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An Even More Super Looper

The Super-Looper antenna which we covered in this column a few months back is a surprisingly useful little device, considering that it is small enough to fit right on the monitoring station table. But antennas generally increase in gain as they increase in size, and so you might expect a larger loop to give a greater signal output. And you'd be right if you did.

So this month, let's look at a larger loop antenna which has a lot to offer for nondirectional, all-around coverage across the shortwave bands. And, not only does this antenna have a nondirectional reception pattern, it is provided with a simple means for changing its polarization. At times, this can be a valuable feature because the antenna will sometimes give a greater response when the antenna's polarization is changed to more closely match the polarization of the received signal.

This month's antenna, the full-wavelength loop, has been with us for a long time. But it is not as well known as many of the other antennas which we find useful on the shortwave bands. This is a bit surprising, as the loop's construction is actually quite simple: just cut a wire a wavelength long and hang it as high as you can in a spread-out, horizontal fashion (Figure 1).

If you have a lot of trees or supports to hang it from, you may be able to make it almost circular, but an irregular rectangle, or even a triangle, is more practical for the situation most of us face on our "antenna farms." And remember, whatever way you put it up, stay away from power lines for both safety and interference reduction.

So Let's Build One

1. To build the full-wavelength loop you will need a length of wire as determined by the formula in Figure 1. Actually, you should buy a length about eight inches longer than the formula indicates, to allow for the length used in bending the wire through the feedline insulator and attaching to the feedline.
2. Determine the number of suspension points you will be using to support the antenna "up-in-the-air." Take the same number of insulators as you have suspension points, and thread one end of all but one of them onto the wire. Then take the last insulator and attach one end of the wire to each end of this last insulator (Figure 1).
3. Obtain a length of feedline which will reach comfortably from the antenna to your monitoring table. You may use any coaxial cable you have for this. Twinlead is also okay. Make sure that it has a coax plug on one end which fits your receiver.

   On the other end of the feedline, prepare the wire feedline ends and the antenna ends for connecting (see Figure 1). Scrape the wires bright and then wrap and solder them in place. Be sure to seal the open end of the coaxial cable with some kind of coax sealer to protect it against the weather.
4. Next attach ropes to the free ends of the insulators which you earlier threaded on the loop wire, and also connect a rope to one end of the insulator where the feedline attaches to the antenna. These ropes will need to be long enough to reach from the insulator to the intended mounting points (such as a tree limb) which you have chosen, and tie on to that point.

   Or, rather than tying them to the mounting points, you may wish to make them long enough such that they can reach from the insulator, over their mounting point, and then reach to ground-level so that you can adjust them from the ground.
5. Using these ropes and tie points, mount the antenna as high and in the clear as possible.
6. The antenna is now ready for use, but don't forget the lightning protection of your choice. At minimum, disconnect the antenna when it is not is use and never operate it during weather likely to produce lightning.

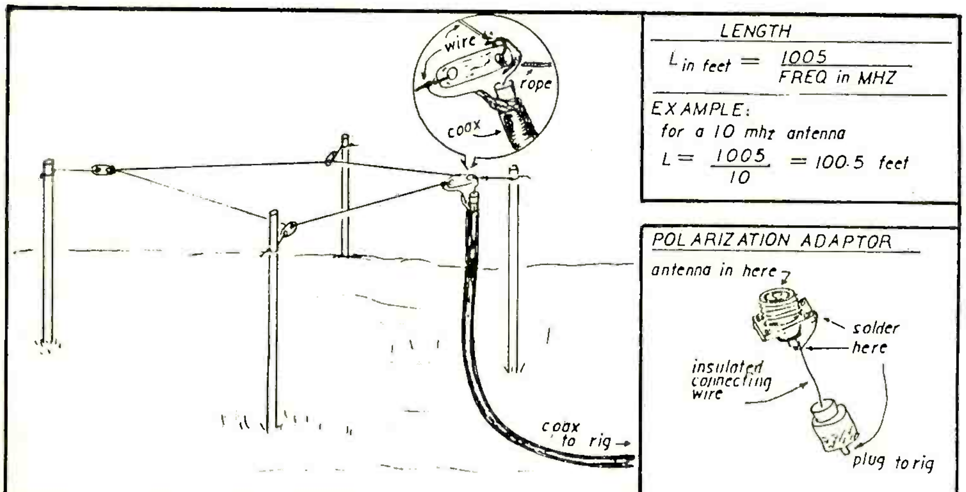

FIG.1 A FULL-WAVELENGTH LOOP ANTENNA.

Using the Loop

For general, all-around reception, the antenna is attached to the rig by its coax plug in the ordinary way you would attach any antenna lead-in. When you want to vary the antenna's polarization to see if you can improve on a weak signal, short the inner and outer connector of the coax plug and run a wire from these combined conductors to the center connector of your receiver's coax socket.

Figure 1 shows how an adapter for this vertical-polarization condition can be made by connecting both the connections of a coax socket together, and running a single wire from these joined connectors to the center conductor connector of a coaxial plug. Try shifting the polarization back and forth on weak signals to see when this can help your reception.

On occasion it may also help in reducing unwanted interference by switching to a polarization different from the polarization of the interference. Experiment and see what you come up with. Then you might drop me a line and tell me how it worked for your applications.

Antenna-Trivia Call

The sky is part of this antenna. I recently read a report from Pennsylvania State University that a technique has been developed whereby a one megawatt radio beam is aimed into the sky, heating the charged particles of the ionosphere far above