# New Use For CB Antennas

## —converting 'em for ham use

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Have you ever wanted a cheap but effective commercial-quality antenna? Do you live in an area without any handy trees to hold up a wire? Perhaps you're a converted CBer and are wondering what to do with that "good buddy" antenna up on the roof. Even the lucky op with forty acres and rhombics for each compass direction may find this set of antennas both useful and interesting.

In order to convert a CB antenna, you first have to find one. I have seen various suitable types for sale through local classified ads and from disgruntled CBers. I purchased my antenna from the local Montgomery Ward for only $16.00, as it had one small (and useless) piece missing. It was either a Hy-Gain "Silver Bullet" or a very similar ½ λ model. Almost any of the many models and makes in use are suitable for these modifications or adaptations of them.

Four variations are shown in the sketches in Figs. 1 through 7, together with several suggestions for possible mounting and grounding methods for the average home lot. Two of the antennas, variants A and B (Figs. 2 and 3), need no additional parts except for the recommended stainless steel hose clamps. These are required in order to provide stronger joints than those used in the original. The other two versions require only two standard sections of aluminum tubing from your local hardware store, plus a couple of short pieces of coax, PVC tubing, and some wire.

Here are instructions for each type, variants A through D, with a summary of the features of each, together with sketches and construction notes. There are two methods shown for constructing the trap for the 10-40 meter antenna. Although I have not tried it, the one using a dowel on the inside, PVC pipe outside, and the coaxial capacitor is not the

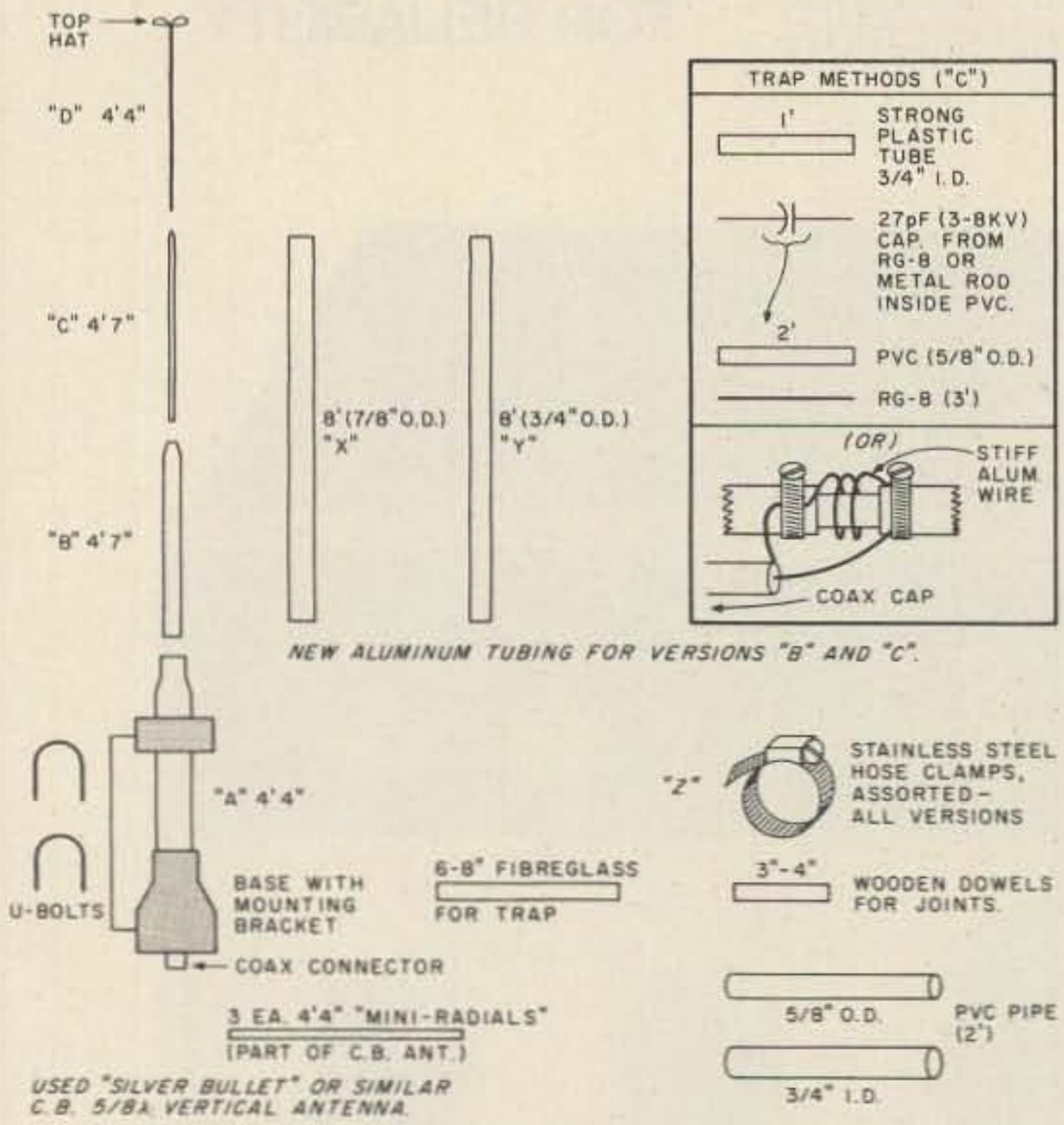



*Fig. 1. As can be seen, a minimum of extra hardware (only a few hose clamps in two cases) is required, and yet a number of quite useful commercial-quality antennas can be constructed. The hose clamps must be stainless steel. Also, avoid overtightening unless wooden dowels are inserted into the smaller tube of a joint. The original joints are not as good as they could be, which is why you need the clamps and dowels.*

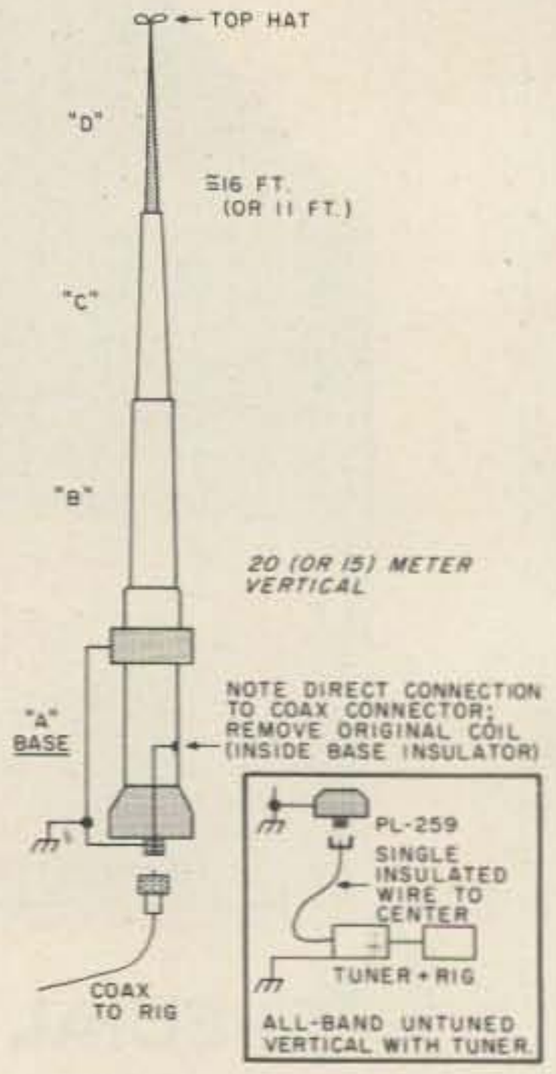



*Fig. 2. Variant A — 20 meter (or 15m) ¼ λ vertical.*

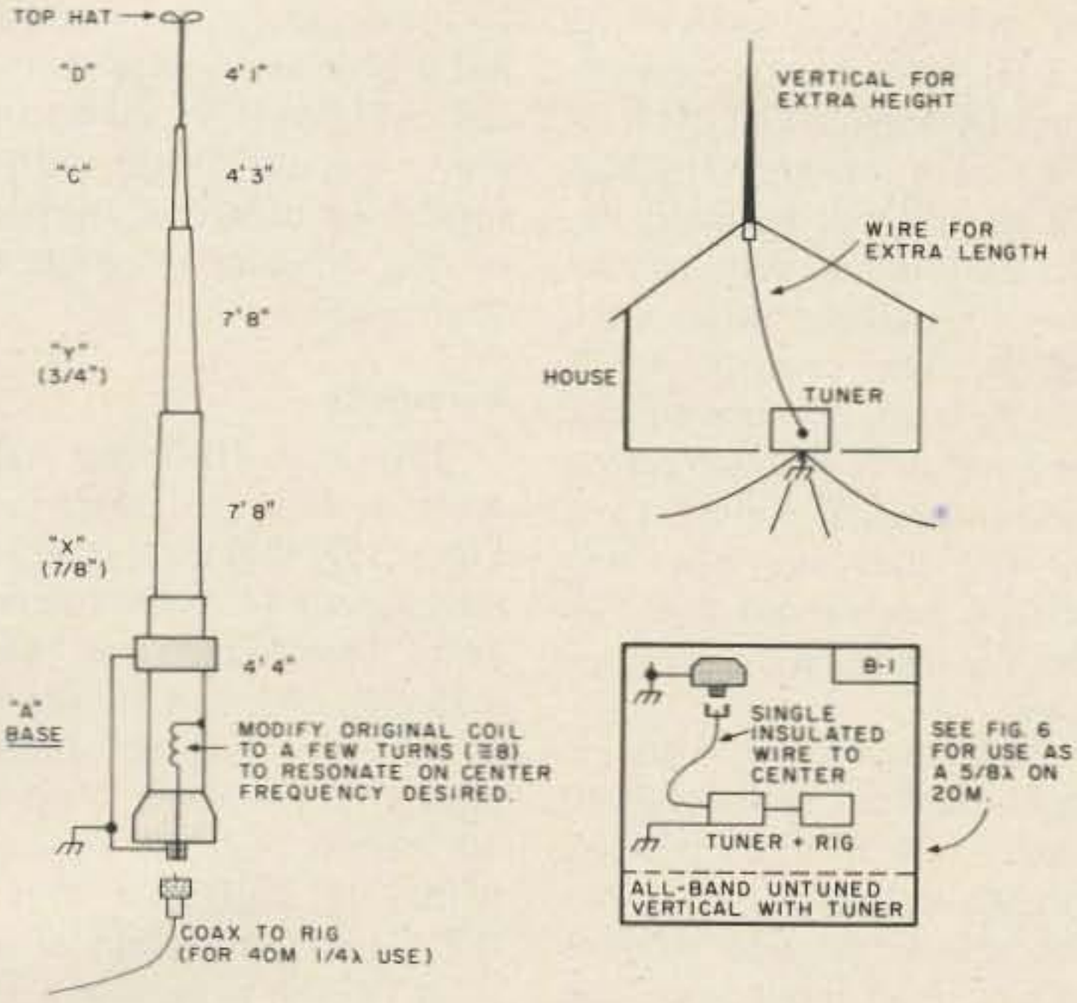



*Fig. 3. Variant B — 40 meter (or tuned) vertical.*

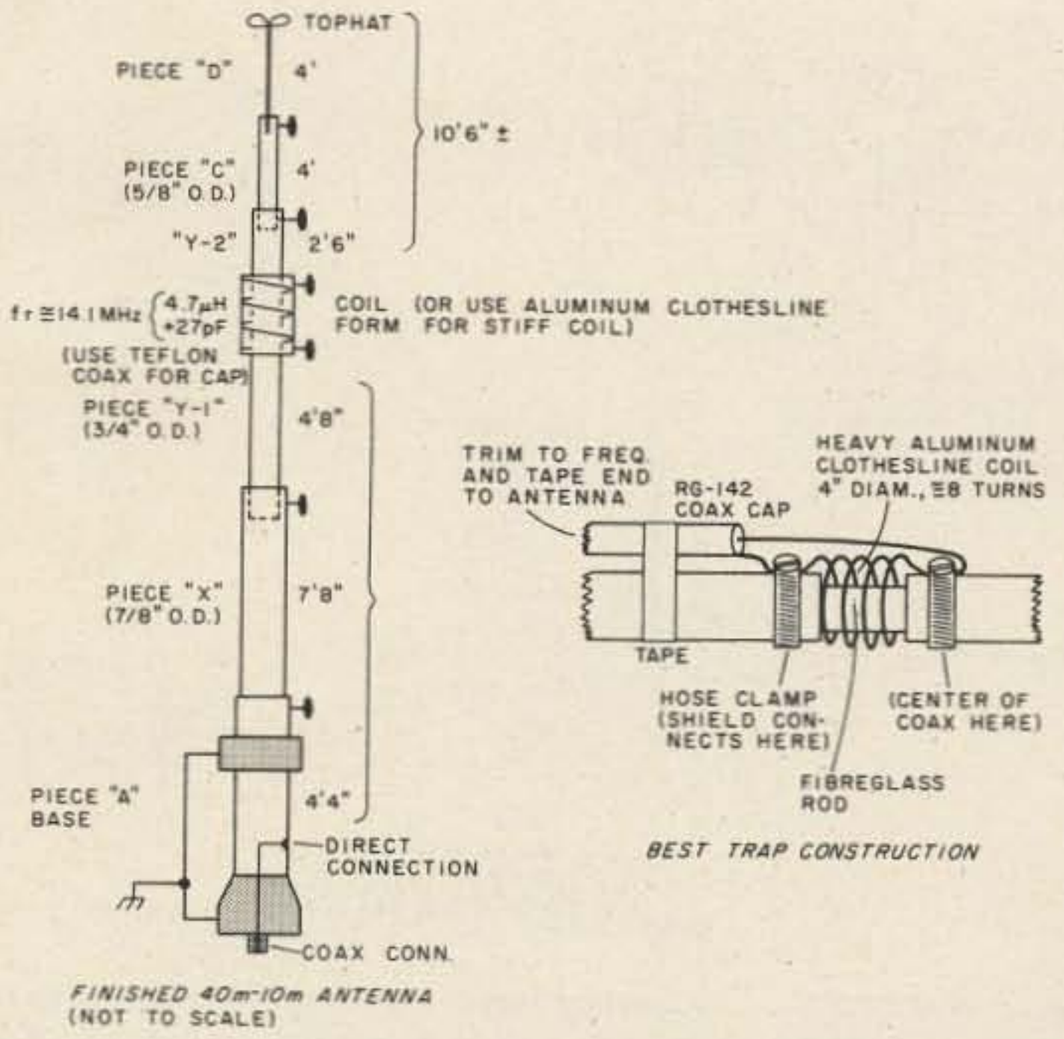



*Fig. 4. Variant C — 10 to 40 meter trap vertical.*

stronger of the two. I just happened to have a heavy fiberglass rod the right size to construct a trap by the other method. Each model has been tried and works quite well.

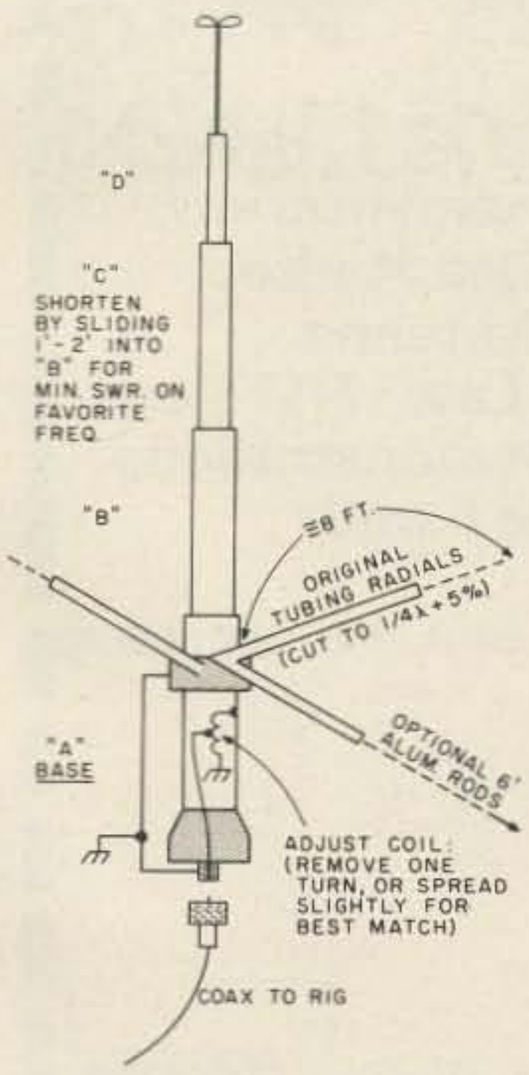
So pick the one that you like best, and remember that these ideas can apply to a complete homemade model, too, although without as easy a base mount. Finally, don't forget the ground rod and radials for good performance.

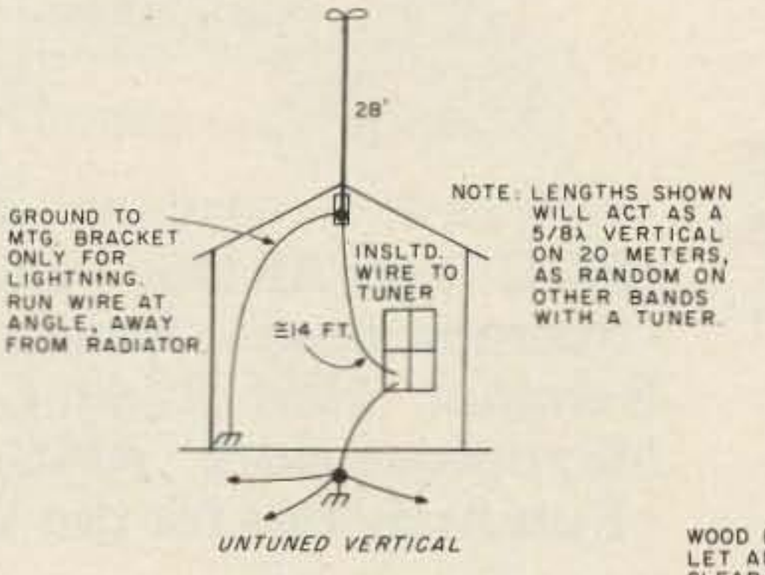
### Variant A

This is a 20 meter (or 15 meter) quarter-wave vertical antenna. (See Fig. 2.) By sliding the tubing together and clamping it, you can shorten the antenna to 11 feet or to 16 feet (±). Replace the base coil inside the insulator with a direct connection. Modify the tubing to utilize the slot-and-clamp method for greater strength. No extra materials are required except clamps. The original radials are not used, but heavy wire (#12-14) quarter-wave ± 5% insulated radials are a must, together with a good ground at the base. The support pipe, if used, can be 8' or more to provide a fair ground, but it should be supplemented with several small rods wired together. See the ground and radial suggestions in Fig. 6.

### Variant B

This is a 40 meter (or tuned) vertical antenna. (See Fig. 3.) The useful height is 28' with the top hat capacitive loading; only a few turns of #12 insulated wire in the base insulator (where the original coil was) will resonate at 7.1 MHz. The entire band will be covered. Use a good ground plus radial wires for best efficiency. This will also work on a portion of the 15m band as a three-quarter wave vertical. Note that if you only want to use a vertical radiator with a tuner, make a connection with a single insulated wire to the center of a PL-259. Using a







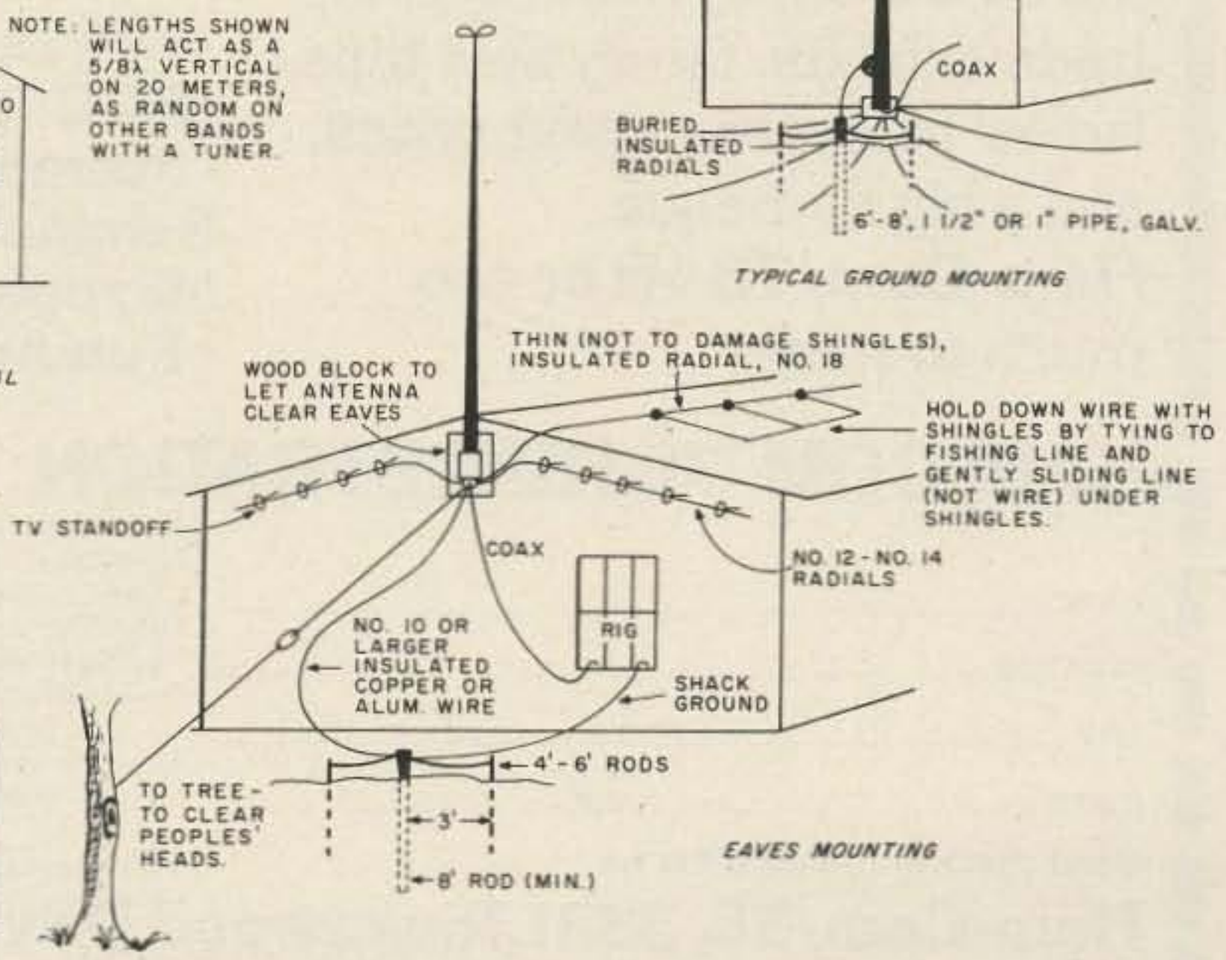



*Fig. 5. Variant D — 10 meter ½ λ vertical.*

*Fig. 6. Installation suggestions.*

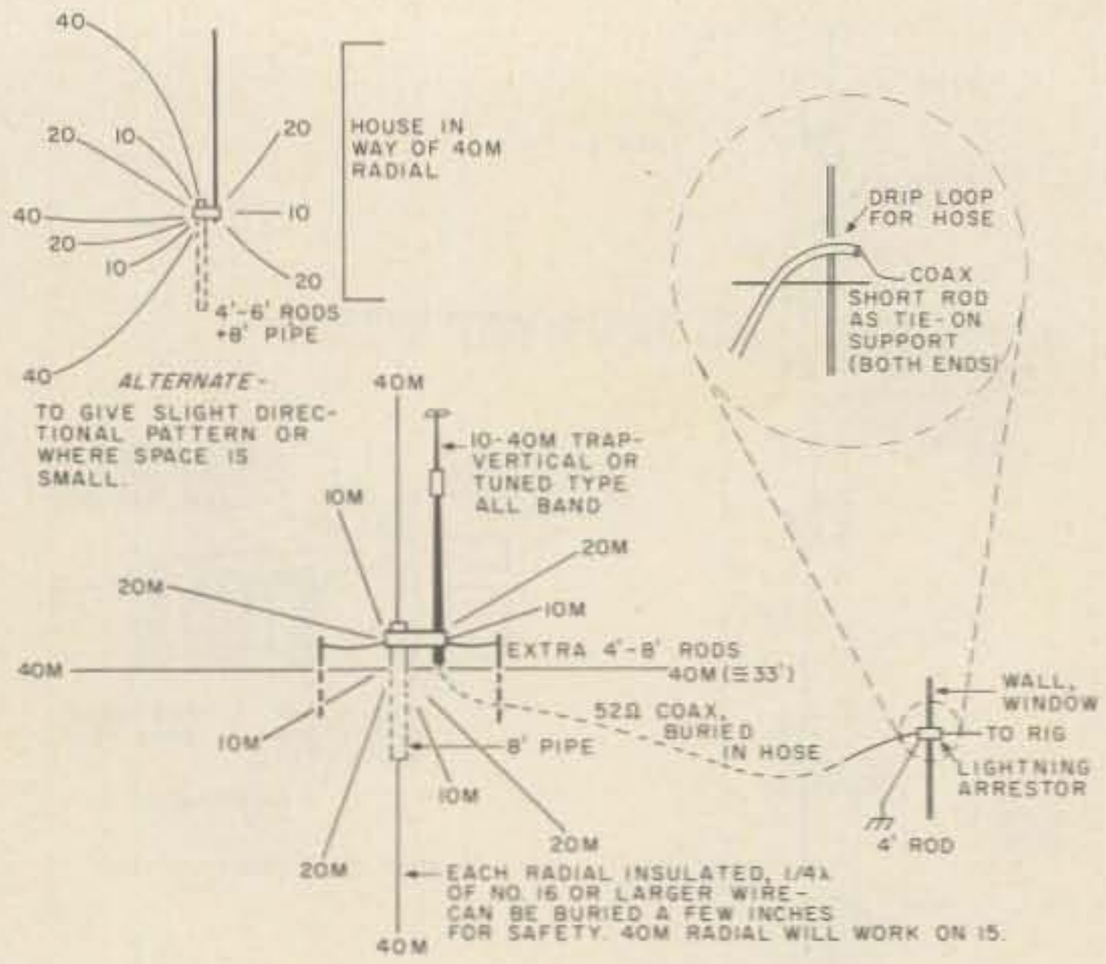



*Fig. 7. Variant C — suggested radial pattern. This will provide efficient operation on each band. A small amount of directivity at low angles will be obtained by the pattern in the upper-left corner.*

roof (or eaves) mounting, run wire (through a feedthrough insulator) to the tuner (with a ground system). The extra length will be more efficient on 80 or 160m, and the vertical will allow some extra height over the usual suburban long wire.

### Variant C

This is a 10 to 40 meter trap vertical antenna. (See Fig. 4.) Use the original base and the top two sections (C and D). Add the two new 8' tubes (X and Y). Cut off Y at 2' 9" from one end. The trap will be inserted between the two parts of Y. For instructions for making the trap, see Fig. 4. The original radials may be used, if you wish, but they will have little effect on bands below 10 meters. Even on 10, they are not long enough. See variant D for an idea for lengthening them for 10m.

This antenna will work on all bands from 10 through 40 meters but with a little less bandwidth than the other version. Since the trap requires only a small inductance, the bandwidth reduction is not large. My model works over 350 kHz on 40, all of 20, all the CW end of 15, and 1 MHz of 10 with an swr between 1.3 and 2. Only enough "L" is needed to resonate the coil at 14.0 MHz. The values shown are what my unit needed. Fine tune the lengths. Note that 40, 20, and 10 meter operation is easiest, but a little extra fudging with L/C will bring in 15m, too. Use a grip-dip meter with a small loop of wire at the base of the antenna to guide in adjustments.

### Variant D

This is a 10 meter half-wave vertical antenna. (See Fig. 5.) By slightly shortening the original 11 meter antenna and tweaking the base matching coil, this version results. The original tubing radials are retained. Most of 10 meters will be covered, with 2 to 3 dB gain. This is the easiest conversion of all.

A helpful suggestion: The radials, as supplied, are not quarter wave and serve mainly to decouple the coax shield. By inserting and adjusting aluminum rods, true quarter-wave radials can be had. This will improve the efficiency and lower the radiation angle. A ground rod is still desirable for safety and to reduce loss. ■