

The BC-375E Strips for Action

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An extraordinary bargain, the much maligned BC-375E makes an excellent all-band transmitter if properly handled. This is the first of several simple conversions using as much of the original rig as practicable.

THE RADIO AMATEUR purchasing the BC-375E or the BC-191F quickly realizes that he has a transmitter strictly not of "modern design." Those adventurous souls who have put them on the air "as is" using either a dynamotor or power pack, should have received the familiar pink ticket in short order. To balance the inherent weaknesses of design, according to present day standards, is the low initial purchase price, the solid construction and the clean-cut physical appearance.

Naturally, the cost can be partially recovered by stripping the entire unit for component parts. A somewhat better idea, I have found, is to rewire the circuits, using as many of the original components as possible, while adding a little more surplus material. Specifically, I have removed most of the original circuitry, built and wired a low-voltage power supply into and behind the tube compartment, while re-designing each of the tuning drawers to cover one amateur band. The drawers are individual transmitters, consisting of the surplus tube combinations, 6L6 oscillator/amplifier and 826 final amplifier. With minor changes the antenna loading and tuning unit remains completely useful.

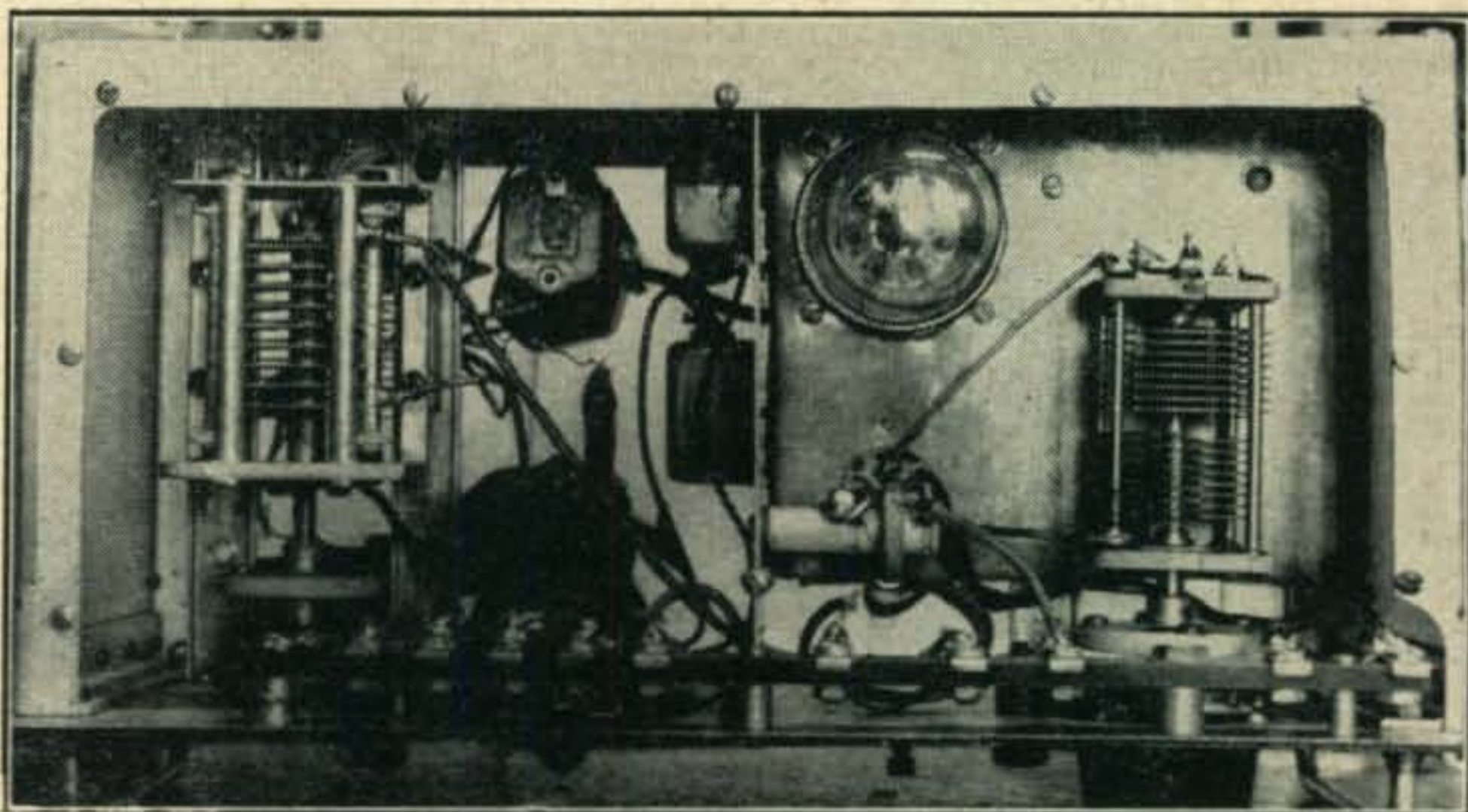
The Partial Dismantling

The second realization about these transmitters came when we found it necessary to use brute force with cold chisel and hacksaw to remove some

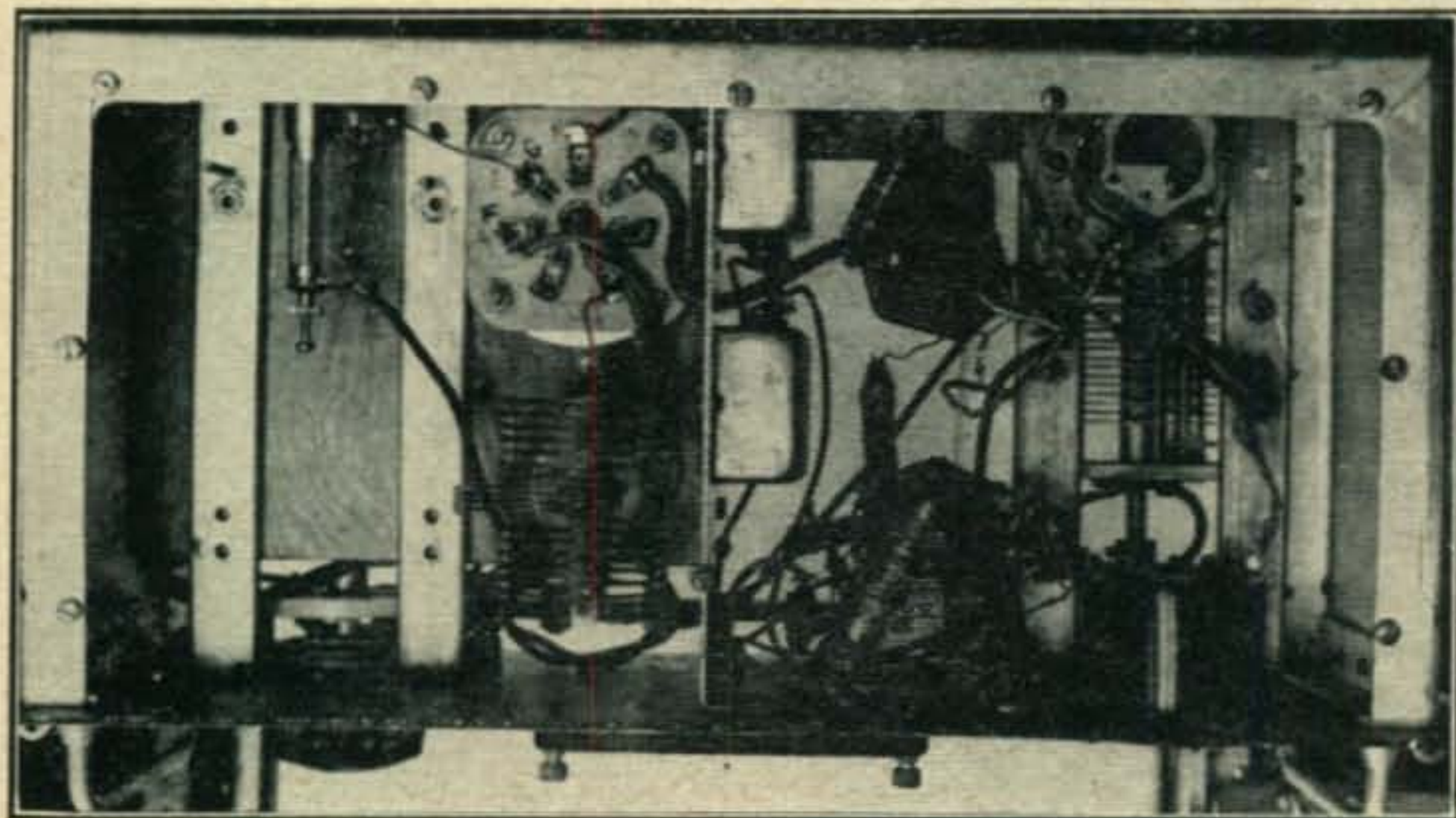
of the well-anchored parts. However, this is not as bad as it sounds and with a little care exercised here and there, most of the parts can be used again.

First step is take off the back panel, slip out the tuning drawer, and remove all the wiring in the main body of the transmitter associated with the original circuit. Leave the wiring in the antenna tuning and loading compartment, although the antenna relay must be removed and the circuit slightly altered, as shown in the lower right corner of Fig. 1. For the sake of appearances, it might be best not to remove any of the controls from the front panel. Switches and meters will be used.

Dismantle the drawers, one for each band, by taking off the top and bottom plates and stripping out all the original wiring. Leave in each drawer the variable condenser marked "B." Remove the switch labelled "Ant. Coupling Switch D." The hole that this will leave in the panel serves as a spot to reach the neutralizing condenser with a long shank screwdriver.



Above: Top view of the 20-meter drawer. The base mounting brackets of the dual 100- μ f condenser determine the level of the copper sheet holding the 826 and plug-in coil sockets. Plug-in coils are used.



Left: Bottom view of the 20-meter drawer. The Millen neutralizing condenser can be seen in the lower right corner. It is directly opposite the hole in the panel left by removing switch "D". The 6L6 plate coil is taken from a GF-12 transmitter. The bathtub condensers are part of the key click filter.

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Reconstruction

The low voltage plate supply for the 6L6 may be conveniently built into the vacated tube compartment of the transmitter frame. Any of the usual power supplies will do if they provide 300 volts at about 100-150 ma. The schematic in Fig. 1 uses some old junk box parts and is shown merely to designate the socket connections to be made to the drawers and the power supply switching arrangements. The a-c line is well-filtered with inductances and condensers obtained from the surplus market. The high voltage supply for the final amplifier should be external. It is brought into the transmitter through a heavy-duty coax cable and the four-prong socket at the back.

A 45-volt battery is used for fixed bias on the 826 final amplifier. This may be mounted in the transmitter. It is connected between pins 2 and 3 with the plus side going to pin 2. A connection from pin 1 is brought out to a coax connector on the front panel. This provides a means of coupling the output of a v.f.o. directly into the grid of the 6L6.

In the antenna compartment, the inductance switch "P" is removed and a tuning condenser C11 is mounted in its place. This condenser may be switched into the "counterpoise" side of the antenna tuner by switch SW3. The original antenna current meter will probably read too low, and to obtain more sensitivity it may be substituted with a meter from a GF 12 surplus unit. It will look approximately the same and with a little filing will fit the hole. The antenna inductance "M" is connected as shown in Fig. 1 and is used for harmonic suppression. Tests show that it will easily improve harmonic attenuation appreciably.

Except for coil size, all drawers were constructed alike. The surplus twin-variable condenser, C8, should have mounting brackets. These will determine the level of the plywood backed copper sheet which is used for the mounting of the 826 tube

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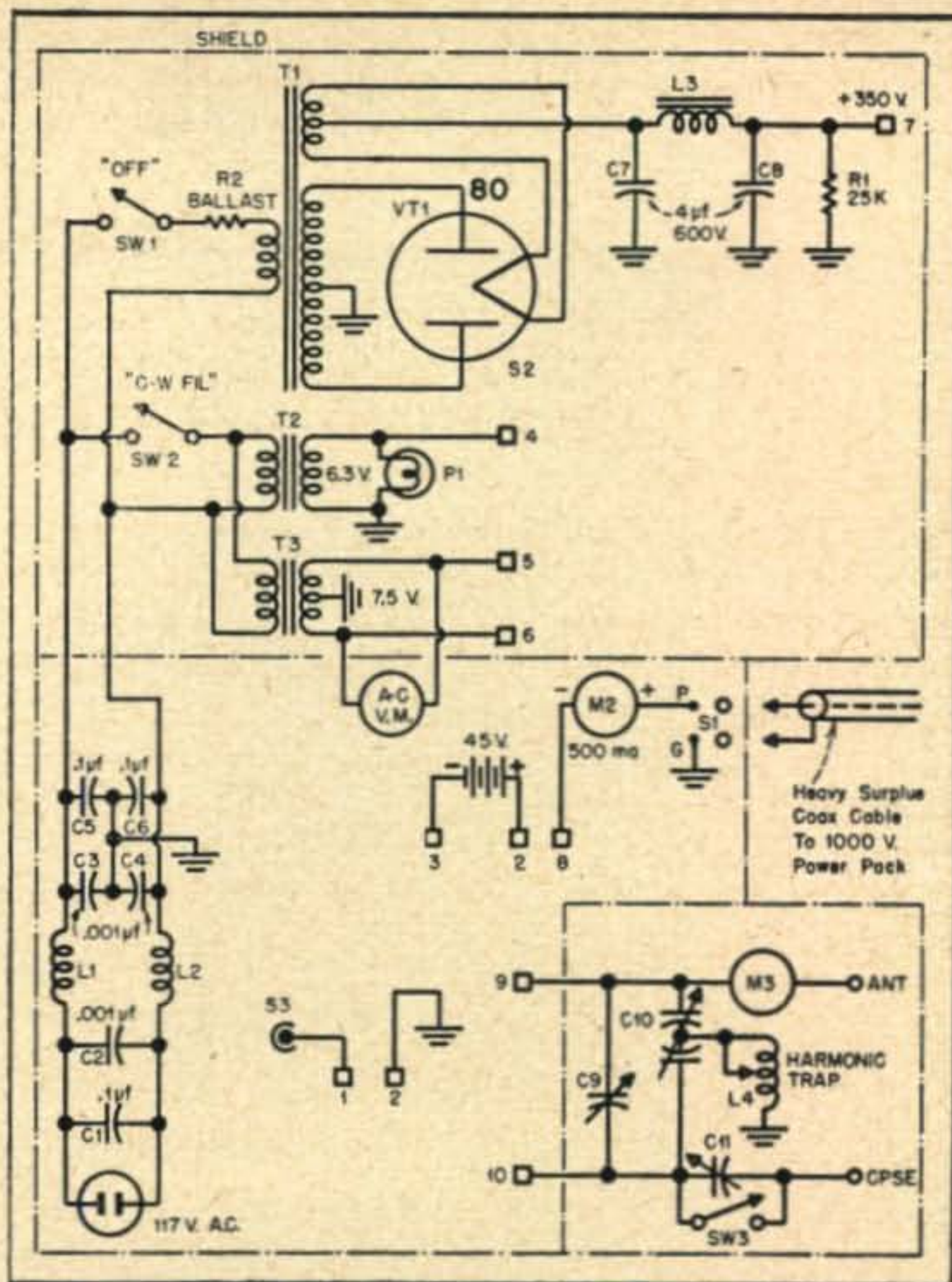
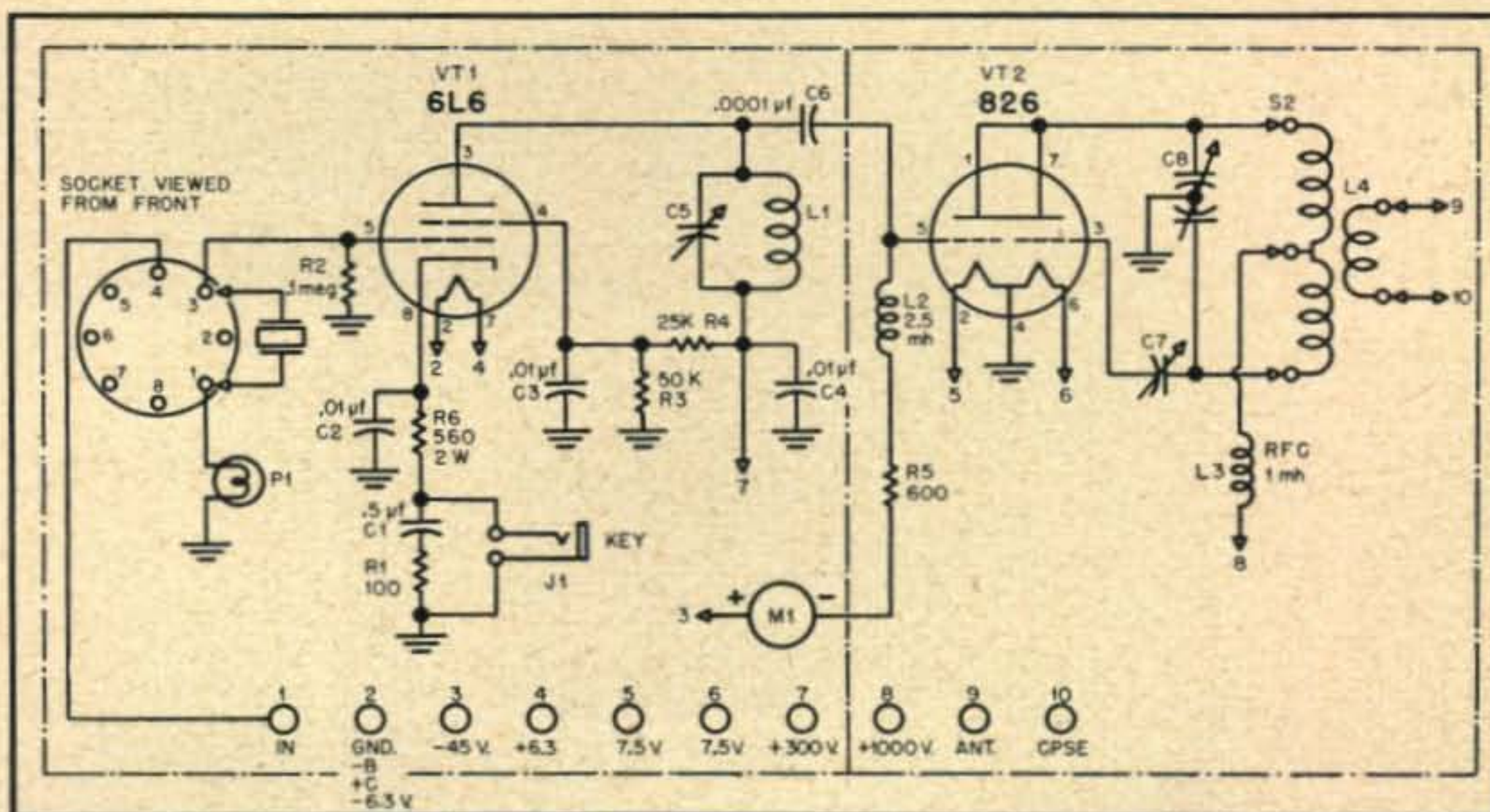


Fig. 1. The 375E after conversion. The 6L6 low voltage supply is mounted in the vacated tube compartment. The rewired antenna tuning and loading section is shown in the lower right-hand corner.

- C1, C5, C6—0.1 μ f, 400 v.
- C2, C3, C4—.001 μ f, mica.
- C7, C8—4.0 μ f, 600 v.
- C9—in original circuit.
- C10—dual 15 μ f, variable.
- C11—in original circuit.
- R1—25K, 10 w.
- L1, L2—surplus inductances.
- L3—surplus filter choke.
- L4—rotary inductance in the original circuit.
- T1—surplus power transformer.
- T2—fil. trans., 6.3 v. T3—fil. trans., 7.5 v.

Fig. 2. Wiring schematic of the drawers for use with the converted 375E. Each drawer contains a separate transmitter.

- C1—0.5 μ f, 600 v.
- C2, C3, C4—.01 μ f, mica.
- C5—in original circuit.
- C6—.0001 μ f, mica.
- C7—Millen 15001.
- C8—dual 100 μ f, variable.
- R1—100 ohms, 1 w.
- R2—100K, 1/2 w.
- R3—50K, 10 w.
- R4—25K, 10 w.
- R5—600 ohms, 10 w.
- L2—2.5 mh.
- L3—1.0 mh, in original circuit.
- P1—60 ma pilot bulb.
- L1—80 meters—26 turns on surplus form.
- 40 meters—17 turns on surplus form.
- 20 meters—11 turns on surplus form.



- L4—80 meters—JVL 80.
- 40 meters—JVL 40.
- 20 meters—JVL 20.