Here is a simple, inexpensive 10 meter antenna that provides excellent bandwidth and even a bit of gain.

The Delta Loop
A Classic DX Antenna for 10 Meters

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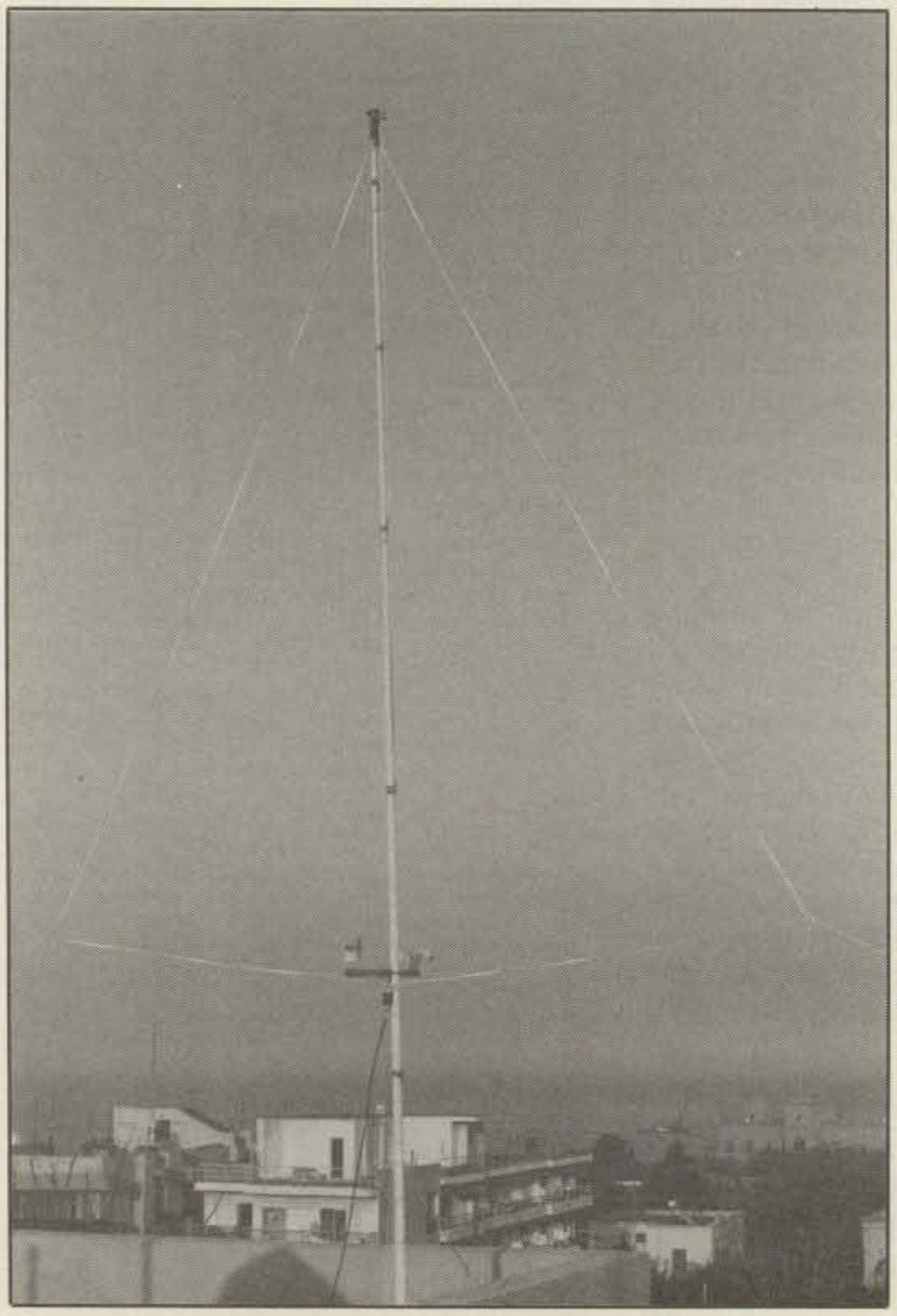
Even though it is pretty much true that almost any antenna will net you some DX on 10 meters when the band is "open," it doesn't hurt to have something more than a dipole when possible. The delta loop antenna is another one of those simple wire antennas, like the extended Double-Zepp, which provides a bit of gain over a dipole but doesn't quite approach the performance of a full-size two-element beam. However, unlike a beam antenna, the basic delta loop can be constructed out of simple wire and does not require any tuning adjustments. And, in contrast to a horizontal dipole antenna, the delta loop antenna requires only one elevated central support point.

The delta loop antenna is just a form of loop antenna in which the total circumference is a full wavelength. Taking the full-wavelength-loop idea and converting it into a three-sided triangular form of antenna is generally attributed to W6DL. He proposed various forms of delta loop antennas where the three sides of the antenna might be of equal length, or two sides might be of equal length and the third side shorter. Depending upon how the antenna was configured and at what point a transmission line was connected to it, either horizontal or vertical polarization could be obtained. Many amateurs have experimented with delta loop antennas and made some valuable contributions to the field of knowledge about them. For instance, it is generally accepted that making the side lengths somewhat unequal and feeding it at a corner (rather than in the middle of a side) will somewhat enhance low-angle radiation from the antenna.

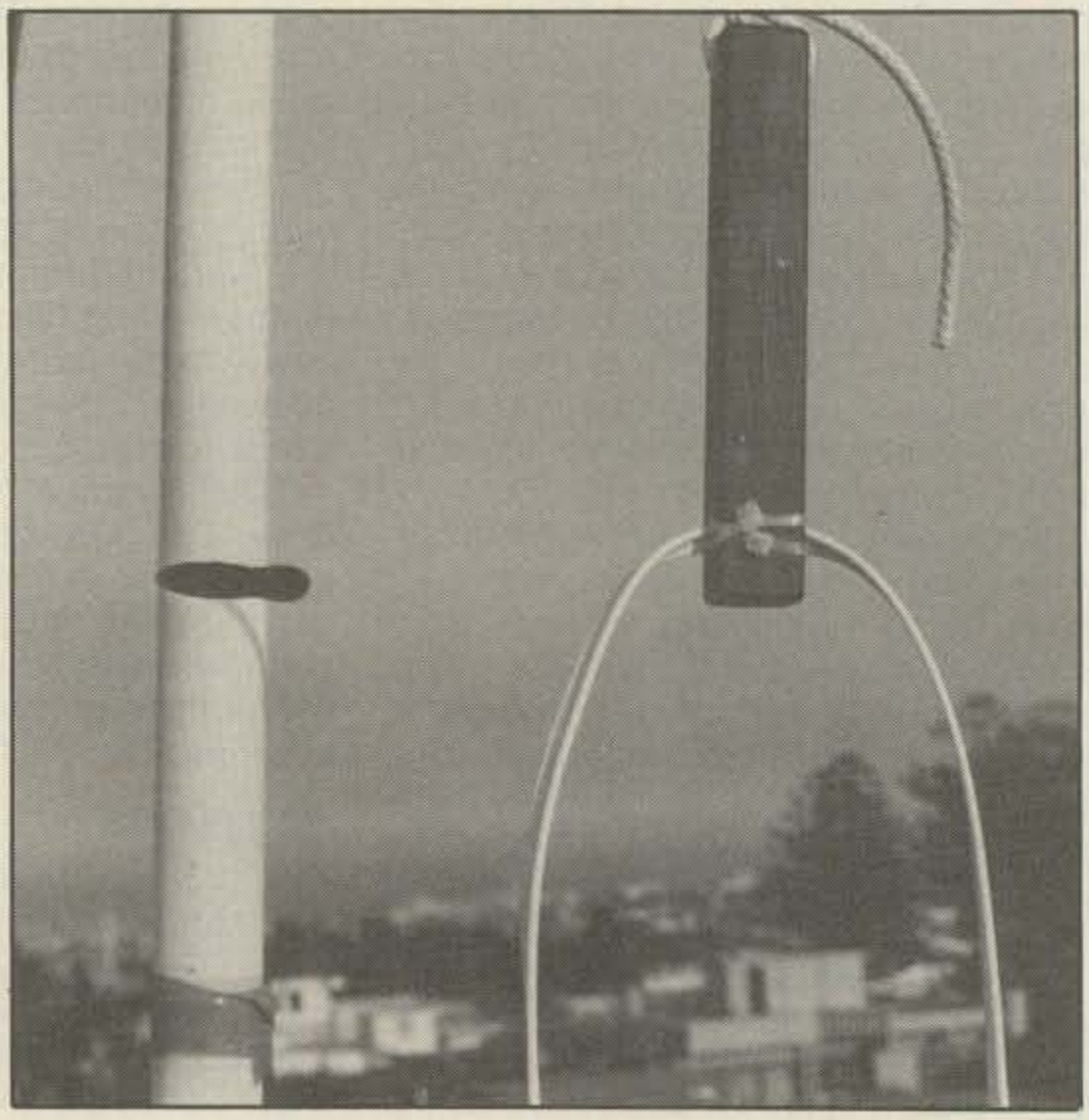
I decided to experiment with a delta

*c/o CQ magazine



Here's the delta loop antenna on a rooftop in Rhodes, Greece. The center support is a fiberglass rod about 16 feet long.

The top apex of the antenna utilizes a plastic insulator about 4 inches long and ¾ square. The twinlead passes through a hole at one end and is held in place by plastic cable ties. A hole at the other end is for a small-size nylon support rope.



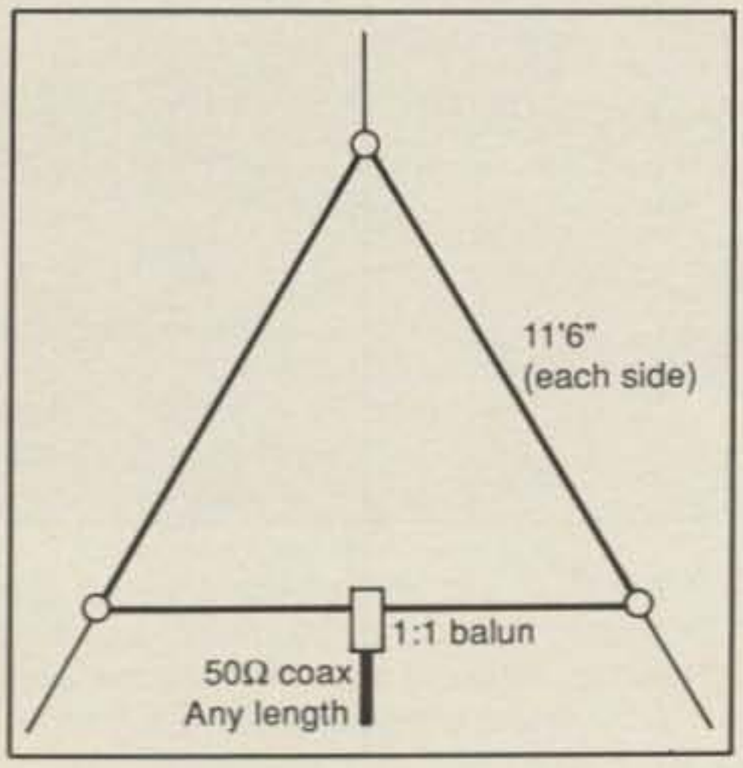


Fig. 1– Simple delta loop antenna for 10 meters. Erected in this manner, only one elevated support point is required. The dashed lines indicate nylon support ropes.

loop antenna for 10 meters in its simplest form, since I thought that form would appeal to most amateurs as a very simple, easy-to-construct antenna idea. Fig. 1 presents the form and dimensions of the 10 meter delta loop. The form of delta loop shown requires only a single, central elevated support point. Many proponents of delta loop antennas will argue that the antenna should be erected as shown in fig. 2 such that the antenna is turned "upside down." I don't disagree with such proponents. However, I simply think that in most *practical* antenna installation situations the delta loop form of fig. 1 is easier to erect, and you have a better chance to get the apex of the antenna at maximum elevation. The latter is important, since a current (radiation) maximum takes place at the apex of the antenna. The antenna form of either fig. 1 or 2 provides a horizonatally polarized signal.

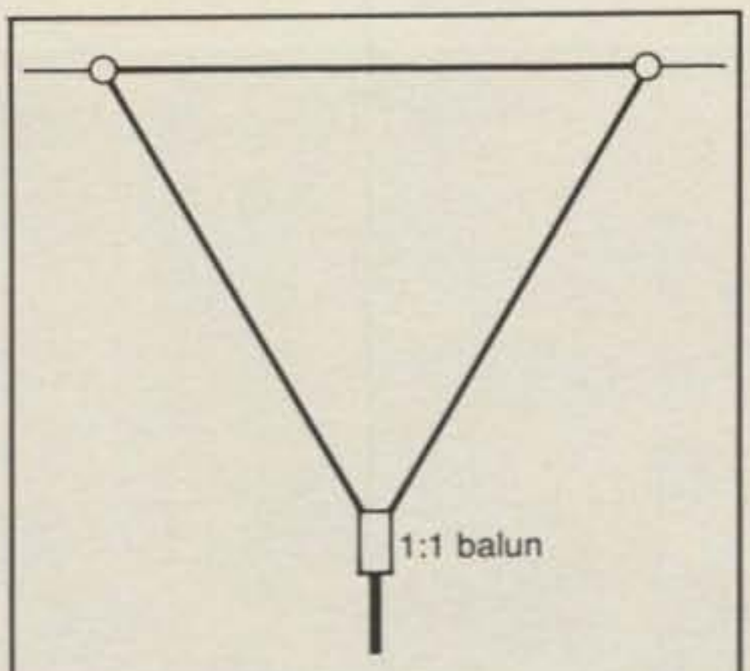


Fig. 2– Experience has shown that the delta loop, erected in this fashion, provides somewhat better DX performance. Obviously, however, two elevated support points are required. Dimensions, etc., remain the same as in fig. 1.

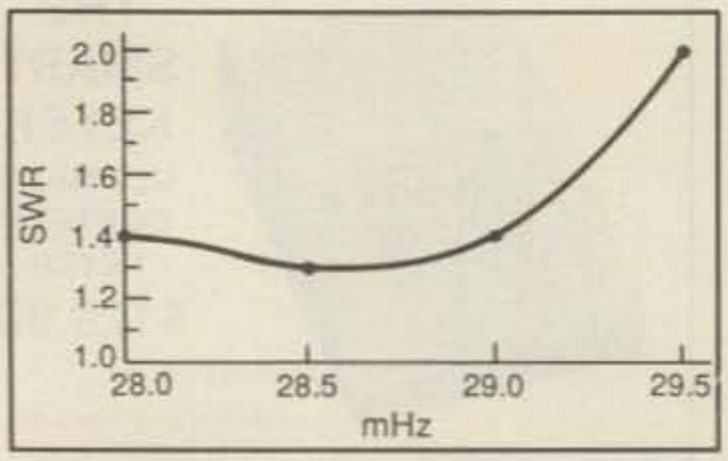
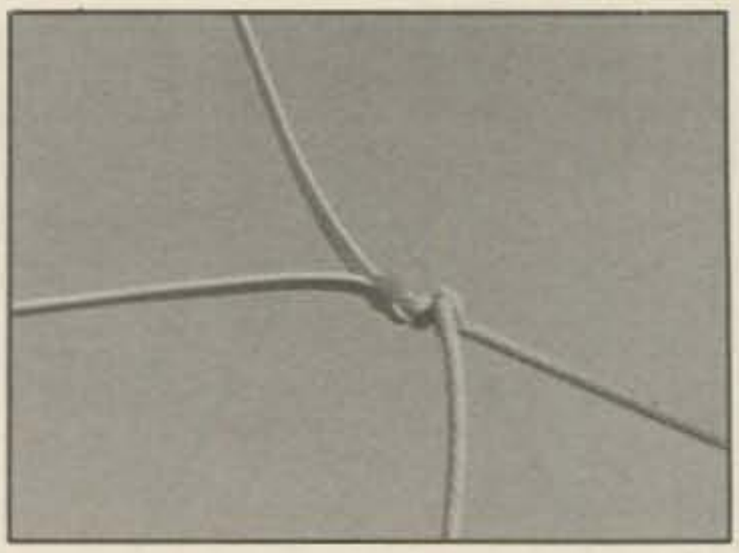


Fig. 3–SWR results obtained for the delta loop. Of course, such results will vary depending upon a specific installation. If you want to favor the upper end of 10 meters more, the loop should be made a few inches shorter on each side.

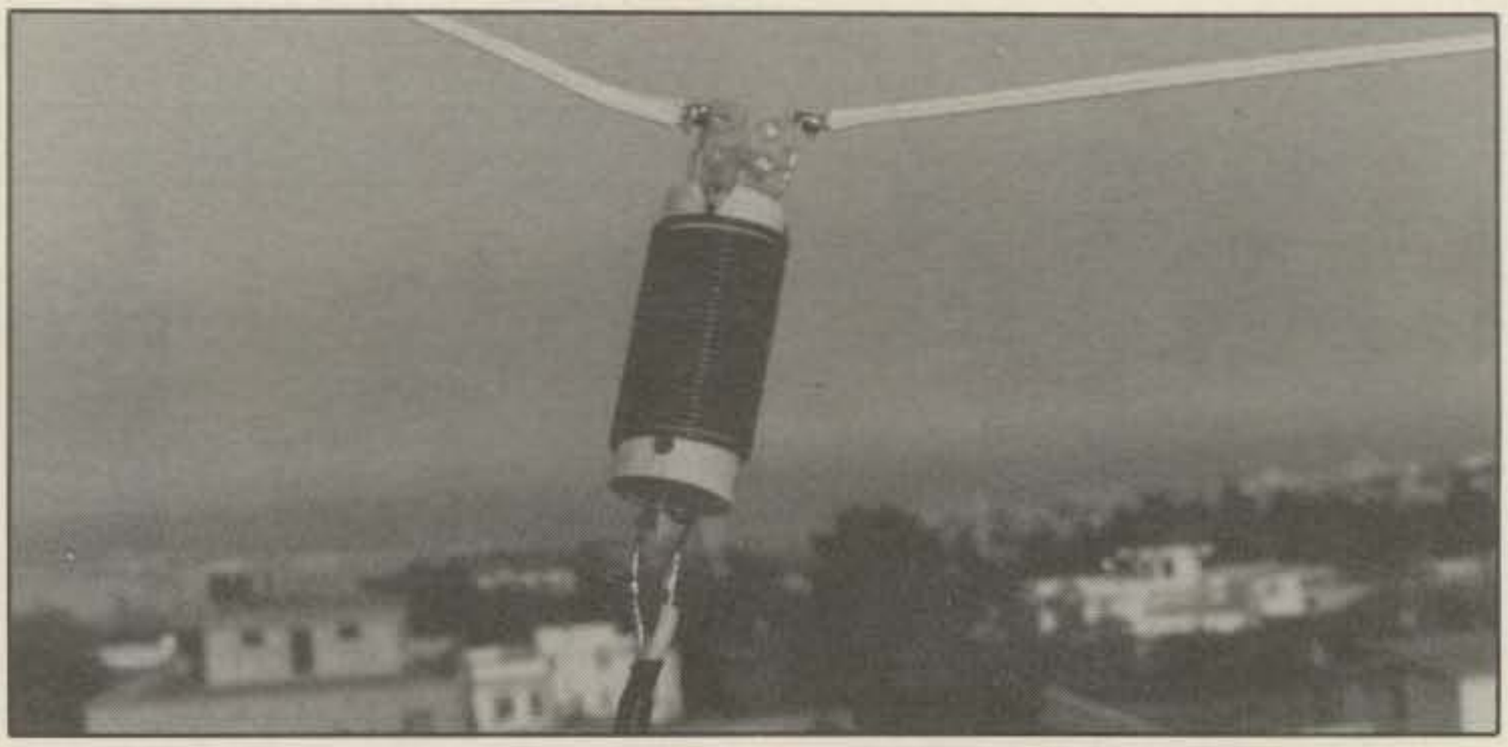


The bottom corners of the antenna are formed by "pinching" the twinlead (using a plastic cable tie) around the corner support ropes, which are then knotted.

Most delta loop antennas are constructed from regular #14 AWG antenna wire, and such construction does result in a very sturdy antenna structure. However, I had quite a bit of good-quality 300 ohm TV twinlead on hand. I therefore constructed the delta loop using that line with the thought that the two-conductor line (ends connected together) would act as sort of a "thick" conductor and provide increased SWR bandwidth. I can't claim to have discovered anything new regarding the construction of a delta loop by using twinlead line, but I was impressed by the SWR bandwidth I obtained as shown in fig. 3. The antenna had an effectively "flat" response for well over 1 MHz of bandwidth. As can be seen from some of the photographs in this article, the antenna was erected fairly well "in the clear" with a fiberglass rod as the central support. The SWR response is bound to vary dependent upon specific installation conditions. As usual, however, the name of the game is to get the apex point of the antenna as high as possible in order to enhance effective low-angle radiation for DX.

Most of the construction details for the antenna are shown by the various photographs. There are few details concerning construction of the antenna about which you have to be careful. The side lengths of the loop are not critical (within plus or minus a few inches). The 1:1 balun shown in fig. 1 is recommended to ensure a symmetrical radiation pattern, but it is not absolutely necessary if you are considering the delta loop form of antenna for a temporary installation.

Performance-wise, the delta loop theoretically provides about 2 dB gain over a horizontal dipole erected at the same mean height. The 2 dB of gain doesn't sound like a lot, but it provides a slight signal increase at practically no cost except for another ½ λ length of wire. Low-angle radiation seems to be enhanced compared to a conventional ½ λ dipole, and the side signal rejection seems to be about 6 to 10 dB better. Those factors combined with the fact that the delta loop requires only a single elevated support point and that it provides extremely good bandwidth distinguish it as a very viable antenna form for 10 meters. CQ



The 1:1 balun used at the base of the antenna is a completely standard handbook design. It's shown here exposed, but it was later put in a plastic enclosure. In this case, the balun consists of three trifilar windings (10 turns) of #14 enameled wire on a 1 inch (outside diameter) by 3 inch long PVC form. It will handle a KW easily.