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Better Than A Quad?

—*try a delta loop*

It has been said that, before anything worthwhile can be done, there must exist a need. In my case, the need was for a good cheap directional antenna for 15 meters. It had to be something much better than a dipole, but about the same cost.

After weeks of searching for a ready-made low-cost beam and being stunned by prices in the one-hundred- to two-hundred-dollar bracket, the idea finally came to me that I must consider a home brew job or stay with the dipole. So the search for that just-right design began. A quick look through one handbook offered first a simple two-element yagi and then a two-element quad. For DX, this handbook says the quad is better, but it is also quite large, fairly heavy, and needs mounting high off the ground. I have neither a tower nor a heavy-duty rotator, so the search continued.

After reading on, I found a brief article about an antenna that some DX operators consider to be better than a quad. It was described as fairly small for 15 meters and also lightweight. But why had I never heard one on the air? Why had I never seen one advertised for sale? There had to be some disadvantage. But there it was, in clear print: "Some DX operators say the delta loop is better than a quad." There was only one thing to do — build it and give it a try.

The description of construction of "the delta" was not very clear, although there was a formula for element spacing and loop lengths. (See Table 1.) After calculating the reflector length for the middle of the band, I came up with 48.3' total length, or 16.1' per side (not bad). The reflector length turned out to be 47.1' total length, or 15.7' per side (not bad, either).

However, after calculating the spacing using λ/0.185', I found that the elements would need to be 248' apart. No wonder nobody ever used a delta; it would be a monster. A 248' boom would be a little bit of a problem. Something was wrong. I checked my calculations, and they were okay. So I thought it had to be a misprint in the formula — λ/0.17 to λ/0.20 should have been 0.17λ to 0.20λ, I guessed. Anyway, this is the formula I used. I came up with a boom length of 10'0" (not bad), so my delta was built using 10'0" element spacing on 15 meters. See Fig. 1 for parts and assembly.

Assembly time from start to finish was no more than six hours, and no special tools were required for construction.

After finishing building the antenna and mounting a TV antenna rotator on a short mast only about five feet above the roof, it was very little trouble for my XYL and I to lift the 12-pound structure to its final resting place. The total boom height after mounting was only 20 feet from the ground and about 80 feet below the tops of dozens of hardwood trees on my lot.

Adjustment of the antenna gamma match was another easy matter. With the help of a neighbor ham, tuning took only five minutes. With the clamp bar all the way to the top of the 36-inch gamma rod, just a half turn of the capacitor brought the swr down to a respectable 1.1 to 1. To my great pleasure, I found that at no point across the entire 15 meter band did it rise above 1.5 to 1. Everything had gone fine so far, and there was only one test left.

That test has been taking place over the past two months, using an HW-101 Heathkit barefoot, mostly in the phone portion of the band.

The first few days of operation with the delta loop were spent with the antenna

$$\text{Reflector total length} = \frac{1030}{f(\text{MHz})}$$

$$\text{Driven total length} = \frac{1005}{f(\text{MHz})}$$

$$\text{Element spacing} = \frac{\lambda}{0.17} \text{ to } \frac{\lambda}{0.20}$$

Table 1.

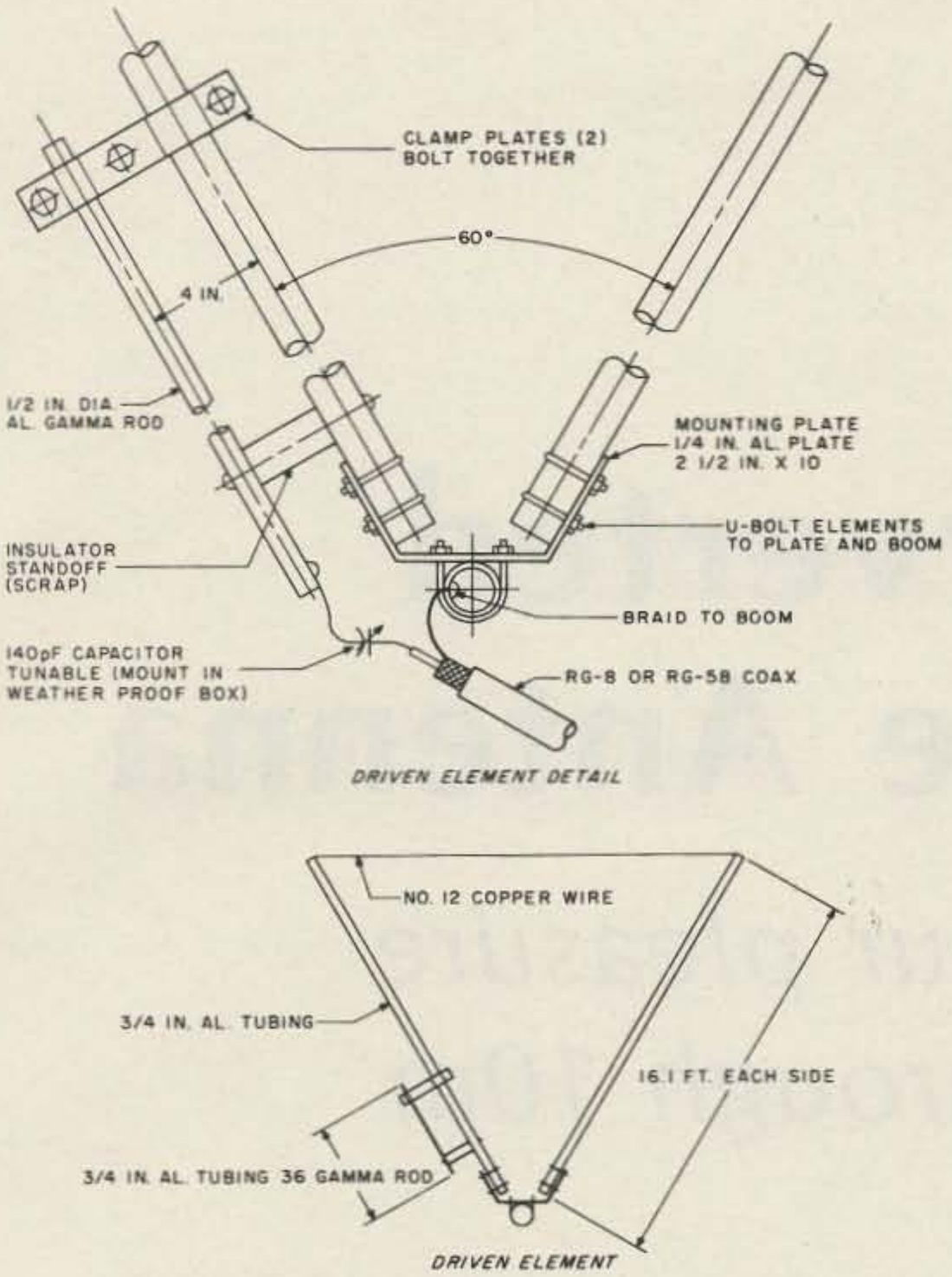


Fig. 1.

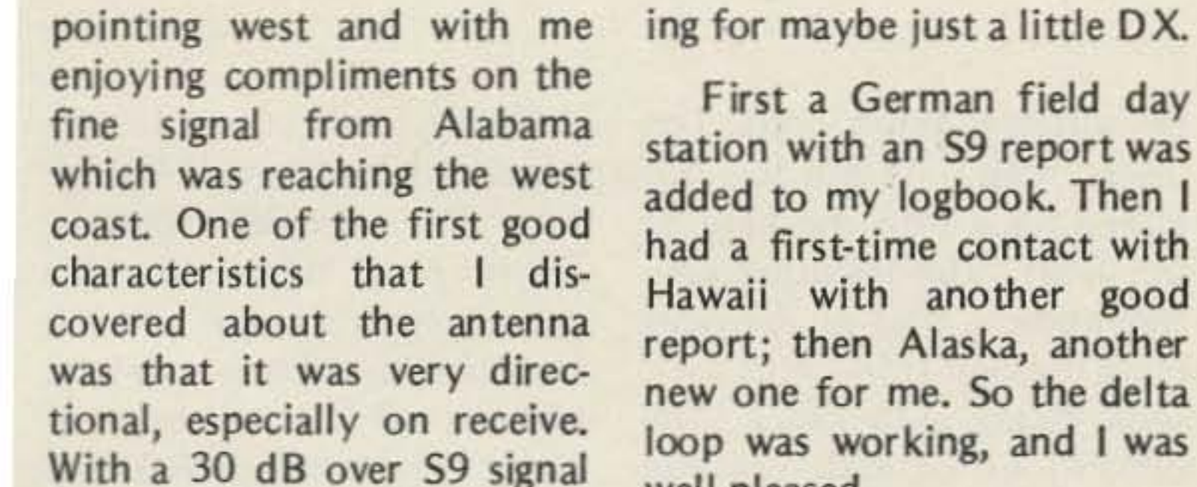
pointing west and with me enjoying compliments on the fine signal from Alabama which was reaching the west coast. One of the first good characteristics that I discovered about the antenna was that it was very directional, especially on receive. With a 30 dB over S9 signal from California being received, turning the loop off 90 degrees either way would knock the signal down to an S2 or S3 reading. So, with this in mind, I began searching for maybe just a little DX.

First a German field day station with an S9 report was added to my logbook. Then I had a first-time contact with Hawaii with another good report; then Alaska, another new one for me. So the delta loop was working, and I was well pleased.

More proof that the loop is a great DX antenna has come in the past few weeks. With not a lot of on-the-air time, mostly in the evenings after work, there have been contacts with Japan, Russia, and over 20 European countries, all with fine reports and with multiple contacts in most of them. My prize so far was a good contact with an Italian station running only three Watts on phone. My first CQ on the 15 Novice band netted Czechoslovakia and the Netherlands, also a low-power station.

If I sound thrilled, it is because I am. Of course, the performance of the delta would not seem so great to an operator who had been using a beam all along. But, for a fellow who has been using a dipole, it is a whole new world. It will give you a good chance in a big DX pileup, even if you are running low power with a low antenna height.

Three other local hams are now building delta loops for their own use, and, if you also would like to knock 'em for a loop, try the delta loop. It is better than a quad! ■



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sons operating on the ham bands, but if we did, then we might find that we would get little or no help from those charged with enforcing the Communications Act. Obviously, local authorities have no jurisdiction.

This incident has served to discourage me about the effectiveness of the Federal Communications Commission when it comes to violations of this nature. Sure, CB is bad, but it will never get any better without enforcement. I do not think that the CB part of the spectrum should simply be written off, but I am not sure what the solution is.

The implications of this incident reach far beyond one simple CBer who has a sick mind, and extend into our own bands as well. It is obvious to me that the FBI has better things to do then to get involved with radio complaints, be they CB or ham.

Thank you for such a fine magazine. I would subscribe to no other.

Dan Gingras WA1BLR
Manchester NH

MILES AHEAD

In the little over a year that I have been getting *73 Magazine*, I have read with interest your open and realistic editorials concerning amateur radio. Unlike the American Radio Relay League, which prints only for the betterment of "the League," you have demonstrated your concern for the amateur in general. There have been times when I thought that your attacks on the ARRL have been misguided, but after reading in *QST* about the

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