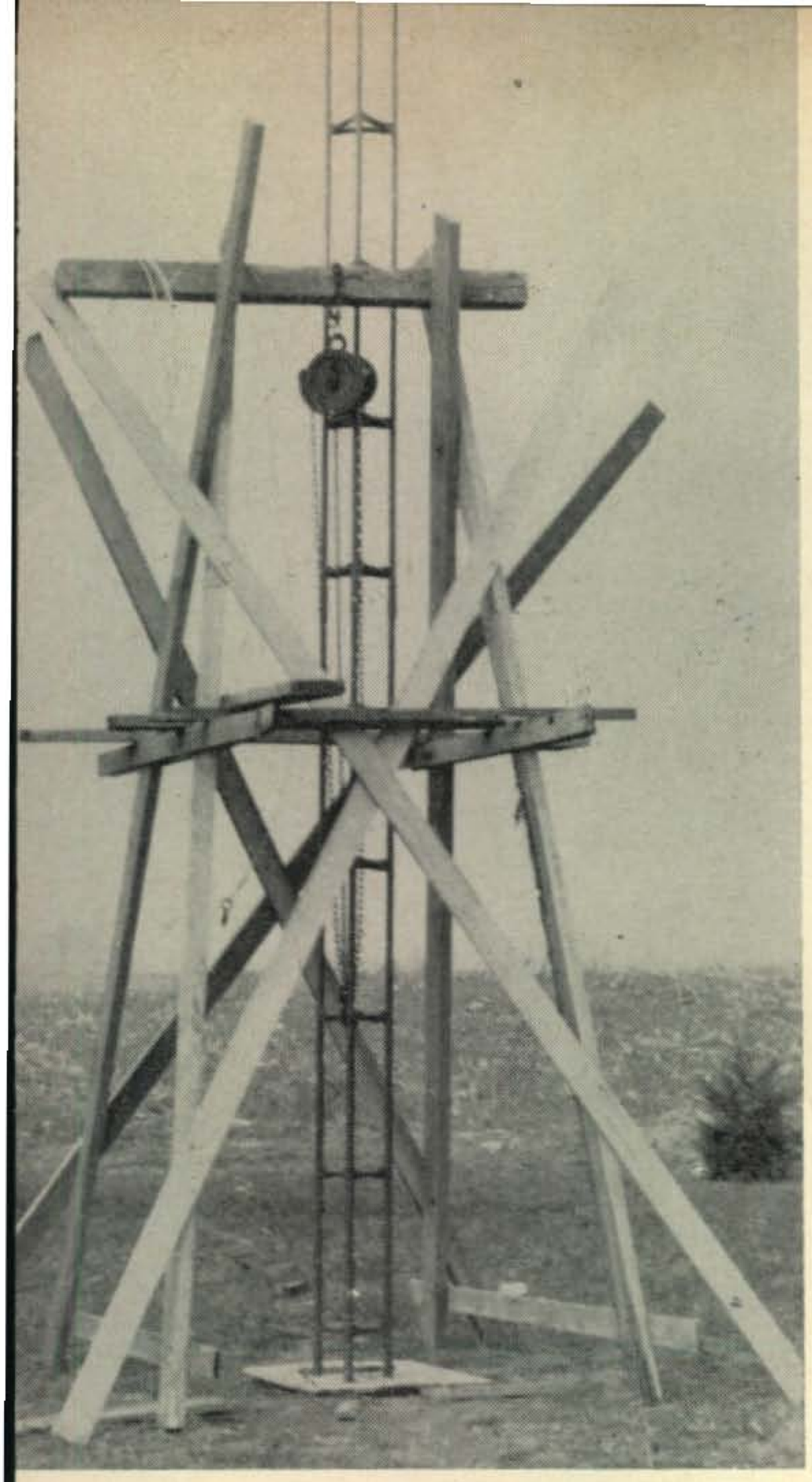

The reinforced A frame supports a 4 × 4 timber on top from which a chain hoist is suspended. A little above the half way mark on the A frame a platform holds a 2 × 6 plank used to secure the tower while the chain hoist is lowered to take a second "bite" on the ten foot sections. This photo was taken 12 years ago when the second vertical was erected.

A 160 Meter Vertical Antenna

A Different Approach to Vertical Construction

BY WILLARD W. WAITE*, W8GDQ

This 160 meter vertical, 137 feet high, is constructed of light weight triangular TV tower sections guyed at three levels. A unique ball and socket mount at the base provides a take-up for sway and protects the base insulator from strain.

THE 160 meter vertical antenna at W8GDQ has been of interest to the top-band fraternity. Possibly a description of this antenna and the unorthodox method used in its construction may be of interest to others. This is the second 160 meter vertical at W8GDQ; the first was built in 1939 at another location. It was of Parris-Dunn "Windcharger" units, was 135 high, and was destroyed in 1947 when a guy anchor failed.

The present antenna, completed in 1952, is 137 feet high and is constructed of 14 lightweight triangular tower sections of the type used for supporting TV antennas. The manufacturer lists it as being suitable for guyed heights up to 100 feet; but when asked about its use as a tower without an antenna structure, he stated that it should be good to 150 feet in such service.

The tower is insulated from ground at the base, with a small tapered section and a porcelain insulator as shown in the photos. There are three sets of three guy wires, each insulated from the tower, and broken up by other strain insulators. Learning from past experience, commercial guy wire anchors of the malleable galvanized type were used instead of our former "home-brew". The guy wires used were made from quarter inch cable purchased from the local telephone company. The power companies used heavier cable than actually necessary for this light weight tower.

All sections were pre-painted, the guy anchors installed, and the guy wires cut to approximate length and the insulators installed, before erection was started. The guy wires are at about the 45, 85, and 125 foot levels.

Erecting The Tower

The tower was erected from the ground, with-

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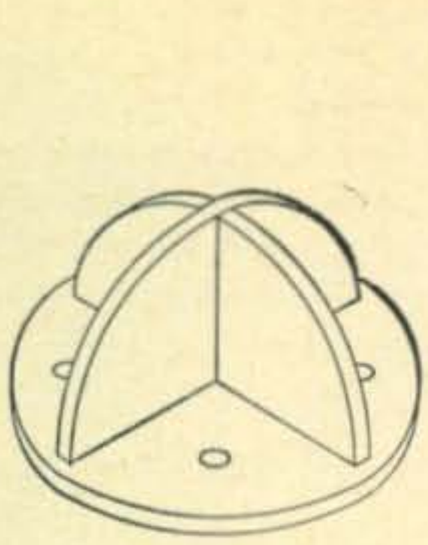
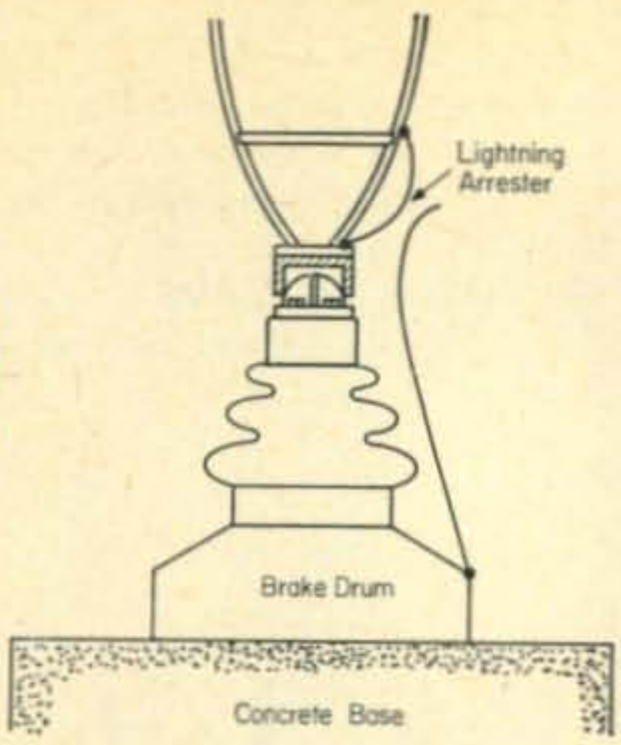


(A)



(B)

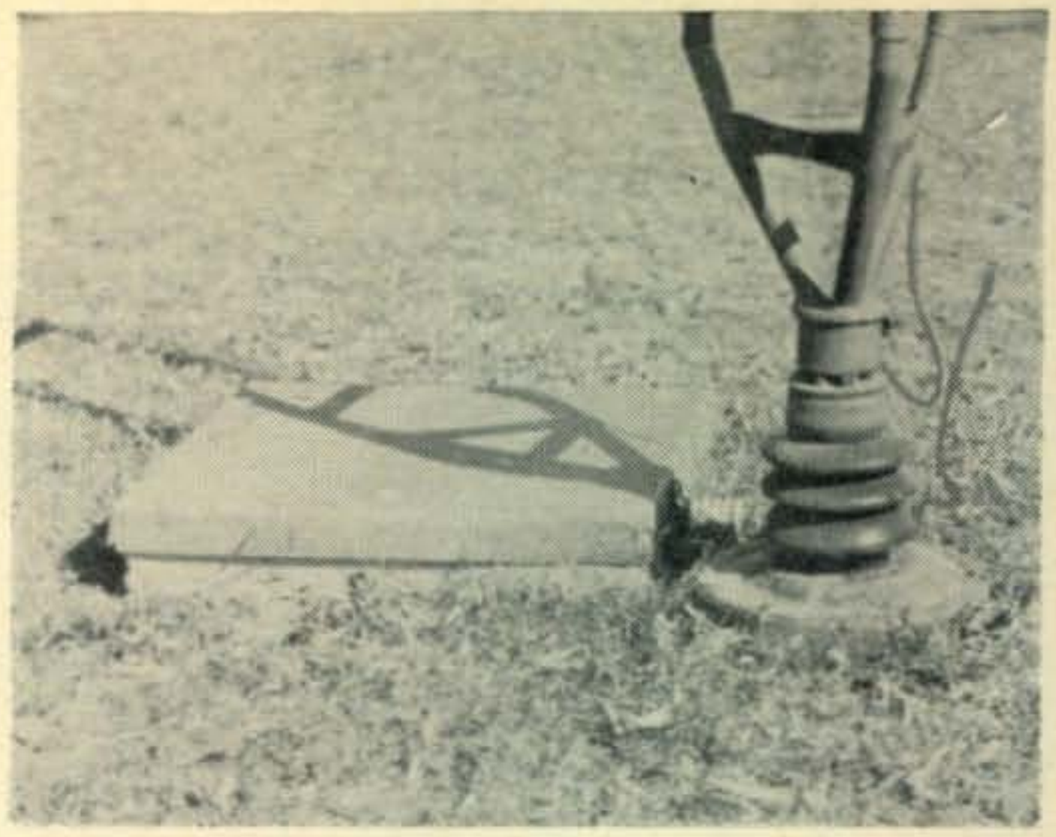


Fig. 1—(A) Construction of the ball-joint base. Sheet steel ⅜" thick is used and the pieces are welded together as shown. (B) Lightning arrester details.

Photo shows the actual installation. The concrete box to the left of the tower is for a contemplated 80 meter coupler and at present contains only the coax termination.

out a "gin-pole", without getting off the ground farther than the use of a stepladder. The photos show the method used.

First, the top three sections of the tower were bolted together, and guy wires attached about 10 feet from the top. This was then tilted up into a vertical position at the approximate location of the antenna. Then the "A-frame" shown in the photos was built of scrap lumber, cross braces attached, and a 4 × 4 put across the top and a chain-hoist attached. The next step is to lift the tower vertically, allowing a little slack in the guy wires, until there is enough room below the tower to insert another ten-foot section. The chainfall we borrowed wouldn't lift ten feet at one time, so the platform shown in the photo was used to support a 2 × 6 slipped through the tower to hold it until the chain could be let down for another "bite".

As additional sections are inserted below, the guys must be let out more and more. The 2 and 3 hole-clamps used by utility companies on their guy wires are very handy to "leap-frog" the release of the guy wires without danger of them getting away. By picking a calm day for erection, only one set of guys need actually be anchored—cement blocks can be attached to the others for stabilization. More time is used getting up and down the stepladder than in actual construction!

Antenna Base

After the antenna was built, a concrete base was poured, and the insulator mounted on an old brakedrum and installed thereon. A "ball-joint" was constructed so the movement of the antenna in the wind would not break the insulator, the antenna let down on it, and the "A-frame" removed.

The construction of the ball joint is shown in fig. 1A. A pipe cap of suitable size was secured to the base of the tower. Curved semi-circular plates were welded to a round base plate. Sheet iron, ⅜" thick was used. The ball joint was bolted to the top of the insulator which had four tapped holes (top and bottom).

After the mast was secured, the RG-8/U feed was connected, the outer braid to the base of the insulator where it is secured to the brake drum and the inner conductor to the base of the antenna. A lightning arrester is made with two lengths of #4 wire as shown in fig. 1B.

A radial system consisting of four 120 foot lengths and two 60 foot lengths was used. One of the 60 foot runs was terminated at the power company's ground at the shack. ■

Lt. Commander Winnette Relieved

Rear Admiral Bernard F. Roeder (right) Director of Naval Communications presented smiling Lt. Commander Charles Winnette with an autographed copy of the Tri-Service MARS emblem in appreciation for his contribution to Naval Communications and amateur radio. Chuck was instrumental in starting the Navy MARS Program, and served as Head of the Amateur Radio Liaison Branch. Lt. Commander Bob Mickley takes over where Chuck left off.