



## ANTENNA

continued

into this nut and tighten it against the cap. Force a piece of copper pipe into the cap as you are tightening the nut to help center the nut.

2. Drill the copper-pipe driven element one-half inch below the *tap point* (see Table 1) with a  $\frac{1}{8}$ -inch bit.

3. Using flux, assemble a copper cap onto the driven element and the drilled copper cap with screw and nut onto the matching element. Torch-solder each into place.

4. Again using flux, assemble the matching element, driven element and coupler with a copper "T" and "L" as shown in Diagram 1. Torch-solder each into place. (It may be easier if you temporarily install the insulating spacer in Step 5 before you perform the torching operation.)

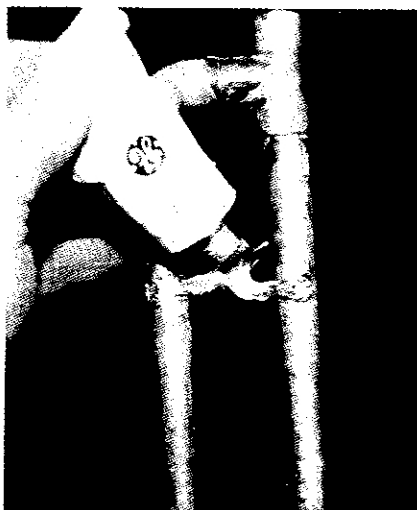
5. Install an *insulating* cable clamp onto both matching and driven elements about a third of the way down from the top of the matching element. Bolt both cable clamps together to keep the radiating element and the matching-element spacing constant. You will probably need a short spacer between the clamps to keep the spacing equal at top and bottom. I used a short length of

Author Jim Weir tries to maintain his footing while adjusting the new antenna for lowest standing-wave ratio.

copper wire between the bolts.

Note: The cable clamps must be insulators; do not use metal clamps with insulating shells. The clamps are there only to prevent antenna vibration in the wind.

6. Torch-solder one solder lug onto each element at the tap point as calculated from Table 1. You may wish to use some sort of clamp to keep the lugs from moving during the cooling process. Although there will



be no mechanical fastener to hold the lugs to the elements, I have had plumber's solder hold fast through 90-mph winds without a hint of failure.

7. Cut your coaxial cable to length to reach from the antenna location to your radio. Feed the coax up through the copper "T" and through the drilled  $\frac{1}{8}$ -inch hole. Pull just enough coax through the hole to reach the solder lug on the matching element, plus just a little extra for strain relief. Slide a  $\frac{1}{8}$ -inch rubber grommet over the coax and work the grommet into the  $\frac{1}{8}$ -inch hole using a small screwdriver or awl. (The  $\frac{1}{8}$ -inch hole was drilled oversize on purpose to allow a  $\frac{1}{8}$ -inch grommet with coax to be worked into the hole fairly easily.)

8. Strip about half of the outer sheath of the coax that protrudes from the grommet. Work the coax shield braid from around the coax center conductor and solder the braid to the solder lug on the radiating element. Strip a small amount of the center conductor's insulation back and solder the center conductor to the solder lug on the matching element.

9. Install whatever coax connector your radio requires on the *other end*

Silicon sealant waterproofs the finished antenna.