An Inexpensive DX Antenna

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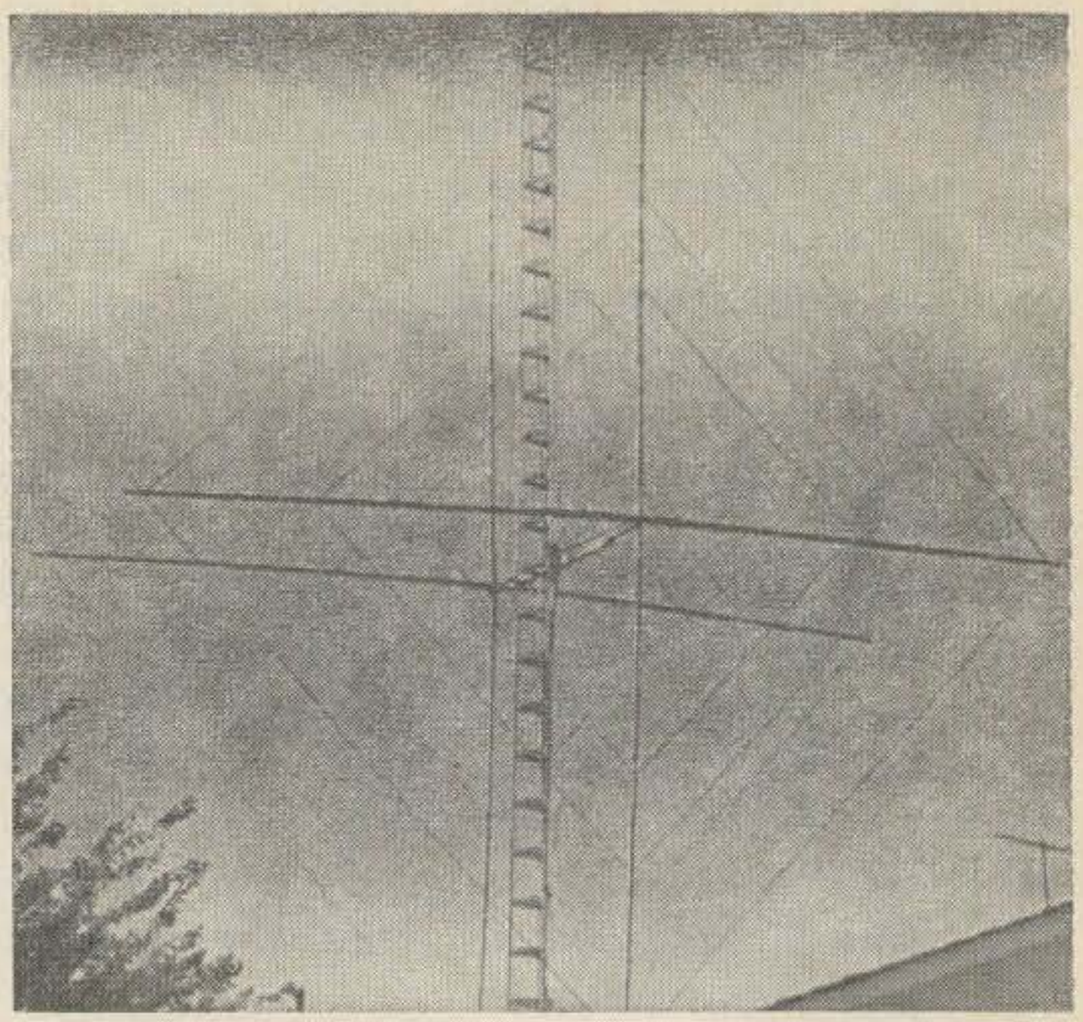


The increased activity in our ham bands has forced many good amateurs to use high gain directional antennas to obtain good solid contacts. The cubical quad antenna described here is quite directional, has high gain, and is inexpensive when compared to other beams (total cost is about $30).

The antenna is mounted with spreaders running horizontally and vertically rather then diagonally. This enables the metal spider brackets to be welded with greater ease and may also add some strength to the assembly. The spider brackets should be made of ⅛" x ½" x 2' aluminum angle (4 each required). Weld each pair on centers and at right angles. The spider to boom bracket should be made of ⅛" x 1" x 2' aluminum angle (2 each required). Weld in the center and at a right angle to the ½" wide legs. The metal may be obtained from a junk yard, some supply houses or any welding shop; take the materials to welding school or high school metal shop to be welded.

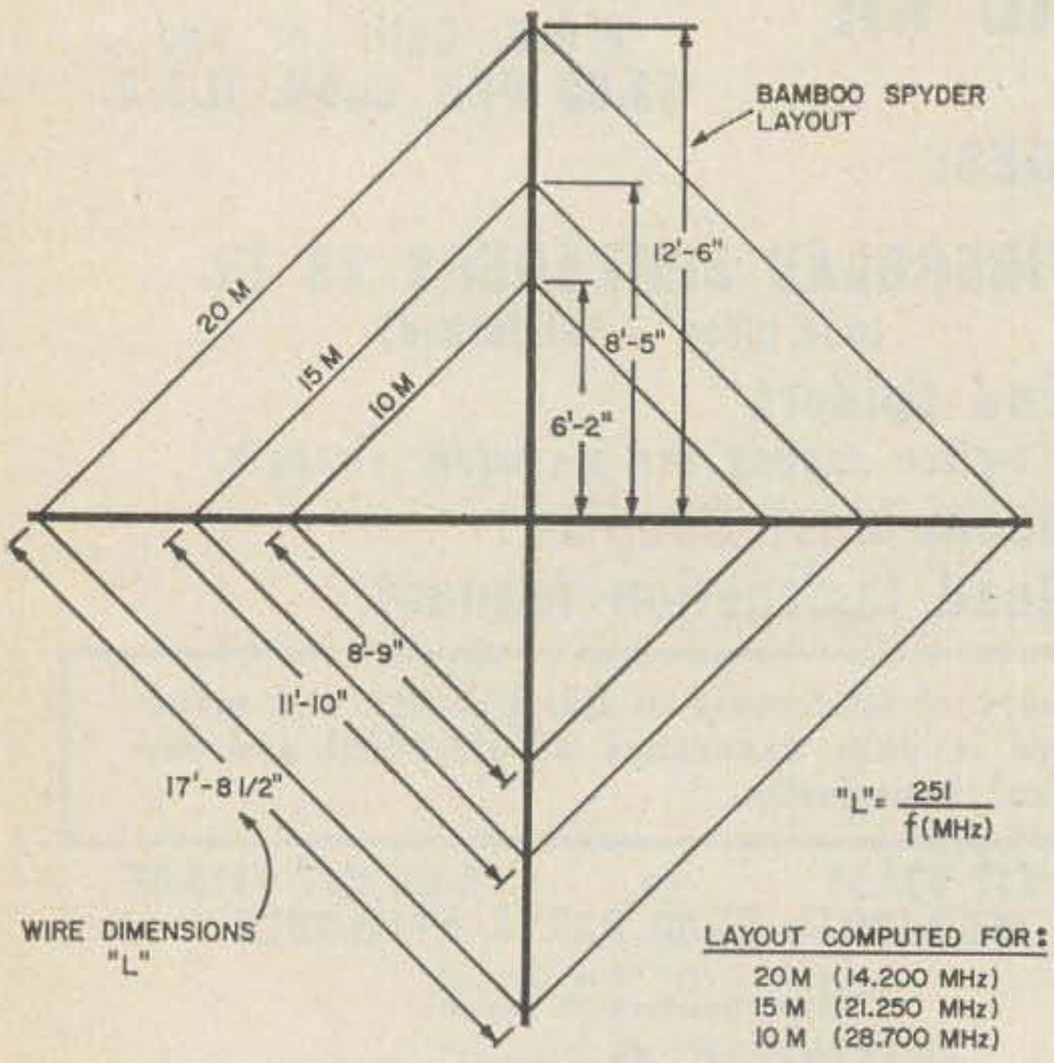


Fig. 1. Complete layout of the three band, two element quad; bamboo poles and a wooden mast provide very economical construction.

The boom to mast support bracket should be made of ⅛" x 1½" x 2' aluminum angle (2 each required). These two pieces should also be welded to each other at right angles and on centers (see figure 3).

The boom is made of 2" x 2" lumber. One piece is 11 feet long and the other is 6 feet long. These two pieces should be nailed together with the shorter piece centered below the longer piece.

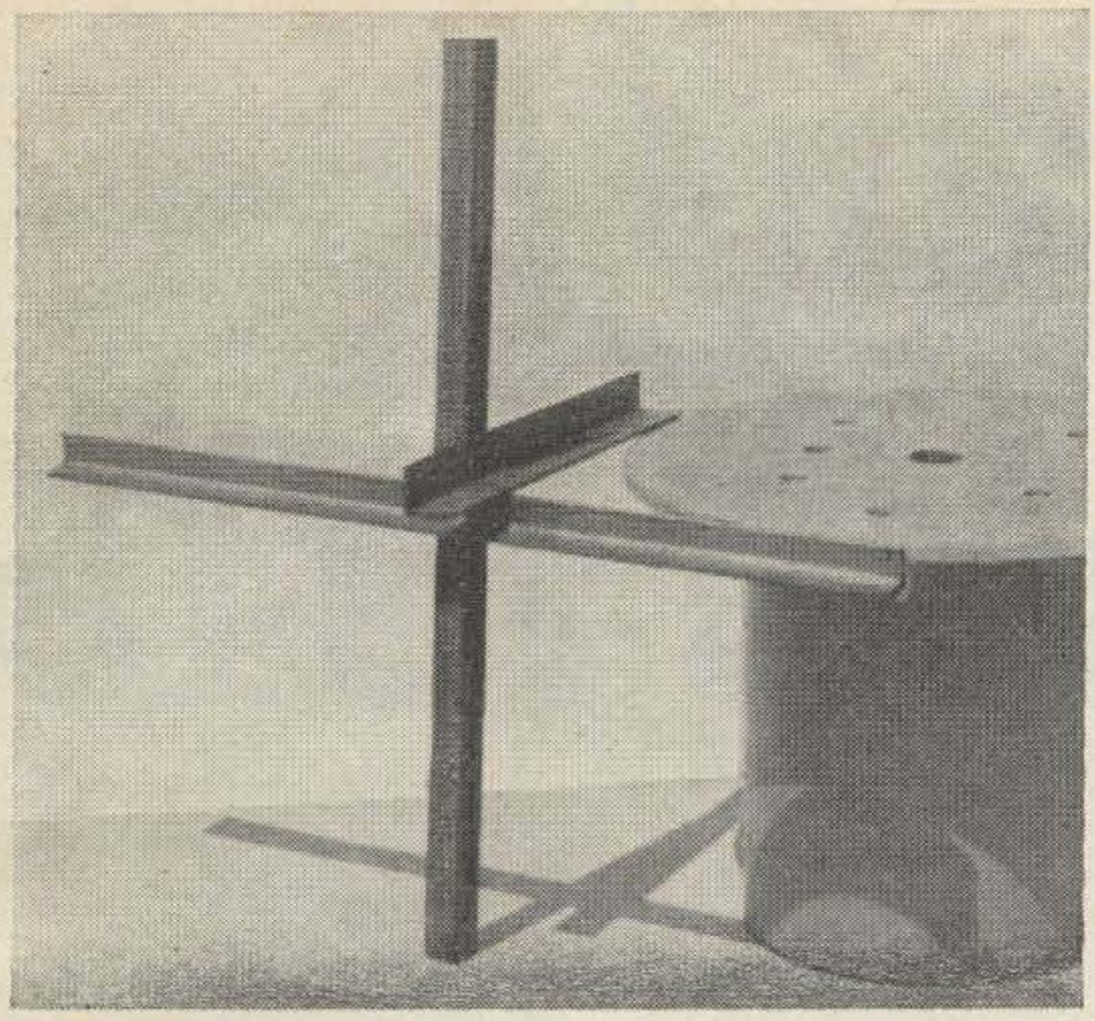
Center the aluminum boom to mast bracket on the boom, drill at least 8 nail holes through the horizontal leg and nail the assembly together.

Obtain the bamboo from a carpet store as carpets often come wrapped around bamboo poles. Try to get unsplit, straight poles 13' long and the thinner the better. You will need 9 poles and they should not cost over 25 cents each.

Cut up a couple of coat hangers into 3" lengths and form into wire hooks as shown in Fig. 3 inset.

Lay out the bamboo to the dimensions shown in Fig. 1. Drill holes through one side of the bamboo and install the wire hooks into 3 legs of the spider. On the fourth leg drill the holes all the way through the bamboo 1" above and 1" below the laid out dimensions for each spider assembly.

Assemble the bamboo to the spiders using



Construction of the homemade spreader assembly. This bracket is welded together from pieces of aluminum angle.

2 small hose clamps for each pole. Most auto stores have an ample supply of hose clamps in assorted sizes.

For each band, attach one end of the wire through the upper hole on the fourth leg. Wrap the wire around the spider and attach the end through the bottom hole. Attach the feed line to the wire ends on the driven element and solder. Short the wire ends together on the reflector element. Tape over the wire hooks to make sure the wire stays in place as it has a tendency to stretch with time.

Assemble the spiders to the boom with large hose clamps. (This is the toughest part.) Space the elements as shown in Fig. 3.

The last bamboo pole is the stabilizer. Cut it 9′ long, drill a small hole through two small hose clamps and screw them to each end of the pole. Attach the stabilizer

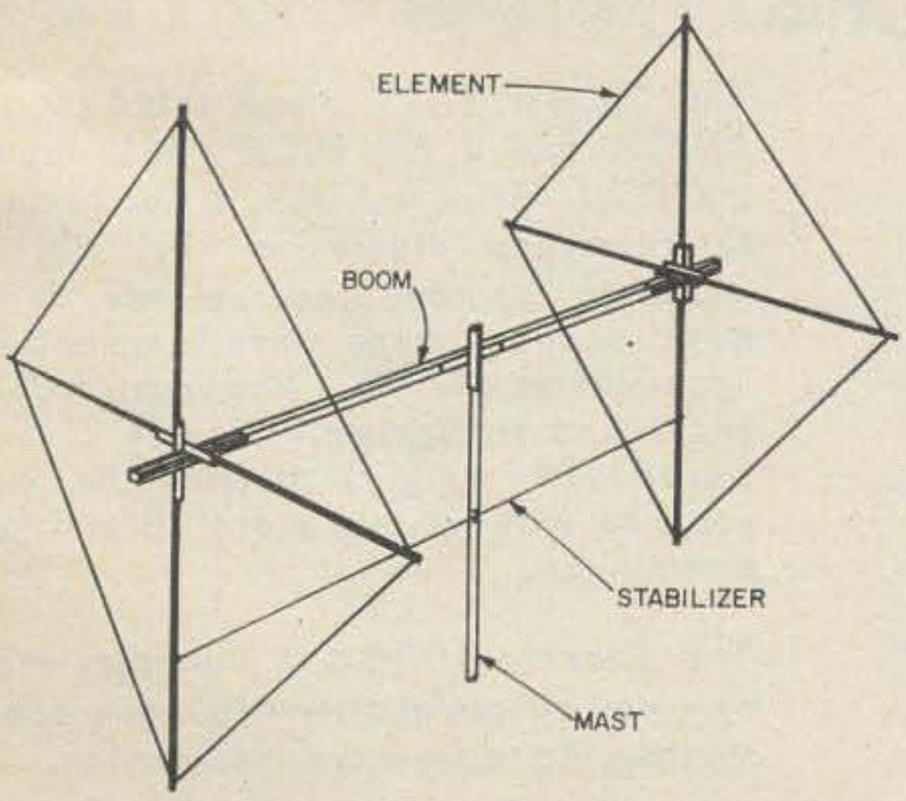


Fig. 2. Overall view of the two element quad showing the layout of the boom, mast and stabilizer.

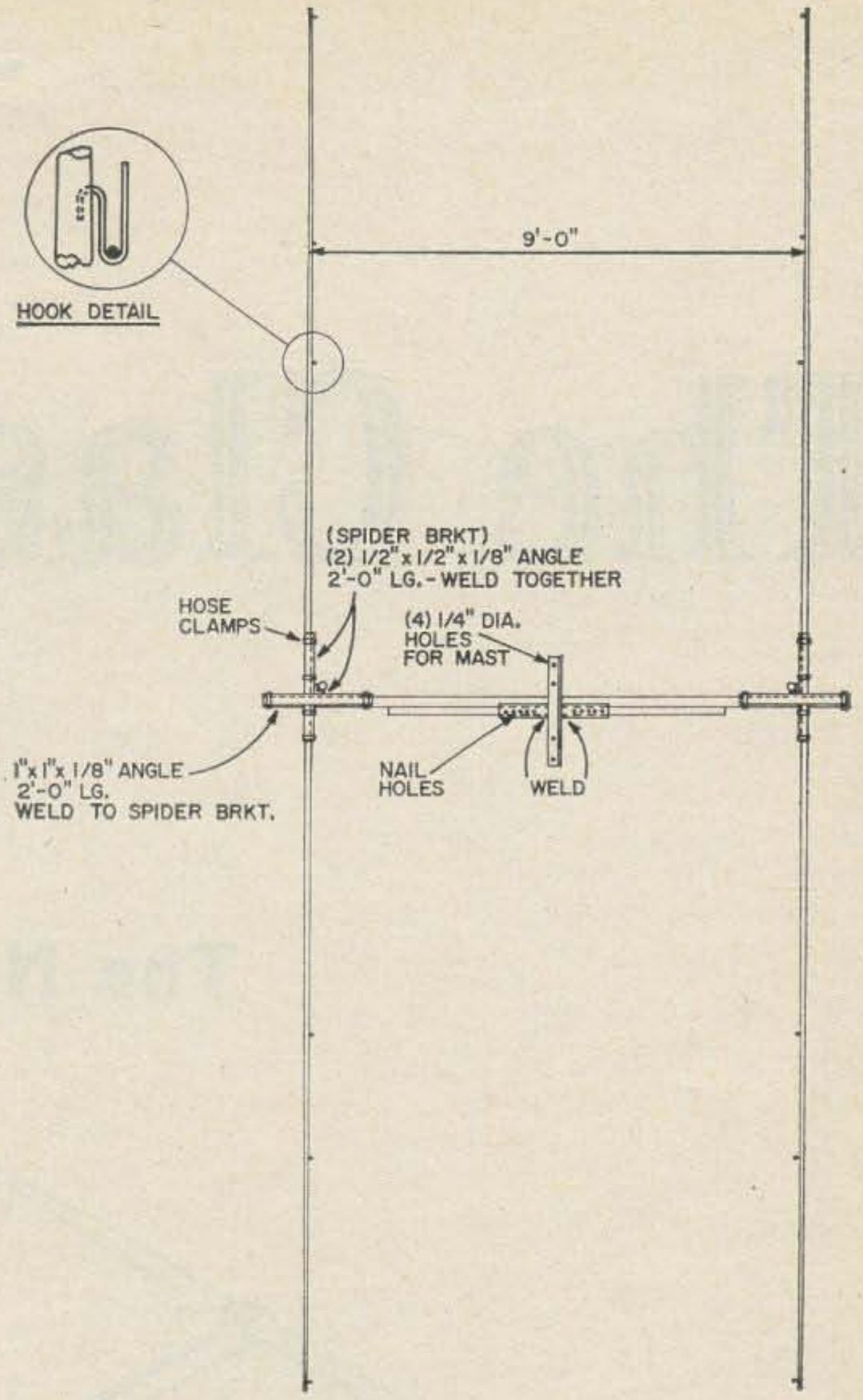


Fig. 3. Constructional details of the two element, three band quad.

about 8′ down on the fourth legs between the elements and parallel to the boom.

Number 17 bare stranded copper wire is adequate for a QRP station, but where higher power is used, #12 copper wire should be employed.

Feed the array with 52 ohm coaxial cable. We found that two of the bands could be fed with the same feed line without appreciable loss, but the other band had to be fed with a separate feed line; this array has 10 and 15 meters on the same feed line with a separate line for 20 meters. It was also found that tuning stubs on the reflector were not absolutely necessary and were omitted from the installation.

We have received Q5 signal reports from Austrailia, New Zealand and Japan with 70 watts on the 10 and 15 meter AM bands. The antenna has been mounted on a 20 foot tower with good results, but much better results are obtained when mounted on a 40 foot tower.

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