BETTER SIGNALS

ANTENNAS AND SIGNAL IMPROVING ACCESSORIES

BY ED NOLL W3FQJ

80-160 Duo-Bander

The activity on the 80 and 160 meter bands increases during the cold weather months. There is less QRN for everyone and, for the DX'er, the propagation is more favorable and night time DX'ing rises. Operation on 80 meters requires adequate erection space for an antenna and, 160 meters twice as much if a resonant antenna is to be constructed. A 160 meter dipole is an impossibility for most hams.

However, there are ways to put together antennas for both bands that do not require as much space. Some steps that can be taken are the use of a quarter-wavelength antenna operated against ground, a sloper or an inverted-V dipole. Loading coils cut down the required space considerably. Of course, it is especially helpful when you can combine both bands in one antenna.

W9INN has put these possibilities into the design of his 80/160 duo-bander which operates as a quarter-wave end-fed antenna on each band, Fig. 1. It includes a special coil, referred to as a resonactor, Fig. 2, which displays a high reactance on 80 meters and functions as a loading coil for 160. A 5-foot mast, or pole, driven into the ground serves as a simple ground system. For DXing you can use a more elaborate system with four or more radials of the same or varying lengths depending upon the space availability at your mounting site.

In the installation of Fig. 3, a fence pole served as a point of attachment for the feed-point assembly. A second 1-inch diameter pipe was driven into the ground to augment the ground system. You can see the ground wire that connects to the ground pipe coming off of the right side of the clamp that holds the feed-point assembly to the fence pole. The opposite side view of this assembly, Fig. 4, shows the end of the antenna wire as it is connected to the inner conductor of the SO-239 chassis-mount socket.

In the inverted-V arrangement, shown in Fig. 1, the mast was 22 foot tall and positioned some 60 feet (not critical) from the fed end of the wire. The linear space occupied by the antenna was some 90 feet. This can be shortened considerably if you use a higher mast.

The resonant frequency can be adjusted on 80 meters by changing the length of wire between the feed point of the antenna and the resonactor coil. When you have this set for the 80-meter resonance you desire, you can establish the 160M resonant frequency you desire by adjusting the wire length be-

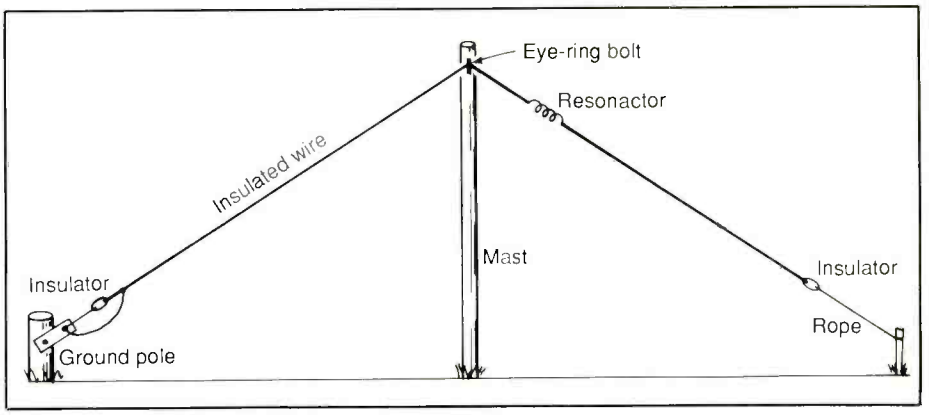

Fig. 1. Feed plan for the end-fed W9INN 80-160 duo-bander.

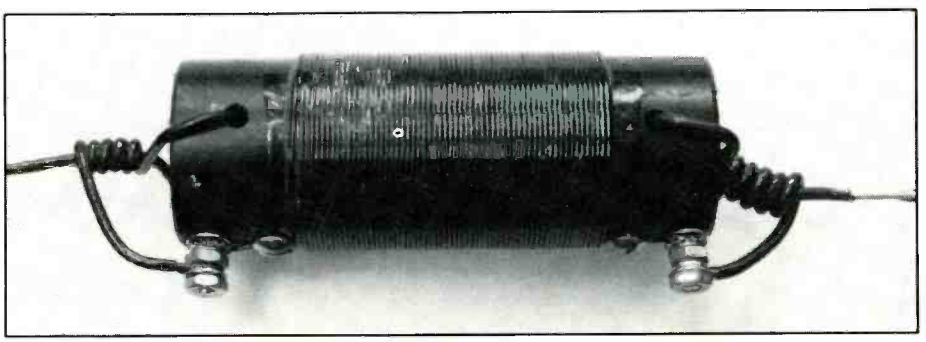

Fig. 2. W9INN resonator coil.

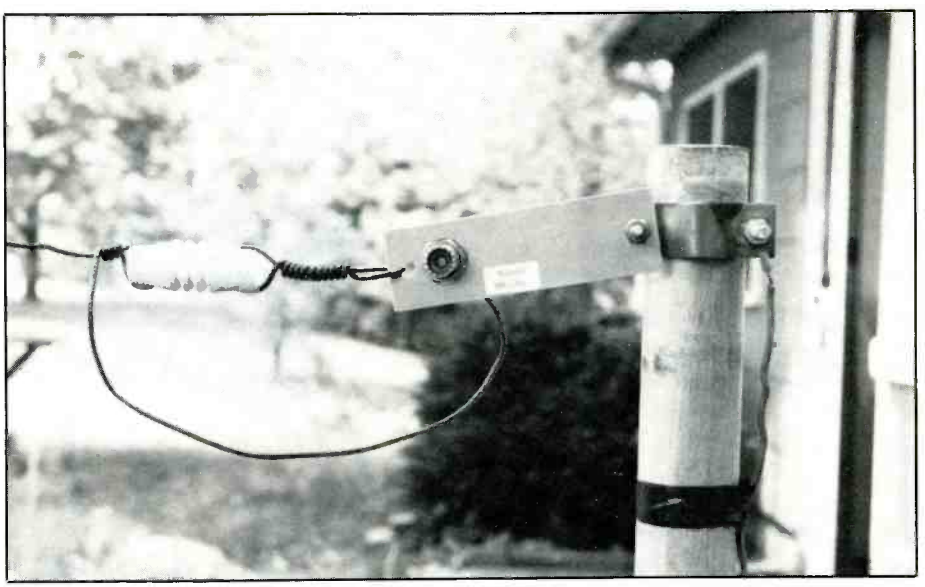

Fig. 3. Ground level feeding of duo-bander. A short length of cable connects antenna to transceiver.

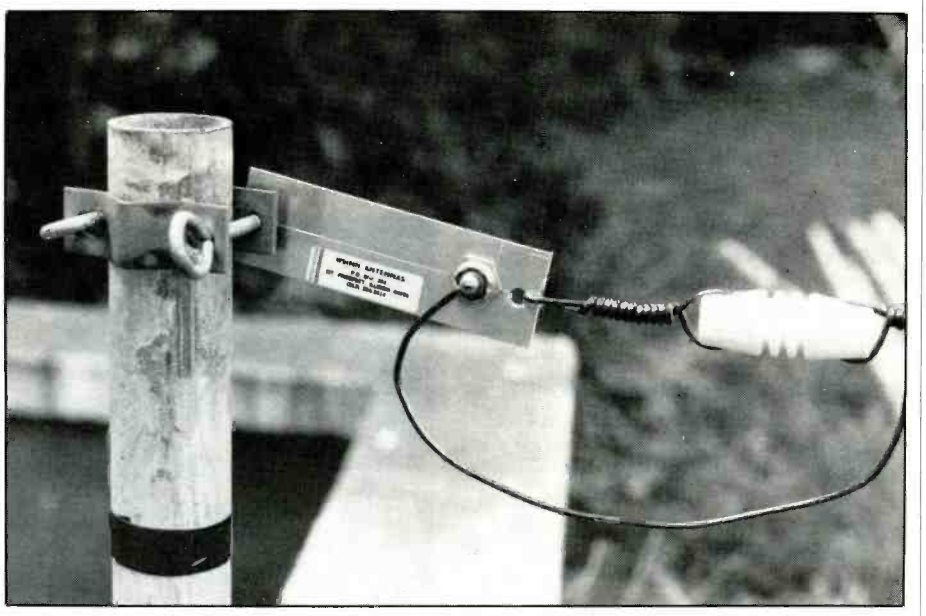

Fig. 4. Opposite side view of end-fed assembly.

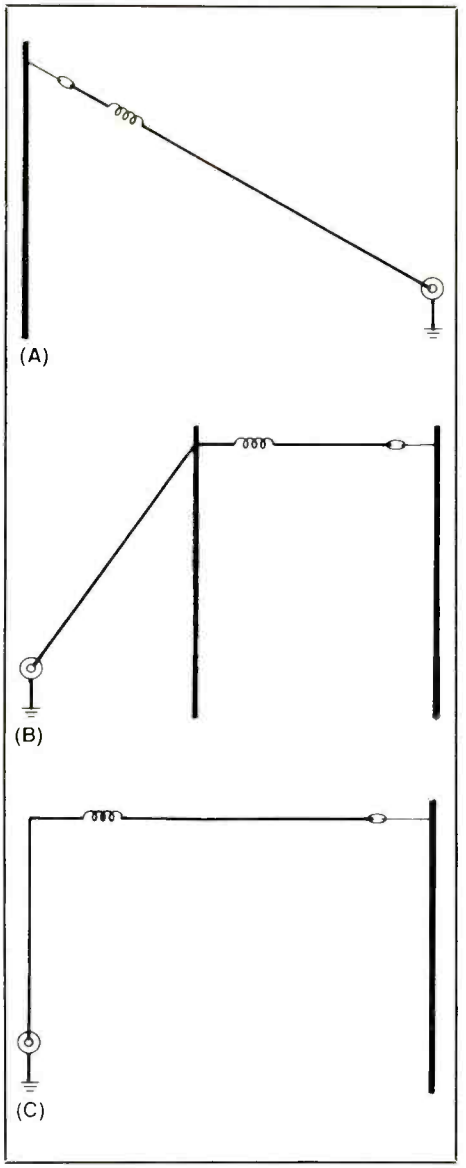

Fig. 5. Various configurations for duo-banders.

tween the coil and the far end of the antenna. Our installation was adjusted to resonate on 3830 and 1875.

In the W9INN design the 2-to-1 SWR range is better than 250 kHz on 80M and better than 120 kHz on 160M. When ordering the antenna from W9INN you can specify the desired resonant points. However, the height above ground does influence the exact resonant frequencies and some adjustment may be necessary if you want to hit an exact center frequency. Actually, a tuner can be used to set-up a low SWR on any other frequency segments of the two bands. Results were excellent without a tuner in the region about the resonant frequency and, with the aid of a tuner, fine operating conditions could be set up over the complete 80 and 160 meter bands. A tuner in the circuit also permitted DX'ing on all the bands up to and including 10 meters.

Antenna can be erected as a sloper, partial flat-top or an inverted-L configuration as shown in Fig. 5. A variety of resonactor coil antennas for various band combinations are available from W9INN, P.O. Box 393, Mount Prospect, IL 60056. For multiple band operation more than one resonactor coil can be used. Additional information is available from the manufacturer.

The 80-160 broadbander did very well on various SWB bands and other segments of the shortwave spectrum such as the marine band above 2 MHz and frequency bands that were approximately odd harmonics of the resonant cuts. It is also easy to resonate the antenna in the broadcast band (MW) by clipping on 30 foot to 60 foot of wire to the end of the antenna. You can make a surprising improvement in the broadcast band signal levels. If you use insulated wire, just lay it on the ground of wind it among bushes and low branches of nearby trees. Actually the 80-160 duo-bander is quite a good all-around, general-coverage antenna. **PC**

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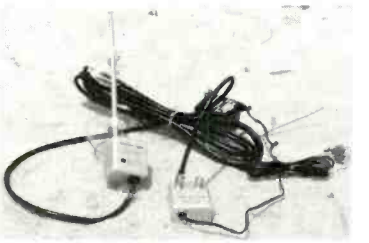

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