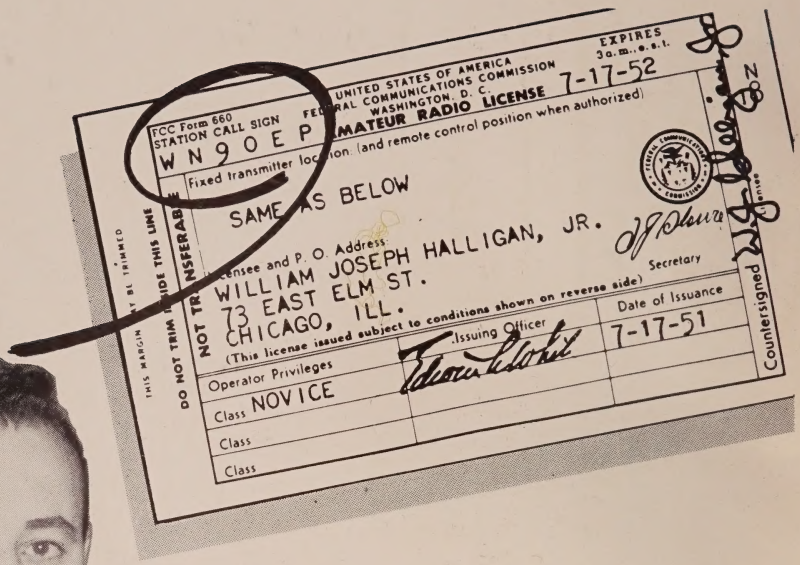
CQ

SEPTEMBER
1951



The Radio Amateurs' Journal

35¢





"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 W N 9 O E P!"

Bill

Bill Halligan, Jr.
Sales Manager
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 QSO's count, so get going!"



hallicrafters

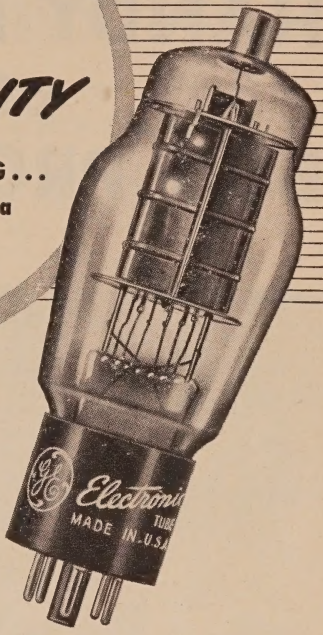
"The Biggest Ham Shack in the World!"

WORLD'S LEADING MANUFACTURER OF *PRECISION* RADIO & TELEVISION • CHICAGO 24



CONTROL CENTER DEPENDABILITY

You have it in G.E.'s 6CD6-G . . . plus high perveance and a husky input!



6CD6-G Beam Power Amplifier

Heater voltage	6.3 v
Heater current	2.5 amp
Max plate voltage	700 v
Max plate current	170 ma

This staunch G-E tube will stay on the job hour after hour, giving trustworthy service while messages stream in and out. Write your own specs for a power tube for emergency use, and you've described the 6CD6-G!

Modern. You want up-to-the-minute design. Type 6CD6-G is mid-century from cap-terminal to base-pins, having been developed for current-model TV.

Ample plate dissipation. 15 w for the 6CD6-G!

High perveance. You can draw approximately 100 ma at 350 v— important in C.D. work, where you need good power with moderate voltages.

Tough. C.D. tubes may encounter sudden, high plate voltages. Ability to withstand them is essential. The 6CD6-G will handle up to 700 v uncomplainingly.

As frequency-multiplier, buffer, or final tube, the 6CD6-G does a fine job where conditions require the utmost stamina. This is a big 807-size tube that will take inputs on the order of 60 w . . . yet a standard receiving type, so economical to buy. See your G-E tube distributor today!
Electronics Department, General Electric Company, Schenectady 5, New York.

EVER WIELD AN 85,000-VOLT PAINTBRUSH?

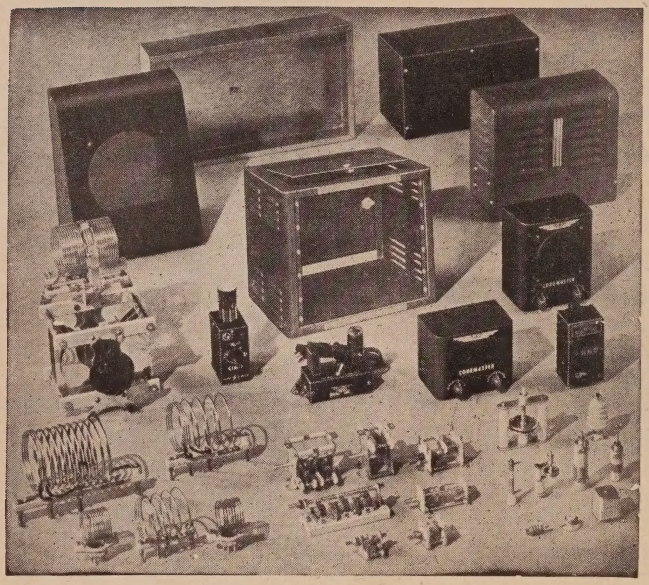
● General Electric does, on metal tubes. Paint from the spray-gun passes through a charged screen that applies a high positive voltage. The paint literally jumps ahead and around the tubes, to cling fast to metal of negative polarity. Purposes are three: (1) to coat G-E tubes evenly and smoothly, (2) to speed tube production, (3) to conserve paint, one-third of which is saved by G.E.'s electrostatic method. Savings like these are passed on directly to you in the form of G-E-tube dollar value —tops in the industry!

ELECTRONIC TUBES OF ALL TYPES FOR THE RADIO AMATEUR

GENERAL ELECTRIC

184-KA10

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Cases
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Chokes

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Dials
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Racks
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*Test Prods (Vise-Grip)
Test Leads
Wave Traps
Wireless Phone Oscillators

These items designed and manufactured exclusively by BUD.

BUD RADIO, Inc.

2120 East 55th Street • Cleveland 3, Ohio

VOL. 7, NO. 9

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George Jacobs, W2PAJ	Predictions
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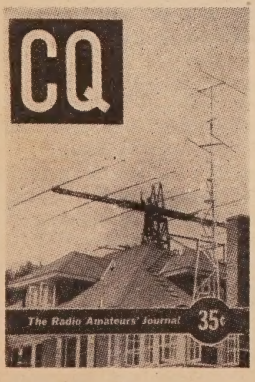
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OUR COVER

Once one of the big guns on the DX front, W2GWE succumbed to the TV bug a few years ago; the tower at the right carries only a small part of the TV arrays that Pete uses to demonstrate that you can get pictures on all 12 channels. But old DX men only fade out temporarily, and W2GWE is now back on 20 with a 5-element (count 'em!) rotary.

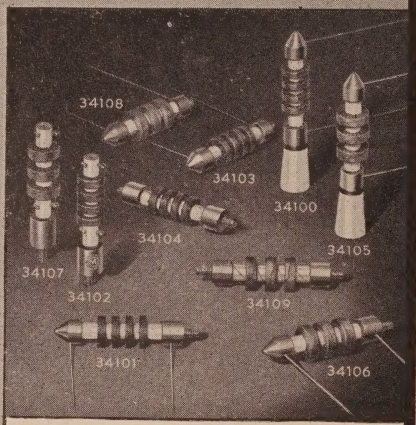
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Application



THE 34100 SERIES

R F CHOKES

Many have copied, few have equalled, and none have surpassed the genuine original design Millen *Designed for Application* series of midget RF Chokes. The more popular styles now in constant production are illustrated herewith. Special styles and variations to meet unusual requirements quickly furnished on high priority.

General Specifications: 2.5 mH, 250 mA for types 34100, 34101, 34102, 34103, 34104, and 1 mH, 300 mA for types 34105, 34106, 34107, 34108, 34109.

JAMES MILLEN MFG. CO., INC.

MAIN OFFICE AND FACTORY

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Feenix, Ariz.

Deer Hon. Ed:

You could never guessing **where** Scratchi is now. He is right in the middle of a callbook. Well, I don't mean that I am actually inside a callbook, but that is where I'm working. That is—oh heck, you knowing what I mean. I am now big business operator. I am regretting that my new stationery is not arriving yet, or you would see, at top of the paper, my business name. Scratchi Gilt-Edge Mail Promotions, Ink. At the moment Hashafisti Scratchi is sole proprietor, whatever that means, but I am confident that a few more months will find me rolling in the bux. I may even have to hire a big office and get stuff of people on my payroll.

All of this is coming about because another ham friend of mine are inventing handy new ham acksessory, and he wanting me to write letters to all hams to seeing if they want to buy it. It is really a 1/c little gadget, being a combination logbook, calendar and scratch paper pad, together with built-in pocket to hold pink tickets. It tastefully finished (like the ads say) in genuwine colored cardboard. Best of all, the price is only one dollar (amateur net).

The deal this friend giving me is this. He is too busy with other inventions to doing the big job of selling, so he letting me take over the selling, and he giving me five per cent of all the money he gets. He is even furnishing the envelopes for our mail-order campaign. All I have to do is address one envelope to customer, address another envelope to my friend so customer can send the buck, put one envelope inside the other along with the advertising wheeze, and mail it. By going through the callbook I can getting plenty of amateur names, so then all we have to do is sit back and wait for the money to roll in.

So, here I am, about half-way through the W7's in the callbook, having merry old time, and not even getting writers cramp yet. Gollies, Hon. Ed., some of these hams live in towns with funny names. Here's one in Naco, Arizona. Sounds like a candy bar. And here's one in Snohomish, Washington. Did sumbuddy sneeze? And WOW! listen to this one—Puyallup, Washington. That sounds exactly like sumbuddy pulling his feet out of the mud. You know, all this is very educational to Scratchi. I not only going to earn a lot of money but I'm going to learn sum gerography.

(Continued on page 58)

Veterans- LEARN THE VALUE OF YOUR RADIO SKILLS



Radio Maintenance is just one of the fields in which the Air Force offers opportunities to veterans with special skills.

Here's why so many veterans with training in Radio and Electronics have been moving into the Air Force

Today's fast-growing Air Force offers better pay and more chances for rapid advancement than ever before. If you're a qualified technician, you can enlist now with your old grade or better, according to your present ability. And, the Air Force will tell you before you enlist what your rating will be. Initial duty assignment for veterans will be to a nearby Air Force Base, and you'll skip basic training, of course. If you're experienced in radio or electronics, find out *now* what the Air Force has to offer you by mailing this coupon.

U. S. AIR FORCE

RECRUITING U.S. ARMY U.S. AIR FORCE

HEADQUARTERS, U. S. Air Force
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Attn: AFPTR-Department 4

Please tell me how I, as a veteran, can get an Air Force rating in keeping with my skill and experience in radio and/or electronics.

*NAME*_____

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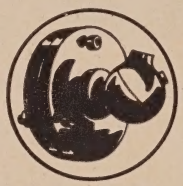
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Swivel Base mounts to allow for any body contour. Durable bakelite insulators with steel backing plate. Half balls of cast aluminum tapped to take shock springs or whip.

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WARD
WORLD'S LEADING EXCLUSIVE MANUFACTURER OF
ANTENNAS

★ ★ Letters ★ ★

St. Paul 4, Minn

Editor, CQ:

Mr. Conklin's article, "Go Fly A Kite", was very interesting. Enclosed is a photo of our 16 ounce, 7 foot kite; the gentleman standing beside it is Cliff Proetz, WØPDN, Secretary of the St. Paul Radio Club.



In a recent flight with our 7 foot kite we had a five mile ground wind and had 1800 feet of line out. It was flying at a 45 degree angle. We figured the kite was approximately 1000 feet high: We feel that if we could eliminate its 105 foot tail it would perform more efficiently. Consequently, we intend to try the more efficient design described by Mr. Conklin.

J. Oigard, WØASW
(9ASW since 1923)

Jamaica 2, N. Y.

Editor, CQ:

What is happening to CQ? Don't you have enough material on amateur radio to fill up the magazine? Why do you waste space when we are looking for new ideas for our rigs? Since when does a magazine devoted to amateur radio print an article on how to build a phonograph for children?

Julian N. Jablin, W2QPQ

P.S. It works very well, and the jr. op. gets a big kick from it.

(W2QUT took time out from writing articles for CQ to build one himself—says his jr. ops. like it, too. ED.)

WN's on 11

Editor, CQ:

Why don't some of the boys get on 11 meters—there is all sorts of room to splash around in. Hi!

Merit Arnold, WN6NLO

(Although most of the novices are on 80, we did spot a WN4 on 11 during a recent short skip opening. Our Novice Editor, W2GJV, will appreciate your reports on 11 meter work. ED.)

(Continued on page 44)



LAND, SEA and AIR

PRs stand the gaff! Wherever you go you find these fine precision crystals doing their jobs with honor . . . meriting the praise of engineers, operators and technicians. Yes—you can depend on PR for perfect frequency control . . . at low cost . . . for all amateur, commercial and industrial services.

20 METERS, Type Z-3, $3.75 • 40, 80 AND 160 METERS, Type Z-2, $2.75

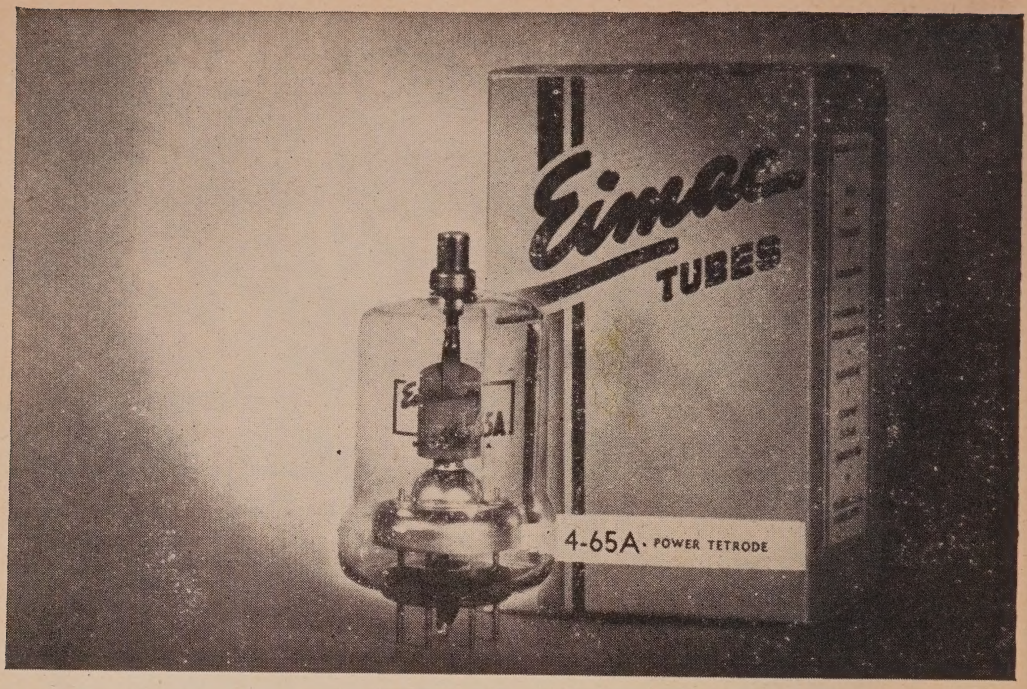
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Since PR 1934

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TOPS FOR MOBILE

If you want a high-power mobile transmitter with the advantages of push-to-talk operation, design and build your gear around the Eimac 4-65A tetrode.

The 4-65A has a quick-heating 6-volt thoriated tungsten filament for low battery drain and is built to take the physical abuse of mobile service. The high power gain of this tube means simplified exciter stages. With 2 watts drive, a 4-65A will provide 50 watts of AM output at 600 plate volts.

Write for complete data on the 4-65A and at the same time ask for a copy of the Eimac "QUICK-REFERENCE TUBE CATALOGUE".

291

Eimac TUBES

EITEL-McCULLOUGH, INC.
San Bruno, California
Export Agents: Frazar & Hansen, 301 Clay St., San Francisco, California

ZERO BIAS

EDITORIAL

THE suggestion that our 7 mc band be opened to 'phone in this country is a recurrent proposal, and a poll of ARRL members some years ago indicated that a significant percentage was in favor of the idea. At present, there are two petitions before the FCC to remove at least a portion of this band from the "CW only" category.

The first request, made by the ARRL as voted by the Directors last May, is to open 7250-7300 kcs. to frequency-shift teletype, on a shared basis with CW. The second petition, recently made by the National Amateur Radio Council, asks for a 100 kc. sub-band for General Class 'phone, but does not specify the frequency limits of this 100 kc. slice. This move by NARC jumps the gun on the ARRL, whose Planning Committee has been asked to "study the possibility of petitioning FCC" for A3 privileges on 40.

There are good reasons for opening a part of the band to both of the types of emissions specified, and the increasingly poorer propagation conditions on the higher frequencies make it desirable that a decision be made as promptly as possible.

It seems to us that here is an excellent opportunity for the FCC to conduct a practical demonstration of democracy, by permitting the amateurs of this country to vote on how this allocation should be made. The ARRL and the NARC perform useful functions by initiating such petitions, but since neither represents the majority of currently licensed amateurs, the FCC is unable to proceed on the basis of their representations. We hope that the Commission will find it possible to set up procedures for taking such a ballot, and that this may then serve as a precedent for a general vote on all subsequent important amateur legislation.

Civil Defense

A well-known amateur, who knows his way around Washington, recently said to us in a cynical moment, "They won't really get moving on this CD thing until after the first bomb has dropped." We hope he's wrong, but there is no denying that many amateurs have become fed-up with the confusion in the CD program at all levels, and in consequence have turned away from participation in it.

Fortunately, not all hams have left the job to the other fellow. During the past few months, we have operated away from the home location, and have had the pleasure of signing into an emergency net which covers a large county with pretty fair effectiveness. As is probably true in other areas, drill nights bring forth far more ten-meter activity than at any other time, including weekends.

Note that we said "emergency net," though; this net, in common with too many others, has so far failed to enroll its members in the county CD organization, with attendant security clearance. Some of these nets even call themselves "Civil Defense" nets; while they may be excellent emergency communications systems, they are sadly deluding themselves as to their availability if and when a bomb drops, unless and until they enroll in their local Civil Defense organization.

Changes

If you haven't already noted them, a quick look at our masthead will show that a number of staff changes are taking place. The increased demands of overtime have made it impossible for Frank Hayami, W2TNE, to continue the technical illustrating which he has done for CQ almost since its start. His place will be taken by Tom Smith, W2MCJ, and Don Hollister, W2WZF, who have been filling in for Frank during the past few months.

A promotion and subsequent change of location have put W3LOE off the air, and at his request we are reluctantly accepting his resignation as Contributing Editor. We hope that Bob will find time in the future to resume his hamming and writing.

Although Carl Drumm, W2GJV, goes on the masthead for the first time this issue, coincident with the first appearance of his Novice column, we have just received some sad news as we go to press. Carl has just suffered a serious heart attack and is hospitalized. We hope that he will be able to take up his column shortly, but until further announcement, Novice correspondence should be sent to our New York office rather than to W2GJV's address.

One more change is coming up, but it won't show on the masthead until next month. With this issue, I relinquish the top spot as Editor. It's been an interesting experience, and I appreciate the help of many of you during the past year. To my successor, the best of luck, and I'll be seeing the rest of you on the air, as time permits.

—Gene, W2ESO



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.

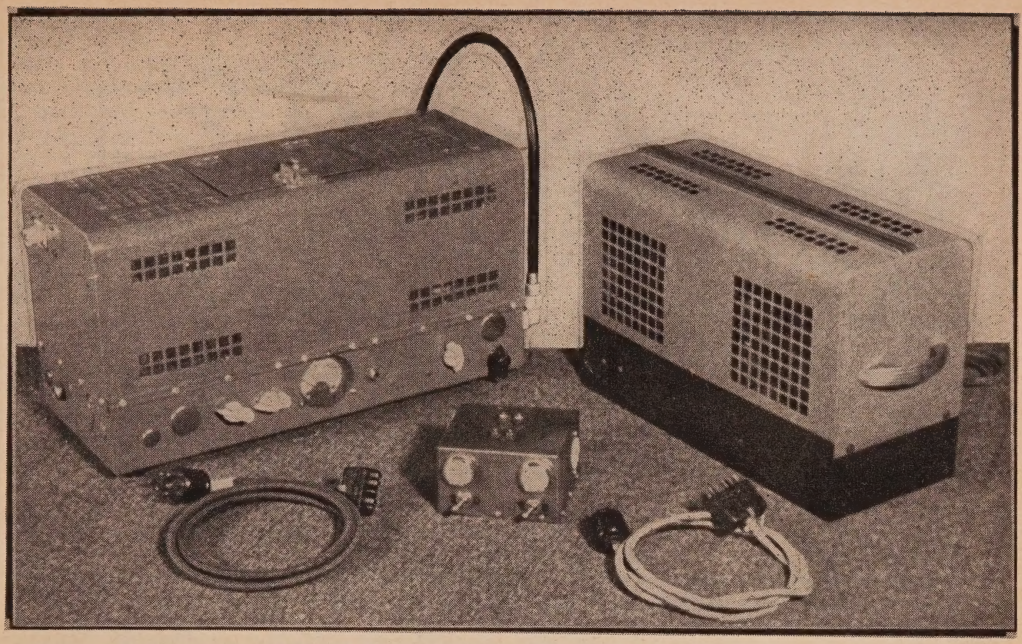
Though it is unsafe to make delivery promises in these uncertain times, our production schedule calls for the beginning of shipments of 32V-3 transmitters in September (of this year), and we expect to meet that schedule if there is no worsening in the world situation. Price to be announced.

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**



A Versatile TVI-less 40 Watt Transmitter

STERLING FISHER, W2PEX*

More than a transmitter write-up, this article features a survey of TVI filters in addition to introducing a novel interstage coupling and simplified high-level speech clipper.

HAVING READ NUMEROUS articles in the last few years describing the theory and technique of TVI elimination, I decided it was high time that I built a rig embodying the principles outlined. This project was undertaken in a spirit of pure scientific research, it being quite coincidental that I live in a group of apartment buildings housing almost 500 families, a high proportion of whom are television devotees.

After construction and several months of operation, I find that the transmitter works very nicely, and has negligible output at the television frequencies. Feeling that there are many others whose neighbors boorishly persist in expressing their preference for the program material on Channel 2 to that on a 10 meter (or any other) harmonic, I am describing the rig which made it possible for me to enjoy Freedom of Speech once again, even at nine in the evening.

The transmitter can be operated from 160 M. through 10 M., with an input of 40 watts or so on CW or AM 'phone. Crystal control may be used, or if desired the rig can be driven by an external VFO. When using the latter, it is easy to QSY quickly, since there are only two controls to be adjusted. The speech amplifier and modulator stages are self-contained, and have more than enough gain for use with a crystal or dynamic mike. Another feature is the high-level negative peak clipper, which prevents overmodulation and the consequent creation of interference, while permitting most effective utilization of the carrier for transmitting information. Changing bands is quite simple, since only two plug-in coils are used, and these are readily accessible through a trap door in the top of the cabinet. A separate control box is used, making it unnecessary to have the rig within reach, facilitating greater variation in the placement of station equipment. In addition to switching filament and plate voltages, the control box provides a 115 volt a.c. output switched with the plate supply voltage for powering the antenna relay, and permits single control transmit-receive operation, since receiver and VFO may be controlled by a relay which is in the box.

*770 Bronx River Rd., Bronxville, N. Y.

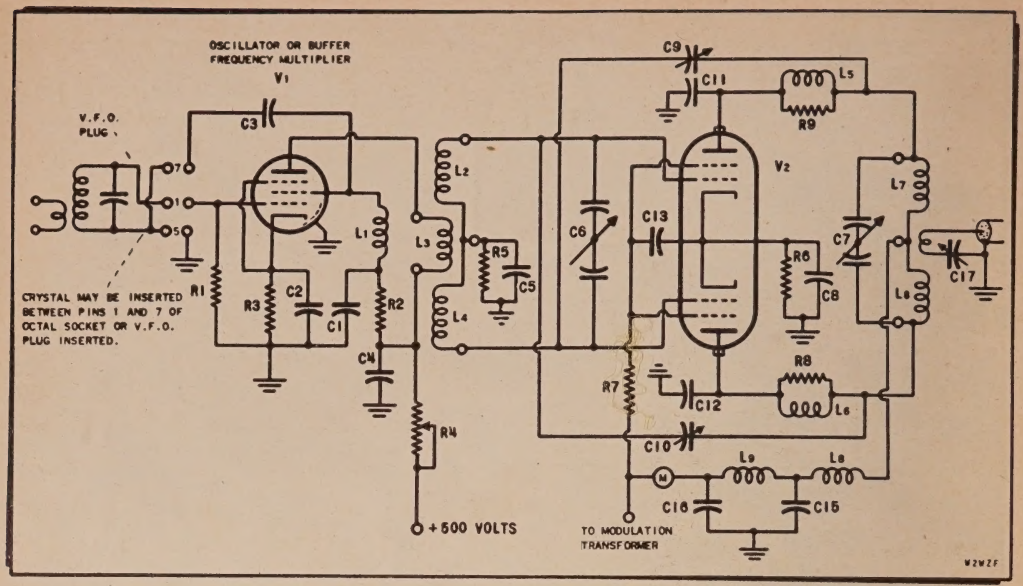


Fig. 1, the r-f circuit. The VFO and antenna low-pass filters are not shown.

R1—270K
R2—15K 10W
R3—200 ohm 1W
R4—5K 25W, adjustable, set to provide 300v. for 6AG7
R5—15K 1W
R6—3-560 ohm 2W, in parallel
R7—20K 10W
R8, R9,—47 ohm 1W, form of parasitic choke — see text. All resistors 1/2W unless otherwise specified.
K=thousand; M=million
C1, C3, C4, C13—.005 μf. mica or ceramic 600v.
C6, C7—50 μμf per section split-stator variable (National TMS-50D)
C2, C5, C8, C14—.005 μf. mica or ceramic 400v.
C9, C10—Neutralizing capacitors. See text.
C11, C12—50 μμf, 1800 v. made by connecting 3-150 μμf 600v. micas in series. Additional tuning capacity for 80M. See text.
C15,—.005 μf 1000V mica.
C16.—50 μμf mica or ceramic 1000v.
C17—50μμf low voltage variable.
L1, L8—2.5mh choke. National R-100.
L2, L4—10M—1-1/2 turn bifilar winding of 72 ohm twinlead on 1-1/2" dia. form. See text.
20M.—3-1/2 turn bifilar widing of 72 ohm twinlead on 1-1/2" dia. form. See text.
40M.—10 turns of #22E close wound on 1-1/2" dia. form. 1/2" spacing between windings.
80M.—26 turns of #26E wire close wound on 1-1/2" dia. form. 3/4" spacing between windings.
L3—10M.-4-1/2 turns of #22E wound on both sides of L_2, L_4 as shown in Figure 3.
20M.—9 turns of #22E close wound near one end of L_2, L_4.
40M.—25 turns of #26E close wound.
80M.—60 turns of #32E close wound.
L5,L6—Parasitic chokes, 8 turns of #22 wire wound on resistor R_8, and R_9, spaced to occupy entire length.
L7—10M B&W 10JVL
20M B&W 20JVL
40M B&W 40JVL
80M B&W 80JVL
L9—7 μh choke, 55 turns of #32E close wound on 7/32" dia. form (1W resistor.)
V1—6AG7
V2—829-B
M—0-200ma. Milliameter

The rig is adaptable to mobile use, and may be operated from the average mobile power supply with no changes other than removing one of the tubes and inserting a shorting plug.

As can be seen in the photo, the transmitter is built on two chassis, and has a separate control box. All three units are connected by two cables terminated with Jones plugs for ease of disassembly. This arrangement, with the power supply on one chassis and r.f. and audio sections on the other, was chosen for several reasons: first, the rig is more easily carried as two small units than as one large one, second, desk space is not taken up by power supply equipment which can be stowed elsewhere, and third, the r.f. and audio section can, as indicated previously, be used with mobile or emergency power supplies.

R. F. Section

As shown in Figure 1, the r.f. section of this transmitter consists of two tubes, a 6AG7 oscillator-frequency multiplier (or buffer when driven by an external VFO) and an 829-B final amplifier.

When the 6AG7 is used as a crystal oscillator, the crystal is connected between control and screen grids, in a Pierce circuit. The plate of the tube may be tuned to either the fundamental or a harmonic of the crystal frequency. Enough output is obtained when quadrupling from a 7 mc

crystal to drive the 829-B to an input of 40 watts with good efficiency and adequate modulation capability on 10 meters.

Switching from crystal to VFO control is simple, since it is necessary only to remove the crystal from its socket and insert the VFO output plug.

The interstage coupling circuit shown in Figure 1 was used because it provides push-pull output from a single-ended stage, and requires only one tuning control. The coupling between plate and grid windings is tight enough to make this possible. In construction of the 10 and 20 meter coils a technique was borrowed from television practice, and a bifilar grid coil wound to ensure equal drive to both grids. The bifilar coil, a photograph of which appears in Figure 2, is made by winding 72 ohm twinlead onto the coil form in the same way as if it were ordinary wire, and connecting the ends as shown in the drawing. At a given instant the polarity of the voltage induced in the two parallel windings formed by the twinlead will be as shown. If the positive end of one winding is connected to the negative end of the other, the two will effectively be in series, the common connection being a center-tap. Equal and opposite voltages with respect to the center-tap will then be present at the remaining two terminals of the winding, and these will provide a balanced drive for the final.

Although a bifilar winding would be ideal for all bands, the size of the twinlead makes its use impractical on 80 meters. There, the coil can be wound in three segments, as shown on the right in Fig 2. The top and bottom segments are the grid windings, the plate winding occupying the central position.

The final amplifier circuit is conventional but there are a few details about which it would be well to comment. The 829-B is operable in the 28 mc band and on higher frequencies without being neutralized, but for greatest stability and fewest headaches neutralization is desirable. The grid-plate capacitance of 0.1$\mu\mu$f is small enough,

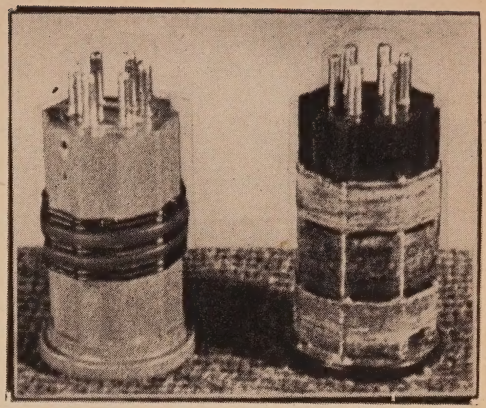


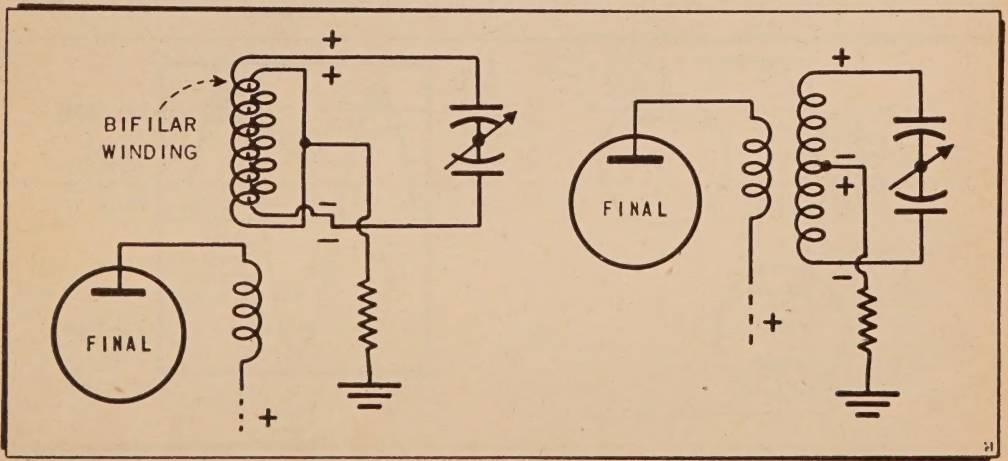
Fig. 2. The 10 meter grid coil at left has a bifilar secondary; the 80 meter coil has a split secondary.

though, to make this a simple task. Both of the neutralizing "condensers" are visible in Figure 3, each consisting of a short length of Number 14 insulated wire soldered to a grid terminal of the 829-B, and extending to within about one-quarter inch of the tank-condenser stator plates tuning the opposite half of the tube.

The adjustment of these "condensers" is relatively uncritical, and any of the standard methods of checking neutralization may be used. It should be remembered, however, that it is easy to overneutralize this tube, since the grid-plate capacitance is so small. Neutralization performed on 10 meters should be satisfactoryon all other bands as well.

Anticipating parasitic tendencies, an r.f. choke was inserted in each of the plate leads as near to to the tube as possible. Dimensions aren't critical, but a value which has proven effective consists of eight turns of Number 18 wire wound on a 47 ohm resistor.

Only a small amount of power need be coupled from plate circuit to grid to produce instability or oscillation. Consequently, extra r.f. filtering was



The physical connections of a bifilar coil are shown at left. Its electrical equivalent appears at right.

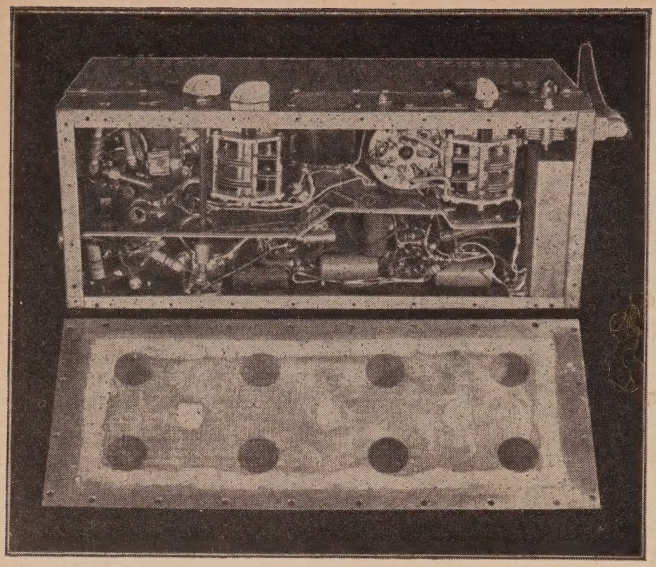


Fig. 3. Underside of the transmitter chassis with bottom plate removed. Partition separates r.f. section (above) from audio section (below). The 6AG7 oscillator-buffer and the 829-B grid tuned-circuit appear at the upper left, while the final amplifier is at upper right.

provided in the high voltage lead going from the center tap of the final plate coil to the plate current meter, since the lead passes near the grid circuit of the 829-B. All filtering components are above the chassis, the B+ lead passing to the inside through a 50 $\mu\mu$f feed-through bypass capacitor. If this type is not available it may be replaced by an ordinary mica capacitor, provided that the leads are kept as short as possible.

To operate the rig on 75 meters, it is necessary to augment the 829-B plate circuit tuning capacity in order to get a desirable L/C ratio. Furthermore, it won't be possible to use commercially made coils unless this is done! Although a vacuum condenser would be ideal for this application, its cost is high. A satisfactory substitute can be made by connecting three 150 $\mu\mu$f 600 volt mica condensers in series, forming a 50 $\mu\mu$f capacitor with the 1800 volt rating necessary to withstand the peak modulation voltage of slightly less than four times the B+ potential. No difficulty has been encountered when using these composite capacitors on 75 meters, although this might not be true on the higher frequency bands.

The relative placement of the 829-B grid tuned circuit and the tube can be seen in Figure 3. R.f. power is fed to the grids from the tuned circuit by means of a short length of 150 ohm line.

Audio Section

The speech amplifier which occupies the lower half of the chassis in Figure 3, is for the most part quite conventional. As shown in Figure 5, it uses a 6SJ7 input stage followed by a 6SF5 high-mu triode, which drives a pair of 6L6's in Class AB1.

Although the type of negative peak clipper used is not new, many amateurs are unaware of this simple yet effective method of limiting modulation in the negative direction to 100%, while leaving the positive peaks unrestricted in ampli-

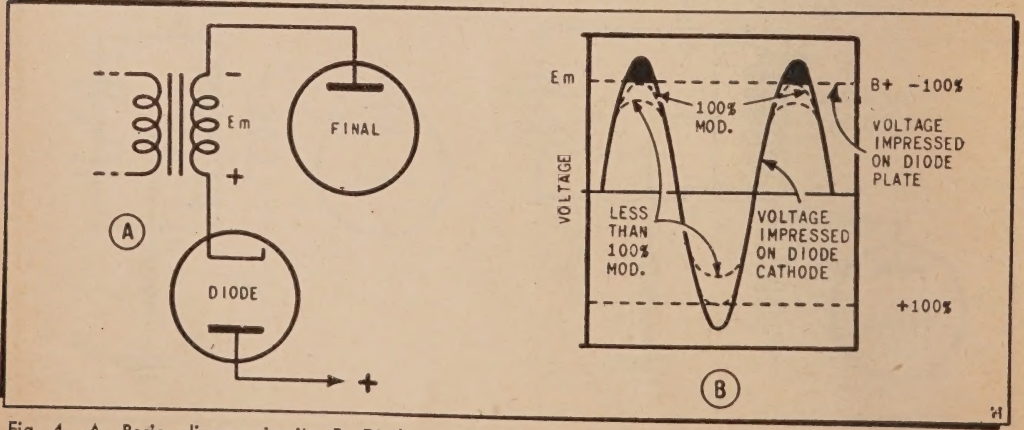
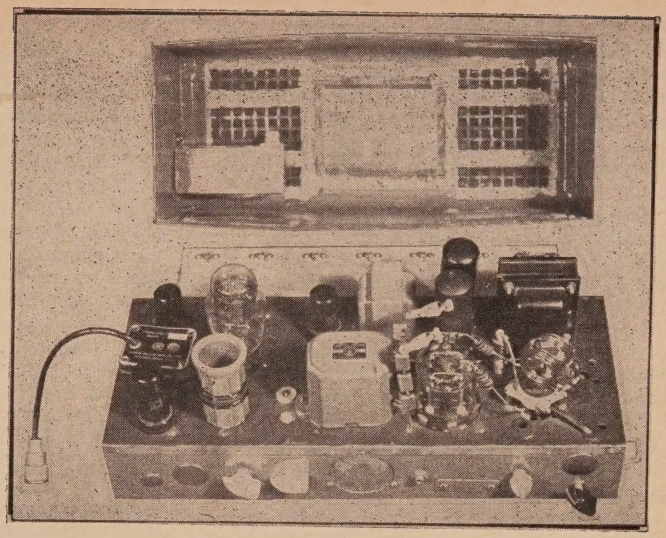


Fig. 4. A. Basic clipper circuit. B. Diode conducts constantly, except for negative peaks (solid black).



Top view of the transmitter with the cover removed. The auxiliary fixed capacitors for 80 meters can be seen next to the 829. Low-pass output filter is bolted solidly to the back of the chassis, and the VFO input filter is visible inside the chassis cover.

tude. As can be seen in Figure 4A, only two components are needed: a diode and a filament transformer. The diode is placed in series with the path of final amplifier plate and screen current, its anode connected to B+, and the center tap of its filament transformer connected to the low end of the modulator transformer. For modulation percentages less than 100% the diode is conductive, as shown in Figure 4B, because its plate is more positive than its cathode at all times. Modulation which would ordinarily exceed 100%, however, causes the cathode of the diode to be driven more positive than its plate on negative modulation peaks. This cuts the diode off, keeping the plate and screen voltages of the 829-B from going below zero, and preventing the generation of spurious sidebands which accompany the sudden interruption of r.f. current

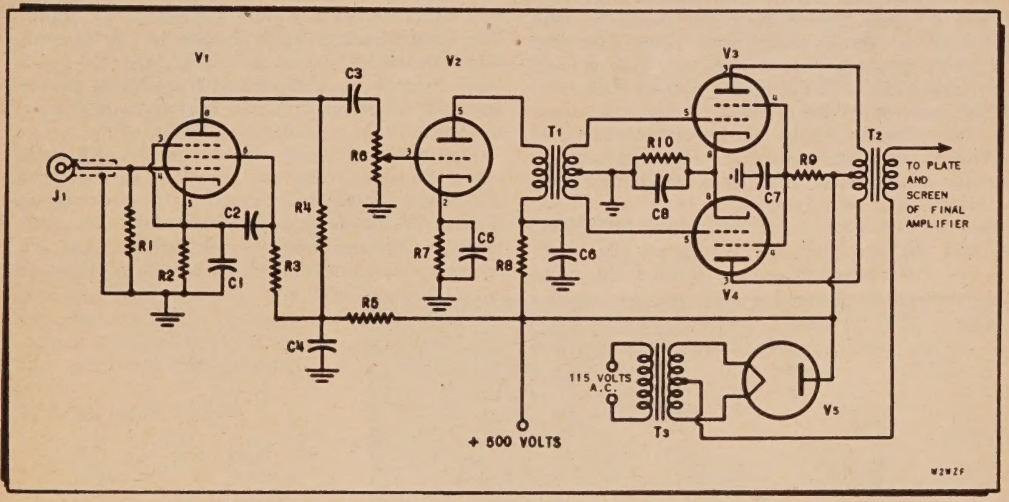


Fig. 5. The audio section. Note the simple but effective speech-clipper at lower right.

R1—3.3M
R2—4.7K
R3—2.2M
R4—470K
R5—47K
R6—gain control, 1M potentiometer
R7—2.2K
R8—180K 1W
R9—68K 2W
R10—270 ohm 2W

All resistors ½w unless otherwise specified.
K=thousand, M= million
C1,—10 μf 10v electrolytic
C2—.05 μf 400v paper
C3—.005 μf 400v paper
C4,—8 μf 450v electrolytic
C5—10 μf 10v electrolytic
C6, C7—0.5 μf 600v
C8—40 μf 50v electrolytic
V1—6SJ7
V2—6SF5
V3, V4—6L6
V5—5V4-G, 83-V, 5Z4, 82,83
T1—Interstage transformer — single plate to p-p grids, turns ratio of secondary to primary: 3 to 1.
T2—Modulation transformer. 9000 ohms primary to 4000 ohms secondary. Stancor A-3845 or UTC S-19
T3—Filament transformer. 5 v. at 2 amps.

when plate and screen are driven negative.

Some undersirable modulation products result from this clipping operation, and must be filtered out to prevent interference to other stations. No additional components are generally necessary, however, since the low-pass filter formed by the inductance of the modulation transformer in conjunction with its input and output capacities does an adequate filtering job.

Suitable diodes include high vacuum types 5V4-G, 83-V, and 5Z4 as well as mercury vapor types 82 and 83, all of which have a low voltage drop at high currents.

In order to isolate the audio and r.f. sections, a partition, visible in Figure 3, was placed between them, extending almost the entire length of the chassis, and only slightly narrower than the height of the chassis.

The audio gain control is toward the rear of the chassis, a shaft extending to the front panel.

TVI Precautions

In common with other rigs, this one required shielding and filtering to make it TVI proof. Shielding was not difficult to achieve, because the 7" x 17" x 3" chassis was of the so-called "amplifier-base" type and had a matching cover. The particular cover I bought could not be used "as received", though, since there was no convenient way of bolting it to the chassis on all four sides. There was, however, a flange to keep the cover from slipping too far down over the chassis. With the aid of a pair of pliers and a large vise it was a simple job to bend the flange so that it formed an apron which fitted down over the chassis on all sides, providing an overlapping joint (see lead photo). If the reader follows this or a similar procedure, the surfaces between the cover and the chassis should be tinned, to forestall corrosion and high resistance. (This is an important step, because steel from which the paint or enamel has been removed is prone to oxidize rapidly.) Clearance holes can then be drilled through the apron on the bottom of the cover at two inch intervals, and corresponding holes drilled and tapped in the chassis. Prior to bolting cover and chassis, two more operations need to be performed. First, all the spot-welded seams in the cover must be soldered shut, since they do not originally constitute r.f. tight joints. Second, copper window screening should be placed over the ventilating grilles and soldered on all four sides. A soldering iron in the 300 watt class is an essential for this and other heavy duty soldering encountered while shielding!

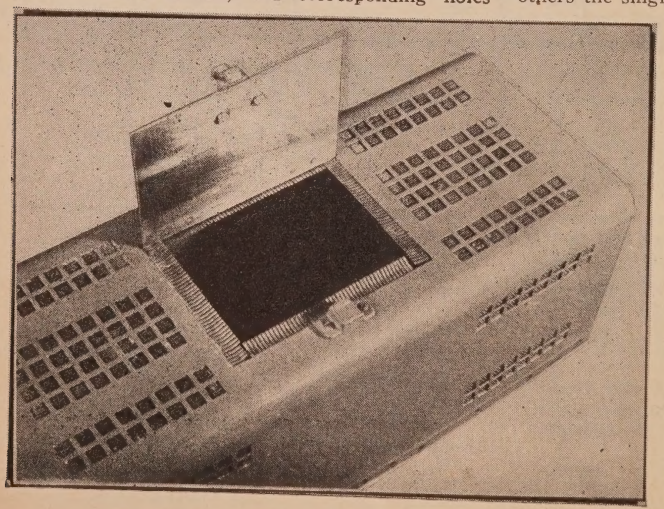
To complete the shielding, the joints in the chassis should be soldered shut, the meter hole covered with screening, and a ventilated bottom plate, such as the one visible in Figure 3, fitted to the chassis.

Unless single band operation is contemplated, changing coils can become quite a problem in any well shielded transmitter. The solution employed in this rig makes use of a trap door in the top of the cover, fastened closed by a spring catch. As shown in the photo below, there are contact fingers on all four sides of the hole which bear on the underside of the trap-door when it is closed, ensuring a good fit. All coils and other components on the chassis can be reached without difficulty through the opening, resulting in an ease of band changing comparable to that of an unshielded rig.

Filtering

As has been emphasized by many authors, all lines leaving the shielded enclosure must be filtered to ensure that harmonic energy stays inside. In this rig it necessitates the filtering of six leads: The input from the VFO, the output, one filament lead (the other being grounded), the B+, and two 115 volt a.c. leads. Since the filtering of the last four is easier and less critical than that of the first two, let us consider it first.

The box containing the filters for the four power leads is visible in Figure 3 in the right end of the chassis, and the schematic of the filters appears in Figure 6A. A two section filter will probably be necessary only in fringe areas; in others the single section filter of Figure 6B should



The trap door for coil-changing is thoroughly grounded by spring contacts on all edges. This spring stock was made by the author on a milling machine, but is now available commercially from Eimac distributors.

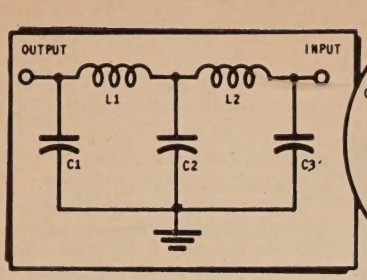


Fig. 6A. Line filter for B+, AC and heater supply lines.

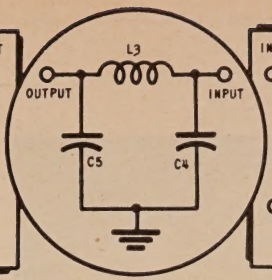


Fig. 6B. Simpler filter for stronger TV areas.

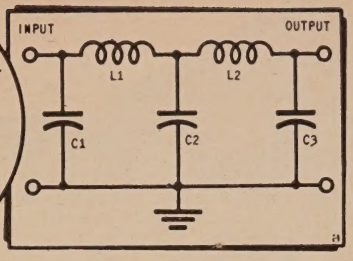


Fig. 7. VFO input low pass filter for 5 to 75 ohm line.

Figs. 6A & B

C1, C2, C5—.005 μf ceramic or mica

C3—50 $\mu\mu$f ceramic or mica

C4—.01 μf ceramic or mica

L1—3.2 μh. For filament line—10 turns of #14E close wound on 1/2" dia. powdered iron slug (see text), or 30 turns close wound on 1/2" form if no slug available. For other three lines—30 turns #32E close wound on 7/32" dia. form (1W resistor).

L2—0.6 μh. For filament line—13 turns #22E 7/32" dia. form close wound on (1W resistor). For other three lines—8 turns of #32E close wound on 7/32" dia. form (1W resistor)

L3—2.5 μh. For filament line—15 turns of #16E close wound on 3/4" dia. form. lines — 25 turns #32E close wound on 7/32" dia. form (1W resistor).

Fig. 7

C1, C3—220 $\mu\mu$f ceramic or mica

C2—470 $\mu\mu$f ceramic or mica.

L1, L2, 1.2 μh 12 turns of #14E wound to a length of 1-1/8" on 5/8" dia. form (self-supporting).

be adequate. The coils should be placed inside a shielded enclosure of some sort to prevent r.f. pickup, although they generally need not be shielded from each other.

The two section B+ and 115 volt line filters are identical and straightforward in construction, as is the 0.6 μhy. filament line coil, but a brief description of the larger inductance filament filter coil is in order. The 3.2 μhy coil in the filament line is different from the others, since, identical construction would result in a serious drop in filament voltage across the coil due to its resistance, and use of larger wire would make the coil too large to fit easily into the small shielded box. These difficulties are circumvented by winding the coil of Number 14 wire on a slug of powdered iron. The slug used had large losses at frequencies above a few megacycles, thus providing r.f. attenuation in excess of that which would have otherwise been expected.

V. F. O. Input Filter

If only crystal controlled operation is contemplated, the next few paragraphs can be skipped; otherwise read on and learn about the next filter creation.

The average VFO of low power output will not cause TVI, even in fringe areas. It is possible though, for harmonics generated within the rig itself to escape from the shielded enclosure along the cable to the VFO. If this is to be avoided, a simple filter must be inserted in the VFO line.

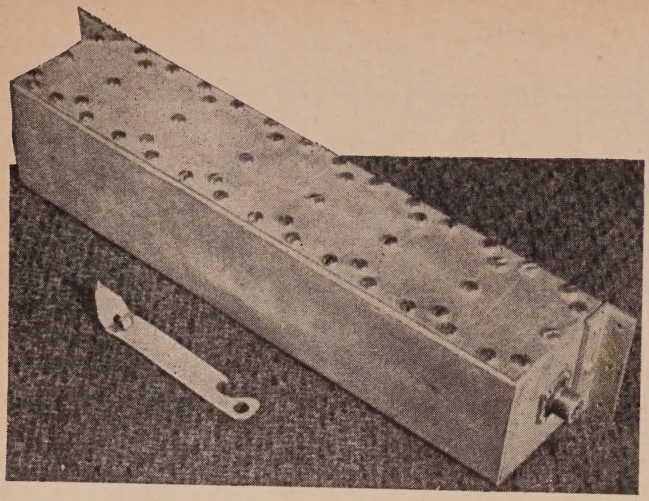
Since the attenuation above cutoff of a constant-K low pass filter is inversely proportional to its cutoff frequency, setting cutoff at 12 mc. makes it possible to use a simple two section filter of this type and yet achieve high attenuation in the TV ranges. Whenever a constant-K filter is used some mismatch will exist, but this condition did not noticeably affect transfer of power to the rig.

Figure 7 shows the constants of a two section filter designed for 52 ohm cable, but which can be used equally well with 72 ohm cable. The finished filter can be seen in the top view, on the inside of the chassis cover, its input connector protruding through the cover. This filter, and all others used, should be fastened securely to the chassis ground by a short, low-inductance lead—in this case the cover itself.

Low-Pass Output Filter

As with all rigs not employing harmonic traps, the final step in the elimination of TVI is the use of a low-pass filter on the output. There are a number of filters available on the market with specified attenuations ranging from about 50 db. to 80 db. which should be quite satisfactory. Alternatively, the many excellent articles on this subject may be used as guides to the construction of a filter.

The filter described here was designed to rather exacting specifications, since at the time it was built I lived in a fringe area where the Channel 2 signal was 200 μv/meter, and I wanted to give complete protection to a TV set whose antenna was 50 feet away from mine. With the 300 watt transmitter I was using, calculations showed that the second harmonic should be about 120 db. below the fundamental; an output of less than .001 micro-watts to the antenna! Assuming the harmonic output of the transmitter to be 30 db. down left 90 db. to be provided by the filter. As can be seen in Figure 10, the *measured* attenuation does not fall below 100 db. above 55 mc,



The assembled filter, showing mounting brackets and what might be the repair tool. The case is 1/8" copper, silver-plated, and all joints are brazed.

while the insertion loss below the cutoff frequency of 45 mc is very low.

The filter consists of 5 full sections and 2 terminating half-sections, with traps in Channels 2, 4 and 6. It is constructed in a copper box 3" x 3" x 14" in size, with each section carefully shielded from the others. It is particularly important that there be no coupling between sections if high attenuation is to be achieved, since the figure of 100 db. represents a voltage ratio of 100,000:1, or a power ratio of 10,000,000,000:1! The shielding and general placement of parts can be seen in one photo, and the assembled filter appears in another.

A design impedance of 75 ohms was chosen, since this will match a dipole and is easily transformed to 300 ohms if operation with a folded dipole is contemplated.[1,2]

Although only the bare details of construction have been outlined, enough material has been given to make possible duplication of this filter. If anyone would like further information on its construction and adjustment, I shall be glad to send it to him, though it should be mentioned that possession of an accurately calibrated grid dip meter is essential for proper adjustment.

[1] "Increasing the Versatility of the Collins 32V Transmitter," W. I. Orr, W6SAI, CQ, July 1950, pp. 30-31.
[2] "The Impedance Matcher," Vince deLong and Ben W. Roberts, WØIEU. CQ, May 1951, p. 20.

Coupling to the Antenna

There are several convenient ways in which balanced output can be obtained from this transmitter. That old standby, the antenna tuner, should be mentioned first, since it is the most versatile and flexible as to loads which can be matched. When using it in conjunction with a filter, best results will generally be obtained if some means is provided for checking the standing wave ratio on the link between the filter and the tuner, so that the tuner can be adjusted to present a resistive load of 75 ohms to the filter. Considerable information on the care and feeding of antenna tuners appears in the ARRL Handbook, so I shan't duplicate their efforts here.

If balanced output of 75 or 300 ohms is desired, it can be obtained as shown in Figure 9, without resorting to an antenna tuner. Figure 9A will be recognized as the "bazooka," and 9B is a 4:1 impedance transformer.

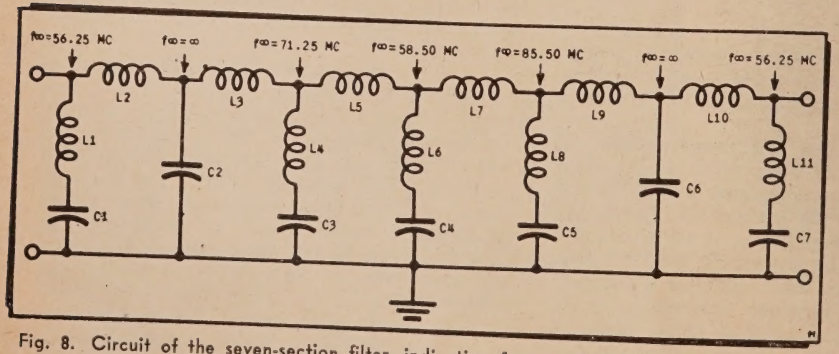


Fig. 8. Circuit of the seven-section filter, indicating frequencies of maximum attenuation.

L1—0.281 μh
L2—0.420 μh
L3—0.467 μh
L4—0.069 μh
L5—0.375 μh
L6—0.123 μh
L7—0.394 μh
L8—0.043 μh
L9—0.486 μh
L10—0.420 μh
L11—0.281 μh
C1—28.3 μμf
C2—94.5 μμf
C3—73.5 μμf
C4—60.3 μμf
C5—80.3 μμf
C6—94.5 μμf
C7—28.3 μμf

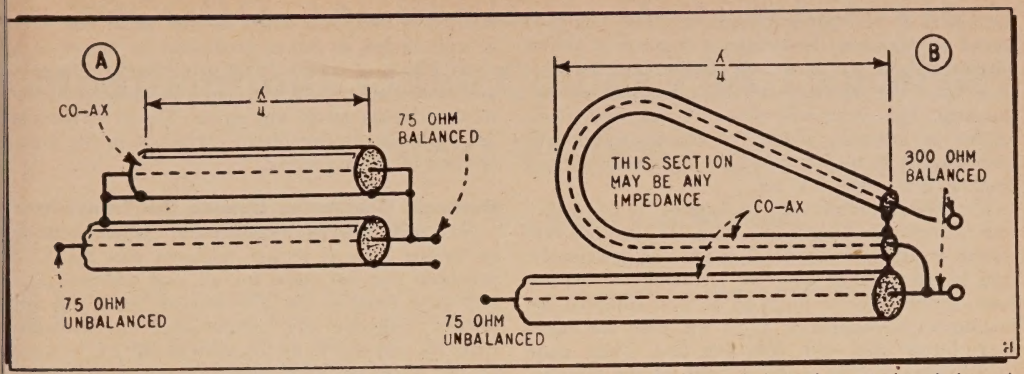


Fig. 9. Two devices for coupling from filter output to antenna. A. 75 ohms unbalanced to 75 ohms balanced transition. B. 75 ohms unbalanced to 300 ohms balanced transformer.

TVI Case Histories

At this point most authors tell wondrous tales of the DX they have been able to work with their rigs. I shall depart only slightly from this routine by relating the various cases of TVI reported to me (DX in a sense) and of their causes and cures.

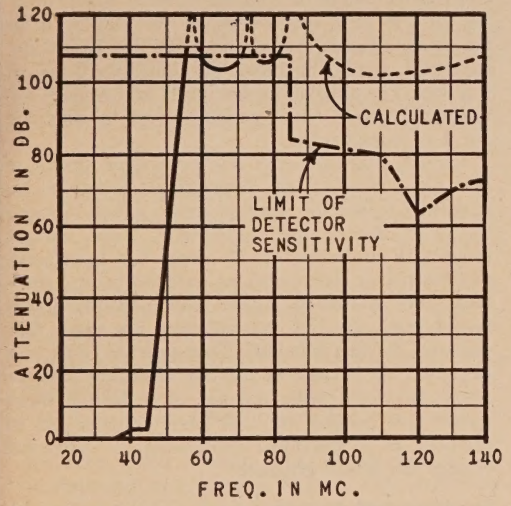


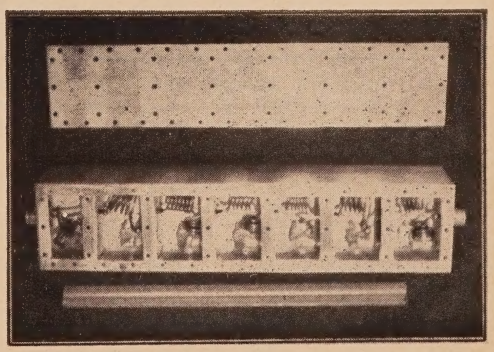
Fig. 10. Attenuation of the low-pass filter was measured in a screen room, using a signal generator and communications receiver. Reduced sensitivity of the receiver above 88 mc limited the range of measurement.

When put into operation, the rig was found, as expected, to have negligible harmonic output. This was determined first by placing a light bulb used as a dummy load within a few inches of an indoor TV receiving antenna. With the antenna so oriented that the signal on Channel 2 was vanishingly small, no interference of any kind could be seen on the picture. (Traps tuned to the fundamental frequency were inserted in the transmission line to the receiver during this and subsequent tests.) Next, the transmitter was connected to an antenna near the outside TV antenna; again no interference of any sort was visible on any channel.

It wasn't long before I got my first report of TVI, however. A neighbor in a nearby apartment, whose TV antenna was not far from my 10 meter antenna, complained that I was completely obliterating the sound on Channel 7, replacing it with my own. I thought this might lead to some highly entertaining programming, but he took a dimmer view of the matter, so I proceded to investigate the cause of the interference. I could not discover any harmonic relationship between my carrier frequency and the one on which interference appeared, but listening to his receiver showed it to be present, nevertheless, and very strong, too. When two parallel resonant traps were inserted in his transmission line at the antenna terminals of the set and tuned to my fundamental frequency, the interference disappeared.

Subsequently, a number of other complaints were received, and depending on the circumstances, one or another of the following "treatments" was successful.

1) An open-ended piece of 300 ohm line cut slightly less than a quarter wavelength long at 10 meters (7'8") was connected across the antenna



Photograph of low-pass output filter showing compartments and placement of components.

terminals of the offended receiver. The line was tuned to resonance by wrapping a piece of tinfoil around it near the open end, and varying its position until the interference was minimized or eliminated. This stunt will not work near the transmitter or antenna, where the quarter-wavelength line itself is in the r.f. field, picking up energy and feeding it into the TV set.

2) When proximity to the source of r.f. makes the quarter-wavelength line unusable, parallel resonant traps, such as those mentioned previously, can be used. These have the advantage of not requiring the receiver input to be well balanced for maximum effectiveness, as is the case for high-pass filters used with 300 ohm line. Their main disadvantage is the same as that of the quarter-wavelength line: they are most effective over only a relatively narrow range of frequencies.

3) The high-pass filter remains the best general cure, but is the most expensive to apply. Although the various commercially made filters do an excellent job, I experimented with several types of simple filters to find one I could "mass produce" and which would provide adequate attenuation under most corcumstances. The filter finally used is shown in Figure 11, and consists simply of two constant-K sections. The attenuation was measured at somewhat more than 30 db. in the 10 meter band, and greater at lower frequencies. Despite the fact that the constant-K filter used alone introduces mismatch, no ghosts in the picture attributable to this were found in any case.

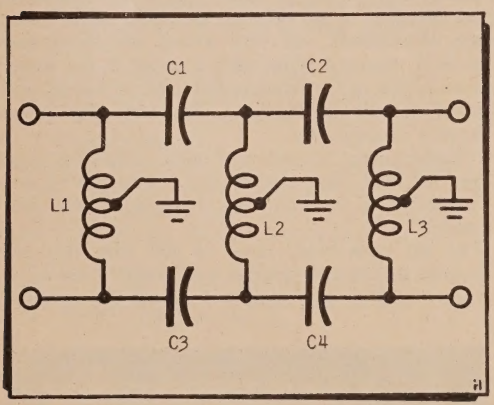


Fig. 11. Constant-K high-pass filter with a 45 mc cutoff, for 300 ohm line. It is easily constructed on a 2" x 3" chassis, using terminal strips to support the components.

C1, C2, C3, C4—12 μμf ceramic or mica

L1, L3—1.06 μh 16-1/2 turns of #28E, center tapped; close wound on 7/32" dia. form (1W resistor).

L2—0.53 μh 9-1/2 turns of #28E, center tapped; close wound on 7/32" dia. form (1W resistor).

When installing the filter, some experimentation should be performed as to the best method of grounding the filter to the receiver. In some installations, filter operation is best when the filter is ungrounded, in others grounding by means of a short length of copper braid proves most effective, and in still others the filter must be fastened bodily to the chassis to do any good. These differences are probably attributable to variations in the input circuits of the receivers.

Harmonic Generation Outside the Transmitter

As I tried different antennas and various methods of feeding them it became apparent that the TVI produced was not equal for all, and addition of a high-pass filter to the TV receiver input did not always eliminate the interference. It developed that this was due to rectification of the r.f. in some of the corroded joints and other oxidized metal junctions in the building, such as are present in the metal window frames, plumbing and electrical conduit. The severity of the TVI varied from one antenna to another because it depended upon the r.f. field intensity at the harmonic generating joints.

One of the clearest cut examples of harmonic generation by this means did not involve radiation by the antenna at all. Being a dweller in an apartment project where outdoor antennas are ostensibly forbidden, I resorted for a while to a 66 foot end-fed length of Number 32 wire. About three feet of 300 ohm line connected the end of it to the antenna tuner, and at one point this passed between the window sill and the aluminum frame of a screen. The antenna loaded nicely and worked out moderately well, but I couldn't seem to eliminate my TVI completely.

Several fruitless hours had been spent trying to find the soucre of the interference, when on an impulse I raised the window screen a few inches—the TVI disappeared! Apparently some current induced in the frame of the screen had been rectified when it passed across an oxidized joint, generating the harmonics. These were probably transferred back to the transmission line and then radiated by the antenna! This type of TVI can be cured, but it requires that the offending joint or joints be found with the aid of a field-strength meter and bonded, or that your antenna be so oriented as to minimize the amount of harmonic energy the joints generate.

Fundamental Output

Harmonic radiation has been dealt with in such detail that it seems only fair to describe briefly the rig's operation at the fundamental.

I have not yet been so fortunate as to find the source of the "high-grade watts" which must undoubtedly be known to those who assure us that 40 watts to a "Wattsnu" transmitter produces a signal twice as strong as that of any other rig with the same input. Consequently, I have so far been able to get signal reports only comparable to those of other 40 watt rigs. However, incorporation of the various features described makes possible maximum utilization of the 40 watts, as well as combining operating ease and flexibility with complete freedom from harmonic output at TV frequencies.

Second Guessing the Experts

Modifications to the Collins 75A-1 Receiver

WILLIAM I. ORR, W6SAI*

"If I'd been designing it, I'd have done it a bit differently . . ."

DURING THE PAST DECADE there have been a few receivers that have been milestones in amateur history. In the early 30's the three tube SW-3 was developed and was an instant hit. It is still a popular receiver in lands where there are no kilowatt rigs just around the corner. The writer had excellent luck with one at FP8AC during the summer of 1950.

A little later the RME-69 was marketed. There was a time, on 14 mc fone, when "if one didn't own an RME-69, he just wasn't one of the boys". The HRO, the PR-10, the SX-28 and a very few others have proven to be outstanding performers, while many other models have simply faded away.

With the introduction of the new Collins 75A-2, tre 75A-1 has finally been outmoded and joins the parade of old favorites. Many hundreds of them are now in use, and their popularity is apparent when one notices the extremely short interval that they stay on the shelf at a second-hand radio store.

Once a receiver reaches this venerable stage, a rash of articles appear in amateur magazines telling how the particular receiver can be "hopped up" or otherwise improved over the basic design into which the manufacturer undoubtedly poured thousands of dollars and many man-hours of engineering time.

This article, therefore, is a short story of how to "improve" the "now obsolete" 75A-1. It is a remarkable receiver, and a few moments spent roaming thru its innards will produce welcome results.

The Audio

1. The most commonly known modification to the 75A-1 is a slight operation upon its rather mediocre audio system. The boomy quality can be improved by placing a 10 μf 50 volt electrolytic condenser across the cathode bias resistor (R-51) of the 6V6 audio tube. Caution! On some models of the 75A-1 the standby switch is connected in series with R-51, thus breaking the cathode return of the 6V6. On these models the 10 μf condenser must go directly across the cathode resistor. If it is placed from cathode to ground and the standby switch is opened——po-o-oof! Better hook it up as in Figure 1.

*555 Crestline Dr., Los Angeles 49, Calif.

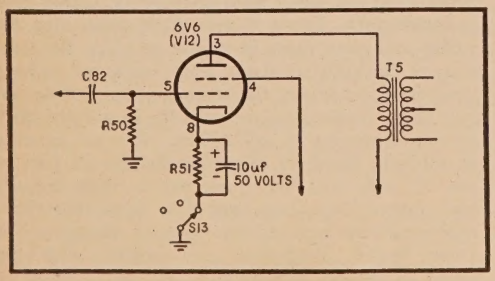


Fig. 1. Audio stage modification.

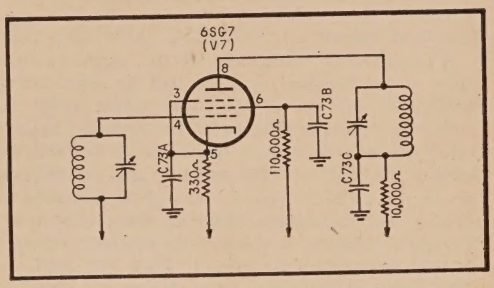


Fig. 2. The hopped-up 1st I.F. stage.

2. A second modification is to replace the second detector i.f. filter condenser (C-83), a .002 μf job, with a .0005 μf condenser. The .002 μf condenser is mounted on the back of the audio volume control and contributes mightily to the "Empty Barrel" effect so noticeable in the receiver. Reducing the value of this condenser restores a correct balance between low and high audio frequencies and makes voices sound much more life-like.

The I. F. Amplifier

1. This is an easy modification for you! Merely replace the 6SK7 tube (V3) in the tunable i.f. stage with a 6SG7 tube. You must re-set the zero adjustment potentiometer in the "S" meter circuit. You will immediately notice increased gain of the receiver and greater sensitivity of the "S" meter. No wiring changes are necessary.

2. If additional i.f. gain is desired, the second 500 kc i.f. stage may be opened up a bit. It is biased back rather heavily. On socket V7 replace R-30 (the 560 ohm cathode resistor) with a 330 ohm resistor of the same wattage. Replace R-32 (120,000 ohm plate resistor) with a 10,000 ohm resistor of the same wattage. Also, replace R-31 (screen resistor) with a 110,000 ohm resistor. These changes will give an appreciable increase in receiver gain with no danger of oscillation in the i.f. amplifier. See Fig. 2.

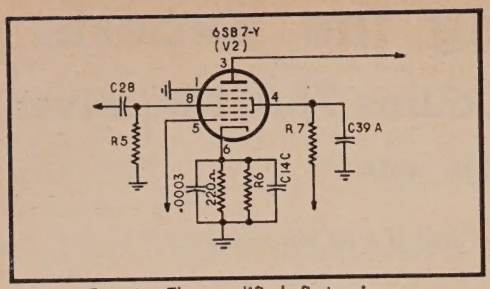


Fig. 3. The modified first mixer.

The First Mixer

A worthwhile betterment of the signal-to-noise ratio of the receiver may be had by substituting a 6SB7-Y for the 6SA7 (V2) mixer tube. To make this change efficiently the cathode resistor (R6) of the converter tube should be shunted with a 220 ohm, ½ watt resistor, and the cathode pin of the 6SB7-Y (pin 6) should be bypassed to ground with a midget .0003 μf mica condenser. This is in addition to the cathode bypass condenser that is already in the circuit. Keep the leads to this new condenser short! See Figure 3.

The R. F. Stage

Ah, here is where we really have ourselves a time!

I have noticed in months past that my 75A-1 had a very inferior signal-to-noise ratio on 28 mc. The results were far worse that the instruction manual would lead one to expect. As a last resort a 6J6 grounded-grid preselector was added to the 75A-1. This did the trick, but it looked like a wart on a dill-pickle. The receiver, by itself, was far better at receiving hiss than it was at receiving signals. Information was received from the factory that the input impedance of the 75A-1 on 28 mc was disgustingly high—something over 1500 ohms. Pity the poor man feeding this receiver with a coaxial line!

A long series of experiments was started and the combination of a new antenna coil and a 6AG5 r.f. amplifier tube turned the trick, making the 75A-1 into a superb 28 mc receiver. Here's how:

The Antenna Coil

The r.f. input circuit of the 75A-1 is unorthodox in that a common antenna and tunable grid coil (L6) is used on all bands. The input impedance of the receiver starts at a modest value of about 200 ohms on 80 meters and progressively grows with each flip of the bandswitch, reaching an unusable value on the 11 and 10 meter bands. The solution is a new antenna coil of correct proportions.

Remove the bottom plate from the coil catacomb and examine the grid coil of the 6AK5 r.f. stage. (L6). It is a slug tuned coil. At the free end is a close wound coil of a dozen or so turns. This is the antenna coil, and it is connected to the antenna terminals of the set by two pieces of twisted hook-up wire. The grid coil is a spaced wound coil directly below the antenna coil, and separated by about ¼". Remove the two twisted leads that go from the antenna coil to the antenna terminals. The antenna coil is now left floating and a new antenna coil is wound, consisting of three turns of high-grade hook-up wire directly around the A.V.C. end of the spaced grid coil. These three turns are close wound directly over the last few turns of the grid coil. A long nose pliers will come in handy to pull the wire around the terminal stud on the coil form and the various other obstacles that prevent you from doing it easily with two hands. If you were smart you left enough wire on both ends of the new coil, to be twisted and to reach to the antenna terminals.

The input impedance will now be close to 300 ohms on 28 mc, 150 ohms on 14 mc, 75 ohms on 7 mc and 35 ohms on 3.5 mc. These are very handy values. 300 ohm line may be used on 28 mc and 14 mc, and 50 ohm coaxial line on 7 mc and 3.5 mc. I would still, however, frown upon the idea of feeding the receiver with coaxial line at 28 mc. Better use an impedance matching device between the coaxial line and the receiver.

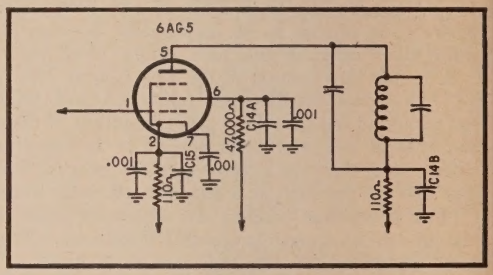


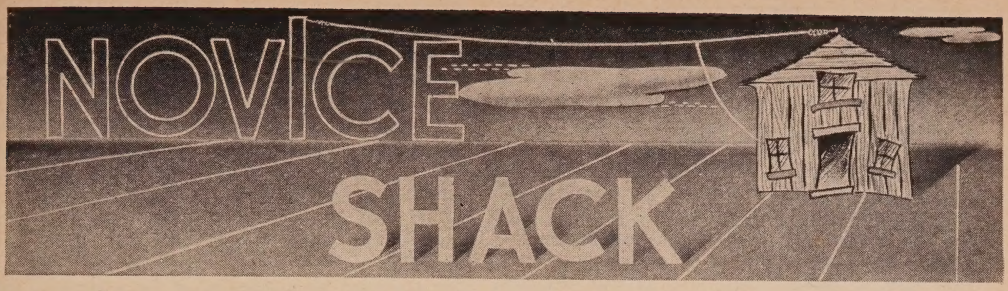
Fig. 4. The reworked r-f amplifier.

The R. F. Tube

Let us examine the 6AK5 tube. My experience with the garden variety or 69¢ surplus 6AK5 (now $1.89-Ed.) is that such an animal is good for about three or four months use, after which it starts to go soft. Experiment has proven that a 6AG5 tube is an excellent substitute for the 'AK5, giving longer life and a decidedly better signal-to-noise ratio. This change may be accomplished as follows; see Fig. 4.

1. By-pass pins 2, 6 and 7 of socket V1 (r.f. tube socket) directly to the socket shield with .001 μf "oyster shell" ceramic condensers, or very small .0003 μμf silver mica condensers. Either type is satisfactory. There is very little room atop the socket and care must be taken to place the condensers correctly to obtain short leads and to keep them from occupying the same space simultaneously! These condensers are actually in parallel with the condensers C15 and C14A that are already in the set. However these condensers in the set are oil units and are connected to their circuits with rather long leads, and their bypassing efficiency at 28 mc is somewhat open to question. The extra bypass condensers are needed with the 6AG5 to prevent oscillation.

(Continued on page 44)



Conducted by J. CARL DRUMM, W2GJV*

WITHIN THE PAST THREE MONTHS, dozens of editorials have appeared in ham publications, welcoming the Novice. Unless you have had previous experience with the peculiarities of amateur operators, this barrage of hospitality may sound a little unreal. It isn't; the genuine friendliness of amateur radiomen, and the lengths to which they will go to help each other, continue to amaze me even after 20 years in the game. For example, here is what happened to me recently:

While tuning the two-meter band one evening, I heard W3FXG calling up the Rock Crushers Net and inviting calls from any guests who might be listening. I reported into the net. Nobody there had ever worked me, or even heard of me (I am fairly new on two meters). Yet at the end of an hour of net drill, I had an invitation to dinner at FXG's home and to attend the club meeting afterward. During the evening, FXG found out that I needed an S meter. He just happened to have one, and right away it became my property —no money was involved; "I'll visit your shack one of these days and pick up something that *I* need." At the next net drill, I reported my inability to find a circuit suitable for matching the meter to my particular receiver. Thereupon, the net members took half an hour out to search through their files until W3QAS came up with exactly the circuit I needed.

There may be other hobbies whose devotees take each other on faith this way—but just try to name five!

You Are Cordially Invited

In line with this long-standing tradition of ham hospitality, CQ wishes to regard all Novices and prospective Novices as our guests. We realize that a good host does not merely greet his friends with a smile and a handshake at the door, then turn his back and leave them to shift for themselves. Instead, he anticipates their needs and is ready to provide for those needs as they arise. That is what we plan to do each month in these columns.

What does the beginner need in order to get started in amateur radio? The CQ staff knows, from first-hand experience; we have all been through the same experiences you are now undergoing. And we know that, at first glance, the list of things you need is rather appalling. First, you must learn the code. Then you must study enough theory and laws to satisfy the FCC. After that, the deluge!

What equipment can you buy or build that will get you on the air with a minimum of expense and lost time, yet will punch out adequate signals and will be usable when you become a full-fledged amateur, authorized to increase power and move to other bands?

How can you develop a smooth, snappy operating procedure that works around QRM (interference) and marks you as a really capable operator?

How can you best direct your ham activities so that at the end of your year of Novice "probation" you can qualify for a General-Class Amateur license?

Why doesn't a piece of equipment work, when you built it exactly as described in a magazine or handbook article?

How do your accomplishments in the field of working DX (distant stations) compare with what other Novices are doing?

CQ has set up the Novice department as a clearing house for questions like this. Each month, in addition to discussing one of the major problems encountered by all beginners, we plan to include pictures of successful Novices and their stations; a tabulation of records established by Novices for DX, number of stations, states, and countries worked; and a list of Novices who have successfully passed their General-Class examinations. Other features will be added as we go along. Each month, we will select a number of questions submitted by beginners and will print them together with the answers. If you have a problem concerning equipment, operating procedure, or any other amateur-radio subject, submit it to the address given in the footnote. You will receive a personal answer, and your question may also be selected for publication in an early issue of CQ.

Do not hesitate to forward any news you may hear regarding Novice activity. Let us know as soon as you get on the air, giving your name, call, and QTH (address). If possible, send along a picture of yourself and your equipment. If you have any suggestions for making this new de-

*213 Morgan Ave., Collingswood, N. J.

partment more interesting and useful, let's have them. As somebody always says at this point, "It's *your* column; how do we know what you like if you don't tell us?"—which is a bit hackneyed by now, but nevertheless true.

Your First Hurdle—The Code

So much for our plans. Now suppose we get down to your immediate problems. Amateur radio's king-sized bugaboo is, of course, the code. It is the only reason why ten million Americans do not already hold ham tickets; it is the first thing you have to whip. There are several excellent booklets in print which describe the best and least painful methods of learning code. We recommend, particularly, "Learning the Radiotelegraph Code," a highly authorative little manual published by the American Radio Relay League, West Hartford 7, Conn. The price is 25 cents. This booklet and others like it are useful; they reflect the experience of thousands of hams who have learned the code in various ways (most of them hard) and who can warn you against the mistakes they made. *But you can not learn code entirely out of a book!* There is just no substitute for listening to Morse character-sounds, letting your mind translate them into letters, then writing down the message. The more time you waste looking for an "easy" way of doing this job, the longer it will be before you get your license. For, at best, learning the code takes time. You can not do it in a couple of days. I know; I've been through it myself.

When I started learning the code, back in 1927, I was strictly on my own, living as I did 25 miles from the nearest active ham. Looking back, I realize that if there are any *wrong* methods of code study that I didn't use, I have never heard of them. I memorized the alphabet by staring at a printed table ("A - - dot dash") instead of training my ear to translate the sound "dit-dah" directly into the thought, "A." I got a key and buzzer and spent hours sending to myself—fine business, as sending practice, but it did nothing whatever for my receiving speed. I listened to code on a receiver—most of it was nothing but an unreadable blur. After a year of this, I still could not copy 5 words per minute.

Finally, I saw an advertisement in a ham magazine, and scraped up enough money to buy a tape practice machine. It cost me a week's wages (!) but it was worth it many times over. This gadget pulled a perforated tape between contact points and sent nearly perfect code at any speed between 3 and 35 words per minute. I started getting up half an hour early to copy from the machine for 30 minutes before breakfast. In the evening, I made it a practice to copy for 30 minutes right after dinner, and for another 30 minutes just before bedtime. On weekends, there was usually time for a few extra sessions. But an hour and a half a day, in three "takes," was set up as the absolute minimum for each day. As soon as possible, I added variety by copying from a receiver, in addition to the machine practice. All this was no fun; it got so that I hated the sound of code, but I forced myself to keep the schedule. In spite of not being too adept at such things, at the end of nine months I could make solid copy of 25 w.p.m. Nine months of machine practice had done five times as much for me as had the whole preceeding year of hit-and-miss methods.

Do not infer from this that use of a code machine is the only way in which you can learn the code. Let us say, merely, that I consider it by far the *quickest* way. The essential thing is that you copy for at least an hour a day *without fail,* at a speed that is only slightly faster than your upper limit. It makes no difference whether the dits and dahs are produced by a machine or by a friendly ham. The advantages of using a machine are obvious, however. It will send to you whenever you have a few spare minutes, at any speed you wish. It never requires you to leave your home in the evening to atend code classes, and it never intrudes upon the family privacy as a visiting instructor would do. Its transmissions are perfect, without the peculiarities that creep into even the best hand sending. You never feel that you are imposing upon it by asking it to send to you seven days a week. It never has to take its kids to the movies just when you want to practice. And it *never* acts disgusted when you have a bad night and can't distinguish an F from an L. Sure, it costs money—anywhere from ten to forty dollars. But so does the acquiring of any other skill, whether it be fly-casting, speaking French, or dancing the mambo.

During the past month, I have been making a survey of code-instruction devices now on the market. While by no means exhausting the field, I have found a number of items that seem well suited to the needs of prospective amateurs.

How Much Will It Cost?

Perforated-tape machines use either a spring motor or an electric motor to draw a paper tape between a pair of electrical contacts. The tape is punched with round holes (dits) and oval slots (dahs) which allow the contacts to close for short or long periods, keying an audio oscillator so that it produces very realistic Morse-code signals. A speed adjustment is provided, so that by moving a lever the code comes at you as fast or as slowly as you wish, within reason. Slow-speed tapes are available for learning the alphabet; medium-speed recordings allow you to increase your speed as

Novice's First QSO Gives Novice Editor His First Novice

A contact which occurred on July 25th, between WN2JDL and W2GJV/2 established a couple of interesting "firsts." It was the first QSO for WN2JDL (Bob Lurie, Plainfield, N. J.) who had just received one of the first Novice-Class licenses issued by the FCC. It was also the first time that your Novice Editor had worked or even heard a WN station. Bob was feeding 25 watts to an 807. W2GJV/2 used 12 watts to a 6V6 transmitter that he was adjusting for a prospective Novice.

rapidly as your capabilities allow; and there are numerous high-speed tapes containing code groups, plain language, radio-type messages etc., which give you enough practice to qualify you as a commercial radio operator if you are interested in going that far.

One of the leading manufacturers of tape machines is the Instructograph Company, 4701 Sheridan Road, Chicago 40, Ill. Their devices sell at from $19.50 to $36, and can be rented for between $3.25 and $4.50 a month, with the privilege of applying the rental payments toward purchase. Five or ten tapes are included in the purchase price, and extra rolls can be had for a dollar each. These machines can also be obtained on a time-payment plan ($10 down and $3 to $5 per month).

A compact little tape machine with an electric motor is manufactured by Gardiner and Company, Stratford, N. J. For $24 you get the machine and ten rolls of tape. Additional tapes are available from a widely-varied list, at fifty cents each. This machine has a speed range of 4 to 35 words per minute, and can be equipped with an "overdrive" attachment if you feel like breezing along at 40 to 60 w.p.m.

A metal-record machine is produced by Teleplex Company, 804 East Dawn Drive, Modesto, Calif. It employs a stack of metal discs with narrow and broad projections on their circumference which make and break an electrical contact when the stack is rotated, thus keying an audio oscillator. An additional feature of this machine is its ability to repeat, over and over, any given section of the record. This premits extended drill on one group of letters, which is very helpful when learning the alphabet, and later when learning to copy whole syllables and words directly as one sound, rather than as a combination of letters. Teleplex machines list at $35 to $40, and can be purchased on a time-payment basis ($10 down and $4.50 a month). They are not rented. Three records are furnished with the machine. After one record has served its purpose, it can be exchanged for a faster one at a cost of one dollar. Teleplex machines, like the tape machines, can be adjusted to send at any speed you may wish, in the range of about 4 to 40 w.p.m.

Phonograph records of code lessons are also available, and offer an inexpensive method of learning code—provided you already have access to a 78 r.p.m. record player. I have surveyed three promising albums.

One of these, produced by the Insuline Corporation of America, 36-02 35th Avenue, Long Island City, N. Y., contains five double-faced 10-inch records. The discs are vinylite (unbreakable, except with a hammer). Four surfaces are devoted to learning the alphabet, a few letters at a time. The next five surfaces transmit code groups of increasing length at speeds of 5, 7, 8, 9 and 15 w.p.m. The last surface contains plain language and punctuation at 15 w.p.m. Surface 9 is arranged to bridge the gap between 9 and 15 w.p.m. by the use of a variable-speed record player. This album is capable of teaching you the code from the very beginning, and raising your speed to well beyond the point required for General-Class examinations. Its only disadvantage, as far as I can see, is the gap between 9 and 15 w.p.m. that would exist for those who do not own a variable-speed record player. Even this is not too much of a hardhsip, because anyone who can make solid copy of 5-letter code groups at 9 words per minute should do a fair job of reading 15 w.p.m. in plain language. This album is known as the ICA 1800, and carries a Dealer Net price of $10.90.

A smaller album with some excellent features is offered by the Raybrun Company, Box 66, Orangeburg, N. Y. This album contains two 10-inch vinylite discs devoted to letters, numerals, words, and code groups. Each leteer is sent in code, and is followed by a three-second pause during which the student attempts to identify the letter before the voice of the instructor announces what it was. At first, the instructor nearly always wins. But it is claimed (and my tests with a group of prospective Novices seem to bear out the claim) that after 25 hours of practice with this album, the average student will be able to make solid copy of four words per minute. The two disadvantages I see in this album are: 1) The highest speed recorded is about four w.p.m., which is hardly enough for the Novice-exam requirements; 2) It incorporates no gradual method of learning the alphabet, but presents all 26 letters immediately— requiring that the student memorize the code by some other method before the record can be really effective. Counterbalancing these two facts are two decided advantages: Voice is used in connection with the code (this method was used very successfully by the Signal Corps); and the cost is only four dollars.

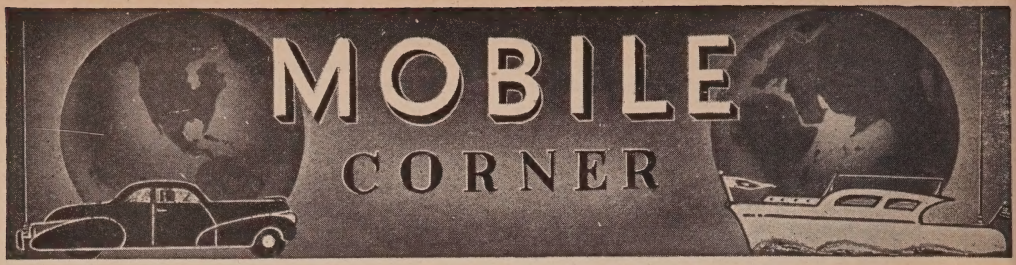
The third group of records surveyed is a very elaborate home-study course prepared by Electronic Technical Institute, 769 Venice Blvd., Los Angeles 15, Calif. The set of 36 double-faced 10-inch vinylite discs is housed in three albums costing $29.95 for the set, or $11 per album, or one dollar each for single records (all prices are Dealer's Net). The first album teaches the alphabet, including numerals and punctuation, in small groups of characters and with constant review. The second album covers a range of 4 to 10 w.p.m., using code groups, words, and plain language. The last album goes from 11 through 18 w.p.m. and has two surfaces that give practice in copying through fading, atmospheric noises, and interference.

What To Do—?

All this array of merchandise could prove very confusing to the beginner. Each prospective ham faces individual problems and must decide for himself what is the best buy. All the manufacturers named above, and many others whose advertisements appear in magazines, will be glad to send descriptive literature covering their products. For what it may be worth to the individual, here is my general advice:

1. If you are really serious about getting your ham ticket, and possibly a commerical license as

(Continued on page 54)



Conducted by RALPH V. ANDERSON, W3NL*

THIS COLUMN is being prepared at the time the flood crest is at Kansas City. Sufficient information is not available to give a report of ham activities in furnishing emergency communications—this will have to wait until the emergency is over and the hams involved have time to gather together a report. At this date it is known, however, that the preparations made primarily by the radio clubs of the area for emergency communications have really worked out.

While Kansas City was the focal point, certainly the smaller emergencies should not go unnoticed since there were many cities affected throughout the entire area. At each of these the hams could be found, furnishing necessary communications.

Flood traffic could be heard on each of the amateur bands. Also, unfortunately, on each band it was necessary to withdraw several stations from traffic handling and give them the task of keeping the traffic frequencies clear. One sometimes wonders at the insistence of some hams that they operate on a "business as usual" basis on frequencies specified as emergency and calling frequencies when just to listen would have revealed an emergency traffic net in operation.

Commercial Mobile

Perhaps we should occasionally take a look at the commercial mobile radio services to see what they are doing. While there is considerable difference in the operation, equipment, etc. between commercial and amateur mobile, there are many items of interest.

With the RTMA change of TV i.f. frequency standard, the mobile services operating in the 40 mc region are now confronted with TVI. It looks as if TV set manufacturers are just going to have to make sets differently whether they want to or not. Wonder if the irate citizen with the defective TV set calls up the police department and tells them they will have to stop transmitting because the TV set is being interfered with?

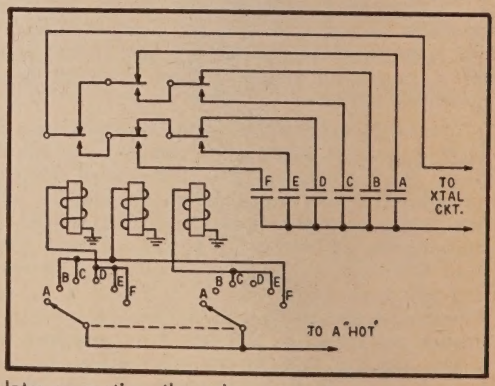
The UHF boys should be all means investigate a UHF installation by the Yellow Taxi Cab in Chicago. This company obtained a development license for operation around 450 mc and has recently started regular operation on this frequency. Only the supervisors' cars were initially equipped, since reliability was not known. Recent tests have shown conclusively that this frequency works excellently. With about 250 watts at the control and 20 watts in the mobile units, reliable communications exist for a radius of fifteen to twenty-five miles in the downtown area of Chicago. The service uses FM. For amateur service AM might be employed. The ignition interference gets less the higher the frequency (in the UHF region) and this should help. The antenna at this frequency is about 6 inches long. Now's the chance for some of the new Technician class licensees to open up new mobile activity on 420. We're just waiting now for the ham that has a 420 converter working into a 2 meter converter working into a 10 meter converter working into a 75 meter converter. We sure would like some reports of anyone operating mobile on U.H.F.

Crystal Switching

Many present day mobile transmitters are "single frequency" in that no method of quick QSY has been provided. In many cases this provision has not been made because there seemed to be insurmountable difficulties, first, the crystal switching means and second, the remote control system.

One of the most popular commercial transmitters which has been placed into ham use has the crystal mounted in the center of the chassis and rather inaccessible because of adjacent components. This transmitter and several others have been suc-

(Continued on page 56)



Inter-connecting the relay contacts permits only 3 control leads to select any of the 6 crystals.

Send contributions to R. V. Anderson, 2509 32nd St., S. E., Washington 20, D. C.

A High-Power Mobile Supply

FRANK KIRBY, W6WI*

Rebuilding a surplus dynamotor for belt drive from the car engine is an inexpensive solution to the problem of high power mobile work.

THE NEED FOR greater signal strength becomes obvious to anyone who has operated under the adverse conditions encountered on the 75 meter mobile band. Many mobiles have worked cross country with 20 or 30 watts but when conditions are poor these low powered signals quickly become washed out.

Since not much can be done toward improving the antenna, the immediate approach to the problem seems to be to increase power. A limit of about 100 watts (d.c. out) is about the maximum that can be gotten from the standard battery systems on present day cars. With a P. E. 103 or similar dynamotor, about 2 to 3 hours run can be gotten before the battery is discharged, depending somewhat on how much current the receiver and transmitter filaments draw.

There are numerous approaches to the problem of obtaining still higher mobile power, a few of which will be mentioned briefly. The type of system to be used will be determined somewhat by the type of driving done.

Some of the different power sources are:

(a) A rewound car generator using slip-rings in place of the commutator. These generators have been built to put out 500 watts at 110 volts AC but have the disadvantage that the frequency varies considerably with the speed of the car.

(b) A 400 to 800 cycle inverter, belt-driven by the car engine. This system should be satisfactory except for the difficulty of procuring 800 cycle transformers of the 500 watt size.

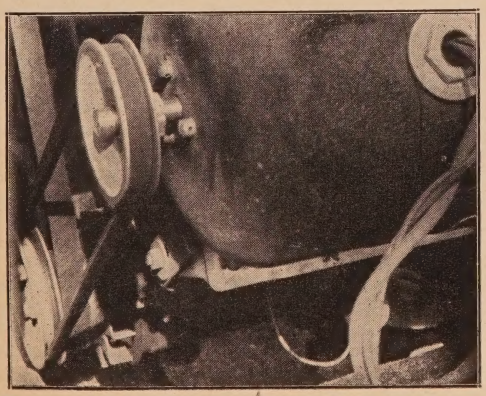
(c) Additional batteries in series with the car battery so that 12 or 28 volt dynamotors can be used. With this system a relay can be used to connect the batteries in parallel for charging and in series for transmitting. Of course, it will be necessary to install an oversize 6 volt car generator to keep the extra batteries charged up. Another disadvantage is the difficulty of finding space in the car to install the extra batteries.

(d) Belt driving a high voltage dynamotor from the car engine.

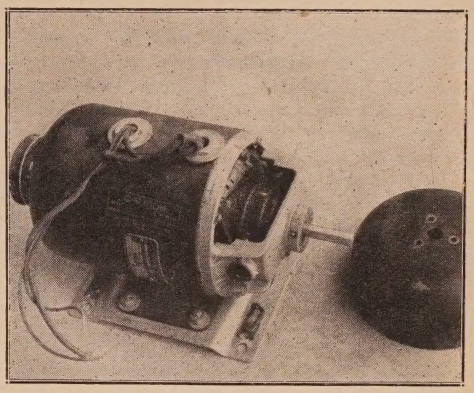
After considering the advantages and disadvantages of the above systems and the type of driving to be done it was decided to try the system mentioned last.

The particular dynamotor used is a B D 77, which is readily available on the surplus market at low cost. The input voltage is 14 volts and the output rating 1000 volts at 350 mils; however, as the input winding is carrying much lower than normal current, the output current can be stepped up to 500 mils without overheating. In actual use the dynamotor has been run intermittently for several hours at 1100 volts and 500 mils without excessive heating. This particular dynamotor was chosen after consulting various tube lists to determine that its ratings would work well with suitable mobile type tubes. The 811, HY 67 and 4D-32 are a few of the tubes that should work well with this power supply.

*Box N452, China Lake, Calif.



The rebuilt dynamotor is driven from an outboard pulley mounted on the regular car generator below.



Experiment: Shaft extensions added on both ends.

Constructional Work

The only constructional work necessary is to extend the shaft of the dynamotor in order to mount a pulley, and to mount an additional pulley next to the pulley of the present generator.

First remove the covers and end belts from the frame. Next remove the brushes, being careful to mark each brush so that it can be put back in exactly the same position. It should now be pos-

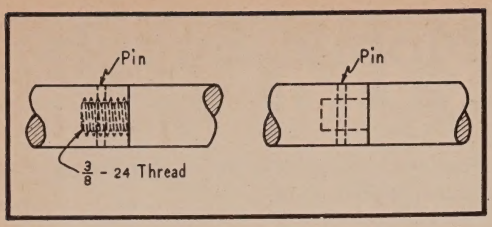
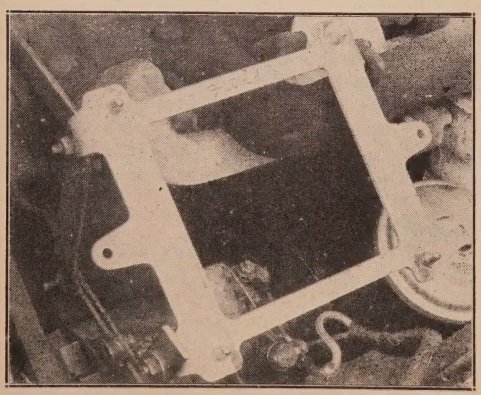


Figure 1

sible to remove the armature from the dynamotor. After removing the armature from the frame the next step is to pull the ball bearings prior to doing a little lathe work on the shaft. If a gear puller is available, the job should be easy; otherwise, hold the bearings in a vise, (protect the bearings with a piece of sheet copper) and drive out the shaft with a piece of brass rod and a hammer. Be careful no to bend the sheet metal cover plates on the ball bearings. Next the .500" shaft should be extended on one end for about 2.500". This can be done as shown in Fig. 1, securing the job with a steel pin.

Which end is extended depends upon the direction of engine rotation. This dynamotor was used on a '49 Chevrolet engine which rotates clockwise, (looking from the front towards the engine). In this case the shaft extension was put on the end carrying the low voltage commutators.

Next, drill a 9/16" hole through the adjusting nuts and the end covers. The dynamotor is now almost ready for reassembly, but before this is done the field lead going to the ungrounded terminal of the low voltage armature winding should be removed and extended to the outside. This wire will be used later to control the output voltage. The job can now be assembled and a 3" pulley put on the extended shaft. These 1/2" pulleys can be obtained from several national mail order houses. Next, a 4" pulley is fastened to the car generator pulley by means of 1/4" screws and spacers 1" long. The length of the spacers will vary somewhat, depending on the type of car and generator used. This pulley is shown in the lower left hand corner of one of the photographs.



The picture above shows how the generator was mounted on a '49 Chevrolet. Obviously this type of mounting may not work on other types of cars but could probably be modified to fit. At the left, near the bottom, is shown the adjusting nut and screw which moves in a slot to take up the wear on the "V" belt. The frame shown came with the dynamotor. As can be seen, there are snap-action catches to hold the generator in place. These should be wired closed to prevent engine vibration from working them loose. In assembling the lower pulley and mounting frame, lock-washers should be used wherever possible.

Voltage Regulation

Without a voltage regulator of some sort the voltage would very considerably with engine speed. The circuit chosen is shown in Figure 2.

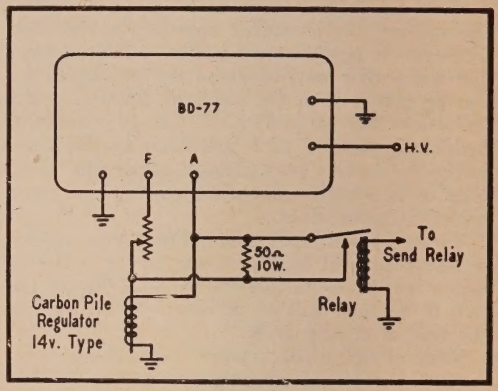


Fig. 2 - the regulator circuit chosen by W6WI.

The relay is operated by the "send" relay located at the transmitter. This particular installation used a Microswitch Type Relay. A 50 ohm 10 watt resistor is shunted across the contacts to prevent burning of the contacts. The carbon pile regulator is the 14 V type, available on the surplus market. This type of regulator doesn't give perfect regulation but does start leveling off the voltage at about 900 volts dc at 35 mph. At 65 mph, the output is about 1100 volts. If much city driving is to be done, an improvement in voltage regulation could be obtained by rewinding the generator field coils to work on six volts. (For a voltage reduction of 1/2 the wire size should be decreased 3 number sizes.) The field could then be supplied from the car battery which would give better regulation than when the field is self-excited as described above. Also, for city driving it probably would be desirable to increase the pulley ratio to 5 to 3 to give more voltage at lower car speeds.

Performance

This generator has been used for some months supplying a 75 meter mobile rig, consisting of push-pull 811's in the final, plate modulated by push-pull 811's, and has proven quite reliable and satisfactory. The improvement in reliable contacts as compared to 50 watts mobile has been very definite, especially on 75.

(Continued on page 46)

A Report on
HAMS AND CIVIL DEFENSE
in New York City

MARTIN HEUVELMANS, W2MSK*

In many communities, the status of amateur radio in Civil Defense is admittedly confused, with the confusion apparently proportional to the size of the community. CQ does not necessarily endorse the opinions of W2MSK, but we are glad to print his report as a stimulant for more thinking and action in CD.

IN AMATEUR RADIO here in New York, until recently Civil Defense has been like the weather, much said about but nothing done. The will to do has been there, and is, of that we can be certain. What has been a source of great surprise to me is the lack of analysis of the problem, and the lack of seeking of a solution for it. This has been particularly puzzling to me, for the reason that in amateur radio we enjoy a membership of many who handle sizeable ventures, men whose minds run in the general trends needed for our participation in C. D.

I know that many regard C.D. as a matter of elementary simplicity. In truth it is a very complex piece of business.

Until very recently, and to some extent still, when one spoke in N.Y.C. of C.D. the one thing that sprang to everyone's mind was A.R.E.C. Join A.R.E.C. and you are in Civil Defense!! Nets sprang up, ran some excellent drills, and then called themselves C.D. Nets. If you dared to ask just how these nets had integrated themselves into C.D., you were regarded as an enemy of A.R.E.C., A.R.R.L. and unfit for association with man or beast. In some mysterious but unexplained manner A.R.E.C. would go through a chrysalis and come forth as the means for C.D. Emergency Communications. The ignoring of the complexities of the structure of the city's government, the immensity of the job to be done, and the affecting federal legislation, was an opiate apparently self-administered in those amateur circles which should have been most alert.

It definitely seems to me a reasonable assumption that if war should come, amateurs as *amateurs* will be shut down at once.

"But we now have specified C.D. frequencies" is the reply to this. Just a little reflection must certainly tell us that the use of these C.D. frequencies will be tied in with as-yet unpublished regulations, which, unless fully complied with, will keep us silent.

We further hear that "the city will not ignore a fine organization like A.R.E.C. The city will use it, come war." This of course is the old closed circle in that it ignores the fact that if war closes down the amateurs, it also closes down A.R.E.C. Should the city attempt to use the amateurs under these conditions, then we would probably be quite a bit older before the plans were formulated to effect our use. Do you remember W.E.R.S., boys and girls? Atom bomb's victim's bones would be bleached white, before we got action.

A.R.E.C. is perhaps the finest private peacetime disaster organization that could be built. It is also an excellent training instrument for eventual C.D. participation by its individual members. It is not C.D. however, and never can be. Certainly not for a city with the government complexity we have here in New York City, and probably not anywhere else either. Many so-called and self-styled C.D. organizations may find themselves silent when they are most needed.

I do not propose that I have all the answers to our C.D. problem. Unfortunately, much of our decision can only be made on incomplete information, an inexcusable situation, the blame for which lies right at Washington's doorstep. Yet, we are not wholly in the dark. While the information we do have is not conclusive, it is nevertheless sufficiently clear for us to base some reasonable assumptions upon it, and lay the groundwork for some semblance of a sensible C.D. program. The information I refer to is not hard to find, for it has been in the pages of C.Q. right along, as well as in the various reports of A.R.R.L.

I am sure readers will remember that:

1. Amateur Civil Defense Frequencies have been announced, although regulatory detail is not yet forthcoming.
2. F.C.C. Disaster Frequency regulations in effect indicate that those amateurs under direct control of competent C.D. authority may transmit under the direction and control of such C.D. authority in a disaster resulting from an armed attack.
3. Close study of the A.R.R.L. announcements relative to their invaluable Washington consultations with F.C.C. and F.C.D.A., etc, indicate that the official controlling Washington pattern of thought for Amateur participation in C.D., is along the same general line as item 2, to wit;

That in event of attack, amateurs will operate under control and direction of local C.D. authority. In other words, the local Director of Civil Defense.

There it is. Quite simple. True, far from complete, but definitely useable. It has been around for quite a time now, so let us now try to do a little sensible analyzing.

*Radio Aide to Director of Civil Defense, New York City

Does item 3 mean that in event of war, the C.D. Director will simply say that all A.R.E.C. members are now in C.D.? That they can now operate under his direction? Some amateurs simply cannot see that *this is not so.* I am certain that it is not, and I can say that *it is the considered opinion of the C.D. authorities of N.Y.C. that such is not the case.*

One need be neither a genius nor a prophet to see the reasonableness of the thought that when the regulations of F.C.D.A. & F.C.C. bearing on item 3 are finally published, they will most certainly include requirements for Security protection and Loyalty oaths for those amateurs who will be permitted to transmit under the C.D. Director's control and administration. *It is unthinkable that the military would permit anything less.*

Likewise, it seems to me to be reasonable to expect that the regulations will require that the amateurs under the control of the C.D. Director shall be so *in fact,* and not by some convenient paper setup. *This control can only be by virtue of membership in the actual C.D. structure under the direct administration of the C.D. Director,* so that he in turn can be answerable to higher authority, State, or Federal, or both. I believe anything less than this unthinkably dangerous from a security point of view. I believe that the military will tolerate nothing less, and justly so.

It is quite likely that there may be considerably more to it than this, when the Brass in Washington makes up its mind to finally get around to it. Nevertheless, we do have here the wherewithall to do something more than sit around and daydream A.R.E.C. into taking over C.D. communications.

These were my thoughts in early 1951, and I found myself in small company. The Amateur Radio Civil Defense picture was a complete vacuum in N.Y.C. Our leadership was nil, or to be charitable, let us say it was negative in action. Discouraged with this appraisal, I decided to lay my views before Mr. Seymour N. Seigel, Director of C.D. Communications for N.Y.C. Mr. Seigel proved to be in agreement with my views and invited me to organize Amateur Radio in C.D.

I do not believe that any one man should represent Amateur Radio to the ctiy fathers. Such a condition has proven unsatisfactory in the past. Mr. Seigel accepted my suggestion for the creation of an advisory board to consult with and advise the city relative to the amateur's viewpoint and the protection of the amateur's interests in any emergency communications that might be organized utilizing amateur radio.

Who then to take onto this Board?

Existing leadership certainly had been most dormant. Possible clash of personalities was a serious factor to consider. Therefore I decided to pick people whom I felt to be of broad experience, rather than nominal leadership in amateur radio. My choices were:

(1) W2AAG, Wm. Kohler. He is and has been for many years manager of the CBS building, a quiet unassuming man of ability and efficiency, highly regarded and respected in amateur circles and President of the Federation of L.I. Radio Clubs.

(2) W2DHN, Leonard Victor, staff photographer for a large newspaper chain, administering a large staff, president of a local Mobile Club and a man militantly conscious of the pressing need for action in the C.D. program.

(3) W2ESZ, John Cuches, Industrial consultant, Past-President of Trylon Radio Club and Vice-President of a large corporation doing important D.O. work, a man of excellent judgment and organizational accomplishment.

In early April of 1951, after the burning of much midnight oil this board laid before the New York City Director of C.D. Communications a series of recommendations designed to integrate Amateur Radio into the C.D. program in such manner as to give the best possible promise of Amateur Radio effectiveness in actual C.D. need, while retaining the full preservation of amateur identity with the maximum self-government possible. Our recommendations were accepted, and by and large, put into effect.

Readers may be interested to know that in the process of formulating these recommendations, the Board went to A.R.R.L. headquarters at Hartford, armed with credentials from the City of N.Y. certifying us to be proper city representatives, seeking information on this problem. We sat in conference there for the better part of three hours and came away with the assurance that our plans were substantially in conformity with the best information available on the subject from Washington D.C.

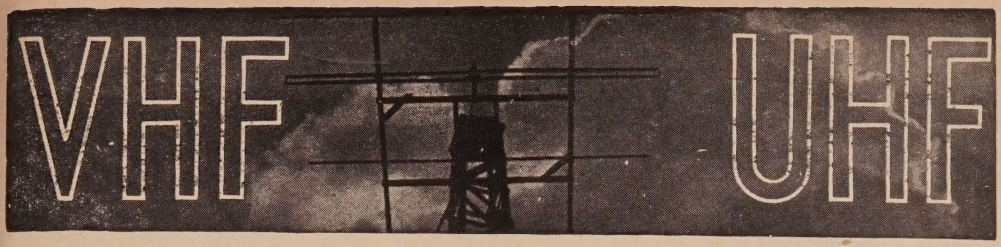
Reduced to its simplest terms, our recommendations work along these general lines.

1. The individual Amateur applies to Director of Civil Defense Communications (Room 2500, Municipal Bldg. N.Y.C.) for membership in C.D.
2. He is carefully checked for security (this check takes 3 to 6 weeks).
3. He takes the Loyalty Oath, receives complete and adequate identification and enters C.D.
4. He then operates under the County E.C. who at present, pending observation how it works out, is also A.R.R.L. E.C.
5. All administrative control is in the hands of C.D. as is indicated to be required by law.

S.E.C.'s as well as all A.R.R.L. county E.C.'s have been sworn in and they direct the actual transmitting activity of the membership under orders from C.D. They do this as CIVIL DEFENSE members and not as ANYTHING ELSE. Yet because of the concurrent ARRL E.C. position, it can be said with some justice that A.R.R.L. is doing the job of Amateur Radio in N.Y.C. C.D. I sincerely hope it will stay that way.

There is no reason in the world why this structure cannot survive if the amateurs do their part. After all, they have been clamoring for the job and now they have it, with the maximum possible freedom for self government, yet under such organization that the dictates of legal requirements are met. I am confident that the amateurs will not fail in this trust. If they do fail in this responsi-

(Continued on page 52)



Conducted by E. M. BROWN, W2PAU*

DURING JULY, 1951, v.h.f. propagation conditions have been exceptionally good. The month got off to a fast start with one of the finest aurora sessions yet encountered. Appearing early in the evening of the first, and lingering until almost dawn of the second, this opening produced plenty of DX on both the six and two meter bands.

Sporadic E activity, which commenced early this Spring, has continued through July almost unabated. The six-meter band has been open for a surprising percentage of the time. Some of the openings, for example, that of July 9th, rank among the best of all time. Double hop permitted transcontinental work, and, at the same time, the ionosphere was "hard" enough to provide coverage down to practically local ranges. This opening seems to have made its effects felt on two meters also, as W1PWW of Bangor, Maine, reports hearing a W8 from Ohio (call letters not definitely established) during the early evening; and W1AHX on Cape Cod logged WØWA (?) on 144.8 mc at about 0020 EDST. These reports seem to fit the established pattern of "skip DX" on two meters—excellent conditions prevailed on the 50 mc band and good tropospheric conditions existed at the same time. The distances seem to fall in the 1000 to 1200 mile range, which agrees very well with previous reports. It seems that no particular section of the country will have a monopoly on v.h.f. ionosphere DX!

Weather conditions have been conducive to v.h.f. DX-ing in most sections. Along the Northeast Atlantic coast the two-meter band has been wide open close to 50% of the time. Old timers who have observed conditions ever since this band was turned over to the hams will agree that 1951 seems to be the best year so far. So many contacts over 300 miles have been made that it would be impossible to take note of all of them in the space available here. On at least one occasion the path over the mountains to Ohio opened. On July 21st W8SFG worked W2AZL and W3BLF. Stan was heard to complain that the East Coast stations were too busy working up and down the beach to flop their beams to horizontal and look to the West! His complaint is probably justified. The majority of the stations on the Washington-Philadelphia-New York-Boston axis seem to be content to continue their vertically-polarized activities so long as there are plenty of potential contacts within their working range, and sufficient DX possibilities to add a bit of excitement to the game now and then. The number of all-out DX operators seems to be dwindling. (We'll be glad to hear from any who take exception to this observation!)

Associate Editor, CQ Send all contributions to E. M. Brown, W2PAU, 88 Emerald Avenue, Westmont, Collingswood 7, New Jersey.

New Fixed-Station 435 MC DX Record, G5BY--G3APY

On July 17, at approximately 2140 GMT, G5BY of Thurlestone, S. Devon, worked G3APY, of Kirby-in-Ashfield. Nottinghamshire, a distance of 227 miles, on 70 cms. Signals were RST449 both ways. The input at G5BY's was *zero* watts to the final! Here's the story in Hilton's own words:

"We contacted at 2100 GMT on two meters, both being RST589. I changed to 436.5 mc and just at the finish of my call my plate supply mains fuse went! G3APY came back on two, reporting my 70 cm signals 589. Renewed fuses with 16-gauge copper wire and found that half of the power pack that supplied the QQE 06-40 final amplifier . . . .was giving no output and the transformer was smoking! Filter condensers gone! Took a chance and answered him with only power (20 watts) to the 8012 triplers. He came back with RST449! Told him to change over to 433.3 mc—this he did and I got him first go at 449. Although I had, by now, removed the rectifier tube connected to the faulty condenser, it was too late to save the transformer which was now on *fire* and operating room was full of smoke! Finally blew up at 2150 GMT after we had made it OK!"

G5BY was using his old 24-element stacked array for transmitting, and a new 30-element beam (his version of the W2NLY two-meter array described in CQ for November, 1950) for reception. The receiver uses a lighthouse tube r.f. amplifier (modified ASB8 type) ahead of a 1N23A crystal mixer, which in turn feeds through a 6AK5 first i.f. amplifier into an ARC5 communications receiver tuned to 8 mc.

G3APY used a 5-element Yagi array made of 12-gauge wire; his transmitter ran 25 watts input to a CV90 coaxial-tank straight amplifier. His receiver is a quadruple-conversion superhet with a crystal-controlled local oscillator.

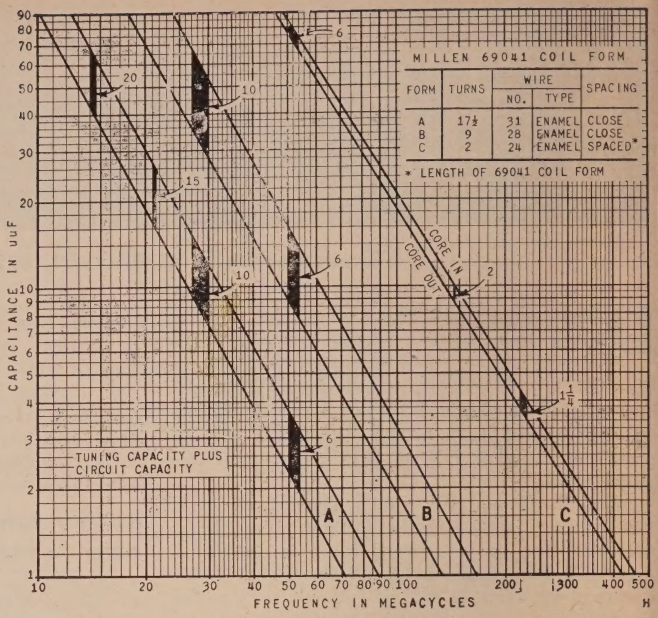
As if to demonstrate that this contact was not a freak, on July 21st, between 2324 and 2332 GMT G5BY worked G2WJ, Dunmow, Essex, two-way

Design Chart for Slug-Tuned Coils

The accompanying chart shows the performance data of three typical v.h.f. slug-tuned coils in graphical form. If you contemplate use of such coils in that new receiver or in the low-powered stages of the rig, the chart should be a valuable guide in designing the coils so they're "on the nose" with a minimum of pruning.

Knowing the total capacitance across the coil (which usually requires an "educated guess", v.h.f. tubes and sockets being what they are) the maximum and minimum frequencies tunable by the coils A, B and C described in the table may be determined.

Although the coils in the table may not include a specific design to suit the particular capacitances of your circuit, the information should provide a reasonably accurate starting point.



on 70 cm. The distance involved here very nearly equals the 227-mile hop to G3APY! G5BY reported G2WJ as S8, and received a report of S9 in return! *This* contact was made with normal input to the final amplifier!

During the same evening Hilton also heard the third harmonic of G3DJX on 434 mc—approximately 200-mile DX!

Two meters was good at the same time. G5BY heard about 6 ON stations on voice, and DL4XS and DL1LB on CW both peaking about RST559. The distance to DL4XS is about 540 miles. Unfortunately Hilton was not able to break through the East Coast QRM to contact DL4XS. When these two get together there may be some really sensational 420 mc results to report, as Jo is reputedly very well-equipped for this band.

Teletype News and Notes

W2NSD has undertaken the job of publishing a "Teletype Bulletin". There has been a real need for a widely distributed publication dealing with the special problems of RTTY equipment design and operation. Wayne points out that the future of his project depends on the support given it by the RTTY gang. He can use timely news items, ideas on equipment, swap or want ads, or what have you! He would also appreciate some financial support—at least to the extent of a little help on the postage! His QTH: Wayne Green, W2NSD, c/o WXEL, Cleveland, Ohio.

W2JAV recently staged what is probably one of the first demonstrations of *mobile* ham teletype operation. (Andy, W3NL, may take issue with our definition of "mobile," but honest—the gear was all housed in one car!) Phil set up on High Point, New Jersey, during the evening of July 7th. His primary objective was to check up on the RTTY gang in New York City, to see whether they were doing a good job of monitoring the calling frequency! He used his Model 14 printer and keyboard. His channel amplifiers, keyer unit, AFSK oscillator and autostart gear, complete with power supplies, are all combined in one package—so miniaturized as to be truly portable. The transmitter and receiver were modified SCR522 equipment. The antenna was a simple 3-element Yagi mounted on the side of the car. The whole works operated from 110-volts, 60 c.p.s., supplied by a small gasoline driven kicker. The entire station fits comfortably in the rear seat of Phil's Chevy, with plenty of room for the operator and a flock of bugs, too!

In general, the results were good. W2JAV was able to set off Ye Ed's insensitive autostart receiver from the portable site as well as from his home QTH despite the 100-mile-plus DX and the low power. He also had solid QSOs with W2PAT at Eatontown, N. J. and W2PXR at Caldwell, N. J. despite the fact that neither of these stations was able to aim his beam antenna in Phil's direction! As for the NYC gang—???!

W2JAV was last seen heading for New York with a load of high-gain antennas and several copies of directions for their use!

W1WB claims credit for the first two-way ham RTTY contact from the Eastern Massachusetts section. On the night of July 25th, Blackie was about to knock off at a reasonable hour to hit the hay when the 'phone rang. It was W1CTW inquiring whether Blackie had his two-meter RTTY gear ready to go. Seems Cal had some character named W2PAU on the hook anxious to do some DX work on his typewriter! Blackie hurriedly completed the last pair of patch cords required to tie his RTTY gear into the two-meter

station and then gave the go ahead sign. Results—solid copy both ways! W1WB was using about 50 watts input and a ground plane dipole antenna. W2PAU was running close to 500 watts input (and we're still using the 10-element flip-flop beam!) DX=300 miles, approx.

It pays to watch the RTTY channels when the band is open. Some of the finest stations in the East operate almost exclusively at the high end of the two-meter band. Though their interest is primarily teletype operation, plenty of phone rag-chewing goes on also. The "calling frequency" (which is also used a lot, perhaps too much, for rag chewing!) is 147.960, and there are usually several hot receivers monitoring this channel at any time during the evening. Vertical polarization is used almost exclusively, though many of the stations are equipped for both polarizations.

West Gulf Division VHF Awards

This will announce the establishment of a West Gulf Divisional Individual VHF Placque award for outstanding performance during the year 1951 (a similar award will be made for 1952) to the leading v.h.f. operator in each of the states of Texas, Oklahoma and New Mexico.

These outstanding v.h.f. operators will be chosen on the basis of activities on any amateur frequencies 144 mc and higher during the calendar year of 1951. Performances will be judged on the following points.

1. Station activity—total number of contacts, number of different contacts, consistency of operation.

2. Equipment and antennas fabricated and used—self-built equipment will count heavily.

3. DX operation—total number of states worked and number of DX contacts during the year.

4. Published v.h.f. articles or notes in contemporary amateur publications.

5. Overall v.h.f. interest—club promotion of v.h.f., CD work, Novice v.h.f. training, publicity, membership in OES or RASO.

6. Operational details such as v.h.f. relays, use of v.h.f. in emergencies, v.h.f. network operations, etc.

7. Monthly reports submitted to awards committee.

A monthly letter from each entrant must be forwarded to the committee who will compile the data for the award record. Monthly reports shall be made starting with the report due September 1st. The report for August should also contain a resume of v.h.f. activities during the months January-August, inclusive.

Address reports and correspondence to VHF Assistant Director Dean Yearout, 4416 East Marble, Albuquerque, New Mexico, who has offered to assist as scribe to the award committee. Judges will be W5CA, West Gulf Division Director, plus two other unbiased and qualified v.h.f. men, residing in localities other than this division. The awards will be made next spring, after the year's reports are tabulated.

High Winds vs. High Antennas

The never-ending effort to squeeze a few more db gain into one's v.h.f. antenna installation often results in a delicate balance between the forces of Nature and the strength of structural materials! That balance was upset recently when a freak thunderstorm and gale struck the Philadelphia-Camden area, bringing gusts up to 85 m.p.h. on peaks. Among those suffering serious antenna damage were W2EH, W2FXT, W2BDI and W2-PAU. Most of the damage has been repaired as of this writing.

According to "The VHF News" for July 1951 other victims of high winds were W5CVW, who suffered the effects of a 70-m.p.h. gale on June 12; and W9UJ, who caught it on March 9.

There is a definite risk involved in the usual top-heavy ham antenna system. It might be very wise to consult your insurance man for information on wind-damage insurance and (possibly more important for city dwellers) lawsuit protection. The cost is surprisingly low, and a modest investment might someday cover the loss of your tower—or the neighbor's roof!

Aurora Opening July 1-2

The extent of the coverage of the auroral opening of July 1-2 is demonstrated by the fact that W4HHK (near Memphis) heard and was called by W8ZUR of Dayton, Ohio. This is one of the most southerly reports of auroral effects on record.

The same opening was enlivened by the presence of W4MKT of Winston-Salem, N. C. This state could use more representation on the two meter band. Paul worked W8GAB for what seems to be the first North Carolina to Ohio 144 mc QSO; he also worked W3QKI and W8GUF (?).

Ken Meyers, W8WRN, lost his big power transformer just before this opening, and was forced to stay on low power. He claims that this was a real liability during the aurora session. (Others have also reported that the effects of high power are most noticeable under auroral conditions.) The list of stations logged by W8WRN during this one looks like a Who's Who! VE3AIB also sent in a long list of stations logged on two meters. *Both* W8WRN and VE3AIB report the following: W2RMA, W3QKI, W4JFU, W4OLK, W8DX, W8GAB, W8LPD, W9BPV, W9MAL and W9-UCH. In addition, W8WRN heard W2SFK, W2-RMR, W2RPO, W3RUE, W4MKT, W4WNW, W8AFU, W8RFW, W8QI, W8WSE, W9EGH and W9MBL, plus a questionable one in Kentucky. VE3AIB also reported W1IZY, W1HDQ, W2-KLZ, W2YXE, W8WRN, W9ALU, W9EHX and W9WWE.

On six meters things were even more hectic. Ken Bowles, W2ZGP, the Ol' Aurora Watchdog at Ithaca, reports some peculiar observations during this opening. He was able to check the "frequency shift" effects on some of the signals— the high side of the carrier seemed to be cut off clean, but the lower side extended down several kc into auroral fuzz. There was no apparent dip between the components of the signals . . . Ken also reports several instances where reception seemed to be due to the combined effects of aurora, sporadic E and abnormal tropospheric propagation. There were

(Continued on page 48)



Conducted by LOUISA B. SANDO, W5RZJ*

WHAT A RESPONSE we're getting from the younger YLs! FB, and let's hear from more of you.

Latest mail brought this note from W6JPI, Margaret Hartley, of San Mateo: "I read your article in the YL's Frequency in the June issue of CQ mentioning one young YL, W7PEF. I think you would be interested to know that I was licensed in September, 1950, when I was 10 years old, and I have been operating 40-meter c.w. since that time. I am running about 40 watts and can be found on 7.125 and 7.173 mc. My father was licensed in 1925 and it was he who helped me get my ticket. Do you know if I am the youngest YL operating at present?



W6JPI, Margaret Hartley, got her ticket a year ago at the age of 10.

"I have just graduated from the sixth grade. Other hobbies are stamp and rock collecting, shell collecting, dogs, writing stories and poems. Sports activities are swimming, badminton and baseball."

FB, Margaret! To the best of our knowledge you are the youngest YL on the air at present. Any other bidders?

Canada's Youngest

When we met W6CTO at W5CA's some weeks ago and the talk lead around to YLs (as it invariably does!), Elmer remarked, "Say, I worked a VE YL recently; only 14 years old and has one of the nicest fists I've ever heard." The YL turned out to be VE7AYL, Juanita Wood, of Victoria, B.C.

It all started for Nita in August of '49 when she was walking home with the boy next door and he asked her if she'd like to see a ham radio set. She agreed and they went to the QTH of VE7APK who lived down the street aways. Nita was utterly amazed and started asking all kinds of questions. Soon Jack started a class for neighborhood youngsters, with Nita the only girl. Before long the boys started dropping out one by one for, what they thought, were more exciting pastimes. But Nita stuck to it and in November came up with her ticket—at the age of 12.

At first she used her instructor's call and station, but received VE7AYL in April '50. Since then (up till the end of May) she had worked 43 countries, 26 Zones, and all States. She made WAC in about two months after getting her call, and is now after DXCC. She also has her Rag-Chewers Certificate. Nita works mostly 20 c.w. "I can read about 20 wpm," she says, "and when I'm on the bit I can read 25—hi!

At present Nita is using some of VE7APK's equipment — 200-watt rig, HRO receiver and doublet antenna. Nita likes building and has a 500-watt rig under construction at the moment. Lacking only the power supply, she hopes to have it on the air this fall. She also has a 15-watt rig for 80 c.w. A member of YLRL, she also belongs to the Victoria Short Wave Club. A popular member, too—she makes coffee for the boys after every meeting!

Now 14 and in Junior High, Nita's other hobbies are stamp collecting, listening to symphonic music, and painting. "I love sports," she adds, "and hope to play tennis this summer. On the school

QRU?

We're always looking for material of interest to and about YLs. Do you have any news of your own activities, know any especially interesting YL personalities, or have any thoughts or suggestions you'd like to pass on to other YLs? We'd be most happy to hear from any or all of you.

**Address all correspondence to 959C-24th St., Los Alamos, New Mexico.*

team I play first base, and I was captain of the girls' basketball team. I ice skate at the arena in the winter, and bowl on Saturdays—preferably ten-pins."

What a gal—we'll bet she'll go far!

To top it off Nita now has a "pupil"—20-year old Muriel Willumson from Toronto. Muriel will be returning home soon and wants to surprise her ham boy friend with her newly gained knowledge of radio.

W9-YL Convention

From W9GME, Gracie. comes word of a W9-YL Convention. Held in Chicago on May 26th, the news was just too late to get in with that of all the other YL get-togethers in the last issue.

"The convention was a terrific success," writes Gracie, "with these YLs attending—W9AYX, Jackie, the breezie gal from Breezie Point and her SWL friend Mary, Milwaukee, Wis.; W9LRT, Julie, with her shoot'n irons and crazy quilt, Bourbon, Ind.; W9FZO, Helen, Chicago; W9LOY, Chris, Chicago; W9MYC, Gladys, Western Springs, Ill., our newest op; W9ILH, Carrie, and her SWL friend, Alton, Ill., and W9GME, Gracie, Chicago."

The YLs arrived in Chicago early Saturday and after checking into their hotel started on a tour of ham shacks, with W9ONT first stop. That evening the meeting got under way officially with a two-hour conference at W9GME's. Gracie then tuned up the rig and turned it over to the gals for some rag-chewing while she whipped up a late snack.

Sunday was spent at W9FZO's ham shack, but after a few hours of swapping yarns they decided to do some bowling. Most appropriate spot was W9ONT's bowling alleys. Walt set them up, with score cards kept with call letters instead of names—much to the curiosity of some of the other customers. When some remarked what funny names the girls had, Walt had to explain that they were radio amateurs and that those were their station calls—and believe it or not, all the gals are Class A.



VE7AYL, Juanita Wood, now 14, has been on the air for two years.



W2CAA snapped this photo of his XYL, W2NFR, smiling approvingly as SM5DO takes over the operating position during one of his visits to New York while flying for the Swedish airlines as radio op. An easy way to work DX, but Helen and Lloyd work plenty of it on both phone and c.w. Proof? W2NFR has made DXCC.

Monday started off early for they all had tickets to the Tommy Bartlet show "Welcome Travelers," secured by SWL Mary, and they were at the College Inn in the Sherman Hotel at 7 a.m. to get good seats. W9ILH, Carrie, was interviewed and, having such an interesting story of ham radio to tell, she was put on the national broadcast with coast to coast hookup, and received a lovely prize.

With departing time drawing near the girls had one last luncheon together and then most of them left for home. Julie stayed over one more day to visit with friends at Sonora Radio Corp. where she used to work.

"The W9-YLs in the Chicago area wish to thank the girls for a grand weekend," adds W9GME. "We all think it was an FB convention and hope we have the pleasure of entertaining the gals again. It seems to have been decided among all the girls to have this date set aside for a yearly convention. It will be most appropriate, giving the W9-YLs a chance to discuss their affairs and helping our new ops to become better acquainted. Suggestions would be greatly appreciated. If time had not been limited more of the YLs could have attended, since many could not be reached by phone. Hope you'll all turn out next time."

SK

Note the new QTH at the beginning of this column—yep, we got here, even sooner than we expected, and are thoroughly enjoying the cool mountain climate. No chance to get the rig set up and on the air yet, but we hope to soon—they tell us this is an FB spot for working out—despite the local QRM. CUL. 33.



Conducted by HERB BECKER, W6QD*

1951 "CQ" World Wide DX Contest

The dates for this year's Contest will be: Phone, Oct. 27-29—c.w., Nov. 3-5. Keep these weekends open.

THIS MONTH we have one WAZ certificate to award. We would like to offer our sincere congratulations to Frank in achieving WAZ.

265 **W3IXN** Frank McEnanem 40 - 141

The August issue contained complete rules and sample log for the 1951 "CQ" World Wide DX Contest. If you haven't read these, please do so, because there are one or two minor changes, and it might make a little difference in your score.

This year our Contest Log Forms are a little different, in that each band used will require a separate sheet. This change should be welcomed by both the contestant, as well as our Committee. It will simplify the tabulating of your final score when the Contest is over, because you won't have contacts of several bands on one sheet.

Another thing that will help your bookkeeping is the method in which you write in the name of the countries as you work them. Previously, it was necessary to put the name of the country down every time you had a QSO. On these new forms it will only be necessary to write in the name of the country when it happens to be a new multiplier. The same thing applies to the Zone column. And lest you forget, the 80 meter band has been added for the 1951 affair.

Contest Log Forms, as well as copies of the rules, can be had by sending a stamped self-addressed envelope to CQ, 67 West 44th Street, New York City, New York. You fellows will help all concerned if, when working some of the boys overseas, you spread the word around on the availability of our Contest Log Forms. The more the standard forms are used, the simpler it is for not only the contestant, but for the Committee who check over the final results.

XE1AC never gives up. Now he pops up with UH8KAA and 9S4AX. However, Al has his bad moments too, and during one of them he missed 7B4QF in Andorra, and 3A2AC in Monaco. According to XE1AC, he received word from EA3FL, who was leaving on July 5th with a group of EA's for Andorra, where, of all things, they were going to operate under the call of PX1A. Al says that if they use the call PX1A, he imagines there will be some confusion (wonder why), but apparently this is the call that has been assigned to them.

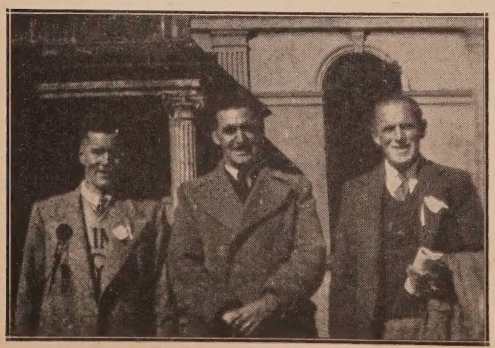
Anything Can Happen-PX1A

Now along comes word from W6EHV that KV4AA reports that PX1A is on, and at the time, EA3HE was operating. He was on phone and c.w. and with a chirpy sig. (This on c.w., natch.) Other new ones by EHV include VK9XK, MD2JB, and OY5EL (?). He lists C9AM, who alleges to be in Manchuria, but he isn't. From a real low twig of the grapevine it appears that he is a "J" national.

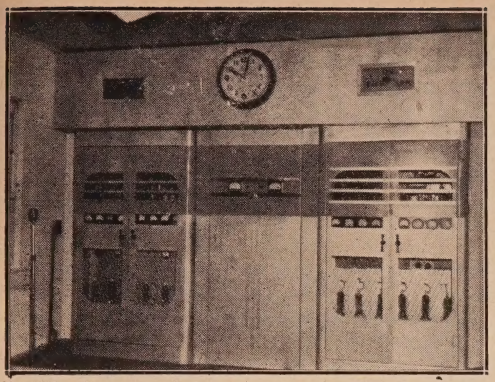
From the same twig, it looks as though one or two of the boys are signing "JB" and they claim, likewise, to be Japanese nationals. The chances are these fellows are nationals, but according to JA2HB, they might be a little premature, since the first of them were not supposed to take the Ham examinations until August.

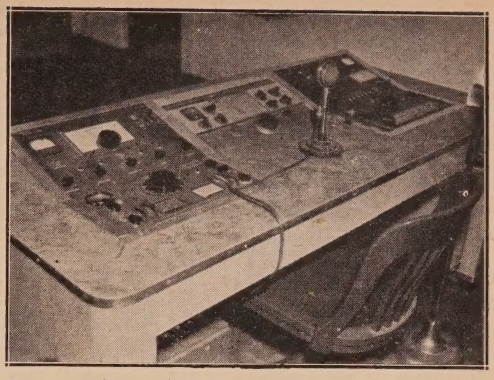
W9NN recently acquired a little booklet from a Finnish Ham entitled "The Ham's Interpreter." Since receiving this book, Bob says his enjoyment of working DX has increased ten-fold. It apparently gives all of the Ham lingo in English, French, Spanish, German, Swedish, and Finnish. The

Send all contributions to Herb Becker, 1406 South Grand Ave., Los Angeles 15, Calif.



These three top notch DX men are from left to right: ZL1MQ, ZK2AA, and ZL1DA.





KH6iK, Kauai High School, Hawaii. KH6IJ, who is a trustee, tells us that these two complete transmitters were built by students studying radio at the school. Many amateurs are turned out each year, and during 1950 seventeen were licensed. Both transmitters use a pair of 450TH tubes in the finals, as well as the modulators. Drivers are 1813's. The receiving position shows two independent exciter and speech units, as well as an NC-240 and an HRO. Antennas consist of an 8-element stacked rotary for 10 and a 4-element rotary for 20—both being 60 feet high. For low frequency work a 700-foot Rhombic is available.

trick, I suppose, is to turn the pages fast enough when one of the foreign boys pops a question at you. Regardless, it sounds like a good thing, and if any of you are interested in the details, get in touch with W9NN.

Those of you who didn't receive a card from MP4BAD can still get one by writing to G3GPE. Ken left Trucial Oman a year and a half ago, but he still has some cards. At the present time, as G3GPE, he is running 20 watts and he is on 7028 kc. . . .

G2MI tells me that ZD9AA will confirm any of his contracts if you will send details of your QSO, together with a self-addressed, but *not* stamped, envelope, to Mr. W. A. Fenton, Tristan da Cunha Island, via Cape Town, South Africa. G2MI was recently in Paris and enjoyed visiting and being entertained by F9HE, F9TR, and F9AA. . . .

W4AZK, who used to handle the cards for FM8AD, is unable to do anything more about it. The reason is quite simple: Dave can't get FM8AD to send him any logs. W4AZK said that a hurricane struck his place in October and made a pretzel out of his beam and Cupid made a bull's-eye with his arrow. (This, of course, could be a hurricane also.) Anyway, Dave has had to take his DXing a bit easy, mostly on account of the other occupants of the apartment house. (Of course). Now, they are located in the country, so we possibly can look forward to more DX activity as time marches on.

VS7NX has worked plenty of stuff on this globe of ours, but he has never been able to work or hear an XE on c.w.—and Jim has been a Ham since 1928. This is the only Zone he lacks for WAZ, so let's hope that some of you boys 'South of the Border' will help VS7NX out of this predicament.

After W6SAI's excursion to Andorra (7B4QF) I'm told he will be given a real welcome home by his W6 "pals" for working so *many* of them!

W3DKT was told by LU8BF that the Argentine DX Certificate is no longer being given, since the magazine Radio Onda is out of existance.

My, my, anything can happen to a DX man. Get this: WØSQO traded his complete station to W4RJ for his Cessna 120 airplane. Now, WØSQO (retired) limits his communication efforts to talking with control towers.

Through W7GHB, 9S4AX passes along a little of the latest on Bulgarian Hams. From what he says, there are six licensed Hams: LZ1AA, 1AK, 1KET, 1KSA, 1KAB, and 1TPI. Chances are, there may be more as time goes on. By the way, will one of you guys in Nevada please work 9S4AX and make him happy?

Some of the boys have been working OY5EL in the Faeroes. W6KIP gave us the QTH, which you will find at the end of the column. This OY is so new that we don't know what to think about him. I hope he is good, but on the other hand, we have never received any advance information about this station opening up. So, for the time being, we will keep our fingers crossed and raise one eyebrow at the same time.

F8BS reminds us again that cards for FB8ZZ and 8XX should go through REF, and that FD3RG is once again F3RG. If you have trouble getting a card from him you might take a chance in sending a 'fill-in' type of card to him with a



Left to right: FB8XX, FY9YC, FB8ZZ, and FQ8AA. This picture was sent to us by F9RO who took it last year before the expedition began.

W. A. Z. HONOR ROLL

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W7ENW	162
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W6PDB	161
W4CYY	161
OK1SV	160
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W6PUY	160
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W6CYI	157
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W6BUY	157
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G2IO	154
W6ATO	154
W6KEV	153
OK1RW	153
W6NTR	153
G3YF	152
KP6AA	152
VK2QL	151
W6LEE	150
W6FHE	150
W6EYR	150
W6RLQ	150
W6LER	150
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W6AUT	133
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W9IU	201
W1GKK	201
W8HFE	201
W2HZY	200
W3DKT	200
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W8EYE	158
W2UEI	156
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LU7CD	155
VE2BV	153
W3LVJ	151
W5MET	150
W8ZMC	143
WØAZT	143
ZL3AB	143
W9FKH	135
VE3ACS	134
MP4BAD	133
W6ETJ	132
W4FPK	131
W2PQJ	130
W4LQN	130
W3ZN	129
WØRBA	127
W9MZP	126
FE8AB	126
W9TB	122
GW4CX	120
EA1AB	119
WØFET	118
KL7PJ	117
VE7VC	116
W6CAE	113
W7EYS	107
VK6DX	103
W6FXL	92
C1CH	84

37 Zones

W1KFV	171
W2ZA	160
W3WU	157
W4IWO	149
W2WC	149
I1UV	149
F9AH	146
GM2UU	142
W4ML	140
W9WCE	140
W2AYJ	133
G6QX	133
W7HKT	130
W4DIA	129
W1APA	128
OE1FF	127
VE5JV	126
W9LNH	122
VE1EA	116
G3BPP	112
W6AX	110
WØFWW	108
OH3OE	108
W7PK	104
W8HSW	104
W2BLS	99
W6WWW	99
KL7KV	88

36 Zones

W4HA	163
W1BFT	156
W5KUJ	151
W3MZE	141
I1IT	140
WØCU	139
W9LI	131
OZ7BG	130
OA4AK	128
VE1PQ	128
I1IZ	128
W3AYS	124
F8TM	124
W2BF	115
4X4BX	112
W5CD	108
W2JA	102
W5BK	99

35 Zones

W1DEP	159
W5JUF	152
W2OST	146
W4DHZ	132
W9CKP	132
W1MRP	130
W5FXN	129
ZL1QW	123
OE5YL	122
W6ZZ	121
W9RQM	119
CO6AJ	119
W9DGA	115
W9FNR	114
W8AVB	113
W2HAZ	111
WØGBJ	110
KZ5IP	108
KL7CZ	80

34 Zones

W8NSS	133
W1NLM	130
W4IYT	127
W1RAN	122
W5NTT	107
W8JM	102
G2BVN	91

PHONE ONLY

39 Zones

XE1AC	205
VQ4ERR	201
W6DI	192
W6VFR	175
PK4DA	175
G8IG	169
W7HTB	161
W8HUD	160
F9BO	150
VE7ZM	145
DL1FK	125

38 Zones

W2BXA	189
W9RBI	188
W6KQY	161
W4CYU	160
ZL1HY	157
W6AM	155
W1HKK	153
W9NDA	149

37 Zones

W1JCX	189
W3BES	182
W8REU	176
W3LTU	169
W8REU	163
CE3AB	163
W9HB	161
W7MBX	158
VK3BZ	158
W6WNH	157
G3DO	157
W6PXH	153
W3GHD	152
W3JNN	150
W8BF	146
W6TT	143
F8VC	124
W7MBW	107
C1CH	83

36 Zones

W1NWO	182
W1MCW	176
W1BEQ	164
W4ESP	154
W2DYR	140
W9BZB	139
GM2UU	135
W9HP	131
W6PDB	130
W4INL	129
W1FJN	128
W8AUP	128
G6BW	127
VE3BNQ	126
VE7HC	123
WØHX	120
W8CYL	112
W3DHM	96
W6SA	92
F8DC	87

35 Zones

HC2JR	171
ZS6Q	156
W4HA	155
W9RNX	149
W6PCK	148
W3EVW	146
W2GHV	137
W2RGV	136
W6CHV	135
WØPUE	135
HC2OT	134
WØEYR	131
W9BVX	130
WØPRZ	124
W9CKP	124
WØANF	124
G8QX	123
W8ZMC	122
W5LWV	108
W4OM	106
W3PA	105

34 Zones

W5ASG	152
W3KT	145
W5JUF	137
I1AXD	130
YV5AB	129
LU8CW	129
W2ZVS	128
W5KC	125
W4LZM	124
W6UZX	123
W8BIQ	122
W5JUF	117
W1BPH	105
W8UIG	100
W4IWO	100
W8QBF	92

return coupon. This might produce the desired results. . F8BS goes on to say that as far as he knows, there are no FL8's, and F8SK is figuring on going to Andorra in September, where he will be on all bands, phone and c.w. Yes, he expects to get a license. . FU8AA is headed for the New Hebrides again, and will be on some time around the end of the year. . Good ole F8BS himself, with another French DX man, plans on spending a few days in Monaco, probably late in August, but at this time we do not know what he will sign.

VR4AB has been worked by quite a few, but we have no other information except that he is aboard ship. If he decides to go ashore, that will be something else again. In the meantime, don't be surprised if country credit is withheld.

Remember W2HHF? He is now W7PGX in Phoenix, Arizona. . . . There is a little talk of W2UWC in CR8. Since this is rather fresh, we don't have any of the gory details as yet. . . . . MP4BAF is on every other day, and he is located on Bahrein. Another active one there is MP4BBD. . . .

VE2BV got a thrill out of working his own station from VP5FR and W4RBQ. As Don said, he had a swell business (?) trip down to Florida and Jamaica, and met quite a few of the boys. By the way, how's business?

W7EYS visited KH6CT and KH6BA last January. When he got home it was snowing, everything was frozen, and so Bob said "Nuts to this." Result: He is now KH6AHZ and lives within a couple of miles of KH6CT and 6BA.

F9RO had the pleasure of meeting W6SAI and W2JAU on their recent visit to Paris. F9RO passes word along to all of you to be patient about cards from the FB8 Gang, because their logs take a long time getting back to France, where apparently the cards will be made out.

W8BRA finally grabbed enough time to bring his countries up to date, and has added fifteen. Not bad, I would say! Incidentally, he questions my ability to recognize a phoney W9 card. He should know there *are* no phoney W9's. . . .

G2PL told W6AM that he can't operate in the evenings very well on account of TVI. Peter has a 2-element rotary beam which seems to be quite an improvement.

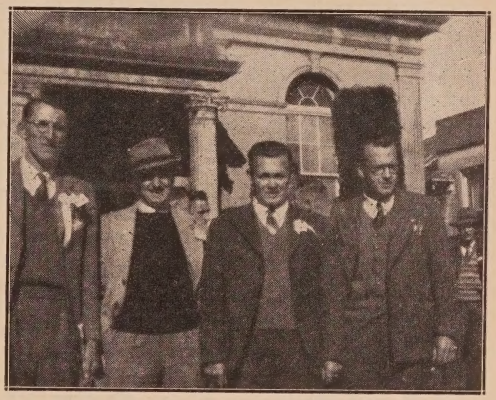
KH6AFI reports working JB3MQ, and once again I might mention that the nationals have not been licensed to return to the air. . . .

W1ENE had his card to LZ1DX returned through ARRL, after going to three different addresses in Michigan. . . . KL7PJ says something about FI8TP, but it makes no difference whether or not he is where he says he is, because of the FCC ban. Chuck claims the good fishing around Anchorage sometimes makes him forget poor DX conditions. . . .

W6ADP is the new Prexy of the Southern California DX Club, and from the Bulletin we see that W6AOA is fixing to handle the cards from VRIC. Also ZK2AA will probably show up at the National Confab in Seattle and PK4DA should be around these parts later in the summer.

From the Northern California DX Bulletin, I see where their new President is W6SR. . . . W6TI has worked 199 countries. . . . According to W6ATO anyone having worked VR6AA and has no card as yet, should communicate with ZL2FR, who, of course, used to be VR6AA. . . . A few QTH's are also being lifted from the Northern California DX Bulletin, which you will find in the usual place.

W6AM got a letter from VS7KR, who has been back in England for quite some time. He repeats again, however, that if some of you have not received your card from him, to drop him a line at his home QTH. 7KR has done his share of traveling, and it might be of interest to a lot of the newer members of the DX clan, to give you some of the spots from which he operated. In 1928 Ken was in Iraq using the call AQ1MDZ. From 1928 to 1932 he was YI6KR. Then from 1932 to 1934, it was ZC and SU6KR. Then he had a spell at home in G, after which he became ST6KR from 1937 to 1939. After the War, from 1948 to 1950 it was VS7KR. That boy has been around and it doesn't look like he is through yet, although at this time he has no idea where he will show up next.



Four famous DX men. Left to right: ZL2GX, ZL1BY, ZL1HY, and ZL1GX.

From W5ASG: "Bud Divine, HC8GI, wants the following dope passed along to you: He is on the Galapagos for a long time as a resident and is using the following frequencies, all A3— 14168, 14192, 14204, 14268, 28524, and 29000. He promises qsl's for all qso's but says tell the boys not to get in a rush. Sometimes it is three months between boats. He is still going to Cocos Island, but does not know when. Maybe next year, but definitely some time. His QTH is P.O. Box 784, Guayquil, Ecuador."

Well, that winds up this little clambake, but I guess we will be back at you again next month. Now, off to the National Convention in Seattle, where, with the help of W6ENV, I expect to make things miserable for W2IOP; WLDX, with his golf clubs, will also be present. I rather suspect that By and I will discuss DX activity— that is, of course, as it existed in our youth.

(Continued on page 63)

Monthly DX Predictions

GEORGE JACOBS, W2PAJ*

In SEPTEMBER the seasonal effect in the Northern Hemisphere upon radio propagation is to cause a moderate increase in the day-time MUFs and a slight decrease in the night-time MUFs. During the years of high sunspot count, 1946-1949, the day-time MUFs had risen high enough by September to permit fairly consistent 10 meter openings from the United States to all continents. For example, in 1949 the 10 meter band opened from the United States to Europe during the first week in August, when the observed smoothed sunspot number was approximately 130. In 1950 the band did not open until the very last week in September when the observed smoothed sunspot number was in the 90s. This year the smoothed sunspot number, predicted for September by the Zurich Observatories is 57. Propagation conditions associated with this portion of the so-called 11 year sunspot cycle will not sustain a high enough rise in daytime MUFs to permit much DX activity on 10 meters. Ten meter activity to South America is expected to increase over what it was in August, and some spotty openings may occur to Oceania, but it will be October before the 10 meter band really opens to Europe or Asia. So again in September, as in the past few months, 20 meters should be the amateur band that will provide us with the majority of DX possibilities.

Associated with the equinox that occurs about September 23, the day that the sun crosses the Equator in its travel from northern to southern skies, is a decrease in ionospheric absorption and noise level in the Northern Hemisphere. This means that on "all dark paths", 40 and 80 meter DX activity should increase. It is still a little early to say that 80 and 40 are open for DX, but DX conditions on these bands will be steadily improving.

A Consoling Answer

In September sporadic E usually occurs less often, and much less communication over medium distances (short skip) is expected to take place by way of this region as compared with August.

I have received quite a few letters from some of you DX'ers who are much concerned about future DX potentialities as we enter the minimum period of the present sunspot cycle. It is true that as we approach the minimum years of 1953-55, conditions on 10 and 20 meters will become progressively poorer, and quite possibly during this period 10 meters may be completely devoid of anything DX-wise except for an occasional South American. Twenty meters will suffer considerably also, and may not be of much use for DX except during the winter months, when all continents will probably still be workable but only for very short periods. Before we start taking antennas down and storing away the rig let me say that the picture is not as black as it seems. It certainly is true that depressed MUFs will take 10 and to some extent 20 meters away from us, DX-wise; however there are other phenomena associated with minimum solar activity that may improve DX conditions on 40, 80, and 160 meters. In some respects this improvement may possibly be considered enough to offset the loss of the higher frequencies. Ionospheric absorption, that phenomena which limits the use of the lower frequencies for DX for the most part "all dark winter paths", decreases considerably with lower sunspot count. Data published by the Bureau Of Standards in Circular 462, "Ionospheric Radio Propagation", indicates that absorption values can decrease by as much as 40% during minimum sunspot activity when compared to periods of maximum sunspot activity. These factors of lower MUFs and lower absorption values indicate that DX conditions on the low bands of 40, 80 and 160 meters should steadily improve. Signals should be stronger, workable periods should be longer, and distances worked should be greater during the coming minimum sunspot period than possibly any time during this past decade. So while you may be thinking of storing away the 10 and 20 meter coils, give some thought to getting some antennas up for the lower frequencies. Propagation analysis certainly indicate that the next few years may be very disappointing on the higher frequencies but we may be in for a pleasant surprise on the improved DX possibilities on the lower frequencies.

There is often an increase in the effects of ionosphere storminess in September, especially during the dark hours, when periods of poor short-wave communication may occur at times. At the time of writing it would appear, based on the 27 day recurrence cycle of this phenomena, that disturbances are more likely to take place during the periods Sept. 4-6, 9-12, and 22-27 than on the other days of the month of September. In general, ionosphere disturbances have their greatest effect at night and on transmissions crossing the higher latitudes (North Atlantic and Trans-Polar) and their least effect, or none at all, on North-South transmissions across the equatorial zone.

General Propagation Conditions For September, 1951

EUROPE

The peak day-time MUF on most European circuits is up to about 24 mc, so no ten meter activity is expected. If better than normal propa-

(Continued on page 60)

3620 Bedford Ave., Brooklyn 10, N. Y.

20 METERS — ALL TIMES IN GMT = EST + 5 HOURS.

TO:	FROM: EAST COAST	CENTRAL USA	PACIFIC COAST
Northern & Central Europe	0930-1230 (2-3) 1230-1900 (1-2) 1900-2230 (3-4)	1100-1300 (2-3) 1300-2000 (1) 2000-2300 (3-4)	1300-1500 (1-2) 1500-2000 (0-1) 2000-2300 (3)
Southern Europe & North Africa	0930-1200 (3) 1200-1830 (2) 1830-2330 (3-4)	1030-1300 (2-3) 1300-2000 (1-2) 2000-2330 (3-4)	1300-1500 (1-2) 1500-2000 (1) 2000-0000 (3)
Near & Middle East	1000-1200 (1-2) 1200-1800 (0-1) 1800-2200 (2-3)	1100-1300 (1) 1300-1900 (0-1) 1900-2200 (2-3)	1300-1500 (1) 1500-2100 (0-1) 2100-2300 (2)
Central America & Northern South America	1100-1430 (3-4) 1430-2230 (2-3) 2230-0400 (4-5)	1130-1500 (3-4) 1500-2300 (2) 2300-0300 (4-5) 0300-0700 (2)	1300-1630 (4) 1630-2300 (2-3) 2300-0400 (4-5)
South America	1000-1300 (2) 1300-2100 (1) 2100-0200 (3-4) 0200-0630 (2)	1100-1300 (2-3) 1300-2300 (1) 2300-0300 (3-4) 0300-0730 (2)	1300-1430 (2-3) 1430-0000 (1) 0000-0400 (3-4) 0400-0830 (2)
Hawaii	1500-1800 (3) 1800-0100 (1) 0100-0300 (2-3)	1500-1800 (3-4) 1800-0200 (1-2) 0200-0500 (3)	1500-1800 (4-5) 1800-0300 (2-3) 0300-0700 (4-5) 0700-1100 (2)
Oceania	1100-1300 (2) 1300-1700 (3) 1900-0100 (0-1) 0100-0300 (2)	1100-1300 (1-2) 1300-1700 (3) 1900-0200 (0-1) 0200-0500 (2)	1730-2000 (2) 2000-0300 (0-1) 0300-0700 (2-3) 0700-1200 (1-2)
South Africa	0900-1200 (0-1) 1200-1400 (2) 1400-2000 (0-1) 2000-0100 (2-3)	1000-1200 (0-1) 1200-1400 (2) 1400-2100 (0-1) 2100-0200 (2)	1300-1500 (2) 1500-0000 (1) 0000-0300 (2)
Japan & Far East	1300-1600 (2-3) 2100-0200 (0-1) 0200-0300 (2)	1400-1900 (2-3) 2000-0300 (0-1) 0300-0500 (2)	1600-2100 (2-3) 2100-0400 (1) 0400-0730 (2-3)
Guam & Pacific	1300-1700 (2-3) 1900-0300 (0-1) 0300-0500 (2)	1400-1700 (2-3) 1900-0400 (0-1) 0400-0600 (2-3)	1500-1730 (3) 1900-2000 (2) 2000-0500 (0-1) 0500-0700 (2-3)
India & Asia	1100-1400 (1-2) 1400-2000 (0-1) 0200-0400 (1)	1300-1600 (1-2) 1600-2000 (0-1) 0200-0500 (1)	1500-1800 (2) 1800-2000 (0-1) 2300-0600 (1-2)

	10 Meters	20 Meters	40 Meters	80 Meters
East Coast - West Coast	2000-0000 (0-1)	1300-1600 (3-4) 1600-2300 (2-3) 2300-0300 (4)	0200-1200 (3)	0300-1200 (2)

Symbols for % of days of month path open.

(0) None (1) 10% (2) 25% (3) 50% (4) 70% (5) 85% or more.

East Coast centered on Washington, D. C.
Central USA centered on St. Louis, Mo.
Pacific Coast centered on Sacramento, Calif.

The Monitoring Post

gleaned by THE BRASSPOUNDER

WELL, WE KNEW IT COULD BE DONE, but never thought ham radio would be called upon to do such a thorough job! FLOODS—TORNADO—over a period of two and a half months around Wichita, Kans., some more violent and damaging than others, with the granddaddy of them all at the end of this period, and a tornado thrown in for variety. WØSOE, at the Wichita Red Cross Building went on the air at 1740 when the Little Arkansas River threatened to go wild; this also activated WØFPC, located in the Wichita City police building. These stations were manned by WØBTF, YXG, DJS, UUS, and RC at the Red Cross spot, with JFB, OZN, and OKD doing the relaying and communicating with local government offices. Other fixed stations working in the net included WØGAV, CLN, AXN, CPG, CIK, MUN, and W5SIC/Ø. The mobiles were: WØBVQ, ZYG, CUZ, BAH, UUS, IGJ, ZIS, DJS, BIX, RQF, ZXY, FKU, CLN, TNW, and SU. A circuit was maintained for the sheriff's office to the scene where an exploding furnace killed two.

The following day, the river again demanded the activation of WØSOE and FBC, these stations being operated by AOG, AAO, YXG, AZK, RC, and CLN, working for 9 hours and 15 minutes. All operation was on 10 meters. This was but the beginning. On May 22 WØSOE went to work on 75 phone with WØRC at the mike when flood conditions threatened at Hays, Kans., getting traffic into Hays for 4 hours and 15 minutes.

Came May 24 when WØSOE again hit the ether for two hours to get traffic from Hays, where WØHJK used Wichita police and highway patrol stations to reach Great Bend. Then came a long rest, when nothing happened for four days. But a tornado hit Wakeeney, Kans., and brought WØUUS, BIX, and RC to the mike at WØSOE again, traffic going through Dodge City to Wakeeney. June 30 came and the waters of the Little Arkansas and Arkansas Rivers threatened again. WØFPC, operated by LFB, OZN, and OKD worked continuously for 34 hours, with WØSOE doing a like trick of 14 minutes longer duration. The latter station was covered this time by WØAOG, GAV, YZL, NZQ, KXO, DJS, CHZ, and BVU. Other fixed stations on this emergency chore were: WØMUN, EXG, BVM, SMI, and BSX.

QRM on 10 during this operation was spotted by WØBVQ, beaming a full kw, who got immediate cooperation from W5SKO, W4RYM, WØKUK/M, WØHKF, and WØBUO when asked to QSY. July 3 brought another shock when both rivers flooded again and communications to Sedgwick County was necessary where levee repairing crews were working feverishly. WØSOE and FPC again went to work. A portable station set up at Maize and operated by WØYZL, BAH, PER, and BIX, did the job, and other fixed stations in Wichita helped. Crews covering WØSOE and FPC included: WØYOS, DJS, YXG, AXN, CHZ, BUV, and LFB, OZN, OKD, and CJR, respectively. The mobiles on this assignment were WØOZN, BAH, DMF, BVQ, ZYG, YXG, UUS, CUZ, AOG, GAV, CHF, and MUN. Time of operation, 29 hours, 33 minutes. The above-mentioned stations were thrown into full operation in the middle of July, and at this time of reporting have been unable to find time to even mention the operation and stations participating in the latest flood, but are praying for a quiet and long dry spell. We extend our deep appreciation to these fellows for their untiring efforts to do a job that is a credit to ham radio.

When the high water hit Topeka, Kans., the local radio club handled things with a rig set up at the police station, and another at the north end of the bridge with the National Guard Post Command. Fixed stations at National Guard headquarters and the Adiutant General's office, with stations also at Rochester School and in North Topeka were in operation. In the field were ten mobiles. W3CVE became alternate net control on the 7-mc band, where WØHOC and KØNRZ operated. Full cooperation by hams assisting is acknowledged, these being in all parts of the country, with stations in every radio district monitoring and keeping the emergency channel open. WØSTC and WØJAF were on 75. W8FJL/M was stuck in Topeka until the roads were opened.

A long list of stations were on the job including: WØAAZ, AJY, AFN, AGC, AGV, AHG, AHT, ANV, BGK, CFY, CWF, DRL, ECF, EFT, EIM, ELO, FMR, GCI, GPR, HBL, HOC, MYQ, HS, ICV, JIV, KRZ, KSY, LIL, LPI, NCV, OBO, OZF, QV, SSB, SWR, TEM, TID, UPU, WGM, WIT, WKV, ZMC, KHX, HXB, CMG, CMW, YOM, LGJ, W6WWD/Ø, W5RZS/Ø, and W5CDY/Ø.

On July 18, Salinas, Kans., where the Smoky Hill River flows, water went almost four feet above flood stage, completely inundating the east end of the city. WØBGW, ATS, INW, and MUY were operating mobile with police; a fixed rig also worked with the police, WØIYR; another was WØTSR. KSAL lost its power, and WØMVG moved into a studio at this broadcast station to maintain communications with mobiles and police department, getting information regarding the

disaster from WØMUY. Two-thirds of Salinas was under 7 to 8 feet of water, but not one casualty was recorded due to the flood.

* * *

"Operation Rochester." That's what it was called by the New York State Civil Defense Commission, and it brought the Rochester Emergency Net out on a full-scale simulated civil defense emergency. Nineteen mobile stations, two walkie-talkies, one relay station employing a 10-meter receiver and a 2-meter transmitter, and two transmitters and receivers at Control Center did the job in a splendid manner.

At 0718 Col. Lawrence Wilkinson, State Civil Defense Director, gave the signal for the test to start and signals wailed. Operators took shelter in their garages, in readiness for the "All Clear" signal, when they rolled to their posts, some prearranged, others to spots where they could contact Control with ease, yet remaining at points from which they could be dispatched quickly. In 13 minutes all stations had reported to Control and were ready for operation.

Mobiles were stationed at five predetermined roadway entrances where equipment and supplies from seven neighboring counties entered the city. When apparatus or supplies reached any of these points, a message was transmitted to Control describing the arriving aid, and a return message dispatched the vehicles to the point within the city where it was most needed.

Five Zone Control stations kept a steady flow of traffic coming into Control Center. Instructions were constantly being fed to the radio room, going out on two circuits. Hospitals were covered by mobiles, and other mobiles were sent quickly to "devastated" areas to join personnel forming field emergency stations, where welfare agencies fed, clothed, and recorded names of "injured" persons; where field medical posts were set up to treat the "injured"; spots throughout the city where "fires" raged, and walkie-talkies accompanied radiological teams detecting and measuring the "radioactivity" as a result of the bursting "bomb." The radiological teams filed their reports with the walkie-talkie operator, who transmitted his traffic to the nearest mobile station, relaying reports to the Control Center.

The two transmitters and receivers in the radio room at Control were never at any time overloaded, for telephone communications had not been too seriously disrupted, yet 75 messages passed through this installation with a maximum of one minute elapsing during the recording of the longest message. Due to the constant previous training of the emergency net, this group functioned very smoothly and efficiently.

Control Center stations comprised two 10-meter transmitters, one 10-meter receiver, and one 2-meter receiver. The aforementioned relay station, located at the highest spot in the city, picked up all transmissions of 10-meter mobile stations on the net, to be sent from one to another point as needed. This receiver was patched into a 2-meter transmitter beamed to the 2-meter receiver at Control Center.



Some of the operators who participated in "Operation Rochester"—Left to right: W2QY, CZT, TEX, RDG, WWO, VVG, CEZ, BGO, NES, QYT, SGJ, VBH.

Among the 35 operators participating in the test and headed by W2QY, were: W2RUJ, CZT, FBA, ZHB, TEX, OWF, UAD, VBH, DYD, NES, VVG, PPR, RMS, WWO, PSD, BDY, CEZ, YPW, ZDW, ENE, YUT, SGJ, DFS, ZS, SCZ, QYT, SNI, and VUY.

* * *

W5PWO, in writing to the editor, says: "Will ya tell that Brasspounder that a group of Texans got together and sent W5PWO out here to this section of land we sold to the United States as Mexican War surplus, to become a Texas missionary. Tell him I'm working amid a bunch of mislaid Yankees. Seems they got a bunch of atoms to tear up . . . . . so thought since they ain't woke up to the fact that Texas atoms are bigger, thought I'd help 'em with the Yankee atoms. Tell him I'm a building a Texas kilowatt, which is the biggest, and hope to be back on the air soon. Hoping the ten-meter skip will let me into Yankee Land with the true gospel of Texas. If any you Yankees want any 'porkupine' eggs I got some at a dollar a piece—they grow all over this war surplus state—called cockleburrs, I believe." He adds: "Used to be the voice of Beaumont, Texas, down where east Texas meets the sea, the birthplace of the oil industry—the oil industry—the biggest city in the biggest county in the biggest state in the world."

W9KHJ worked KZ5AC and 80 other stations with his 10-meter mobile rig while on vacation to Colorado and Wyoming. . . . Building up traffic totals has given W9CKU a busy time of late. . . . Louis Nel, ZS6XQ from Mafeking, South Africa, who became paralyzed in a swimming accident while practising for an Olympics team, is leaving Boston City Hospital for home after a year of operations and treatment. His stay has been made as pleasant as possible by many American hams who have sent him letters and QSL cards, and at his departure for home a recorder is being presented to him, with a suitable letter of presentation naming all the hams contributing toward the purchase of the recorder. Please send your contributions to W1BB, BDU, HX, or RM, who head the committee.

75A-1 MODIFICATION

(from page 22)

2. Replace cathode resistor R2 with a 110 ohm resistor. Replace screen resistor R3 with a 47,000 ohm resistor. Replace plate resistor R4 with a 110 ohm resistor. These resistors are all mounted on the fibre terminal strip next to the 6AK5 socket.

3. Replace the 6AK5 tube shield with the next larger size, as the 6AG5 is a taller tube than the 6AK5. You may also replace the 6AK5 crystal oscillator tube with a 6AG5 for uniformity. Either type works equally well here.

Alignment

The receiver should now be completely and carefully aligned according to the procedure outlined in the instruction manual. For most effective alignment a noise generator should be employed.[1]

Summary

The net result of all these changes is a receiver with excellent sensitivity and superior signal-to-noise ratio on all bands. It is now much more tolerant of various types of antennas, and weak signals stand out sharply above the background noise of the set. Each modification, in itself, may make only a slight improvement in the set, but taken as a whole, the series of changes produce an amazing improvement. The useable sensitivity on 28 mc is such that a preselector does no good, and my dill-pickle 6J6 preselector now rests in the junk box.

Here are some handy hints, as a closing shot, for 75A-1 owners:

1. Has your 75A-1 ever broken into wild oscillations at the high frequency end of the tuning dial? This is a puzzling phenomenon but very easy to cure. Loosen all the self-tapping screws on the bottom plate of the coil catacomb and retighten them. There is a chemical reaction that takes place between the steel bolts and the aluminum coverplate, and after a period of time the screws provide only a high resistance ground for the plate. Loosening and retightening the screws will clean the oxide and eliminate the trouble.

2. A 100,000 ohm potentiometer connected between pin 6 of the b.f.o. tube (V10) and ground is a very handy device for varying the b.f.o. injection. This is a nice touch when you are chasing the "weak ones" on c.w. The correct amount of injection is very important for weak signal reception.

3. When the time comes to replace the 6SJ7 in the variable oscillator, put in a 5693 "red" long life tube. It will last a good deal longer than a 6SJ7 and is a much more stable oscillator.

4. If you are not overly impressed with the noise limiter, remove the 6H6 detector/noise limiter tube and substitute a pair of 1N34 crystals mounted on an octal adapter socket. This provides much cleaner clipping on ignition noise.

5. You might try a Jensen "Speechmaster" speaker on the receiver. It sounds pretty nice.

1 A Practical Crystal Noise Generator. By W. I. Orr, Radio & Television News, June, 1951.

LETTERS

(from page 6)

New Lenox, Ill.

Editor, CQ:

I was glad to read in the August issue of CQ that you are starting a Novice section. This interest is further strengthened by the fact that my son and I have just received our Novice licenses.

I was always interested in Amateur radio since high school but never took the steps necessary to become an operator, lack of funds being the primary reason.

Some months ago my boy became interested so we have been working together, with the most helpful assistance of the Joliet Amateur Radio Society. We took our examination in Chicago the morning of July 2nd (we were the first to arrive at the FCC offices), our licenses are dated July 17th, and you can imagine how we felt when the licenses arrived. My boy, Ronald, is WN9OGC, he is 16 years of age and will be a junior at the Joliet Township High School. My call is WN9-OFR.

It is needless to say that we are both diligently working on that code speed and studying theory with the Club in Joliet, hoping to take that next examination at the earliest possible time.

Thanks a lot for a fine magazine; it has been a great help to us. We will be looking forward to this Novice section.

R. Melvin Whitaker, WN9OFR

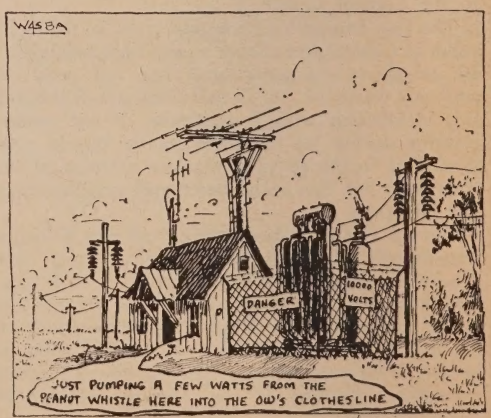
Help Wanted

Bridgeville, Del.

Editor, CQ:

Can any of my fellow readers of CQ help me on the following? I have an Electronic Labs "Master Utiliphone," Model 2660B, which has become inoperative. The original manufacturer is no longer in business, so I am unable to get a schematic or suggested service procedure for this unit.

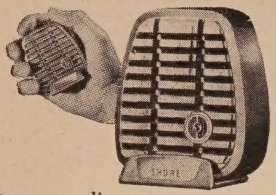
Geo. V. Ruos



The Newcomer's Buyway

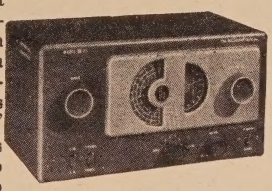
Advertising

"The Hercules"



In amateur radio, just like lots of other hobbies, there are all kinds of gadgets and accessories which one acquires in time as a matter of course. However, probably the first item a radio amateur requires, after obtaining his basic receiver and transmitter, is a dependable microphone, so voice "contacts" can be made. Regardless of whether you are a new-comer or an old-timer in amateur radio, the new Controlled Reluctance mike, the "Hercules" (manufactured by Shure Brothers, Inc., 225 W. Huron St., Chicago, Ill.) warrants your consideration. It is a hand-held magnetic unit that provides clear reproduction, high speech intelligibility, high output and ruggedness at an amazingly low price. Being magnetic, this mike is practically immune to varying conditions of heat or humidity. The "Hercules" can be used indoors or outdoors, fits snugly in the hand, sits firmly on a desk or can be placed on a stand. There are two models with an output level of 52.5 db below 1 volt per microbar. Model 510C "Hercules" lists at $15.00 while the Model 510S, which has a built-in switch, lists for only $17.00. The "Hercules" has a die-cast case, with a Metallic Green finish. See the "Hercules" at your Distributor or write Shure Brothers for further details.

SR-75 "Transceiver"



One of the oldest space and money-saving — tricks in radio is to make a tube serve two different purposes. This is called "reflexing" when one tube serves as, say, both a radio frequency and audio frequency amplifier in a receiver. When you make a tube do double-duty in both a receiver and a transmitter the combination is called a "transceiver." Logically, the result is always a reduction in size and cost without sacrificing efficiency.

With the needs of novices and beginning amateurs in mind, one of the pioneer amateur equipment manufacturers has designed a completely new transceiver. This is the Hallicrafters Model SR-75 which receives all frequencies from 540 Kc through 32 Mc, thus including the Standard Broadcast Band and all amateur bands through ten meters. The ten-watt transmitter not only covers the Novice 80 and 11 meter bands with crystal control, as required by FCC regulations, but also is capable of operation on the 10, 11, 20, 40 and 80 meter bands for full-fledged amateur work. A power amplifier stage may be added to the transmitter whenever desired. The SR-75 Transceiver, manufactured by The Hallicrafters Company of Chicago, will not become obsolete as it keeps step with its owner's progress in amateur radio.

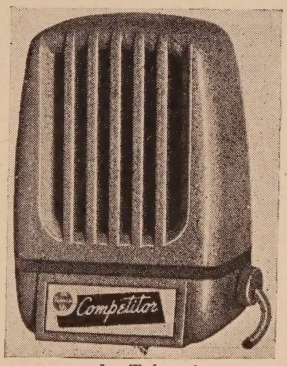
Allied Catalog

In amateur radio, a new youngster is affectionately called a "Young Squirt." We'd like to say a few words to the Young Squirts, (and OM's), reading this. In ham radio there are all kinds of gadgets, accessories and essential parts to be bought. You'll acquire some of these items as soon as you start to build your equipment. Others you'll only "look at" for years. However — before you buy anything — think of Allied's complete, free catalog.



Here is the new, complete Buying Guide to *everything* in Amateur Radio. It's ALLIED's 212-page 1952 catalog—packed with full selections of quality receivers, transmitters and station gear of every description — everything you need to operate an efficient Ham station at lowest money-saving cost. Here, too, are the widest selections of parts, tubes, kits, tools, books and diagrams, ready for fast, dependable shipment from ALLIED's huge stocks. You can count on ALLIED for expert service, the most generous time payment terms and down-to-earth practical help from our large staff of old-time Hams. Have the complete, dependable service enjoyed by thousands of Amateurs over the past 30 years. Send today for your FREE copy of the new ALLIED Catalog, finest Buying Guide in Amateur Radio. ALLIED RADIO CORP., 833 W. Jackson Blvd., Dept., 16-JJ-1, Chicago 7.

"The Competitor"



Operating your own two-way station is now quite simple. With equipment smaller in size than most TV receivers you will be able to talk to fellow hobbyists across town, in other states, and occasionally, when conditions are good, thousands of miles away. If you always thought it took all kinds of high-priced special equipment to do this, stand corrected. Take, for example, the microphone you will use with your transmitter, the "sending" part of your station. An ideal mike, low in cost but high in audio quality, equally suited for hand, desk or stand use, is the Turner Company Model 60X, a moisture-sealed crystal mike popularly known as "The Competitor". This mike has — Response: 70 to 7,000 c.p.s.; Level: 52 db below 1 volt/dyne/sq. cm. The model 60X has a list price of $10.85 while model S60X, which has an "on-off" slide switch, lists at $12.85. For more information see your Distributor or write The Turner Co., 929 17th St. N.E., Cedar Rapids, Iowa.

Errata

Errors of ommission and commission sneak into every publication, and *CQ* is no exception. To set things straight, here are corrections to a number of innaccuracies spotted by our readers and/or the Editor.

January, 1950, "Small Rig - - - Big Signal," by Robert W. Clark, WØRVD. The lower deck of switch S5, shown on the diagram on pages 12 and 13, should be of the shorting type, to complete the cathode circuits of more than one multiplier stage.

November, 1950, "A Compact Regenerative Receiver," by Leon Wortman, W2LJU. The circuit diagram on page 20 shows the detector plate resistor incorrectly numbered as R1. This shouid read R2, and the correct value for R2 is given in the parts list. The value of coupling condenser C9 was omitted from the parts list; this may be anything from 0.005$\mu\mu$f to 0.05$\mu\mu$f. "Zero Bias" for January, 1951, warned of the danger in this hot chassis design—use an isolation transformer or a one-wire line cord and direct ground on the chassis. The transformer is preferable; if the chassis ground system is used and the ground wire becomes disconnected, the chassis immediately rises to 115 volts above ground.

December, 1950, "A Practical All-Band VFO," by L. Dennis Shapiro, W2URX. The circuit diagram on page 19 shows the heaters of the 6SA7 and 6AG7 incorrectly fed through the cathode resistors. These heaters should return directly to ground.

January, 1951, "Radio Wave Propagation," by Chester R. Underhill, W2YT. There is a discrepancy between the value of lapse rate given on page 26 and that stated on page 28. The latter, 0.8x10-6 units per 100 feet, is correct.

May, 1951, "The Impedance-Matcher," by V. DeLong and Ben W. Roberts, WØIEU. Although the wire size was given correctly as No. 22 on page 21, some confusion has occurred due to the typo error reference to "No. 88" on the following page. The coil forms were made by Isolantite, Inc., now out of business; there was a limited supply on hand at the Collins plant which the authors made available to those who wrote them, but these are probably unavailable by now unless another source of supply has been located.

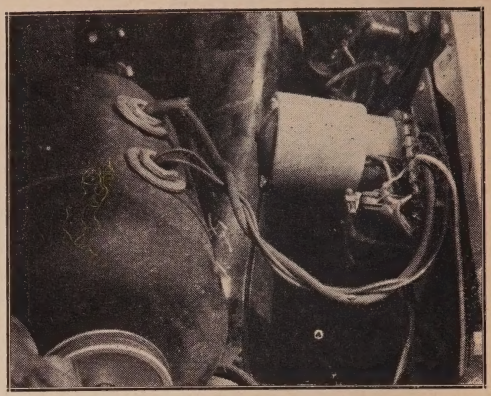
May, 1951, "War Surplus for Civil Defense," by P. S. Rand, WIDBM. The original circuit of the BC-696-A shown as Fig. 8 on page 25 has several errors in the heater and cathode circuits of the 1629 "eye" tube. The heaters of the 1626 and the 1629 are also incorrectly numbered 1 and 7 instead of 2 and 7. The correct wiring for this unit is given in W2BFB's SCR-274-N article in *CQ* for August , 1950, page 25.

July CQ-1950, "DX Contest Results." HB9BJ was incorrectly classified as a Single-Operator station; actually, HB9BJ and second operator HB9KU took first place in the All-Band Multiple Op. division for Switzerland. HB9CI and HB9JK move up a notch in the Single Op. standings.

Similarly, VE7WH should have been listed as All-Band Multiple Operator first place winner, and both VE7EH and VE7KC move up one place in the Single Operator listing.

MOBILE SUPPLY

(from page 28)

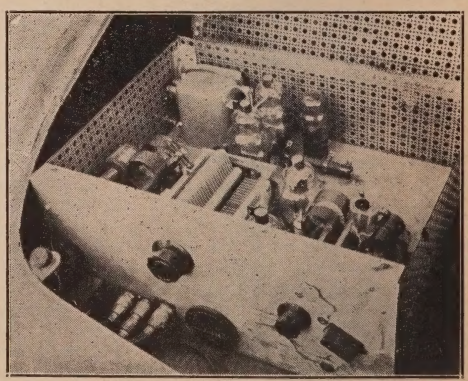


The carbon-pile regulator mounts near the dynamotor.

Although the additional load on the car engine undoubtedly causes some reduction of gas mileage, this has not been noticeable. (And the car doesn't slow down when I press the mike button! You'd be surprised how often this question comes up.)

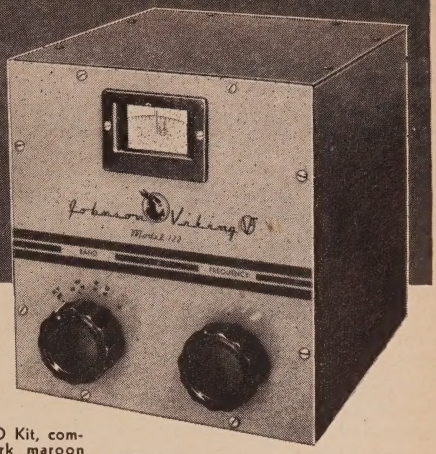
Outside of getting out further than I can now receive, the main problems of mobile high power lie in the antenna. I have had corona discharge from the end of the whip under some conditions, and have had trouble with loading coils burning up.

Recently, a single-sideband crystal-filter rig has been tried, using 300 watts to 811's as a class B linear stage. This has worked well both with and without carrier insertion; when carrier is not entirely suppressed, some of the boys figure it for clamp-tube modulation, after watching their "S" meters bounce. The SSB rig is still in the experimental stage, but looks like a good bet for high-power mobile.



The 811 amplifier and 811 Class B modulator are located in the rear trunk.

the New JOHNSON VIKING VFO KIT



- ✔ Accurate Frequency Calibration (All Bands — 160 thru 10 meters)
- ✔ 5" Calibrated Dial With 6:1 Reduction
- ✔ High Stability — Cleanest Keying
- ✔ Simple Assembly — Build it in an evening

JOHNSON Viking VFO Kit, complete, less tubes in dark maroon finished cabinet to match Viking 1. Size 7" x 6-7/8" x 6-9/16". **$42.75** Amateur Net

Amateurs will hail the new JOHNSON Viking VFO Kit — for use with the Viking 1 or other transmitter — as an outstanding piece of equipment.

It is built to highest standards of appearance and performance!

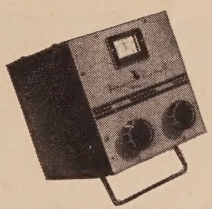
VFO output is 8 to 10 volts on the 7.0 to 7.425 MC range and 5.5 to 7.5 volts on the 1.75 to 2.0 MC range. Output is more than adequate to drive a transmitter on all bands when the oscillator stage is utilized as an isolating R.F. Amplifier or frequency doubler.

COMPANION UNIT FOR JOHNSON VIKING 1

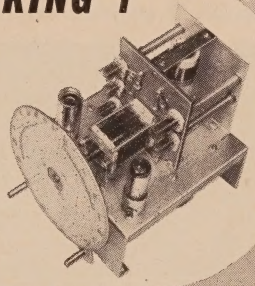
OR OTHER TRANSMITTERS

SEPARATE OSCILLATOR TANKS

Two separate tanks are used so that a frequency multiplication of only four need be used to cover the 10 meter band. Design provides band spread and accuracy, minimum frequency drift, and excellent keying characteristics.



Has built in tilting bracket.



All voltage requirements are amply supplied from the VFO supply socket on the Viking 1 Transmitter. No other power supply is required. All necessary cables and plugs are furnished.

If the JOHNSON VFO is used without the Viking 1, power supply requirements are 250 to 300 v unregulated, 15 ma, and 6.3 v, .3 amp., ac or dc, which is usually available from existing transmitter power supplies.

Compare These Features

- OA2 Regulator and 6AU6 Electron Coupled Oscillator
- Keying Three Ways, VFO, Transmitter or Both
- All Voltages Supplied From Viking 1 Socket
- All Cables, Plugs Supplied
- Tank Circuits Temperature Compensated
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- Easily Calibrated
- Complete Easy Assembly Information Supplied

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HAMFEST CALENDAR

INDIANA: Sept. 23; Tri-State Amateur Radio Society of Evansville. Annual Basket Picnic and Ham Fest At Servel Picnic Grounds. Feature event: Demonstration of radio controlled model airplane by W9FZT. Games and contests plus an opportunity to work Aircraft Mobile. Rig on 29.6 MC at picnic grounds for directions and QSO's. Inquiries to W9HRH, Sec'y.

INDIANA: French Lick; Oct. 20, 21. A.R.R.L. Central Division Convention, sponsored by Indiana Radio Club Council at French Lick Springs Hotel. Technical talks, exhibits, contests, and prizes. Banquet and dance on Saturday evening. For the ladies a style show, luncheon, and tour of formal gardens of hotel. Special meetings for "Mobileers," EC's, VHF, SSB. Advance registrations $4.00 per person. Inquiries to W9MVZ, P.O. Box 7506, Indianapolis, Ind.

NEW JERSEY: Sunday, Sept. 9, (Rain date: Sunday, Sept. 16) South Jersey Radio Association annual Hamfest and picnic commemorating Club's 35th Anniversary; at Wallworth Park, Haddonfield, N. J. Events: 2 and 10 meter hidden transmitter hunt, games, pony rides, prizes. 2, 10, 75 meter stations on air from picnic grounds using club call K2AA to guide mobiles. Inquiries to W2SPV.

SOUTH DAKOTA: Oct. 6, 7; Annual So. Dakota Hamfest in Sioux Falls. $4.00 registration includes banquet; Send to WØPHR, 325 S. Menlo Ave., Sioux Falls. Advance registrations must be in Sioux Falls by Oct. 2 to participate in advance registration drawing. Inquiries WØRRN.

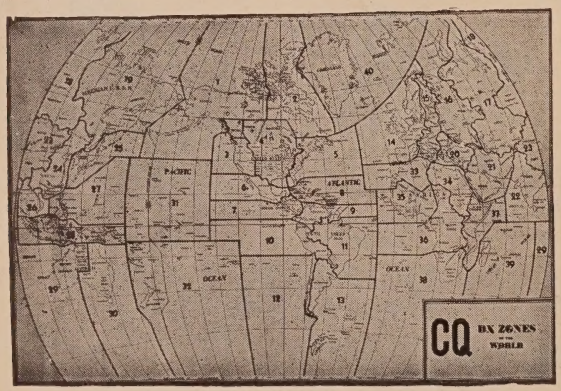
VERMONT: Sunday, Sept. 16; Vermont State ARRL Convention and Hamfest at Brattleboro. Inquiries: W1FPS, Pres.

CANADA: Saturday, Sept. 22. Montreal Amateur Radio Club "Montreal Hamfest" in Victoria Hall, Westmont, P. Q. Formally opened by VE2BE, Canadian General Manager at 2 pm. Talks, clinics, premiere of 1000' technicolor movie "Field-Day 1951," displays of American and British equipment, banquet and dancing. Tickets $4.00 single, $7.50 double, limited to 350. Orders to Hal Ward, Chairman, 242 Mount Vernon Ave., Montreal 28, P. Q.

VHF-UHF

(from page 35)

some cases of apparent back-scatter from E_s regions —the bearing of the signals were not correct and the reflections (?) were too clean for aurora. Successful 'phone QSOs were held with several stations apparently via the aurora, during which the quality of modulation was observed to vary from good to



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Dress up your operating room with this beautiful "WAZ" Zone map. Complete, revised, and up to date in every respect! All countries and prefixes in each DX Zone are clearly shown. Order your today!

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Sirs: I enclose $1.00 for which please send me a WAZ DX ZONE MAP OF THE WORLD.

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Above — For maximum efficiency, Tel-A-Ray Pre-Amplifiers are peaked at the factory to a single channel. This Pre-Amp is primarily designed for antenna mounting with the Tel-A-Ray "Reception Master" antenna. But when weaker constructed antennas are in use it may be mast mounted.



New, Improved TEL-A-RAY PRE-AMPLIFIER

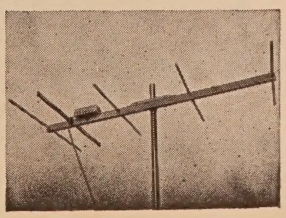
gives clear, sharp reception beyond the fringe areas!

The only antenna-mounted device of its kind, the Tel-A-Ray Pre-Amplifier has established itself as an essential aid in getting good television reception in many locations. Now, it has been tremendously improved. Among other things, there are now separate models for high and low channels, with a matched tuned grid circuit that insures maximum gain and a stable signal.

Here is a must installation wherever signals are weak and snow is a problem . . . a simple, easily installed and economical means of getting clear, sharp, snow-free reception even beyond the fringe areas. For an investment of just a few dollars, you can get far better television. And with multiple installations of antenna and Tel-A-Ray Pre-Amplifiers peaked to different stations, you can greatly increase your choice of television entertainment.

Use With Model T or TD Antenna for the best results

Installation of these famous long distance Tel-A-Ray antennas is the first step in getting clear, snow-free reception. With the Pre-Amplifier, they give up to 300 times gain over dipole.



- Gives maximum gain in signal.
- Insures stability of signal.
- Provides for vastly improved signal - to - noise ratio.
- Compensates for lead line loss.
- Eliminates or greatly reduces snow.
- An essential complement to the booster at the set in many locations, and can be used without a booster in numerous cases.
- Made of Dural and weather-sealed . . . completely g u a r a n t e e d against weather damage.
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Try these MERIT Ham Units for your "Rig." Make MERIT first choice for your transformer needs.

XMTR RECTIFIER FILAMENT TYPE

Type No.	Sec. Volts	Sec. Amp.	Insul. Volts	Dimensions H	W	D	Mtg.
P-2940	2.5 c.t.	10	7500	3	3⅝	2¼	B $3.15
P-3042	2.5 c.t.	10	10000	2⅞	3⅜	2¼	EH $3.45

B

XMTR FILAMENT FOR MEDIUM AND HIGH POWER POPULAR TUBES

P-2943	5	c.t.	20	2500	3¾	3⅛	3	EV $6.00
P-2947	6.3	c.t.	6	2500	3	3⅝	2¼ B	$3.00
P-3146	10	c.t.	10	3000	3⅞	3-3/16	3⅜ D	$5.55

A

LOW AND MEDIUM POWER PLATES

Type No.	Sec. Rms. Volts	Sec. DC Volts	DC Sec. M.A.	Dimensions H.	W.	D.	Mtg.
P-3175	(500-550)	(400)	150	3-9/16	3	3⅛	D $5.70
P-3159	(900-900) (800-800)	(750) (600)	225	4⅝	3-13/16	5⅛	D $9.00

D

Type No.	Sec. Rms. Volts	Sec. DC Volts	DC Sec. M.A.	Dimensions H.	W.	D.	Mtg.
P-3167	(1450-1450)	(1200)	300	5¾	6⅛	4	EH $22.35
	(1175-1175)	(1000)					

See Merit Catalog No. 5111 for other items. Ask your dealer or write.

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BOX 91, CQ MAGAZINE
67 West 44th St. New York 18, N. Y.

unreadable . . . Ken had ample opportunity to check the polarization of the received signals, and his observations in general tend to support the idea that signals maintain their original polarization under auroral reflection conditions. His log of the night's activities, too long to reproduce here, ends up with the comment, "That light in the sky ain't aurora!"

Things in General

K2USA, the MARS station at Fort Monmouth, N. J., is now active on two meters, thanks to the sparking of A1, W8WXV. The receiving set-up uses a lighthouse tube pre-amplifier ahead of a crystal-controlled converter into an HRO. The transmitter is a souped-up 522, but an 829B amplifier is ready for early installation. The antenna is a corner-reflector job, horizontal only. (This no doubt accounts to a certain extent for the generally low level of activity reported by the gang at K2USA! Future plans call for some sort of antenna to facilitate working the vertically-polarized stations in the nearby cities.) A great deal of GI traffic is handled by K2USA and they could often use a lift into the New York and Philadelphia areas. Look for them on about 144.2 mc.

KP4NX sends in a review of his six-meter accomplishments during July. On the 8th he worked W3PCB, W3OJU and W4HVV and heard W3QFL. On July 9th he worked W5ONS and W4IUJ and heard W5HHV, W9OCA, W9RQM, VE3ANY, VE3BQY, W9JPB, W9ZHB, WØINI and W5OUT. As we write this column the six-meter band is again wide open, and KP4NX has been heard working W1HDQ and VE1QZ (whom we are hearing apparently via backscatter. NBFM sounds good, Oscar!) Westy is using only 30 watts input to a 2E26 with NBFM or CW. (Sounds a little rusty but not hard to read!) The rig feeds into a Cubical Quad antenna. The correct QTH for KP4NX is: Harold West (ex W4KGK, W1LCC) ARINC Box 4008, San Juan, Puerto Rico.

W8NQD reports that thanks to the excellent six-meter opening on the 9th of July his States Worked total is now up to 45. Tom is afraid that those last three are going to be a bit tough! Another active candidate for WAS is W4MS. Eddie is now up to 40 states and 5 countries confirmed.

W2YXE, of Troy, New York, wishes that the 144-mc gang in the Philadelphia area would aim their beams straight north more often. He worked W2BDI at Merchantville, N. J. early on July 4th and heard several others in the S.N.J. section during the same period.

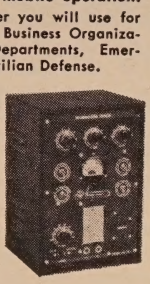
CO6WW reports that he is using an 829 final with about 90 watts input, crystal controlled on 50.1 or 50.2 mc. He is on the band from 6 to 11 p.m. every day, and on Sundays he's usually active all day. The antenna is a Workshop 3-element array, and the receiver is a VHF152 ahead of an SX-25. The QTH for CO6WW is Jose J. Garcia, PO Box 324, Cienfuegos, Cuba. Jose's log for July reads as follows: July 8th: heard W8LPD and worked W8BFQ, W9ZHL, W8NQD, W4CPZ, W9UIA, W4FLW, W5AJG, W5ABN, W3PCB and W3OJU. July 9th: heard W4FQI and worked

HARVEY HAS THE GEAR YOU WANT!

HARVEY-WELLS XMTRS

...have everything from 2 to 80 meters, for fixed or mobile operation.

H-W is the transmitter you will use for years. Best for Hams, Business Organizations, Government Departments, Emergency Services and Civilian Defense.



2 BANDMASTER MODELS

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
Model 381 Mobile VFO Low Impedance **$33.95** with 3 tubes

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.

POLICE ALARM

Mobile FM Receiver 152

Model M-101 covers 152 mc to 162 mc Band **$72.50**
Model M-51 covers 30 to 50 mc's.

MONITORADIO

For Home or Fixed Location

Model PR-31 for 30 to 50 mc band... **$44.95** complete.
Model PR-8 for 152 to 162 mc band... **$44.95,** complete with 14" whip indoor antenna.

VISIT HARVEY'S AUDIO-TORIUM — Come in and visit our new Sound Department... all these items and many more on working display at all times.

Gonset Converters

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**

NEW GONSET FM COMMUNICATIONS TUNER; for all 2-way FM radio telephone communications; 30-40 mc; 40-50 mc; 88-108 mc; 152-162 mc. **$59.50 net.** (Other frequency ranges available on special order.)
DeLuxe Model (separate squelch tube, pilot light switch).....**$69.50 net**

Get Your MASTER MOBILE Mounts and Antennas from HARVEY



***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.

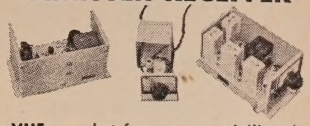
New VHF Master Mobile Antenna #113

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
Shpg. Wt. 40 lbs.

HALLICRAFTER SX-62

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

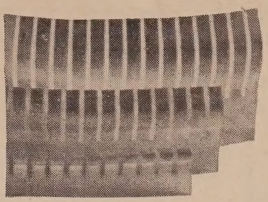
Employs 3 stages of i.f. and 12 permeability-tuned i.f. circuits (4 per stage), in addition to the crystal filter. Has all the features of the renowned HRO-50.
$383.50

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.

Telephone: LUxemburg 2-1500

HARVEY RADIO COMPANY INC.

103 West 43rd St., New York 18, N. Y.



FINGER STOCK

Electrical Weather-stripping by Eimac—

Now Available!

Silver-plated, spring alloy, preformed finger stock especially suited for electrical "weather-stripping" for TVI-proofing cabinet access doors, etc. Also ideal for making coaxially constructed tube connections and many other uses. Available in 17/32", 31/32", and 1 7/8" widths.

• **Write for new Eimac Catalogue Summary showing Eimac tubes and other accessories.**

Eimac

Eitel-McCullough, Inc.

San Bruno, California

SYLVAN DEALERSHIPS

Not ANYone can sell SYLVAN products. SYLVAN dealerships are granted by invitation only.

SYLVAN intends to, and will, build the finest electronic products. Consequently, the dealer handling our line, must be thoroughly reliable and dependable. Accordingly, SYLVAN invites you the active ham, to tell us who your favorite dealer is and WHY.

For the best letter received in September, SYLVAN will give a prize of one of the RC converters, the winner to choose the model. All entries become our property and our judgement is final.

This month for the 3 northern New England states, our dealer by invitation is .....
EVANS RADIO, P.O. Box 312, Concord, New Hamp.

SYLVAN ELECTRONIC LABS.
BROADALBIN, NEW YORK

and W4FLW. July 22nd: heard W4MS and W5FSC.

That's about the works for now. We're a little short of news this month. To those of our readers who have written us and not as yet received an answer, we hereby extend our thanks and apologies. Ye Ed was out of circulation for a while this past month, laid up in the hospital with plumbing difficulties. That, plus the six-day work week, has put us quite a bit behind. We sure could use some help from any of our readers who would like to try their hand at journalistic work! If any of you are interested in helping out as assistant editor (with suitable remuneration, of course!) contact me or Gene Black, W2ESO, Editor of CQ, and we'll try to arrange a deal.

We'd like to get more news items from all sections of the country, regarding all phases of v.h.f. and u.h.f. activity. This is your column—it can't be successful without your help.

See you next month, 73.

Brownie, W2PAU

HAMS & CIVIL DEFENSE

(from page 30)

bility, then I fear that we will have small grounds for defense against future onslaught upon our frequencies. If any individual fails, C.D. can replace him, and will if it must.

So far amateur radio has given an excellent performance. I must leave out much of the story for security reasons. A good number of 10 meter mobiles are sworn in, with a substantial number pending security clearance. Many more on 10 and 2 are wanted. Over *1000 mobiles* will be needed for the job of C.D. in *N.Y.C.*

Three major full scale C.D. drills have been participated in by these amateurs in the boroughs of Queens, Bronx, and Brooklyn. Not just amateur net drills, as we have known them in the past, but actual simulated war conditions, full scale city-run affairs involving thousands of people all over the city. Amateurs have manned amateur-equipped installations right in the secret Borough Controls, handling official communications on amateur frequencies, to and from mobiles in distant parts of the city, working from and with city installations, and for and with city department personnel. These amateurs are in C.D. in its ultimate form.

There is a most dramatic story in Amateur Radio's actual assignment. For security reason it cannot be told here. One thing I can say, and that is that the dignity and stature of amateur radio is recognized in being given this assignment. Our contribution in the saving of life, in an actual emergency, *could be incalculable.* That is, of course, if we rise to the challenge and enroll the mobiles needed for the job, and do it.

We are appreciated, welcomed, and understood by C.D. Director Arthur W. Wallander and C.D. Communications Director Seigel. These men are confident we can do the job. Were this not so, then we would not be as far as we are today.

There is of course, also an end the City must hold up, the administrative part. To operate this

SEE LEO FIRST FOR... National NC RECEIVERS

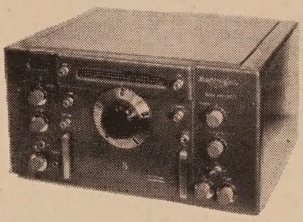


Leo I. Meyerson
WØGFQ

ON HAND FOR IMMEDIATE DELIVERY!

HRO-50-1 RECEIVER

Additional I.F. Stage and 12 permeability tuned I.F. circuits result in the ultimate in selectivity!
Built-in power supply on separate chassis. Front panel oscillator compensation control. 20 to 1 precision gear drive. Provisions for NBFM adapter. Push-pull audio output. Speaker matching transformer built into receiver with 8 and 500/600 ohm output terminals.

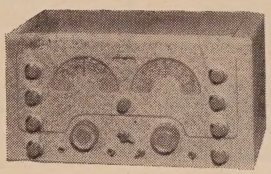


$383.50
(less speaker)
LOW DOWN PAYMENT

10" PM Speaker matching cabinet **$16.00**

NC-183 RECEIVER

Sixteen tubes (including rectifier and voltage regulator) are employed in a modern high-gain super-heterodyne circuit. HF oscillator termperature-compensated on all bands; phonograph pick-up jack; accessory connector socket; illuminated signal strength meter with adjustable sensitivity; self-contained output transformer with 500 ohm and 8 ohm terminals; operates from 115 or 230 volts 50/60 cycles or, in emergency, from batteries or vibrator power supply; narrow band FM adaptor available. Frequency coverage: 540kc. to 31mc. and 48 to 56 mc.



$279.00
(less speaker)
LOW DOWN PAYMENT

10" PM Speaker in matching cabinet **$16.00**

NATIONAL RECEIVERS

NC-125	$149.50	Matching Speaker	$11.00
SELECT-O-JET (#2 or #3)			$24.95
SW-54			$49.95

GOOD NEWS for the NOVICE...



NEW NOVICE CW 7 KIT $19.95

Here is a complete novice 80 meter AC-DC 7 watt transmitting kit — complete with tubes, power supply, tuning indicator, antenna, pi-network, key and crystal. Nothing left to buy — simply wire (complete instructions included) plug into AC socket and go on the air. Will operate on either 110 volts AC or DC.

NEW LOG BOOK

25¢

Full column log listing all FCC required info . . . accommodates 1,525 stations. "Q" signals, phonetic alphabet, amateur international prefixes.

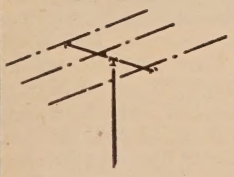


FREE WRL CATALOG



NOW YOU CAN AFFORD TO OWN A BEAM

10 METER BEAM



Plumber's delight 3 element beam quickly assembled; furnished with Gamma match. Extremely light; all aluminum construction; grounded antenna; very low priced. Furnished less mast and lead. Full instructions furnished.

Narrow spaced **$15.95**

Wide spaced **$17.95**

GUARANTEED CRYSTALS 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

$1.25 ea.

80-40 METER

3.5 to 4.0 — 7.0 to 7.4

98¢ ea.

Please state frequency. We will come as close as possible. No refunds or exchanges, please.

Our Famous REFERENCE MAP 25¢



CU ON 10-20 & 75 METERS

WRITE FOR DETAILED SPECIFICATION EQUIPMENT SHEETS
WRITE - WIRE — PHONE 7795

World Radio LABORATORIES INCORPORATED
COUNCIL BLUFFS, IOWA

World Radio Laboratories, Inc.
744 West Broadway
Council Bluffs, Iowa

Please send me:

- ☐ New Log Book
- ☐ New Catalog ☐ Radio Map
- ☐ Used Equipment List
- ☐ SW-54 Info. C-9
- ☐ Select-O-Jet Info.
- ☐ HRO-50-1
- ☐ NC-57 Info.
- ☐ NC-183 Info.
- ☐ NC-125

Name_____

Address_____

City_____ State_____

ATTENTION
ALL RADIO AMATEURS

We proudly present

SYLVAN SPECIAL

The culmination of 3 years of intensive engineering, this VFO - EXCITER - TRANSMITTER represents the ultimate of the electron art to-date.

The SYLVAN SPECIAL is specifically engineered to do a superb job on either phone or CW. For example, the specially designed VFO dial which combines a 10" slide rule mechanism accurately calibrated every 10 kc., with a rotary vernier calibrated every kilocycle, has uniform 10" bandspread scales for each band plus SEPARATE 10" scales for the 75 and 20 meter phone, sub-bands.

Add to this, an essentially drift-free series tuned oscillator, band-switching, voltage regulation, chirp-free keying, 100% AM, and ample RF and AUDIO output to drive any high power amplifier-modulator combination, and you get the SYLVAN SPECIAL.

Priced at about $275.00, a very limited number will be produced in October.

See it at your dealer or

write for informative 4 page engineering bulletin.

SYLVAN ELECTRONIC LABS.
BROADALBIN, NEW YORK

ATTENTION
MOBILE HAMS

COMPLETE MOBILE PACKAGE — NOTHING ELSE TO BUY. OUTSTANDING MOBILE SIGNALS USE MOTOROLA EQUIPMENT — BACKED BY YEARS OF COMMUNICATION EQUIPMENT EXPERIENCE — WORLD'S LARGEST PRODUCER OF 2-WAY MOBILE EQUIPMENT.

A mobile transmitter with a double feature FM or AM at flip of the switch, the MOTOROLA FMT-30-DMS 27-30 MC. . . **$130.00**

P-7253 spring base rear-mount antenna. **$24.75**

MOTOROLA P-69-13 or 18-ARS receiver with special noise limiter for use with any converter having 1440-3000 KC **$60.00**

New Gon-set Tri-Band Spread Converter **$47.60**

3-30 famous Gon-set converter complete to connect to the P-69-13 or 18-ARS receiver **$39.95**

P-327-E Fire wall loud speaker **$5.00**

The above comes complete with all necessary accessories and mounting hardware. Order direct or through the Motorola National Service Organization member in your area.

NOTE: This Receiver and Transmitter is equipment which has been returned from the field, modified and rebuilt for Amateur Service.

For further information write to:

MOTOROLA INC.
Amateur Sales Dept. CQ Sept.
1327 W. Washington Blvd., Chicago 7, Ill.
Attention: Harry Harrison W9LLX
Telephone—Taylor 9-2200, Ext. 161

organization as required by law, requires some clerical help and administrative supervision. This of course means money. Whether those who hold the purse strings of the City of New York will provide the C.D. authorities the needed funds with which to administrate this program is another matter. At any rate the amateurs have started the job and the rest is up to the City of New York.

NOVICE SHACK

(from page 25)

well, and if you can afford it, buy a tape or metal-record machine. It can take you from zero to beyond 30 w.p.m. if you do your part, and it is very durable and extremely versatile.

2. If you are not interested in commercial work and can not afford a $20-$40 machine, consider the phonograph records. They do an excellent job within the range of speeds they cover; they are durable, and can be purchased safely by a group of learners and exchanged among members who have progressed to different code speeds. This reduces the price the individual must pay, while still giving him the advantage of unlimited practice in his own home.

3. If you own a tape or wire recorder, or can borrow one for two or three months, it is only necessary to find a friendly ham (one with a good fist, naturally), who will record a spool full of code-practice material for you. In "Learning the Radiotelegraph Code," there is a chapter on Class Instruction that outlines ten lessons, complete with practice words. This would make an excellent practice tape, and its cost would be practically nothing.

Let me urge you, however, not to go too far in trying to economize in this code-learning project. Especially, do not "go partners" with one or more other students if it means that you may not be able to practice code in your own home at any time you wish.

As soon as you have acquired enough speed, spend as much time as possible listening to code signals on a communications receiver. There are many stations that send at fairly low speeds. In particular, I suggest that you make a practice of copying the nightly transmissions of W1AW, headquarters station of the American Radio Relay League at Newington, Conn. W1AW transmits code practice at speeds ranging from 5 to 35 w.p.m. for one hour each night, on 1887, 3555, 7215, 14,100, and 28,060 kilocycles, and on 52 and 146 megacycles. Look for this station at 8 p.m. on Saturdays, and at 9:30 p.m. on Sundays, Tuesdays, and Thursdays, when the speed varies between 5 and 13 w.p.m. The times quoted are EDST during the Daylight Saving Time season, and EST thereafter.

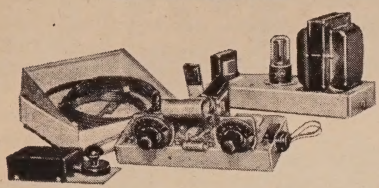
See You Next Month

Four weeks from now, I hope you can report substantial progress toward the 5 w.p.m. mark. Then it will be time to talk about your first receiver. After all, "You can't work them if you can't hear them!" Until then luck and

73 (best regards)
Carl, W2GJV

NOVICE CLASS XMTR KITS

80M CW OSC. & POWER SUPPLY
ALL PARTS, CHASSES, XTAL, KEY ANTENNA, AND INSTRUCTIONS



Complete—Nothing Else To Buy—ALL FOR ONLY **$25**

LOW FREQ. XTALS-FT 241A

For SSB, lattice filter, etc. ½" spc. 54th or 72nd harm. channels. Listed by fund. Fractions omitted.

372	402	429 497
374	403	431 503
375	404	433 504
376	405	434 506
377	408	435 507
379	409	436 509
380	411	438 511
381	412	481 516
383	413	483 518
384	414	484 519
386	415	485 526
387	416	488 530
388	418	490 531
390	419	491 533
391	420	492 537
392	422	493 538
393	423	496
394	424	
395	425	.49 ea.
396	426	10 for
401	427	$4.50

400	452	
440	462	
441	465	
442	468	
443	472	
446	474	
447	477	
448	479	
450		

.99 ea.
10 for
$9.00

SCR 522 XTALS
1/8" pins ½" spc.

5910	
6370	
6407.9	
6450	
6470	
6522.9	
6547.9	
7480	
7580	
7810	

$1.29 each

SPECIAL
200 KC XTALS without holders
.69 ea. 3 for $2.00

BC-610 XTALS
2 banana plugs ¾" spc.

2045	2532
2105	2545
2125	2557
2145	3202
2155	3215
2280	3237
2258	3250
2260	3322
2282	3510
2300	3520
2305	3550
2320	3570
2360	3580
2390	3945
2415	3955
2435	3995
2442	

$1.29 each

HAM XTALS—FT-243 HOLDERS—½" pin spc.

4190	6773	7806	3735	5840	6450	6740	7573
5030	6873	7840	5305	5850	6473	6806	7640
5485	6906	7873	5677	5873	6475	7340	7673
6006	6973	7973	5706	5906	6506	7440	7706
6040	7740	8273	5740	5940	6540	7473	7806
6073	7773	8306	5750	5973	6573	7506	8340
6106			5760	6273	6606	7540	
6140	.49 each		5773	6373	6640		
6173	10 for		5806	6406	6673	.99 each	
6206	$4.50		5825	6640	6705	10 for $9.00	

WEBSTER-MODEL 18 WIRE RECORDERS



Includes microphone with stand, ¼ hour spool wire, plastic dust cover, and removable foot switch

Brand New Discontinued Model

DICTATION • TRANSCRIPTION • PLAYBACK

For Doctors, Dentists, Lawyers, Accountants, Secretaries, Clergymen, Speakers, Businessmen, Hams, etc. Including the following exclusive Webster-Chicago features.

- Automatic stops—shut off machine at end of wire
- Pushbutton record-listen switch.
- Immediate playback thru 2 inch speaker
- Neon recording volume indicator
- Removable take-up drum
- Elapsed time indicator

DRASTICALLY REDUCED FROM ORIGINAL PRICE OF $135.00 TO AN ALL TIME LOW OF.....ONLY **$89.50**

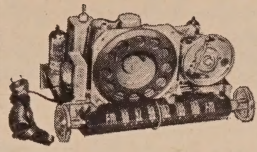
RECORDING WIRE
1 hour | ½ hour | ¼ hour
$3.50 | $2.10 | $1.40

SUN RADIO

OF WASHINGTON, D. C.
938 F STREET, N. W. WASH. 4, D. C.

Special Purchase

REG. $29.95 FM RADIO CHASSIS 88-108 MC



Complete with 6 Tubes, Built-in Antenna and Speaker. Product of Famous Radio & TV Manufacturer whose name we promised not to mention

TUBE LINEUP:
1-12BA7 1-12S8
2-12BA6 1-35W4
1-35B5

May also be used as an FM Tuner by picking signal off detector.

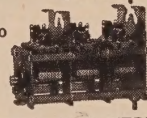
Brand New - Now Only
$16.95

VARIABLE CONDENSERS

From SCR-522



2 GANG - 220 MMF per section
$1.29



3 GANG - 220 MMF per section
$1.59

BRAND NEW with CONCENTRIC AIR TRIMMERS



NAVY VHF BRAND NEW CW TRANSMITTER

Battery operated (67½V."B" and 1½V."A") Frequency 80 to 105 MC. uses 2 1G4 Tubes - with instruction manual - less tubes and batteries.
$4.95

FAMOUS MAKE BUTTERFLY CONDENSERS ALL NEW — ⅓ OFF!

.500 GAP.	.375 GAP.	.250 GAP.
	11- 8.15	143-19.85
115-25.25	106-20.15	159-21.00
124-26.65	130-21.60	175-22.50
	141-24.50	192-23.95
	153-25.95	208-25.95

Note: Figure in Left Column is Max. Cap. per Section

NATIONALLY KNOWN FAMOUS MAKE HEAVY DUTY SINGLE & DOUBLE STATOR TRANSMITTING CONDENSERS.

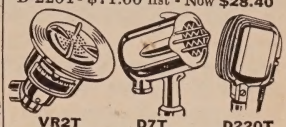
Max. Cap.	Gap	Price
300	.077	$ 5.32
230	.171	5.57
250	.219	12.85
500	.219	17.22
75	.344	8.96
245	.344	14.11
150	.469	12.95
100-100	.219	14.11
100-100	.344	15.64
60-60	.469	14.11

ANTENNA RELAY UNIT—BC-442A with R.F. Ammeter & Vacuum cond. **$2.89**

Low-Impedence Dynamic Mikes—Display Models

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MOBILE CORNER

(from page 26)

cessfully operated with the crystal remotely located and connected to the crystal socket terminals by a 30 inch length of 300 ohm line. Obviously the shortest possible length should be employed. This seems to be a practical dodge for getting the crystal out of the transmitter and into a space where a crystal switching means may be employed. A "rumble seat" can easily be attached to house the mechanism.

Several switching schemes may be used. The most satisfactory seems to be a solenoid operated six-position switch, such as was used in a commercial car receiver a few years back. This switch advances one position each time the solenoid is momentarily energized and only one wire need be run from the transmitter to the operating position. While this switch has not been manufactured for a number of years, hams seem to dig them up someplace, for there are a great many in use. In any event, many of the present day car BC receivers have switches which are adaptable to this use.

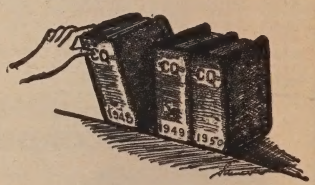
While more wires are required between the transmitter and operator, a very satisfactory switch can be made from the motor of the SCR 522. This motor had to deliver considerable power for its original use, and consequently has a very heavy spring on the armature. If this spring tension is reduced, either by adjustment or replacement of the spring, this motor will run nicely on 6 watts and will give four positions.

Two crystals can be switched with a single relay and one wire. This system works excellently when a calling frequency is employed—the relay is energized only while on the calling frequency, a quick QSY being effected by unoperating the relay. The diagram shows a system employing three wires and three relays to switch six crystals, yet there are only two transfer-type contacts on the relays and no more than two relays are energized at any one time. If a relay is obtainable with four transfer contacts, eight crystals can be switched with the same amount of gear using the familiar Xmas tree circuit, or three transfers will switch seven crystals. The position with no relays energized can be used for the VFO connection if one is employed.

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From a letter from the midwest: "My pet gripe is the type of ten-meter ham who calls CQ when skip is on and concludes with the pontifical announcement that he will tune 1 and 3 tenths of a cycle each side of his carrier! The next pet peeve is the helpful Joe who gives you a long winde road map that goes 'I will tune 50 kc each side of my channel, then the Mexican phone band and then from 28.5 mc up to the middle and then from the top down——etc., etc.' He might also add that if no one answers, he'll go out for a ham sandwich. The boys I like, which I seldom seem to hear, say 'tuning from the top end down' ".

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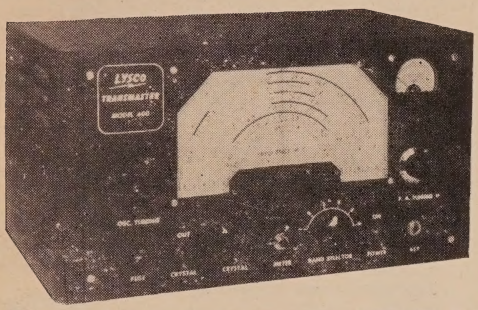
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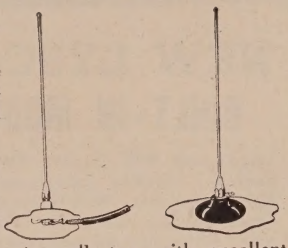
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.....St. Paul, Minn. is equipped with auto calls and many emergency calls have been handled. The beauty of these things is that they can run continually and need no attention from the operator unless there's a call. An operator can provide a watch service while he's asleep. .....To those who asked for the Operating Instructions, my apologies that they were sent so late. They are now available, on request. .....Romance should be good for the GM lassie around PK land for any YL can find a monsoon. Please forgive me!.....How about the mobile v.f.o. that wanders onto the same frequency as a crystal rig, with the resultant beat note sounding like a buzz saw going through a knot in an oak log?.....There are a number of 1 kw. mobiles operating.....Do you know that 75 meter mobiles have worked VK?..... A remote v.f.o. tuned with a motor is used in some mobile installations. Only the oscillator is supplied with power, the motor is turned on and runs until the beat note hits the converter—then everything is all set..... Mobile operation is permitted in very, very few countries and only in North and South America. The most popular ten meter home-brewed low-power transmitter is a 6J6 into a 2E26..... This writer is daily being forced to conclude that clamp type modulation for mobiles is a curse because of the many, many hams that haven't got them adjusted properly. This system works FB, however, when everything is right..... Readers are again reminded that this is your column; let me know what you want in it.

SCRATCHI

(from page 4)

At the moment I actually resting from my task, and writing you, because I waiting for Brother Itchi to come back from the postoffice with more stamps. I surely using a lot of stamps on this job. In factly, I think my tongue is more tired than anything else, although it too are having big experience. Have you ever tasting thousands of stamps? It can be very interesting. Not all of them taste the same. Some taste like old burned-out transformer laminations. Others are like solder flux, while my latest batch tasting exactly like the inside of a wet electrolytic condenser. I can hardly wait to taste the new batch that Brother Itchi is bringing.

Let's see, maybe I can take some time now to figure out how much money I'll be making with this deal. If we figure that there are 100,000 hams in this country (counting the new novice and technician licenses), I think I can sell to 25% of them. This is a total of $25,000, of which I get 5%, or $1250 dollars. Hmmm, not bad for a starter. Of course, hams not being satisfied with only one of these combination logbook, calendar and scratch-pad holders, so they have to getting more of them. Hey, not bad, Hon. Ed.

Now, I having some small expenses, but they ought not to running too much. I use one three-cent stamp on letter I mail to ham, and I use

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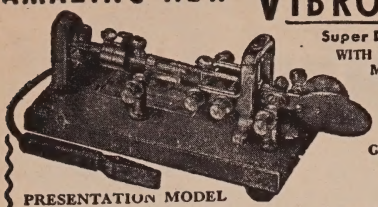
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another three-cent stamp on envelope which is put inside letter, I use some ink, and there is also wear and tear on the fountain pen and on my tongue. Forgetting these last two items for the moment, if I multiply three cents by two I get six cents, then when I multiply that by 100,000 I get.....no, that looks wrong. Now, if I multiply three cents by 100,000 and then multiply by two I get.....HEY! Hon. Ed., sumthing is wrong, because that is almost $6000.

I must have multiplied wrong. Let's work this out another way. I spend six cents on each amateur, and when he sends in his dollar, I get five percent of that. Five percent of one dollar is.....five percent of one dollar is.....HOKENDOKE SACREMENTO!!! That low life! That dirty scheming chiseler! That no-good, back-biting bum! Of all the.....well if he thinks that Scratchi will.....wait tille I catch that.....Hon. Ed. I an flabbergast!

Are you realizing that even if every amateur bought one of those worthless pieces of junk all I would get back would be five cents—when I already spent six cents on him, and if some of them didn't waste their money on this useless gadget, I'd really be in the hole? Gollies but I'm mad. I'm almost mad enough to go out and get a legal FCC ham license. That would show up this "friend" of mine.

You know, it's a good thing I haven't mailed or sealed any of these letters yet. If you will excoose ing me, Hon. Ed., I have to get to work. I'm going to scratch out my friends name on all those return envelopes, and put my own name on, so that the dollars will come to me instead. Then he can come to me to settle up. Five percent he wants to give me. What does he think I am, a five percenter?

Respectively yours,
Hashafisti Scratchi

PREDICTIONS

(from page 41)

gation conditions exist, as they did during May and June, there is the possibility of some 11 and even 10 meter openings from East and Central USA to Europe or North Africa during the last week of the month, between 1700-2000 GMT. At best though, even these openings will be few and very sporadic.

Plenty of activity should take place on 20 meters The band should open quite early and stay open until about 0000 GMT taking the usual mid afternoon dip. You should notice that the band will close about an hour or more earlier then it did in August, in accordance with seasonal trends.

Lower absorption and noise levels should mean an increase in the "dark path" 40 meter DX activity on these paths. Conditions should be especially improved for New England and Canadian Maritime QTH's, between 2300-0500 GMT.

Eighty meters is still quite a bit below the MUF but "dark path" conditions on this band are also improving and more DX on these frequencies should be worked this month than in August.

SOUTH AMERICA

With the seasonal increase in day-time MUF's on these North-South paths, 10 meters will be more active than in August. Best openings are expected between 1800-2300 GMT for East and Central USA QTH's, and between 1900-0100 GMT to the West Coast. A good many of these openings should be characterized by strong signal intensities.

Twenty meters is expected to be very good to Latin America, with the band open from early morning to very late in the evening.

DX activity on 40 meters should be good on these circuits. Signal levels are expected to be strong on many evenings from after sundown to just before sunup. Less frequent openings are expected to occur on 80 meters, with openings more likely only to Central America.

FAR EAST

No 10 meter activity can be expected from the Eastern or Central sections of the USA to the Far East. Some openings may occur from these USA areas to Hawaii between 2100-0000 GMT with generally erratic signals, since the frequency is right on the MUF. It still too early for any consistent openings from the Pacific Coast to the Far East but some spotty openings may occur, especially after the 15th of September, between 0300-0500 GMT.

Conditions on 20 are expected to be fairly good. Two distinct openings should occur, with good signal levels expected during both openings. To the East Coast these openings should occur between 1300-1600 GMT and 0200-0300 GMT, to the Mid West between 1400-1900 GMT and 0300-0500 GMT. These transmission paths, because of the shorter distances, favor Pacific Coast locations and conditions should be best between 1600-2100 GMT and 0400-0730 GMT.

Very little 40 meter activity is expected and only from the Western section of the USA. Best time for possible DX on this band is between 1000-1200 GMT.

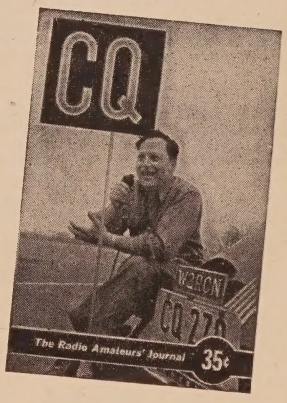
No 80 meter activity is expected.

OCEANIA (Austrailia and New Zealand)

The MUF is just bordering 28 mc for circuits from the East and Central sections of the USA. Some erratic openings are expected to occur between 2100-0100 GMT. Conditions favor the Pacific Coast QTH's and more frequent, more solid, openings are expected between 2000-0300 GMT, with some QSO's producing strong signal levels.

Some good band openings can be expected on 20. On a good number of days moderate signal levels should be observed between 1100-1700 GMT to the East Coast and Mid West, with a second opening between 0100-0500 GMT. From the Pacific Coast to Oceania these two openings occur between 1730-2000 GMT and 0300-0700 GMT.

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NEED ART-13; ARC-1; ARC-3; DY-17; TS-12; TS-13; MN-26 J or K; BC-342; BC-312; BC-611 Handie Talkie (or any part); I-100; BC-348; BC-788A, AM, B or C; I-152A, AM, B or C; TS-67; teletype, test or any other equipment. Will trade. Write: Bob Sanett (W6REX), 4668 Dockweiler, Los Angeles, Calif.

WANTED: 32V2 or 32V1 in good condition. Cash. W4SBJ, 409-C Crenshaw Street, Mobile, Alabama.

BARGAINS. Extra Special! Motorola P-69-13 Mobile Receivers $29.50; Globe King $315.00; HT9 $199.00; HRO7 $199.00; Temco 75GA $225.00; Collins 32RA $125.00; Collins 32MA $99.50; Collins 75A1 $295.00; new 150 watt phone $199.00; HRO-5T $175.00; Hallicrafters S-47 $119.00; RME45 $99.00; SX17 $89.50; Meissner Ex Shifter; NC46, S40A $69.50; VHF 152A $69.00; SX24 $69.00; Globe Trotter $57.50; New Meissner signal calibrators $24.95; MB611 $29.00; 90800 exciter $29.50; Gonset 10-11 converters $25.00; 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.

RECTIFIERS, G. E. Model 5A3V Selenium. 12V-4A, 6V-2A. Two on one bolt. $1.00 postpaid. G. Phillips, 514 E. Rudisill Blvd., Fort Wayne, Indiana.

10 and 20 Meter Beams $23.25 up. Aluminum tubing, etc. Willard Radcliff, Fostoria, Ohio.

NASSAU SUFFOLK Communications Lab. Communications receivers aligned, serviced. Equipment, meters repaired. William Kessler, 15 Helena Avenue, Bethpage, L. I., N. Y. Hicksville 3-2625M.

EQUIPMENT for five radio stations and accumulated extras; 110 V AC generators, etc.; tools; darkroom and printing equipment for QSL design. If you don't like my price — send yours! Over 100 items list - dime. Kernzradio, Route Three, Fulton, New York.

"JUNK BOX" overflow and stuff: tubes, xformers, surplus equipment, miniature sockets, etc. Write for list. C. Sparks, 325 Putnam Ave., Woodstock, Illinois.

WANTED: Model 12 and 14 teletype machines and parts. Particularly model 12 keyboards. AN-FGC-1 terminal equipment and tech. manual. TS-115B-UP and TS-117-GP test sets. Tech. manuals on all types of Army and Navy radar equipment, especially SA-3, SL and SCR-545. Mark Wayman, 511 Ceres Avenue, Fontana, Calif.

FOR SALE: BC-610E with BC-614E Speech Amp. Good condition with high efficiency B & W Kw swinging link coils for final 75, 40, 20, 15 and 10. In operation. Complete with extra new 250TH and Kw antenna changeover relay. $450.00. Will deliver within 100 miles. W5MBE, C. W. Cook, Route 2, Pollock, La.

QSLs? SWLs? Made-to-order cards! Samples 10c. Sackers, W8DED, Holland, Michigan.

ATTENTION
ALL RADIO AMATEURS
Don't fail to see Page 52
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During the Equinox period, 40 meter activity appears to improve on these circuits. Since both the Northern and Southern Hemispheres are undergoing seasonal transitions, average absorption and noise factors are at their lowest values. Signals should be best to the East Coast between 0500-1200 GMT, 0700-1300 GMT to the Mid West and 0800-1400 GMT to the Pacific Coast.

ASIA (India)

During the fall, winter and early spring months, signals from this area have a tendency to follow the less noiser northern path across Northern Europe and the North Pole rather than the Southern path. In the United States rotary antennas should be beamed between 35 degrees to 10 degrees for best results.

Twenty meters will provide the only possibilities for DX QSOs to this area, with conditions far from good but improving over August. Aurora! absorption is very heavy on these paths. Best openings should occur between 1100-1400 GMT to the East Coast with a second opening around 0200-0400 GMT. Openings to the Mid West between 1300-1600 GMT and 0200-0500 GMT and to the Pacific Coast between 1500-1800 GMT and 2300-0600 GMT.

No 10, 40 or 80 meter openings are expected for those paths.

Just a reminder that the 1951 "CQ" World Wide DX contest will take place October 27-29 and November 2-4. October's DX Predictions will be devoted largely to analyzing DX conditions on all bands for this contest period. Don't miss it.

All basic propagation information used in calculating the following prediction charts has been obtained from the National Bureau of Standards D-82 Publication.

DX & OVERSEAS

(from page 39)

Seriously, W7RT and his entire Committee have worked like the dickens to make this the best affair ever. Oh yes, I understand a whole carload of W9's will be there. Gee Whiz!

QTH COLUMN

AC3SQ	Via W9KOK
CN8EM	Bob, Navy 214, c/o FPO N.Y.C.
CT2BO	Gil Vincente, Ponta Delgada, Azores.
FB8XX	Via R.E.F.
FB8ZZ	Via R.E.F.
FP8AW	Via W2SN.
LZ amateurs	Box 830, Sofia, Bulgaria.
MD2JB	Via W1LIV.
OY5EL	Eigel Larsen, Skuvanes, Faeroes.
TA3GVU	Via W2SN.
VR4AB	Muda, Br. Solomans.
VS1YL	Jean (a YL op), 764 Mountbatten Road, Singapore, Malaya.
VS2DD	40 Commando Perok, Malaya.
YA2B	Via W2SN.
ZB2L	Den Anton, Lloyds Signal Station, Windmill Hill, Gibraltar.
ZS2MI	Via ZS6DO, O. W. Reid, Box 5163, Nairobi, Kenya.

Columbia
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- **Get rich quick on an investment of 3c!**
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- **We're buying all types of radio gear.**
- **And shelling out dough like mad!**
- **Here are SOME items we want to buy:**

APR-4	T-4/A/ART-13	TS-147
ARC-3	ARC-1	TS-148
APR-5	BC-348	TS-33

- **WRITE COLUMBIA FIRST! WE CAN & DO PAY MORE!**

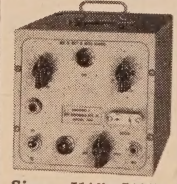
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P. S. Mention "job-lot" when writing.

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829	8.95	VR150	.79
6L6G	2.09	5BP4	3.95
VR75	.79	90291 (2AP1)	3.95

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Here's your mobile or fixed station at minimum cost, using a 2E26 final. Modulated, clamper tube style with a 6V6 Oscillator, 6V6. Power requirements: 300 to 500 volts at 100 mils. "The Perfect Modulator" is what it has been called. You'll be pleased as well.

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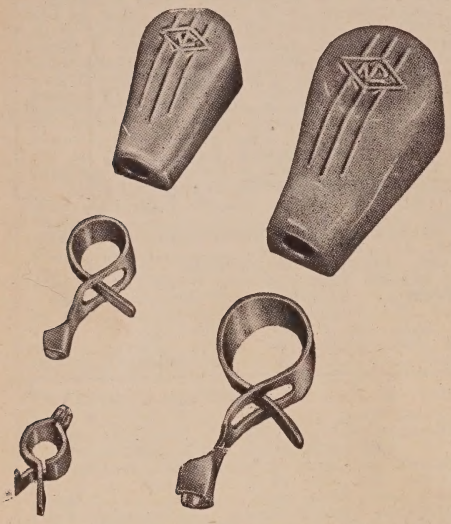


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High quality grid and plate connectors JAN-I-10 specifications) and the non- of both the insulated ceramic (meeting insulated spring clip types for use on tubes having contacts of 1/4", 3/8" and 9/16" diameters. All lugs are designed to provide strong mechanical connection. Write for drawings and prices.

National

NATIONAL COMPANY, Inc.
MALDEN, MASSACHUSETTS

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for CRITICAL DEFENSE NEEDS
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NC-125

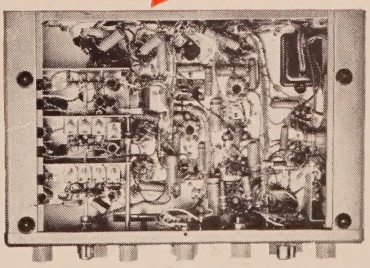
COVERAGE: 560 kcs. to 35 mc. in 4 bands. Voice or CW.

FEATURES: Edge-lighted direct-reading scale with amateur, police, foreign, ship frequencies clearly marked. Three microvolt sensitivity (for 10 db s.g./noise ratio on 10-meter band). Lively S-meter reads S9 to 50 mv. signal. AVC, ANL. Jack for phono or NFM adaptor. Volt. reg., stabilized osc. Audio essentially flat to 10,000 c.p.s.

CONTROLS: Main Tuning, Bandspread, Freq. (SOJ), Boost (SOJ), Send-Receive, Pitch, CWO-MVC-AVC-ANL, AF Gain, Tone, Trimmer, Bandswitch, RF Gain.

TUBE COMPLEMEMT: 6SG7 RF amp, 6SG7-Y osc.-mixer, 6SG7 1st IF, 6SG7 2nd IF, 6H6 2nd det-AVC-ANL, 6SL7GT phase shifter, 6SL7GT boost-reject aud. amp., 6SL7GT 1st aud.-CWO, 6V6GT aud. output, OD3/VR-150 volt. reg., 5Y3GT rect.

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