a full-wave Folded Antenna for 20 Meters

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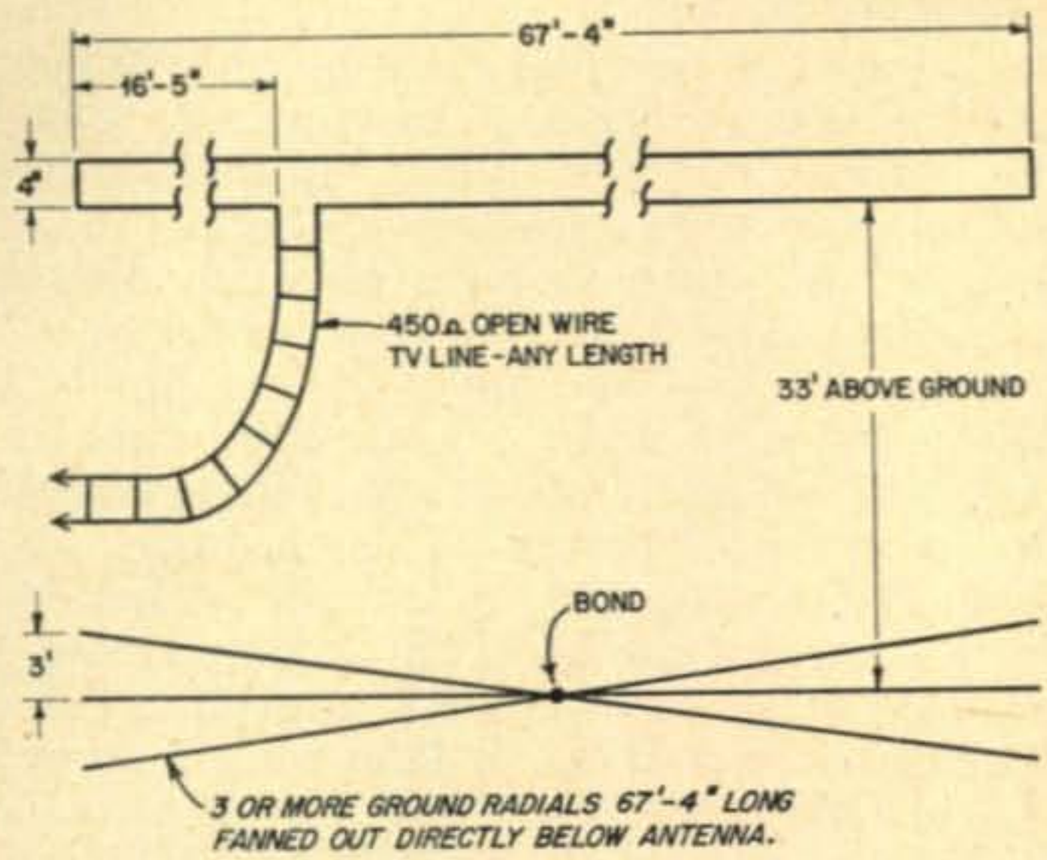
The popularity of the folded antenna has generally been limited to the dipole, however antennas of any resonant length can be folded and fed at a current point with flat line. Actually a folded full-wave has advantages over a dipole in that it has a slight gain and a clover leaf radiation pattern. Experience has shown the full-wave to be practically non-directional, in contrast to the decided nulls off the ends of a simple folded dipole.

A folded antenna is naturally a high efficiency system because of its broad resonance and high, easily matched impedance. A folded full-wave has an impedance of about 400 ohms at a current maximum, and 450 ohm open-wire TV line, presently available at less than 2 cents per foot, makes an excellent match. When it comes to efficiency open-wire line tops all others, and it performs nicely even in rainy weather.

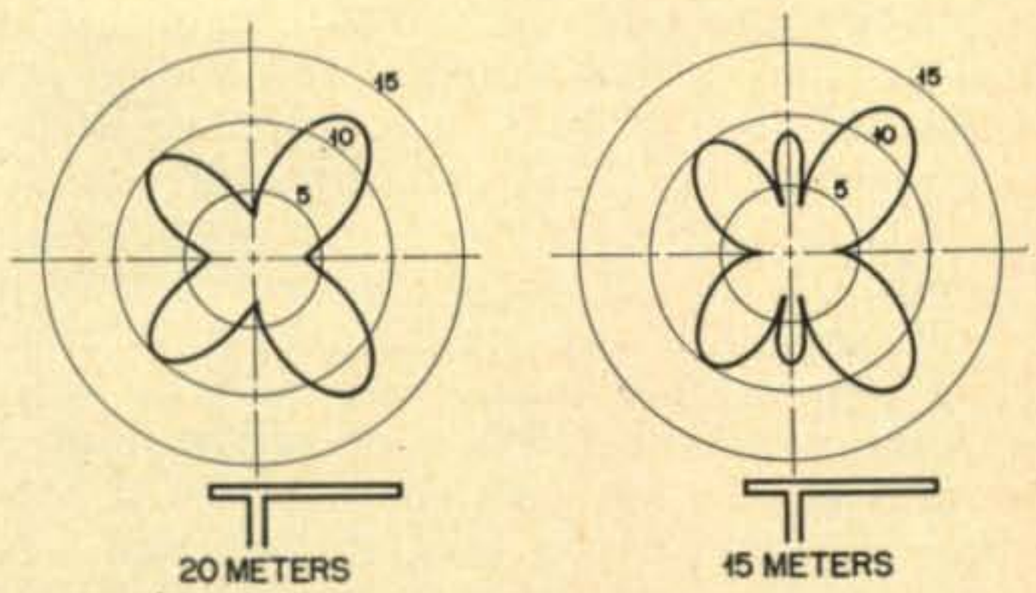
The antenna itself is made up of number 16 wire and 6 inch lengths of plastic tubing (the kind used by telephone companies to protect wires running thru trees, available from Greybar). The 6 inch lengths are drilled 1 inch from each end to give 4 inch spacing of the flat top. Insulation is not the big consideration at this point and wood or any other light weight material could be used. Weight being the big consideration as 24 spreaders (at 3 foot intervals) are needed to keep the wires spaced.

The ground system can be made up of any diameter wire, and buried an inch or so, just enough to get it out of the way.

The experts incorrectly assume that a ground system directly under a horizontal antenna will not improve the low angle radiation as the reenforcing of the direct wave with that of the image antenna occurs at considerable distance from the antenna. What has not been said however is that a ground system ½ wave below an antenna does cancel high angle radiation, and it does improve the efficiency of the system by minimizing dielectric losses that could occur as the result of the effective electrical ground being considerably below the actual surface of the ground. The cancelling of high angle radiation plus the increased efficiency does increase the power radiated at the lower angles. The



20 METER FOLDED FULL WAVE



ALTHOUGH INDIVIDUAL HORIZONTAL PATTERNS MAY VARY SOMEWHAT, THE ABOVE PATTERNS GIVE A GOOD IDEA OF WHAT TO EXPECT UNDER PRACTICAL CONDITIONS.

presence of the ground system also prevents nulls from occurring in the vertical pattern. No signal can be transmitted at vertical angles where a null exists. The space directly beneath the antenna should be clear of all obstructions to permit the ground system to work properly.

This antenna was tried at three different locations with exceptional results over a period of five years. On 20 meter fone all continents except Asia were worked with signal strengths of 9 or better. Stateside reports averaged well over 9 which is quite surprising for 80 watts input.

Although this is, strictly speaking, a 20 meter antenna and was designed as such, it will take power on 40 and 15 meters. The feeders do some radiating on these bands but it is entirely usable, and compares favorably with multi-band antennas. ■