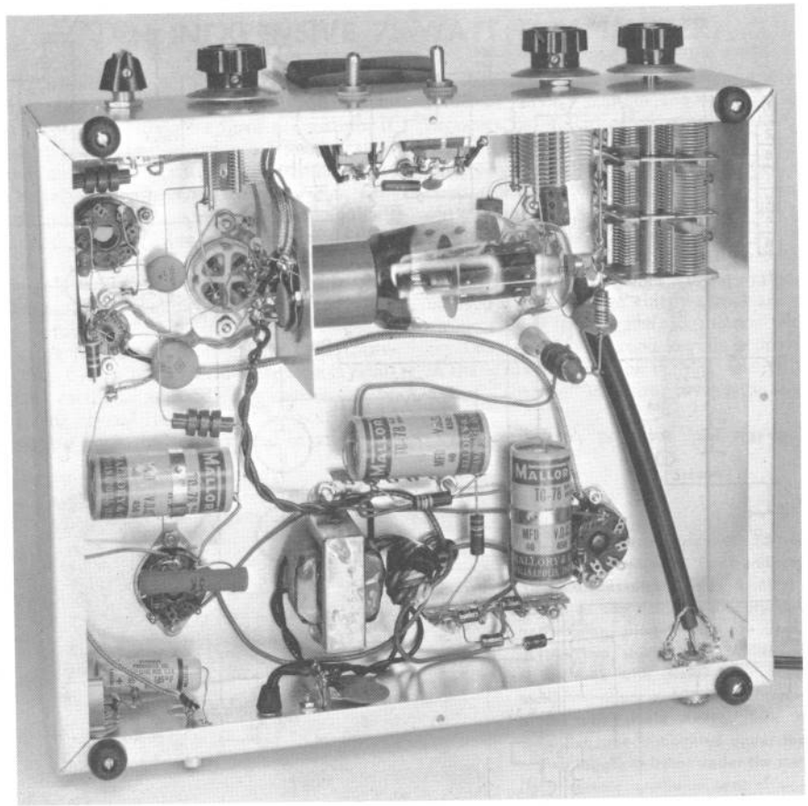

Fig. 6-42—A view underneath the chassis of the 75-watt transmitter with the perforated-metal bottom plate removed. The four silicon rectifiers are mounted on a multiple tie point strip (lower right); the center electrolytic filter capacitor has its metal strap removed, and the capacitor is supported by its two leads and another multiple tie point strip. The small electrolytic capacitor at the lower left is across the keying circuit. Ventilation of the chassis is obtained through the holes above the 1625 (see Fig. 6-40) and by raising the chassis above the table by the height of the rubber feet. The rubber feet and several sheetmetal screws normally hold the perforated-metal bottom plate in place. C_3 must have the three stators connected together to give the full 1100-pf. capacitance (upper right). A pair of the 8-32 mounting screws for T_1 also anchor T_2 (bottom center).

All other construction is straightforward assembly on the chassis, with 4-40 hardware for the 12BY7 socket and 6-32 hardware for everything else but the transformers, which are big enough to require 8-32 hardware. Multiple tie-point strips are used at several points to furnish mounting terminals for the silicon rectifiers and some filter and bypass capacitors, and chassis connections are made to soldering lugs held in place by the tube-socket hardware. The metal mounting strap around one of the 40-μf. filter capacitors is removed, and the capacitor is supported by its two leads and tie-points. This is the 40-μf. capacitor in Fig. 6-40 that has neither ter-

and 2000-ohm resistors in the 1625 cathode circuit. Screen and cathode bypass capacitors are mounted and grounded close to their respective tube sockets.

The 6.3-volt windings of T_1 and T_2 must be connected "aiding" to furnish the 12.6 volts for the tube heaters. Connect the primary leads in parallel first, and then try the 6.3-volt windings connected in series, with one of the tubes connected across the "12.6-volt" leads. If the secondaries are aiding, the tube heater will light when the primaries are connected to the 115-volt line. If not, reverse the connections of *one* of the secondaries.

The construction of the coils is straightfor-

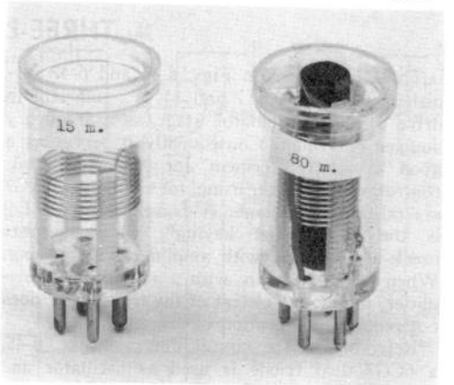

Fig. 6-43—The normal coil is simply a section of coil stock mounted inside a polystyrene coil form (left). The 80-meter amplifier inductor uses a length of ferrite rod within the coil to increase the inductance (right). Rod is held in place with transparent tape.

the end of the coil. If this is not done, the hot pin may move around in the softened polystyrene. It makes the soldering easier if the pins of the coil forms are cleaned out first with a suitable drill. The ferrite rod can be brought to size by first filing a notch around it with a three-cornered file, and then splitting it over the sharp edge of a cold chisel held upright in a vise. A sharp hammer blow on the ferrite while the rod is pressed against the cold chisel will usually result in a fairly clean break. The rod can be brought to exact size with a grindstone.

Tune-Up Procedure

For the initial testing, a 60-watt lamp bulb will make a suitable dummy load. Connect it at J_2 through a short length of cable or wires and a plug. Plug in an 80-meter crystal at Pins 2 and 4 (or 6 and 8) of J_1, and plug in a telegraph key at J_3. Plug in the 80-meter L_1 and L_2, and set C_1 at minimum capacitance. Plug in the tubes and set S_1 at OP. When the a.c. is turned on (by a wall switch or by plugging in P_1 to a "live" socket) the voltage-regulator tubes should glow immediately and the tube heaters should light. After a minute, turn S_1 to TUNE. With S_3 set to read grid current, turn C_1 through its range. If the crystal is oscillating, grid current will be indicated, and the amount can be controlled by the setting of C_1. Set for about 2½ ma., on the low-capacitance side of the setting that gives maximum reading. Flip S_3 to read cathode current and, with C_3 set at maximum capacitance, tune C_2 while watching the cathode current. A sudden dip in the current indicates resonance; leave C_2 at this position momentarily. Turn S_1 to OP and load the amplifier to a cathode current of about 120 ma. (0.6 on the meter) by reducing capacitance in C_3 and retuning to resonance (dip) with C_2. The plate voltage should be about 680, so with a screen current of about 10 ma. the plate input to the 1625 under these conditions is $0.11 \times 680 = 74.8$ watts. With the amplifier loaded, recheck the grid current; it should be about 2.5 ma. (0.25 on the meter). Observe the

rent should be reduced slightly by detuning C_1.

Operation on the other bands is similar. With an 80-meter crystal, 40-meter output is obtained with 40-meter coils at L_1 and L_2. With a 40-meter crystal, output can be obtained on 40, 20, 15 or 10 meters by the proper selection of coils and tuning. It will be found that the same coil at L_1 can tune to either 20 meters (near maximum capacitance) or 15 meters (near minimum capacitance). Be careful when first tuning to be certain the right band is tuned. When quadrupling in the oscillator for 10-meter operation, it will not be possible to obtain the 2½ ma. grid current required for high-efficiency operation. However, with ¾ ma. or so the input to the 1625 can be reduced to 100 ma. cathode current, for an output of about 20 watts. The tuning on 15 and 10 meters becomes a little critical, and an output indicator (r.f. ammeter or voltmeter) is a useful device for getting the most output for a given input.

The keying can be made "softer" by adding more capacitance across the 4-μf. capacitor in the key circuit, if it becomes desirable to do so.

Coil Table for the 75-Watt Transmitter

The L_1 coils are mounted inside 4-pin polystyrene coil form (Allied Radio 47 A6695); L_2 coils are mounted inside 5-pin form (Allied Radio 47A6696). Coil stocks are (A) 1-inch diameter 32 t.p.i. No. 24, (B) 1-inch diameter 16 t.p.i. No. 20, and (C) ¾-inch diameter 16 t.p.i. No. 20. (B & W 3016, 3015 and 3011.)

Band	L_1	L_2
80 m.	42½ turns A	16½ turns C*
40 m.	20½ turns B	24½ turns B
20 m.	6½ turns B	12½ turns B
15 m.	Same as 20 m.	6½ turns B
10 m.	3½ turns B	5½ turns B

* With 2-inch length of ½-inch diameter ferrite