The 10-10 Antenna

Good 10-Meter DX with a 10-Dollar Vertical

BY VICTOR DAMORA,* K2HKM

• Here is a simple 10-meter vertical coax antenna that you can attach to your TV mast. It has given a good account of itself at the author's station.

A SHORTAGE of space for antennas was responsible for the birth of the "10-10" (10 meters — 10 dollars) antenna shown in the sketches on the next page. It will be recognized as a vertical of the coaxial type. It is of light weight and rugged and your TV mast will serve as a support. The total cost should be less than $10.00.

The completed assembly is shown in Fig. 1. The TV mast extension may be a piece of pipe or tubing 2 or 3 feet long and of sufficiently small diameter to drop inside the top of the TV mast, or it may be fastened to the top of the TV mast with standard TV U-bolt clamps.

Figs. 2 and 3 show the details of construction. The top section is an 8-ft. length of ⅜-inch aluminum rod. A ⅛-inch hole was drilled an inch or so deep in the top end of the rod, and a lateral hole was drilled a half inch or so from the end, and tapped for a set-screw. This was done so that various short pieces of ⅛-inch rod might be inserted for adjustment of length. The other end of the ⅜-inch rod was drilled and tapped for an 8-32 machine screw for fastening the inner conductor of a 72-ohm coax feedline.

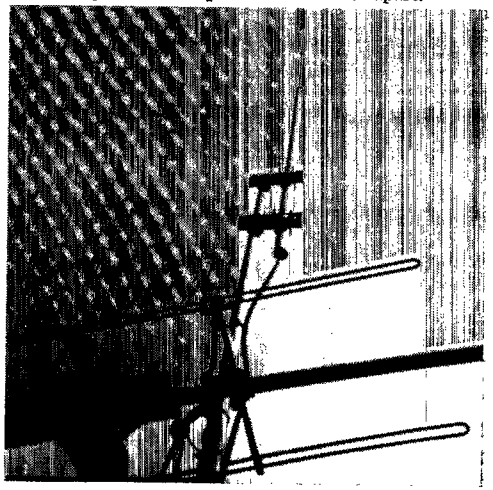
The lower section or skirt is an 8-ft. section of aluminum tubing, 1½ inches o.d., with 0.058-inch wall. Two bakelite disks were used for the insulator at the center. These were cut from ¾-inch sheet stock. The top piece, or cap, is 1¾ inches in diameter. The lower piece was cut to fit inside the skirt as snugly as possible. Circles were scribed on the bakelite, and ⅜-inch holes were drilled at the centers. Then the disks were cut out with a coping saw and trimmed smooth with a file. If more convenient, the cap need not be ¾ inch thick; ¼ inch should be adequate. The edge of the piece that fits inside the skirt was drilled and tapped for a machine screw which fastens the disk to the skirt and also serves as the terminal for the outer conductor of the coax line. Notches were filed in both disks to provide passage for this lead. After the disks were slid over the lower end of the ⅜-inch rod, they were clamped together with a pair of brass collars fitted with set screws.

The coax line should be fitted with four or five spacers that will easily fit into the skirt. These will hold the line reasonably well spaced inside the skirt. The spacers can be cut from plastic bottle tops, etc., and held in place with friction tape.

The bottom end of the antenna is insulated from the TV mast extension by a pair of 2 × 7 × ¾-inch bakelite blocks, as shown in the sketch. The bottom of the antenna and the top of the mast extension are fastened to opposite ends of the blocks by means of U bolts.

The performance of this antenna has far surpassed expectations. With only 65 watts input, we're often reported the loudest signal on the band. It's possible that the ground-plane effect of the TV antennas below help to keep the vertical pattern at a low angle. Try it, and you'll be surprised.

The 10–10 antenna mounted on a TV mast. The mounting blocks are spaced about 2 feet apart.



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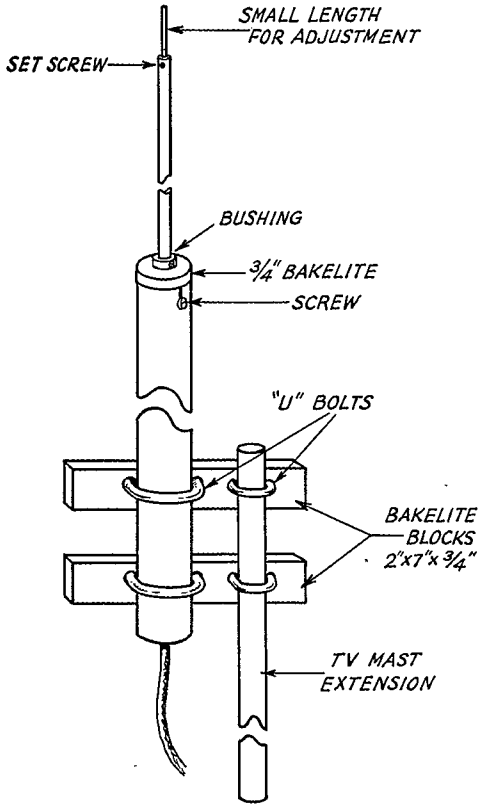

Fig. 1 — Sketch showing the completed antenna and mounting assembly.

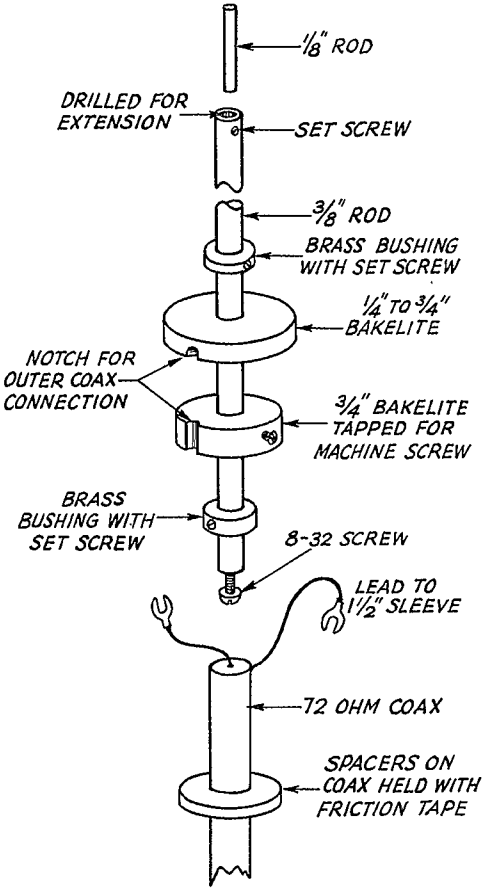

Fig. 2 — Exploded view showing the 3/8-inch rod and method of assembling the pieces.

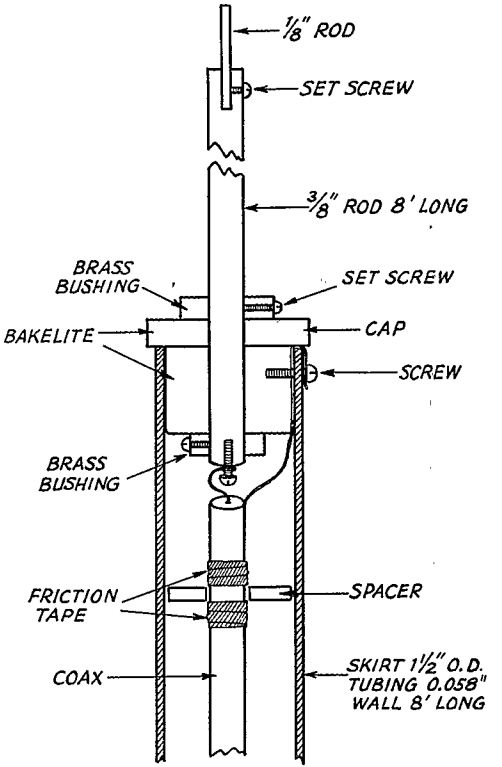

Fig. 3 — Cutaway view showing the center insulator in place in the skirt and the method of connecting the coax line.