

The "Cage" is Back! W1AW Installs New/Old Antenna



One half of the new 75/80-meter cage antenna going up at W1AW. The antenna is suspended on three of W1AW's towers.

NEWINGTON, CT May 3, 2001--Good ideas seem to have a way of coming back into style. Joining the W1AW antenna farm this week is an 80-meter "cage" dipole. The new antenna is not too different from ones used in the early years of Amateur Radio--including during the transatlantic tests of the early 1920s.

W1AW Station Manager Joe Carcia, NJ1Q, says the new dipole--oriented to radiate east-west and approximately one-quarter wavelength off the ground--will complement an existing "coaxial dipole" that's been in use for several years. Visitors to W1AW now will have

the option using either antenna when operating 75 or 80 meters. US visitors wishing to work a station "back home" probably will choose the new antenna, Carcia said.

The current 75/80-meter dipole at W1AW, designed by Frank Witt, AI1H, is oriented to radiate north-south and also is about one-quarter wavelength above ground. It requires some re-tuning to be used over the entire band, however.



Andrew Toth of XX Towers adjusts the cage antenna's center-feed support.

In addition to its more favorable domestic orientation, it's hoped the new antenna will provide the greater bandwidth W1AW needs to cover the entire 75 and 80 meter band without encountering severe SWR problems. The multi-wire "cage" appears as a much larger single conductor and has a lower Q than typical single-wire antenna. Therefore, it can be shorter physically--the W1AW cage is about 120 feet long--while still covering a larger chunk of spectrum.

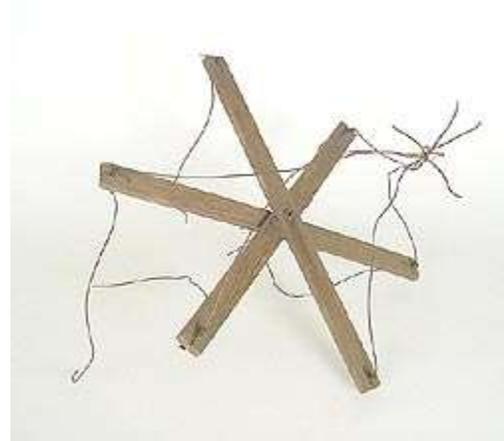
In radio's early days, large, multi-wire antennas were standard equipment at Amateur Radio stations, and the "cage" was a common design. Carcia says he reviewed back issues of *The ARRL Antenna Book* and *ARRL's Wire Antenna Classics* looking for just the right antenna. The latter featured a December 1980 *QST* article, *Broad-Band 80-Meter Antenna*. Carcia decided that the classic design could meet his modern requirements.

The decision to go with the cage design was based on several considerations. The primary mission of W1AW is to reliably disseminate information--bulletins and code practice--in several modes. This means W1AW must be able to span the spectrum at full power from the 80-meter CW band to the 75-meter phone band.

W1AW transmits CW on 3.581 MHz, digital on 3.625 MHz and SSB on 3.990 MHz. W1AW's FET power amplifiers do not tolerate high SWR, and a self-protection circuit automatically reduces power to 500 W if SWR exceeds 2:1. Additionally, W1AW wanted to make it easier for visiting operators to use these bands without having to make special provisions to tune the existing antenna system. A broadband antenna definitely would offer greater operating convenience.

There were other considerations too. For safety reasons, W1AW does not have antennas with active elements near ground level. Vertical antennas pose an additional safety problem because of guying and a requirement that the tower be a safe distance from other objects. Another dipole antenna was the obvious choice.

Carcia says the new W1AW cage antenna will be tuned and tested well in advance of ARRL Field Day--the fourth weekend in June.



A remnant of the antenna from the first amateur station to work across the Atlantic: A six-wire spreader from a cage antenna used at 1MO-1XW in 1922 and 1923 for the first transatlantic tests. This was donated to the ARRL by K.B Warner, W1EH. [ARRL Photos]