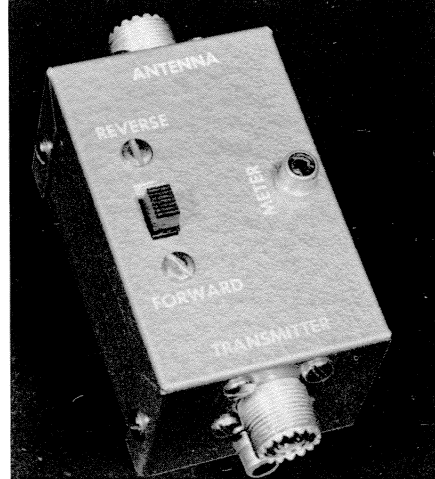


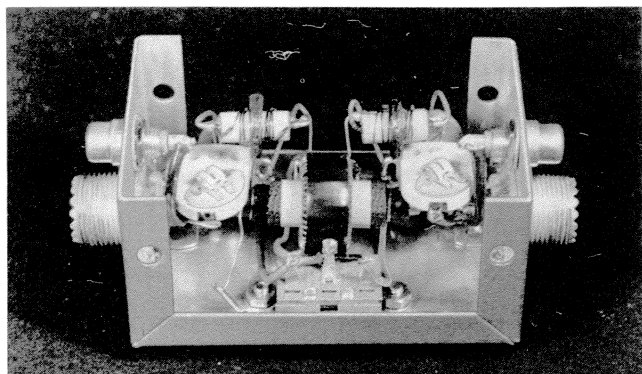
TABLE II — METER SELECTION CHART

Minimum Watt Range Desired	Maximum Watt Range Desired	Meter Range	Potentiometer $R_3$ Ohms
0-3	1000	0-75 $\mu$ a	*50,000 + $R_1$ Fixed
0-6	1000	0-150 $\mu$ a	25,000 + $R_1$ Fixed
0-12	1000	0-300 $\mu$ a	15,000
0-25	1000	0-500 $\mu$ a	7,500
0-50	1000	0-1 MA	4,000

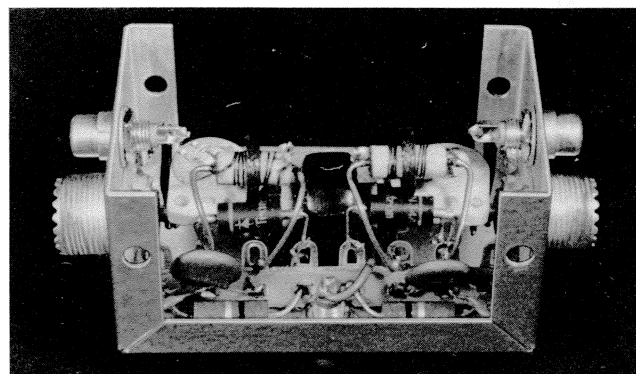
\*Zero to three watts range is possible but it would be desirable to use the proper fixed resistance to limit this range for zero to seven and one half watts to go with the full scale marking on a 0 — 75 microammeter. When using this low range  $R_3$  is set at zero resistance and  $R_1$  is chosen to calibrate desired range.



TOP VIEW of the RF pickup unit. Compact size and complete shielding contribute to maintaining 50-ohm impedance through unit, minimizing disturbance in line. Box size is  $3\frac{1}{4} \times 2\frac{1}{8} \times 1\frac{5}{8}$  inches.



INTERIOR VIEW of the switch side of the pickup unit. Trimmer capacitors  $C_1$  and  $C_2$  are adjusted through  $\frac{1}{4}$ -inch diameter holes in the other half of the box, and then plugged with snap-in buttons.



DETAIL VIEW of the terminal strip area of the pickup unit. Parts can be identified from the layout diagram, Fig. 2, which is drawn from the same position as this photo.

enameled wire over the tape. Ground one end of this winding and it forms a good electrostatic shield.

**CONSTRUCTION** of the RF wattmeter is not difficult, but to assure success, study the parts layout diagram, Fig. 2, and the interior illustrations carefully before starting assembly. Complete the drilling on the part, so put everything in its place please! Complete the drilling on the Minibox and mount the parts in this order: Switch  $S_1$ , coaxial cable chassis connectors ( $J_3$  and  $J_4$ ) and the phono jacks ( $J_1$  and  $J_2$ ).

Solder a short piece of No. 14 bare copper wire to each center conductor of  $J_3$  and  $J_4$ . Connect this wire to the center contact on the adjacent phono jack. The parts mounting strip goes in next, with the outer lugs on each end soldered to an SO-239 connector mounting screw. This grounds the outer two terminals which will later be used as common grounds. This mounting strip may be  $\frac{1}{16}$ " too long, so file  $\frac{1}{32}$ " off each end to make it fit inside the Minibox.

Wire the switch and remaining phono jack ( $J_5$ ) to the proper tie points (these connections are hard to reach later so don't forget). Now mount the two 20 ohm resistors ( $R_1$  and  $R_2$ ) and two 220 mmf capacitors ( $C_3$  and  $C_4$ ), followed by the two .01 mfd. bypass capacitors ( $C_5$  and  $C_6$ ).

The IN34A diodes now go in, keeping their leads short. Hold each lead with longnose pliers, to act as a heat sink, while soldering. Put in the two RF chokes (RFC $_1$  and RFC $_2$ ) and the main work is done.

The current transformer should be built as a subassembly which will literally fall in place with five connections to be soldered. Here's how it is done: Cut to the exact length a piece of No. 10 or 12 copper wire that will connect the two center conductors in the SO-239 coaxial cable connectors. This wire is used to mount the entire transformer assembly, and forms the primary of the current transformer. This model has a piece of copper tubing  $\frac{3}{16}$ " I.D. x  $1\frac{1}{2}$ " long slipped over the No. 10 wire and soldered.

Then put on a layer of spaghetti tubing and wind the electrostatic shield ( $L_2$ ). Put on more than 35 turns so it can later be pruned to length, and dope the wire with radio cement. When dry, adjust the turns to approximately 35 and clean one end of the wire. Cut off the other wire close to the coil. The cleaned wire will later be tied to ground.

A commercially available form for the toroid coil ( $L_2$ ) can be used; or, a suitable toroid form can be made from the iron tuning slug inside the amplifier plate coil in the Command

Set transmitters, as described by WOPME in *QST*.<sup>1</sup>

Wind the toroid with a full winding, dope with radio cement, and allow to dry. Leave 1-inch leads on this coil for connections and clean the leads at this time. Wind enough tape over center of the shield winding so that the toroid fits snugly at the center of the shield. Cement the toroid in place and, when dry, solder this assembly in place.

Construct the indicator unit, using the desired range of meter and power level potentiometer shown in TABLE II — METER SELECTION CHART. A sloping front meter case (Bud CMA-2066, or equivalent) was used on the model pictured.

**ADJUSTMENT** of the completed RF wattmeter is simple, once the wiring has been given a final check. The test setup, pictured in the view on page 1, shows the RF power source, line pickup unit, indicator unit, and 50-ohm dummy antenna load. RG-8/U or other 50-ohm coaxial cable should be used for interconnections between units. Sufficient RF power output to give a full-scale forward reading for the meter range selected, should be available.

Set switch  $S_1$  toward the load, set  $R_3$  at maximum resistance, turn on the transmitter and tune it for opti-

(continued on page 6)