurs in active military service: W1HVF (USNR). . . . Winner of 1951 competition for outstanding Fifth Naval District Reserve Electronics unit is Volunteer Electronics Company 5-7 at Parkersburg, W. Va. Runner-up is Company 5-8, Charlottesville, Va.



Station of Naval Reserve Electronics Platoon 6-23, Belle Glade, Fla. This station has been of considerable assistance in hurricane emergencies during the past four years.

Happenings of the Month

WASHINGTON NOTES

A tip of our hat to FCC, which, as the result of extraordinary effort, has now just about caught up on the backlog of new and renewal license applications; as of early August tickets were going out within about two weeks of receipt by FCC of the applications. Some modifications were still delayed somewhat but the situation is rapidly getting back to normal.

FCC has for some time been in something of a dilemma when it came to telling the boys in Northern Minnesota whether they were east or west of the Mississippi, when it came to application of the 160-meter rules. They were reminded of this recently when we ran into the same problem with respect to the August maneuvers, where it was decided to designate the whole State "west." Now, the Commission, with the approval of the Coast Guard (which operates Loran) proposes to change our rules to make the entire State in the "west of the Mississippi" category for the 160-meter band frequencies, as well. Anyone having pronounced views, either pro or con, has until September 25th to file comment (1 original and 14 copies required). The proposal seems logical and is no more than a minor administrative clarification; at this writing, it is not expected that the League will file comment.

If the first month is any indication we're going to see plenty of Novice and Technician licensees on the air. FCC says that during July 1099 Novice and 294 Technician tickets were issued, with an estimated half of the latter getting both. Incidentally, quite a few of the Novices are those who failed on their General Class exams; if they learn they failed (usually on the code test) they turn right around and take the Novice. That means most everybody applying for ham tickets this year should show up on the air, one way or another.

ELECTION NOTICE

To All Full Members of the American Radio Relay League Residing in the Atlantic, Dakota, Delta, Great Lakes, Midwest, Pacific and Southeastern Divisions, and in the Dominion of Canada:

An election is about to be held in each of the above-mentioned divisions to choose both a director and a vice-director for the 1952–1953 term. These elections constitute an important part of the machinery of self-government of ARRL. They provide the constitutional opportunity for members to put the direction of their association in the hands of representatives of their own choosing. The election procedures are specified in the By-Laws. A copy of the Constitution & By-Laws will be mailed to any member upon request.

Nomination is by petition, which must reach the Headquarters by noon of September 20th. Nominating petitions are hereby solicited. Ten or more Full Members of the League residing in any one of the above named divisions may join in nominating any eligible Full Member residing in that division as a candidate for director therefrom, or as a candidate for vice-director therefrom. No person may simultaneously be a candidate for both offices. Inasmuch as all the powers of the director are transferred to the vice-director in the event of the director's resignation or death or inability to perform his duties, it is of as great importance to name a candidate for vice-director as it is for director. The following form for nomination is suggested:

Executive Committee
The American Radio Relay League
West Hartford 7, Conn.

We, the undersigned Full Members of the ARRL residing in the ..... Division, hereby nominate ....., of ....., as a candidate for director; and we also nominate ....., of ....., as a candidate for vice-director; from this division for the 1952–1953 term.

(Signatures and addresses)

The signers must be Full Members in good standing. The nominee must be a Full Member and must have been both a member of the League and a licensed radio amateur operator for a continuous term of at least four years immediately preceding receipt by the Secretary of his petition of nomination, except that a lapse of not to exceed ninety days in the renewal of the operator's license and a lapse of not to exceed thirty days in the renewal of membership in the League, at any expiration of either during the four-year period, will not disqualify the candidate. He must be without commercial radio connections: he may not be commercially engaged in the manufacture, selling or renting of radio apparatus normally capable of being used in radio communication or experimentation, nor commercially engaged in the publication of radio literature intended, in whole or part, for consumption by licensed radio amateurs. Further details concerning the eligibility are given in By-Law 12. His complete name and address should be stated. The same requirements obtain for vice-director as for director. All such petitions must be filed at the headquarters office of the League in West Hartford, Conn., by noon EDST of the 20th day of September, 1951. There is no limit to the number of petitions that may be filed on behalf of a given candidate but no member shall append his signature to more than one petition for the office of director and one petition for the office of vice-director. To be valid, a petition must have the signatures of at least ten Full Members in good standing; that is to say, ten or more Full Members must join in executing a single document; a candidate is not nominated by one petition bearing six valid signatures and another bearing four. Petitioners are urged to have an ample number of signatures, since nominators are occasionally found not to be Full Members in good standing. It is not necessary that a petition name candidates both for director and for vice-director but members are urged to interest themselves equally in the two offices.

League members are classified as Full Members and Associate Members. Only those possessing Full Membership may nominate candidates or stand as candidates; members holding Associate Membership are not eligible to either function.

Voting by ballots mailed to each Full Member will take

(Continued on page 104)

The "Rackabinet"

Shielded Rack Construction for the 1951 Rig

BY M. W. THOMPSON,* W5RXA

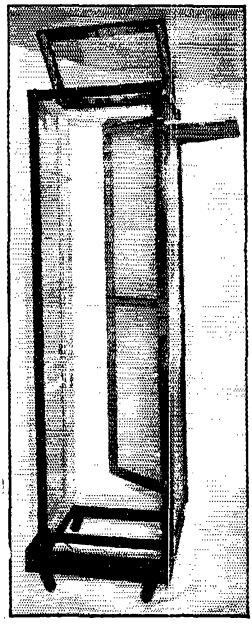
THE "Rackabinet" was created because (1) I had to have more desk, bench, table and floor space, (2) down here in the semitropic heat and humidity of southern Mississippi open construction assuring generous air circulation is desirable, (3) the standard rack doesn't lend itself well to screening which is a first essential in TVI reduction, (4) it can be constructed for about $25.00, and (5) a dearth of published information seemed to indicate that all other hams are wealthy or there is a regrettable lack of ham initiative in steel rack-and-cabinet construction.

Now, before you jump away from the idea of making your own steel-frame enclosure on the grounds that you're not a machinist and have no shop or tools, let it sink in that there is *nothing* in this construction you cannot do in your home except the welding. I'm a retired but unreformed "huckster" (advertising and sales-promotion man) accustomed to spending most of my time gazing out of the windows of tall Michigan Boulevard and Madison Avenue buildings while dreaming up Satevepost ads or planning a convention. So, fellah, if *I* can do the job, *anyone* can. The Rackabinet was created largely out on the concrete slab under a portico, but partly (in bad weather) in the guest room with the carpeting well covered with newspapers. Tools I had to borrow were (1) an electric hand drill with $\frac{3}{16}$-inch and No. 25 drills, (2) a 10-24 tap and holder for threading the panel holes, (3) a center punch, (4) a hack saw, and (5) a small reamer, because I couldn't drill to $\frac{1}{32}$-inch accuracy. The drills must be of the high-speed type unless you want to spend most of your time replacing or resharpening them. The electric drill can be one of those baby $\frac{1}{4}$-inch numbers, although one of the heavier, slower-speed jobs with a $\frac{1}{2}$-inch chuck will work faster and easier.

This unit, of course, maintains the flexibility of the standard rack. Although the main framework is welded, the slides that support the chassis are bolted on. If one wishes to replan and rebuild, new panel and slide-bracket holes can be drilled. There should be little reason to wish for greater depth or a different width, and six feet of panel space provides for almost unlimited combinations of standard rack units.

The top is hinged at the rear so that final-amplifier coils may be changed from the front, while the entire back is hinged for ready access to any unit. The chassis are supported along their sides, leaving them open underneath for ventilation and adjustments and relieving the weight from the panel. If interchassis shielding is found desirable, a thin sheet of aluminum can be laid across the slide supports. Mounted on good ball-bearing casters, the Rackabinet can be turned easily for checking, adjusting or rebuilding. The shelf on the upper right-hand side is for a TVI filter, antenna coupler and changeover relay.

To suit your personal needs and preferences, your enclosure can be developed from the basic framework in any one of several ways. I like the equipment where I can see it and discuss it with other hams or explain what is going on to my nontechnical townsmen and youngsters. Using regular 14 × 18 mesh copper (bronze) screen on all but the front, I accomplish this, plus shielding and ventilation. You may prefer sheet steel or aluminum panels on the sides, bottom and top, or quarter-inch plywood over the screen, or maybe one of the fibrous but rigid wallboards. A good job in Masonite or Presdwood wouldn't look bad. Where TVI doesn't make shielding so essential, a striking job could be done in double-thickness glass, with chromium trim strips. But where solid material is used, forced-air ventilation should be provided.



The completed shielded rack enclosure. The shelf is for the antenna coupler and filter.

* Lovers Lane, Ocean Springs, Miss.

Cutting the Material

One must first decide how much panel height is required. In my case there is, from bottom to top, a 12¼-inch 600-watt final power-supply panel; a 12¼-inch 300-watt modulator supply; a 12¼-inch modulator unit; an 8¾-inch speech-amplifier panel; a 10½-inch panel for the exciter; and a 12¼-inch unit for the final. That's 68¼ inches plus 2½ inches of space at the bottom, or 70¾ inches total. The width is controlled by the standard panel dimension of 19 inches. The outside width measurement is 20⅜ inches. Using 1½-inch angle iron, that leaves 17⅜ inches space between verticals for passing 17-inch chassis. As for the depth, I had projecting terminals and interchassis wiring at the rear of my 13-inch chassis, so that an over-all cabinet depth of 15⅛ inches was about right to clear everything easily. This makes the distance between front and rear verticals 12⅛ inches. The bases of many manufactured racks project about 5 inches in front. When you move an 80-lb. chassis in and out of a 370-lb. steel assembly, it is comforting to know that it won't topple forward on you. The projection also is a handy affair to stand on when reaching into the top to change final amplifier tank coils. If you don't want it, just make all four side pieces the same length and don't cut the extra crosspiece.

The right size of angle iron (steel) is 1½ × 1½ × ⅛ inches. I got mine from a Biloxi machine shop that caters to boat builders and canning plants. It comes in 20-foot lengths and they sell it by the pound, not the foot. Two of these 20-foot lengths are sufficient and weigh about 51 pounds. I paid 11 cents per pound.

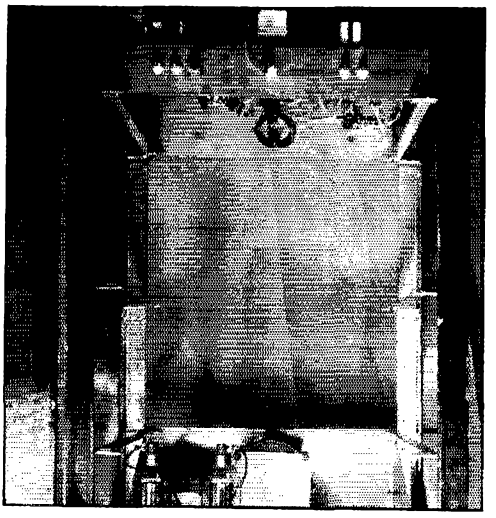
Now use that hack saw, some muscle, patience and reasonable accuracy. It's hard work, but if at 54 years and 135 lbs. I can cut up that steel, so can you. The tabulation shows how the angle iron was divided up to leave a minimum of scrap. For my particular job, the first piece was cut into three lengths each 70¾ inches long for the verticals, and one crosspiece 20⅜ inches long. The second 20-foot length was divided into one vertical 70¾ inches long, four crosspieces each 20⅛ inches long, two top sides 15⅛ inches long and two bottom sides 20⅛ inches long. The longer crosspiece, taken from the first 20-ft. length, is the one across the base extension. You will note that this leaves a few inches of scrap, so you could make your verticals an inch or two longer if you so desire.

Angle-Iron Cutting Dimensions

20-Ft. Lengths	*Piece A*	*Piece B*
4 verticals, 70¾ in. each	(3) 17 ft., 8¼ in.	(1) 5 ft., 10¾ in.
4 crosspieces, 20⅛ in. each	———	(4) 6 ft., 8½ in.
2 top sides, 15⅛ in. each	———	(2) 2 ft., 6¼ in.
2 bottom sides, 20⅛ in. each	———	(2) 3 ft., 4¼ in.
1 crosspiece, 20⅜ in.	(1) 1 ft., 8¾ in.	———
Totals	19 ft., 4⅝ in.	18 ft., 5¾ in.

Chassis Slides

Those slides on which the chassis rest (and which make them much easier to move in and out) are made of ¾ × $\frac{3}{16}$-inch steel bar. This, too, comes in 20-ft. lengths at about 12 cents per pound. This translates into about 7 cents a foot and the quantity needed will, of course, be determined by the number of units you have to mount.



Rear view of the Rackabinet showing how the chassis are supported on slide rails.

If your cabinet depth is the same as mine (15⅛ inches) your slides ought to be 14⅛ inches long. Remember that two of them are needed for each chassis in the rig. You will need about 5 feet more for pieces to anchor the screening.

The right-angle brackets on which the slides rest are available at any hardware store. Get the 2 × 2 × ⅝-inch size costing a nickel apiece. One is required at each end of each slide, making a total of four per chassis.

Welding

Now as to welding, any auto-body repair shop or machine shop, and most garages, will have not only the welding equipment, but also a power sander or grinder for taking off corners and smoothing up the finished job. The garage where I get my service work done charged me $3.75 an hour for the foreman and equipment. The whole job took an hour and a half.

While the angle iron has sharp outside corners, the inside corners are rounded and therefore a little of the metal will have to be ground off at the ends of the verticals and crosspieces to permit an accurate fit at the joint. Any coöperative welder-machinist will grasp at once what you're trying to do if you show him the sketch of Fig. 1. Placing a pair of top and bottom crosspieces *inside*, at the ends of the two verticals, as shown in Fig. 2, weld a front frame and then a back

frame. Be sure to use a square to get perfect right angles. This is not difficult. The two short side pieces are then squared up and welded on, connecting the upper corners of your front and rear frames. These side pieces go *outside* the verticals and crosspieces.

Now, at the bottom, get your two longer side pieces placed and welded, being careful to see that the verticals are the same distance apart at

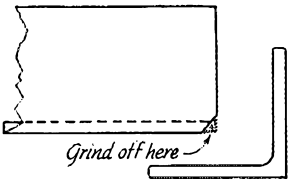


Fig. 1 — Where the crosspieces fit into the vertical members and the verticals meet the side pieces, a few seconds on the grinder will assure a snug square fit.

top and bottom. This will leave 5 inches protruding in front. The last crosspiece is made a little longer than the others to allow for the thickness of the verticals. This piece is now welded across the front ends of the lower side pieces with its flat surfaces on theirs and its ends inside. The final touch is to clean up the corners with the sander. Round off the jagged edges, correct slight

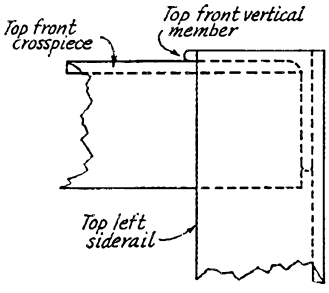


Fig. 2 — Looking down in the top left corner of the framework. The crosspieces fit into the verticals and the verticals then fit into the side pieces.

mismatches, and finish smoothing with a hand file and emery cloth and you'll have a keen job.

With your help, the side rails can be welded to their brackets in short order. My welder had an odd pair of pliers with which I could clamp a bracket and slide together after careful positioning. Then it took only 20 seconds for each weld. The brackets should be placed flush with the end and the edge of the slide piece. If you serve as "helper," don't look directly at the welding flame unless you wear smoked glasses. It's dangerous to the eyes and can result in a severe headache.

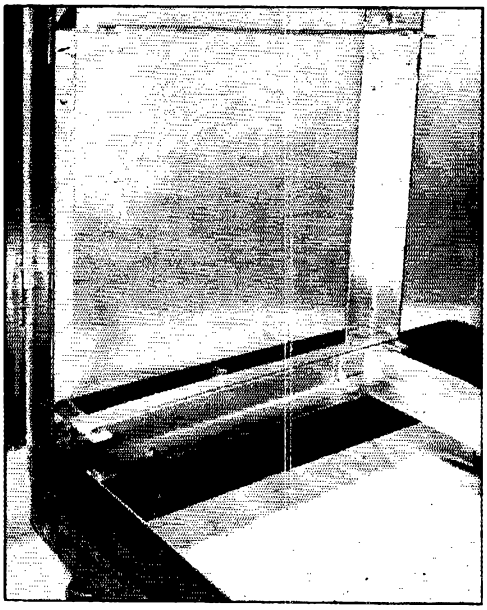
Drilling the Holes

If you don't want to bother doing the complete standard-rack drilling, start from the top, lay the framework on its back, place your top panel (or panel and chassis if assembled) in position and mark the hole locations on the front vertical members. The hole centers must be 18¼ inches apart horizontally to fit standard panels. Use the No. 25 drill and tap the holes for this panel (some oil helps), then mount it in position temporarily and stand the framework upright.

If the chassis is already attached to the panel, it is an easy matter to hold a slide assembly in position under each side edge of the chassis and mark the hole centers on the inside surfaces of the upright frame members. If you have the panel only to work with, have someone place a square against its back surface, with the horizontal edge down and lined up with the bottom edge of the panel. The slide assemblies can now be positioned against the square. If slight readjustments prove necessary after the chassis has been attached, the large holes in the brackets permit some movement before final tightening. I did this with four complete panel-and-chassis units and two blank panels and all came out satisfactorily.

Because of the angle-iron crosspiece, the last 1½ inches at the bottom of the frame cannot be used. By sawing an inch off the ends of the bottom brackets, the bottom chassis can be placed even with the top edge of the bottom crosspiece.

After you have the holes for the panels and slide brackets drilled, you will need holes for the hinges for the top and rear doors and for mounting latches or hooks of the type you select. I used two 2"× ¾-inch hinges for the top and three for the rear door. If you want a shelf like the one shown in the photograph, remember to drill holes for the supports. I used standard shelf brackets that can be picked up in any hardware store. You should also consider holes for supporting strips of insulation that will carry such things as key and



This close-up view shows how the angle-iron pieces are fitted together at the corners, how the wood base is fastened on, and the mounting of the slide rails.

microphone jacks, and connectors for a.c. power input, VFO input and the coax output line to the filter and antenna tuner. If you expect to do quite a bit of experimenting and adjusting that calls for frequent moving or turning of the Rackabinet, it's a good idea to provide a pair of screen-door handles on the sides of the front verticals. Otherwise, you'll be digging your fingers into the screening.

You can get flat-top casters that will bolt directly to the bottom of the steel frame, but I prefer the type with a heavy 1½-inch pin that slides into a metal tube inserted in wood. Therefore, I fastened a frame of 2 × 2 wood to the base. Good casters cost about $3.00 for a set of four. It pays to get good ones especially, considering the weight involved. The smaller cheaper ones will dig holes in the floor and balk at swiveling smoothly. While you're working with wood, cut out a board to fit the base projection in front and drill holes in the angle iron so that the board can be fastened securely in place.

Finishing

No matter where you are located, that steel must have a protective covering of paint. Down here, unprotected steel will turn bright orange with rust in 96 hours or less. I cleaned up the frame with a wire brush, emery paper, soap and water, and gasoline and then went over it completely with aluminum paint. A good local paint man may have other suggestions; discussion with him won't hurt. After the aluminum paint is thoroughly dry, you can paint the frame any color you choose. I left mine aluminum on the inside and painted it black on the outside. I didn't have good luck with "quick-drying" enamel. Forty-eight hours later it was still tacky. Your paint dealer can suggest something more suitable for metal. Do not apply the enamel or other finish to the areas where the doors are to contact the frame. Let them rest against the aluminum. Wood parts should be treated with a paste filler and a coat of shellac or undercoat if the finish is to match that of the metal work.

Fitting the Screening

The strips of copper screening on the sides are made 14⅝ inches wide by removing a ¾-inch strip along one side of a 6-foot length of 30-inch screening, and splitting the remaining 29¼-inch piece. The bolts that hold the chassis slides in place also are used to secure the screen along the verticals. Sections of the steel bar stock, 14⅝ inches long, are used for anchoring the screen at the top and bottom. These have a hole at each end and an extra one in the middle. In addition to holding the screen in place, the end holes are used for bolts that attach the bars to the verticals just below the side pieces. There is enough "give" to the screen to permit stretching the screen taut before the bolts all around are tightened. Perhaps you can find an easier or better way of doing the same thing.

The door frames are made of finished 1 × 2-inch wood strip, joined at the corners with corrugated fasteners ("wiggle nails") of the size called ¾ × 5. Each door has the same dimensions as the outside measurements of the framework it is to cover. The two doors require a 6-foot length of 38-inch screen, which is split. One 19-inch piece is used on the inside of the back door. The other half provides a 19 × 14-inch piece for the underside of the top door and a piece of equal size to cover a frame that is laid in the bottom of the rack to complete the shielding. The whole screen job takes about 45 square feet costing less than $5.00. The screen is put on the wood frames with tacks. To make the screen tight, tack down along one end. Then work down both sides alternately — three tacks along one side, then three along the other, etc., and pull tight at the bottom. My screens hum when they are tapped. The edges of the screening beyond the lines of tacks should be bent up to assure contact with the steel frame when the doors are closed. Short lengths of flexible copper braid should be soldered to the screening near the hinges and secured under the hinge mounting bolts to assure good contact between the screening on the doors and the steel frame. You should also solder a heavy lug or strap to the screen near one of the rear bottom corners for connecting the Rackabinet to a good ground. Remember the thing is insulated on composition casters and there's no sense in *you* being the fuse between the frame and ground if something goes wrong!

The accompanying list of materials shows what the complete job cost me. I hope that I've convinced you that *you* can build a steel structure that is a cross between rack and cabinet, suited to 1951's shielding needs, strong enough to hold all speech and r.f. units for a high-power rig, and one that permits a variety of exterior finishes.

Bill of Materials for Rackabinet

Angle iron	$ 5.60
Steel strip	1.40
Lumber	2.00
Casters	3.00
Screen	4.20
Welding	5.65
Hinges, brackets, screws	2.25
Paint and enamel	1.40
Total cost	$25.50

Switch to Safety!

Another radio amateur — the third in recent months — has joined the ranks of Silent Keys as a result of accidental electrocution.

The latest victim, Michael Collins, EI3N, was found lying prone on the ham shack floor, a rig carrying 1500 volts across his knees. His wife narrowly escaped a similar fate when, in her haste to assist, she came in contact with the "hot" chassis. A coroner's report attributed death to heart failure resulting from electric shock.

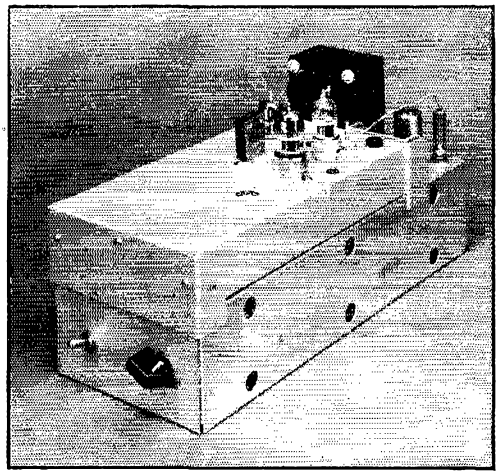
Using the 6BQ7 on 220 and 144 Mc.

Simplified Dual-Triode Circuit for Improved Performance on the Higher Frequencies

BY EDWARD P. TILTON, * W1HDQ, AND C. VERNON CHAMBERS, ** W1JEQ

• New tube types come along so frequently that it is virtually impossible to keep track of them all, much less make good use of them, but every so often one shows up with characteristics that make it a real improvement over its hundreds of predecessors for amateur work. A recent interesting arrival is the 6BQ7, a dual triode designed specifically for use as a low-noise r.f. amplifier in the v.h.f. range. Like most other new tubes, it was developed for television applications, but it makes possible both simplification and improvement in our receivers for frequencies above 100 Mc.

THOUGH the new 6BQ7 [1] can be used in any of the triode amplifier circuits normally used in v.h.f. receivers, it is at its best in a modified version of the cascode circuit. For those unfamiliar with v.h.f. receiver techniques, the cascode is a two-stage r.f. amplifier using a neutralized triode working into a grounded-grid triode, the result being an amplifier having gain at least equal to one pentode stage, but with a much lower noise figure. It is particularly well suited to broadband applications. The principal weakness of the cascode is its fairly complex circuitry. Its effectiveness also falls off rather rapidly above 100 Mc. or so, mainly because of the loading effects of the stray capacitances at higher frequencies. It works quite well at 144 Mc., but much less so at 220 Mc.



The 6BQ7 crystal-controlled converter for 220 or 144 Mc. is shown here mounted on the base unit previously described. The 6BQ7 is the large tube at the front. At the left, behind the crystal, is the 6J6 oscillator-multiplier. The other 6J6, right, is a combined mixer and injection frequency doubler. Note the plug-in lead for taking off the high voltage for the 6BQ7.

The 6BQ7 is destined to make a considerable improvement in high-band TV reception, and the characteristics that accomplish this also make possible better 220-Mc. performance than we have had heretofore. As may be seen from Fig. 1, the output of the first triode is connected directly to the input of the second, resulting in a considerable reduction in circuit capacitance compared to the conventional cascode. The inductive neutralization of the cascode is replaced by a tapped plate coil and capacitive feed-back (L_3 and C_8) resulting in further circuit simplification.

A Crystal-Controlled Converter for 220 or 144 Mc.

The converter shown in the accompanying photographs was built as an addition to the family of crystal-controlled converters originally described in September, 1950, *QST*,[2] and appearing in the 1951 edition of *The Radio Amateur's Handbook*. Constants are given for its use on either 144 or 220 Mc. On the lower band it has only a very slight edge in performance on the 144-Mc. converter originally described for the series, but on 220 Mc. it shows a real improvement over other converters built for this frequency in the ARRL Lab. On 144 or even 50 Mc., its simplicity and ease of adjustment make the new version, also known as a "direct-coupled driven-grounded-grid" circuit, attractive to v.h.f. converter builders.

For 144 or 220 Mc. the crystal oscillator and multipler use the same parts and circuitry. Only the crystal frequency and the coil (L_7 and L_8) sizes for the two multiplier stages are different. An easily-adjusted third-overtone oscillator [3] is used in either case. To suit the intermediate frequency of 7 Mc. (for the low end of each band in question, and tuning upward) the crystal frequency is 7611 kc. for the 144-Mc. unit, and 7100 kc. for the 220-Mc. one. The crystals actually oscillate on approximately 22,833 and 21,300 kc. respectively. One half of the first 6J6

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

** Technical Assistant, *QST*.

[1] "A New Low-Noise Twin Triode," Technical Topics, *QST*, August, 1951, p. 46.

[2] Tilton and Chambers, "Crystal-Controlled Converters for V.H.F. Use," *QST*, September, 1950, p. 11. Also *Radio Amateur's Handbook*, 1951 edition, p. 376.

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

is the overtone oscillator, with the second triode section tripling in the 144-Mc. unit to 68.5 Mc. The same section quintuples to 106.5 Mc. in the 220-Mc. set-up. In either case the second 6J6 is operated as a combined mixer and injection-frequency doubler, the injection frequency being 137 Mc. for the 2-meter unit and 213 Mc. for the 1¼-meter one.

The converter is made as a plug-in unit. The base containing an i.f. amplifier and power supply was described in detail previously,[2] so only the special features not common to the earlier units will be discussed here. The crystal oscillator is slightly different in that a separate feed-back coil is used, in place of tapping the coil as is done in the other converters of the series. Because only third-overtone operation is involved, adjustment of the feed-back is not at all critical. Thus it is possible to make the feed-back winding and the plate coil from a single piece of B & W Miniductor, doing away with the necessity of adjusting the position of the feed-back winding ordinarily. Should it be necessary to adjust the regeneration, the two coils can be separated. Feed-back should be increased (by closer coupling between the coils or more turns on the feed-back winding) only until the crystal starts readily on its third overtone under load. Too much feed-back may result in self-oscillation, at a frequency determined by L_5 and C_4, rather than by the crystal.

Operation of the multiplier stages is conventional in every respect, and though only 105 volts is used on these stages there should be no difficulty in obtaining the necessary injection voltage from the multiplier chain. The injection may be sufficient without external coupling capacitance or link, but it is advisable to check this when the converter is put into operation. A small capacitance made of a short length of 75-ohm Twin-Lead may be connected between the doubler plate and the mixer grid, and the

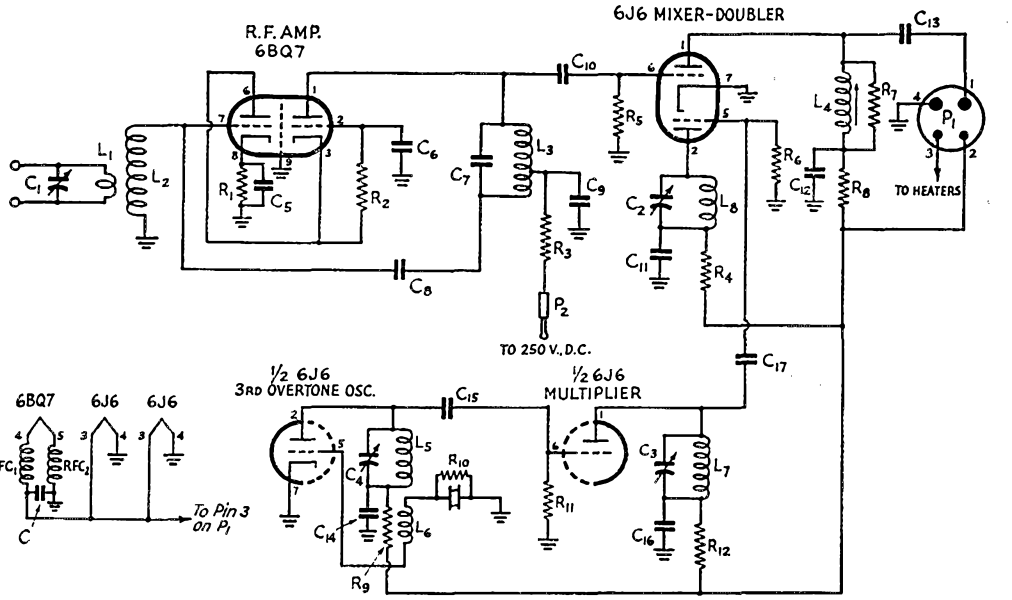
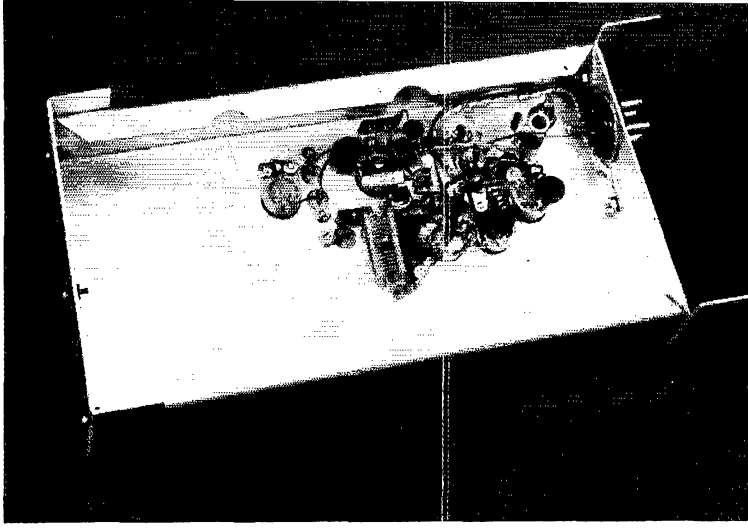


Fig. 1 — Schematic diagram and parts list for the 6BQ7 converter for 220 or 144 Mc.

C_1, C_2, C_3 — 5–20 μμfd. ceramic trimmer (Centralab 820-B).
C_4 — 5–50 μμfd. ceramic trimmer (Centralab 822-AN).
C_5, C_6, C_9, C_{11}, C_{12}, C_{14}, C_{16} — 0.001-μfd. disk ceramic.
C_7, C_8 — 2-μμfd. ceramic.
C_{10} — 10-μμfd. ceramic.
C_{13}, C_{15}, C_{17} — 50-μμfd. ceramic.
R_1 — 100 ohms.
R_2 — 50,000 ohms.
R_3, R_4, R_8, R_9, R_{12} — 1000 ohms.
R_5 — 0.68 megohm.
R_6 — 0.22 megohm.
R_7 — 2200 ohms.
R_{10} — 3300 ohms.
R_{11} — 47,000 ohms.
All resistors ½-watt.
L_1 — 220 Mc. — 1 turn ⅜-inch diam., closely coupled to L_2.
— 144 Mc. — 2 turns as above.
L_2 — 220 Mc. — 2 turns ⅜-inch diam., spaced diam. of wire.
— 144 Mc. — 5 turns ⅜-inch diam., ⅝ inch long.
L_3 — 220 Mc. — 3¼ turns ¼-inch diam., ⅜ inch long, tapped at 1½ turns from C_8 end.
— 144 Mc. — 5 turns ⅜-inch diam., ¾ inch long, tapped at 1½ turns from C_8 end.
L_4 — 44 turns No. 30 enam., close-wound on ⅜-inch diam. slug-tuned form.
L_5, L_6 — Made from one piece of B & W Miniductor No. 3003, 17 turns total. Cut at 5 turns for L_6; balance for L_5.
L_7 — 220 Mc. — 6 turns ¼-inch diam., ⅝ inch long.
— 144 Mc. — 8 turns ⅜-inch diam., ¾ inch long.
L_8 — 220 Mc. — 2 turns ¼-inch diam., spaced ⅛ inch.
— 144 Mc. — 3 turns ⅜-inch diam., ¼ inch long.
All coils No. 18 enameled wire unless otherwise noted.
RFC_1, RFC_2 — 5 turns each No. 22 enam., close-wound side-by-side (bi-filar) on 3/16-inch diameter. Cement turns together with coil dope.
P_1 — 4-prong plug (Amphenol 86-CP4).
P_2 — Test-lead type plug. Matching fitting must be added to power supply, or P_1 and matching fitting changed to 5-prong.



Bottom view of the 6BQ7 converter with 220-Mc. coils installed. At the upper left is the antenna trimmer. The large coil near the center of the chassis contains the overtone oscillator inductances, L_5 and L_6. The two multiplier tuned circuits are visible at the lower right, with the slug-tuned mixer plate coil at the upper right.

desired value obtained by snipping off small portions at a time until the signal-to-noise ratio is adversely affected. About one inch of Twin-Lead was so used in the 220-Mc. version, but none was needed for 144 Mc. Be sure to remove the plate voltage during the cutting operation.

Adjustment of the r.f. stages is not at all critical, and little work will be required if the layout and values given are followed closely. Neutralization was found to be extremely broad so it was possible to use a 2-$\mu\mu$fd. fixed ceramic capacitor at C_8 in place of a variable trimmer tried at first. As with earlier versions of the cascode, the stages do not oscillate even if the neutralization is omitted, but the noise figure is improved by its addition.

The bi-filar-wound r.f. chokes in the 6BQ7 heater leads are designed to be self-resonant at approximately the highest frequency for which the converter will be used, but here again the value is not critical. The chokes are made by winding two short pieces of No. 22 enameled wire side by side on a 3/16-inch drill for 5 turns. If the turns are wound tightly they may be removed from the drill without coming apart. They should be cemented together with coil dope.

For best results, the inductance of the antenna coil should be as low as possible. It is resonated at the signal frequency with the antenna system attached, and is coupled closely to the cold end of the grid coil. The setting of C_1 will be found to be quite critical, but it will hold well over the band and will not require readjustment ordinarily with any flat-line antenna system. The frequency response of the converter as a whole will, in fact, be considerably flatter than that of almost any v.h.f. antenna system.

Resonance indication in the two r.f. stage inductances, L_2 and L_3, will be extremely broad. If the coils are made to the specifications given in the parts list it is probable that no adjustment will be needed. If a grid-dip meter is available the coils may be stretched or squeezed to resonate at the middle of the band. Otherwise they can be adjusted on a test signal. Only a slight change in sensitivity will be seen with considerable inductance change, so the converter should be quite capable of receiving signals before any adjustment is made on the coils.

It will be noted that the two sections of the r.f. tube are in series as far as the plate voltage is concerned. For this reason it is necessary to use higher voltage on the second plate than is applied to the other stages. In the previous models used with the base unit, only regulated voltage was used on the converter stages, so it was necessary to make some special provision for tying into the 250-volt supply ahead of the regulator. This was done by mounting a tip jack on the base unit and providing a test-lead type plug on the end of a short flexible lead. A receptacle for the plug is provided on the converter chassis also, to keep it and the flexible lead in place when the converter is not in use. Another way to take care of the necessary higher voltage in the new converter would be to change the power plugs on all the converters and the socket on the base unit to 5-prong assemblies.

Performance

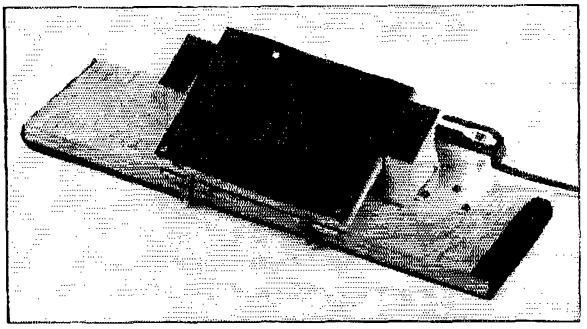
In the all-important matter of signal-to-noise ratio this converter has the edge on anything we've seen for the frequencies concerned. The superiority over a cascode or neutralized 6J6 r.f. amplifier on 144 Mc. was very slight, a matter of about 0.5 db. or so, and too small to be of much practical value. But on 220 Mc. the converter is around 3 db. better than a tunable-oscillator cascode job using the conventional 6AK5 – 6J6 line-up in the r.f. section. Adjustment was easier, and less trouble was encountered in getting the circuits lined up properly. Combination of the two r.f. stage functions in one tube, and the considerably reduced circuit complexity, make for an extremely simple and compact front-end design. In addition to use in converters for 220 and 144 Mc., the 6BQ7 should be fine for broadband preamplifier service, ahead of already-built receivers or converters that leave something to be desired on the frequencies from 50 Mc. up.

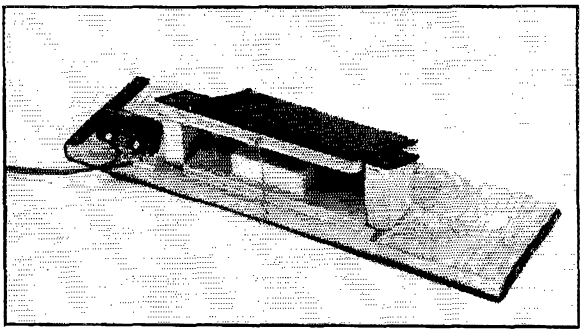
A Cheap and Dirty Foot Switch

BY BYRON GOODMAN,* W1DX

THE foot switch shown in the photographs was thrown together at the last minute before the 1951 Field Day, and any comments you may have on its appearance are quite justified. But the darned thing works so well, and is so convenient to use, that it would be a shame not to pass along the idea. You can pretty it up as much as you like, so that it will fit in better with your Chippendale or Louis Quinze — this decor just happens to match our Field Day motif.

In case you are wondering "What and why is a foot switch?" it can be described briefly as "a foot-operated gadget that takes the place of the usual send-receive switch." It connects in parallel with your present send-receive switch, and if you like it well enough you can then throw away the old switch. The "why" of it is that it leaves both hands free for the 101 things required during Field Day and other contests, or traffic handling, or just plain general operating. The switch remains closed as long as your foot is on it. Other applications are possible, of course. The foot switch might be an "antiswisher" that turns on the VFO without putting a signal on the air, for example.





Two views of a simple foot-operated switch. (*Upper*) The rubber bands in front of the hinges determine the return pressure of the pedal. (*Lower*) A string between base and pedal limits the upper travel of the pedal, and a positive downstop is provided by the wood blocks nailed to the base under the pedal.

Incidentally, this foot switch is no untried first effort. It is the result of several redesign conferences. For example, the first model had no rest for the foot when not pressing on the switch. Certain muscle-bound members of our Field Day gang found this situation intolerable, so rests were added for both right- and left-footed operators. There were discussions concerning the proper spring-return tension and distance of travel, so these items were made adjustable. (To the best of our knowledge, no one gave a hoot about them during the contest.) But seriously, the thing is a handy gadget, and we'll wager that once you try it you will use it most or all of the time.

*Assistant Technical Editor, *QST*.

Construction

The switch is built around a Microswitch, available through many war-surplus channels. Just be sure you get one that is normally open and has a long lever arm. Some of the arms are plain and some have a roller on the end — either one will be fine. These switches are rated at 10 amperes for 125 v. a.c., so they will handle most control circuits.

The pedal and base of the switch were made from scraps of ½-inch plywood we had, but almost any wood scraps should do the trick. The pedal piece (ours measured 4½ by 6 inches, before and after cutting) was held to the base piece (4 by 15 inches, but it could have been wider) with a pair of hinges. The hinges were fastened with 6-32 flat-head machine screws, because there were no wood screws kicking around, and this required counterboring the wood for the nuts and cutting off the screws so they wouldn't butt out past the wood surfaces. Wood screws would have been correct, of course.

The Microswitch is mounted on an aluminum bracket, and the bracket was bent at an acute angle so that the switch arm would meet the pedal properly. The stop under the pedal was two scraps of wood that were nailed to the base, to give a positive stop for the pedal. They were located at a point where the pedal pushed down to about ⅛ inch beyond where the Microswitch had already closed. Thus, you can afford to be brutal with the pedal without injuring the Microswitch, because the switch has some allowable overtravel.

The foot rests, on either side of the pedal, were made of wood and screwed and glued to the base plate. Their height was made equal to the resting height of the pedal.

The springiness of the Microswitch lever is not used to return the pedal, since it is not enough for the job and, anyway, it would be poor design. Two brads were driven in the end of the pedal above the hinges, and two more brads were driven in the edge of the base plate, below the hinges. A rubber band was looped around each pair of brads and we were in business. Need more tension? Take up another loop. It looks corny, but it works every time.

The pedal would swing right around if it didn't have a stop on it, and this took some real engineering (Field Day style). One brad in the edge of the pedal away from the hinges and another below it in the edge of the base plate were tied together by a short piece of string. The height is adjusted by the position of the knots on the string.

A rubber stair tread was cut up for the pedal and rests, and fastened with tacks. A piece of this rubber was also used on the bottom of the base plate, but you might want to use rubber feet instead.

As mentioned earlier, anyone with a picture-book station would want to dress up the switch a bit. About all this requires is some care with the woodworking and some paint or varnish. A box construction, with the foot rests forming the two sides of the box, would be logical with a heavy base. The rubber-band return could be eliminated in favor of compression springs under the pedal, riding on guide pins, but the string limit stop is heard to beat because it is so simple and it doesn't show from the front.

If all of your transmissions are of the 10- or 15-minute variety, a hand-operated switch is probably the best for you. But for almost all other types of operating, a foot switch is hard to beat. With one in parallel with the hand switch, you can't miss!

Strays

A Civil Service examination has been announced for Electronic Specialists for filling positions in the Signal Corps located at various places throughout the United States. The salaries are $3825 and $4200 a year. To qualify, applicants must have had at least 3½ years of appropriate experience. Pertinent study in the physical sciences or engineering above high school level may be substituted for most of the experience. No written test is required. Full information and application forms may be secured at most first- and second-class post offices, Civil Service regional offices, or direct from the U. S. Civil Service Commission, Washington 25, D. C. Applications will be accepted by the Executive Secretary, Board of U. S. Civil Service Examiners, Signal Corps, 2800 South 20th St., Philadelphia, Penna., until further notice.

High Claimed Scores—1951 Field Day

Listed below are high claimed scores reported for the Fifteenth ARRL Field Day, June 23rd–24th. These are subject to checking and grouping according to the number of transmitters in simultaneous use at each station. Complete FD results will be published in a later issue.

Class A

(Listings show call used in FD, claimed score, and number of simultaneously-operated transmitters.)

Frankford Radio Club	W3FRY/3	33,120–10
Tri-County Radio Assn.	W2OM/2	14,598– 9
Garden State Radio Assn.	W2GSA/2	14,072– 9
Lakeland Amateur Radio Assn.	W2VDJ/2	10,737– 6
Potomac Valley Radio Club "W4"	W4KFC/4	10,602– 3
Potomac Valley Radio Club "W3"	W3EIS/3	10,116– 3
Ohio Valley Radio Assn.	W8JIN/8	9369– 4
Hamilton Amateur Radio Club	VE3BNG/3	8964– 8
Somerset Hills Radio Club.	K2CW/2	8172– 6
Northern New Jersey Radio Assn.	W2DAY/2	8046– 4
York Radio Club	W9CWP/9	7902– 4
Raritan Valley Radio Club.	W2QW/2	7830– 4
The Foothill Mobile Net.	W6PD/6	7710– 4
Nutley Amateur Radio Society	W2GLQ/2	7695– 4
Ridgewood Radio Club.	W2GTD/2	7605– 6
Four Lakes Amateur Radio Club.	W9SWQ/9	7092– 5
Society of Amateur Radio Operators	W6AEX/6	7056– 7
Royal Order of Suds Club.	W6CG/6	6517– 6
Nassau Radio Club	W2BVL/2	6381– 5
Cleveland Brasspounders Assn.	W8BWA/8	6210– 2
Phoamblowers & Brasspounders	W9EDK/9	6174– 3
Richmond Amateur Radio Club	W4WT/4	6102– 2
Wisconsin Valley Radio Assn.	W9RQM/9	6093– 2
Greater Cincinnati Amateur Radio Assn.	W8BDA/8	5988– 2
Kitchener Waterloo Amateur Radio Club	VE3CY/3	5769– 5
Joliet Amateur Radio League.	W9DDR/9	5683– 4
Narragansett Assn. of Radio Operators	W1SKT/1	5607– 3
Frontier Radio Assn.	VE3WD/3	5535– 4
Bridgeport Radio Amateur Club	W1QOA/1	5229– 2
North Bay Amateur Radio Assn.	W6HTB/6	5154– 8
Mid-Island Radio Club.	W2UBW/2	5146– 4
Nortown Amateur Radio Club.	VE3BRR/3	5112– 5
Hamfesters Radio Club.	W9DXU/9	5067– 4
Capital Key & Mike Club.	W3DIM/3	5058– 3
Lake County Amateur Radio Club.	W9JZA/9	4983– 4
Candlewood Amateur Radio Assn.	W1VB/2	4959– 2
Rock River Radio Club.	W9APU/9	4932– 3
Ft. Wayne Radio Club.	W9RJY/9	4669– 5
Montreal Amateur Radio Club	VE2GE/2	4626– 2
Tri-County Amateur Radio Assn.	W6QE/6	4453– 6
Radio Club of Tacoma.	W7DK/2	4365– 4
Tusco Radio Club.	W8HQ/8	4356– 1
York Road Radio Club.	W3QB/3	4338– 1
Connecticut Wireless Assn.	W1TX/1	4299– 1
Chicago Amateur Radio Club.	W9CAF/9	4245– 3
McClellan Amateur Radio Society	K6FAB/6	4230– 4
Findlay Radio Club.	W8FT/8	4185– 2
Aero Amateur Radio Club.	W3PGA/3	4125– 4
Racine Megacycle Club.	W9UDU/9	4122– 2
Sioux City Amateur Radio Club	WØFZO/Ø	4119– 4
Edison Radio Amateurs' Assn.	W8AW/8	4113– 4
(non club group)	W8II/8	4140– 1
Levittown Amateur Radio Club	W2GLO/2	4050– 5
(non club group)	WØDEP/Ø	4050– 2
Toledo Radio Club	W8FO/8	4021– 3
Schuylkill Amateur Radio Club	W3KJJ/3	4014– 2

(Continued on page 104)

A Mobile Converter for Civil Defense

Simple Circuits To Render Effective Reception in the 28- and 50-Mc. Bands

BY RICHARD M. SMITH,* W1FTX

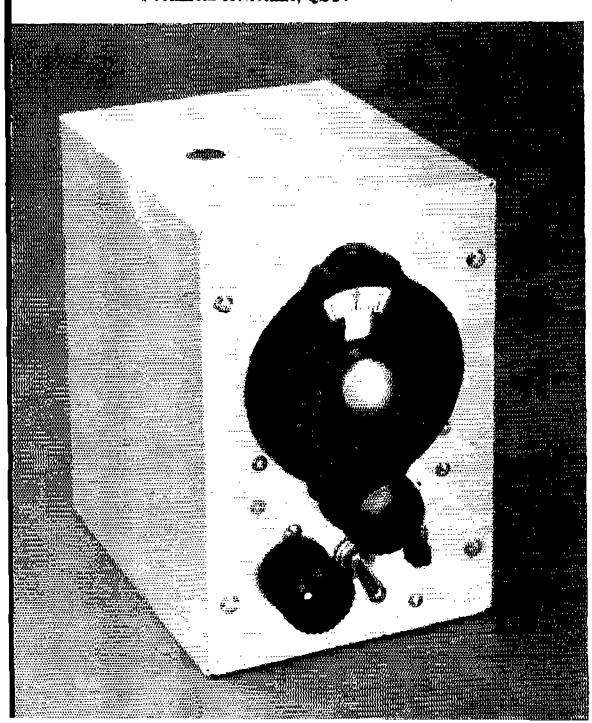
MANY of us who cannot "go mobile" on short notice are faced with the problem of either buying or building suitable equipment before we can take an active part in amateur radio's contribution to the defense effort. Some will be satisfied to serve as operators of fixed stations, but the real need is for more mobile units, and as anyone will admit, without mobile or portable units, no emergency communications system is complete.

In many localities Civil Defense networks are already established in the 28-Mc. band, always a popular spot for mobile operation. In others, the 50-Mc. band is being used because it is ideally suited for local communication and the equipment used need not be elaborate. The converter described here is designed for use in either of these two bands. In spite of its simplicity, it will provide excellent performance, and its cost is far below that of comparable commercial products.

The Circuit

To some, the inclusion of a tuned r.f. stage might seem superfluous in a converter that is designed primarily for reception of local signals. It has, however, very definite advantages in a mobile converter. It serves to isolate the whip antenna from the oscillator circuit, thus improving stability, and adds a bit of sensitivity that helps to eliminate "dead spots" so often encountered when traveling about. For these reasons, a 6AK5 r.f. stage is used, as shown in the schematic diagram, Fig. 1. A 6J6 was selected for use as the oscillator-mixer because it is about as simple an arrangement as could be desired.

* Technical Assistant, *QST*.



• If you want to get into CD work in your community and need a converter for either ten or six meters, the easy-to-build unit described here should fill the bill.

The oscillator operates 1500 kc. below the signal frequency, producing output that can be fed into an auto radio (or any receiver, for that matter) tuned to 1500 kc. What amounts to single-dial tuning without ganging is accomplished by broadening the response of the mixer circuit, and using the oscillator tuning condenser as the main tuning control. The input circuit is tuned by a separate control, but this need be readjusted only when a tuning excursion is to include the whole band. For operation within a civil defense band segment the antenna trimmer is set once, and then left alone.

The antenna switch S_1 is arranged to transfer the antenna from the converter to the b.c. receiver when the converter is not in use. Coils permitting coverage of either the 28- or 50-Mc. band are described in the parts listed below Fig. 1.

The power requirements of the converter are small, and can be obtained from within the auto radio without serious overload in most cases. Satisfactory operation can be obtained with from 150 to 200 volts d.c., providing that it is free from ripple and is fairly stable. Drain on the supply will be about 20 to 25 ma. If the supply voltage exceeds 200 volts, a suitable dropping resistor should be used in series with the B-plus lead. Nothing is gained by exceeding 200 volts.

♦

A mobile converter for use in either the 28- or 50-Mc. bands. In addition to the main tuning dial, the controls on the panel are the antenna trimmer, heater switch, and antenna switch. The hole in the top of the cabinet is for access to the mixer tuning slug. The entire unit measures only 4 by 5 by 6 inches, and can be bolted to the steering post. It obtains its power from within the auto b.c. set.

♦

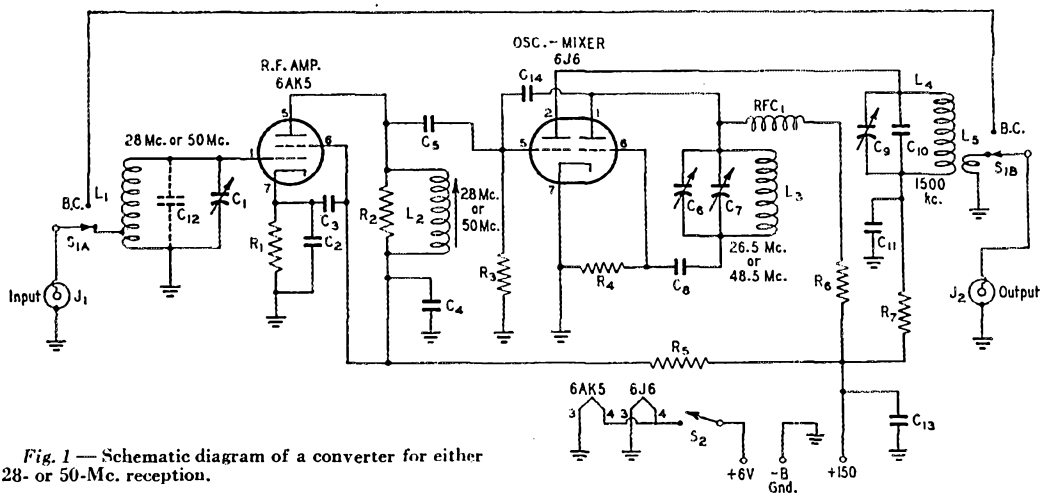


Fig. 1 — Schematic diagram of a converter for either 28- or 50-Mc. reception.

C_1 — 15-$\mu\mu$fd. variable (Millen 20015).
C_2 — 150-$\mu\mu$fd. disc ceramic.
C_3 — 470-$\mu\mu$fd. disc ceramic.
C_4 — 0.001-μfd. disc ceramic.
C_5 — 15-$\mu\mu$fd. tubular ceramic (Centralab D6-150).
C_6 — 3-30 $\mu\mu$fd. compression-type trimmer (Millen 27030).
C_7 — 15-$\mu\mu$fd. variable reduced to one stator and one rotor plate (Millen 20015).
C_8, C_{10} — 100-$\mu\mu$fd. mica.
C_9 — 50-$\mu\mu$fd. variable.
C_{11}, C_{13} — 0.01-μfd. disc ceramic.
C_{12} — 47-$\mu\mu$fd. mica. (Omit for 50-Mc. operation.)
C_{14} — See text.
R_1 — 220 ohms, ½ watt.
R_2 — 6800 ohms, ½ watt.
R_3 — 1.5 megohms, ½ watt.
R_4 — 15,000 ohms, ½ watt.
R_5, R_7 — 680 ohms, ½ watt.
R_6 — 47,000 ohms, ½ watt.

L_1 — 16 turns No. 18 enam. closewound, ¼-in. diam., tapped 3 turns from ground end.
L_2 — 28 Mc. — 14 turns No. 22 d.s.c. spaced to fill a National XR-50 slug-tuned form. Inductance range 0.9 μh. to 3μh.
50 Mc. — 8 turns No. 22 d.s.c. spaced to fill a National XR-50 slug-tuned form. Inductance range 0.7 μh. to 1.2 μh.
L_3 — 28 Mc. — 9 turns of B & W Miniductor No. 3008 (1⅛-inch diam., 5/16 inch long).
50 Mc. — 5 turns of B & W Miniductor No. 3007. (Same dimensions as for 28 Mc.)
L_4 — 90 turns No. 30 enam. closewound on a ¾-inch diameter form. Inductance 80 μh.
L_5 — 5 turns No. 30 d.s.c. closewound at ground end of L_4.
RFC_1 — 250 μh. (Millen 34300).
J_1, J_2 — Coaxial jacks (Cinch S-101-D).
S_1 — D.p.d.t. snap slide switch.
S_2 — S.p.s.t. toggle switch.

Construction

The converter is built in a 4 × 5 × 6-inch aluminum utility box (ICA 29842) that lends itself readily to steering-post mounting in the car. One of the removable covers of the box is used as the panel which, as shown in the front view, contains the main tuning dial, antenna trimmer C_1, heater switch S_2, and antenna switch S_1. All other parts are mounted on an L-shaped bracket bolted to the panel to form a "chassis" as shown. This bracket is sized to be a snug fit within the box to add to the mechanical rigidity of the assembled unit. It extends 4 15/16 inches behind the panel, is 3 inches high, and 2¾ inches wide. The assembly is held inside the box by four 6-32 screws passing through the panel and two self-tapping screws that fasten the chassis at the rear.

The top view shows the location of parts on the chassis, with the 6AK5 socket centered ¾ inch behind the panel and ¾ inch from the chassis edge. The socket for the 6J6 is centered 2½ inches behind the 6AK5. Oscillator tuning condenser C_7 is mounted in the center of the chassis, supported rigidly by a small aluminum bracket 1½ inches wide and 1 3/16 inches high. The rotor shaft of the condenser, which must be insulated from ground, passes through a ⅜-inch clearance hole in the bracket, and is connected to the main tuning dial (National BM) by an insulated coupling and a short length of ¼-inch polystyrene rod. The oscillator padding condenser C_6 is soldered across the rear of C_7, and the oscillator coil is cemented to the ceramic body of the padder. This entire assembly should be made as rigid as possible to insure mechanical stability of the oscillator circuit.

Arrangement of the parts "below decks" is shown in the bottom view. An aluminum shield partition 2½ inches high and 2¼ inches wide is placed 1½ inches behind the panel to isolate the grid circuit of the 6AK5 stage from its plate circuit. The shield is set in from one edge of the chassis to provide passage for the cabled d.c. supply leads. Antenna trimmer C_1 is centered 1⅛ inches from the edge of the panel and 1¼ inches from the bottom. L_1 and C_{12} are soldered directly to the terminals of C_1, as shown, with the coil placed in the center directly behind heater switch S_2. C_{12}, shown in dotted lines in Fig. 1, is required only for 28-Mc. operation. The double-pole double-throw slide switch used for S_1 is centered 1¼ inches from the edge of the panel and 1¼ inches from the bottom. It is necessary to notch the lip of the box to clear

the lower portion of the slide switch.

The slug-tuned coil used in the 6AK5 plate circuit is mounted with its adjustment screw extending upward between the 6AK5 and 6J6 sockets. A ceramic feed-through insulator passes through the shield partition near one terminal of this coil to provide a short connection to the plate pin of the 6AK5 socket.

The 1500-kc. output coil is mounted near the rear, adjacent to C_9, which has its adjustment shaft projecting through a ⅜-inch clearance hole in the rear apron just above the output jack, J_2. *Caution:* this shaft carries the full supply voltage, and should be adjusted only with an insulated screwdriver, or with power off.

Power is brought into the unit through a 3-wire cable entering through a grommet-lined hole centered just above J_1 and J_2. A tie point mounted on the inside of the chassis serves as a distribution point for the supply voltages and to anchor the power cable.

The usual precautions concerning short r.f. leads should be observed when wiring the unit, with particular care being taken to make the leads from the screen-grid and cathode by-pass condensers in the 6AK5 stage short. In addition, it was found desirable to run the d.c. lead from the screen-grid terminal away from the field of L_1. It can be seen passing around the edge of the shield partition in the bottom view.

To give a degree of control over oscillator-voltage injection, a 1-inch length of No. 18 wire encased in spaghetti tubing is soldered to the No. 1 plate terminal of the 6J6 socket. The wire is then bent across the tube socket until it rests close to C_5, forming an adjustable capacitance shown in the diagram as C_{14}. Its adjustment is described in later paragraphs.

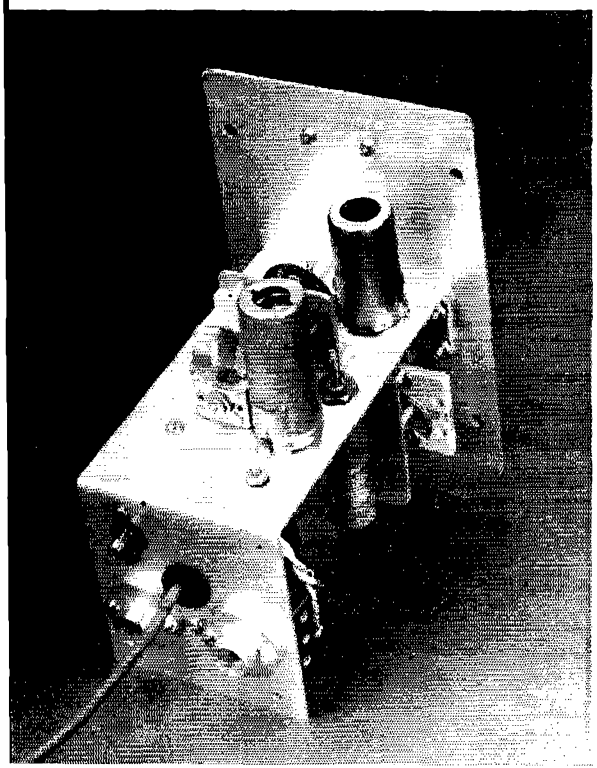
The tap on antenna coil L_1 is made before the coil is wound. To do this, scrape the enamel off a point about 4 inches from the end of the No. 18 wire used for the coil, and wrap one turn of fine wire (No. 30 or smaller) around the exposed bare copper. Then apply a *small* amount of solder. The coil is then wound around the shank of a ¼-inch drill with sufficient turns each side of the tap to meet the specifications given below the diagram. The tap lead should be covered with spaghetti tubing and connected to the proper terminal of S_1.

Adjustment & Operation

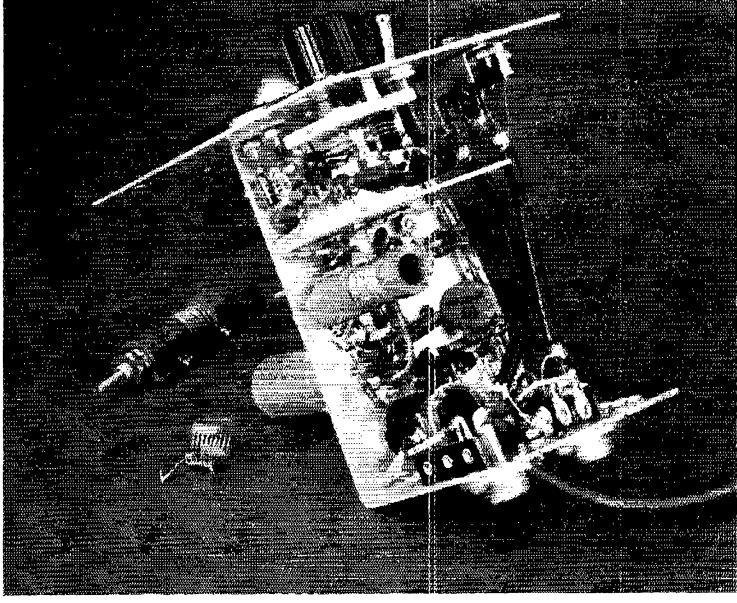
After making the necessary connections to the input and output terminals of the converter, tune the receiver that is to be used with it to 1500 kc., and apply power to the converter. If a calibrated signal generator is available, apply a 50-microvolt signal to the input of the converter and adjust the oscillator padder until the signal is heard. In the absence of a generator, the signal from a low-power transmitter operating in either fundamental or harmonic relationship to the desired signal frequency may be used if a short antenna is connected to the converter. Do not attempt to make adjustments without some form of loading (either the generator or an antenna) on the input circuit, because the 6AK5 may oscillate, making proper adjustment impossible.

With the coil specifications given it is possible to set the oscillator on either the high-frequency side of the signal frequency or on the low-frequency side. Thus, as the padder is adjusted, two response points will be found, one requiring more capacity in the padder than the other. It doesn't matter a great deal on which side the oscillator works, unless troublesome image responses are encountered, but in the interest of obtaining maximum stability the usual procedure is to set the oscillator on the low-frequency side.

Once the oscillator adjustment has been made, the mixer circuit can be peaked by listening to the increase in background noise as the slug-tuned coil is adjusted. With swamping resistor R_2 connected across the mixer coil, this peak may be difficult to detect by ear. If this is the case, disconnect one end of R_2 from the circuit and then adjust the slug of L_2. Once the slug has been set for maximum background noise, the resistor



Rear view of the converter. The output jack is on the left, just below the output tuning condenser, and the input jack on the right. The 6J6 oscillator-mixer tube is near the rear of the chassis, and the 6AK5 r.f. tube near the panel. Between the two tubes are the mixer tuning screw and the oscillator tuning condenser. The oscillator coil and padder are immediately to the left of the 6J6.



Bottom view, showing placement of parts with relation to the shield partition. Components associated with the r.f. stage are between the shield and the panel, while those of the oscillator-mixer stage occupy the rear. The 28-Mc. coils are in place in the unit. The coils displayed to the left of the unit are for 50-Mc. operation.

should be reconnected, of course. The output circuit comprising C_9 and L_4 should be resonated next. This circuit tunes quite broadly, but it is possible to observe a slight increase in background noise at resonance.

To adjust oscillator injection, the capacity of the "condenser" formed by the proximity of the wire connected to Pin 1 of the 6J6 socket to C_5 may be changed by bending the wire. A marked increase in background noise should result as the wire is moved closer to C_5. As a check, tune the oscillator padder C_6 through both of the points that produced signal response as described earlier. If the background noise remains nearly constant across the range, the adjustment may be considered satisfactory. If it is less when the oscillator is tuned to the low-frequency side of the signal frequency, the wire should be moved closer to C_5.

The tuning of the input circuit will be influenced somewhat by the type of antenna used, so final adjustment of this circuit cannot be made until the converter is connected to the antenna it is to be used with. In most cases it will be possible to resonate the circuit to any spot in the band with the tuning condenser specified, but some squeezing or spreading of turns of L_1 may be needed. If after adjustment the circuit tunes too sharply, its response may be broadened slightly by moving the tap one turn closer to the plate end of the coil.

Performance

The converter, although simple, has enough gain to satisfy most mobile requirements. In lab tests with the output fed into a good communications receiver, a 1-microvolt signal produced output of several S units above the background noise on both 28 and 50 Mc. The 28-Mc. band is spread out over 80 per cent of the dial, and about the same coverage is obtained in the 50-Mc. range. When the unit is bolted securely inside its cabinet mechanical stability is all that could be desired, and if the layout shown is followed, its operation should be trouble-free. Installation is left to the individual constructor because each will have his own idea of where the unit is to be mounted in the car. Reference should be made to the chapter on mobile equipment in *The Radio Amateur's Handbook*.

Strays

The strength of aluminum is greater at sub-zero temperatures than at room temperatures, according to *Ohmite News*. All of which is good news and should go a long way toward keeping up both our morale and our beams during this coming winter's ice storms.

—•••—

A 'phone jack that has developed a defect can still be used as a panel bearing for quarter-inch shafting. — *W9LQE*

Silent Keys

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

W1EKT, Everett D. Whitney, Wakefield, Mass.
W1HWR, Hobart V. MacMillan, Everett, Mass.
W1KAK, Edgar Butcher, Columbia, Conn.
W1LYE, George P. Earnshaw, Providence, R. I.
W2QZJ, Thomas N. Taylor, Buffalo, N. Y.
W3LUO, ex-W8CDI, George H. Findley, Johnstown, Penna.
W4QCO, Lieut. Charles J. James, Avondale, Ga.
W6DEJ, Arnold J. Harris, Boulder Creek, Calif.
W6IPQ, Herbert L. Caldwell, Laguna Beach, Calif.
W6ZIV, Howard I. Keller, Los Angeles, Calif.
W7KZT, Neal D. Davis, Seattle, Wash.
ex-W8DCS, Ray W. Callihan, Columbus, Ohio
W8WEQ, S. F. Burch, Columbus, Ohio
WØEKK, Milan M. Kinsey, Omaha, Nebr.
WØJUI, Charles M. Aurant, Rockford, Iowa
EI3N, Michael Collins, Dublin
KH6AAS, Nobu Tamanaha, Honolulu
VE3ACW, Isaac L. Newton, Ottawa

The World Above 50 Mc.

CONDUCTED BY E. P. TILTON,* W1HDQ

INTERESTED in new blood for the v.h.f. bands? Then take a look at these figures for the month of July, just obtained from FCC: 1099 Novice and 294 Technician Class licenses issued in the first month that these new tickets have been available. Apparently this is no matter of a first day rush; applicants are still trooping into the examination rooms in numbers well in excess of what might have been expected under the former licensing arrangement.

Roughly half of the Technicians also took out Novice tickets, but that still leaves well over a thousand new hams, a high percentage of whom are going to be interested in the frequencies from 145 Mc. up! Now what does this mean to The World Above 50 Mc.? It's too early to say, as we write, for the first WN calls are just beginning to appear, but it could mean a major change in the complexion of our hobby.

For nearly twenty years newcomers, intrigued by the possibilities inherent in a developing field, have been learning the code (at 10 or 13 w.p.m.) and boning up on theory to get Class B tickets for the express purpose of working on 50 Mc. or higher. Perhaps not as many as aimed at 10-meter 'phone, in the years of easy DX around the sunspot cycle peak, but certainly a sizable percentage of the new calls have had their first use on the v.h.f. bands. Now that operation on 145, 220 and 420 Mc. is available on easier terms, that percentage should rise sharply.

If we have complained of low activity on our v.h.f. bands, now is the time to do something about it. Certainly quite a few of those WNs are going to be showing up on 145-147 Mc. We who are already there can do much to help them get off on the right foot. With some assistance and interest on our part, the Technicians could be the making of 220 and 420 Mc., to say nothing of our higher amateur assignments, but they can't do it alone.

There is plenty waiting to be done on the bands from 220 Mc. up, and in many instances the fun is just now getting underway. If it has been slow in starting in most areas, it is mainly because not enough fellows were in there trying, rather than from any lack of interesting possibilities on those frequencies. Right now is none too soon to get 220- or 420-Mc. nights organized in your locality, and to make some provision for attracting the Novice and Technician newcomers to your club. Let's see to it that these fellows are properly welcomed to The World Above 50 Mc. If they are, 1951 could be our biggest year on record!

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

FALL V.H.F. PARTY	Sept. 22nd and 23rd *See rules on page 58*

July in Review

The unusually short and widespread sporadic-*E* skip of June continued well through July. Openings of the 50-Mc. band were less frequent than in June, but of generally good quality when they did develop. The 27-day cycle was in evidence, with the June 11th double-hop opening coming around again on July 9th, with renewed vigor, and on July 24th there was a lively recurrence of a June burst. The month closed with a 24-hour 50-Mc. opening July 29th and 30th.

Ionization was so dense and widespread on July 9th that it was possible to work almost anywhere in the country. E_s signals overlapped the ground-wave range at times. W8NQD, Ashland, Ohio, worked his first VE3s by E_s, under 250 miles; W1LSN, Exeter, N. H., was hearing W2BYM, Lakehurst, N. J., not much over 200 miles, by the skip method; stations all through the East were hearing both ends of QSOs between W8s and W7s, W4s and W5s, W9s and W6s. If anyone failed to pick up new states that night, it was mostly because there was nobody on the air on 6 in Nevada, Montana or Nebraska, the states almost everyone was looking for. Just about every other state was accounted for in the course of the evening.

One step up the WAS ladder was provided for W1CGY, W2ZGP and your conductor by our far-ranging friend, W3CIR, who was /7 in the Bryce Canyon region of Utah at the year's most opportune moment. It is of interest to note that with all the stations that were active in the northeastern part of the country, only those stations mentioned above and W2BYM and W1GJO were heard. Of these, only W1GJO does not use a stacked array, and Grid's antenna is a 5-element job. Big antennas pay off on 6, too! Other stations worked by W3CIR/7 included W5s SFW KCP MJD IOW, W9s ALU HGE, WØs TJF GPQ CNJ TKX WKB OUE QIN, VE6MO, VE5NC and VE5SF. W4FBH, W4CPZ, W2BYM and W1GJO were heard. Quite a performance for a mobile station!

The ionosphere sounder at Cornell University was getting vertical returns from the *E* region up to 24 Mc., the upper limit of its range, at times during the evening of the 9th. The highest recorded previously was around 15 Mc. This indicates the possibility of 2-meter DX via E_s, but no reports have been received along that line. E_s skip was noted throughout the f.m. band, however, so the m.u.f. was really getting up there.

The night of July 1st brought a very widespread auroral disturbance and one of the best nights for aurora DX on record. This particular show demonstrates how hard is the lot of the fellow who makes the predictions for this sort of thing. Weekly information from CRPL for the period preceding July 1st makes no mention of a possible disturbance for two days either side of that date, pointing up the statement by Moore (June *QST*) that "Prediction services cannot be right all the time at the present state of our knowledge!" Even the boys at the Cornell Ionosphere Project were not aware of the aurora until it began to show in the sky, though it had been going on for two hours before sundown.

As in several of our larger auroral displays last year, there was long-distance propagation on 50 Mc. that had all the earmarks of a normal E_s opening. Stations 1000 miles or more away came in extremely strong and steady on voice, with no aurora distortion whatever. Voice was usable, but badly distorted, on signals from nearer points. This condition was noted all across the country, from VE1 to Wyoming. W7JRG, Sheridan, Wyoming, worked W7GCS, Sun River, Montana, and W7ACD, Shelley, Idaho, with

typical aurora signals on c.w., but stations farther to the east were good on voice. His best DX was W8TDJ, Morgantown, W. Va., worked on c.w., but because of weak signals rather than multipath distortion.

The 50-Mc. opening got underway around 6 P.M. EST, breaking out very suddenly from seemingly normal conditions. Observers who checked 144 Mc. at intervals are of the opinion that the band was open, but no DX was reported in the early period. Signals were in very strong on 6 until around 8 P.M. EST, when the usual mid-period fadeout developed. Aurora was visible over most of the northern part of the country as soon as the sky was dark enough to permit observation, but, as has been noted on other occasions, there did not seem to be much effect on 50-Mc. propagation between about 8 and 9:15 EST, when a recurrence of the early evening conditions began to appear.

Things began to happen on 144 Mc. around midnight, so late that many of the aurora regulars on that band had already given up. Conditions were red hot on 2 for about an hour, and DX signals remained in, though getting weaker, until nearly 2 A.M. EST. The visible aurora during this time was extending well to the south of the zenith in Connecticut, and 2-meter signals as far south as North Carolina were coming in well. The direction for best signal was extremely broad, but peaking well to the west. At least one 2-meter "first" came about when W4MKT, Winston-Salem, N. C., worked W8GAB, East Sparta, Ohio, the first work between these states on 144 Mc. W3QKI, Erie, Pa., also worked W4MKT, perhaps another "first."

After the 2-meter DX faded, the 6-meter band remained open for all sorts of signals for some time. Your conductor and W2ZGP embarked on a series of 50-Mc. tests at 1:30 A.M. EST, remaining in contact until auroral light gave way to daylight at 3:40 A.M., at which time the 50-Mc. signals were barely audible each way, and fading out rapidly.

If this session was any indication, we are in for some fine aurora openings during the late summer and early fall. There are many things to be learned about auroral propagation, so let's have some careful observation when the opportunity affords. ARRL requests detailed reports of observations from 50 Mc. up. Don't send just a list of stations heard or worked. Include time, particularly, and also the character of the signal and the direction of the beam for best reception, if possible, and the type of equipment and antennas used. Results of tests on 220 Mc. or higher frequencies are of particular interest.

Contacts with Cuba and Puerto Rico continued on 50 Mc. through July. CO6WW has been reported worked by many Ws recently. KP4NX worked W3PCB, W3OJU and W4HVV on the 8th, and heard W3QFL. In the big session of the 9th he appears to have been lost in the W QRM by most of the gang. Only W5ONS and W4IUJ were worked, but Westy was hearing W5s AJG OUT HHV (?), VE9RB, VE3ANY, VE3BQN, W9s RQM OCA JPB ZHB, and WØINI. Sunday afternoon, the 29th, he caught a fine opening, working W3PCB, W2AMJ, W2BYM, W1LLL, W1HDQ, W1CGY, W8CMS, VE1BC, and VE1QZ. QSL to KP4NX as follows: Harold West, ARINC, Box 4008, San Juan, Puerto Rico, *not* the callbook address.

Another 6-meter man who would like a QTH correction: W4GMP, who worked a flock of stations from Key West this summer, is now in the Mediterranean Theater. He will QSL on his return to the States; meanwhile send cards for him to W4FBH.

Some hair-raising 2-meter reception is reported from the San Francisco area by W6MHF. Dave began hearing weak rapidly-fading 2-meter signals from the east around 3 P.M. PDST, July 15th. What he could make out sounded like W3s and 4s! W6IPY and K6FBA also heard a signal believed to be a W3. Around 4 P.M. there was an unusual background noise level and an S2 signal was heard on 144.15, peaking 10 degrees south of east. It rose momentarily to S7, and "mobile" was heard mentioned, possibly referring to Mobile, Ala. A signal sounding like "W3DHB," mentioning Pennsylvania, was heard, and between 4:15 and 4:30, W3KUS or KUX was heard on 144.5, testing with occasional feed-back, fading S8 to S1. Around 6:30 P.M. a station believed to have been a W5 was heard on 144.2 Mc. At 6:30 P.M. Tuesday, July 15th, the following was heard on 144.15: "W — LK standing by on the band." Can anyone shed light on these strange goings-on? And while we're about it, how about more care in signing calls, and more use of c.w.?

A good tropospheric opening was observed on the evening of July 17th by WØIHD, Overland, Mo., who worked WØUOP, Des Moines, WØBIP, Elliott, Iowa, WØDVV, Merriam, WØJFE, Abilene, Kans., and WØDDX, Kansas City, Mo.

The 2-meter band was hot all through the Middle West during the evening of the 29th. W9FVJ, Toledo, Ill., says that everything from W3QKI and W3WBM in Western Pennsylvania to WØJFE in Abilene, Kans., was coming through, though activity was held down by the Turkey Run State Park (Indiana) v.h.f. shindig that day. Two-meter men from ten states attended the big picnic, the annual gathering that is becoming the closest thing we have to a National Convention for v.h.f. men.

Why Do They Do It?

There's nothing like some good openings to show up the weak spots in our operating procedure. This month's mail has several complaints that say, in effect, "Why does any guy call, and call, and *call*, for an endless number of repetitions of the call of the station he's after, before finally

(*Continued on page 106*)

2-Meter Standings

	Call	States	Areas	Miles		Call	States	Areas	Miles
W1HDQ	16	6		650	W5IRP	6	2		410
W1IZY	15	6		750	W5ONS	5	2		950
W1MNF	14	5		570	W5FSC	5	2		500
W1BCN	13	5		500	W5JLY	4	2		650
W1CTW	12	4		500					
W1KLC	12	4		500	W6ZL	2	2		1400
					W6WSQ	2	2		1390
W2BAV	21	7		1175	W2PJA/6	2	2		1390
W2NLY	18	6		750	W6ZEM/6	1	1		415
W2PAU	15	6		740	W6GGM	1	1		300
W2DFV	13	5		350	W6YYG	1	1		300
W2CET	12	5		405					
W2DPB	12	5		500	W8WJC	20	7		775
W2QED	12	5		365	W8BFQ	20	7		775
W2FHJ	12	5		—	W8WXV	18	8		1200
W2QNZ	12	5		—	W8UKS	18	7		720
W2ORI	8	6		570	W8EP	17	7		—
					W8WRN	16	6		670
W3RUE	17	7		760	W8RWW	14	7		500
W3NKM	17	7		660	W8WSE	14	6		620
W3QKI	16	7		820	W8FQK	13	7		—
W3LNA	14	7		720	W8CYE	12	6		—
W3KWL	14	6		480	W8BAX	12	—		655
W3GKP	14	6		610	W8CPA	12	—		650
W3OWW	13	6		600					
W3KBA	13	6		—	W9FVJ	20	7		790
W3KUX	12	5		575	W9UCH	19	7		750
W3PGV	12	5		—	W9SUV	19	7		—
W3LMC	11	4		400	W9EQC	17	7		820
					W9BOV	15	6		—
W4HHK	15	6		660	W9WOK	15	5		690
W4JDN	13	6		—	W9AFT	14	—		—
W4JFV	13	5		830	W9NFK	12	7		690
W4IKZ	13	5		650	W9UIA	11	7		540
W4JFU	13	5		720	W9FPE	11	5		800
W4LVA	13	5		400	W9GTA	11	5		540
W4MKJ	12	7		665					
W4OXC	12	7		500	WØNFM	14	7		660
W4CLY	12	5		720	WØIHD	13	6		725
W4JHC	12	5		720	WØEMS	13	5		1080
W4OLK	12	5		720	WØZJB	12	7		1097
W4FJ	12	5		700	WØWGZ	11	5		760
					WØHXY	8	3		—
W5JTI	14	5		670	WØJHS	7	3		—
W5QNL	10	5		1400					
W5AJG	8	3		1260	VE3AIB	12	6		600
W5ML	8	3		725	VE1QY	11	4		900
W5ERD	8	3		570	VE3BOW	8	5		520
W5VX	7	4		—	VE3BQN	7	4		540
W5VY	7	3		1200	VE3BPB	6	4		525
W5CVW	7	2		560	VE3DER	6	4		450
W5FBT	6	2		500	VE3EAH	5	4		380
W5FEK	6	2		500					

Amateur Radio in Detroit Civil Defense

Motor City Amateurs a Vital Link in CD Communications

BY FRANCIS GARY,* W8GJH

CIVIL DEFENSE preparations in the locality of Detroit have reached a high stage of development and amateur radio operators are playing a major role in the operations. It all started when Joe Gardella, W8WFA, was appointed ARRL emergency coördinator for Metropolitan Detroit. Gardella called a series of meetings of ECs from nine local radio clubs. Out of these meetings was born, about three years ago, the Inter-County Amateur Radio Emergency Club.

As originally constituted, the club was to include only operators in Wayne County (mostly Detroit) and neighboring Macomb County, where many of the city's suburbs are located. Within a brief time, however, operators outside those two counties began to realize the potentialities of the organization and clamored for admittance. The geographical scope of the club was therefore enlarged to take in adjoining Washtenaw, Oakland, Monroe and Livingston County amateurs.

To facilitate efficient operations during drills — and for the real thing, if it ever came — the operators decided to divide their extensive territory into smaller districts. Fourteen distinct sections were mapped out, each having a base control station, where telephones are operating, centrally located within the sectional area. The functioning of this "base station net" was to be correlated by an Area Control Center. The latter is a completely equipped station with headquarters in downtown Detroit's American Red Cross building, where roof antennas cover all bands.

Frequency Deliberations

The next decision was the selection of a band to use for the network. Some advocated 2 meters, others suggested 80, but the 10-meter band was finally agreed upon as the one on which most of the amateur stations in the area are equipped to operate most effectively on a local basis. In addition, a 75-meter 'phone and 80 and 40 c.w. frequencies are used for liaison with state and national emergency amateur networks.

Each of the 14 base control stations was assigned 10 or more mobile units to control. Also within each base district are four grammar schools designated as casualty care stations, an intermediate school to serve as a base medical depot, and a high school to operate as a hospital. Enlisting enough mobiles was no great problem since Detroit, as the nation's motor city, already had many in operation. It was agreed that base radio stations would function 10 kc. apart on the assigned high and low portions of the 10-meter band, but that *all* mobiles would operate on 29,610 kc. Some participants expressed doubt that such a system was feasible since the base stations would be receiving mobiles other than their own. Nevertheless, it has been proven that this situation was no handicap. True enough, base stations could hear mobiles outside their own areas, but it was found that units within a four-mile radius of the base easily blocked out interference from those farther away because of their greater signal strength. Since the 14 base districts are eight miles in diameter with the base station approximately in the center, everything has worked out splendidly. Even under short-skip conditions, the system has proven very efficient with a minimum of QRM.

• The Detroit AREC set-up contains much that is typical and a few things that are unique. AREC civil defense planners will be interested to note what problems were met and how they were solved. To others, a perusal of this article will show what can be accomplished given a modicum of leadership and enthusiasm.

As the frequency set-up is operated, mobiles do not hear each other nor any base station except their own since they are tuned only to their own base and each base, as noted above, has a different frequency. When conditions require transfer of a mobile to another base, the operator is so advised. As he proceeds to the new jurisdiction area, he tunes to the frequency of his new base station but does not attempt to transmit until coming within the four-mile range.

The base control stations had their troubles, too, when it was decided that each must be self-sustaining — that is, capable of running off gasoline-driven generators. With patience and perseverance the boys solved that obstacle also, and the base stations are now so equipped.

Mobile Control Unit Needed

Drills were conducted as soon as the obvious "bugs" were worked out. Other faults here and there became apparent, but for the most part, even the early drills were deemed successful.

One weakness recognized was the need for a mobile unit capable of taking over the responsibilities of the stationary Area Control (Able) Station during activation of the net and again later in event the Able Station should be bombed or otherwise put out of commission. None of the

* SEC Michigan, 620 Thayer, Flint, Mich.

members' units was equipped to handle such an assignment and funds were lacking to obtain one elsewhere. The acquisition of such a unit seemed impossible. And then fate stepped in.

Independently and unawares of the work of the Inter-County Club, Bill Landis, W8DZT, industrial relations director of the Briggs Manufacturing Company, conceived the idea of a powerful fully-equipped radio unit as a valuable adjunct to civil defense activities. Landis offered to furnish some of the major radio equipment if the company would provide a trailer and purchase such additional equipment as was needed. Company officials quickly realized the possibilities of such civil defense preparations and gave W8DZT the go ahead. Naturally, word got around among the amateurs of what Briggs was doing, and Landis and Gardella soon joined forces. There was mutual gain from the collaboration which followed, with the Inter-County Club fulfilling its need for a suitable mobile unit and Landis obtaining an established organization to utilize his brainchild.

W8GIS

The finished product has now been functioning under the call W8GIS for several months. A 27-footer with a matching automobile to pull it, the trailer is designed for two-man operation, with space for a third operator to rest while off duty. Actually, however, one man can easily control any of its two transmitters and receivers from a single position.

Equipment of the mobile unit permits operation on all the amateur bands from 160 down to 2 meters. For 160, 80, 75, 40 and 20 meters, a Federal 167-B transmitter runs up to 600 watts input to a pair of 813s in parallel. Ten crystal channels plus VFO are selected from the front panel. High-level modulation of this rig is accomplished by push-pull 810s in Class B. The d.c. power supply uses Type 5557 thyratrons to vary the power input up to the full 600 watts.

The 11-, 10-, 6- and 2-meter amateur bands are covered with a Millen 90810 transmitter ending up in an 829-B running 150 watts input. Modulators for this rig are push-pull 807s in AB_2. A Meissner Signal Shifter is used as a VFO and also affords a choice of a.m. or phase-shift modulation.

Receiving equipment includes a Hallicrafters SX-71, rack mounted, and an RME VHF-152A used in conjunction with a BC-348-K, both mounted in the operating console with the Meissner VFO.

Antennas originally included two center-loaded whips plus a three-element close-spaced parasitic beam for 10 meters, both with coax cable, and a T-match adjusted for use on 10 meters. After about a month of experimenting, though, changes were made. The 75-meter center-loaded whip was retained but the other was replaced by a ¼-wave 2-meter whip. The T-match was removed and a ground-plane antenna substituted. It has interchangeable elements which permit use of either 2 or 10 meters. This antenna is raised or lowered from within the trailer to facilitate mobility.

Power is supplied by two gasoline-driven 115-volt a.c. generators housed in a separate compartment at the rear. The generator compartment is cooled by forced draft.

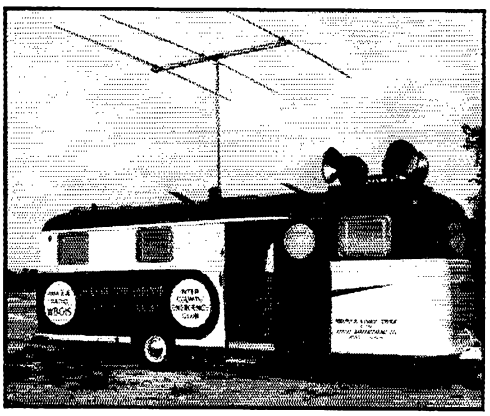
In addition to the radio gear, a 30-watt p.a. system is mounted in the forward end of the trailer, with four re-enterant trumpet speakers on the roof. These are driven by a Ward 74-GSG-88220A amplifier which is equipped with an automatic record changer.

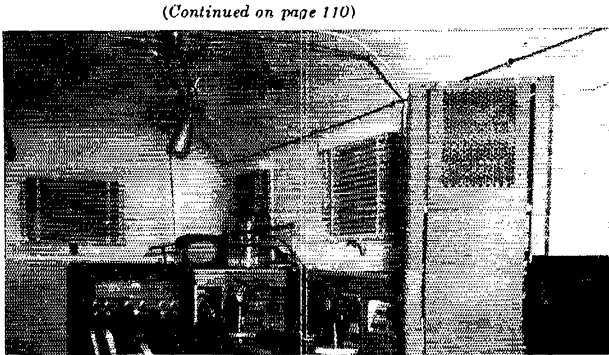
Drills

The power, versatility and elaborate structure of the mobile unit attracted amateurs to the OCD/AREC drills. The drills are held the first and third Wednesday of every month. The earlier one each month is really a series of drills by such of the 14 base sections as care to participate. The second monthly drill, however, includes all units of the six-county emergency network.

At first the drills attracted a relatively small group, but as they continued, interest increased. Currently from 150 to 170 mobile stations are taking a regular part. In addition, when the Inter-County Club realized that some amateurs were not participating because of inadequate equipment, they were invited to serve as base station relief operators or to accompany the mobile unit drivers.

(*Continued on page 110*)





(*Above*): The 27-foot trailer of the Inter-County Amateur Radio Emergency Club. (*Right*): Interior view of the trailer, showing the equipment of mobile station W8GIS.

Correspondence From Members-

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

GOOD IDEA!

423 Middlesex, Metuchen, N. J.

Editor, *QST*:

For the past few months a very useful course in code has been presented by the engineering staff of WCTC in Brunswick, N. J. One of the transmitter operators, Irv Landy, runs the show and puts out three lessons a week. Each lesson is repeated the night after it is first presented. The station remains on the air fifteen minutes extra for the lessons, which are presented at 11 P.M. EDST, Monday through Saturday. The show is presented in coöperation with the U. S. Naval Reserve, which supplies the code records. Maybe other stations can try the same thing.

— *John Aurelius*

SNAFU

415 Argonne Blvd., Winston-Salem, N. C.

Editor, *QST*:

I have been a member of the League for many years now and I have never registered a complaint about *QST* or any of the staff, but at the present I have a gripe.

After looking at the cover of the July issue my very blood boiled at the conception of what a bunch of hams would be like on Field Day. If you will look at that pussell-gutted fellow cooking the mother bird and another low-down-hound climbing the tree to rob the nest of the young you will agree with me. I don't think that any bunch of men would stoop so low as to kill the mother bird and then take the young from the nest.

Just what would the public gather from that picture?

— *W. N. Bray, W4BYA*

TWO-LETTER CALLS

1405 W. Troy Ave., Ferndale 20, Mich.

Editor, *QST*:

The transactions of the recent Board meeting were read with considerable interest, especially the recommendation to the FCC that amateurs who have been licensed 25 or more years and whose current license has run continuously for 15 years should be entitled to a two-letter call.

On October 31, 1919, I received my first operator license, No. 5722, issued by the Department of Commerce. Edward Hopponon, a close ham friend of mine, and I applied for our station licenses together, hoping to get consecutive calls. He got 8MP and I got 8AEH. *Sacre bleu!* I appealed to the RI, who was then Mr. S. W. Edwards, and was informed that I, of all people, had been "honored" with one of the first three-letter calls issued in the Eighth District! Two-letter calls were still being issued for some time after that.

If the FCC approves your suggestion, I would like to be one of the first to receive what I rightfully believe I am entitled to — a two-letter call!

— *C. W. Mallory, W8JYU*

TVI CAN BE CURED

8019 S. Dorchester Ave., Chicago, Ill.

Editor, *QST*:

In connection with the current discussions of TVI elimination, I would like to report my simple approach and its pleasant results. With only the simplest power-line filters and the standard (leaky) metal cabinet, the picture on my own TV set (which has a high-pass filter) jumped and the sound thumped. I was running 300 watts input to a single 838 triode with about 25 grid mils at 90 volts fixed bias using a VR tube; these ratings are strictly according to the book. Noting this tube was rated at zero bias for Class B audio application, I tried removing *all* grid bias with reduction of plate voltage from 1400 to 1000 and grid drive to 20 ma. Actual drive required is, of course, greatly reduced; plate current without excitation is about 35 ma. and I run 100 watts, yet my twin-lamp is almost as bright as before and my RST reports on 40 meters are practically unchanged. I have eliminated the bleeder in my power supply and retired the separate bias supply. There is a slight pattern from my exciter yet to be eliminated, but it does not show on the nearest neighbor's TV.

Now, the point I wish to make is *not* that I have discovered a revolutionary principle; it is merely that, with trivial changes in my rig, I *can* and *do* enjoy satisfactory rag-chews and net participation all evening without TVI or annoyed neighbors. No new parts or wiring changes (except grounding the grid choke) were required and I recommend every TVI-troubled ham try it.

— *Fred. W. Kinsey, W9DOQ*

PUBLICITY

14220 Gramatan Ave., Cleveland 11, Ohio

Editor, *QST*:

My experience has shown that carrying out the recent League recommendations on publicity really brings results. Upon several occasions this writer has sought and obtained publicity for business purposes. Newspaper people are in the business of collecting and publishing news, and therefor genuinely appreciate help doing their jobs. A well-prepared story, written in newspaper form and in laymen's language, is likely to evoke the comment, "This is in quite usable form." Furthermore, the better written stories are more likely to be published, more of them will be used (that is, less cutting) and as a result the end product will be more accurate.

I heartily recommend that those amateurs "handy with the pen" read and apply the information contained in the League's pamphlet entitled "Publicity."

— *James B. Bamberg, W8OPX*

4232 Hampton Ave., Western Springs, Ill.

Editor, *QST*:

I'm quite pleased with your speedy return of my WAC certificate recently and was also pleased with the nice news release you sent to my local newspaper. I had been unaware of this phase of your publicity department.

— *Robert A. Jones, W9DWD*

SLOW-SPEED CODE, ETC.

33 Pearl Hill St., Milford, Conn.

Editor, *QST*:

Thank you very much for the slow-speed code practice. Made more progress in learning code in weeks than in years previously, because it is more interesting to copy and understand solid copy.

— *Bob Caruthers*

Maquoketa, Iowa

Editor, *QST*:

Thought it was about time I was telling you how much your code practice sessions are appreciated by us newcomers. In the 3 or 4 weeks I have been studying with you, I have little trouble in copying 10 w.p.m. Sure hope there will be thousands of Novices on the air, and with your help I'm sure there will be.

— *Raymond Shields*

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441 East 18th St., Paterson, N. J.

Editor, *QST*:

At the time that I write this, it's just been a few hours since I passed my General class exam, and I'd like to express my gratitude to the staff of ARRL. The slow-speed code practice programs over WIAW taught me enough code in just one month to pass my exam. Previous to May

(*Continued on page 112*)

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

How:

This month we are favored with correspondence from a researcher on matters amateur who is undoubtedly known by you all as a shrewd appraiser of the finer points of the hobby. We are therefore delighted to find him leaving the more general aspects of hamming for a closer scrutiny and analysis of the purely DXing angle and angles thereon. His letter follows:

Kippering-on-the-Charles, Mass.

Dear Mr. Newkirk:

I have been following with interest your sporadic summations of the problems involved in working DX, and from them I have gleaned many helpful suggestions. I have just completed a new transmitter that incorporates what seem to be the most desirable features and I thought you might be interested.

On c.w., the rig has several aids for working DX, such as a continuously-variable key-click, tone and chirp control, and adjustable VFO drift (positive only). This latter feature permits going outside the band to call a DX station without requiring manual retuning back into the band. The automatic feature moves the VFO back in after the station has been raised, but before I sign. Another brand-new feature is the optional use of a balanced modulator to give two signals for "bracketing": a DX station without help, since I belong to no DX clique. The Variac will work downward as well as upward, thus permitting me to fade out conveniently on any G or W I wish to drop in a hurry.

On 'phone, the speech clipper can be used with or without filter. This latter condition gives all of the advantageous effects of overmodulation without violating the FCC rules, and it has turned out to be very useful in raising DX, although it does not seem to be too popular with some of the locals. A built-in tape recorder repeats each sentence for me automatically, and saves considerable wear and tear on the vocal cords.

I am enclosing photographs of everything but the final amplifier and plate supply, which were not available at the time, being built into a wall for obvious reasons. Thanks again for all of your helpful suggestions.

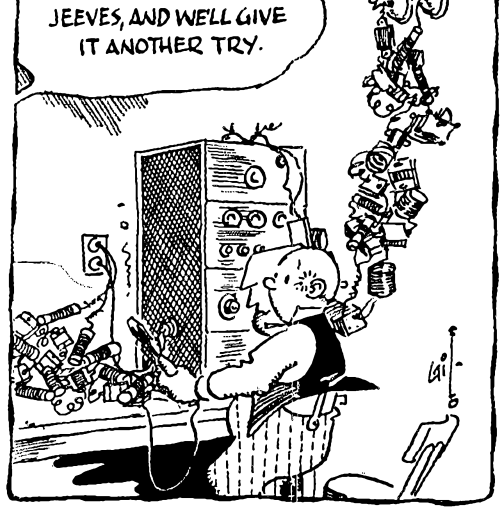
73,

Larson E. Rapp, WIOU

There you are. This rig would seem to be a very marketable item and we wish Mr. Rapp the best of luck in his future designs. We are also interested in knowing if the outfit will be available in kit form with choice of brick material. Our fireplace will be a toughie to match!

What:

With the boys on *twenty*, XE1AC took another whack at c.w. and came up with **SP1XA** (000), **FF8AB** (019), **FQ8AC** (005), **C3AB** (118), **VS6BC** (013) and **KV4AC** (044). Al tried his best for 7B4QF and 3A2AC but couldn't spot himself in the right place at the right time, it seemed . _ . _ . _ We had to QSO W7OY to rate a line from him. Eddie is up to 196 with such recent additions as **VT1AF** (009), **FR7ZA** (020), **AC3PT** (048), **AC3SQ** (105) and VP5BH. He's still trying to score with **OY5EL** (060), LB5ZC, **ZD6EF** (051) and MP4-BAF. By the way, AC3PT is just catching on to the code and as soon as he can master it he will treat Ws to all the QSOs they want, using the specified frequency. W7OY received a 3A2AF QSL which stated "only W QSO" . _ . _ . _ VK9XK is a lighthouse maintenance man and gets a chance to be some fancy DX during his island travels. This from W6GPB, who recently tallied his 150th country. Joe finds that UAØKKB just loves to try his 'phone during a c.w. contact and that VQ8CB isn't overenthused about working Ws . _ . _ . _ The hot months saw W5MPG still plugging away on **XU6F** (053), **VSs 1CZ** (14,095) and **6AE** (095) while W8OPG's list featured ZC4ZX raised with a 6L6 final . _ . _ . _ WØFID comes shining through with **VQ4CM** (070), **IS1AHK** (035), **MD2DW** (035), **EA8BD** (047), **KX6AB** (058), **VR2CD** (081), TG9CR, DU1VVS, TF3MB, KG6s AAD FAB, JAs 2KW 3AD, KR6EY and VS6CB. Dick reports QSLs from UAØKFB, SP1JF, HA4SA, VS1EJ, CX1FY and VP5BM via the bureau with FA8DA and VR2CD cards arriving direct in 5 and 8 days, respectively . _ . _ . _ W9NN's vertical pounced upon VP2KM, CP5EK, UQ2AN and VR2BW while W8DAW made the grade with 7B4QF . _ . _ . _ **UG6AB** (020) and KW6AR answered W9JTM and W2JBL wrapped up **FKS8AL** (012), **MD2JB** (066), **VP6SD** (020) and **UB5DL** (008). George has pitted himself against a fresh onslaught of TV-eye . _ . _ . _ One **5S5EE** (080) intrigued W1BFT. *Sounds like a syncopated* sideswiper solo. Carl has more faith in MP4BBD on Bahrein . _ . _ . _ DX at KR6GL goes like HS1VR, FO8AC, SU1AD, VS1EC, VU2NB, DU6RG, VR4AB and C2AP. Art has been using an ART-13 rig with BC-348 inhaler and reports hearing and working UAØs and UA9s by the score. KR6GL has the logs of W2HAE/VS6 and DU1NR should anyone need the pasteboards. He further writes, "In the Philippines, American nationals cannot be licensed though many individual attempts have been made to reason with the authorities. DU nationals can only QSO American or American Military licensed stations." . _ . _ . _ "Not enough news to fill the head of a pin," says W5FXN. Jim is wondering about a **9B3AA** (090) and has worked **YU3AC** (103), **3V8AN** (015), **EA6AM** (103) and **KH6KL/KP6** (100) . _ . _ . _ XYL W1LYR tried the DX tangent on 4X4BD and W6AM tells us of **CW1OX** (065) on Formosa . _ . _ . _ Another Call Book-like list of contacts is furnished by W3JYS. By continents starting with *Asia*: JAs 2CG 2DS 2OM, **VU2JG** (057), **4X4s AS** (108) **BA** (086) **CW** (082) **DC** (072), **AP2N** (090), **KR6CA** (030), **UA9OA** (054) and two aforementioned MP4s. *Africa*: **3V8AJ** (087), **CR4s AH** (045) **AI** (081), **ZD2DCP** (092), **SU1GM** (030), **EK1BT** (036), an FQ8 and two MD2s. *Oceania*: **FO8AG** (100), **ZK1BC** (150), **KG6s FAA** (110) **HL** (087) and **HZ** (120). *Europe*: **UB5KAO**



* *New Mailing Address:* Effective immediately, please mail all reports of DX activity to DX Editor Newkirk's new QTH, 5833 North Kenmore Ave., Chicago, Ill.

(035), UP2KBC (030), LZ1DX (044), MB9BJ (032), GD3FBS (006), CT2AA (100), I1AHR/M1 (076) and 3A2AF (088). *Americas*: FY7YB (025), YS1FM (040) and YN3AG (035). Lee happened to be doing some work on the shack at the time and so missed out on 7B4QF. Woe unto the next Andorran entry to show up! . . . . . VS1CZ (061), 4X4BX (035), CT2BO (001), FG7XA (021), MD2AM (380), OA8A (082) and VP3VN (020) replied to W5DRW's 32V2 . . . . . The No. Calif. DX Club's *DXer* recommends EA9s AB (010) AC (100), VT1AC (020), FK3DR (040), VR7A (015), LB5XA (020–040), ZB1BS (065) and 9S4AR (025 t8) . . . . . The So. Calif. DX Club's *Bulletin* chimes in with MD5PM (047), FW8AA (040), ZD1SS (035), UM8KAA (060), LX1AS (078) and VR1G who sometimes dits and dashes on the high end.

The *twenty 'phone* connoisseurs appear to be in form. Two-way A3 contacts with VR1B (111), JA6IJ (201), KB6AO (254), KJ6AQ (236), KM6AV (225), KC6AA (224), KW6AU (230), EK1WX (371), EA6AR (400), EA9AI (318), VS6BO (207) and UH8KAA (001) were logged at XE1AC . . . . . W6UQQ caught up with XZ2SY while W4HA was making short work of SP5SG, ZC1AL, KH6KY/KM6, KH6QL/KC6 and HC8GI . . . . . W8DAW heard from CN8EM regarding one 7B4UM (250) and W1JCX raised OY3FP (275) in the Faeroes . . . . . At W5MPG there was VK9YT (125) and ZK2AA (340) while AC3PT worked W7OY when using 14,190 kc. . . . . The *Bulletin* hints about W2UWC/CR8 (333), VR1G and also MP4KAC (320) in Kuwait.

Among the few reports for *forty* is included the following from W3DLI: FP8BX (7030), FA8RJ (7020), TI8JR (7015), CX1FY (7024), FK8AB (7002) and VP6FM. This makes 41 on the band for Walter and he further notes that VK5XK has left picturesque Kangaroo Island for a new GPO assignment . . . . . One VR7A was encountered by W4AYV during a CD Party and our friend the *DXer* bespeaks of VK1JW (7005) on Macquarie Isle . . . . . W2OLU worked HC2ME (7023), PY2BBO (7015) and OK1NB (7015) . . . . . W2RDK is about to give 7 Mc. another big go from a fat new QTH.

Eighty runs about the same. W4BRB lists as possibilities in the coming season VQ4CM (3519), CP5EK and OQ5LL. OY3IGO has been reported worked by Belgians and VE1ZZ worked CE3AG and heard CE4AD. Hisself, W4BRB nailed down KS4AQ (3516), YN1AA (3521) and FG7XA (3513). The latter was No. 92 for Gene — just eight to go! He is wondering where the Oceania boys are hanging out these days . . . . . VE1JD slides across the pond with regularity and his ledger includes Gs numbering 14, PAØs YJ (3524), XYZ (3510), HB9KO (3509), DL6HY (3506), FA8DA (3501), KS4AQ (3516), CE3AG (3516) and GW3GXL (3520) . . . . . Liz's neighbor VE1QW does okay, too, with several G contacts, GM3DZB, OZ5AB, OZ7KY, DLs 1WP 3FG and 6KG. What's more, these were on *seventy-five*. Eldrid has confirmed 22 of 44 75-meter countries worked this past year . . . . . Back on A1, W9BQM received a communication from ZL4GA reading, "This is the first time a W has been contacted by ZLs during the annual QRP 5-watt-input contest and not only can you claim a first but the distinction of being the only one that has done so." W6s note: we W9s still bear watching!

Where:

OE13DX tells W2KW that the new OE13 bureau answers to APO 168, care of PM, New York, N. Y. The old APO 777A specification is no longer used . . . . . The CAV (Czechoslovakia) announces discontinuance of individual station address listings and in the future QSLs should be sent via their bureau, P. O. Box 69, Praha I, Czechoslovakia.

ARALV officer Oscar Esparza, CO6OK, is widely worked on 10 and 20, 'phone or c.w. The rig has 6L6s modulating 807s and doublet antennas are favored.

CN8EM	Navy 214, % FPO, New York, N. Y.
CN8EQ	W. C. Dunn, W3LFK, CTC USNR, Box B, Navy 214, % FPO, New York, N. Y.
CR9AF	João Pires Antas, Oficinas Navais, Macao, Asia
CW1OX	Chang, Post Box 113, Taipeh, Formosa
CW1TO	Box 113, Taipeh, Formosa
HR1AT	Oscar Alvarado Trochez, P. O. Box 244, Tegucigalpa D. C., Honduras, C. A.
HR1DF	Oscar Danilo Funes, P. O. Box 319, Tegucigalpa D. C., Honduras, C. A.
KB6AT	% CAA, Canton Island
MP4BBD	Roy J. Fleming, Box 613, Awali, Bahrein Island, Persian Gulf
SV1SP	Geo. N. Zarifis, 10 St. Fanourion St., Pangrati, Athens, Greece
TA3GVU	(QSL to W4GVU)
VK9XK	(QSL to VK3XK)
VP9AG	Palm Spring House, Middle Road, Paget, Bermuda
VS1AY	Stanley Woolmer, G3HNF, 161, The Avenue, Tottenham N. 17, London, England
XU6F	13 Yik Yam St., Hong Kong, Asia
YU3AC	P. O. Box 180, Ljubljana, Yugoslavia
ZC4KN	K. E. White, Box 451, Nicosia, Cyprus
ZD6NJC	(QSL to ZD6HJ)
3A2AC	Via REF
3A2AF	(QSL to W6SAI)
7B4QF	(QSL to W6SAI, ON4QF, or via ARRL)

W1s ODW RWS, W3s JYS LPF, W5FXN, W6s AM GPB, W9s CFT RBI, WØs AIH FID, CN8EG, HR1DF, KR6GL and the No. Calif. DX Club's *DXer* comprised the Gleaning Committee on this run.

Tidbits:

Here's a chance for another award in the DXing line. The ARALV (Cuba) offers a certificate to any station submitting QSLs confirming contacts with any seven of the eight Cuban call areas to P. O. Box 136, Santa Clara, Cuba. CM9 (experimental prefix) and CM4 are not considered, there being but one licensee for the latter on the Isle of Pines. An arrangement is being devised whereby you may merely present the seven QSLs to a local radio club near you and draw your diploma. By the way, CO-prefixed stations indicate Class A licenses good for c.w. and 'phone on all amateur bands available and CM stations, Class B, may operate

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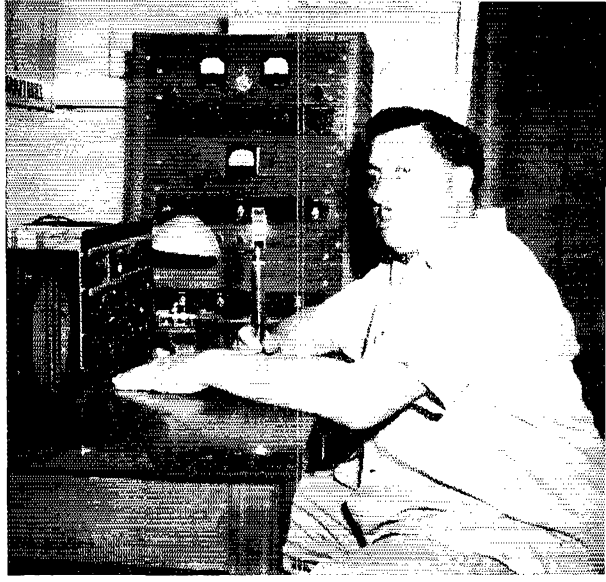
HB9IH runs a neat installation at Burgdorf and is frequently worked or heard whenever the bands are open to Europe.



KG4AK helps to keep Guantanamo Bay widely heard on all DX bands. Equipment employed includes a 400-watt Globe King rig, an AR-88 receiver, and folded dipoles on four bands. Operator Dom Constantino is a chief electronic technician in the Navy.

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c.w. on all bands but 'phone only on 40 meters . . . . CN8EG finds that EA8BF is ex-EA8MC and CN8ES is operated by W4RCG . . . . In several years of operating VS1AY, G3HNF knocked off 46 of the 48 states and 125 countries on voice. Stan will use a 30-watt 'phone rig in England and stands ready with his VS log in case anyone still is shy a card. ". . . I shall get back to Singapore in August of 1952. The only bands of any use for 'phone over there are 14 and 28 Mc.; the l.f. bands have too high a noise level. Unfortunately, it was not too easy to work into Eastern Canada and the States from there even with a good beam as the path is almost due North and we are blocked in that direction by a large hill with a very high tin content which appears to act as a screen. A few months ago a ham club was formed in Singapore (the first since the war) and when I left it was in flourishing condition . . ." . . . . LU8BF tipped off W9ABA that the Argentine award "DX" was strictly for the year 1950. We presume that it cannot be applied for now even though 1950 contacts qualifying for same are concerned . . . . . W1EYP is working some of the DX countries he visited years ago as a sea op and has a shiny new DXCC diploma. Paul paid personal compliments to ZS2J, ZS5JC, CR7IA, VQ8AB and TF3EA among the DX now active and also operated KA1RC in Cavite around 1930. He does his DXing with 20 watts to an 807 and his skywire is a low tuned doublet . . . . . VP4LZ is manned at some time or other by a half dozen flight ops of PAA including W1EEC. John estimates they are able to keep the station on the air about 30 per cent of the time and 'phone-c.w. operation on 20, 40 and 80 meters is the rule. The QSL policy is adhered to 100 per cent and "The QSL QTH via PY1AJ is a good deal for us. In Trinidad we keep the rig on the air. In Rio we work on QSLs. In the past two weeks we have sent over 300 after a long delay in obtaining stock on an Illinois order. Am going to try to get over to Guadeloupe for a week. If all goes well it should be the 2nd or 3rd week of September." . . . . A letter to W7HLU from FO8AC explains the latter's infrequent activity of late. Georges has to hit the QSL backlog with a vengeance in order to escape W pesterings on 20. But we gather he does intend to get the situation cleared up. . . . . W2FLP relays word from VK2YG that VK1YG QSOs from Heard will soon all be QSLd . . . . Add certificates: The Brisbane DX Club, founded in 1949, consists of twelve active members and any DX station that contacts any five of the twelve is awarded a very fine certificate. "The DX station operator who wishes to gain this award must ascertain whether the Brisbane station is a member and, if answered in the affirmative, the DX station will obtain the Christian name of the Brisbane station and note this in his log." After gathering five such names they are passed back to the fifth station along with dates of contact. The QSL card of the DX station must be received by each of the five Brisbane stations before the award can be issued . . . . . XE1AC was told that a legit PX1A was to fire up in Andorra with EA3FL at the helm. Operation was to include both 'phone and c.w. on 20 and 40 meters and the URE (Spain) QSL bureau was to handle the cards. The reason for the unusual call letters unknown . . . . . Latest So. Calif. DX Club roster of officers shows W6ADP, Pres.; W6BUD, Veep; W6NTR, Treas.; W6SYG, Ed.; W6AOA, Rec. Secy.; W6BXL, Corr. Secy.; W6NGA, Dir.; W6TIP, Dir.; W6AM, Board Chairman . . . . . "I work mostly on 20 meters but if any W stations are particularly interested I would be glad to work on the lower frequencies, including 80 meters," writes ZC1AL. This station, recently reactivated, assures 100 per cent QSL in answer to cards sent via ARRL only . . . . . Succumbing to the Call of the Islands, W7EYS has adopted the call KH6ACZ and is busy putting the finishing touches on an elaborate shack in Lanakai. "With KH6BA just over the hill, KH6CT just down the beach and KH6YL up the beach, I'm in a hot spot. Who do I see for a handicap of 200?" Bob will need no handicap advantage what with a record of 143 'phone countries in the Washington log. He's firing up with a bunch of anti-TVI measures installed, too, although television hasn't yet barged in upon that scene . . . . . W5FNA hears that the wheels have been set in motion for another try at official licensing in Curacao. Also, PJ5FN married a Venezuelan YL and has moved permanently to Venezuela. At this writing Ws still cannot QSO PJs and we look forward to a few constructive changes along that line . . . . . W9KOK has AC3SQ QSLs on hand for many KH6s and W6-W7s to be shipped forthwith upon his receipt of their cards . . . . . W5ASG and VE3AUJ tie in with HC8GI info. He is permanently located in the Galapagos as previously stated and runs a 25-watt 'phone-only rig on 14,168, 14,192, 14,204, 14,268, 28,524 and 29,000 kc., rock-bound. Bud promises a QSL per QSO but requests patience; frequently there is three months between mailboats. He still intends to try for the Cocos, possibly next year . . . . . Failure of FM8AD to provide logs forced W4AZK to relinquish his task as U.S.A. QSL manager for this Martinique stalwart. Other rare DX stations note: Dave has the time and will be glad to handle someone's QSL department provided he is kept up to date in the log department . . . . . Ex-KM6AQ now operates as W6LEZ and can be reached for QSL of KM6AQ-KM6AN contacts at 668 Florence St., Palm City, Calif. . . . . According to QSL manager VP3YG, the only legit British Guiana licensees are VP3s CW DG FD FJ GT HA HAG LF RG TF TY VN and YG. Late deletions from the list down there are VP3s ACS BCR BG BSM HL JM MCB and TR, all no longer active. Desmond would like a line on ex-VP3TR whom he presumes to be somewhere in California. VP3YG is most active on 14-Mc. 'phone . . . . . Lots of good info in the No. Calif. DX Club's *DXer*. Those still short a VR6AA card might have some luck via ZL2FR and similar VR1F proceedings through VK2ADV. W6SAI, G6ZO and ON4QF have been mentioned in the same breath with possible Vatican City operation. VK1s DC, KJ and NL on Heard make it a practice to ignore

(*Continued on page 114*)

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Sgt. Guy Kane of DL4FS/3A2AB needs no build-up to the DX fraternity. This is Guy's home set-up which finds considerable use between his jaunts to 3A2 ("Furlough in Monaco," February, 1951, *QST*).

September 1951

VE/W Contest

September 29th–30th

No, this popular "across the border" contest has not been forgotten. Its place on the contest calendar has simply been moved from the bottom to the top which should result in a decided increase in participation.

This is the opportunity to get a real check on performance of that new rig or antenna prior to the SS Contest and other winter operating activities.

Clear the contest dates with the XYL/YL now and get ready for a week end of good fun. The rules, detailed below, are unchanged from last year. Operating time is limited to provide reasonable time to eat and sleep.

Certificates of Merit will be awarded to the leader of each ARRL section. Give your station a workout and enjoy yourself in the process. CU in the 1951 VE/W Contest!

Rules

1) Any station located in any ARRL section as listed in *QST* (page 6) is eligible to enter.

2) All contacts must be made during the contest period 6:00 P.M. EST September 29th to 11:59 P.M. EST September 30th, with a total of no more than 20 hours operating time for each entry. Times on and off the air must be clearly shown in the contest log.

3) Message preambles such as the following must be exchanged and be fully reported in the log entered: (1) number of contact; (2) your call; (3) RST report given; (4) location: (5) ARRL section; (6) time sent; (7) date sent. *Example:* NR 1 W3KMN 569 Silver Spring Md Del DC 6R02P Sept 29.

4) One point may be counted for each preamble sent and acknowledged. One point may be counted for each preamble received. No more than two contest points may be counted for contacts with any one station, regardless of frequency bands in use. VE stations will multiply the total points by the number of W ARRL sections worked. W stations will multiply the total points by the number of VE ARRL sections worked and also by 8, there being eight times as many W sections as VE. Stations using a power input of less than 30 watts will receive an additional multiplier of 2, and stations using a power of less than 100 watts will receive one of 1.5. The final score consists of "total points" multiplied by "sections" (times 8 in case of W stations) multiplied by the "power multiplier."

5) Each entry must be accompanied by the following certification: "I hereby state that in this contest I have not operated my transmitter outside the frequency bands as specified by governmental regulation, and also that the log submitted is correct and true."

6) All entries shall be sent to the Montreal Amateur Radio Club, P.O. Box 7, Station H, Montreal, Canada, and must be postmarked not later than midnight October 20, 1951.

A says that a strong unmodulated carrier takes up more spectrum space in a ham band than does a weaker carrier. B says it isn't so, but A argues that the receiver S-meter still indicates when farther detuned from the strong signal than from the weak one. Who is right?

(Turn to page 116 for the answer)

V.H.F. QSO Party

September 22nd–23rd

Certificates for Leaders

ARRL is pleased to announce another of its popular V.H.F. QSO Parties. All amateurs who can work any band or bands above 50 Mc. are invited to participate in this activity. The Party will be held during a 32-hour period starting at 2:00 P.M. local standard time, Saturday, September 22nd, and ending at midnight local standard time, Sunday, September 23rd. It will provide opportunities to work new v.h.f. DX and renew old friendships during a week end of concentrated activity on the bands above 50 Mc.

How To Take Part

Call "CQ contest" to get in touch with other contestants. Exchanging signal-strength and readability reports is suggested but not required. When you work another v.h.f. amateur, you must give him the name of your ARRL section. Page 6 of this issue is a register of the League field-organization set-up, and serves as a convenient section check-off list. You compete only with amateurs in your own ARRL section for the certificate award. ARRL staff members are not eligible for awards.

Count 1 point for successfully-confirmed two-way exchanges of section information on 2 or 6 meters. A one-way exchange, confirmed, does *not* count. When two-way exchanges are accomplished with your transmitter on the 220-, 420-, 1215-Mc. or higher band, you may record 5 *points* per QSO.

Multiplier

The sum of station points earned is multiplied by a section multiplier. Each time a new section is worked two-way it adds one to the multiplier. *The multiplier grows by one if you rework this same section on another band.* (Scoring differs in this respect from other ARRL competitions to encourage everyone to make use of *as many* v.h.f. bands as possible.) A simple tabulation with points and section list is all that is required. A card to Headquarters will bring the simple form on which to report; or your own similar tabulation will be accepted.

Rules

1) Name-of-section exchanges must be acknowledged by both operators before either may claim the point(s).

2) All claimed contacts must fall in the contest period and must be on authorized amateur frequencies above 50 Mc., using permitted modes of operation.

3) Fixed-, portable- or mobile-station operation *under one call*, from one location only, is permitted.

4) The band your transmitter is on determines whether a QSO counts 1 or 5 points. Cross-band work shall not count.

5) A "contestant" is a single operator working without the help of any other person. Results may be presented with names of all participating persons, for listing, but only single-operator scores will be considered for certificates.

(Continued on page 114)

Hints and Kinks For the Experimenter

NOISE SUPPRESSION IN MOBILE INSTALLATIONS

In most cases the installation of simple suppressors is not enough when ham-band converters are to be used with the car radio. The search for offending points in the electrical system can be speeded up greatly by a systematic approach, rather than going about it hit-or-miss. The following procedure is the easy way to do it:

1) Fire up the car radio and connect a length of coaxial cable long enough to reach to all parts of the ignition system from the antenna terminal. Attach a "pee-wee" clip to the inner conductor of the coax. Ground the braid to the chassis.

2) Clip the pee-wee onto any suspected cable or wire or other object on the inside of the fire wall. If noise comes out of the 'speaker, bond or by-pass the offender as required.

3) Repeat the above process on the engine side of the fire wall.

4) Connect the converter to the car radio, and the coaxial cable to the converter. Repeat (2) and (3) above.

When finished, a noise limiter will be practically unnecessary. — *Rod Macdonald, VE2FO*

CAPACITANCE OF BC-375-E TUNING CONDENSERS

The following tabulation, gleaned from an obsolete U. S. Army manual, lists the capacitance ranges of various condensers found in the tuning units of the BC-375-E. The part number can be found stamped on the end plate of the condenser. The condensers are listed according to the number of the tuning unit in which they are found. Capacitances are in μμfd.

T.U.	*Part No.*	*Max.*	*Min.*
5A	P-7761569P2	35	20
	T-7660443P6	156	20
6A	P-7761569P3	77	15
	T-7660443P1	116	19
7A	P-7761569P4	111	23
	T-7660443P2	116	19
8A	P-7761569P5	66	14
	T-7660443P7	81	15
9A	P-7761569P6	77	15
	T-7660443P3	116	19
10A	P-7761569P7	62	14
	T-7660443P4	116	19

In addition, each tuning unit contains two identical neutralizing condensers. The range of these is from 26 μμfd. to 19 μμfd. — *W. E. McCormick, W5KMA*

TIPS ON PAINTING ANTENNA MASTS

Now is the time to repaint that antenna mast. It will add years to the life of the mast, and to your own when the neighbors find out that a mast can really be a thing of beauty!

Before starting the job, the surface should be prepared. Blistered and cracked paint should be removed to provide a smooth, clean surface. Then, when selecting the paint, avoid the cheaper varieties. In most cases they will merely deteriorate rapidly, cracking, blistering and chalking, making it necessary to do the whole job over again in a short time. A marine paint such as is used on boats is ideal for the purpose, but outside house paint will also do the trick.

Most masts and towers are painted white, and while white paints all look pretty much alike, there are important differences to keep in mind when selecting the paint for the job. The white can be either a lead base or zinc oxide. The lead-base paint will perhaps last a bit longer, but will darken with age. The zinc-base paint is whiter, but is more brittle than the lead. An ideal paint for the purpose is a mixture of 60 per cent titanium oxide and 40 per cent zinc oxide in a pure linseed oil base. This mixture provides flexibility plus tremendous tinting strength and whiteness. This means good coverage with one coat and longer lasting qualities. Such a formula can be purchased ready-mixed.

To increase the lasting quality of the paint still further a good grade of outside varnish such as Valspar should be added to the mixture. Use one cup of varnish per pint of paint.

When thinning your paint it is best to use linseed oil instead of turpentine. The linseed oil makes for toughness, resilience, and binding. Turpentine will wash the binder from the paint and make it chalky and flake from the surface. — *Louis H. Hippe, W6APQ*

CHECKING CRYSTALS FOR OVERTONE ACTIVITY

In the course of doing some work with overtone crystal oscillators, still another use for the grid-dip oscillator came to light. Merely connect a few turns of wire to the pins of the crystal holder, and then couple them closely to the coil of the grid-dip meter. If the crystal being checked has possibilities of use in an overtone circuit, the meter will dip as the oscillator is tuned through the odd-harmonic frequencies of the fundamental.

Some surprising things will result. For instance, one 3497.5-kc. crystal showed activity on the *twenty-third* overtone, and 13th and 15th overtone activity with ordinary crystals seems to be quite common. — *Harry T. Simms, W4HBD*

(Continued on page 116)

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
JOHN E. CANN, W1RWS, Asst. Comm. Mgr., C.W.
GEORGE HART, W1NJM, Natl. Emerg. Coördinator

J. A. MOSKEY, W1JMY, Deputy Comm. Mgr.
L. G. McCOY, W1ICP, Asst. Comm. Mgr., 'Phone
LILLIAN M. SALTER, Administrative Aide

Dispersed Emergency Power. The operating plans for civil defense often include consideration of equipment pools as well as operator pools of amateurs available for manning mobiles and key posts with more than one operator. It should be pointed out, when considering equipment, that reasonable amounts as a pool in central public quarters or club stations may be a good thing, but let's not put all our eggs in one basket. A serious situation would develop in an emergency if this central storage point burned down, or was unavailable because of sabotage or enemy action. Several alternative points of dispersal of gas-powered and battery-powered and radio equipment are desirable. It's all to the good, as we see it, if a lot of the amateur operators bending efforts to public service aim at individual emergency ability so the public effort is backed up by some true individual dispersal. From the operating end, let us add, there are numerous advantages in having an independent small rig around the station. In our personal case, one such running 25 watts from batteries makes it possible to report into the local nets — an adequate test for the operating condition of the set three or four times a week (!) — and leaves the big rig free to go on twenty meters or other bands.

Mobile. Sometime ago ARRL's Board recommended that mobiles operate in the frequency segment 29.6 to 29.7 Mc. It is requested that fixed stations running high power try to give mobile operators in this sector a "break" by placing their own operations in other parts of the band.

To every operator with a *mobile:* Be sure to register your mobile equipment (if not already done) with the nearest ARRL Emergency Coördinator. He will be happy to give you on receipt of such registration a pocket card identifying your *Official Mobile Unit*, also an ARRL *Emergency Radio Unit* placard for your unit or for car use.

On Learning To Copy. W1AW Monday-through-Friday practice transmissions probably assist as many new hams to get their licenses as all individual-practice efforts combined. All persons who have an interest in acquiring FCC authorizations are cordially invited to utilize the 9:30–10:30 P.M. EDST practice periods sent simultaneously on all W1AW frequencies for initial practice or to become certified in the ARRL Code Proficiency Program.

Attention is invited to the fact that the Official Bulletin transmissions, also sent by tape on all frequencies at 8 P.M. and again at midnight EDST, are nearly as useful for practice work as the hour of practice at successively higher speeds. In some respects listening to these faster transmissions is preferable. Correspondence with those who aspire to become new hams would indicate an illusion that *only* "solid" copy at a slow speed can help! Not so. Besides taking down the letters that can be copied "solid" at slowest speeds, one should also attempt to pick out and write down single characters out of transmissions beyond the speed one can copy. This is the way to cultivate the needed ability to pass over several characters that are not immediately identified — coming up with another successfully-copied character as quickly as possible. Gradually, as one's receiving speed advances, there will be fewer and fewer intermediate characters that are missed. First the shorter words may be recognized. Then comes the thrill of making out intelligible ideas. It's highly fascinating to *copy down* and be a real communicator. This is to encourage all concerned to get more from learning by listening by *not* confining practice to the lowest-speed ranges we transmit.

Keeping Notes During QSOs. This column has previously suggested the advantages, from an operating standpoint, of having clear notes of questions and details pertinent to both voice and c.w. contacts. W9ALI has found it convenient to use 6 by 8 mimeo forms for taking rough notes during each QSO. The useful data can be transferred neatly to "remarks" or left pages of one's log right after QSO, making for neater log keeping than where too much is written in. The note sheets can themselves be filed, but we want to make it clear that unless all provisions of Sec. 12.136 (FCC regs) are met the sheets cannot in themselves be taken as a log. For those who want to try the idea, here is the QSO form that W9ALI uses:

Date.....Time Start.....End.....

Called.....Called By.....Name.....

Reports: Rec'd RST.....Sent RST.....

Remarks.....[10 ruled lines, 5/8" spacing].....

.....

The forms with complete copy of notes from QSOs may be filed or discarded as informal supplementary information is added to one's

official log in condensed summary or detailed quotations. Individual variations of the form can suit any need or taste. It is a great help in conducting either voice or c.w. contacts to have a complete record of information received, outline ideas for reply, etc. Speaking from personal experience, many log pages (and backs of them) have been defaced in the interests of making the radio contacts (rather than the neatness of the record) more perfect. Lacking easy mimeographing facilities available to some, running record of QSOs might be noted in stenographer's notebooks, of course, and a dated series of these can supplement the necessarily more concise official logbook information.

— *F. E. H.*

FREQUENCY MEASURING TEST, SEPTEMBER 13TH

All amateurs are invited to try their hand at frequency measuring. W1AW will transmit signals for the purpose of frequency measurement starting at 9:30 P.M. EST (6:30 P.M. PST), Thursday, September 13th. The signals will consist of dashes interspersed with station identification. These will follow a general message sent to help listeners to locate the signals before the measurement transmission starts. The approximate frequencies used will be 3601, 7145 and 14,006 kc. About 4½ minutes will be allowed for measuring each frequency, with long dashes for measurement starting about 9:36 P.M. It is suggested that frequencies be measured *in the order listed.* Transmissions will be found within 5 or 10 kc. of the suggested frequencies.

At 12:30 A.M. EST, September 14th (9:30 P.M. PST September 13th), W1AW will transmit a second series of signals for the Frequency Measuring Test. Approximate frequencies used will be 3511, 7284 and 14,130 kc.

Individual reports on results will be sent to all amateurs who take part and submit results. Copies of this report are sent SCMs also, so eligibility for OO appointments is known. When the average accuracy reported shows error of less than 71.43 parts per million, or falls between limits of 71.43 and 357.15 parts per million, the participants will become eligible for appointment by SCMs as Class I or Class II official observers, respectively.

This ARRL Frequency Measuring Test will be used to aid qualification of ARRL members as Class I and Class II observers. Present observers *not* demonstrating the requisite average accuracy will be reclassified appropriately until they demonstrate the above-stated minimum required accuracy for these classes of appointment. Class I and Class II OOs must participate in at least two Frequency Measuring Tests each year to hold such appointments. SCMs (see address, page 6) are open for initial applications for Class III and IV observer posts, good receiving equipment for 'phone and c.w. bands being the main requirement. *All* observers must make use of the coöperative notice (mail) forms provided by ARRL, reporting activity monthly through SCMs, to warrant continued holding of official observer appointment.

QST To Report Results

Any amateur may submit frequency measurements on one or all frequencies listed above. No entry consisting of a single measurement will be considered eligible for the *QST* listing of the *top results* in this FMT; at least *two* readings and preferably more should be submitted to warrant *QST* mention. Order of listing will be based on the over-all *average* accuracy, as compared with readings submitted by an independent professional frequency-measuring organization.

W1AW OPERATING SCHEDULE

From September 1st through October 31st W1AW will operate on the same frequencies and at the same times as indicated in the summer schedule announced on page 59 of July *QST*. The general contact schedule also will remain the same. The fall operating schedule will be announced in October *QST*.

MEET THE SCMs

Joseph E. Roden, W7MQ, who began his second term as SCM of Oregon on March 1st of this year, obtained his first license in 1927 after a seven-year interest in amateur radio. Besides his present call he also has held the calls W6DVC and W7AGG.

A former EC and present ORS and OPS appointee, he also is a participant in ARRL Sweepstakes, Field Day and LO-Nite activities, and conducts code classes for the Pendleton Amateur Radio Club, of which he is a charter member as well as a past-president and past-secretary. He was awarded a Public Service certificate for his work during the Northwest storm emergency of January, 1950; also holds WAS and Code Proficiency (30 w.p.m.), certificates. At present he is Disaster Chairman for the American Red Cross for Umatilla County, Oregon.

Equipment at W7MQ, in a basement room, includes a BC-610 transmitter, for operation on all bands, and SX-28A and Command series receivers. Antennas used are an 80-meter doublet fed with heavy duty 75-ohm Twin-Lead transmission line and a 10-meter doublet. In addition, Roden has several 6-meter transceivers and a 115-volt 60-cycle gasoline-driven generator capable of 2500 watts output. He also has an all-band emergency-powered rig using an 807 final and a home-built 75-meter mobile in his car.

On April 29th of this year SCM Roden was named Oregon's most outstanding amateur and was presented with a cup by the Oregonian Amateur Radio Society. The selection was based on ability, activity, operating technique, and achievement in the radio field. His XYL holds the call W7GPO.

Joe's other hobbies are 16-mm. movies and gardening. His favorite sports are baseball and basketball. He owns and operates a garage and service station, and specializes in two-way radio maintenance and repair.

A.R.R.L. ACTIVITIES CALENDAR

Sept. 8th: CP Qualifying Run — W6OWP
Sept. 13th: Frequency Measuring Test
Sept. 14th: CP Qualifying Run — W1AW, WØTQD
Sept. 22nd-23rd: V.H.F. Contest
Oct. 7th: CP Qualifying Run — W6OWP
Oct. 13th: Simulated Emergency Test
Oct. 17th: CP Qualifying Run — W1AW, WØTQD
Oct. 20th-21st: CD QSO Party (c.w.)
Oct. 27th-28th: CD QSO Party ('phone)
Nov. 5th: CP Qualifying Run — W6OWP
Nov. 17th-18th, 24th-25th: Sweepstakes Contest
Nov. 20th: CP Qualifying Run — W1AW, WØTQD
Dec. 7th: CP Qualifying Run — W6OWP
Dec. 7th-10th, 14th-16th: 10-Meter WAS Party
Dec. 19th: CP Qualifying Run — W1AW, WØTQD

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH 239	WØYXO....232	W2BXA....227
W8HGW.....238	W6VFR....231	W3CPV....226
W3BES.....232	W6ENV....231	W3GHD....226
	G2PL.....229	

RADIOTELEPHONE

W1FH.....207	PY2CK.....199	W1JCX... 183
LU6AJ.....201	XE1AC.....198	W2BXA....182
VQ4ERR.....201	W8HGW....194	W6DI.....181
	W9RBI.....186	

From June 15 to July 15, 1951, DXCC certificates and endorsements based on postwar contacts with 100-or-more countries have been issued to the amateurs listed below.

NEW MEMBERS

ZS2CR.....140	VO3X.....107	I1UV.....102
W6KYG.....118	ZS5FS.....106	W1FPS.....101
LA2B.....112	G8QW.....105	KH6EL.....101
W6AUT.....112	W4IPR.....104	W6YK.....100
W3JYS.....111	HB9HC....103	G4QK.....100
KZ5KS.....108	CT1SQ.....103	W9KXK....100
	I1ALU.....102	

RADIOTELEPHONE

LU4DD.....135	XZ2SY.....102	W9FDX....100
G8QW.....104	W8DMD ..102	F9RM.....100
W1JYQ 103	G2VJ.....100	TA3GVU...100

ENDORSEMENTS

W2QKS.....222	HB9EU....171	ZE2JN.....134
W6SN.....222	W6EHV....171	W1EOB....123
W6DZZ.....211	W4RBQ....160	VE2BV.....123
W5ASG.....204	W4AZK....151	SM5KX....121
VK2ACX....200	4X4RE.....151	PAØLR.....121
W2QHH.....200	W5CGC....151	W3MZE....120
VE4RO.....200	ZS6A.....151	F8SK.....120
HB9J.....190	W1ATE....143	G3LP.....120
G6QB.....183	W9HUZ....142	VE1PA.....116
W8HFE.....180	IS1AHK....140	LA5S.....115
ZS6BW.....173	W1TX.....140	VE3SR.....111
W5EGK.....172	W9GRV....140	W3KEW...110

RADIOTELEPHONE

W1NWO.....180	W1ATE....143	EA2CA.....131
G2PL.....171	W7HIA.....140	EA2CQ.....111
	HB9J.....134	

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/WØTQD will be made on September 14th at 2130 EDST. Identical texts will be sent simultaneously by automatic transmitters. Frequencies of transmission from W1AW will be 1887, 3555, 7120, 14,100, 28,060, 52,000 and 146,000 kc. WØTQD will transmit on 3534 kc. The next qualifying run *from W6OWP* only will be transmitted on September 8th at 2100 PST on 3590 and 7248 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 five 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, Monday through Friday, at 2130 EDST. References to texts used on several of the transmissions are given below. These make it possible to check your copy. 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 July *QST*
Sept. 4th:	*Building an 813 Transmitter* . . . , p. 11
Sept. 6th:	*Building an 813 Transmitter* . . . , p. 15
Sept. 10th:	*A 'Phone Man's VFO*, p. 18
Sept. 12th:	*A Vertical Nonrotating Directional Antenna System*, p. 20
Sept. 18th:	*A Bandswitching V.H.F. Converter* . . . , p. 33
Sept. 21st:	*How To Lay Out a Transmitter*, p. 38
Sept. 24th:	*Keying the BC-696*, p. 41
Sept. 26th:	*DX-pedition to Guadeloupe* p. 41,

TRAFFIC TOPICS

September is net-registration month. As the balmy weather grows less balmy, the QRN dies down and we start dusting the summer dust from our rigs, many nets which have been dormant all summer will get back into the active column. Others, which were operating through the summer on a changed schedule, will be getting back to a full active basis. Section nets will start sending representatives to their regional nets in the National Traffic System more regularly. Each summer we make a valiant effort to keep the traffic lanes open, always with a little more success than the previous year. If you are melancholy because a beautiful summer is coming to an end, look forward with cheer to a winter season of traffic handling bigger and better than any so far.

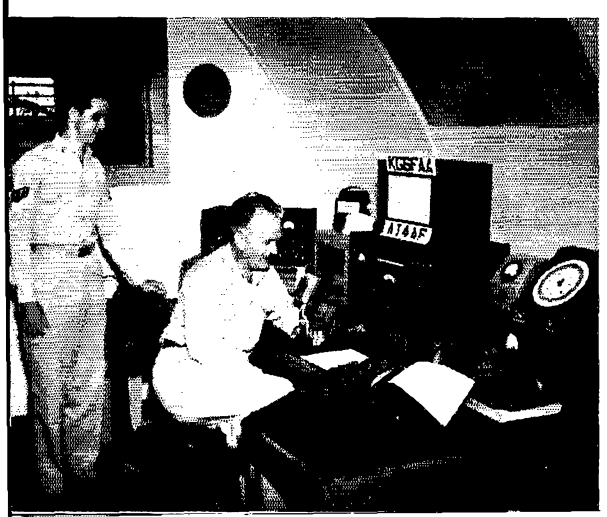
The first step is to register your net with ARRL! Starting on September 1st, all the present nets registered in our card file will be moved to an "inactive" status until or unless we get new registration data. This is necessary because so many nets change their schedule as they go into fall operation, and summer operation is therefore not applicable. We need an entirely new set of registrations, and cards which can be used for this purpose are available to anyone and are already in the hands of many League officials.

If you do not have one of these cards, here is the dope we need for our registration card file: (1) name of net; (2) net designation (as used on air, so it can be identified when heard); (3) net frequency; (4) days of operation; (5) times of starting and ending net sessions (be sure to indicate the time zone); (6) direct coverage (i.e., by stations who actually report into the net regularly); (7) starting date (if not continuous); (8) call of net manager; (9) list of net control stations; (10) name and call of person submitting the information.

We plan to produce the customary list of active nets in November *QST*, and also the customary cross-indexed net directory sometime around the end of the year. We are interested in registering *all nets*, but especially those which meet more often than once a week, and especially those which operate on frequencies below 30 Mc., where the QRM can be a tough problem unless you know in advance where other nets are operating.

Shall we make this year's net registration the biggest, best and most complete ever? Hmmm?

♦



Here is KG6FAA, the station of the 19th Bombardment Wing in Guam, with Wing Communications Officer Maj. M. B. Morton at the mike. Looking on is Chief Opr. Sgt. A. G. Nilges. Not shown is station chief 1 t. Clem Coggin, KG6AAD. KG6FAA has been in the BPL every month this year so far. In the first four months of 1951, 6088 messages were handled. All traffic is routed via the National Traffic System. (*USAF photo*)

♦

QST for

♦

Some of New Jersey's traffic elite gathered at the home of W2ZK on June 24th to discuss participation in New Jersey Civil Defense. Much of this lineup needs no introduction to active traffic-handlers: *Standing, l. to r.*: W2s EAS, SLW, ANG, NKD (SCM N.N.J.), UWK (RM), VQR (SEC), KHA, ZK, ZEP. *Seated*: W2s ZI (former ARRL director), DRV, CGG (venerable RM), K2BG (NCS NNJ CD net), CUI, BZJ.

♦

Our squib in July *QST* concerning overseas traffic schedules brought from W2EC, manager of TLAP, the information that WØTQD maintains a daily schedule with KG6FAA and relays traffic eastward on TLAP, principally to W3CUL. The net is now operating on 7260 kc. at 2030 EST, Monday through Friday, but this will probably change back to their customary schedule in the fall.

—•••—

National Traffic System. This report will come to you at a time when activity is increasing, but it reports on June activities. By the time you read this, things will be much better (we hope) than they appear to be from this report, written in the middle of the summer slump.

Summer or winter, there can be no National Traffic System without the coöperation and coördination of all traffic men. We respect your individual inclinations, and know that these inclinations do not always lead to participation in something as big as NTS, which has a nationwide flow pattern for traffic and operates on a nationwide time schedule. On the other hand, it may be that you do not participate in NTS because you do not understand how it operates. If such is the case, you will want to take steps to fill in this void in your traffic handling education, and we are just the ones who can do it for you. Drop a line and ask us for the mimeograph which explains the operation of the National Traffic System.

We want to introduce two new Regional Net Managers, Forrest N. Ruehlen, W5MRK, and Harry Smith, W9TT, who will take over the reins of RN5 and 9RN respectively. Neither W5MRK nor W9TT needs any introduction to members of their respective nets. They replace W4NNJ and W4BAZ, both of whom had to resign for personal reasons. Certificates are being held up temporarily pending appointment of a new manager for CAN.

Net	*Sessions*	*Traffic*	*High*	*Low*	*Av.*	*Most Consistent*
RN6	45	569	84	0	12.6	L.A., E. Bay
9RN	26	126	16	0	5	Ind.
TRN	18	10	2	0		Ont.
PAN	21	610	50	3	29	RN6

The reporting record of four nets out of a possible 13 is nothing to get puffed up about. Considering the time of year, however, it could be worse. We want in particular to point out that VE3BUR sets a fine example of reporting by doing so even though there is very little activity to report from the Thirteenth Regional Net. This is not a "brag" column, but a place where, each month, traffic-handling amateurs can at a glance determine the status of their National Traffic System. If the status is bad, the figures will show it as bad — which is exactly as it should be. When such a thing happens, it is time to do something about it.

Fifth Regional Net (W5MRK): We have not heard from Forrest since his appointment, but the grapevine has it that RN5 is active despite almost intolerable QRN down in the Southland.

Sixth Regional Net (W6JZ): Nine regularly-operating nets and several free-lance traffic handlers are represented on RN6 almost every night. This net is one of the few regional nets which has maintained its twice-nightly operating schedule five days per week. The boys out that way are really busy taking care of the great inflow of GI traffic. Certificates have been issued to W6s DTY FCT GJP HQN IZG LRQ SWP YHM, and W7CZY. Ray, W6JZ, finds himself hard pressed for time to hold down the manager's job.

Ninth Regional Net (9RN): Contact has been lacking with CAN, and some QRM has been experienced with TEN, which operates only 5 kc. away. 9RN is still operating in conjunction with Trunk Line J, and operation is being conducted during the summer this year for the first time.

Thirteenth Regional Net (VE3BUR): Traffic has fallen way down with VE3s ATR, BL and BUR keeping the frequency occupied and providing representation in EAN where possible. VE1 and VE2 are just about out of the picture.

Eastern Area Net (W2CLL): EAN is operating on a skeleton basis for the summer. Traffic is light and representation skimpy, although the traffic is always cleared somehow.

Pacific Area Net (WØZJO): Hal is doing the NCS honors every night and handling most of the traffic besides. Someone recently called him a "one-man Trunk Line." Representation from RN6 has been perfect, RN7 about 70%, EAN about 60%, CAN "poor." PAN now operates on 7207.5 kc. at 1930 PST.

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for June traffic:

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W3CUL	93	1530	1203	291	3117
W4PL	11	1094	968	122	2195
W6KYV	178	1006	215	761	2190
JA3AC	436	501	217	284	1438
W9ILH	23	672	701	31	1427
KG6FAA	468	436	290	132	1326
WØTQD	5	583	571	12	1171
W3CTJ	1	511	0	510	1022
W9JUJ	29	414	431	35	909
W6BAM	68	414	129	285	896
W6JZ	6	441	361	48	856
K5NRJ	70	338	294	37	739
KR6AF	178	237	130	107	652
W6UHY	16	268	268	63	615
W6GYH	14	282	185	119	600
W9JTX	4	280	264	10	558
K4WAR	259	133	74	59	525
W7IOQ	48	214	207	54	523
W5MN	7	249	217	29	502
Late Reports					
W9JUJ (May)	41	1100	1026	16	2183
W9JTX (May)	14	613	576	32	1235
W5NG (May)	7	415	398	14	834
W9TT (May)	38	227	195	70	530
W5RIQ (May)	33	243	201	36	513

The following made the BPL for 100 or more *originations-plus-deliveries:*

W6HOV 287	W9NZZ 182	W3BES 100
W5SKI 276	W5PBT 171	Late Reports
W7NRB 222	W6BHG 122	JA2DS (May) 230
WØMON 188	W1THU 109	W1TBS (May) 211
	W8RJC 102	

A message total of 500 or more or 100 or more *originations-plus-deliveries* will put *you* in line for a place in the BPL. The Brass Pounders League is open to all operators who qualify for this monthly listing.

As the proposed regulations for the Radio Amateur Civil Emergency Service move their ponderous way through the vast and intricate network of government agencies concerned for coördination, and while we amateurs sit patiently and impatiently awaiting the outcome, it seems a good time to pause just momentarily to take a look at the progress which we have made since we have taken on civil defense as one of our primary jobs. We now have about 1300 Emergency Coördinators, 6000 AREC mobiles and 20,000 AREC members. We are strong in all parts of the nation, and amateur leaders everywhere are maintaining or getting into close touch with local civil defense officials. In some states, a statewide amateur organization exists for tying into civil defense at the state level. In the Northeastern Area, ten states have agreed jointly to certain standards of frequency allocation, operating procedure, and made provisions for mutual assistance. Amateurs in Seattle, Chicago, Camden, Niagara Falls and Sault Ste. Marie, as well as in many other cities, have joined forces with civil defense units to conduct simulated emergency tests and atom bomb drops so realistic that participants often found themselves believing it was real. Meanwhile, the customary amateur participation in natural disasters continues apace, without let-up, without reserve, without diminution.

Publicity-wise, we have also fared well. Our publicity file here at headquarters is bulging and running over, until the "folder" has become a container, and at the present rate, unless some considerable weeding out is done, the container will become a room. And still it comes.

Yes, we can well be proud of the progress we have made in organizational planning for emergencies, both natural and man-made. Perhaps some of us are even satisfied, but too often satisfaction begets complacency, and complacency begets downfall. We have come a long way, but there is still a long way to go. The time to preen ourselves is never; the time to strive for greater accomplishment is always.

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On Tuesday, June 5th, an unseasonal snowstorm hit Southern Alberta. It kept up all Tuesday afternoon and by early Wednesday morning several inches had fallen. During the dark hours the storm had taken a very heavy toll of telephone, telegraph and power line poles. In many parts of Southern Alberta communication and power had been completely cut off. VE6AO, aided by RL and OM, had been on the air early in the morning and by 10 A.M. the Calgary Power Company had contacted EC VE6TK and asked for a high-powered station and radio link. VE6NF/NW were on the air as the Calgary outlet and the net soon built up as the need for communication was realized. Many were emergency-powered. A 5-kw. auxiliary plant was put into stand-by service at NF/NW in case of power failure in Calgary. Sure enough, early Wednesday morning power failed.

Calgary Power Company posted an engineer at NF/NW to issue instructions directly to their field crews. The stations checking in on the 75-meter emergency channel were VE6s KO EO OE NA YM HN CH EB PK LI LM JD IY RS GK IX LA LC HZ GJ OT FC SL and VE7AIT.

The situation was serious. The only medium of communication in Southern Alberta, with the exception of a very few small rural lines, was ham radio. Besides Calgary Power and The Canadian Pacific Railway traffic was also handled for Canadian Western Natural Gas, Canadian Freightways, Dench of Canada Ltd., and The Albertan Publishing Co. Death, sickness and accident reports, requests for food supplies, emergency-equipment repair messages and many other important messages were passed on the emergency channel. The net closed at 1800 June 10th after the last telephone link was put through. Calgary and Lethbridge had been given 24-hour service throughout the entire emergency. Power to Southern Alberta had been restored by ham radio.

The following hams also rendered their services to the AREC: Operating at VE6NF/NW and VE6AO were VE6s NF NW OD NY TT AY WI BO JV TX AX UE TK UB FK WT DI AO RL OM XP and RZ. At VE6KO and VE6EO were VE6s KO EO VN MA SQ LF MN OG PV PL OX TG and PD. At VE6OE and VE6NA were VE6s OE NA ES JJ and GJ.

This emergency has given a great boost to amateur radio throughout Southern Alberta. Fitting tribute to the amateurs that served in this emergency was paid via press and radio.

— VE6TK, EC Calgary, Alta.

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"During the recent flood we were called in by the Moline Chapter of the Red Cross to act as a scouting group with several officials. On the night of April 23rd we took three mobile units and with the Red Cross Officials cruised the area around East Moline, Ill., and as far east as Rapid City and reported the flood conditions back to a mobile unit stationed at the City Hall headquarters. Mobiles W9QUV, W9QWT and myself, W9MSQ, with fixed-station W9HJO handled the traffic. All Red Cross representatives appeared to be very pleased with the coöperation they received from our group and feel we have an efficient group they can call on when they need future help."

— W9MSQ, EC Rock Island Co., Ill.

— • • • —

The Mississippi Gulf Coast Amateurs have formed a net on 3935 kc. to operate daily at 6 P.M. CST during the hurricane season which should end sometime in October. Purpose of this net is to furnish information on barometer readings and whatever else is required by the Red Cross and other officials before and during a hurricane. Amateurs on 75 meters are asked to avoid use of 3935 kc. during southern hurricanes this fall.

— W5JHS, SCM Miss.

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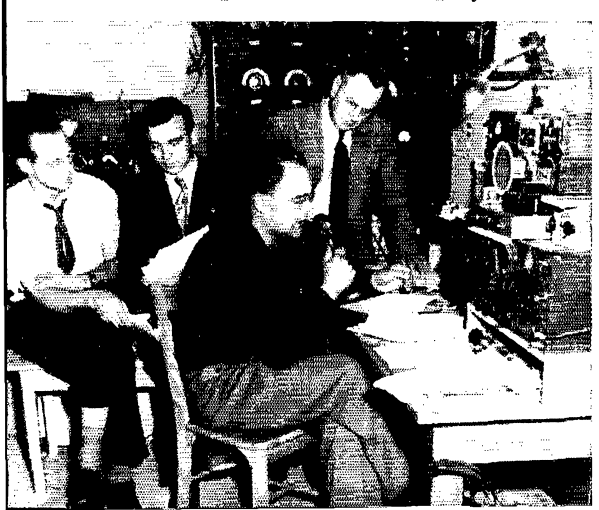
W3IGW suggests that we establish a National Emergency Calling Frequency on 2 meters at 147.3 Mc. This would make it possible for each NCS to have a receiver on 147.3 Mc. at all times, so that if anyone wants to send traffic from one place to another he just gets on 147.3 and calls the net or the place he has traffic for. Even if you cannot reach the place you want, someone will answer and act as relay, after which you will both switch to your own net frequency to send the traffic or continue normal operation.

The idea has its advantages, but we would be remiss if we did not point out the possible disadvantages: (1) 2 meters is only local in coverage, so why have "national" frequencies? (2) The frequencies selected may be fine for one locality but may be in established net frequencies elsewhere — which would mean that someone would have to buy a whole new set of crystals in order that the net could change frequency. (3) Such a common liaison frequency on 2 meters may be obviated by FCC regulations governing the Radio



In the Southern Alberta emergency of June 5th, VE6NF/NW was instrumental in furnishing badly-needed emergency communication to utilities, railroads and many other affected agencies. Shown here with two power company engineers are Calgary EC VE6TK (*second from left*) and Asst. EC VE6NW (*with mike*).

♦

Amateur Civil Emergency Service when they come out; that is to say, the regulations may preclude any use of a common liaison frequency on a nationwide basis — or if such a frequency is designated, it may be entirely different from the one which we might select.

The reaction we expect is that everyone will agree that the idea of a common liaison frequency on 2 meters is a good one, but that the selection of the actual frequency is all wrong, and no two groups will agree on the same frequency. Let's have your comments, gang.

—•••—

On June 1st, the emergency net of Lincoln, Nebr., was alerted to possible flood duty due to heavy rains in and around the city and county. Because of the alertness of the AREC members, who were monitoring 3983, little time was lost and mobiles were dispatched into the isolated area. By 11:30 P.M. WØASE/Ø was set up near the expected flood area and used as headquarters of the American Red Cross. This station stayed in continuous operation until 3:30 P.M. June 2nd, when the emergency was declared over. Numerous mobiles were sent out to help gather information as to the progress of the river rise and approach of the crest. The Red Cross was prolific in its praise of the coöperation shown by the amateurs. The following mobiles were in operation at one time or another during the emergency period: WØs JDJ EDI HQQ TVS VYX and KNT. Others assisting were WØs RYG UVI VEC ZNI and WYH. WØASE, WØVYX and WØVEC supplied equipment for the headquarters station.

OPERATION NIAGARA

At approximately 1850 EDST on June 15, 1951, an unidentified hostile aircraft dropped an atomic bomb on the City of Niagara Falls, New York, causing deaths, destruction and devastation throughout the city. Fortunately, all was simulated and a part of Operation Niagara, a simulated atomic bomb attack conducted under the supervision of the New York State Civil Defense Commission.

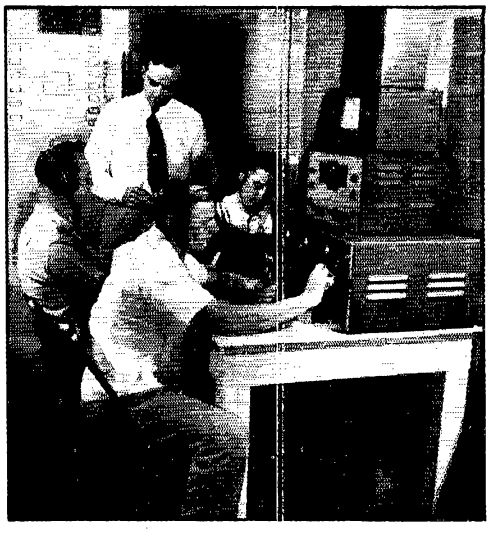
With the "all clear" at approximately 1905 hours, reliable communication between the various components of the Civil Defense Corps and the Central Control Point from whence their diversified activities were to be directed and controlled was highly essential and local hams were gratified to have a large part of the communications burden delegated to them.

Some eighty-odd pieces of fire-fighting apparatus and other Civil Defense aid vehicles were to be dispatched through five check points, one on each of the main routes into the City. One of the communications tasks assigned to hams was to provide radio communication between each of these check points and the Central Control Point. V.h.f. gear was thought most desirable but a sufficient number of such mobile installations was not available, so a 75-meter 'phone net was activated and controlled by a fixed station at the Central Control Point.

Considerable use was planned of some thirty-odd City-owned vehicles equipped with two-way v.h.f. radio. It was evident that each dispatcher of City-owned equipment must necessarily be tied in to the Central Control Point, and again the hams were assigned the task. A 2-meter station was set up at the Central Control Point to act as net control for five additional 2-meter stations located at the five dispatching stations. In addition, an outlet for the 2-meter net was provided in the Central Control Point of the North Tonawanda (New York) Civil Defense Corps. Both of the amateur nets were "checked out" and found reliable a day or so before the start of the exercise.

Within minutes after the sounding of the "all clear" all amateur facilities were operative and handling traffic. No major failures were experienced during the exercise. It soon became apparent, however, that the over-all communications picture was far from satisfactory. Much of the traffic originated via radio at the various check points "died" to all intents and purposes somewhere between the net control operating position at the Central Control Point and the various service chiefs for whom the traffic was intended. The courier system broke down almost completely with the result that messages went unanswered and caused considerable confusion at the check points. Significantly, no better results were obtained from the wire telephone circuits paralleling the radio links. However, the amateur nets were both operationally reliable throughout the exercise although proper utilization of their facilities was not made.

The following comments are made by the writer for the information and guidance of other amateurs connected with Civil Defense organizations in communications capacities:



During "Operation Niagara," W2QYV/2 was the Central Control Point for emergency communications. In the foreground is W2QYV, while W2IGI, W2FMF and W2VIU can be seen in the background.

1) Utilization of 75-meter 'phone nets should be avoided due to the excessive QRM and QRN prevalent on that band.

2) Two-meter and other v.h.f. nets are highly desirable in every respect over distances of twenty miles or more and should be given maximum utilization. During Operation Niagara, the 2-meter net experienced none of the difficulties which beset the 75-meter net.

3) V.h.f. handie-talkies or walkie-talkies are a must for the use of radiological survey teams. No such equipment was available for amateur use in Operation Niagara.

4) A preliminary survey of the volume of traffic to be expected on each radio circuit is a necessity. Such a survey would make it possible to predetermine to a great extent the number of individual radio links required by each service. Obviously, however, some compromises must often be made to fit the amount of gear available.

5) Communications procedure exercises involving all key civil defense personnel must be held periodically so that maximum proper utilization may be made of radio facilities. It is imperative that simple but complete message forms be provided and that *all* personnel be instructed in their proper use. Too much emphasis cannot be placed upon the importance of proper routing of messages.

6) Amateur radio is the only non-military radio service in a position to provide civil defense organizations with practical point-to-point communication between fixed stations. Hence, the ham is practically indispensable to any civil defense communications plan. The problem is to convince the executive personnel of the civil defense organization that radio circuits may be the *only* media available in the event of an actual atomic bomb attack.

7) Much public relations work seems indicated. Civil defense officials tried to make the ham the "goat" of the communications difficulties experienced during Operation Niagara and it is quite possible that hams elsewhere will suffer similarly.

Much of the credit for the hams' contribution to Operation Niagara must be given to W2FMF. Other amateurs furnishing gear and their services as operators for the amateur nets were W2s IGI KHO OVP WOE VJO OPZ VLL ZOO RCK CGU DPL RGO CRH VIU KYM RUG PPL TBY SSJ and OWQ.

Says M. Bradley Norton, "As [civil defense] director of the Niagara Falls area, I am thoroughly 'sold' on the efficiency and value of the amateurs and their equipment and we not only will continue to have them in our picture but we have plans under way to greatly increase their responsibilities." — *W. W. Orr, W2OWQ*

• 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, Jerry Mathis, W3BES — The Abington Twp. ARA has a new call, RQY, and the Philmont Mobile Club came up with RQZ. The two clubs, along with many others not reported, took part in helping Swarthmore College trace a weather balloon, sent aloft for scientific measurements. The son of GHS and INL, who is ten years old, passed his General Class exam and is awaiting his ticket. QMP is waiting for his Advanced Class license in order to try his new 20-meter antenna on 'phone. QLC is on 160-meter 'phone with 150 watts and 10-meter 'phone with 250 watts. He has worked PJ5HH, HC8GI, and FG7XA to bring his total up to 46 countries and 20 zones in the space of a year. NNV now is an MARS member. Traffic: W3CUL 3117, CTJ 1022, NHI 378, BES 167, LTU 28, ELI 21, QMP 6.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, James W. John, W3OMN — The Potomac-Rappahannock Valley Net held its annual picnic at Braddock Heights on June 17th. DWX, electronic engineer for Glenn L. Martin Co., discussed Radio Interference (QRN) Elimination at the June 5th meeting of the Chesapeake Radio Club and LZM, Route Manager for the Baltimore Area, spoke on traffic-handling on June 19th. On June 15th the Capitol Suburban Radio Club enjoyed an unusual talk on Aerobee Rocket Instrumentation by C. J. Applegate, head of Applegate Electronic Research of Boulder, Colo. The Washington Radio Club combined a picnic with the annual Field Day operation. The club call, CAB, was used for the first time. This year's officers for WRC are MSU, pres.; 4ESB, vice-pres.; OSR, rec. secy.; CJT, corr. secy.; and LSX, treas. The number of clubs and individuals participating in the annual Field Day operation this year showed a large increase. The Radio Club of Patuxent River operated on and under a 125-foot tower at Great Mills, Md. Transmitters were on five bands. CARC operated on five bands under the call MTE. CSRC again tried balloons while using the call NEW. Frederick Amateur Radio Assn. used the call WN on five bands. The Rock Creek Amateur Radio Assn. operated on eight bands with 58 operators under the call RCN. The Capitol Key and Mike Club used the call DIM on three bands. LSX has been elected vice-pres. for YLRL for 1951–2. CVE again is handling traffic with his doctor's OK. EYX has purchased a new QTH in Falls Church, Va. MDY retired from FCC and was elected honorary member of CARC. FLG now is on 144-Mc. RTTY. First contact was 4JCV. LXK worked DNC on 144-Mc. KYG now is on 144 Mc. with contacts depending on the weather as wind controls the rotator. RRF is active week ends from his home QTH in Delaware. 8WDQ now is portable 3 in Baltimore. PXM graduated from Duke U. and is in Baltimore with Glenn L. Martin Co. 6ZF, SCM of the Sacramento Valley section, California, now is 3ZF and is stationed at Andrews Field, D. C. QZC is QRT while away at camp for the summer. AIR has worked Virginia, Maryland, New Jersey, and District of Columbia on 420 Mc. with ½ watt, except New Jersey when four watts were used. Antenna is co-ax line to horizontal five-element Yagi. The monitoring period at 144 and 420 Mc. for contacts is maintained at 10:45 EDT. BSV is on 42 Mc. with multi-element beam and 4XI50 final. Schedules have been held with QED. CARC is conducting code classes under the guidance of LZM, LMC, and AFM. Total enrollment is 17. Traffic: W3UF 294, CVE 58, NNX 37, QZC 20, FWP 13, LSX 4.

SOUTHERN NEW JERSEY — SCM, Dr. Luther M. Mkitarian, W2ASG — I regret to report that Assembly Bill 106, which passed the Assembly and the State Senate without any opposition, failed to receive the Governor's signature. Instead he vetoed it because of extreme opposition from the Commissioner of Motor Vehicles. WI has been ill for quite a long time. PFT has recovered from serious injuries received in a recent auto accident. ORS is "on the air" at his new QTH. ZI has signed up with MARS and is attempting to organize a net in Mercer County. There was not much news this month; wish you all a pleasant summer vacation. Traffic: K2BG 62, W2ORS 43, ZVW 41, ZI 28, ASG 13, RG 11.

WESTERN NEW YORK — SCM, Harding A. Clark, W2PGT — SEC: SJV. RM: RUF. NYS and NYSS traffic nets have moved to 3620 kc. for the summer and may make this the permanent frequency. If you do not find them on 3720 kc. look on 3620 kc. YRF has moved to Phoenix, Arizona. BLP has moved to Rochester. GVH is a new call in Watertown. The KBT Club made a tour of Republic Steel Company's plant. Field Day was a great success this year with more groups active than on any previous Field Day. There was a large increase in the number of one- and two-man set-ups, which is excellent training for emergency work when in all probability that will be the pattern of operations in case of emergency. The bands were buzzing with activity during the entire period of the test, and how dead they were after the operating period ended! Summer weather is taking its heavy toll of activity. Traffic: W2RUF 338, COU 260, TPN 72, PGT 68, ZHU 45, EMW 31, FCG 28, RUT 26, BLO 22, SJV 18.

WESTERN PENNSYLVANIA — SCM, Ernest J. Hlinsky, W3KWL — In the June V.H.F. Contest such old stand-bys as NKM, RUE, MON, LNA, and KWL kept things humming for Western Pennsylvania contacts. From reports received it looks like NKM takes section honors, with your SCM placing near the top. In the Field Day activity AAX operated from Goblers Knob, Forest Hills, as a lone operator and piled up 28 contacts for a score of 715.5. Up Erie way, LTK operated with 25 operators at Summit Mt. VRZ reported from Beaver with 15 operators. The Mercer County Radio Assn. worked from Hickory with 5 operators. The McKean County Radio Club reported 12 operators working near Duke Center and over 400 contacts were made. ODU renewed his ORS appointment. OFO has been appointed ORS. KOF is a new Official Observer, Class 1V. AER, our PAM, tells us that his XYL underwent a serious operation, but doctors feel confident that she now is on her way to recovery. Up Dubois way, MOT says he has new stacked 2-6-10-meter beams. LOD says he is working only 7 Mc. these hot days. KNQ reports traffic nets are slow but he manages to QNI into 3RN. YA, State College, reports it is the first official MARS station. UHN has antenna trouble but expects a new 80-meter antenna and new tower. Up Erie way, the gang is all hepped up about joining in the Centennial Plans. New directors of the Erie Radio Club are KKT, KNQ, OIE, NXK, and KLD. Club president is ODF, new vice-president is PLY, Ronnie Barker is treasurer, and QPP is secretary. Down Pittsburgh way, the Steel City Radio Club station, KWH, is heard making a big noise on 28, 50, and 144 Mc. RXT is the big gun at the station, with all of his work paying dividends. JT is selling out his station. TVB is reported to have challenged the golfing sensation, Sam Snead. We hear the Section Emergency Coördinator, OMA, paid a visit to Erie. Traffic: (June) W3AER 16, MIZ 15, KWL 7, VNL 3, MOT 2, UHN 1. (May) W3LEV 9. (April) W3LEV 4.

CENTRAL DIVISION

ILLINOIS — SCM, Lloyd E. Hopkins, W9EVJ — Section Nets: 1EN, 3940 kc.; 1LN, 3515 kc. SEC: QLZ. PAM: UQT. RM: BUK. An interesting talk on antennas was given to the Quad-City Amateur Radio Club by THY. CRD built 50-kc. Q5-er using 12 tuned circuits and crystal-controlled mixer with the base of the band-pass skirt 1.5 kc. wide. He also is working on a pair of 6-meter portables as per *QST*. UBP is busy installing mobile rig. SXL reports visitors from 35 miles away came to the local club Field Day set-up due to good publicity. NIU found 14-Mc. operations on Field Day so good he is going to put his home rig down there. The Paxton Radio Club participated in Field Day with AMH, BGF, BYC, LMC, and NKX operating on 7-, 14-, and 28-Mc. c.w. and 3.8-Mc. 'phone. LMC is sweating out a QSL from Nevada to complete his WAS. LNI enjoyed a visit from 8TBP, who used to be one of our section boys and had the call IEP. KJ is going "nets," spending his time on two ARRL and two MARS nets. JQY reports new S-76 receiver works FB and he is active with mobile net in northern Cook County. 4MWX spent vacation in Rockford and ran across the set-up of PVA/9 operating nearby and wishes to extend his appreciation for the hospitality shown him. SKR was inactive the past month because of new TVI troubles. PK is changing QTH but expects to be back on 1LN shortly. DOQ is looking for Great Lakes, Chanute Field, and Scott Air Base schedules. JMG is awaiting the arrival of a harmonic next month. HKA is making his annual trek to Mackinaw City, Mich., for August and September where he will operate as portable eight. FGZ, stationed in Washington

(Continued on page 72)

SINCE the end of World War II, it has been a constant struggle to catch up with the accumulated demand for ham and civilian equipment, a demand created by the many years of scarcity due to all out war production. Just as we had our goal in sight, and felt that in a few more months all our products would once again be available for delivery "from stock," the clouds of world tension reappeared.

Already, we have had to discontinue production of some of our most popular receivers because of procurement difficulties; and now the President calls for a further step-up in the defense program. To anyone in the electronic industry, the signs are unmistakable, but to those in other fields, there is some confusion as to just what the present situation portends for the amateur.

Government purchases of electronic equipment have been considerable, with most firms engaged in this type of manufacture holding one or more substantial government contracts for such equipment. This in itself means a curtailment of facilities for other than government production. In addition, government contracts carry "D/O" ratings which take priority over civilian production. This means that orders for ham items must take a back seat and delivery schedules may be even slower than at present.

The most recent development affecting the procurement of material is that the Department of Commerce has set up the NPA (National Production Authority) under the Defense Production Act of 1950. This authority has promulgated plans for the control of essential materials — CMP (Controlled Materials Plan). The main purpose of this plan is to control the basic raw materials, steel, copper and aluminum, including their alloys. The idea is to divert most of these essential materials into defense production, and divide the remainder for non-essential products. Manufacturers must apply quarterly for allotments of the basic materials, stating the purpose for which they are to be used.

Even though our production expands, and procurement increases, the production of ham items must become less and less until the pressure is released. And, unless our crystal ball has become unusually cloudy, the pressure will not be released for some time.

We are still manufacturing a considerable quantity of receivers for the amateur and hope, along with you, that the world situation will soon improve so that we can resume normal production of ham items.

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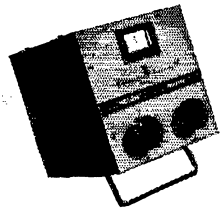

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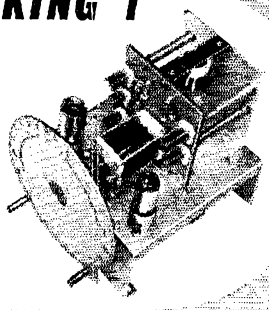

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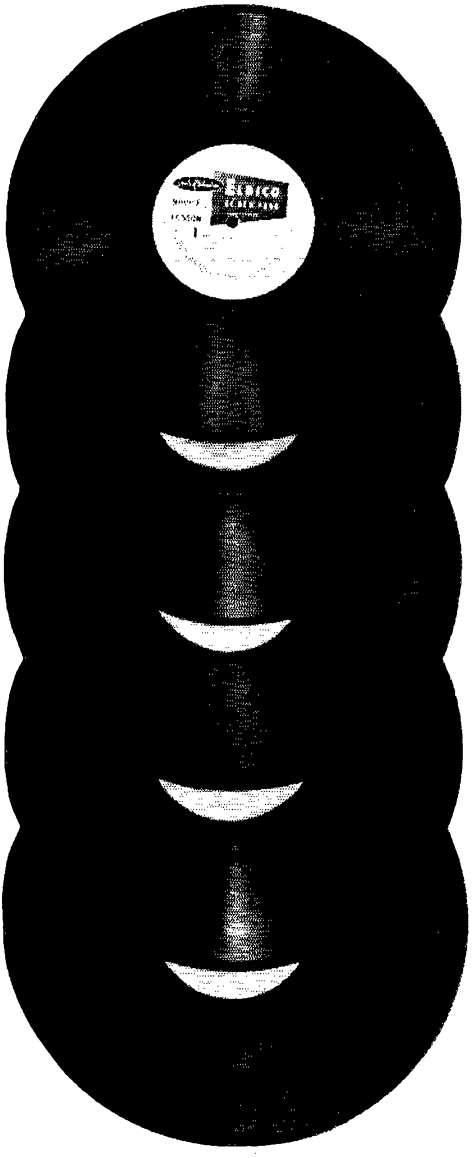

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(*Continued from page 66*)

State, is putting out with a pair of 250TH bottles these days. MEM looks proud after snagging an SM and EA for his first real DX. There will be no report from this section next month as your SCM will be on vacation during the period the report is usually prepared. Traffic: (June) W9ILH 1427, CSW 212, IAY 109, YIX 76, KRH 52, KJ 50, EHS 49, MEM 31, DOQ 22, YTV 21, LMC 18, DOR 15, PK 11, LIN 6, UBP 6, SXL 5, KCN 4, JQY 3, BGN 2, HKA 2. (May) W9DOQ 20, DOR 10.

INDIANA — SCM, *W. E. Monigan, W9RE* — SEC: PHV. PAM: BKJ. PAM v.h.f.: DOK. RM N: 9RCB. RM S: DGA. At a meeting of amateur E.C. representatives with the director of communications, Indiana Department of Civil Defense, it was decided to recommend the use of the following frequencies in amateur planning for civil defense: 29.62 Mc., mobile and base operations; 29.60 Mc., secondary frequency where needed; 3992 kc., mobile and base operations; 3505 kc., radiotelegraph point-to-point (intercity); 53.5 Mc., mobile and base operations; 50.5 Mc., radiotelephone point-to-point; 147.0 Mc., mobile and base operations; 146.81 Mc., radiotelephone point-to-point. JUJ and family, LZI and family, and TT and family visited with RCB/JTX. AND, Central Division Director, visited South Bend. Indiana was well covered with Field Day stations. Strong signals were heard in South Bend from one end of the State to the other. DPL has a new rig. Muncie is going mobile. DOK, HJJ, FYC, TE, JUJ, and NJR are on 28 Mc. and NSF and GTA are on 144 Mc. MZE, NAT, and MKZ (ex-4OZQ) are new at Evansville. GFS is on 3.5- and 7-Mc. mobile. HRH is mobile bound. SWN visited the West while on vacation. MTF and MOH vacationed in WØ-Land. At Garrett, ATB reports a new youngster. At Fort Wayne, DKS and IDZ have the same. MYT is new call at Fort Wayne. FLT has moved to California. ENB is back from the service. EUJ is rebuilding at Hobart. DHJ and BJM are on 144 Mc. DKR says there is no TVI at his location. Send in your reports, fellows. Also it's time now to nominate my successor, as my term runs out October 14th. I will not be able to devote the necessary time to the office. Traffic: (June) W9JUJ 909, JTX 558, NZZ 274, TT 199, RCB 132, TG 54, DHJ 42, BKJ 27, YB 22, RE 17, QLW 16, NH 11, DPL 8, DKS 2, DOK 1. (May) W9JUJ 2183, JTX 1235, TT 530, RCB 292, LVI 169, QLW 149, AB 104, TG 71, PMT 43, DHJ 33, YB 30, DOK 18, NH 18, RE 8, BKJ 5.

WISCONSIN — SCM, Reno W. Goetsch, W9RQM — SEC: UFX. PAM: ESJ. RMs: CBE, CWZ, and LFK. The BEN picnic was held Aug. 19th at Lakeview Park, Neenah. Appointments renewed: KXK as OPS and VHA as EC. JGG is QRL in Milwaukee. HDZ has discontinued his 160-meter OBS schedule. New hams in Sturgeon Bay are NKZ and NLH. The following were active on Field Day: Beaver Dam, APU/9; Sturgeon Bay, UIM/9; Eau Claire, ERW/9; Stevens Point-Waupaca, CWZ/9; Green Bay, ART/9; Milwaukee, ESJ/9, HRM/9, BTQ/9, BMI/9; Racine, UDU/9; Wausau, RQM/9; Madison, SWQ/9; Shawano, DCK/9; Neenah-Menasha, GJY/9; La Crosse, SFL/Ø Nenominee, WDK/9. ERW received Class A ticket. NLE is a new call at Eau Claire. MYG is radio communication chairman in Sheboygan c.d. organization. UFX reports that there are EC appointments for 23 communities in the State. All ECs, your monthly report should be mailed to reach UFX by the 4th of each month. NLA, secretary of Dells Region Radio Club, reports action toward affiliation with ARRL. Congrats to CIH and PFK, who tied in the May Frequency Measuring Test with an average error of only .00002%! LJV worked V.H.F. Contest with 144-Mc. airborne mobile at 10,000 ft. Also active in the affair were DKU, AFT, PYM, JBF, TQ, RQM, VZP, and OCA. NNA and NIT are new calls at Stevens Point. NKZ has new NC-183. NLH works 3.5-Mc. c.w. with TBS5OB and S40-A. GJK completed 4-Mc. mobile installation. ZYM is new OO. K8WAY operated portable at Camp McCoy. The M. & M. annual picnic was held at Henes Park, Menominee, Mich., July 29th. GIO, former instructor at Tomahawk V.S., now is teaching at Scott AFB, Ill. VHA and the Wausau AREC put on a demonstration for the local Kiwanis Club. New MRAC officers are: ONY, pres.; VQD, 1st vice-pres.; MOT, 2nd vice-pres.; EZP, secy.; UH, treas.; RUF, chairman of the board; IZO, ANA, GPI, RH, FDX, and SNK, directors. ESJ kept his mobile busy while on vacation. Traffic: W9ESJ 437, IXA 54, ANM 33, DR 26, RQM 22, CWZ 18, AOW 6, HDZ 6, OVO 6, DCK 5.

DAKOTA DIVISION

NORTH DAKOTA — SCM, Rev. Lawrence C. Strandenaes, WØJWY — The annual North Dakota section hamboree was held at Mayville on June 17th, being sponsored by the Goose River hams. There were 84 hams registered, including 3 VEs. About 200 people enjoyed the affair in ideal weather. Winner of the main prize, the Hallicrafters S-77, was EXO. The Fargo Club will sponsor the hamboree next year, and it will be held in or near that city. Many thanks to all who helped to make this year's outing so successful. HDD was recalled into active Naval service the first part of June and, for the present at least, is stationed in Seattle. New calls are DGB in Drayton, DHX in McCluskey, and DIG in Bisbee. All are on 160-meter 'phone. Please keep those reports and news items coming.

SOUTH DAKOTA — SCM, J. W. Sikorski, WØRRN — CSB, Hitchcock, has new Johnson Viking on 10–160 meters. COM, Aberdeen CQ Club, operated 3.8, 14, and 28 Mc. on Field Day. BPH, Hitchcock, is converting Bendix TA-12 for ham bands. CMJ, Aberdeen, has installed 10-meter beam. 10-meter addicts ask "what for?" DKJ, Aberdeen, is attending summer school at Vermillion. Newly-licensed DDN, Inwood, Iowa, is a member of the Sioux Falls ARC and drives 60 miles to attend meetings. He has purchased the rig of CQK, South Dakota hams wish to thank Mitchell ARC for the FB picnic the Club sponsored. Nearly 150 attended. Ex-BJH writes from Eglin Field, Fla., that he passed Class B exam and has installed mobile 10-meter rig. Traffic: WØPHR, 58.

MINNESOTA — SCM, Charles M. Bove, WØMXC — Asst. SCM, Jean Walter, ØKYE. SEC: BOL. RM: RPT. GTX is a newcomer in Alexandria. FID won a scholarship at Harvard and will be out of action here for the next four years. Our congratulations, Dick. RXL is passing out the cigars, boys. It is a girl. Howie has just completed a very professional-looking gallon job for all bands. Some people have all the luck! Section members will be happy to hear that their SCM is convalescing satisfactorily after two serious operations. The barrage of postcards you sent him gave him a real lift. EMM has a new location at Deer River after completing his medical internship in St. Paul. GUS has a new hand-made location near Newport, where he chose an acre of land for its low noise level! Now he can hear them when others think the band is dead. RHT is back from Korea. 2YMZ has moved to Wadena, and is checking into the 'phone net regularly. FFS, while stationed at Fort Leavenworth, kept in touch with home via the 'phone net and finally was advised of the birth of a daughter. Traffic: WØITQ 157, KFF 60, RXL 30, RA 12, FTJ 3.

DELTA DIVISION

ARKANSAS — SCM, Dr. John L. Stockton, W5DRW — We all wish to welcome two hams who have moved to Arkansas: SYX, ex-ØEJD, who is near Springdale, and W2ZFM, who has moved to Fayetteville from the Canal Zone, where he held the call KZ5AK. VN now is stationed at Flippin with the CAA. Sorry to learn that QYY has moved from our section to the Illinois section. RWJ reports a nice Field Day outing. The Camden Club was active during Field Day, as was NIR and several other hams. BAB had a nice vacation in Texas and Colorado. DVI and VX attended the National ARRL Convention via the special Chicago train trip. VX has an air-conditioned shack now. The traffic season isn't so very far off now. Traffic: W5RWJ 20, EA 9.

MISSISSIPPI — SCM, Norman B. Feehan, W5JHS — K5FBB has moved into its new club house and has four poles and a beam tower up. FZK is chief operator. The Gulf Coast boys have started a net to run during the hurricane season on 3935 kc. and 29.6 Mc. Keesler AFB and the whole of Mississippi will miss SKI, who is changing QTHs. The clubs that participated in Field Day are Jackson, Meridian, Hattiesburg, and Keesler AFB. SNR has a modulator for that Globe King now so there will be a vacant place on the 40-meter band. Congratulations to the Pascagoula Club on a very active net (Crab Net) on 10 meters. FFF was a visitor on the Gulf Coast and checked in the 10-meter net from his mobile station. RUT has his Advanced Class ticket and is checking in the 3935-kc. Hurricane Net. ECT is new NCS for the Magnolia Net. SFC, SGJ, and STT are active on 7 Mc. Don't forget to send a card to your Route Manager, WZ, and tell him you will be on the slow-speed c.w. net that will start this fall. Traffic: (June) W5SKI 372, JHS 19. (May) W5SKI 433.

TENNESSEE — SCM, D. G. Stewart, W4AFI — Field Day messages indicate another highly successful event, with set-ups in operation on all bands from one end of the State to the other. Stations reporting: AY/4, FA/4, FLW/4, IIY/4, JD/4, ODR/5, OGV/4, and VT/4. KARC issued a special QSL for contacts made with its Field Day station, JD/4. The Corn-Cob Net again held its get-together near Crossville at Cumberland Mountain State Park July 8th. A full day of swimming fishing picnicking and chewing the fat was enjoyed by all in attendance. Davidson County Ten-Meter Emergency Net has suspended operations for the summer except on Sunday evenings. RPT is planning on 4-Mc. 'phone soon. APC is rebuilding with TVI suppression in mind. NNH is experimenting with TV antennas during the summer lull. NUW is active on 50 Mc. and reports Tennessee stations much sought after during openings for 50-Mc. WAS. FI is building new 50- and 144-Mc. transmitter with plug-in finals. The 144-Mc. final will use silver-plated components. FLW reports the June 11th opening on 50 Mc. the best so far this year with numerous Canadian and U.S. stations heard and worked. IIB is batting away on MARS with traffic clearances via MARS and regular amateur channels. On June 4th c.d. officials of Memphis and Mumford were given a demonstration of amateur communication on 144 Mc. with BAQ, DI, HHK, IIY, and JOW participating. HHQ recently was appointed communications director for Fountain City C.D. District. Traffic: (June) W4PL 2195, FI 76, RPT 33, AEE 25, IIB 23, HHQ 10, BAQ 8, NNH 7, FLW 5, PMR 3, AFI 1. (May) W4APC 148.

(*Continued on page 74*)

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GREAT LAKES DIVISION

KENTUCKY — SCM, I. W. Lyle, jr., W4KKG — SKE has new NC-57 on the way. KZF is experimenting with 144 Mc. and hopes to work a little 144-Mc. DX. MKJ and JEI were high score men at Field Day set-up, with VP and MPV a very close second in ARTS member competition. Many clubs and amateurs throughout the State took an active part in this year's Field Day, and from reports coming in a big time was had by all. SFV, RRD, PSJ, and 9CWT operated from atop Iroquois Park Hill. The Paducah Club was active also with about ten members operating. OXX is burning up the ether and tires with his new mobile rig. KFI has a new QTH. MWX is Kentucky representative to TLJ/9RN and is handling traffic through summer QRN. He spent Field Day with the Rockford, Ill., gang. JQV is on with an ART-13. MGT turns in a nice traffic total. Henry, do you have an air-conditioned shack? NZY received MARS appointment. MDB received his Class A ticket and is giving 3.8- and 14-Mc. 'phone a try. Now is the time, gang, to get that rig ready for some nice operating time this fall and winter. Drop MWX and CDA a line and get in the traffic game. They are Kentucky Route Managers. You don't need power, just a clean signal with provisions for break-in. Traffic: W4MGT 78, MWX 34, NZY 4, KKG 3, KZF 2.

MICHIGAN — SCM, Norman C. MacPhail, W8DLZ — Asst. SCM ('phone): R. B. Cooper, 8AQA. Asst. SCM (c.w.): J. R. Beljan, 8SCW. SEC: GJH. PAMs: JUQ and TTY. RMs: UKV and YKC. New appointments: OPS to TTY, in the U. P. A trip to Detroit shows what terrific progress can be made along the lines of amateur/civilian defense coöperation and coördination. WFA, EC for Wayne and McCombe Counties, certainly is to be congratulated. Motor City RC reports CIC, pres.; FJL, vice-pres.; GBU, secy.; and AJQ, treas. QGZ's summer QTH is Harbor Springs. He says he will be operating low power. 9UXV now is living in Laurium and soon will be a W8 on 3.8 Mc. MRK, RXY, ZCH, and GNN have established a nightly 2-meter net with 9FAN in Sheboygan, Wisc. This is the start of something that might well develop into a state-wide affair. The BR/MEN annual picnic was a howling success with the Petoskey/Traverse City gang really doing a bang-up job of demonstrating how to conduct an affair of this sort. Plans for 1951–1952 sound good and traffic will continue to receive priority attention by all members. UTH was elected president of BRNet with AQA again secretary. UGD was elected manager of MEN. More than 125 were present with 33 mobiles and 68 calls represented. The new Novice Class has resulted in considerable interest among many who some day will hold the more coveted General and Advanced Class licenses. BVY reports the City of Midland is building an emergency amateur station in city-owned property. The local gang will provide the operators. SWF is busy licking TVI in his BC-610. YNX is back on the air after two years with a 40-watter. MGQ is working mobile on 3.8 and 28 Mc. WVL received a Certificate of Merit for his part in the Armed Forces Receiving Contest. ZEE is working portable/mobile rig on 3.8 Mc. DQL worked mobile en route to California. Summer vacations have slowed down the traffic nets, but many still are active on 3663 and 3930 kc. Traffic: (June) W8RJC 414, ELW 233, YKC 84, DAP 63, TZD 55, CPB 48, WXO 41, TQP 40, WVL 40, QBO 38, BVY 34, DLZ 31, AQA 28, ZLK 28, LR 26, IKX 15, QIX 15, QPO 15, OAF 9, UKV 8, COW 7, DSE 7, ZEE 6, FX 4, EGI 3, DQL 2, SCW 2. (May) W8YKC 138, UKV 105, AYV 43, DSE 20, QIX 15.

OHIO — SCM, Leslie Misch, W8HGW — Asst. SCMs, J. E. Siringer, 8AJW, and C. D. Hall, 8PUN. SEC: UPB. A total of seventy-four Field Day stations in Ohio reported to the SCM, making this one of the most successful Field Day operations. ARO and DAE again make BPL. AQ now is on 3.9-Mc. mobile. 5SMA, New Mexico SCM, visited JFC for a few days. DXO and HGW have their beams down for repairs. ZJM blew his final plate transformer. DZX is organizing a slow-speed net. Interested parties, please contact Sam for details. QIE, an ex-Morse operator on the railroads, is putting a beam on his new tower. GTV, ex-9VND, a DX man from way back, now is in Ohio competing with the "Big Five" in the Cincy Area. TKS, Toledo EC, has done a fine job in the c.d. set-up there and is to be congratulated on his splendid record. MGP is mobiling out West. JBL has worked 32 countries with his 15 watts. Please send the monthly reports in on time, fellows. Send them no later than the tenth of the month. Traffic: W8FYO 318, ARO 308, DAE 143, IB 111, DZX 97, UPB 54, JFC 31, AL 29, GZ 23, PUN 20, WAB 19, EZE 17, EQN 9, DMJ 8, PMJ 7, CBI 6, AQ 4, BEW 2, ET 2, LCY 2, ICC 1.

HUDSON DIVISION

EASTERN NEW YORK — SCM, George W. Sleeper, W2CLL — SEC: NJF. RMs: TYC and KBT. PAMs: IJG, NIV, and ILI. AARA and SARA report their usual FB Field Day outings. BNC has returned from vacation. The AARA year book is a humdinger and congrats to JQI for an FB job. We are sorry to learn that GSJ is leaving us for his former 8th district QTH. AREC is kept jumping these days with the various c.d. alert tests going on all over the State. BGO is making a statewide trip from the NYSCD. The annual section conference held in Poughkeepsie was successful. Thanks to the Poughkeepsie Club for arranging the FB meeting place. The conference was attended by BDI and NJM from Headquarters, and OUT from the NYSCD. We were somewhat disappointed, however, with the lack of ORS representation. Thought is being given to holding another conference in October. TYC is the new manager of the 3509.5-kc. NYSCD c.w. net. AWF is blasting the ether from his summer QTH at Tupper Lake. APF supplied the usual for the Field Day boys. We hear that APF is burning his fingers with soldering irons these days helping the jr. operator to get started. Traffic nets are struggling along with the usual summer headache. Congrats are in order to the gang who keep these nets operating and thus demonstrate to the public that we are always on the job. The SCM still would like to hear from all affiliated clubs in the section. WBH worked MD2AD on a Monday and received QSL on Thursday. WBH also delivered an FB talk to the local Rotary Club on ham radio. Appointments made: AAR as EC for Hartsdale, BNC as ORS. Endorsements: QGH as EC for Westchester. Traffic: W2BNC 135, TYC 133, CLL 59, GSJ 59, PHO 40, BVF 5.

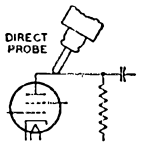
NEW YORK CITY AND LONG ISLAND — SCM, George V. Cooke, jr., W2OBU — SEC: SYW. RMs: TUK, PRE. Field Day proved to be the biggest ever in the history of the section. Many messages of activity were received and appreciated. The following clubs originated and forwarded messages to the SCM: Tu-Boro, Sunrise, Mid-Island, Huntington, Nassau, Lake Success, Brooklyn Poly, Levittown, and Suffolk. Many more participated but failed to make known their whereabouts. KDB, EC for Suffolk County, resigned to take up duties with the Navy at Philadelphia and KNA is acting in his place until a full appointment can be made. Bill took along his small rig and holds schedules with the boys back home. KTF, EC for Baldwin Area, conducted 17 drills during the month and gained two new members. Nassau County AREC/c.d. members participated in a 3-hour c.d. drill with the following results: 40 members active and 110 messages handled by FI/2, County EC, and TUK/2 assisting on 28 and 144 Mc. from Mineola c.d. headquarters. RPZ, home on leave from the Navy, assisted on Field Day with BVL/2 at Garden City. AD is new in his new QTH in East Hampstead. HYJ, after a very long absence, has returned to 144 Mc. JSV, Queens EC, reports the 10-meter net under IAG picking up, with increased work on mobiles and two new members added. Two-meter AREC operations, under TJA, Asst. EC, has 34 active members and gained three new members. PAG/2, AVI, and DVK completed 15 consecutive weeks of perfect attendance in the 2-meter net and have received Section Net certificates. A c.d. drill was held with only mobiles supplying communications and was strictly observed by c.d. officials of the city. Another c.d. drill was held in the Bronx, on city properties, and was conducted by DUP, Bronx EC, who states that Bronx now has 32 AREC members. Brooklyn, with BIV as the EC, had an extremely active month in AREC/c.d. affairs. The fellows participated in two Red Cross demonstrations, at the opening of a Rest Center and at the inauguration of the Manhattan Chapter. At no time was telephone means used. The 80-meter c.w. net has been functioning famously with DXN, Asst. EC, heading it. A new 10-meter net has been formed and meets at 2200, Thursdays. During the month the net handled 150 messages. Thirty amateurs were sworn into the city's c.d. organization, including all borough ECs. Three c.d. control centers, Baldwin, Freeport, and Oceanside, are equipped with 144-Mc. stations participating in weekly drills. AOD is active again on 144 and 420 Mc. with increased activity on those bands. George has put up a new fifteen-element horizontal antenna and expects to make some new records for himself and hopes to go mobile before many weeks. The Nassau Radio Club's new officers for '51–'52 are as follows: IWE, pres.; VL, vice-pres.; G. Mezey, secy.; UXY, treas.; and CB, trustee; and the Club's second radio school will start at the end of September. The NLI Traffic Net, operating on 3710 kc., Mondays through Fridays at 1930, will resume full fall and winter schedules on September 10th, and TUK, the RM for the net, is starting a recruiting drive among old-timers and novices to participate in the activity. DXN passed his traffic test in the NYSS Net and received his Section Net certificate and appointment as ORS. IN spent a good part of the summer in Pittsburgh doing the town with a walkie-talkie. Traffic: (June) W2VNJ 239, OJX 92, OBU 83, ZZA 77, EC 67, RUZ 63, MQB 59, CSO 47, OUT 22, DXN 16, TUK 16, IN 15, IAG 11, PF 10, BVL 3. (May) W2DXN 20.

NORTHERN NEW JERSEY — SCM, Thomas J. Ryan, jr., W2NKD — The news was hot and heavy this month. To begin with, there was the explosion and fire at the Warren Chemical Co. in Port Newark. Here again was another case to be added to the annals of ham radio. The chips were down and the gang came through with flying colors. N.N.J.'s AREC organization has "paid off" again. Other news of the month includes the unfortunate veto of Bill 106, which was the bill in the State Legislature designed to approve the issuance of call-letter license to New Jersey amateurs. It is now the plan to contact as many Jersey hams as possible through a "federation" of clubs throughout the State to coördinate efforts toward support of the next

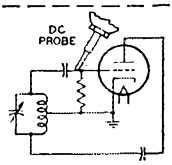
(*Continued on page 76*)

Now ...a NEW Junior VoltOhmyst* ...the WV-77A

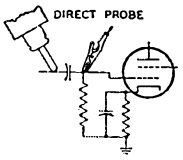
For all regular measurements and specialized measurements as illustrated.



MEASURES AC VOLTS . . . such as signal voltage on plate of af tube.



MEASURES DC VOLTS . . . such as oscillator grid bias. One-megohm resistor in probe prevents circuit loading.



MEASURES RESISTANCE . . . such as leakage in coupling capacitor up to 1000 megohms.

Just one probe cable and one slip-on probe handle all measurements.

Check these important features . . .

- ✓ Accurate laboratory calibration.
- ✓ Meter electronically protected against burn-out.
- ✓ Metal case shielding . . . extra stability in rf fields.
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- ✓ Carbon-film 1% multiplier resistors . . . dependability plus.
- ✓ Zero-center scale . . . for discriminator alignment.
- ✓ Frequency response flat from 30 cps to approximately 3 Mc.
- ✓ High ac input resistance for greater accuracy.
- ✓ Constant dc input resistance . . . 11 megohms on all scales.
- ✓ Negative feedback circuits for greater over-all stability.
- ✓ Ohms cable always positive . . . for quick leakage measurements of electrolytic capacitors.
- ✓ Polarity reverse switch . . . eliminates cable switching.
- ✓ ±3% over-all accuracy on + dc scales, and ±5% on ac and −dc scales.

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An all-electronic ac-operated vacuum-tube volt-ohmmeter by RCA . . . ONLY $47.50

Includes DC probe, AC direct probe and cable, ground lead, and alligator clip

The RCA WV-77A VoltOhmyst* provides the extra features you've wanted in an inexpensive VTVM. Using the famous VoltOhmyst electronic bridge circuit, 200-microampere meter movement, and carbon-film multiplier resistors, the WV-77A incorporates features found only in more expensive instruments.

As a DC Voltmeter, it measures dc from 0.05 volt to 1200 volts in five ranges. Uses 1-megohm resistor in isolating probe with less than 2-uuf input capacitance.

As an AC Voltmeter, it measures ac from 0.1 volt to 1200 volts rms in five ranges. Frequency range is more than adequate for measurement of power line, audio, and ultra-sonic frequencies.

As a wide-range Ohmmeter, it measures resistance from 0.2 ohm to 1 billion ohms in five ranges. Requires only 1.5-volt battery as burn-out protection in measuring such low-power elements as battery-type tube filaments.

The RCA WV-77A comes equipped with probes and cables as illustrated. See your RCA Test Equipment Distributor today . . . or write RCA, Commercial Engineering, Section 48IX, Harrison, N. J.

Accessories Available on Order

The WG-289 High-Voltage Probe and WG-206 Multiplier Resistor extend the dc range of the WV-77A to 50,000 volts.

The WG-264 Crystal-Diode Probe extends frequency range of the WV-77A to 250 Mc.

*Reg. U.S. Pat. Off.

RADIO CORPORATION of AMERICA
TEST EQUIPMENT **HARRISON, N.J.**

bill when it is drawn up. Club officers, please note: You will be called upon to ally yourselves with the officers of other clubs to work out a program of dissemination of information about a new license-plate bill so that when passage time arrives in the Legislature we will be in a position to add the weight of public opinion to the inherent weight of a well-thought-out and well-written bill. CCU has been appointed as EC of Hasbrouck Heights and BGI as EC for Wood Ridge. NNJRA has resumed regular meetings (2nd and 4th Mondays) at 60 Grand Ave., Englewood. The Central Bergen Chapter of the Red Cross appropriated funds for a 3000-watt generator and other equipment. HI has gone mobile and reports into the Bergen County Emergency Mobile Net. NCY, EC of Dumont, has the excellent services of the aforementioned HI, ZBH, BIM, and LQP. ZKE, of the Morris Radio Club, is the new EC of Towaco. VYB is at Navy boot camp at Newport, R. I., awaiting duty assignment. DXU, son of EBK, is on active duty with the Marines. CUI worked portable all summer from Normandy Beach, N. J. Field Day messages were gratefully received from all N.N.J. clubs in the field. The Jersey Net on June 24th held a meeting at the home of ZK. Those who attended were CGG, the RM of the net, EAS, SLW, ANG, UWK, VQR, the SEC of N.N.J., KHA, ZEP, DRV, ZI, K2BG, CUI, and BZJ. The Ramapo Valley Amateur Radio Club received the call HOQ for the club station at the Ramsey Municipal Building, writes MSR. IIN now is using a BC-610 on 3.8-Mc. 'phone, 3.5-Mc. c.w., and 28-Mc. 'phone. CGG visited RUF in Buffalo on the way to Niagara Falls. Explorer Boy Scouts of Roselle Troop 52 helped LOP and his group with Field Day gear. CWK received an Armed Forces Day code certificate and QSLs from AIR, NSS, and WAR. EC appointments went to OEW, Florham Park; JGP, West Orange; IUS, of Mendham; and IOF, of Lincoln Park. ZXM, maritime mobile, is in there pitching and putting out that strong signal with his 10-meter 1-kw. rig on the good ship *Flying Enterprise*. ZXM/MM uses p.p. 813, 3.5144 Mc. at 50 w.; 3.5, 29.7 Mc. at 1000 w.; three-element rotary beam with folded dipole. Supply is a.c. on 2-kw. motor generator and an HQ-129 receiver. Attention club secretaries: Please send the SCM the meeting place and time of your club as both the SCM and the SEC would like to pay a visit to each club. Traffic: W2CCS 201, ANG 148, CUI/2 128, WCL 53, LMB 42, ZEP 27, CJX 4, NIY 2.

MIDWEST DIVISION

IOWA — SCM, William G. Davis, WØPP — It is with sadness I report the passing of our good friend and long-standing member of the Iowa 75, JUI. Charlie was one of the first members of the net when it was formed before World War 2. BXO reports the antenna of the Davenport Club station, BXR, again is in the air. The club treasury was helped by the proceeds of an auction of parts donated by TNY. The SCM visited the Club June 27th. SCA comes up with a good traffic score again, considering the season. He's also keeping on with T.E.N. and C.A.N. WML was set up at the Maytag Factory at the celebration of the making of the seven-millionth washer. UHC reports the Iowa Great Lakes Ham Club was out in force for Field Day. BGU, FKA, GQI, MVE, QVA, and TQG furnished communication between the air-strip and speakers' stand at the Lake Geode dedication. GQI has graduated from Bradley U. and is expecting a call from Uncle. MVE is back in the Navy. OHO now is with the Signal Corps at Pentagon. There has been no report from FDL, but the Davenport Club furnished operators AON, BXO, CGY, EGR, UIM, UHK, ETJ, NVI, UXF, TNY, TSO, VIE, HAX, USD, and FTF; also rigs from FP, UIM, EGR, UHK, ETJ, and HAX. Traffic: WØSCA 328, YTA 41, NYX 26, BDR 22, QVA 21.

KANSAS — SCM, Earl N. Johnston, WØICV — The Jayhawk Amateur Radio Society held Field Day using the call SO/Ø, and with one rig on 7 Mc. made 302 contacts in spite of being hit by a big rainstorm. The Johnson County Radio Amateurs also had its first Field Day using the call CLA/Ø, making 96 contacts, mostly on 7 Mc., despite thunderstorms, mud, equipment failures, and antenna-loading problems. NZP managed the affair with CLA, ODU, IIJ, WAI, HTV, BIO, WMH, EIB, and HJW participating. The Central Kansas Radio Club held Field Day near Lindsborg using the call MVG/Ø. The tornado at Wakeeney had BGW, ATS, and MUY out with Floyd's Viking and NC-100X handling Red Cross traffic. CC was the first into Wakeeney with his 75-meter mobile and handled emergency traffic relaying through TYR and others. The Kaw Valley Radio Club of Topeka changed its Field Day location to the Kansas National Guard Armory because of threatening weather and had rigs on 28-Mc. 'phone, 14-Mc. 'phone, 14-Mc. c.w., 7-Mc. c.w., and 3.8-Mc. 'phone. Mobiles got busy during the night checking on dike-break rumors west of Topeka because of high water. The real crisis started Thursday night when at about 9:30 P.M. Mayor Wilke, of Topeka, asked that the mobiles be called out to furnish communication for the National Guard, which was on dike patrol. Friday brought more of the same duty and Saturday, when the flood was at its worst, three fixed stations and ten mobiles furnished communication for the National Guard, city and county officials, and the Red Cross. ZGK is new EC for Johnson and Wyandotte County. LIX, MUY, and WIT have been on vacation. Traffic: WØUQD 48, NIY 14, KXL 3, ICV 2, LIX 2.

MISSOURI — SCM, Clarence L. Arundale, WØGBJ — PLJ is looking for contacts on 144 Mc. WAP is teaching code to a CAP group of boys and girls. FIR is getting settled at new QTH and is installing mobile rig. GCL reports rain during Field Day operations of the Rolla Club. JEJ has received his Master's Degree and is back on the air in Joplin. ICW is installing mobile rig. QMF is giving 28 Mc. a try while QRN is bad on low frequencies. The St. Louis Amateur Radio Club Council held its mobile picnic on June 10th at Tyson Valley Park. An unusual feature was the Hidden Transmitter Hunt with receivers constructed on the spot using IN34s. It was so popular the gang requested another hunt so the transmitter was hidden again. The Heart of America Radio Club Ten-Meter Emergency Net participated in "Operation Survival" on June 5th. Greater Kansas City mobile units gave a good demonstration of communications support in coöperation with the Civil Air Patrol Operation MSU on May 20th. SMARC is endeavoring to educate TV owners in Springfield regarding fringe-area TV reception and TVI with hams coöperating. Traffic: WØWAP 31, GAR 23, OUD 13, GBJ 8, QMF 4.

NEBRASKA — SCM, Scott E. Davison, WØOED — Your SCM has been off the air entirely for some time because of moving from one house to another. His new address is 908 North "I" St. Nebraska was well represented on the air Field Day. AZC and VBJ are sporting new Class A tickets. ADK is vacationing by car on 28 Mc. VBR has a new antenna. NVE is sporting a new car. YOF has joined the AREC. Nebraska was well represented at the Colorado Hamfest at Estes Park. AIN reports in from Korea, and AYO from Canal Zone. ESX now is at Springfield, Mo., as a maintenance technician with CAA. He says he will have 32V-2 on soon. TQD banged out another "overseas" BPL. Great going, Lyle. FJD has been remodeling the rig this summer. TIP was a caller on the SCM recently. He operates 160-meter mobile and has FB layout in his car. EUT has revamped his rig. UVQ has a new antenna. The 3.9-Mc. Sunday 'phone net has been operating nicely all summer. VNA is sporting a new Class A ticket. JGT is vacationing in California, operating 3.9-Mc. mobile. RCH soon will be mobile on his territory job from Minnesota to Texas. Let's have more reports. We're interested in your mobile and summer operations. KP4PI wants Nebraska schedules. Look for him on 28-Mc. 'phone. If you have not already made contact with your local c.d., do so at once so that you may take your place in the community set-up. Traffic: WØTQD 1171, AY 32.

NEW ENGLAND DIVISION

MAINE — SCM, Orestes R. Brackett, W1PTL — SEC: IGW. RM: NGV. PAM: PTL. PTN is operating on schedule, 3596 kc., 1900. The Sea Gull Net is off for the summer. Several reports on Field Day activity follow: ITU, president of PAWA, all-night operation at Falmouth, Maine, 3 operators, all members AREC. KINAE/1, Readfield, 6 operators, 3 AREC. NXX, Scarboro, 1 operator, AREC. LBJ, York, 6 operators, 3 AREC. OTM is newly wed and he and his XYL, Joyce, are making their home in Norway, where Bill is running a gas-filling station. A nice vacation was had by IGW and family in Dexter. PCQ is studying X-ray work at a hospital in Portland and will be with us here for about a year. PTL was in Bath and Phippsburg, and over the Fourth of July visited ACO and RQR. Cliff has more DX on 3.5-Mc. c.w. than I have ever seen before. He really does a fine job with the small amount of power that he is using. NDG soon will be on 3.8 Mc. with 500 watts using a pair of 813s. He has just received his new Advanced Class ticket. NIQ is doing a fine job with his 800 watts on 3.8 Mc. from Togus. Where are all of those traffic reports? We don't blame you for taking advantage of this nice summer weather, but just take a few minutes and send them in. QUA and SPJ, who have their new Advanced Class tickets, are doing a fine job on 3.8 Mc. Traffic: W1LKP 71, QQY 62, BTY 54, PTL 32, OLQ 22, EFR 9, QIQ 6, SEJ 6.

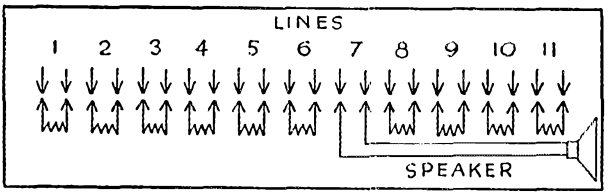
EASTERN MASSACHUSETTS — SCM, Frank L. Baker, jr., W1ALP — SMV is new EC for Cohasset. THU is new ORS in Bedford. The following appointments were endorsed: PZ, NSP, QNJ, LVN, MCR, BKR, and BBL as ECs; PXH as OO; PZ and HUP as OPS; AAL as RM for 14- and 28-Mc. c.w. Mort Reardon now is TQP. Walter Butterworth, GM, after 40 years of service with the FCC, recently retired and was given a dinner in Boston attended by Mr. Kolster, Entwistle, TS of ARRL, IS, IH, UD, BVR, ALP, ZK, IYU, QVC, AJL, PAD, QMD, AT, SS and many others. SUT, in Walpole, is on 3.8 Mc., as are LEL, QA, IIM, and KVH. QA also is on 144 Mc. PFA is mobile on 3.8 Mc. BIO is on 14-, 7- and 3.5-Mc. c.w. HVC is on 144 Mc. 3PJF/1 is on 28-Mc. mobile in Boston. He attended the South Shore Club banquet, which was held at the Fore River Club House. Other visitors were BFT, FTJ, UC, and QA. The clubs were quite active in Field Day this year. The South Shore Club, IA, went to Hull. The Framingham Club, GLA, was on at Westboro. The Old Colony Radio Assn., SE, was on in Foxboro. The El Ray Radio Club was out, too. On June 10th a test was

(Continued on page 78)

MALLORY HAM BULLETIN

Simplified Speaker or Meter Switching

Suppose you were faced with the problem of how to switch a single speaker to each of 11 separate lines and at the same time maintain a constant terminating impedance at each of the unused lines.



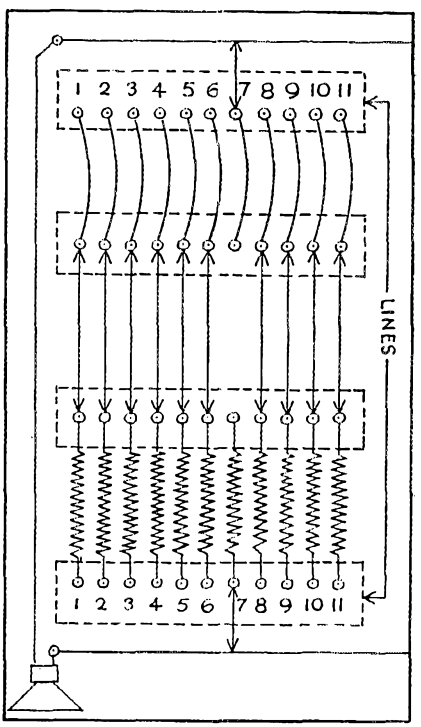
In spite of the complexity of such an assignment this actual problem was solved easily and quickly with the help of the unique Mallory 1400L Circuit Opening Switch (see diagram below).

It is unlikely that a speaker switching problem of this magnitude will ever be encountered by the average amateur. However, with a milliammeter or microammeter substituted for the speaker, and with the feed-lines re-connected to the plate, screen and grid circuits of a low power transmitter or exciter, this circuit can become of definite interest to the amateur.

Imagine what this basic circuit and the Mallory #1400L switch could do for you in your own rig! A single meter could be used to measure current flow in each of 11 *completely isolated* circuits. And with the addition of a few series and shunt connected multiplier resistors, it could be expanded to include intermixed measurements of current and voltage in both anode and cathode circuits!

The Mallory #1400L Circuit Opening Switch gives the amateur precisely what is needed for meter switching. It may be used in circuits up to 500 volts (plenty of range for low power rigs or exciters), it has extra-duty solder terminals to which multiplier resistors may be mounted, and yet its cost is well within the average budget.

For additional technical details on how to use the #1400L and also for information on meter multiplication, write for a copy of "Meter Switching in DC Circuits". This pamphlet is yours for the asking. Address us at P. R. Mallory & Co., Inc., Box 1558, Indianapolis 6, Indiana.



Meanwhile see the #1400L and those other fine Mallory parts at your Mallory Distributor. They include volume controls—rheostats—pads—dry electrolytic capacitors—tubular capacitors—ceramic capacitors—dry disc rectifiers—vibrators and vibrator power supplies—Inductuners* and bias cells.

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held on 3.9 Mc. in the whole State. RDR acted as Net Control and called the net to order by regions: 1 IZN, 2 CJK, 3 IHI, 4 QNJ, 5 DFS, 6 AYN/RSE, 7 AHX, 8 DHX, 9 BNO. We want to thank all who have sent in contributions to the George Bent Fund. The Everett Emergency Club has the call TNI. TMB, Marblehead, is on 144 Mc. BDM, now in Groton, will be on all bands. KL7AJC, ex-1PDG, formerly of Norwood, is in Fairbanks with the CAA and looking for W1s. HIL has 37 states on 50 Mc. BGH has a 522 on 144 Mc. The Quannapowitt Radio Assn. had a demonstration by the New England Telephone Company on Microwaves Relay Stations. The T-9 Radio Club held a meeting at ISX's QTH. THU is with the CAA in Bedford and is on the EMN. The Eastern Mass. Club held its final meeting at the Smith House in Cambridge. SS was presented with a silver engraved gavel as retiring president. New officers are QVP, pres.; LMB vice-pres.; AMO, secy.-treas. WU has a seven-element beam for 144 Mc. ZS6XQ, who still is at the Boston City Hospital, sent out a very nice QSL card. MXG left for Ireland July 5th. OBN/2 now is living in Brooklyn, N. Y. DFS, Somerville EC, says they are going on 50 Mc. OTK, FBI, MAR, KFM, AIW, HPS, SIV, NJN, and OEI are working with him. One of BB's members of Winthrop c.d, Ralph Colby, 13 years old, was the first one in New England to pass the new Novice Class exam. MJE and KON are building a house at Beverly Cove with lots of room for antennas. SQP is back in the Navy. EYI is flying an Ercoupe in his spare time. The Newton Net, on 145.62 Mc., will hold drills on the fourth Tuesday of each month. PWV attended the QCWA meeting in N. Y. The Newton Net drill had twelve members on in the June drill. SUV has been reporting in to EMN. ODQ and SUR attended the c.d. meeting in Brockton. SUR has the rig in his car on 144 Mc. AVY is the clearing house for all kinds of gear in his QTH for hams. CTZ has new rig in the car for 28 Mc. ONK is building a new QTH. MHN is president and manager of the "Barefoot Net" on 3862 kc. at 5:30 P.M. each night. LAZ is working on a rig for 3.9 Mc. APN has hair-trigger relays on 28 Mc. for a fast comeback. AAL has a new room for his shack. ZK has a rig on 3.9 Mc. on his boat. EAU is building a new QTH in Scituate. ADM is chairman of communications for c.d. in Canton. IS has a rig on 144 Mc. in his car. AEZ/MM is on 144 Mc. in his boat. FVD will have a rig in his car on 144 Mc. NYA, in Braintree, and QGJ, in Woburn, are on 144 Mc. Traffic: (June) W1SS 178, THU 150, TY 98, DMS 90, LM 84, JCK 76, CTR 10, PU 8, WU 8, AVY 6, BB 4. (May) W1RSE 16.

WESTERN MASSACHUSETTS — SCM, Victor W. Paounoff, W1EOB — SEC: JYH. RM: BVR. Section net meets at 7 P.M. on 3725 kc. Monday, Wednesday, and Friday. Slow-speed net meets at 6:30 P.M. Monday and Friday, same frequency. New OBS is AGM on 28-Mc. 'phone. BVR and UD attended the testimonial dinner on the retirement of Walter Butterworth. BDV is lazing in the Maine sun at York Beach. COI is planning beams on his 8-acre lot. An excellent write-up in the Holyoke papers, authored by MOK, featured ham emergency and Field Day set-up. Several of the clubs and AREC groups had FB workouts during Field Day. In general results were good but "we'll do better next year." By now, all of us have completed our vacations and should be rarin' to go again. Let's start off with a bang this season in the QSO Party and then follow up by participating in one of the many organized activities in our section. Traffic: W1EOB 59, BVR 21, AGM 6, MOK 5, BDV 1.

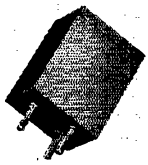
West. Mass. "Get-acquainted" QSO Party

Time: September 16th from 8 A.M. to 6 P.M. Place: First 100 kc. of 80 c.w., 75 'phone, 40 c.w., 20 c.w., 20 'phone, all of 10 c.w., all of 10 'phone, all of the 6- and 2-meter bands. Object: To swap nickname with as many West. Mass. operators in as many counties as possible. Same station may be worked once on each of the bands listed above. QSO points, 2 per complete exchange of names. Scoring: Total QSO points times the number of different counties worked (5 is maximum multiplier). Mail copy of logs and score to W1EOB, 26 Denton Circle, Springfield, Mass. Suggested times of operation: 80 and 75 from 8 to 10 A.M.; 40 from 10 to 12 A.M.; 20 from noon to 2 P.M.; 10, 6, and 2 from 2 to 6 P.M.; 80, 40, and 20 at will from 2 to 6 P.M. Section officials (i.e., SCM, SEC, and RM) are not eligible for prizes.

NEW HAMPSHIRE — SCM, Norman A. Chapman, W1JNC — RM: CRW. The Great Bay Radio Club put on another excellent clam chowder get-together at the Hampton Beach Fire Station on June 7th. Capt. Basil Cutting, APK, and Lt. Al Bellerose, IJB, from N. H. State Police, gave interesting talks on "Civil Defense in N. H." and "Mobile Installations." Members of the Gypsy Radio Club, Haverhill, Mass., were invited guests. Forty hams enjoyed HRI's chowder. TNY, Newport, and TPQ, Plymouth, are new General Class ticket holders. EDN,

(Continued on page 80)

CRYSTALS



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JK T-9

JK G-9

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Derry, now is Advanced Class. While at home nursing a broken ankle TBS has hooked eleven states on 50 Mc. Fish Net members from all the New England states and New York attended their annual "Fishfest" held at Canobie Lake Park, Salem, N. H., on July 1st. JTI is standing by on 3958 kc. Thursdays and Fridays for any stations needing Carroll County for their WNH certificate. The following clubs participated in Field Day activities: The Nashua Mike and Key Club operated from Pack Monadnock. The Great Bay Radio Club was on Mt. Agamenticus. The Manchester Radio Club was at Candia and the Concord Brasspounders at Pleasant Lake, Northwood. OMZ, RYD, SJS, TJU, and FLF are 10-meter mobile. TA and MKD are mobile on 3.8 Mc. The N. H./A.R.R.L. Convention will be held in Manchester on Oct. 6th. Traffic: (June) W1POK 85, JNC 24, QJX 15. (May) W1TBS 216, JGI 8.

VERMONT — SCM, Burtis W. Dean, W1NLO — During Field Day MEP worked 22 stations on 144 Mc. from the top of Mt. Equinox with mobile rig; BNV, SPK, and TFB operated under SPK's call from Ripton. BJP, IT, RLS, RNA, RWX, and SVT operated under RNA's call at Bluff Point (near the Bob Cat Country); the Tri-County Amateur Radio Club operated under FPS's call near Brattleboro; the BARC, operating under the Club's call, KOO, from Waterville, had AEA, BRG, NLO, OKH, QQN, QVS, RPR, SEL, SEO, TBG, TEW, and TLI as operators. Visitors were QNM, RCZ. RWX, TJ, ETE, and KJG. KRV has resigned as RM. RNA is resigning as SEC effective Sept. 1st. Don't forget the Annual Vermont Hamfest and State ARRL Convention Sunday, Sept. 16th, at the Community Hall, Brattleboro. Registration starts at 9:30 A.M. DST. Rush your check or money order for $4.50 (advance registration) to the Tri-County Amateur Radio Club, P. O. Box 78, Brattleboro. This is my last report as your SCM as I have resigned, effective July 15th. Certainly appreciate all the hard work the gang has been doing with the c.w. and 'phone nets and the AREC.

NORTHWESTERN DIVISION

IDAHO — SCM, Alan K. Ross, W7IWU — Burley: HAH was host to your SCM at a Magic Valley Radio Club meeting in his home June 26th. The Club's Field Day activities were from Mt. Harrison, with HST, VAC, DLA, JHY, MCM, NGU, MJZ, and HAH taking part. Prior to Field Day a drill was held with Heyburn c.d. officials, and later a practice drill was held with VAC as Net Control. Twin Falls: The Keys and Mikes Radio Club operated with 11 members two miles south of Berger. Dubois: MIR reports two operators on Field Day eight miles north of Kilgore. Boise: Field Day stations known to be out were KJO at Robie Creek Summit, near Boise, and OCR, OSQ, and JMH at the same location. IWU was near Mile High, with GHT and NVO helping to operate. 6EBK/7 visited me and we had some fine contacts as he was traveling to Lewiston. Traffic: W7JL 90, GHT 78, LQU 20, HOV 12, BAA 11, HAH 7, FIS 4.

MONTANA — SCM, Edward G. Brown, W7KGJ — Conditions have continued to be unfavorable for local net activities. LCM and his XYL are happily and busily engaged in the necessary preconstruction duties before starting work on their new home. They plan to build in Huntley, a few blocks west of their present location. The Mayor will put up a 10-over-20-meter beam near the new City Hall. CVQ attended the National Convention in Seattle. LIT has returned to duty in Hawaii after a thirty-day leave which he spent at home in Billings. Jack was able to attend Field Day activities again this year. The Billings gang operated Field Day using the club call, OQI. Weather conditions were ideal but radio conditions were not very favorable and contacts were far below expectations. OPM recently received his Advanced Class license and is constructing a new modulator. The SMARA is planning a radio booth at the Midland Empire Fair at Billings. LCM relayed a message reporting a forest fire near Missoula for the forest service. A station contacted Earl with the emergency traffic and Earl relayed to Missoula via land line. Traffic: W7KGJ 46, CVQ 11, BNU 10, LCM 7, COH 1.

OREGON — SCM, J. E. Roden, W7MQ — AIZ is new Asst. SEC for Oregon and is very active in getting the new Oregon State C.D. RACES Net organized and going. PIU has been transferred to Honolulu. BGG, with CAA, has been transferred from Pendleton and now is located in Seattle. PAB reports the Rogue Valley Radio Club is conducting successful code classes each Tuesday evening. HDN reports the big OEN picnic at Suttle Lake was a big success. CZ, from Hermiston, has an FB 100-watt mobile on the 3.8-Mc. band. The LaGrand Amateur Radio Club held successful Field Day operations at Starkey. ESJ reports that his activity for the month was 100 per cent amateur radio, but was 99 per cent on the cool end of a soldering iron as he is doing some extensive experimental work. AIZ, EJF, and FMX very ably assisted the AP in getting the news from a ship collision off Coos Bay when regular channels of communication were out of service, and all received commendations in the AP *News Desk Log*. The Pendleton Amateur Radio Club received thanks for a job well done when the Club recently assisted in pro-

(*Continued on page 82*)

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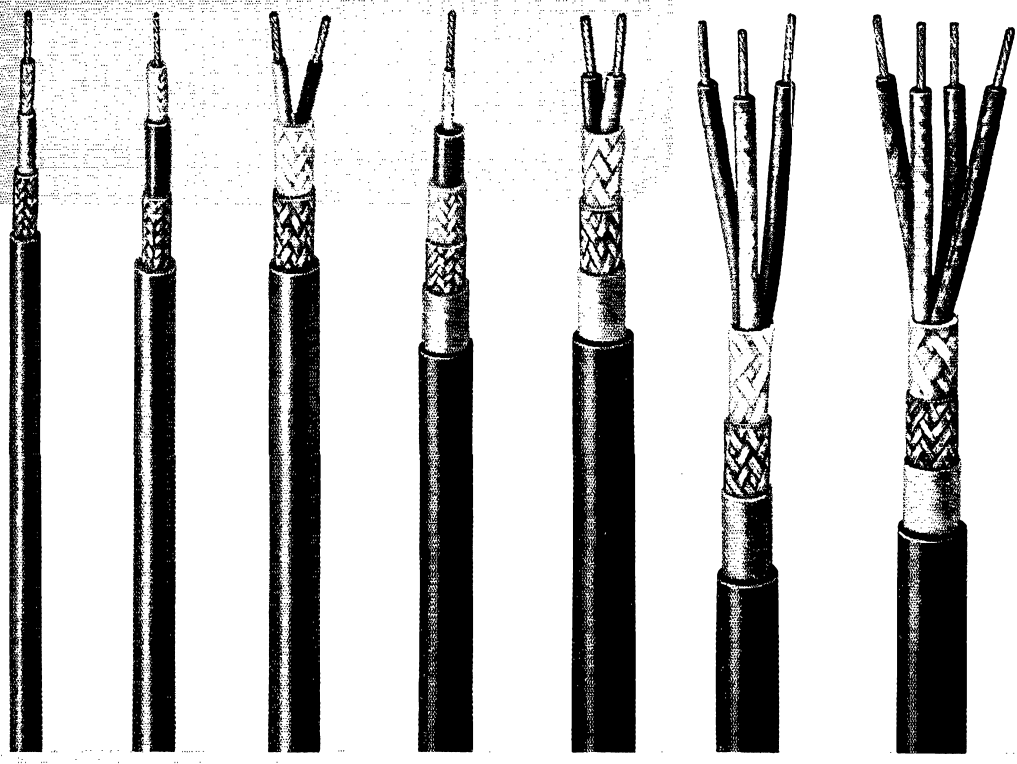

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viding communications at a big water rodeo put on by the Chamber of Commerce at McKay Lake, near Pendleton. BUS had a small fire recently in the exciter section of his BC-610 which has disabled the unit for a while. KR had similar troubles with his HT-9, probably because of moisture collection. Traffic: W7LZE 163, HLF 135, HDN 132, MQ 102, AIZ 98, AJN 89, GNJ 45, II 41, EJF 30, KTG 26, MEZ 23, JKU 22, BDN 16, BWD 15, FY 13, OKH 13, AHZ 10, PL 9, HJU 7, KLE 6, NFU 6.

WASHINGTON — SCM, Laurence M. Sebring, W7CZY — SEC: KAA. RM: FIX. BX reports Harvey-Wells on all bands, but weak on antennas. His new QTH is 1726 McFadden Ave., Chehalis. ZU's jr. operator has built a novice rig. Major Art Monsees, 6HJP, San Francisco, is assigned to the 634th Aircraft Control and Warning Sqdn., P. O. Box 909, Everett, Wash., and is signing K7FAE. FIX is looking for someone to take over the job of WSN manager. The Walla Walla Valley Amateur Radio Club had 15 operators at its Field Day location at McIntire Point in the Blue Mountains in Northeastern Oregon. HAD's new QTH is 135 Apt. 1, Elm St., Bremerton. JXC has high hopes of working Seattle on 144 Mc. with his 48 elements. The Spokane Area has a breakfast net on from 7:45 to 8:00 A.M. and a dinner net on from 12:00 to 1:00 P.M. Frequency of its ARRL Emergency Corps is 29.600 Mc. EVW is busy working on a frequency meter. The Cascade Radio Club had 25 operators on for its Field Day event. Contacts were made with approximately 250 stations. Operation was on 3.8-, 14-, and 28-Mc. 'phone and 3.5- and 7-Mc. c.w. Power was furnished by a 10-kw. generator which was loaned by the City of Everett. The set-up was on CZY's antenna farm. An auxiliary of the club has been formed with the following officers: Anna Sebring (CZY's XYL), pres.; Margaret Oczkewicz (CSK's XYL), vice-pres.; and Dessie Huntley (PED's XYL), secy.-treas. MWP and OEX have passed Class A exams. The North End Field Day at Carney Lake was enlivened by a good score and many yellow-jacket stings! NL was Field Day director. DND had a get-together at his Chico home on the Sound over the 4th of July with the following hams: VI, OZG, PGY, BA, OEX, KZP, and PDB. The Seattle Totem Net had a "Subversive Mobile Hunt" on July 3rd using direction-finding loops on mobiles to locate the quarry with the home-station squad using bearings to compute location. HRC was in charge, with CBE/M the quarry. OEX, OHQ, PGY, and BA put up a beam for OPA. The Spokane Radio Amateurs set up Field Day equipment on top of Mt. Spokane. Those who turned out with their equipment were OPR, OHI, OCD, OUH, OOF, NXN, ESY, PCV, OHB, and FQS. Traffic: W7IOQ 523, CZY 385, FRU 281, NRB 231, NWP 96, BA 82, KCU 71, ZU 45, LVB 42, FIX 32, ACF 29, KAA 16, APS 13, ETO 11, EVW 7, CWN 6, GAT 6, KTL 1.

PACIFIC DIVISION

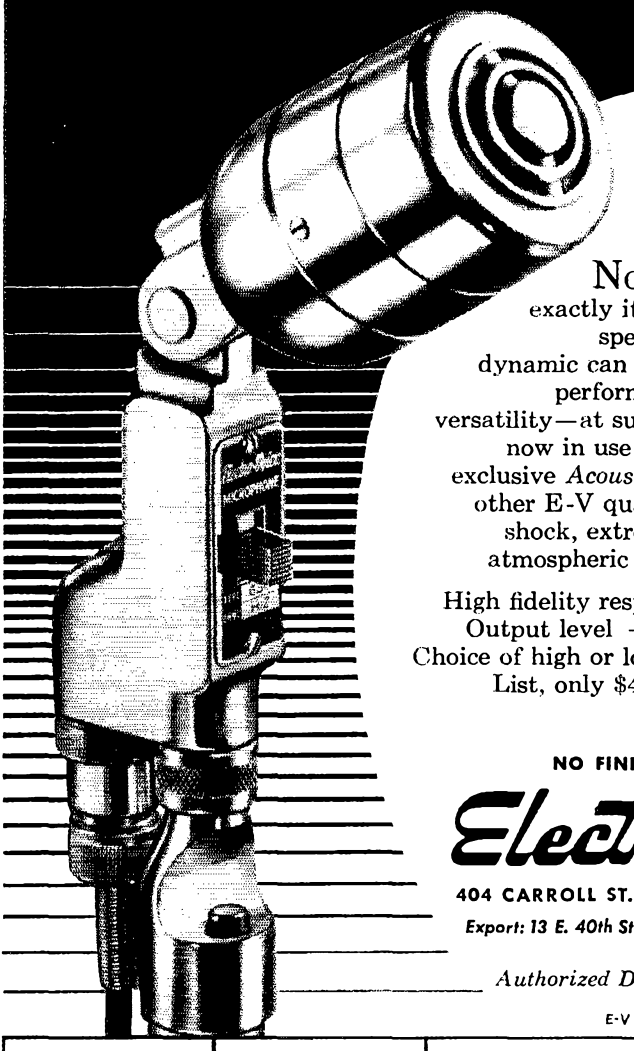
HAWAII — SCM, John R. Sanders, KH6RU — The HARC had an FB Field Day set-up with a 500 foot "V" beam across the beach at Bellows Field. The Kauai and Maui Clubs also were in the running and, considering the poor conditions prevailing, good scores were run up. The Honolulu Mobile Club is planning a big hidden transmitter hunt for the fall. IJ is concentrating on 3.8-Mc. mobile work. AN is busy gathering plans and materials for a 14-Mc. rotary. RU had a visit from wartime Boston friends, W6BGA and W6BZR. ADY demonstrated a 7.5-watt 3.8-Mc. rig at an HARC meeting. KA and QL 'phone patch into their homes regularly from Truk Island through several 10-meter Oahu stations. *Far Pacific Area:* KB6AO will leave Canton Is. for six weeks vacation in Hawaii and the U.S. this fall. KC6AA left Truk for good in July. KG6AAD attended a meeting of the Far East Amateur Radio League in Tokyo. KG6FAA completed 99 'phone patches for the month. Pacific Traffic Maulers who made BPL this month were KG6FAA, KR6AF, and JA3AC. Traffic: (June) JA3AC 1438, KG6FAA 1326, KR6AF 652, KH6ADY 23, KG6AAD 17, KH6RU 6. (May) JA2DS 366.

NEVADA — SCM, Carroll Short, jr., W7BVZ — SEC: JU. ECs: HJ, JLM, JVW, KIO, KOA, MBQ, TJY, VO, and ZT. RM: PST. OPS: JUO. Nevada State frequencies are 3660, 7225, and 29,360 kc. MBQ is concerned over proposed higher power rates in Henderson and says he will have to QRT or QRP! PCH reports he has been working much short skip from 10-meter mobile and some on 20-meter c.w. MJB enjoyed Field Day with Collins equipment on 7 Mc. At home he is on 7- and 28-Mc. 'phone and c.w. and expects to be on 3.5-Mc. c.w. soon. The Reno Club, with 7YN/7, was on with three Collins transmitters in grass meadow near Reno, instead of the usual hilltop spot. Operators were KLK, MJP, MRN, TQZ, CX, LXF, BNX, EEF, CNG, and KCE, according to CX. TQZ is back in Police Radio. KCE is on 3.8-Mc. mobile. CNG is on 28-Mc. mobile. Southern Nevada hams on individually on Field Day were HJ, JU, LGS, and TKV.

SANTA CLARA VALLEY — SCM, Roy I. Cousin, W6LZL — SEC: AEV. ECs: CER, CLF, FTG, IXJ, NOE, QIE, QNK, and TFZ. The Field Day showing made by the entire section was very good. From Saturday evening through the wee small hours the signals kept coming through and heavy eyelids were lifted to pore through the index files

(*Continued on page 84*)

Have you QSO'd the 630 lately?



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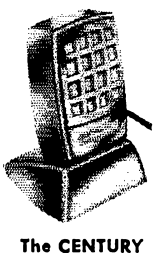

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for a possible new contact. UKM has built up the Select-O-Ject per *QST* article and it works like a charm. June 9–10 was a big week end for the v.h.f. gang. LOZ, CDX, ESH, and GCG took part, among others, with GCG making over 120 contacts on 144 Mc. QNK reports that things are picking up in c.d. activity down Salinas way. MMG left for his annual vacation to W1-Land. YHM was off the air most of the month making repairs on the rig; power now is up to 500 watts. HC was appointed c.w. net manager of MTN, and was elected president of the Central California Radio Council. The Mission Trail gang had its annual round-up at Coyote and everyone there had a very good time. SYW attended and won a math book. BJS is at Treasure Island studying electronics. FKG is recovering from a badly-cut arm. A large transmitting tube went to pieces while being handled. At the June SCCARA meeting EI gave a very fine talk on the application of the vacuum condensers in ham rigs. Well, fellows, once more I'd like to request that you make an effort to get your activity reports in by the first of each month. Traffic: W6BPT 199, HC 140, YHM 37.

EAST BAY — SCM, Horace R. Greer, W6TI — As no other valid nominating petition was received for the office of SCM of the East Bay section, Mr. Ray H. Cornell, W6JZ, was duly elected. His term of office will begin August 16, 1951. Please take notice that in the future all reports should be sent to him at 909 Curtis St., Albany 6, California. I wish to take this opportunity to express my thanks to all the gang for the splendid cooperation they have given me in the almost fourteen years that I have been SCM of the East Bay section. It has been a pleasant job and one that I have enjoyed doing for the good of amateur radio. I have spent hundreds of dollars out of my own pocket and given thousands of hours of time for the good of the cause. There never has been a report missed in all these years, and my last request of the gang is to keep the news and reports coming in to your new SCM. It is necessary that you furnish him with the dope and news that go into this report each month. I also wish to thank my Asst. SCM, EJA, for all the good work he has done, and OBJ, my SEC, who also is retiring, for the outstanding and faithful work he has done in emergency work. On July 4th, at the speed boat races on Lake Merrit, the following furnished 10-meter 'phone communication: VS, EY, AKB, NTU, and KZF. Three boats with rigs and one control station at the main boat house made up the deal that worked out FB. A report from NBARA shows the following hams took part in Field Day: RRG and MIZ, 14-Mc. c.w.; CFE and YTT, 7-Mc. c.w.; CHI and ZHU, 3.8-Mc. 'phone; WGM and AFC, 144 Mc.; ZZF, JDO, AIM, and HUY, 28-Mc. 'phone; BPC, NIG, and HNX, 14-Mc. 'phone. WHA and BGJ took over 3.5-Mc. c.w. BUC worked out on 160-meter 'phone. QDE has new 75A-2 and EJA has new HRO-50-1. CYE, Elton Nelson, was murdered by his brother-in-law recently. SKI has cleaned up his TVI problems. OJW has been on vacation painting his house. NGC is QRL house-remodeling. JZ makes BPL as usual. The Mission Trail Net sure had a bang-up affair on June 30th and July 1st at Coyote at its annual get-together. The SARO 75-meter mobile gang is going strong with UHM, MVO, ZIG, VIQ, QNH, UDF, BNB, UV, VJN, DZR, SMF, AAQ, VJS, and ESH putting in S9 signals on 3995 kc. daily. TT and DUB are QRL new store. CGG and GIZ are QRL helping out. TI now has 200 countries on c.w. Traffic: W6JZ 856, NGC 17, TI 2

SAN FRANCISCO — SCM, R. F. Czeikowitz, W6ATO — Phone: JU 7-5561. SEC: 6NL. Phone: PL 5-6457. *Eureka Area:* EC: SLX. GDV paid a visit to the Humboldt Club while on leave. NAO is trying out 28-Mc. 'phone. CWR is building with surplus gear. BJO is temporarily QRT — poison oak. KTV is the envied possessor of a Collins 32V-2 and a National receiver. One of the few cups awarded at the Hobby Show was won by the Humboldt Amateur Radio Club for its outstanding display. LE now is mostly on 3.8- and 28-Mc. 'phone. EQQ is on 7-Mc. c.w., as are QCS and JSY. BME is taking his mobile with him to summer school at Oregon State College. YUH finds it necessary to rebuild his rig as a result of fire damage to his house. FBK is building a 28-Mc. transreceiver complete with 13 tubes, power supply, and VFO on a chassis 8 by 5 by 2 inches. FBK, FCR, and LE together planned and carried out a 28-Mc. fixed and mobile demonstration for the local Kiwanis Club. ZSE is modifying an ARC-5 for 28 Mc. ZZK is on 3.5-Mc. c.w. KAR is a DXer and finds the QRM rough, especially on MD2JB. The Humboldt Amateur Radio Club meets the second and fourth Fridays in the YMCA rooms, rear of Municipal Auditorium, entrance on "E" Street, Eureka. *Marin Area:* EC: KNZ. Activity is at its usual low summer ebb. Rigs are being built, and mobile equipment is on the upswing. The Marin Radio Amateurs Club meets the second Friday in the Engineering Lecture Room, Marin College, Kentfield. The old-timers meeting at the Mill Valley Golf Clubhouse was greatly enjoyed by all. The hearty and sincere congratulations of the SCM are offered to the rapidly-growing Tamalpias Radio Club. The presiding officer is elected for each meeting by popular acclaim. Only one term office exists, that of secretary-treasurer, which is ably filled by OZC, a friend of most of the old-timers in the entire Bay Area. The Tamalpias Club meets the third Friday at 232 Mirimar Ave., San Rafael, and

(*Continued on page 86*)

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all are invited. *Santa Rosa Area:* EC: IEN. Work is progressing in adding mobile units to the E.C. in this area. The two-meter net is operating Tuesdays at 8 P.M. on approximately 147 Mc., while the 10-meter net is active Wednesdays at 8 P.M. The Sonoma County Radio Amateurs' Club meets the first Wednesday in the Tap Room of the Grace Bros. Brewery on Second St., west of the Freeway, Santa Rosa. *San Francisco Area:* EC: BYS. Asst. EC: JWF. Phone: MI 7-3284. The Beer Bust of the San Francisco Radio Club was a very great success. Plans are being processed for the regular yearly picnic to be held in September. Operating activity is low because of the vacation season. The competition between the SFRC and the HAMS was especially keen during Field Day this year, with the issue still in doubt at this writing. Considerable spice was added to the contest when the HAMS sent a box of chicken bones down to the operating site of the SFRC. The chickens were filched from the SFRC Beer Bust larder by the HAMS. The San Francisco Radio Club meets the fourth Friday at 1641 Taraval St., and the Highfrequency Amateur and Mobile Society meets the second Friday at the local Red Cross Building, 1625 Van Ness Ave., San Francisco. Traffic: W6SWP 38, ATO 7.

SACRAMENTO VALLEY — Acting SCM, Willie van de Kamp, W6CKV — Asst. SCMs: Northern Area, 6YNM; Central Area, 6CKV; Southern Area, 6ZYV. SEC: KME. ECs: Met. Sacramento, BVK; Walnut Grove, AYZ; Dunsmuir, JDN; Mt. Shasta City, EWG; Paradise (Chico Area), HBM; Roseville, GHP. RM: PIV. OBS: AF, BTY. PAM: ZYV. OES: PIV, GHE. OOs: ZYV, YNM, BTY, GDO, YV. OPS: JDN. Nets: Sac. Emergency (city) AUO NCS. Sac. Valley Net, JEQ NCS. Mother Lode, UNT NCS. Tall Pine, YNM NCS. *Northern Area:* The Dunsmuir and Mt. Shasta clubs provided communications for the RAILROAD DAYS parade in Dunsmuir. The Mt. Shasta Radio Club devoted a meeting to the discussion of radioactivity. *Central Area:* QWD has moved to Chico. OEX is back in Oroville. TKE is the father of a jr. operator. BVK was heard operating portable while on vacation. CKV is trying kites for antenna supports. *Southern Area:* GDO is the only consistent reporter from this area. LBJ has a Panadaptor. Traffic: W6GDO 11.

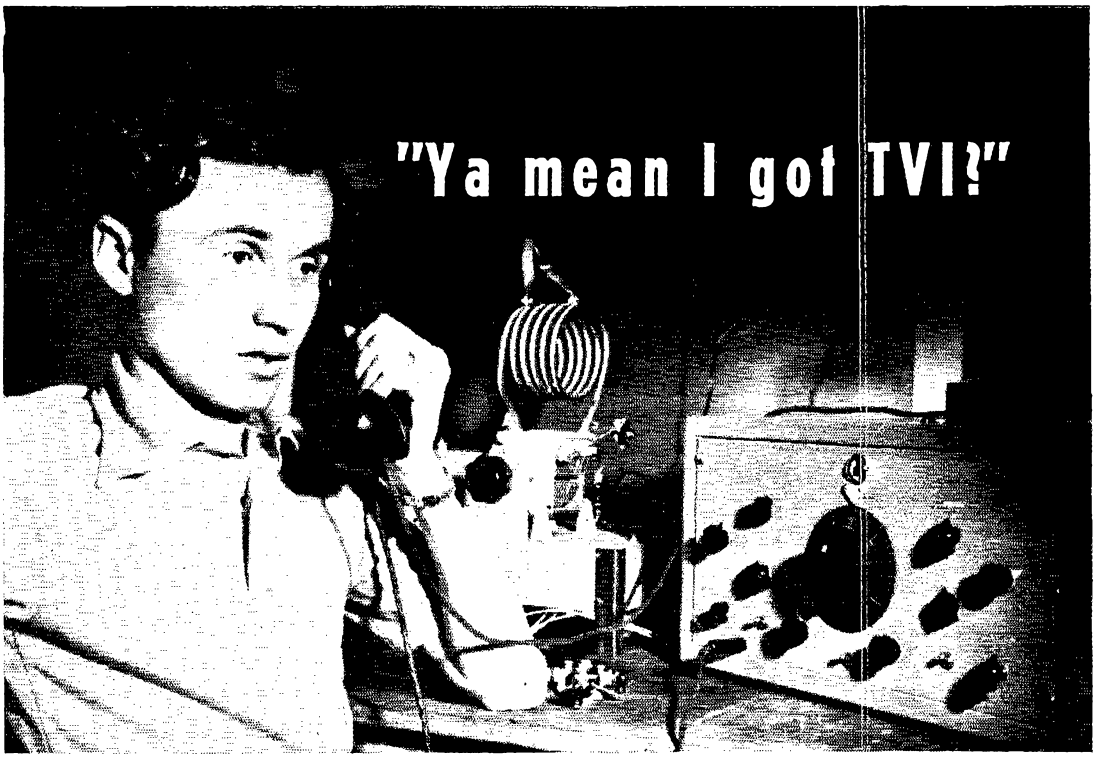
SAN JOAQUIN VALLEY — SCM, E. Howard Hale, W6FYM — 9KWT/6, from Riverside, Ill., was active on 7-Mc. c.w. during his vacation near Porterville. LRQ reports he still is having TVI troubles. GJP, the section RM, reports that SJVN summer activities are very slow but watch out on 3525 kc. come fall. Mono County has officially been placed in the Pacific Division and assigned to this section and JQB immediately applied for ORS and OO and same has been issued to him. Most all clubs were active during Field Day, according to messages received by the SCM. Hope you all made high scores and had a swell time. It is with much sadness that I report the passing of Ralph Russell, PNM, of Stockton. Ralph had not been too active the past couple of years because of illness, but those who knew him a few years back will remember how active he was on both 'phone and c.w. FEA, of Fresno, was elected chairman of the YLRL for the W6 and KH6 districts at a recent Southern California YLRL Club meeting. To enrich the club treasury, the Fresno Club has as a project a waste-paper drive. LKL is off to the Navy. HAB is off to the Air Force. Your SCM attended the National ARRL Convention in Seattle the latter part of July. Don't forget to send those reports to me, guys and gals. Traffic: (June) W6LRQ 34, GJP 14, HZE 14, JQB 10, FYM 7. (May) W6LRQ 68.

ROANOKE DIVISION

NORTH CAROLINA — Acting SCM, J. C. Geaslen, W4DLX — SEC: ZG. PAMs: DLX and NAL. RM: AKC. Our SCM, DCQ, has resigned and has gone with Philco. He is leaving the country for some rare DX location. Good luck, Herman. RIG and RFM are new Advanced Class licenses. KHP is with CAA at Winston-Salem. BDU has new rig on the c.w. net. MKT worked Pennsylvania and Ohio on 2-meter band opening July 2nd. The Gastonia Club has new headquarters and now is in old WGNC building. Our director, CVQ, reports a swell time at the hamfest at Shenandoah Valley, Va. FYY, club station at High Point, is back on 3.8-Mc. 'phone. Thanks for the nice report. REZ has a converted police rig on 28 Mc. and is really working rare DX. IYM has been heard on the air during TV hours. MNQ, at Stoney Point, has a new 813 rig perking. The following clubs have reported Field Day activity: BX and BFB, Charlotte; NC, Winston-Salem; PAR, Salisbury; GNF, Greensboro; AKC, Gastonia; Elizabeth City. The only score reported was one from Greensboro of 461 contacts. OTE will have to de-BCI and de-TVI the rig. Only one report was sent in this month, from REZ. You guys can do better than that. You send it in, I'll write it up. Also, dig up new members for ARRL so we can get more space. Traffic: W4OTE 16, REZ 11, NYE 6, DLX 3.

VIRGINIA — SCM, H. Edgar Lindauer, W4FF — SEC: NAD. Within the next 30 days Virginia dust will fly and moisture will be removed from rigs made silent by summer shut-down. Some of the VFN gang may be lucky and skip that corona which breaks down otherwise sturdy rigs because of continuous summer activities despite the heat and

(*Continued on page 88*)



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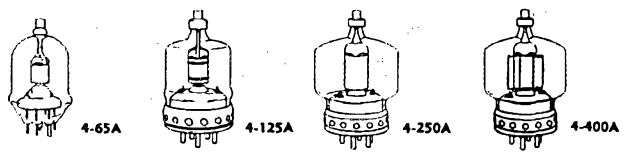


Eimac TUBES

TOP TETRODES FOR TOP AMATEURS

static. VSN, VFN, and VN will resume traffic operations on or about Oct. 1st at the usual time QNY and QNI. Watch for *VN Bulletin* during September for pertinent details. The Shenandoah Amateur Radio Club's first annual hamfest, held at Skyline Drive in the Blue Ridge Mts., is the envy of other Virginia clubs. A QTH like that should collect entire ham families to other splendid showings. Mobile operation had a real spontaneous Field Day during the hamfest sparked by good attendance from the Washington (D. C.) Mobile Club. Radio clubs could find stimulus in Field Day operation by adopting the several successful intra-membership team competitions used by the PVRC. Such methods can possibly bring home the "Gavel." The 1950 SS Contest was won by this means. VFN was kept in operation during the summer and still is going strong. FV was unanimously elected its Net Manager for the 1951–1952 season. Congrats to "Ole Ed" and thanks to the electorate for selecting a really deserving guy who for years has been a steady stanchion of support for section activities, accepting responsibilities whenever needed. NBA, the retiring Net Manager, conducted the most successful season of record with an enviable all-time attendance of 30 VFN stations on the air nightly. VN trailed with half that many. CVO is building again; this time it's a close-spaced 20-meter beam. GHO is new station in West Norfolk and also operates WCAV. NV, AIV, NAD, CVO, and FV kept VFN humming during the summer. The W4 team defeated the W3 team of PVRC in a closely contested Field Day action and enjoyed a feast at the latter's expense. STM, at Catlett, got his ticket and will be on deck for net traffic using VFO now in the making. K4AIR made BPL five consecutive months. Traffic: W4PWX 45, CVO 14, LK 7.

WEST VIRGINIA — SCM, Donald B. Morris, W8JM — DRF received a new HRO for a graduation present. DHX operated portable 4 while on vacation. GQH is a new amateur in St. Albans. YMN is stationed at Norfolk Naval Air Base as instructor in electronics. YPR is on the lookout for traffic during the summer months. 5KWY, ex-KS4AI, pictured in a recent issue of *QST*, is the former 8VKF, of Princeton. GGC mentions that VKF got him started in radio ten years ago. Rhodes, treasurer of MARA, is recovering from serious burns received while at work. PQQ operated portable from Monaco using the call 3A2AC along with 6SAI. 3LXE, ex-8CNZ from Morgantown, was declared winner of the West Virginia QSO Party, with JM placing second. DYP has converter in his auto and is considering a transmitter soon. All stations interested in net operation this coming year are requested to get in touch with either AUJ for c.w. net or MCR on the 'phone net. EVR is acting chairman for organization of the West Virginia State Radio Council. Each club will be asked to have representation on the Council. No West Virginia station has been able to work more than 48 of the 55 counties in West Virginia. Traffic: W8AUJ 64, DFC 21.

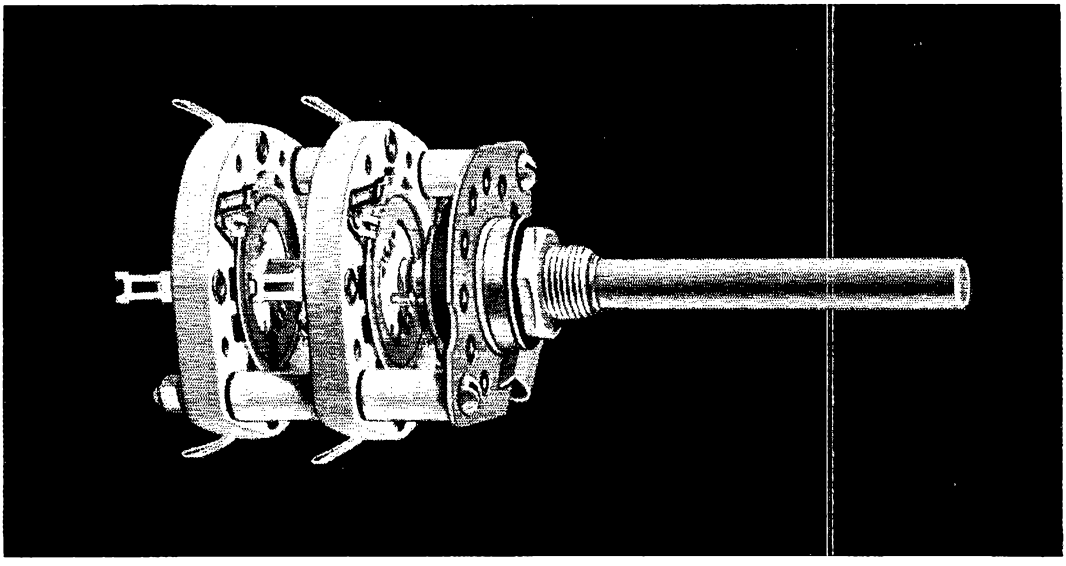
ROCKY MOUNTAIN DIVISION

COLORADO — SCM, M. W. Mitchell, W9IQZ — SEC: KHQ. RMs: ZJO and LZY. Asst. SEC: PGX. PNK and AGU have moved from Golden and Holly, respectively, and are new ECs in Climax and Salida. MOM made BPL this month. The high spot of the month was the Rocky Mountain Division Convention at Estes Park, put on by the very capable DD and his wife and daughter. George Grammer gave some very good technical talks. The high spot, of course, was the banquet and prize drawing. Radio Products of Denver donated most of the prizes and your SCM walked off with a prize, a $10.00 certificate! Admiral Nimitz and the State Director of Civil Defense, Lt. Gen. Henry Larson, made some very good speeches which were eye-openers to the amateurs who did not realize the seriousness of the world situation. Only three cards were received this month. Let's have more report cards in the future. 5KSW and his XYL, 5OTU, visited yours truly for 10 days and a good time was had. The beer-can shield on his center-loaded mobile 75-meter mobile was donated by your SCM. It looks like your SCM is going mobile after a couple of wild horse-trading deals. SFS, PQZ, and OWP gave a demonstration of amateur radio before a father-son banquet. OPH has new 75-meter rig on 'phone. ANW is with REA at Ft. Morgan. During Field Day COZ/Ø had 4 operators at Palmer Park, Colorado Springs, Colo., with 2 AREC members. FDP/Ø set up in Elephant Park, 3 miles southwest of Evergreen, Colo. TW had 14 operators in the field at E. Mississippi Ave. and Parker Road. Traffic: WØMOM 285, OWP 10, KHQ 6.

UTAH — SCM, Leonard F. Zimmerman, W7SP — No reports were received this month. JOE and MWT attended the Rocky Mountain Division Convention and say it was an FB affair. JOE says that a vote of thanks goes to DD for his excellent handling of the affair. LRA, Utah Amateur Radio Club's station, was on the air for Field Day from an abandoned farm in the old arms plant property west of Salt Lake City. LAB, the Ogden Club's station, was on somewhere near the top of the Wasatch Mountains up Ogden Canyon. JOE and I paid them a visit about midnight and they had a station on 20-meter 'phone and one on 40-meter c.w. going full blast; it was cold up there and Jack and I were in our shirt sleeves. Two meters is looking good in

(Continued on page 90)

Here's Centralab's *NEW* Ham Switch



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this section. The following stations are known to be equipped for 144 Mc.: DTB, EWX, JOE, JVA, KUX, KMR, LCA, MFQ, QQD, OSV, PVJ, SP, and ZDX.

WYOMING — SCM, A. D. Gaddis, W7HNI — SEC: LKQ. PAM: KFV. Seven of the Cheyenne gang reported via radio on Field Day. LVU and LKQ report the Casper gang made 106 Field Day contacts. Three Gillette hams totaled 38 Field Day contacts. JRG worked his 43rd state on 50 Mc. OWZ is working on 2-meter mobile rig. ABO cooked his power transformer. KFV, FLO, OWZ, and HNI attended the Estes Park Convention. NHC, IJW, AMU, HX, and BJS participated in SAR CAP mission. The Sheridam Amateur Relay League did an FB job printing hamfest leaflets. Traffic: W7OWZ 2, HNI 1.

SOUTHEASTERN DIVISION

ALABAMA — SCM, Lewis Garrett, W4LEN — SEC: ISD. GJW's EC appointment has been endorsed. AENB will operate on 3665 kc. during Army maneuvers. CYL has a D-TVI-D 696 and kw. 75 rig. Decatur, Mobile, Anniston, and two Birmingham groups took part in Field Day with nice signals, and all emergency powered. SLJ has new 350-watt "clamper tube" rig. HFP and family are spending a ham-visiting vacation, meeting AENP from a different location each night. The Mobile Club picked up 8 new members, the Anniston Club 3. GJW, EC, and the Birmingham Club are making plans and registration in AREC. AENP needs Tuscaloosa outlet, present outlet to Birmingham is on 3.8 Mc., FSW to KUX on 144 Mc. HVN threw an FB hamfest July 1st at his place at Browns. AUP, as usual, smelled food and turned up a day early. It is estimated 7 out of 10 cars had mobile rigs. The KUX-KCQ combine put up 2-meter installation and worked 140 miles with S-9 report. This shows what 15 watts will do — with a good beam and good operators. As a result of this show, 2-meter activity is picking up all over the State. Anyone interested in a 2-meter net? PPK is working both AENP and AENB. IMK/MM is working into AENB with 3 watts. Traffic: W4MVM 58, RTM 37, BFM 20, KIX 20, ISD 16, LEN 16, PPK 14, OAO 5.

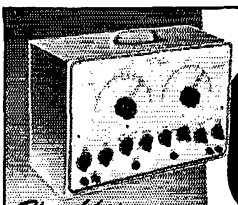
EASTERN FLORIDA — SCM, John W. Hollister, W4FWZ — Field Day evidently was a big success from the reports received. The JARS operated as IZ with 22 operators and visitors. Messages were received from NVU, Miami; IUJ, BRB, AAP, MVJ, HDX, JQ, SMR, OBW, and TH, West Palm Beach; SJK, Riviera; MTI, Clearwater; PJG and LNE, Key West; AYV, Umatilla; and DUG, Tampa. Others heard were RUJ, MQN, and TL, Daytona: RWM reports a c.d. control station being set up. Fort Myers: CQZ reports PJG used handie-talkies at stock-car races. SMK reports 17 hams now at Ft. Myers. New calls are SMK, SFX, and SEX. SMK and SFX are on 7 Mc. FUM has a gallon on all bands in his new shack while RHX runs a half kw. The Ft. Myers gang is ready for any kind of activity. Jacksonville: PJI was a welcome visitor. The NRTC furnished a big power unit for Field Day with LCO and Al Rogero on hand to keep it perking. JWX gets congrats on Field Day success. Okeechobee: It's Advanced Class for PZT, after 30 years a ham. The Florida Civil Defense Council has issued Bulletin 38 on communications. If you didn't receive one, and want it, let me know. AYX succeeds AXY as MO on K. of Kc. and RT is new SA. The Rebel Radio Club (WPB) has associate members in 13 Florida cities and wants more for contest work, as announced previously in this column. Just write CKB or BRB. RTZ/4 is back in West Palm Beach. Hope worked with 8UKV for 10 months. MKP is going to M.I.T. WV reports the QPO Net is doing swell. Peace officers will find this national net on 7260 kc. Mondays, 3715 kc. Fridays, and 14,120 kc. Sundays. Write WV for information. It's time to think about the Palmetto Net on 3675 kc. Who do you want to run it this season? OCG had it last. Are you ready for the storm season? Miami WxBu has set up special stations for weather information. Traffic: W4KJ 116, PJU 88, LMT 72, PZT 69, IM 30, JWX 19, RWM 14, FWZ 13, KWA 3.

WESTERN FLORIDA — SCM, Edward J. Collins, W4MS/RE — The Tally gang had an FB time Field Day under the call TL/4. The Pensy gang enjoyed Field Day activity as RE/4. PQW was the prime factor in making the event possible. AXP was up Virginia way and visited the gang. MS was the first Florida-CO QSO on 50 Mc. PLA is enjoying the mobile gear. FHQ is enjoying the HRO-5OT1. UC is getting his station together again. RJH is mobile. LRC has gone back into the Navy. RZV is going mobile. MUX keeps the bug warm on 7 Mc. VR keeps him company. CNK is going on 144 Mc. to get in on the DX. LUF will be back on as soon as the new Class B license arrives. CQF works all bands. QK was elected president of the Pensy Radio Club. GNX has returned to the area. FDL also has returned to Pensy. BFD is working on his converter for 50 Mc. The Eglin Radio Club now is affiliated with the ARRL. We need more ORS, OBS, OES, OOs, ECs, etc. How about it, fellows? Traffic: W4MS 5, AXP 2.

GEORGIA — SCM, James P. Born jr., W4ZD — The Atlanta Radio Club's Hamfest was attended by approximately 700 hams, XYLs, and jr. operators. Among the highlights of the hamfest were the talks by Brig. Gen. Frank A. Kopf, Deputy Director of Georgia Civil Defense,

(Continued on page 92)

New 1952 HEATHKITS



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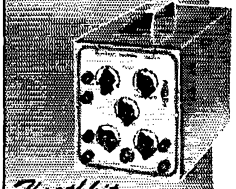

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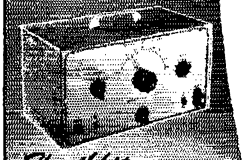

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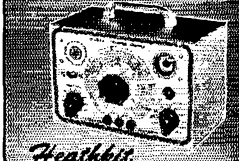

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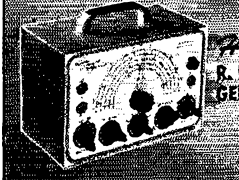

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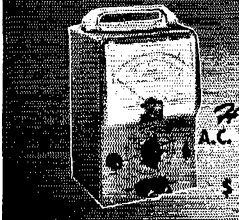

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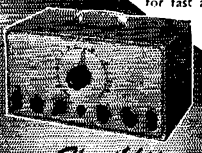

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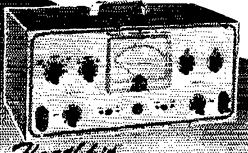

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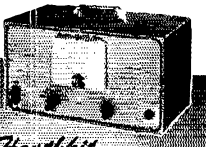

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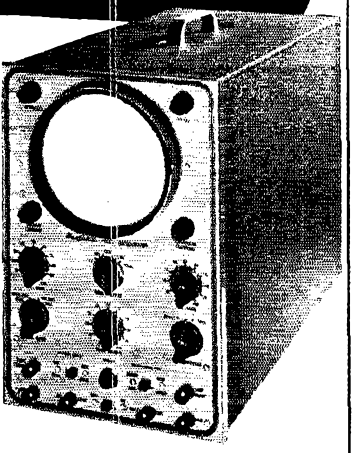

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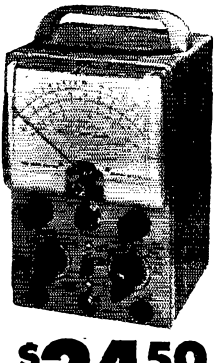

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and Mr. George "Pup" Phillips, Atlanta Civil Defense Director. DZ8 gave a very interesting talk and showed a moving picture on "Heating with RF" at the June meeting of the Atlanta Radio Club. Our sympathies go to PUM, whose mother passed away recently. HZG is building a 300-watt all-band 'phone transmitter. RFS is building a new 28-Mc. beam to go with the 32V-2 Collins he won at the Atlanta Hamfest. PBF has moved to Washington, D. C., and has his old call, 3AYV, again. BOC is building two new finals; both will be 1 kw., one for 3.8 and 7 Mc. and the other for 14 and 28 Mc. K4WAR, the Camp Gordon Radio Club has an FB traffic score again this month. Several of the members at K4WAR are experimenting with 144 Mc. and have a double-stacked "Flip Flop" five-element 144-Mc. beam forty feet in the air. K4WAR's DX total to date is 86 countries confirmed. The Camp Gordon Radio Club now has 393 members with about 75 licensed hams. EJC has a new shack in the basement and has his 14-Mc. transmitter completed. NNM, NXD, NWK, and NZO are vacationing in Florida. UR and KOR are vacationing in New England. Traffic: K4WAR 525, W4HKA 70, ZD 25, EJC 21, HZG 12, MTS 8, KOR 6, OSE 3.

WEST INDIES — SCM, William Werner, KP4DJ — SEC: ES. The San Juan Naval Amateur Radio Club, waiting for the call KP4USN, handled 100 messages with the Armed Forces Net on 14,250 kc. using three-element beams on 14 and 28 Mc. The MRAC had 23 operators and two power plants. BARC had 11 operators and one power plant on Field Day near Ramey AFB. CP and FJ, CAP officials in the July 4th parade, contacted aircraft from CAP truck in the parade. CAP officials in San Juan are LQ and MV. CAP officials in Ponce are ES, FJ, BQ, CP, and GN. CH is installing portable station in his car for a.c. operation where commercial power is available. CK and CU are coverting mobiles for all-band operation. CP guards the 3925-kc. net frequency 8 A.M.–10 P.M. daily. The P. R. Emergency Net took part in a transcribed radio program with announcements by HZ, EC for San Juan. GP installed folded dipole for 3925 kc. GN uses Bandmaster De Luxe for mobile on 3925 kc. AZ has 35-foot steel tower on the roof for three-element 14-Mc. rotary. AV, c.d. communications director, plans installation of c.d.-owned stations in 71 towns of the Island operating on 1705 kc. HZ and DJ attended c.d. meeting at San Juan. HZ, DJ, and FF attended R. C. Disaster Committee meeting at Bayamon. IY wrote a magazine article re break-in operation. KV4AQ, St. Croix, V. I., joined AREC 3559-kc. net. KV4AA was appointed c.d. communications director by the Governor of Virgin Islands and advises plans of tying St. Thomas and St. Croix c.d. activities to P.R. AREC net on 3559 kc. MS has 32V-1. CG is mobile on 3925 kc. Traffic: KP4DV 12, DJ 3.

CANAL ZONE — SCM, Everett Kimmel, KZ5AW — The Reverend LG, our first KZ5 from the ministry, is a busy man, concurrently building a new church and a new ham station with a beam, in different places of course. LT is a newcomer to KZ5. KO moved to Curundu, GF to Diablo. BD and RM are vacationing Stateside. WJ, benedict, at first QRL with curtains and furniture painting, finally got to work on his rig. KZ5KZ made WAC during Field Day. TB worked the Field Day station from Puerto Rico. AP has a neat mobile rig. MN, PC, and WA will use surplus SCR-669s for MARS 80-meter work. JQ is piloting the 669 restoration job. CG, PC, and WG/AF will handle traffic to U.S.A. from the Sloop *Arthur Rogers*, Galapagos-bound for a two-month cruise, HC8GI at the island end. JF qualified as OO, Class I, on the first try; FL, RM, and GD came through with the usual low errors in requalifying.

SOUTHWESTERN DIVISION

LOS ANGELES — SCM, Samuel A. Greenlee, W6ESR — SEC: KSX. RMs: CMN, DDE, FYW, and LDR. Your SCM deeply appreciates your fine coöperation, and please remember we welcome activity reports from ALL hams in the section. So that we may become better acquainted with the activities of our brother amateurs, we are starting a "Pat on the Back" department. This month's "well done" goes to that little-known group, the ARRL Official Observers. These hams, prompted solely by a genuine interest in the welfare of their fellow amateurs, are continuously monitoring our bands; always on the alert for any unfavorable characteristic of our signal, method of operation, etc., which, if not brought to our attention might lead to difficulties with the FCC. So next time you receive a card from an Official Observer, don't argue, he's probably right. Instead, be thankful that the warning came from a brother ham rather than from the FCC. Another example of the amateur spirit of helpfulness. Again this month BPL was made by KYV, UHY, GYH, and BHG and in addition, by HOV. KYV is experimenting with high-speed tape equipment. HOV cleared Home Show traffic on the American Legion Net. BHG received certificate for copying proficiency on Armed Forces Day. DDE maintains heavy schedules on 14-Mc. c.w. with Guam and Japan. HAX is at Camp Pendleton and handling G.I. overseas traffic. HVC and KOY have new Viking transmitters. GHY has new schedule at 0615. (When does he sleep?) OHX worked 45 stations on 144 Mc. in one day. AM still is putting up

(Continued on page 94)

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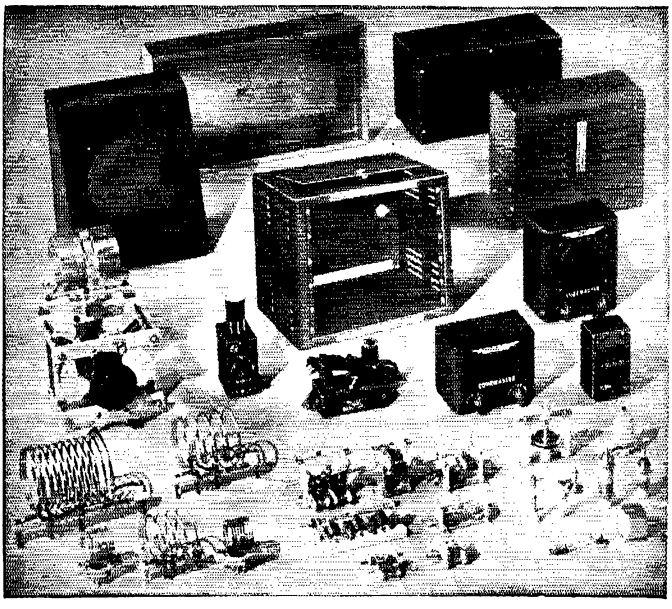

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rhombics! The "grin of the month" department: FYW had difficulty loading his 28-Mc. dipole. Investigation disclosed a horse had made a meal of the antenna — insulators and all! COZ was portable 6 in the San Bernardino Mountains until August. UPK now is living in Long Beach, as is JPA, ex-2JPA. YVJ is using a 7-Mc. ground plane. A new traffic net on 80-meter c.w. is being organized within the Counties of Ventura, Santa Barbara, and San Luis Obispo. It will work into RN6. For information contact DTY. Thanks also to the following reporters: BLY, CK, DBY, FMG, FZO, GEB, HLZ, KQS, LDR, MU, NAZ, and VG. SEC KSX reports the following new ECs: HOV, EC Liaison with the American Legion Net; VCU, for Val-Area Net, replacing CWS. The Crescent Bay Net had a practice drill with the Mar Vista c.d. group. The Net also has an aeronautical mobile (W6OYY). Centinella Valley, Mid-Cities, Crescent Bay, and Val-Area Nets participated at the Home Show, at Pan-Pacific Auditorium. MBFs on 50 Mc. were set up throughout the building to provide visitors with information on location of exhibits, locating lost children and, in general, supplementing the p.a system. In addition, 254 G.I. messages were picked up. It was very well received by the public. Traffic: W6KYV 2,190, UHY 615, GYH 600, HOV 356, DDE 271, BHG 132, HLZ 54, DBY 47, VG 32, COZ 22, BLY 12, CK 11, CMN 10, OHX 8, AM 6, FMG 4, DTY 2, KQS 2, ZOJ 1.

ARIZONA — SCM, Jim Kennedy, W7MID — 5RDB/7 is handling plenty of traffic from Davis-Monthan Field. NYK is doing an FB job as EC for Tucson. MDK is handling armed forces traffic on 144-Mc. 'phone. JGZ reports from Nogales for the summer, and is continuing his traffic activities. New calls in Tucson are PKO, Clark; PKU, Drachman; PLM, Hood; PKW, Harris; PMD, Zender. LAD and LLO are General Class; OZM, RMB, and HUV are Advanced Class. Sixteen turned out for the June c.w. party on 3.5 and 7 Mc. PEF got a nice write-up as one of our youngest YLs. The Tucson clubs operated GV with 4 rigs on Field Day. In Phoenix, MWQ and cohorts operated from Mingus, while NAP and associates operated from Blue Point. A newcomer to Tucson is ØDBO, mobile on 28 Mc. IOA, PUM, and QAP now are on 50 Mc. KYE and others have 144-Mc. projects under way. A new call in Phoenix is PKS, Coppock, on 28 Mc. K7NRZ/W7OIQ reports his traffic work curtailed by Navy activities. A county-wide test of c.d. organization in Maricopa County went off very smoothly June 17th, with ham radio on 28 Mc. supplying communications between various warden centers, filter centers, and C.D. Headquarters. Our thanks to the many who got up so early to participate. Traffic: W7JGZ 24, K7NRZ 16, W7QAP 2.

SAN DIEGO — SCM, Ellen White, W6YYM — Asst. SCMs: Shelley E. Trotter, 6BAM; Richard E. Huddleston, 6DLN; Thomas H. Wells, 6EWU. SEC: NBJ. RM: ELQ. ECs: DEY and VJQ. DEY reports that Orange County amateurs have shown fine attendance in recent drills with interest running at a high level. AREC headquarters in Balboa Park is currently on the air on all bands except 50 Mc. GTC is a new hand as ORS. DIN's XYL finally received the FB call of LQH. Another brand-new YL call heard on till the A.M. is MBC, Shirley Dixon. Field Day interest ran high in the section with the following among those participating: San Diego Amateur Radio Club, Helix Club, Imperial Valley Amateur Radio Club, Coronado Club, Soledad, Palomar, Fullerton Club, Orange County Club, NIK/6. FCT expects to be QRT for a while because of extra work evenings. The U.S. Fleet Sonar School, DCM, is active on 7, 14, and 28 Mc., operated by 5LIA, 6HDN, and 7OMN. One of the first novice licensees in San Diego is a nine-year-old YL. One of the latest to receive a ticket is Dr. Joseph Van Baceleare, the oldest ham in San Diego, who speaks five languages as well as reading three others. Congratulations! DLN is at school in L.A. for the summer. The Soledad Club put in 10 good days of public relations during the County Fair. IGP and WXW are on the air from their new QTH in Chula Vista. The fishing bug has bitten DX-hound CHV. The section played host to 1DX and 1LVQ, of the ARRL staff, August 10th. KW has an FB ham shack completed and expects to be on the air shortly. DEY is mobile with a Harvey-Wells transmitter. Summer is taking its customary toll of activity, but the high frequencies should be active with novice licensees shortly. Traffic: W6BAM 896, IZG 138, YYN 10, FMZ 9.

WEST GULF DIVISION

NORTHERN TEXAS — SCM, William A. Green, W5BKH — Asst. SCM, Joe G. Buch, 5CDU. SEC: AAO. RMs: GZU and LSN. PAM: IWQ. Emergency nets of North Texas are on a reduced operating basis during August, but still are in a stand-by status. The tornado at White Deer gave the Panhandle 10-meter net a workout with GXK, HVP, HUU, IZW, JAD, KZX, MYH, MJD, OME, OIE, QWK, and SIN participating. Also working on 3.8 Mc. were BFA, FVN, IWQ, and OHL. Winds of over 100 m.p.h. hit Abilene June 10th taking down nearly every antenna in town. However, in a very short time the 10-meter emergency net, with SQW controlling, was in operation for assistance to the Red Cross. Welcome to a new club, the Texhoma ARC, with POG, DRV, SGR and

(Continued on page 96)

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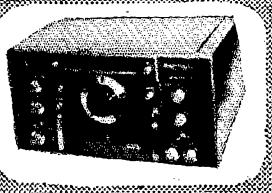

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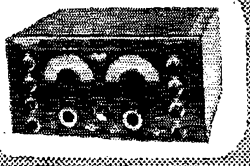

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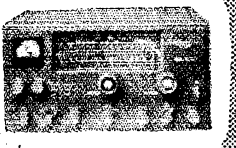

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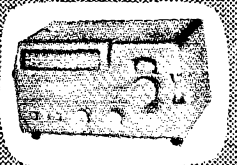

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BGP, president, vice-president, secretary-treasurer, and activities manager, respectively. Advanced Class tickets noted are BEY, PXD, ROH, and SHS. 144-Mc. activity is increasing in Lubbock with HDX, JQD, KTX, and NFO active. A new modulator for AW and a new portable rig for LGY should help AREC activities. NWT and PTZ are busy with the Navy. IZO was honored by a ham-picnic at Bonham State Park. The Bonham ARC has enough Novice Class people ready so that they are demanding more frequencies. Hi. Reports of a fine Field Day are coming in with the usual comment that next year the score will be bigger. GUD now works 7 nets. Traffic: W5KRZ 291, BKH 209, RHC 122, IWQ 106, QHI 101, GZU 69, LEZ 64, CVW 46, EBW 46, RHP 37, GUD 31, BFA 22, AWT 19, HD 18, SGR 14, LGY 9, POG 7, HBD 6.

OKLAHOMA — SCM, Frank E. Fisher, W5AHT/AST — SEC: AGM. RM: FOG. PAMs: (160-80-20) GZK, (11 meters and higher) ATJ. With the appointment of GZK as PAM for 160, 80, and 20 meters, ATJ will concentrate on development of 'phone activities on 11 meters and higher. Field Day went off very well in most places. Conditions were poor for high scores but the results were quite satisfactory and a good time was had by all. Traffic is holding up very well. MRK has reorganized RN5 and this net again is in operation with MRK as manager. The North Texas 'phone net has expanded into the Texas-Oklahoma traffic net operating on 3960 kc. The net is doing a fine job in the delivery of much of the overseas traffic now encountered. GZK and GVV have a regular schedule for 45th Division traffic. Has anyone figured out why overseas traffic seldom, if ever, has a word count? MFX lost a new Packard by fire on the road. MJU and JHA, with the twins, spent an enjoyable vacation on the West Coast. EHC lost an antenna pole when a ditcher snagged a guy wire. RDI now is Advanced Class. SWM has a new General Class ticket. MCF recently moved to Oklahoma City. ACM has purchased 14 acres for an antenna farm. The Tulsa Club has a house trailer for emergency unit. There's room for lots of gear and a big coffee pot. K5NRJ says this is the last big traffic month for him for a while as he has to catch up with his work at A. & M. Jack makes BPL as usual. Traffic: K5NRJ 739, W5GZK 431, RIT 119, AHT 97, FOM 89, OQD 80, MRK 57, OWG 28, IOW 13, PHR 7, ADB 4.

SOUTHERN TEXAS — SCM, Dr. Charles Fermaglich, W5FJF — STEN and most of the ham clubs in this section have decided to reserve 3850 to 3860 kc. for mobile operation. Let's make it universal and let the mobile boys have 3855 kc. QCF, QEN, PTV, QFA, QDX, QJD, and BCN are alternating as NCS of the South Texas Traffic Net. QOF, QEN, GEL, and QFA recently were appointed ORS. The section c.w. net will resume as soon as the QRN subsides. The South Texas Traffic Net, on approximately 3825 kc., is increasing in size each day. PTV has a new and elaborate 'phone patch. QFA has been appointed OBS. Look for him on 3860 kc. Mon., Wed., and Sat. at 1815 CST. PBT has been working portable at Camp Polk, La., and handling lots of traffic on 7-Mc. c.w. Some of the local Field Day participants were IX, 6 operators; DPA, 6 operators; RGA, 2 operators; LHK, 300 contacts; GLS, 14 operators; DXD, 13 operators; KA, 35 operators; RIH, 30 contacts. TD recently visited in L.A. OX now is in the communications business. RIH reports organization of a c.w. traffic net for novice operators. FIW, RIH, ABQ, NIY, and QCF are active in STEN c.w. net. RIH is working on a plan to have the Sheriff's Dept. and State Highway Dept. alert hams in remote areas when an emergency arises. PY has been appointed EC for Bexar County. He also has been appointed as deputy director of civil defense for San Antonio and reports a c.d. net on 28 Mc. with the idea of swinging to 144 Mc. as the men develop equipment. The first roll call was answered by 19. ACL took traffic from VE8, KR6, and JA2. NHB has a new Wallman 2-meter converter. QOF is active on 7-, 14-, and 28-Mc. c.w. and 10- and 28-Mc. 'phone and recently was appointed OBS and OO. MN still is handling traffic schedules with PTV, 4PL, and ØQXO. RFG is going to Colorado to get away from the heat and static. IVT and FQQ were heard on 3.8-Mc. mobile. KRZ is handling traffic. PTV is running low power but doing swell. QFA, NIH, and CCT were in a round table on 3.8 Mc. GQ is handling messages for Austin. APP and PGE are ragchewing on 3.8 Mc. JRV is putting in a nice signal. GLD is heard on 3.8-Mc. mobile. FJF now is on 3.8-Mc. mobile with 120 watts. DSB is active in the Gulf Coast Net and in MARS. STP and SM have applied for MARS. STP is on 144 Mc. Traffic: W5MN 502, PTV 404, PBT 182, ABQ 30, RIH 22, BCN 16, ACL 9, FIW 8, NIY 8, QCF 8, QOF 5, RGF 5, DSB 4, NHB 4.

NEW MEXICO — SCM, Lawrence R. Walsh, W5SMA — Acting SCM, Richard J. Matthias, W5BIW. SEC: PLK. PAM: BIW. PAM v.h.f.: FAG. RM: NKG. Our SCM is in college in Ohio working for his Master's Degree. Sandia Base Club members heard a talk by AIG on Mobile Antenna Radiation Patterns, featuring a demonstration of pattern plotting used on several of the 10-meter mobile rigs belonging to club members. Hams Associated held a "Family Nite" for its June 8th meeting, also a Radio Scavenger Hunt. Movies were shown at the June 22nd meeting, and a miniature transmitter hunt was held at the July 13th meeting. The Mesilla Valley Radio Club had very good

(*Continued on page 98*)

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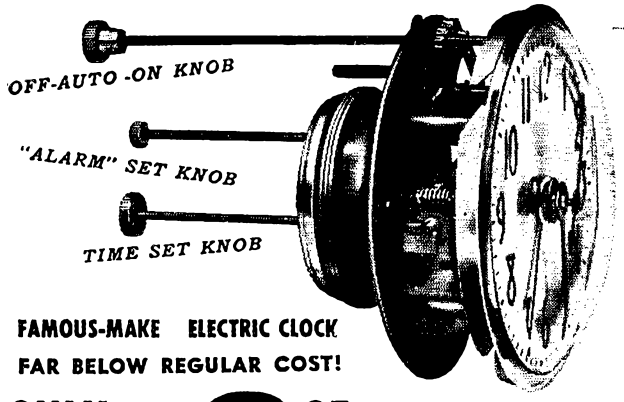

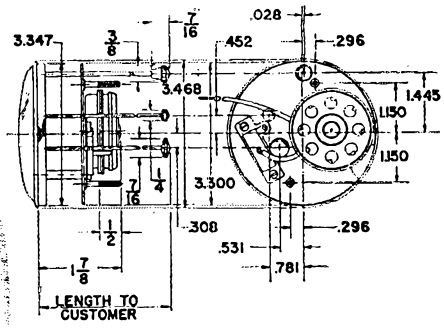

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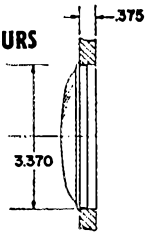

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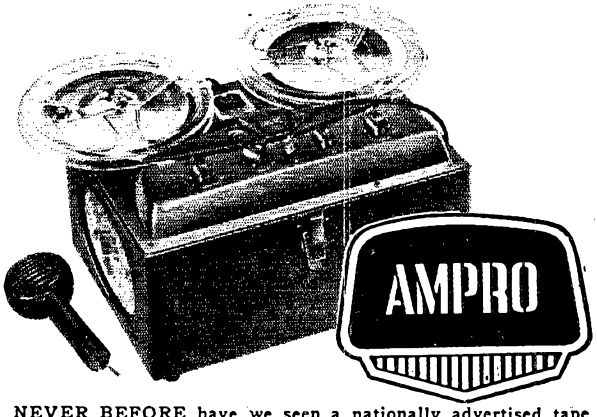

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34-088	1200 ft. tape (plastic)	**3.67**
34-089	600 ft. tape (plastic)	**2.34**

*NOTE: Tape comes on plastic reel, 1200 ft. on 7", 600 ft. on 5". Plastic recording tape has higher fidelity and greater strength than paper.

local newspaper publicity regarding its Field Day activities, which included the setting up of a complete station "Message Center" at the Chamber of Commerce. The Santa Fe and Los Alamos hams furnished two-way communication in the recent search for three children lost in the Hyde Park Area. Many New Mexico amateurs have been lending a hand to the fighters of forest fires in various sections of the State. The Albuquerque Emergency Corps on May 31st staged a surprise simulated bombing of a small town in Central New Mexico. It was agreed that lots would have to be done to have a smooth-running emergency communications set-up. LEF needs Delaware for WAS. QQI, a naval flier, was killed when his plane crashed near Albuquerque. PVM is back in Albuquerque. PWD and his brother, RKE, both transferred to Kirtland AFB, California. ZU is back in Roswell. RMH and family are in Indiana for a visit. Correction on item in New Mexico news for July regarding Sandia Base Club roster: Full title of this roster is Sandia Base Radio Club *and other Albuquerque Area Amateurs.* The secretary states that there are approximately 160 who are members (active and associate) of the club and that 9 are not hams. Another correction on the same issue: Regarding the statement that the Los Alamos Club is preparing a map of the State with QSL, etc., the complete story was that several interesting posters were made and all placed on display in the Public Library; the Club's purpose — to give amateur radio a boost in the community. Traffic: W5SRW/5 161, RMJ 22.

CANADA
MARITIME DIVISION

MARITIME — SCM, A. M. Crowell, VE1DQ — SEC: FQ. The first c.d. emergency practice run in the Halifax-Dartmouth Area during the past month was carried out successfully and included controls on 3.8-Mc 'phone and mobiles on 3.8-Mc. 'phone, as well as fixed stations on 3.8-Mc. 'phone. Also used was the v.h.f. link on 144 Mc. to the c.w. control at OM, who handled the out-of-town traffic routing on 3.7 Mc. The local gang reports a swell time during Field Day, and while the score of the HARC station, FO, was not as high as expected all present had an FB time. The AFARS delegates just returned from the North Bay Hamfest are all 100 per cent in favor of "travel by air." In fact, we gather that one of the highlights of the Hamfest was the swell air transport provided by the RCAF. Orchids to KM and fellow officers. 50-Mc. activity hit a new high with QZ, PQ, BC, VL, TR, TF, QY, BB, UZ, EI, WL, and GC active in the recent VHF QSO Party. VY, from Sackville, visited us with his mobile on 3.8 and 14 Mc. DQ/1, LZ/1, HD/1, and XR/1 are operating from their summer QTHs. DB was chasing 3A2AC and 11AHR/MI for a while. A nice report was received from East Coast Sigs., A.R.C., via ex-VE1CS for VW. The boys are using 150 watts on 3.5, 7, and 14 Mc. With 15 watts on Field Day a score of 1498.5 was made. Traffic: VE1FQ 126, MK 101, OM 77, TO 61, AAK 40, YV 34, VW 32, ZO 23, EY 22, XH 15, AL 14, DB 14, PS 14, AAL 10, ABA 10, ZM 9, ABJ 8, CN 8, ZT 7, JS 5, XA 5, XB 4.

ONTARIO DIVISION

ONTARIO — SCM, G. Eric Farquhar, VE3IA — Asst. SCM, c.w., W. Guillot, 3BUR. Asst. SCM, 'phone, Earl B. Kimble, 3FQ. SEC: KM. A reminder to all, please get your reports in promptly at the month's end. Congrats to DEU on the arrival of a jr. operator. KM sports a new rig (commercial). The Hamilton gang tied in with civil defense and put over an FB S.E.T. While reports on Field Day activities around VE3-Land are not available at this time, it is known that all participating enjoyed the outing. The Mohawk Club was heard with its new call, BAC, doing a nice job. Likewise the Queen City Club gave your scribe a thrill to hear the familiar call of WK again. This is a memorial station in honor of Art Palmer, a Silent Key. The Southern Ontario v.h.f. group held a meeting in Oakville. XZ has returned from a trip to England. BIK was caught removing whip from mobile unit! API, in New Liskeard, received WAC certificate and the following day got WAVE Award. OJ is busy on AREC work and expects 3.5- and 3.8-Mc. nets going by autumn. BUR dropped into Headquarters while holidaying. ATR reported into nets 79 times in June. DH has gone to England for a two-year tour of duty. AVS is EC for Kapuskasing. JU mobiled to the SOO and YR enjoyed a new mobile rig while on vacation to Maritimes. The Sudbury District Radio Club elected AZF, pres.; AXE, vice-pres.; EAT, secy.; DEP, treas. The Northern Ontario Hamfest held in North Bay was a tremendous success. Thanks to the hard-working committees of the Sudbury, Kirkland Lake, and North Bay Clubs, the sponsors, for a swell affair. Don't forget the nationwide S.E.T. in October. IA passed up a sailing regatta for a hamfest and brought home, of all things, a modulation indicator. AHO, with revamped receiver, is back in the traffic game. IB, Ontario's 70-year-young ham, enjoyed North Bay and Hamilton Hamfests. Drop your SCM a line if interested in ORS or OPS appointments, or AREC membership. Traffic: VE3IA 204, ATR 94, BUR 74, AHO 34

(*Continued on page 100*)


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QUEBEC DIVISION

QUEBEC — SCM, Gordon A. Lynn, VE2GL — Field Day activity appears to have been greater in this section than on any previous occasion. Many fine set-ups have been heard from and some very fine scores are reported. A considerable number of the VE2 gang visited the North Bay hamfest, travelling via air. HM reports schedules with VE8-Land have been discontinued for the summer months, but unscheduled contacts are being made each week end from St. Sauveur. GF has 55 watts to RK39 into long-wire antenna with NC-173 receiver at Champigny for the summer. ZF has 20 watts on 3.8- and 14-Mc. 'phone from his summer camp. AO reports having visited 16 VE2 hams during the month and that ZV has changed QTH. FM, formerly stationed at Heath Point, has changed QTH to Cap de Rosieres on the tip of Gaspé Peninsula. CA has had 833A on temporarily to see what it does and contemplates a permanent job on it soon. He still continues to work the North Country and handle some traffic. RZ reports regular schedules with LEN and AFARS and is handling some traffic. SD spends quite a bit of time on 7 Mc. SL is operating portable from Siscoe in the gold-mining country. BE and BG keep a spot warm in the 75-meter band. XO manages to get on the high end of 75 meters to keep in touch with the W1 and W2 gang despite the QRM from the garden. LZ again is stirring up 75 meters. JV worked VT1AB on 14 Mc. and says look for ZD1AA in Zanzibar, who is moving there from VQ5-Land. Traffic: VE2CA 55, AO 28, RZ 13, GL 7.

VANALTA DIVISION

BRITISH COLUMBIA — SCM, Ernest Savage, VE7FB — Field Day brought out the biggest showing of British Columbia clubs since 1939. The weather was warm and dry throughout the twenty-four hours. General reports show the bands were poor and in most cases there was nobody new to work after the half-way point. XA and I had a personal QSO over traffic. He is our Route Manager and would like to see more of you traffic conscious and endeavor to check into the traffic nets if you have traffic or just check in to let us hear from you. Do not be afraid of the speed. They will send to you at the speed you wish. I also visited HR, your QSL Manager, who does not have many envelopes for the amount of QSLs you have. How about that? TD, UZ, and FB were all mobile or portable at Fort Merry Hill R.C. Sigs. summer camp. JB challenged the Ws to golf at the National ARRL Convention. ANC has taken up residence in Vancouver. GP has been heard testing on 75-meter 'phone. DH is being heard running high power of .025 kw. on 14-Mc. 'phone. XV is under the weather so is not active. TT was raided by the Nanaimo Club in the middle of painting the house. US is mobile now. UT visited Vancouver. AQ's XYL, ASB, left for VE3-Land, working portable VE3. AQB, formerly HB, is back from G-Land and on the air. SH can't get her rig to perk. Never a word from Prince Rupert. Where is Doc?

PRAIRIE DIVISION

SASKATCHEWAN — SCM, Harold R. Horn, VE5HR — The Saskatoon Amateur Radio Club wishes to thank those who attended the Annual Hamfest. Manitoba was well represented and 6MJ, SCM of Alberta, and his XYL, also attended. 5AA, club station, was on the air continuously, guiding the large mobile fleet to location at HMCS *Unicorn* and to the Field Day site. The AFARS, SARL, and ARRL meetings were well attended. New SARL officers are OB, pres.; MZ, vice-pres.; GI, secy.-treas. Let's see more ARRL and SARL members. Send your subscriptions to Steve Tomecko, VE5GI, Lipton, Sask. 6MJ gave a short talk about the ARRL and what it has done for the amateur The hidden transmitter was found by UQ, followed by MD and LP. GW won the Gus Cox Memorial Trophy in the c.w. contest, with BV second. MA again carried off the Fur-Lined Button Hole Trophy for best in the Liars Contest. Ws won out in the YL operators' quiz with YF, CD, and FL tied for second. GX won a dynamic mike draw and auctioned it for $20, with proceeds going to SARL. JF has been doing FB on 50 Mc. with W5, WØ, W7, and VE7 contacts. The Weyburn Club put on a display at its local fair with WN, club station, on the air. New appointments: TE and PJ as OPS, LY as OBS. EE built a grid-dip oscillator good to 300 Mc. HR got OTC certificate. Traffic: VE5HR 39, TE 14, PJ 8, EE 4.

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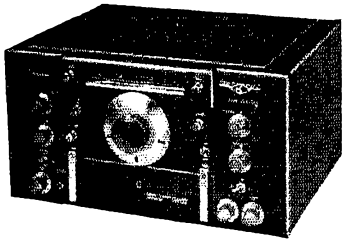
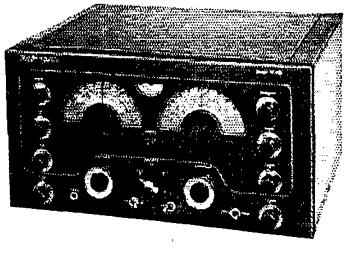
Phenomenal trade-in allowances!



National HRO-50-1—employs 3 stages of i.f. and 12 permeability-tuned i.f. circuits (4 per stage), in addition to the crystal filter. Plus all the features of the world-famous HRO-50. **ONLY $383.50**



National NC-183—a new improved model better than ever. From 2-stage r.f. to push-pull high fidelity audio output, the NC-183 incorporates every wanted feature of a fine receiver. Tunes .54 to 31 Mcs. continuous plus 48 to 56 Mcs. Uses 16 tubes.
ONLY $279.00

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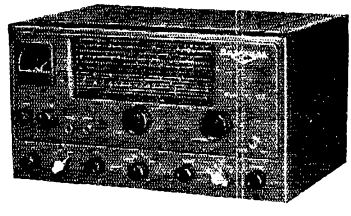
HENRY offers you out of this world trade-in allowances on your used communication equipment in exchange for one of the new National Quality Receivers. Plus such advantages as quicker delivery, easier terms, more generous trade-ins, a 10-day free trial and 90-day free service. Write, wire, phone or visit either store today!



National NC-125—a moderately-priced receiver covering 550 kcs. to 36 Mcs. in 4 bands. Separate r.f. and audio gain controls. Volt. reg., stabilized oscillator. **ONLY $149.50**

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"WORLD'S LARGEST DISTRIBUTORS OF SHORT WAVE RECEIVERS"

Converting the M1-7800

(*Continued from page 21*)

or fusetron on the dynamotor. The return circuit is the car frame. The filament supply lead, QSY lead, relay lead and transmit control lead are all No. 10 wire, well insulated. The voice coil lead is ordinary zip-cord. The coaxial cable is RG-58/U and single-conductor shielded microphone cable is used for the microphone line. All of these wires are enclosed in another 1-inch Greenfield flexible conduit.

As a precautionary measure, a 6-ampere dry-disc Mallory battery booster is mounted on the inside of the fire wall and wired into the battery circuit. The a.c. is connected by a detachable line cord for plugging into any convenient outlet.

The rig is very easy to tune up. Either 7- or 14-Mc. crystals can be used with equally good results. Sample current and voltage readings with 14-Mc. crystals are as follows: oscillator plate and screen current, 10 ma.; 807 grid current, 2 ma.; 807 plate and screen current, 62 ma.; modulator plate current, idle, 38 ma.; modulator plate current, maximum, 82 ma.; oscillator plate voltage, 265 volts; oscillator screen voltage, 140 volts; 807 plate voltage, 365 volts; 807 screen voltage, 200 volts; power input to 807 approximately 22.5 watts.

Ignition interference was no problem after installing a generator parallel wave-trap, spark plug suppressors and a 6H6 noise-gate limiter in the receiver. The limiter is seldom used. A switch for operating it was installed beside the tuning control on the Gonset converter so it would be handy to operate when needed.

A good coat of grey crystalline lacquer finished the job off, giving it the appearance of a new rig. Like any good mobile installation it represents a lot of hard work, but it has paid off in operating pleasure, and it was a real godsend in last fall's hurricane disaster.

Coffee-Can VFO

(*Continued from page 27*)

same size, using ½-inch spacers between the two pieces to clear the wiring.

I have enclosed the rig in a standard metal cabinet with a 7 × 12-inch panel. The base is fastened to the panel at the appropriate level for sliding the unit into the cabinet. The key jacks and the shaft of the oscillator tuning condenser need not be insulated from the panel, but a good-sized clearance hole must be made for the shaft of C_{14}, and *the control must be a well-insulated knob with a recessed set screw.* The oscillator vernier dial is a National Type AD. With the amount of electrical bandspread provided, there is no difficulty in setting the oscillator to frequency on any band. The two key jacks, the toggle switch and a pilot light are placed between the two tuning controls.

Adjustment is very easy, of course. C_{15} is adjusted until the band falls within the range of

(*Continued on page 104*)

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the tuning condenser, C_2. Then, with the proper coil plugged in at L_2, the output circuit is resonated with C_{14}. Minimum unloaded final-amplifier plate current should run about 15 ma. at 400 volts when the amplifier is working at the oscillator frequency and about twice this value when doubling frequency. Through a suitable antenna coupler it should be possible to load the final to about 130 ma. at the oscillator fundamental, somewhat less when doubling. This current is a little above the manufacturer's rating, but for c.w. operation, satisfactory tube life will be obtained.

Several of these little rigs are in operation around the Boston area in close proximity to TV receivers, yet no trouble is experienced with TVI so long as an antenna coupler is used.[2]

[2] In Boston, only Channels 4 and 7 are in use. In localities where other channels, especially Channels 2 and 6, are in use, it may be necessary to follow some of the precautions of power-lead filtering and shielding outlined in Chapter 23 of *The Radio Amateur's Handbook*, 28th edition, at least for 14-Mc. work. — *Ed.*

Happenings

(*Continued from page 36*)

place between October 1st and November 20th, except that if on September 20th only one eligible candidate has been nominated, he will be declared elected.

Present directors and vice-directors for these divisions are as follows: *Atlantic:* Walter Bradley Martin, W3QV, and Henry W. Wickenhiser, jr., W3KWA. *Dakota:* Goodwin L. Dosland, WØTSN, and Alfred M. Gowan, WØPHR. *Delta:* Victor Canfield, W5BSR, and George S. Acton, W5BMM. *Great Lakes:* John H. Brabb, W8SPF, and Harold E. Stricker, W8WZ. *Midwest:* Leonard Collett, WØDEA, and (acting director) Alvin G. Keyes, WØKTQ. *Pacific:* Kenneth E. Hughes, W6CIS, and C. Porter Evans, W6BF. *Southeastern:* Lamar Hill, W4BOL, and William P. Sides, W4AUP. *Canada:* Alex Reid, VE2BE, and William W. Butchart, VE6LQ.

Full Members are urged to take the initiative and to file nomination petitions immediately.

For the Board of Directors:

A. L. BUDLONG
Secretary

July 1, 1951

Field Day Scores

(*Continued from page 45*)

Class B

(Listings show calls of operators at each station, ca used, and score.)

W6s	AOA BXL	W6AOA/6	5040
W2s	FBA JBQ	W2FBA/2	4941
W8s	BZT ZQU	W8TQ/8	3037
W1NXX		W1NXX/1	2376
W1s	HA RAN	W1HA/1	1701
W4s	MGT MWR	W4MGT/4	1545
VE1VW		VE1VW/1	1498
W5s	IER RCV	W5IER/5	1494
W1s	RNA BJP	W1RNA/1	1422

Class C

W8ICS/8	6966	W4LKD/4	891
W6MBA/6	4050	W4IUJ/4	864
W3FMG/3	1049	W1SGA/1	810
W8FAT/8	1026	W8DTD/8	797
W3AXK/3	958	VE3IR/3	783
W4SJK/4	945	W8BDZ/8	689

(*Continued on page 106*)

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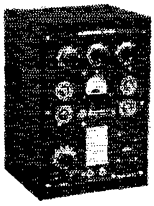

Senior $111.50
DeLuxe $137.50

BANDMASTER POWER SUPPLIES

APS-50 for 110 A.C., $39.50

DPS-50 for 6 or 12 V. 6V .....$87.50, 12V $54.50

New LYSCO Mobile Transmitters

25 watts minimum peak power. Clamp type modulation. Tuning adjustment from front panel. Dimensions 4" wide, 4½" high, 6" deep. Rounded drawn case, black wrinkle finish. Tubes: Model A 3-6AQ5...Model B 3-6V6GT...Model C 3-12A6. 25 watts power minimum.

Amateur: 10 meters, 20 meters, 75 meters.
Civil Air Patrol: 2374 kc.....$29.95 Net less tubes

Model 144 2-Meter Receiver.....$49.95 with tubes
Model 381 Mobile VFO High Impedance $26.95 with 3 tubes
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HARVEY delivers these famous Emergency Receivers Immediately!

High quality emergency band FM receivers for application. ANYWHERE you are you can HEAR police calls, fire alarms, bus dispatchers, railroad communication, ships at sea, etc.

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Model M-101 covers 152 mc to 162 mc Band $72.50
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Model PR-31 for 30 to 50 mc band... $44.95 complete.
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3-30 Gonset Converter; 10-11 Gonset Converter; 20 Meter Gonset Converter; 75 Meter Gonset Converter. Shipping weight each, 4½ lbs.....$44.75
Gonset Tri-Band Converter.....$47.60
Model B Noise Clipper.....$9.25
Universal Steering Post for use with all Gonset Converters $3.90

NEW GONSET TWO-METER CONVERTER; superheterodyne... same size and appearance as Tri-Band Converter and FM Tuner. $44.50

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DeLuxe Model (separate squelch tube, pilot light switch).....$69.50 net

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Mounts, tapped for ⅜" threaded stud.

Model		Net
132	Universal Body Mount	$8.75
132X	Above with Heavy Duty Spring	9.85
132S	132 with Stainless Steel Spring	10.75
140	Bumper Mount	6.55
140X	Above with Heavy Duty Spring	7.65
142	Bumper Mount, no spring	3.25
92	18" Adjust. Extension Bar	3.25

Antennas, stainless steel

100-96S	96" whip, ⅜" stud for all mounts	$5.25
106-96S	96" whip, plain end to fit 92 ext.	4.50
	All-Band Antenna, 20, 40 or 75 meter coil	8.75
	Extra Coil for 20, 40 or 75 meters, ea.	3.30

Note: use all band antenna on 10 by shorting coil.

New VHF Master Mobile Antenna #113

Frequency range, 140 to 165 MC. Roof top mount, only one 7/16" hole cut in car roof necessary. Uses stainless steel wire for antenna. Complete with 10 ft. of coaxial cable. $4.95

Master Coaxial VHF Antenna #114

An efficient antenna for convertibles, station wagons, fire trucks, etc. Mounts on any standard Master Mobile Mount. $9.95

New—ELDICO—2 Meter XMITTER-RECEIVER

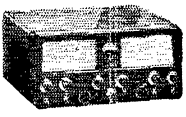
VHF superhet for amateur, civilian defense and CAP . . . mobile or fixed station operation. 144-150 mc. 10 tubes. Sensitive, stable, selective. Vernier tuning.

TRANSMITTER — Crystal controlled, 144-150 mc. 7 standard tubes. Coax connectors. Uses any power supply providing 300 v. at 200 ma. Screwdriver adjusted tuning controls.

Metal cabinets, in baked hammertone enamel, 5½ x 9½ x 5½ in., with universal mounting flanges.

Receiver, in kit form, net $59.95
Receiver, wired and tested, net 94.95
For external local oscillator, add $5.00 to above.
Transmitter, in kit form, net ... $49.95
Transmitter, wired and tested, net 74.95
Prices are less power supply & speaker

HALLICRAFTER SX-71



Calibrated bandspread, double-conversion, built-in NBFM, xtal filter, S meter. Range—538 kc to 35 Mc and 46-56 Mc. *Many important features.*

Less Speaker.....$199.50
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World's finest receiver for the all-wave listener. Will outperform any ordinary broadcast receiver on any frequency. Standard broadcast, shortwave or FM. Continuous AM coverage, 540 KC to 109 Meg. on 6 bands. FM reception, 27 to 109 Meg. 14 tubes, plus voltage regulator and rectifier. In stock for immediate delivery. $289.50

NATIONAL HRO-50-1

Employs 3 stages of i.f. and 12 permeability-tuned i.f. circuits (4 per stage), in addition to the crystal filter. Has all the features of the renowned HRO-50. $383.50

NOTE: In view of the rapidly changing price situation in both complete units and components we wish to emphasize that all prices are subject to change without notice, and are Net, F.O.B., N.Y.C.

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W8AJW/8	689	W9FKC/9	612
W8VK/8	675	W4OBW/4	607
W6WBG/6	635		

Class D

K5NRJ	651	W2VBH	118
W4JQ	378	W6NCP	53
K5NRL	234	W7NWP	42
W1OAK	135		

Class E

W6AYZ	201	W9AZR	84
W6GPB	124	W4SMF	70
W9GQM	100	W2UAP	64
W2GRH	98	VE3AUU	60
VE1EK	89	W2HY	56
W2GCA	84		

50 Mc.

(*Continued from page 51*)

Standings as of July 25th

WØZJB	48	W5VY	47	W9ZHB	48
WØBJV	48	W5GNQ	46	W9QUV	48
WØCJS	48	W5JTI	44	W9HGE	47
W5AJG	48	W5ONS	44	W9PK	47
W9ZHL	48	W5ML	44	W9VZP	47
W9OCA	48	W5JLY	43	W9RQM	47
W6OB	48	W5JME	43	W9ALU	47
		W5VV	42	W9QKM	46
W1HDQ	47	W5FAL	41	W9UIA	45
W1CLS	46	W5NHD	41	W9UNS	42
W1CGY	46	W5FSC	41		
W1LLL	44	W5HLD	40	WØQIN	47
W1KHL	44	W5HEZ	38	WØDZM	47
W1HMS	43			WØNFM	47
W1LSN	42	W6WNN	48	WØINI	47
W1EIO	41	W6UXN	47	WØTKX	47
		W6TMI	45	WØKYF	44
W2RLV	45	W6IWS	41	WØJOL	44
W2BYM	44	W6OVK	40	WØJHS	43
W2IDZ	43			WØPKD	43
W2AMJ	42	W7HEA	47	WØHVW	42
W2MEU	42	W7ERA	47	WØMVG	41
W2FHJ	41	W7BQX	45	WØIPI	41
W2GYV	40	W7DYD	45		
W2QVH	38	W7JRG	42	VE3ANY	42
		W7BOC	42	VE3AET	35
W3OJU	45	W7JPA	42	VE1QZ	32
W3NKM	41	W7FIV	41	VE1QY	31
W3MQU	39	W7CAM	40	HC2OT	26
W3JVI	38	W7ACD	40	XE1GE	19
W4FBH	46				
W4EQM	44				
W4QN	44	W8NSS	46		
W4FWH	42	W8NQD	45		
W4CPZ	42	W8YLS	41		
W4MS	40	W8CMS	41		
W4OXC	40	W8RFW	41		
W4FNR	39	W8LBH	39		
W4IUJ	38	W8UZ	37		
W4BEN	35	W8LPD	37		

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

slipping in his own a couple of times?" Well, we don't know the answer, except that if nobody ever got results by calling that way, the practice would soon be dropped. Must be about time to reactivate the Society for the Suppression

(*Continued on page 108*)

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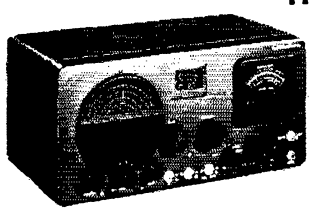
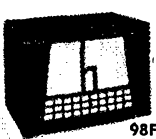
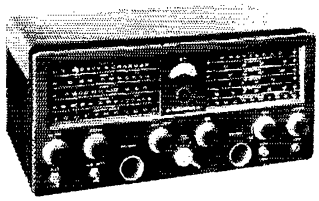


S-76 DUAL-IF RECEIVER

Low-cost double-conversion superhet with 50 kc 2nd IF and giant-sized 4-inch "S" meter. Covers 538 kc to 34 mc in 4 bands. Has 1-RF, 2-Conversion and 3-IF stages. Two microvolts average sensitivity with ½-watt output. Has Sensitivity, Volume, BFO Pitch, Selectivity, and Tone Controls: AVC, Rec/Standby, BFO, ANL switches. Phono input jack, 3.2 or 500 ohms. In black steel cabinet, 18½x9x9½". Less speaker. With all tubes. For 105-125 volts, 60 cycles, AC.
98F001. Wt., 40 lbs. **NET $169.50**



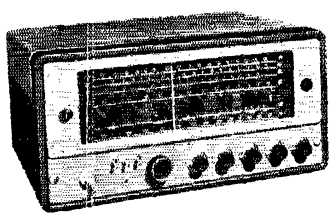
R-46 SPEAKER
Matching 10" PM Speaker for SX-71 and SX-62 receivers.
98F002. Wt., 19 lbs. NET..... $19.95



SX-71 5-BAND RECEIVER

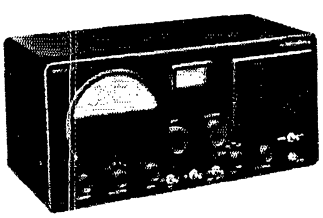
Double-conversion receiver with extra-sensitivity and superior image rejection. Covers 538 kc to 35 mc and 46 mc to 56 mc in 5 bands. Built-in NBFM. Has 1—RF, 2—Conversion and 3—IF stages plus limiter and balanced detector stages. Includes "S" meter, phone jack, external power socket and Receive/Send switches. Steel cabinet, 18½" x 7⅞" x 12". Less speaker. For 105-125 v., 60 cycles. AC operation. **$199.50**
98F008. Wt., 33 lbs. NET.

Prices Subject To Change Without Notice



SX-62 DELUXE RECEIVER

Covers 540 kc to 109 mc in 6 bands — includes AM, FM and SW broadcasts. PP 6V6 output stage furnishes 10 watts andio with response of 50 to 15,000 cps. Separate bass and treble controls plus phono input make this ideal for custom installation. Has built-in 500 kc crystal oscillator with dial pointer for re-set accuracy. Includes BFO for code signals. Steel cabinet, 20x10¼x16". Less speaker. 105-125 v.,60 cyc.
98F007. Wt., 77 lbs. NET. **$289.50**



S-77 AC-DC RECEIVER

New AC-DC version of an old favorite, the famous S-40B. Covers 540 kc to 43 mc in 4 bands. Has electrical band-spread. High signal-to-noise ratio assures good selectivity. Includes ANL, AVC, BFO, 1—RF and 2—IF stages. Has phone jack and external power socket. 3-position tone control. Built-in 5" PM speaker. Steel cabinet, 9 x 18½ x 11". For 105-125 volts AC or DC operation.
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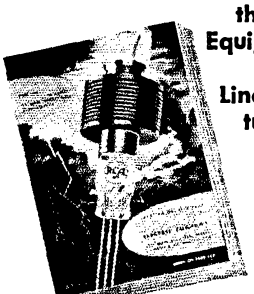

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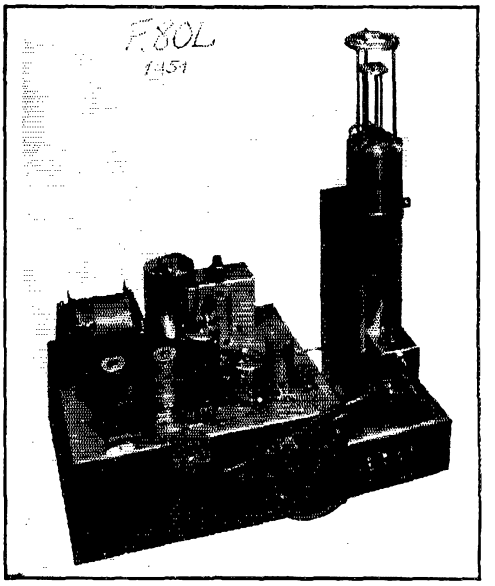
To join, all you have to do is to swear that you will *never* reply to anyone who gives your call more than five times without signing his own. Of course this is easy some of the time, but the real test comes when you've just called a directional CQ, for one of those hard-to-get states you need. The long-caller is hard to pass up then, but chances are he's just trying you out. Will *you* take the pledge? Remember, five calls with no sign and you move on across the band; no exceptions allowed. Join the SSLCWS now — be a man with a mission!

The World Above 420 Mc.

It isn't enough for G5BY that he has managed to extend his best two-way DX on 435 Mc. to 227 miles — this time he did it with *no* input at the final stage! It happened like this: On the evening of July 17th, around 2100 GCT, Hilton worked G3APY, Kirkby-in-Ashfield, Nottinghamshire, on 145 Mc., with signals 589 each way. Hilton then changed over to 435 Mc., G3APY reporting his signals about the same strength on the higher frequency. At the end of the first transmission, fuses in the final power supply blew — a shorted filter section!



The crystal-controlled 430-Mc. converter used by F8OL, Meudon, France. At the right is a tuned-line lighthouse r.f. stage. This feeds an EC-80 grounded-grid stage. A crystal mixer is inside the small cavity in the middle foreground. Mixer output is fed into a 6AK5 tunable i.f. stage at about 13 Mc. Crystal-controlled injection is developed by the two stages in the left foreground. An antenna coupling balun is on the front of the chassis.

This was too good a chance to let pass, so G5BY went back with the supply disabled; no voltage on the final QQV-06-40 (like our AX9903), and 20 watts input to the 8012s in the tripler-driver. Still 449! Then G3APY changed to 435 Mc. and the contact was continued two-way. The following evening when 2-meter signals were running S3 to 5, G3APY was again able to hear G5BY on 435 Mc., 339. This was with normal input to the final, however!

On July 21st, G5BY worked G2WJ, Dunmow, Essex, two-way on 435 Mc., almost exactly the distance to G3APY. This contact took place at 2324 GCT, after Hilton had heard the third harmonic of a 2-meter G at a distance of about 200 miles! G5BY called CQ on 145 Mc., asking for replies on 435. G2WJ answered, and when G5BY also went to 435 Mc. the signals were S8 to 9 each way. During

(Continued on page 110)

Our 29th Year

LEEDS
"The Home of RADIO"

QUALITY—PRICE DEPENDABILITY

LYSCO TRANSMASTER

35 watt transmitter exciter for 10 to 160 meters. Break in keying illuminated dial, PA plate meter . . . modulation tie in, grid meter jack and built in power supply. 6AG7 OSC, 6AG7 Buffer, 807 P.A., VR150 and 5U4G rectifier. 115V AC, 60 cycles. Output low impedance 50 ohm line. Complete with tubes in black wrinkle finish cabinet. 17"L. X 9"H. X 11"D.

Model 600 TVI Suppressed $143.95

Model 500 Standard $131.95

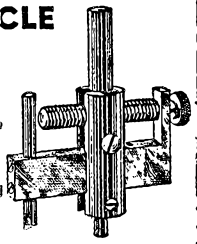
Descriptive bulletin on request.

Model 50 Antenna Coupler designed to feed long wire from transmitter ..... $ 14.50

MICRO CIRCLE CUTTER

FOR METAL WOOD • PLASTICS

- Micrometer type size control
- Extra heavy duty beam
- Special beam locking mechanism



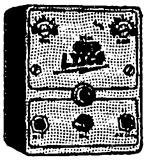
At all dealers

Model	Type	Size	Price
1	Round shank	4 inch	$5.00
1	Square shank	4 inch	5.00
5	Round shank	6 inch	7.50

LYSCO MOBILE TRANSMASTERS

25 watts—clamp Tube Modulation **For 10-20-75 Meters**

Lysco presents a new line of mobile transmitters with built in antenna relay for push to talk operation, clamp type audio for 100% A.M. Modulation, tuning adjustment from front panel. Power input 500V. D.C. at 125 Ma.—6.3V. A.C./D.C. at 1.35 Amps. Comes in beautiful rounded drawn case, black wrinkle finish, with attractive silk screened front panel. Size 4"W. x 4½"H. x 6"D.



Model	Band	Tubes Used
A 114	20	3-6AQ5
B 114	20	3-6V6GT
A 129	10	3-6AQ5
B 129	10	3-6V6GT
A 175	75	3-6AQ5
B 175	75	3-6V6GT

Less Tubes $29.95 **With Tubes $33.55**

PLATE TRANSFORMERS

For Small Transmitters. DC Voltage Ratings are Approx. Values Obtained at Output of a 2 Section Choke Input Filter Using Mercury Vapor Rectifier Tubes. Pri. is for 115 V. 60 cy.

Type No.	Sec. Rms. Volts	Sec. DC Volts	DC Sec. M.A.	Dimensions H.	W.	D.	Price
P-3157	660-660 / 550-550	500 / 400	250	4⅜	3 13/16	4⅜	$8.08
P-3158	1080-1080 / 500-500	1000 / 400	125 / 150	4⅜	3 13/16	5	10.00
P-3159	900-900 / 800-800	750 / 600	225	4⅜	3 13/16	5⅛	9.70
P-3167	1450-1450 / 1175-1175	1200 / 1000	300	5¾	6⅛	4	24.12
P-3168	2100-2100 / 1800-1800	1750 / 1500	300	5¾	6⅛	4½	30.58
P-4062	2900-2900 / 2385-2385	2500 / 2000	300	8½	6½	5⅜	47.04

RAYTHEON VOLTAGE STABILIZERS

Positive Stabilization ±½%

Input 95-130 volts, 60 cycles single phase; output 115 volts stabilized to ±½%. *Output 6.0 or 7.5 volts stabilized ±½%.

No.	Output Capacity Watts	Net Weight lbs.	Price
VR-6110	15	4	$ 16.00
VR-6101*	30	5	18.00
VR-6111	30	5	18.00
VR-6112	60	8	25.00
VR-6113	120	14	33.00
VR-6114	250	25	52.00
VR-6115	500	45	81.00
VR-6116	1000	92	135.00
VR-7B	2000	200	245.00

*Output 6.0 or 7.5 volts stabilized ± ½%.

SUPERIOR POWERSTATS

Smooth, efficient voltage control. 0 to 135V. output from 115V. AC line.

Type 20 (illustrated 3 amps.....$12.50
116 for table mtg 7.5 amps..... 23.00
116U for panel mtg 7.5 amps... 18.00
1126 15 amps..... 46.00
1156 45 amps..... 118.00

Also available for 230 volt input. Write for descriptive literature.

ALUMINUM CHASSIS

7x5x2....18 gauge.....$0.82	10x14x3..16 gauge.....$2.26
7x7x2....18 gauge.....$0.92	15x7x3...16 gauge.....$1.76
9x7x2....18 gauge.....$1.03	17x10x3..16 gauge.....$2.20
5x10x3...18 gauge.....$1.12	17x13x3..14 gauge.....$2.82
7x11x2...18 gauge.....$1.06	17x13x5..14 gauge.....$3.67
12x10x3..18 gauge.....$1.62	

G.E. Vibrator Transformer

Input: 6V
Output: 240V at 62Ma. $1.25
Fully Shielded
Brand New

If not rated 25% with order, balance C. O. D. All prices F. O. B. our warehouse New York. No order under $2.00. We ship to any part of the globe.

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Dept. QS 9
New York City 7

this period the 2-meter band was wide open to the Continent, with several ONs, DL4XS and DL1LB coming through well.

More 200-mile work on 435 Mc. is reported by our old friend, F8OL (notice how the leaders in the trans-Atlantic work on 50 Mc. are now showing up in the 420-Mc. ranks!), Meudon, France, with PAØPN, Middelburg, Holland. Their first contact was made on July 2nd at 2030 GCT, signals being reported S6 and S7 respectively. Both stations use the European equivalent of the 9903, delivering about 20 watts as a straight-through amplifier. The receiver at F8OL, pictured on p. 108, has a lighthouse r.f. stage followed by a grounded-grid stage using an EC80, and a crystal mixer, the injection being crystal controlled on 421 Mc. The antenna used by F8OL is 8 halfwaves in phase with reflectors.

PAØPN has four halfwaves in phase with reflectors, less than 15 feet above sea level (adjacent ground is below sea level). His receiver uses a CV-102 diode mixer. The oscillator is on 141 Mc., followed by a tripler.

It is of interest to note that on July 7th, during a period of low barometric pressure, F8OL was unable to hear PAØPN on 145 Mc., yet a satisfactory contact was maintained on 435! PAØPN was also heard well on 435 Mc. on June 28th and 30th, and July 2nd, 3rd, 4th and 6th.

These reports of DX on 420 by our European friends serve to show how far many of them are ahead of most of us. Without exception, all the leaders in this department in Europe are using crystal-controlled transmitters and narrow-band receivers. Most of them work on c.w., or can do so when necessary.

This is not to argue that we all need to do the same. There is plenty of room for the modulated oscillator and the wideband receiver in our 30-Mc. wide band — but if we are to do any real DX work, other than from mountain to mountain, we will have to make use of narrow-band techniques. We can have a lot of fun on 420 with the simple gear, and the more fellows we have on the merrier, but let's not have any illusions about its capabilities for weak-signal work over long distances. DX on 420, here as in Europe, takes crystal control, communications receiver selectivity, and good big antenna systems.

Detroit Civil Defense

(Continued from page 53)

Briefly, the plan of operation for drills is this: A 24-hour radio monitoring watch is maintained on a frequency designated by OCD for air-warning alerts. On receipt of an alert, the trailer and its towing vehicle are placed in readiness for movement and prearranged warning messages are transmitted to the various base stations. The bases, in turn, summon their own cluster of mobiles. After the network is fully activated, control of the net is relinquished to the OCD fixed Area Control Center in the Red Cross building. The mobile unit then stands by, ready to be used as conditions indicate.

A Simulated Emergency

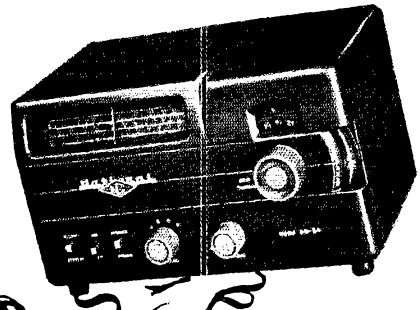
All in all, Detroit amateurs considered they had a good workable plan for civil defense communications. Their big test was yet to come, however.

At 6 A.M. on Monday, April 16th, a simulated emergency bombing test was conducted throughout the city and its environs.

Theoretically, two enemy bombers, undetected by observers or radar, dropped two atomic bombs on the city, one in the north central part of town, the other on the west side. Normal communications throughout the entire area were

(Continued on page 112)

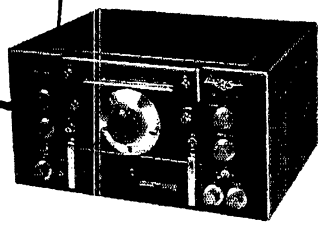
'Tell Yuh What I'm Gonna Do'



NATIONAL SW-54
(illustrated above)
Shpg. wt. 10 lbs.
Only $49.95

Here's *More For Your Money* With a "SURPRISE" Trade-In Allowance On Used Communication Equipment For One Of The New NATIONAL Receivers

Yuh say you're not satisfied with other trade-in offers. Yuh say you want more for your money. Okay boys, tell you what we're gonna do! For the bargain of your life just tell us what (factory-built) equipment you have to trade. Indicate by model number the National Receiver of your choice. Back will come our satisfying, money-saving deal. Wire, write, phone or use the handy coupon today!



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Less speaker
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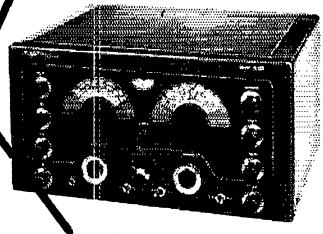

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Only $279.00

National

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Walter Ashe Radio Co. Q-51-9
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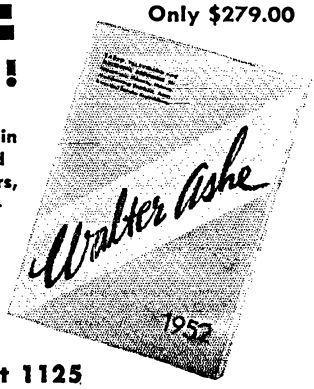

•

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Phone: CHestnut 1125

rendered useless. The radio amateurs sprang into action. This is what the record shows:

6:07 A.M. — W8BPB is awakened by the "blast" and immediately starts to monitor the emergency frequencies.

6:08 A.M. — W8BPB contacts W8FLN/mobile who reports: "An atomic attack. Appears to be centered over southern part of Highland Park." W8BPB tells mobile to stand by.

6:10 A.M. — Amateur base W8CYL calls W8BPB and reports in service.

6:12 A.M. — W8BPB hears four mobiles on the 29,610-kc. emergency frequency. He calls these units and advises them to stand by.

6:16 A.M. — W8BPB hears "disaster announcement" from local radio station WJR and repeats contents. He asks other base stations in the OCD amateur net to report in to him as temporary net control station.

6:18 A.M. — Amateur activation program in effect, with various operators contacting others by 'phone or otherwise.

6:25 A.M. — Base station W8BPB calls roll. Response received from 10 of the 14 base stations in the net.

6:30 A.M. — The 10 responding base stations activate their mobile units.

6:35 A.M. — Mobile area control station W8GIS takes over control of the unit activation from W8BPB.

6:40 A.M. — W8GIS conducts roll call of the base stations and finds 13 of the 14 operating but no response from A-7, W8FKL, in Highland Park. Two of the 13 base stations are operating on emergency power. The 13 report a total of 51 mobile units activated.

7:08 A.M. — W8GIS/mobile contacts OCD Control Center, reporting status of amateur net, and awaits orders.

8:10 A.M. — W8GIS/mobile turns over control of Amateur Emergency Network to fixed Area Control Station at Red Cross Hq. Mobile unit proceeds to location in disaster area per orders from Area Control.

Thus ended Detroit's first city-wide surprise dry run. Authorities considered it eminently successful and were especially lavish in their praise of the amateur operators. Officials from the State of Michigan were interested observers during the maneuvers. While nothing is definite yet, it now looks as though a statewide network of radio amateurs may be patterned after the system developed by the Inter-County Emergency Club. Michigan operators earnestly hope so. They are anxious to establish further in the eyes of the public just what they can do to help the nation in any time of need.

Correspondence

(Continued from page 54)

1st, when the slow-speed programs began, I hadn't really begun to build up my proficiency.

I would also like to mention that the material I found in the *License Manual* covered the general class exams beautifully! So thanks again, fellows!

— *Norman Rosman*

ITV

821 Rinaldi St., Visalia, Calif.

Editor, *QST*:

There's been such a tremendous ruckus raised about TVI caused by amateur operation that I'm beginning to wonder if we don't have a tendency to coddle these entranced fringe-area viewers. Has anyone paused to give thought to the interference caused to us hams by the operation of TV receivers? I've run into quite a bit of it here, and it's gotten to the point where a fellow has to have a good S9-plus signal to make a dent in my racket-ridden receiver.

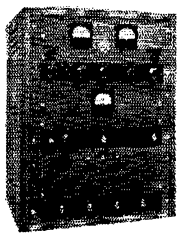
The square-wave generator of the average TV receiver throws out quite a nice blanket of good old-fashioned hash — right into the spectrum occupied by the 160- and 80-meter bands. I, for one, think it's about time that we start countering these TVI complaints with a few of our own.

— *R. P. Hinz, W6DIE*

(Continued on page 114)

FELLOWS—HERE'S A REAL BARGAIN FOR YOU MOBILE FANS.

Leo I. Meyerson
W9GFQ

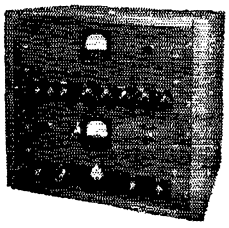


NEW WRL 400-A GLOBE KING TRANSMITTER

HIGH POWER—MORE WATTS PER DOLLAR

Our newest model with increased power—400 watts Phone, 425 watts CW. Incorporates some of the latest TVI protective features. Efficient performance on all bands — 10 to 160 on phone and CW. Provisions for ECO. Complete with tubes, meters, and one set of coils. Low Down Payments.

KIT FORM **$439.45** WIRED-TESTED **$459.45**



WRL 150 WATT GLOBE CHAMPION TRANSMITTER

MORE WATTS PER DOLLAR

R.F. Section a complete 150 watt XMTR. Provisions for ECO. Automatic fixed bias on Final and Buffer. Class B Speech Modulator. 150 watt input — 10 thru 160 meter bands. Complete with tubes, meters. Low Down Payments.

KIT FORM **$279.00** WIRED **$299.00**

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1951 WRL CATALOG

NEW LOG BOOK

For mobile or fixed station. Spiral binding — turns up — lies flat. Full column log listing all FCC required info. Log will accommodate 1,525 stations. Front and back covers show "Q" signals, phonetic alphabet, and amateur international prefixes. **25¢**

Good condition Motorola, Model P69-13, deluxe fixed frequency 8 tube super-heterodyne receivers equipped with two vibrators, automatic volume control, squelch circuit, and noise silencer. Less controls and speaker. Any type PM speaker can be used.

MODEL P69-13, 8 tube..**$29.50**
MODEL P69-12, 6 tube (same as above).....**$19.50**

Crystals for above sets $2.75 each. (Please state type of converter to be used so proper crystal frequency will be sent you.)

EXTRA SPECIAL
GOOD CONDITION

Collins 32RA 100 watt XMTR. **$125.00**

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LOW DOWN PAYMENTS
NAME YOUR TERMS
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Let me know what you have to trade, any make or model. I'll allow you more for your present equipment. WRL buys more equipment . . . WRL sells more equipment. Our large volume of sales means faster turnover, greater savings for you! We finance our own paper . . . no red tape! Get guaranteed satisfaction from the "World's Most Personalized Radio Supply House."

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Just right for your control room walls. Approximately 28" x36". Contains time zones, amateur zones, monitoring stations. Mail coupon today and ..... **25¢**

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WRL 10 METER BEAM

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Narrow spaced **$15.95**
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IN HOLDERS Type FT-243
160 METER
1.8 to 1.825 1.875 to 1.9
1.9 to 1.925 1.925 to 2.0
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Hq. Army Field Forces Board No. 1, Fort Bragg, N. C.

Editor, *QST*:

"A new class of amateur operators license is hereby established to be known as Amateur Extra First Grade. License of this grade will be issued to persons passing the required special examination and code speed in sending and receiving at least twenty words a minute."

History repeats itself! The above is from Department of Commerce letter No. 252, as printed in *QST* for August, 1923!

— *Lloyd D. Colvin, W4KE*

CK80

435 Best St., Buffalo 8, N. Y.

Editor, *QST:*

During the past few months I have been relaying traffic with checks of 80 and sometimes even more. These cannot be classed as messages — they are letters. This isn't fair because it holds up more important traffic. Under poor conditions I have spent as much as half an hour getting one of these messages relayed to the West Coast, during which time I could have handled ten or more short ones.

Let's all try to coöperate with the fellows who do all the work and keep the messages within reasonable length. My suggestion would be to keep them under 25 words.

— *Clara C. Reyer, W2RUF*

How's DX?

(*Continued from page 57*)

calls on their own frequencies and VK1VU frowns on the QSL tradition . . . . . Gleanings are also good in the So. Calif. DX Club's *Bulletin* and are topped off by rumors of an impending VR7 entry from some exotic isle.

—...—

In view of this month's lead, the time may not be too far distant when we'll run a Jeeves cartoon depicting the ear-tufted gent, with mortar and trowel, tuck-pointing a rack for the final. Or wouldn't that be sufficiently far-fetched to be humorous?

V.H.F. QSO Party

(*Continued from page 58*)

6) Scoring: *1 point* for completed two-way section exchanges on 50 or 144 Mc.; *5 points* for completed two-way section exchanges on the higher v.h.f. bands. The sum of these points will be multiplied by the number of *different* ARRL sections worked; i.e., those with which at least one point has been earned. Reworking sections on additional bands for extra section credits is permitted.

7) A contact *per band* may be counted for each different station worked. *Example:* W1SNK (E. Mass.) works W1EIO (Maine) on 50, 144 and 220 Mc. for complete exchanges. This gives W1SNK 7 points (1 + 1 + 5 = 7) and also 3 section-multiplier credits. (If more Maine stations are subsequently contacted on these bands they do not add to the multiplier but they do pay off in additional contact points.)

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

9) Award Committee decisions shall be accepted as final.

10) All reports must be postmarked no later than October 10, 1951, to be entered for awards. (See p. 55, May, 1948, *QST*, for form or a message to Hq. will bring a mimeographed blank for report on this contest.) Reports must show bands used, dates and contact times, calls of stations worked, names of ARRL sections worked, and score computations.

Reporting

Submit contest logs to Headquarters immediately, even if your score is small, to help in cross-checking the claims of others.

— *F. E. H.*

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ONE OF AMERICA'S GREAT RADIO STORES

80 MTR TRANSMITTING STATION

FOR THE NOVICE

1-TRANSMITTER KIT $15.95
(as described in May *QST*)

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(see June *QST*)

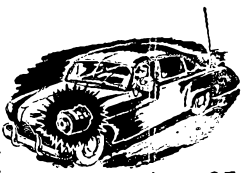
3-ANTENNA KIT (80 MTRS) 2.95

COMBINATION SPECIAL $28.85

ALL THREE KITS..... $25.95
All kits are available separately at prices indicated beside each kit. Complete instructions with each kit.

LEECE-NEVILLE MOBILE A. C. ALTERNATOR SYSTEM

No more battery worries! 35 amps charge at idle speed—60-80 amps. charge—110 A.C. with use of transformer. Recently removed from Police Cars, they are less than 3 years—will last a lifetime. Comes complete with altenator, rectifier, regulator and wiring diagram.



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Perfect for mobile. Requires 1" hole. Flange mounting. Completely enclosed. Satin aluminum finish. While they last. Only..... $4.74

BC 652-A MOBILE RECEIVER

2 to 6 MEGS—IDEAL for Aircraft, Yachts, Amateur, Fire, Police, Taxicabs, Trucks, etc. (Super sensitive one full microvolt) 11 tube superhet circuit, including a crystal calibration check system. Continuously tuned range—noise limiter—each unit is brand new, complete with Dynamotor, Tubes, Circuit in original sealed cartons, wgt. 401bs..... $39.15

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Ideal for use in TV & Radio Replacement. All first quality, guaranteed brand new fresh factory stock. Buy now while still available. All 130 V.

D.C. MA.	Singly Each	Lots of 10 Each
65	$.66	$.63
75	.78	.75
100	.96	.92
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250	1.50	1.42
275	1.65	1.55
300	1.89	1.75
350	2.15	2.01
400	2.54	2.43
450	2.64	2.52

LYSCO MODEL 60 VIBRAPACK

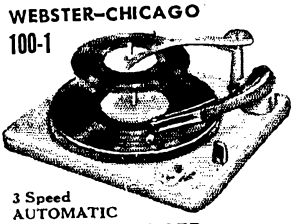
6 VDC-6 AMP. 300 VDC-80 MA.

A scoop for you. Built in Relay for push-to-talk. Selenium Rectifiers for Battery Conservation and fast Break-in operation. Designed specifically for Lysco Equipment. Only..... $32.94

INEXPENSIVE LYSCO CLAMPMASTER

MODEL 401. Will modulate any pentode or tetrode Power amplifier up to K.W. High ImP. input. Uses 6.3 VAC/DC 300-400 V. at 20 ma. from transmitter. Housed in standard Lysco modulator and employs 6SJ7, 6 SN7GR and 6V6GT. Modulator on-off switch & gain control. Complete with tubes..... $19.94

WEBSTER-CHICAGO 100-1



3 Speed AUTOMATIC

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A fortunate purchase makes this price possible to you. Plays 12, 10, 7 inch records at 33⅓, 45, & 78 RPM. Brand new in original sealed cartons for the fantastically low price, while they last..... $24.84

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A COMPLETE 2-METER 9 TUBE RECEIVER

MOBILE *or* HOME 3 WATTS AUDIO

Better than one microvolt sensitivity at ½ watt audio (RMA Standards)! Latest in miniature tubes and IF xfmrs. Illuminated slide rule dial. A noise limiter that really works with no loss of signal audio. Write for details. Complete with tubes, plugs and mounting brackets —less power supply and speaker. *Amateur Net* $72.44

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Exceptionally fine Hi-Fi speakers for high quality use at a low price. All with 3.2 voice coil, less output.

Size	Stock No.	Watts	Each
2''	2 AMS	1-2	$2.19
3''	3 AMS	2-3	2.19
4''	4 AMS	2 3	2.34
5''	5 AMS	2-4	2.49
6''	6 AMS	3-5	2.85
8''	8 EVS	4-6	4.35
10''	10 EVS	4-6	5.64
12''	12 EVS	4-6	6.24

Niagara Radio Supply Corp.

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NIAGARA'S GUARANTEE OF SATISFACTION

All items ordered must meet with full approval or your money back.

QUIST QUIZ—

(*Continued from page 58*)

B is right, because any stable unmodulated signal exists at only one frequency. The strong signal *seems* broad because the receiver isn't selective enough. The sharper (more selective) the receiver, the less spectrum the signal would appear to occupy. Let A try a more selective receiver and find out for himself.

Hints and Kinks

(*Continued from page 59*)

USING B.C. RECEIVERS AS MAKESHIFT TEST GEAR

NOT all of us are fortunate enough to own an r.f. signal generator for use in aligning and calibrating homebuilt receiving gear, but almost anyone can scare up a spare broadcast set. Described below are several methods for putting the b.c. receiver to work as a substitute.

To align the i.f. of a receiver which has a b.f.o. to 456 kc. or 465 kc., attach a couple of feet of antenna wire to the b.f.o., and run it near the broadcast receiver. Tune the b.c. set to the second harmonic of the b.f.o. (912 kc. or 930 kc.) and adjust the b.f.o. until a beat note is heard. Finding frequencies in the broadcast band is simplified by the fact that the carriers are spaced at 10-kc. intervals through the band. The frequency of your local station is usually published with the daily program schedules, and other publications are available listing all stations. For a 456-kc. i.f. try to find a station on 910 kc. The 2-kc. difference beat note can be estimated, but make sure that the b.f.o. harmonic is *higher* in frequency than the b.c. station. A slight tuning of the b.c. receiver dial will determine this. Then, without disturbing the "antenna" on the b.f.o., align the i.f. amplifier by peaking it on noise, not on a signal. This method is accurate enough for any receiver except one which uses a crystal filter. The third harmonics of 456 kc. and 465 kc. also fall within the broadcast band, and can be used, but they will not fall directly on any b.c. station frequency.

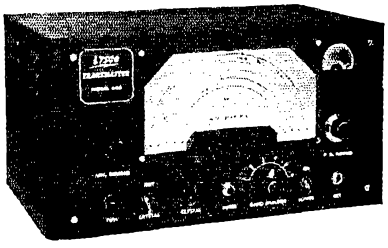
The spare b.c. set can also be used for band-edge calibration of another receiver. The h.f. oscillator in most b.c. sets can be tuned to 1000 kc. In some instances it may be necessary to add a very small amount of tuning capacity to the oscillator circuit, but in most cases this can be done merely by screwing down the padding condenser a couple of turns. Attach a couple of feet of wire to the oscillator tuning condenser in the b.c. set and place one end of it near the receiver being calibrated. Tune the b.c. set to the low-frequency end of its range so that the harmonic of its oscillator beats with WWV. Then without disturbing the b.c. receiver or the temporary antenna, the communications receiver can be tuned to pick up harmonics of the b.c. set oscillator at 1000-kc. intervals through a large part of the spectrum. It should be possible to pick up

(*Continued on page 118*)

TRANSMITTERS

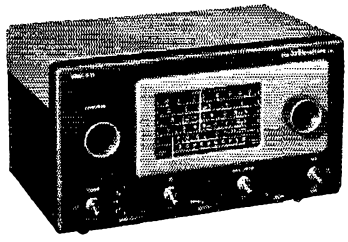
Harvey-Wells Bandmaster Senior	$111.50
Harvey-Wells Bandmaster Deluxe	137.50
Harvey-Wells Bandmaster Junior	87.50
Harvey-Wells Modulation Kit	15.50
Harvey-Wells APS-50 power supply AC	39.50
Harvey-Wells DPS50 6 volt power supply	87.50
Harvey-Wells DPS50 12 volt power supply	54.50
Johnson Viking I kit less tubes, mike and key	209.50
Hallicrafters SR-75 trans. and receiver	89.95
Lysco B-129 Mobile Transmitter	29.95
Lysco A-175 Mobile Transmitter	29.95
Lysco A-140 CAP Mobile Transmitter	29.95
Stancor ST-203A Mobile Transmitter	66.75

Lysco-600 All Band Transmaster..... $143.95



RECEIVERS

Hallicrafters S-38B	$49.50
Hallicrafters S-40B	99.95
Hallicrafters S-53A	79.95
Hallicrafters S-72	109.95
Hallicrafters S-76, less speaker	169.50
Hallicrafters S-77	99.95
Hallicrafters SX-62, less speaker	289.50
Hallicrafters SX-71, less speaker	199.50
Hallicrafters R-46, speaker	19.95
Hammarlund HQ 129-X, less speaker	199.50
Hammarlund HQ129-X, speaker	14.50
National NC-183, less speaker	279.00
National HRO-50, less speaker	359.00
National HRO-50T1, less speaker	383.50
National NC-125	149.50
National SW-54	49.95



S-53A Receiver

WHILE THEY LAST

NC-33	$67.50
NC-57B	99.50
National HRO-7. NEW with ABCDEF coils, less speaker or power supply	250.00

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R.C.A. 6787	139.60
Meissner 8-C	54.70
Hallicrafters ST-74	59.50

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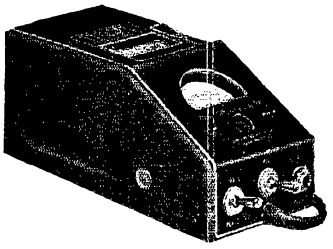
Gonset—10-11 meter	44.75
Gonset—20 meter	44.75
Gonset—75 meter	44.75
Gonset—two meter	44.50
Gonset—Tri-Band	47.60
Gonset—Noise clipper	9.25
Gonset—Universal Steering post bracket	3.90

Lysco D11 Grid Dip Meter..... $39.95



Millen 90651..... $61.50

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Bud VFO 21	$52.50
Millen VFO 90711	124.50

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Hylite—4 element yagis, 2 meters	$8.75
Hylite—two 4 element yagis, 2 meters	20.50

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FORT ORANGE RADIO DISTRIBUTING COMPANY, INC.

904 BROADWAY — ALBANY 7, N. Y.

LONG DISTANCE PHONE: ALBANY 5-1594 — *CABLE ADDRESS:* "UNCLEDAVE"

this signal at 4 Mc., 7 Mc., 14 Mc., and perhaps higher frequencies.

If the exact i.f. of the b.c. set is known, its h.f. oscillator may be used for approximate calibration of a receiver between the 1000-kc. points mentioned above. The oscillator frequency will usually be higher than the dial frequency by the i.f. Thus, if the b.c. set is tuned to a station at 700 kc. and the i.f. is 465 kc., the oscillator will be tuned to 1165 kc. Harmonics of this frequency can be used to obtain additional calibration points. It should be remembered, however, that only when the "generator" can be tuned to beat with WWV or some other frequency standard can the calibration points be considered as exact.

To determine the i.f. of a receiver which has a broadcast band, tune the receiver to a b.c. station of known frequency near the low-frequency limit of the band. With a second b.c. set, tune higher in frequency until a beat note is heard. In this area we have b.c. stations at 850 kc. and 1300 kc., just 6 kc. less than 456 kc. apart. The required 6-kc. beat note can be estimated, and a slight retuning of the second receiver will tell whether the i.f. is 6 kc. higher or lower than 450 kc. If the h.f. oscillator of the receiver being checked is *lower* in frequency than the mixer, the set being checked will have to be tuned to a station at the high-frequency end of the b.c. band while the auxiliary set will have to be tuned lower.

To determine an unknown i.f. in sets which do not have broadcast band coverage, the same principles described above are used, with the receiver being checked tuned to any station of known frequency. Tune an auxiliary receiver with a calibrated dial until the oscillator of the first receiver is heard. The difference between the frequency of the known station and the dial reading of the second receiver is the approximate i.f. of the first receiver. — *James B. Bamberg, W8OPX*

MOBILE OPERATING AID

TRYING to fish a crystal out of the glove compartment can be a nuisance. As a solution, take the plastic container that toothbrushes are sold in, remove the small partition near one end, and slip your favorite spare crystals inside. — *Charles L. Wood, W2VMX/2*

SOURCE OF ANTENNA WIRE

IF the present high cost of antenna wire is interfering with plans for your new rhombic, try using electric fence wire. This is copper-clad steel wire, and you can buy about a half mile of it for ten dollars. — *Ed Stephenson, W1SCO*

ADDITIONAL CURES FOR ITV

IN many instances hams find it impossible to use the 160-, 80-, and 40-meter bands because of "hash" radiated from near-by TV receivers. This hash originates with the horizontal oscillators operating at about 15 kc. and driving a flyback

(Continued on page 120)

system of power supply operating as a Class B amplifier. Harmonics of the oscillator frequency are generated, and are radiated by the wiring of the receiver, appearing at 15-kc. intervals through the spectrum.

To eliminate the interference it is usually only necessary to by-pass the high-frequency harmonics to ground. For example, in an Admiral model 30A1, a 0.01-μfd. 600-volt by-pass from the B+ side of the plate loading resistor of the horizontal oscillator and a 0.05-μfd. 600-volt by-pass at the output of the low-voltage power supply did the trick.

In other cases it may be necessary to by-pass the a.c. line where it enters the set. A pair of 0.001-μfd. 400-volt mica condensers installed with short leads from each side of the line to chassis should help. — *John F. Gallagher, W2VAQ*

CUTTING "MINIDUCTOR" COILS

I RECENTLY had to prune a "Miniductor" to a required inductance. Not wishing to destroy the extra turns which could be saved for later use in another rig, I tried using a heated razor blade to cut the plastic supports. The results were excellent, leaving a clean cut and not disturbing any turns.

The blade, held by a pair of pliers, was heated over a flame until it was red hot. Then with light pressure the blade cut through the plastic strip at the required length. It was necessary to reheat the blade after each cut, but even so the time required to do the job was less than five minutes. — *Norman Schneider, W2KVG*

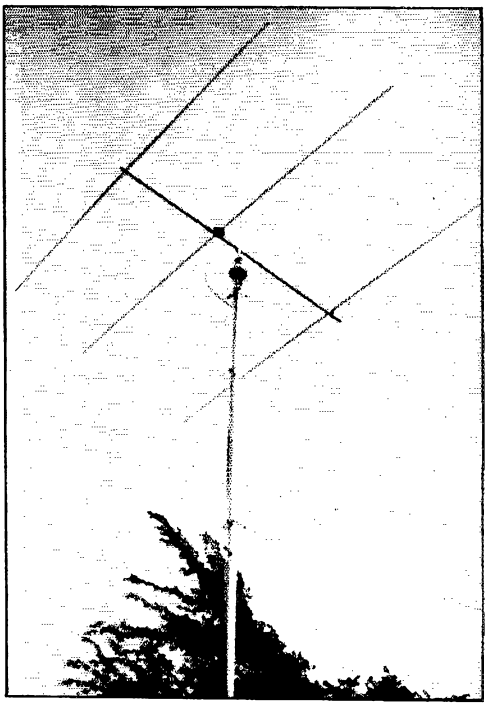
ANOTHER CLAMP TUBE KINK

HEAVY-DUTY bleeders on the high-voltage supply are not necessary when a clamp tube is used on the final amplifier tube. The rig here, which has an 813 final with a 6L6 clamp tube, draws 50 ma. residual plate current. This key-up drain exceeds the requirements for good voltage regulation, so the big bleeders were removed from the power supply and replaced with a series of 1-watt carbon units adding up to about 200,000 ohms. This serves as a protective bleeder, decreases the load on the power supply, raises the supply voltage a bit, and saves a few pennies on the electric bill. — *Phil Grover, KL7ABF*

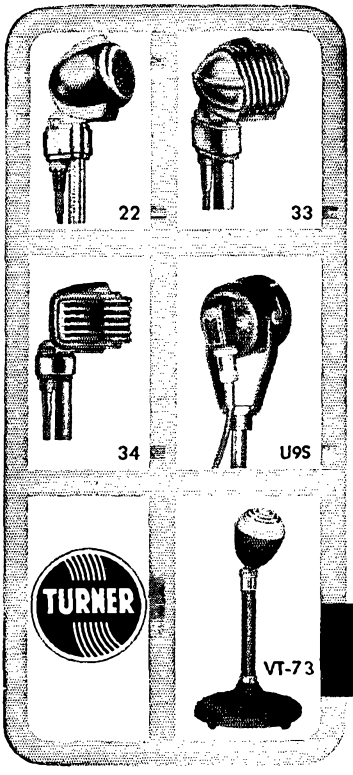
Strays

When FA8CF applied for DXCC recently, his Algeria confirmation, from FA9UP, was for a QSO on 435 Mc.!

—···—



Present-day TV antenna supporting structures and accessories are readily adaptable to ham needs, as witness this neat installation of the 3-element 10-meter Workshop beam at W1SPF. The mast is Milner 3-inch aluminum-alloy tubing designed for supporting "super-high" TV receiving antennas and comes in 10-foot sections with a hinged flat-casting base for mounting on a rooftop or concrete pedestal. A Tele-rotor turns the beam with no more effort than would be required to rotate a lighter-weight TV antenna. The beam is 34 feet high, and the mast is guyed at 20 feet and 30 feet with 3/32-inch 7 × 7 aircraft cable. Using a near-by tree for a "gin pole," and with several friends manning the guys, the whole assembly was raised in a matter of minutes. The installation at W1SPF has withstood winds up to 55 m.p.h. without incident.



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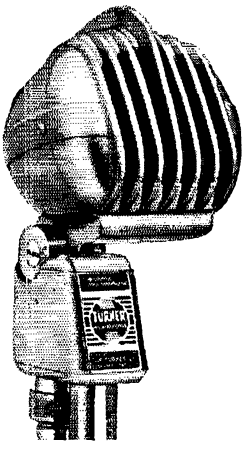

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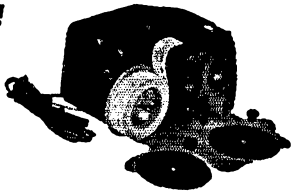

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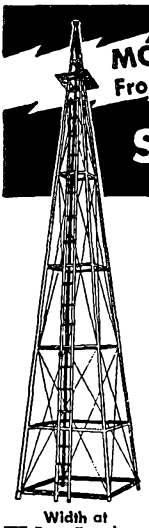

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(6) A special rate of 7¢ per word will apply to advertising which, in our judgment, is obviously non-commercial in nature and is placed and signed by a member of the American Radio Relay League. Thus, advertising of bona fide surplus equipment owned, 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.

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(8) No advertiser may use more than 100 words in any one issue nor more than one ad in one issue.

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MOTOROLA used equipment communication equipment bought and sold, W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

SUBSCRIPTIONS. Radio publications a specialty. Earl Meade, Huntley, Montana. W7LCM.

NEW crystals for all commercial services at economical prices; also regrinding or replacement crystals for Broadcast, Motorola, Link, G-E and other commercial types. Over fifteen years of satisfaction and fast service! Eidson Electronic Co., Phone 3901, 1802 No. Third St., Temple, Texas.

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LEARN Morse Code in just 8 hours! Code-Voice Record method gets you ready for Novice Class license, good Army job in radio. You get 4 sides of code instruction on two 10-in. 78 RPM Vinylite records in handsomely illustrated, completely detailed album. Send only $4.00. Money-back guarantee. Dept. Q1, The Raybrun Company, Box 66, Orangeburg, N. Y.

QSLS: Uncle Fred's QSLs. Three colors and up. Rainbow map QSLs. Special DX QSLs. Bargain QSLs. Samples rushed, 10¢. Uncle Fred, Box 86, Lynn, Penna.

SELL Modern station. Two 1 kw finals P.P. HF300 and P.P. 4-125A; 805 Mod. metered and Variac controlled throughout. Two solid aluminum racks Std. 6 ft. VX-101 VFO, BC-348P and NC-183. Single button controlled. Wkd fone WAC and DXCC. Send for picture and description. Reasonably priced. G. D. Rice, Watterson Trail, Jeffersontown, Kentucky. W4FQX.

GOING to try for an amateur radio operator's license? Check yourself with a complete coverage multiple-choice type test similar to those used by the F.C.C. Surecheck tests with answer key, Novice Class, $1.50; Conditional and General Class, $1.75; Advanced Class, $2.00. Order your time-teated Surecheck test today. Amateur Radio Supply, 1013 Seventh Ave., Worthington, Minn.

5-Element 2-meter beams. Riverside Tool Co., Box 87, Riverside, Ill.

WANTED: Collins 310B or 310C exciter. Write W2COU, 245 Cambridge St., Syracuse, N. Y.

WANTED: Old radio magazines and catalogs prior to 1925. Send list and prices — or will trade. Vance Phillips, W6GH, Hope Ranch, Santa Barbara, Calif.

WANTED: Teletype 1/40th HP synchronous motor W6ITH, Moraga, Calif.

QSLS, SWLS. C. Fritz, 1213 Briargate, Joliet, Illinois.

WANTED: March and May 1916 QSTs. 200 copies for sale 1920 to 1951 at 25¢. WØMCX, 1022 N. Rockhill Rd., Rock Hill 19, Mo.

WANTED: Your surplus radio receivers, transmitters, ARC-1, ARC-3, ART-13. We buy anything. What have you? Tom Allen, 562 Atlantic Ave., Brooklyn 17, N. Y.

QSLS! Taprint, Little Rock, Mississippi.

CRYSTALS! Bassett precision Type 100A (FT-243) within 80, 40, 20 bands or MARS channels at $1.50 each. Specify exact frequency and include postage. Rex Bassett, Inc., Bassett Building, Fort Lauderdale, Florida.

ZC4XP needs Collins 310-B-3 exciter in 1st class condition. No currency difficulties involved. All letters answered. Write ZC4XP, P. O. Box 451, Nicosia, Cyprus.

75 Meter converter, $6.00; KW AM clamp tube modulator, $8.00; transmitter 'phone/c.w. 40 w., $30.00; 10-meter converter, $10.00; grid dip meter, $12.50. Write for details. W6RET, 550 So. G., Oxnard, Calif.

WANTED: 129X or 348 converted, 40 meters, Clay Elworthy, W6KXC, Sloat, Calif.

QSLS? SWLS? Modernistics? Cartoons? Mobiles? Photographics? QSL samples, 10¢. Sakkers, W8DED, 53 East 7th Street, Holland, Michigan.

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STATION W5GAU. 1 Kw rack and panel 'phone transmitter. No junk. Will sell cheap if you come and get it. Robert H. Johnston, 613 Walnut St., Wharton, Texas.

SELL used set ICA code records. D. Hutchins, Rocksprings, Texas.

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FOR Sale: 4 months old Motorola mobile equipment including FMT-30-DMS, 30 watt AM/FM xmitter, P-69-13 police cruiser rcvr, antenna and mount plus new Gonset tri-band converter; $175.00. Am also interested in Panadapter, Hi-quality rcvr or 20 meter beam. W9JQJ, 555 Sherdan Road, Glencoe, Ill.

FOR Sale: One Mark II xmitter-rcvr. Complete with original parts. Never used. Make offer. F.o.b. Louisville, Kentucky. R. H. Bush, 4007 Alton Road.

WANTED Bandspread and general coverage coils for National AGS and FB7 receivers. Also low frequency oscillator for ART-13. All must be in good condition and reasonable in price. W5FJF, 618 Medical Arts Bldg., Houston 2, Texas.

LYSCO 600 $120. Hallicrafters S40B, $80; both new. Shipping extra. Webster Chicago 210-1 tape recorder, new; Pentron 9AT3, Webster Ekotape 111, Masco 30 watt PA. Make offer. Ray Aiken, Akron St., Lockport, N. Y.

RECEIVERS: Used, complete with speakers: HRO-7T, $210; HRO-5T, $175; 75A-1, $290; NC-125, $135; NC-108, $49.95; HRO-50 R, less spkr, $270. Radio Equipment Co., 821 W. 21st St., Norfolk, Va.

SELL QST: 144 consecutive issues, Jan. 1939 to Dec. 1950, to the highest bidder. In excellent condition. W2BJR, East Williston, N. Y.

WANTED: GI General Electric Model 51 wire recorder. Sell Taylor 900A super-modulated kilowatt $1000. WØNFA, Franz, 2110 Parkridge, Brentwood, Mo.

1948 Stromberg-Carlson FM-AM-SW chassis with 12" speaker: $55. E. L. Self, Ninety Six, So. Carolina.

BC-459 newly converted and power supply. Swap for low power transmitter. Also BC-654 for sale or swap. John Jackman, 800 Madison Ave., Bridgeport, Conn.

FOR Sale: QST January 1931 through December 1934, complete. Radio, January '36 through Mar. '42, except Oct/Nov. '37; June '41; CQ November '47 through December '50, except January/February '49, August '50. W6CRQ, R. H. Morse, 2621 Kingsland Ave., Oakland 19, Calif.

866A Kit, 2 tubes and 2.5v/10A transformer, $6.98. 1N34, 69¢. Sell your surplus tubes and gear. Send list, best prices. "TAB," 109 Liberty St., N. Y. C.

FOR Sale: BC-457 complete but dismantled. 800 volt, 300 Ma. power supply also dismantled. Total price: $18. J. E. Greve, 1025-20 St., Rock Island, Ill.

DX'er would like wiring diagram for Howard Communication Rcvr. Model 450A. Any offers greatly appreciated. A. M. Brown, Terrace, B. C., Canada.

QSLS, SWLS. High quality. Reasonable prices. Samples. Bob Teachout, W1FSV, 40 Elm Street, Rutland, Vt.

WANT: Marconi, DeForest, Wireless Specialty, Electro Importing, Clapp-Eastham, Murdock apparatus. Wireless books before 1919. Wireless Age, Electrical Experimenters, Modern Electrics, Marconigraphs, cash or swap QST. Electrical Experimenters, Wireless Age. Louis Rizoli, W1AAT, 100 Bay View, Salem, Mass.

WANTED: DeForest Responder, Arc Radiophone, Audion Boxes, Marconi Coherer, Magnetic Detector, Type D, E & Multiple Tuners; other gear prior to 1920. Franklin Wingard, Rock Island, Illinois.

BARGAINS: New and reconditioned Collins, National, Hallicrafters, Hammarlund, RME, Millen, Gonset, others. Nearly all models. Reconditioned S38, $29; S40A, $69; NC57, $69; NC173, $149; NC183, $199; HRO5TA1, $159; HRO7, $189; HRO50, $289; HQ129X, $139; RME45, $89; DB22A, $49; HF-10-20, $49; VHF152A, $59; SX42, SX43, SX28A, SX25, SP400X, Collins 75A and 32V, others. Terms. Shipped on approval. List free. Write me and get better equipment for less money. Henry Radio, Butler, Mo.

BALLOONS: Radiosonde, 12' bursting. 3 for $2.00. Phone patch schematics, practical discussion, $1.00. C. E. Nichols, W1MRK, 57 Hancock, Auburndale, Mass.

FOR Sale: BC-610E with BC614E speech amplifier. Good condition, high efficiency with B & W KW swinging link coils for final. In operation. 75, 40, 20, 15 and 10. Complete with extra new 250TH and Kw antenna changeover relay. $450. Will deliver within 100 miles. W5MBE, C. W. Cook, Route 2, Pollock, Louisiana.

FOR Sale: Revere tape recorder, practically new, used for code practice, 2 rolls tape; $110. SRC 522 receiver and transmitter and Dynamotor, $30. Faust H. Boyd, W9LQI, Ashton, Illinois.

BARGAINS: Transmitting and receiving equipment for sale. Send in for list. Need back issues: ARRL Handbooks and CQ, year 1945. C. A. McKay, 1724 Rumsey Ave., Fort Wayne 7, Indiana.

SELL: RME-45 A-1 shape with matching speaker. Highest offer over $80.00. Dale Conger, WØDJM, Wagner, South Dakota.

MUST Sell: 150-watt rack mounted transmitter. Includes power supply, modulator, ECO, buffer and final: $250. New NC-183 for $250. Both for $450. W5TBD, Box 425, Eagle Pass, Texas.

SELL Dumont 241 'scope; $195. I-222-A Sig. Gen, $95; Federal 804 Sig. Gen, $150; BC-654A; TCS-12. T. Clark Howard, 46 Mt. Vernon, Boston 8, Mass.

PAIR Selsyn motors, $10.00. Morse Engineering Co., St. Louis.Mo.

WANTED: Collins 32V2 xmitter. Cash. W3CUN.

PORTABLE and Bantam transmitters, plus antenna dope in Bantam transmitter manual. $1.00 postpaid. B & B Labs, Box 3281, Station F, Atlanta, Georgia.

BC610-E transmitter, factory-converted 10-meters, coils, plug-in crystal, VFO units for 10–20–40–80, speech amplifier unit, late model antenna tuner, control unit with built-in 'phone patch, $550 plus crating. Also Mon-Key, Sonar VFX680, coils, all bands, Millen Grid Dipper, BC221AL with modulation, Bud relay rack cabinet 26" panel space. All F.o.b. Indianapolis. Write to Severeid, W9DPL, 2431 East Riverside Drive, Indianapolis.

USED equipment: RME VHF-152A, $69.50; National SOJ-1, $15; National NC-46, $65; Johnson Viking, wired, A-1 condx; four crystals, practically new with TVI preventatives including brute-force AC line filter, $250; Sonar SRT-75 transmitter, $149; RME CM-1 carrier level meter, $7.95; others. Write for latest list. W1BFT, Evans Radio, P. O. Box 312, Concord, N. H.

COAX RG 11, heavy duty xmitter type, 72 ohms, new Amphenol, in 100 ft. coils, not surplus, brand new, $8.00 per 100 ft. Dorsey's Co., Ed Meyer, W3HCG. 827 Upshur St., N.W., Washington, D. C.

WANTED: Used Teleplex drum type 115V, 60 cy. AC, Radio communication records. Also wanted: interested ham to practice with, prefer middle age L. A. area. Late model receiver and transmitter, factory built, if home-made, for rebuilding. ARRL recommended, all of recent design. Trade: S40A Hallicrafters receiver, new Icor recorder model 15–1150–60 cy. 7 reels of tape 400 and 800 ft., all in excellent shape. W. H. Burkhalter, 865 Laguna Ave., Los Angeles 26, Calif.

FOR Sale: 1 Meissner Model Ex signal shifter, with phase modulator. Also 40 M JVL, 10 M JVL, and 10 M OEP coil. All for $85. L. Hertwig, W9HLC, Oconto Falls, Wis.

SALE or trade: 4D32 and 829B tubes, 150 watt coils. Need 500 watt coils and 811A's. W3PKI, 737 Pine, Steelton, Penna.

FOR Sale: Collins 75A-1 receiver. Outstanding condition, less than 300 hours operating time. Complete: $275. D. J. Wilke, W3LSG, P. O. Box 716, Pottstown, Penna.

SWAP 10" TV-FM-2 meter with Mallory-DuMont front end, also all kinds of ham gear, for any good surplus (ARC-1, ARC-3, APR-4, "TS-") units, etc., manuals, tubes, General Radio, Ferris, etc. Lab equipment; also top cash. Microwave equipment badly needed. Littell, Farhills, Box 26, Dayton 9, Ohio.

KELSEY 5 x 8 printing press, with $250 of assorted type and extras. Excellent for printing bulletins, QSLs, etc. Everything perfect. Want: SP400X, cash or what have you? WANTED: Stancor ST-202A kit. Merit Arnold, RFD 2, Box 1162, Vista, Calif.

10 & 20 Meter Beams: $23.25 up. Aluminum tubing, etc. Willard Radcliff, Fostoria, Ohio.

BARGAINS: Extra special! Motorola P-69–13 mobile receivers, $29.50; Globe King, $315; HT9, $199; HRO7, $199; Temco 75GA, $225; Collins 32RA, $125; Collins 32MA, $99.50; Collins 75A1, $295; new 150 watt 'phone, $199; HRO-5T, $175; Hallicrafters S-47, $119; RME45, $99; SX17, $89.50; Meissner EX Shifter; NC46, S-40A, $69.50; VHF152A, $69; SX24, $69; Globe Trotter, $57.50; New Meissner signal calibrators, $24.95; MB611, $29; 90800 exciter $29.50; Gonset 10–11 converters $25; XE10 $14.95, and many others. Large stock trade ins. Free trial. Terms financed by Leo, WØGFQ. Write for catalog and best deal to World Radio Laboratories, Inc., Council Bluffs, Iowa.

QSLS. Samples free. Wunder, W2TDV, 135–21 Francis Lewis Blvd., Rosedale 10, N. Y.

SELL: Hallicrafters receiver S40, in perfect condition. $60. Set of spare tubes, $5. M. H. Klapp, W2EQV, 17 Kenosha St., Albany, N.Y.

DESPERATE! Want following editions U. S. Govt. Printing Office Call Books: Government & Commercial Stations, 1922, 1925 and amateur stations, 1926. Want large sized Call Books, any editions. Looking for 1916 QSTs to complete file. Want paper cover edition of ARRL Handbook for following years: must show front cover very good or like-new appearance: 1929, 1930, 1938, 1948. Robert L. Willits, W1PN, 53 Hemenway St., Boston, Mass.

WANTED: "S" Meter for NC-57, in good condition. R. L. Westcott, W7NOM, Ontario, Oregon.

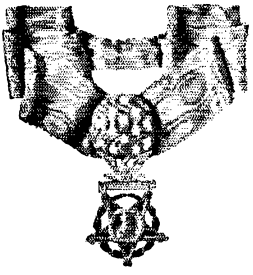
$300 or best offer takes HT-19 and 120-watt PP807 modulator. $250 or best offer for HT-19 only. All inquiries answered. D. E. Charest, KL7UQ, 1714 Bowen, Bismarck, N. D.

WANTED: N.R.I. or other servicing course. For sale: Triplett 1696A modulation monitor. Box 382, Newark, N. J.

AR-88 "S" Meters New, $9.95. W6EH.

Index of Advertisers

Medal of Honor



Sergeant Charles Turner, of Boston, Massachusetts—Medal of Honor, Korea. On September 1, 1950, near Yongsan, Korea, Sergeant Turner took over an exposed turret machine gun on a tank. Despite fifty direct hits on the tank, he stayed by his gun and destroyed seven enemy machine gun nests before he was killed.

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Sergeant Turner died to keep America free. Won't you see that America *stays* the land of peace and promise for which he gave his life? Defending the things he fought for is *your* job, too.

One important defense job you can do *right now* is to buy United States Defense* Bonds and buy them regularly. For it's your Defense Bonds that help keep America strong *within*. And out of America's inner strength can come power that guarantees security—for your country, for your family, for *you*.

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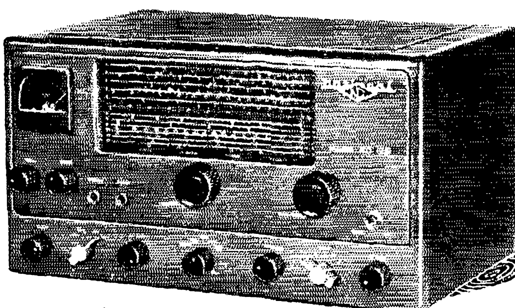

COVERAG... or CW...

...with am... cl...

...ack for phon... lized osc...

...), Se... ANL, AF... band ...itch, RF Gain...

TUBE ... 6SG7 RF amp, 6S... osc... 1st IF, 6SG7 2nd IF ... ANL, 6SL7GT phase ... ...st-reject aud. amp., 6S... 6V6GT aud. output, ... reg., 5Y3GT rect.

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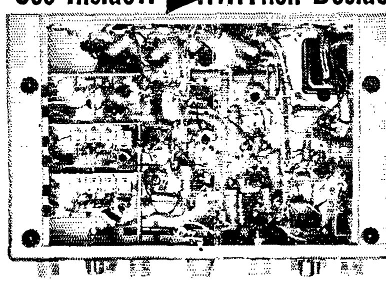

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