

A "PORTABLE SHOP"

The Radioman Goes to Live in an Apartment

THE housing shortage is no respecter of persons. My radio hobby and I had grown up together with space unlimited. There was a large room to tinker in, a big work table, home made instruments and apparatus, built with no regard for compactness. Then came a better job in a crowded city . . . and a four-room apartment. Also came a baby into our apartment, who in spite of her pint size occupied at least one-half the space. There just wasn't room for so much as a variable condenser to open out. My "junk" was packed and stored in an old unheated shed. But friends kept saying, "Wish you'd take a look at my radio." Besides, I was getting mighty lonely for the feel of a soldering iron. I began making trips to the shed. The photo shows the result.

The whole thing tucks away into a closet when not in use but comes right out into the living room in the evening and perches on a kitchen chair in front of the Chesterfield. There's room in the bottom for tools. The shelves at the right hold test prods, plug-in coils and a pocket volt-ohm-milliammeter. This meter is my one piece of "boughten" apparatus. In the lower left corner is a 110-volt outlet (Fig. 1) controlled by the switch just above it. There's a pilot light shunted across the outlet (so you won't forget and leave the soldering iron on). Above the switch is another 110 outlet and there's another one behind the panel. The test instruments plug into it. This completes the first section. The apparatus is built in sections on masonite backed with metal shields. Different sections can be removed separately. Above the outlets is a four-inch dynamic speaker. The audio channel is located in the lower central section, with the off-on switch at the left. Below the electron-eye is a neon bulb. To the left of the attenuator knob (below) is a single-pole double-throw switch. This is shown in the diagram and explained later. The three pin jacks at the left are: Common, B-plus, and 6.3 volts A.C. The two at the right are Input and Ground. The upper section was built directly on the back of the panel with no chassis but is carefully shielded. The large dial above is for tuning. The pin jacks at the right are for R.F. input (or aerial) and output. To the left is the regeneration control and two Diode Voltmeter pin jacks. The upper is an A.C. input and the lower is plus D.C. output. The plug-in coil can be seen protruding slightly from behind the panel at the right.

THE AUDIO CHANNEL

The circuit diagram is given at Fig. 2. The unit consists of the loud-speaker, 6V6 output tube, 6SQ7 voltage amplifier, 6E5 electron-ray voltage indicator, 2-meg. attenuator and a switching arrangement. The switching arrangement allows one to listen to any audio signal or its effects may be noted on the electron-ray indicator. The electron-ray indicator is especially useful in making voltage gain tests and in balancing phase-inverter circuits. It is sensitive

to frequencies above and below the limits of the loud-speaker. The 6V6 is much superior to the more common 6F6 because of its greater sensitivity, which is very valuable when listening to weak signals. Voltage variations of low frequency—hum, etc., cause the edge of the indicator-shadow to waver, flicker or blur. Frequencies above the audible range to 50,000 cycles or more close the eye smoothly but no signal is heard from the loud-speaker. It should be noted that when the speaker is in the circuit the diode rectifier is inoperative. If it were left in the circuit it would cause distortion. The 2-megohm attenuator causes little loading in any circuit and allows a range of from 1 volt to 500 to be measured.

With good building and careful calibration this unit will give accurate A.C. measurements which compare favorably with those of a good electronic voltmeter. Strong I.F. signals are rectified by this instrument and close the eye smoothly. Even R.F. signals from a strong local station have been picked up by a test probe and have found their way to

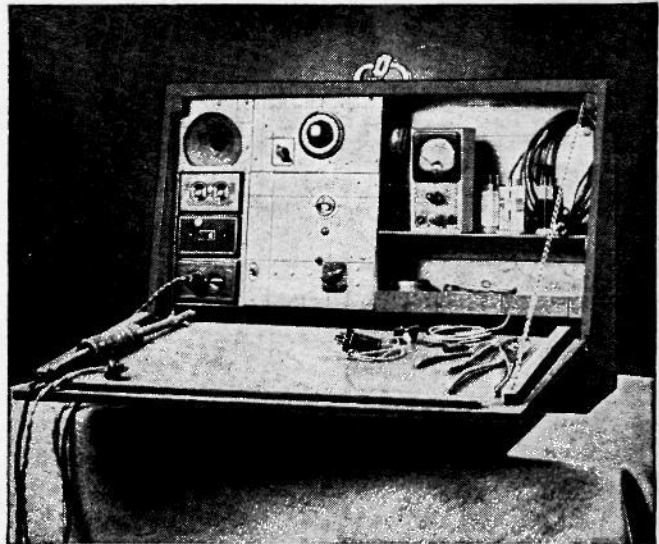
the grid of the 6V6 and appeared as an untuned and unwanted program.

The Neon Tester—shown in the Audio Circuit diagram—needs no explanation. As a condenser tester it is the most used apparatus on the panel.

R.F., I.F. AND SIGNAL GENERATOR

This, as can be seen from Fig. 3, is a simple one-tube regenerative circuit of the Hartley oscillator type. This is the simplest and most satisfactory circuit for this purpose. It has good stability with respect to load, because the only coupling between the oscillating circuit and the load is the elec-

(Continued on page 357)



Right—Photo of the "portable radio shop." Below—the four circuits, an oscillator, signal tracer, VTVM and amplifier.

