Irvin J. Kirch W9YFG
34 Hoss Road
Indianapolis IN 46217

For Cheapskates Only: A No-Frills Tilt-Over

—requires a friend with a welding rig

After pricing all types of tilt-over towers and masts and coming to the conclusion that I must have been at the airport when my ship came in, I decided that if I were ever going to have a tilt-over mast, I'd have to home-brew one.

A good friend of mine had obtained several tilt-over light standards

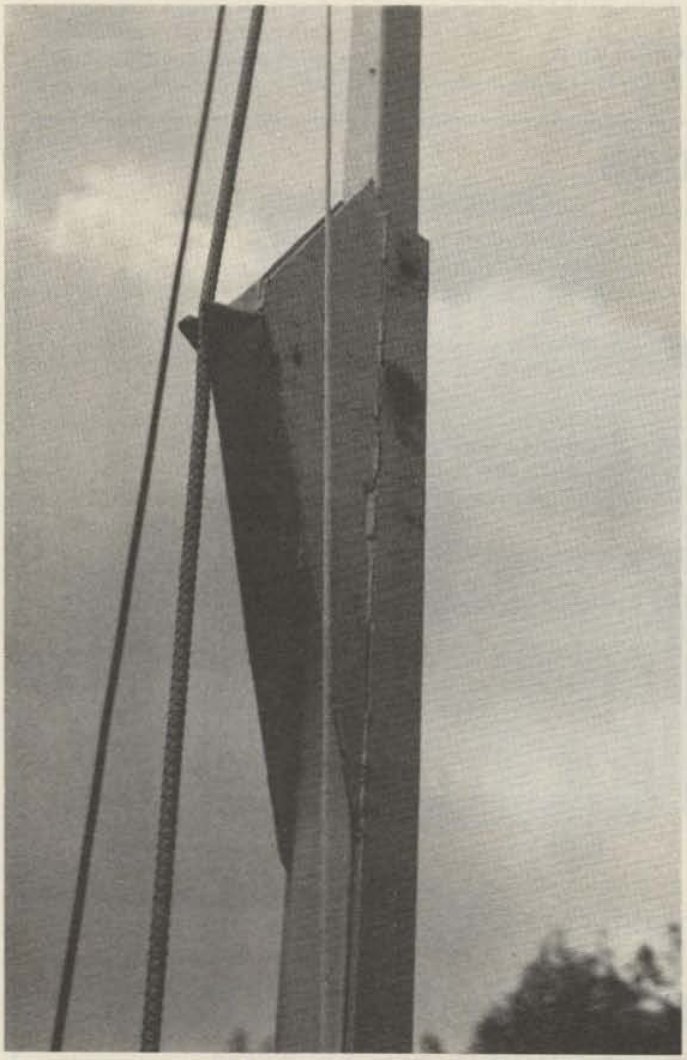

Photo A. Close-up of hinge section reinforced with ¼" boiler plate. Mast is in upright position.

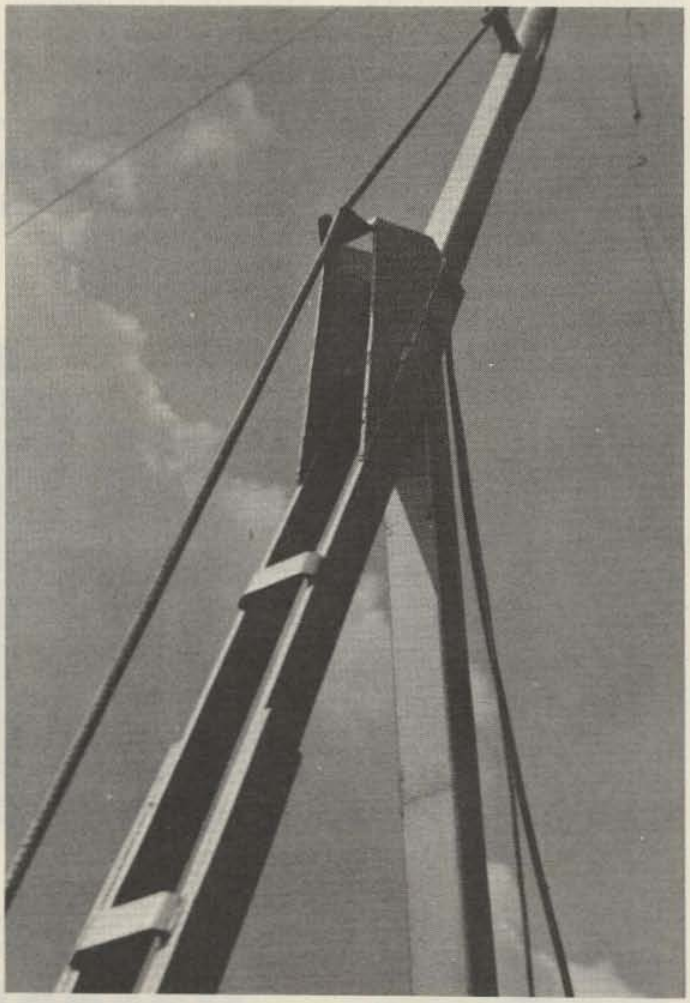

Photo B. View showing hinge section and ½" reinforcing rod which travels down the back of the mast and terminates near the bottom of the 6" channel iron. Mast partially tilted over.

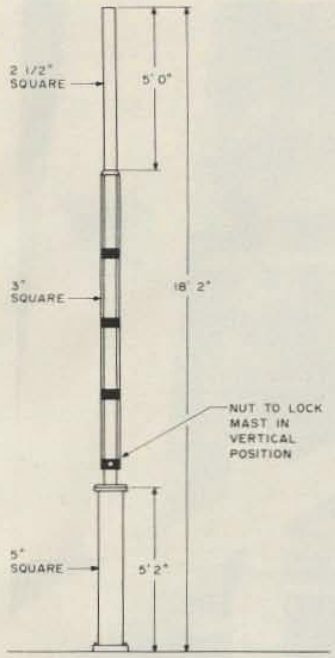

Fig. 1. Before conversion.

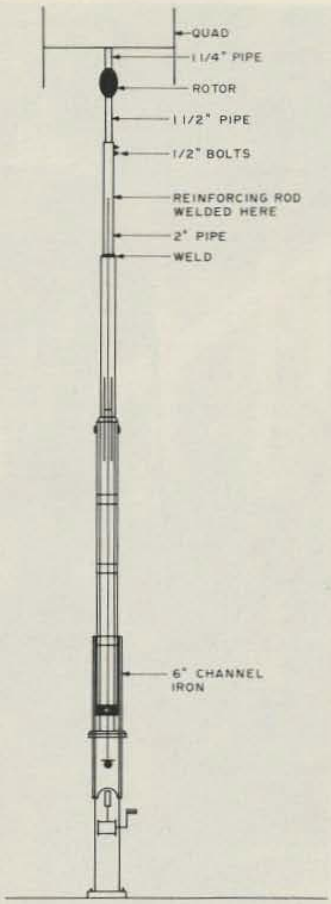

Fig. 2. Back view.

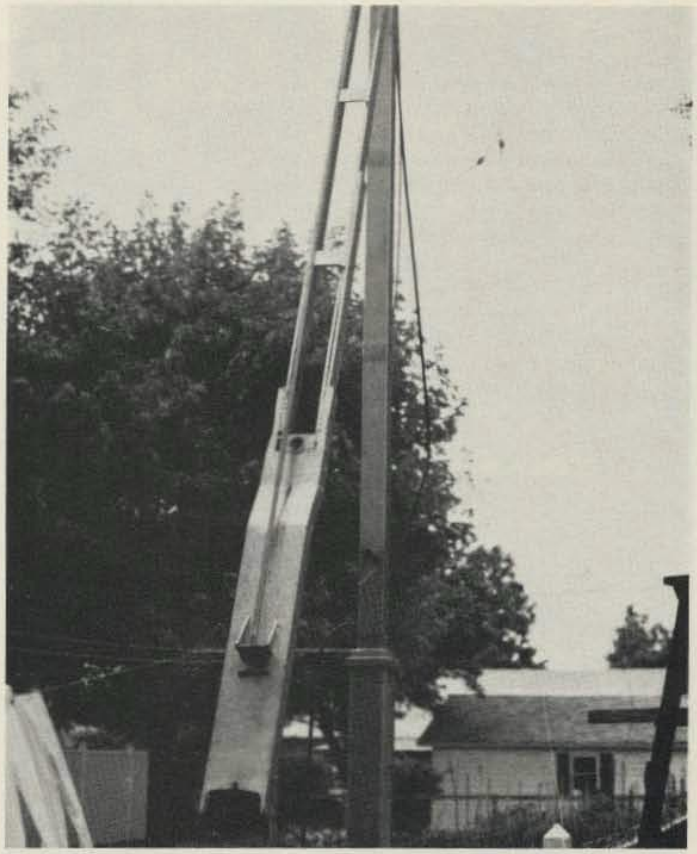

Photo C. View showing 6" channel iron welded to the bottom of tilt-over section to increase fulcrum point.

(Fig. 1) from one of the major oil companies when they closed service stations in the area. After utilizing all but one, he graciously declared it "surplus." After spending several hours removing the old paint and some accumulated rust, I contacted a nearby ham, Harold Stark K9UBL, an expert machinist and welder. He had constructed his own tilt-over mast from heavy-duty pipe, and volunteered to do the necessary welding along with figuring stress points on our mast. All additional materials, with the exception of the boat winch, were purchased at the local junk yard. The finished mast is shown in photos.

A twelve-foot piece of 2" pipe was telescoped into the 2½"-square section of the light standard and welded in place. Two holes were drilled near the top of the 2" pipe, over which nuts were welded. These nuts receive two ½" cap screws which secure the 1½" pipe that telescopes into the 2" section. The cap screws allow for varying the height of the mast. The 1½" section is ten feet long and telescopes two feet into the 2" pipe. The rotator sits atop the 1½" pipe.

Since the added load of pipe and antenna were more than the mast was originally designed for, Harold reinforced the hinge section (Fig. 3) with two pieces of ¼" boiler plate. A piece of 6" channel iron was welded to the bottom end of the tilt-over section to increase the fulcrum point. To offset any bending of the mast as it is raised and lowered, a piece of ½" reinforcing rod was welded to the 2" section of pipe where it travels down the back of the mast, and terminates near the bottom of the 6" channel iron. The end of the rod is threaded to receive a nut. This allows for varying the tension on the upper section of the mast.

A J. C. Penney boat winch was bolted to the bottom section, and just

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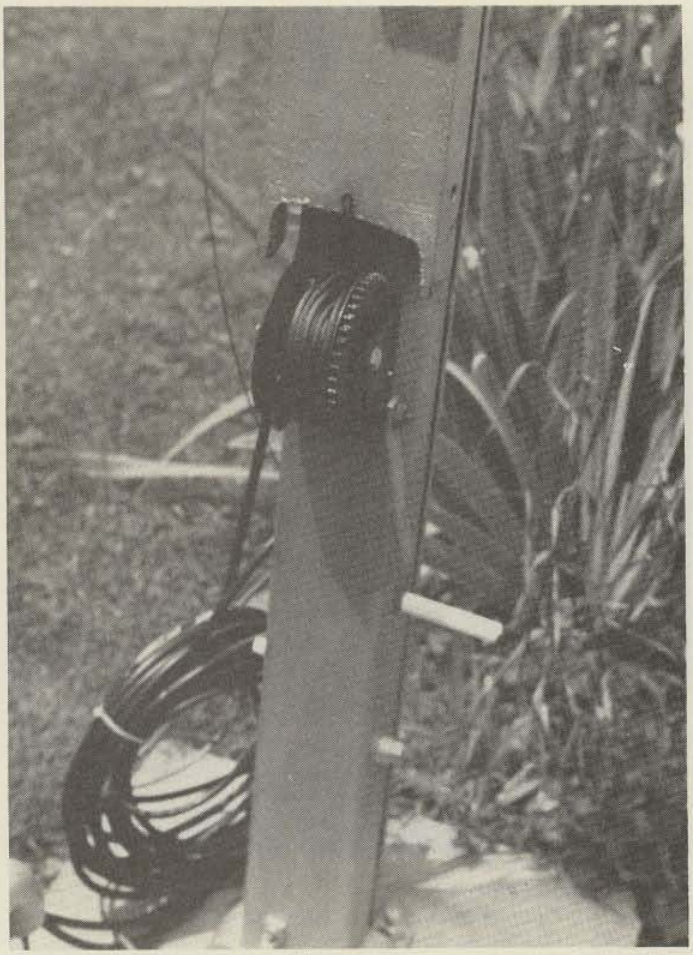

Photo D. Close-up of winch, bottom of 6" channel iron, and base bolted to concrete base.

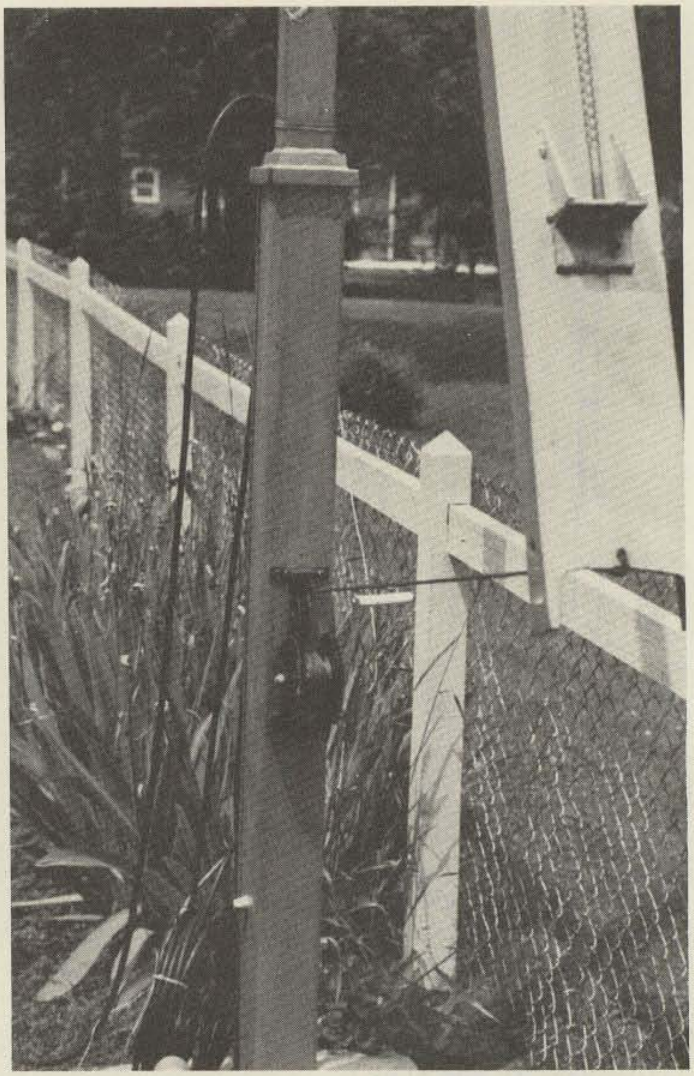

Photo E. Close-up of 6" channel iron showing how reinforcing rod fastens to channel iron and is threaded to receive nut. Also shows slot in base section to receive pulley over which cable travels.

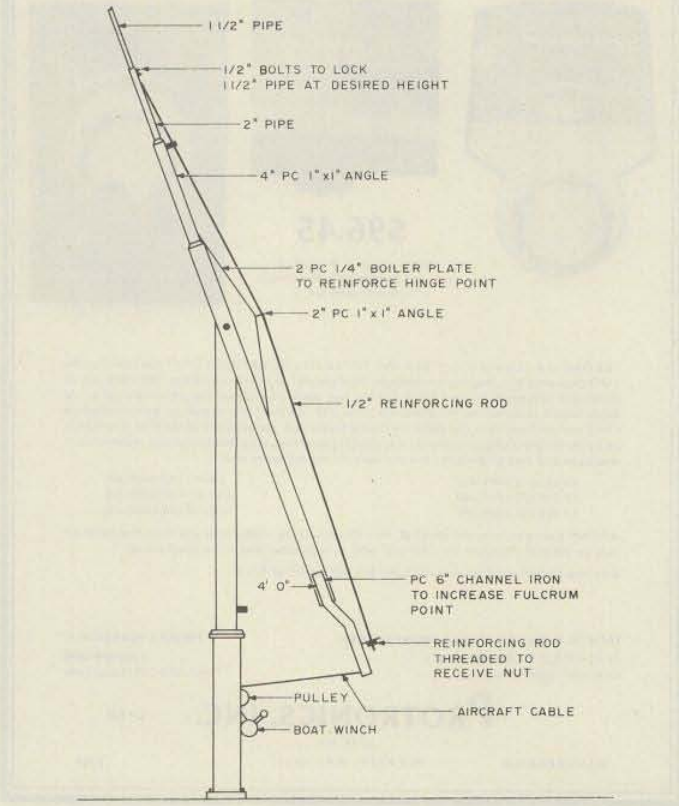

Fig. 3. Side view.

above the winch a slot was cut to receive a pulley. The aircraft cable passes over the pulley and onto the drum of the winch.

Due to space limitations, I am able to guy the mast in only two directions. At present, our ten-meter quad is sitting at thirty-two feet. Space permitting, I would feel that it was safe to raise it to thirty-nine feet. We had it at thirty-nine feet for several months last fall and had no trouble whatsoever tilting it over to work on the quad. However, with winter approaching, and the possibility of another blizzard like the one we had last winter, I became gun-shy and lowered it to thirty-two feet. I am happy to report that we made it through the winter with no problems despite heavy icing and strong winds.

I also have the center of my forty- and eighty-meter dipoles attached to the top of the mast just below the quad. These are raised and lowered by means of a pulley.

Anyone interested in putting up one of these masts should keep his eyes open for a tilt-over light standard. They are used in most service stations and shopping centers. Good sources of supply are the major oil companies and electrical contractors. With the future of gasoline being so bleak, they may become as plentiful as politicians. ■