

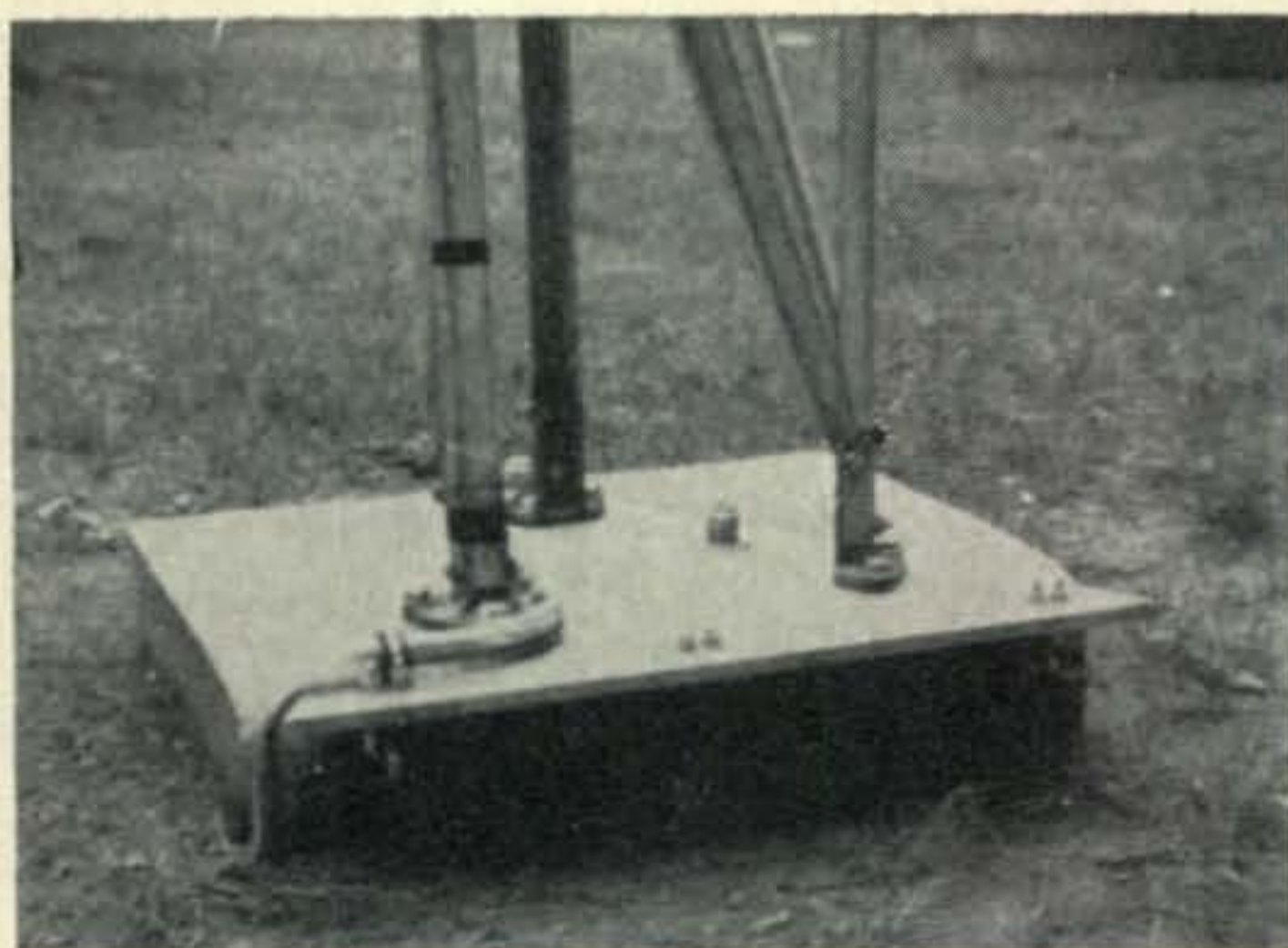
Fig. 4—Construction and mounting detail of the hinge and base plate. The hold-down bolts embedded in the concrete are shown in fig. 5.

nuts to the bolt. This prevents rotary as well as vertical motion once set in the concrete, so that  $\frac{5}{8}$  inch nuts can be installed after the tower is raised. The holes for these bolts in the hinge plate are made somewhat oversize to avoid binding. A  $\frac{1}{2}$  inch diameter galvanized rod is used as a hinge pin. The ends are clamped with U-shaped  $\frac{1}{2}$  inch cable clamps to secure the pin.

#### Installation Details

A spot is very carefully chosen so that the tower, when assembled on the ground and attached to the hinge, will not overlap on a neighbor's lot. Also, the axis of the hinge should be exactly perpendicular with an imaginary line between the tower base and a large, nearby tree, if possible. This allows a block and tackle, attached to the tree, to do most of the work.

A hole is dug about  $4\frac{1}{2}$  feet down. (This was



View of the completed base and tower. Note the radial connection in the left corner.

done not only for strength, but because of the frost line in New England. In some parts of the country 2 feet would suffice.) The width of the hole should exceed that of the hinge by several inches.

A good ground system is important. Three radial holes are made with a  $\frac{1}{2}$  inch steel rod, 5 feet long, starting about 2 feet down the sides of the hole. The rod is removed, and 3 lengths of  $\frac{1}{4}$  inch copper tubing are inserted in the holes, meeting in the center. Using a torch, they are soldered together with copper strap, which is then brought up to the surface. The free end is fastened by means of a bolt to the base of the hinge.

Cover the bottom of the hole with gravel, for drainage. Before pouring concrete, wet down the sides of the hole. Rocks can be mixed with the concrete while pouring. When the hole is nearly full, insert the hinge frame, using a level to keep it straight, and making sure the direction of the hinge axis is correct. A wood frame is used to form the concrete above ground, and is later removed. With the concrete all poured, insert the hinge pin and plate. This will show where to insert the hold-down bolts into the con-

[Continued on page 100]

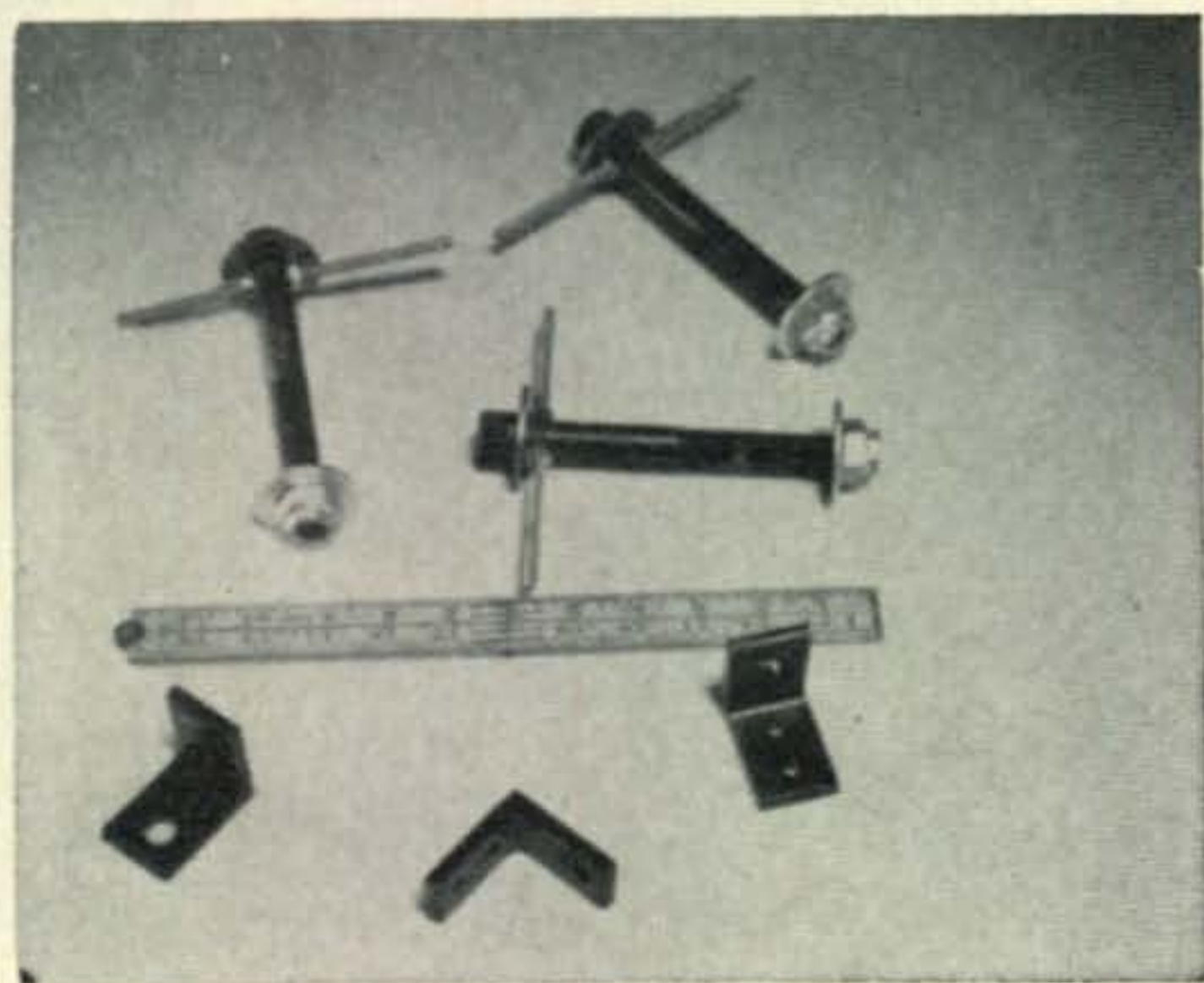
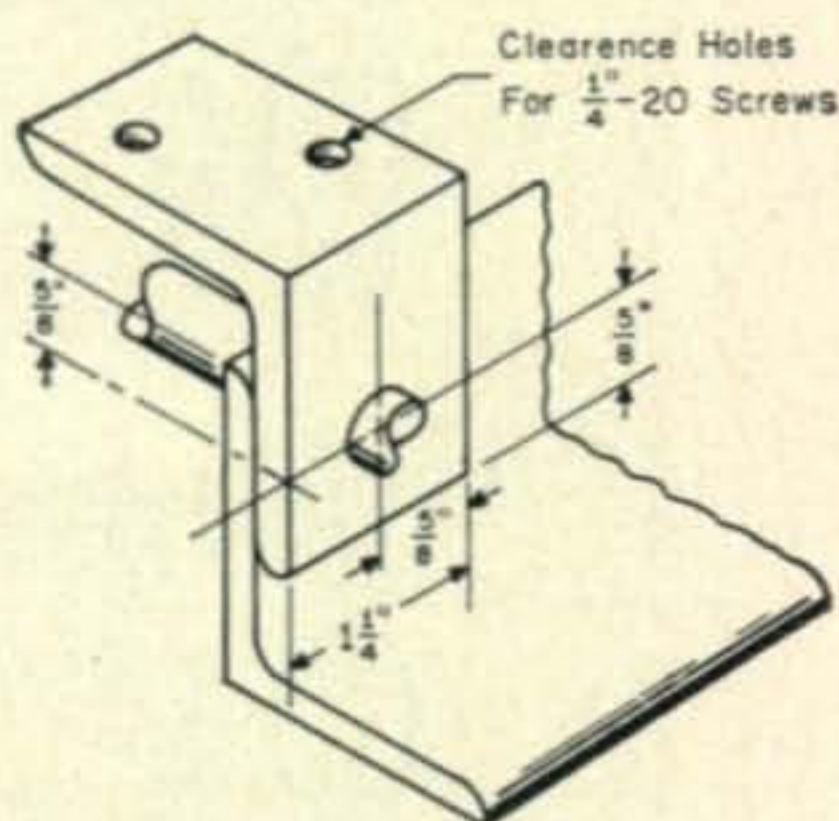


Fig. 5—The  $\frac{5}{8}$ "  $\times$  6" hold down bolts are prepared as described in the text. The  $\frac{1}{4}$ " threaded rod running through the bolt, just under the head, prevents rotary movement of the bolt after the concrete sets. The drawing on the right shows the hinge parts mounted on the base slots. They are made from angle iron.



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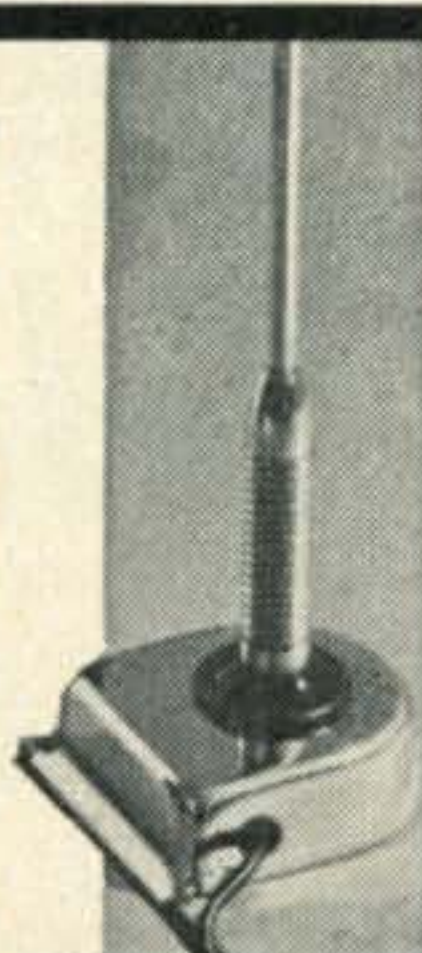
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MARS net for a couple of days. The wire was about ten feet off the rain soaked ground. Just recently I operated from the Naval Hospital in Jacksonville, Fla. and was able to meet state traffic nets.

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### Hinged Tower Base [from page 69]

crete. With the bolts in place and everything together, trim the concrete surface until the plate is perfectly horizontal.

#### Tower Raising

The tower base is mounted to the hinge, as shown in the photos, and the entire tower is assembled on the ground. (Because of a yard full of trees, the beam was not attached until the tower was raised, but this can be done if room is available.) Rotator cable and transmission line is installed, and guy wires are attached. Guy anchors are placed in the ground, at three points about 120 degrees apart.

If a block and tackle is to be used, the tie point should be directly in line with the tower, to avoid undue strain on the hinge. Four or five willing assistants should be on hand. Two men on the block and tackle, and two or three walking up the tower from underneath is ideal. The type of block and tackle that has a locking brake is much preferred.

When the tower is at a 45 degree angle, two men from underneath should be transferred to the side guy wires, to keep the tower from swinging to the sides. Extremely light pressure should be used on the guys, as the hinge and the block and tackle will keep the tower very nicely in line. When the tower is nearly upright, the rear guy wire is loosely attached to its anchor to control the tower and keep it from swinging too far. All guys are then permanently attached, and the hinge plate is securely bolted down.

If a place to tie a block and tackle is not available, a couple of additional strong backs under the tower will suffice. Once the tower is partially raised, a few men on each of the side guys can pull it the rest of the way up.

The writer used two sets of guys on a 60 foot steel tower, supporting a full size three-element 20 meter beam. The installation has withstood severe wind and ice conditions, and shows distinct signs of being around for quite a while longer. ■

### Rtty A-Z [from page 67]

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