

A 40 Foot Non-Conductive Sky-Hook

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"A" Frame masts with the necessary guy wires are functional, but require lumber, hardware, and a bit of carpentry skills. . .

TV masts will suffice for Field Day Doublets, but won't pack the weight required for the average Amateur antenna. . .

I enjoy dreaming over pictures of 60 foot tilt-over metal towers. . . *dream*, that is.

Most "Joe Average" types are resourceful and Hams are no exception, have you ever seen a 20 foot piece of half inch waterpipe tied to a treetop with a pulley on the end to raise an 80 Meter dipole?

In the November '65 issue of 73, Earl Spencer K4FQU described his 80 foot telephone pole installation. It is interesting and serves as a good reference for this article.

Still, 80 foot poles don't grow on trees, so to speak, but there must be enough of the little ones around to equip every ham with at least one.

My problem is twofold. First, my station is located in a trailer park with not much more than room for a trapped vertical and possibly a VHF beam. Second, being a fringe

T.V. area, it is almost a necessity to keep below 20 meters as the cleanest rig will block out the weak TV signals.

The only advantage is that every TV receiver must have an external antenna and mast or pole. It isn't too hard to sneak in a ham-band antenna with a little ingenuity.

To get on with it, no station is any better than it's antenna system, and the lower bands get short-changed because of the size required for a good half-wave dipole or quarter-wave vertical without a lot of messy guy wires.

I was fortunate to obtain a like-new utility pole from a friend, with the prime purpose of raising the wife's TV antenna higher for better reception, I told her. Of course I may have harbored a few thoughts for a ham antenna or three!

What can a Ham do with a nice big hunk of free-standing sky-hook? Well. . .

First it has to be brought home, and to say the least, this is no small obstacle. In fact, since it is the first of many, it is the

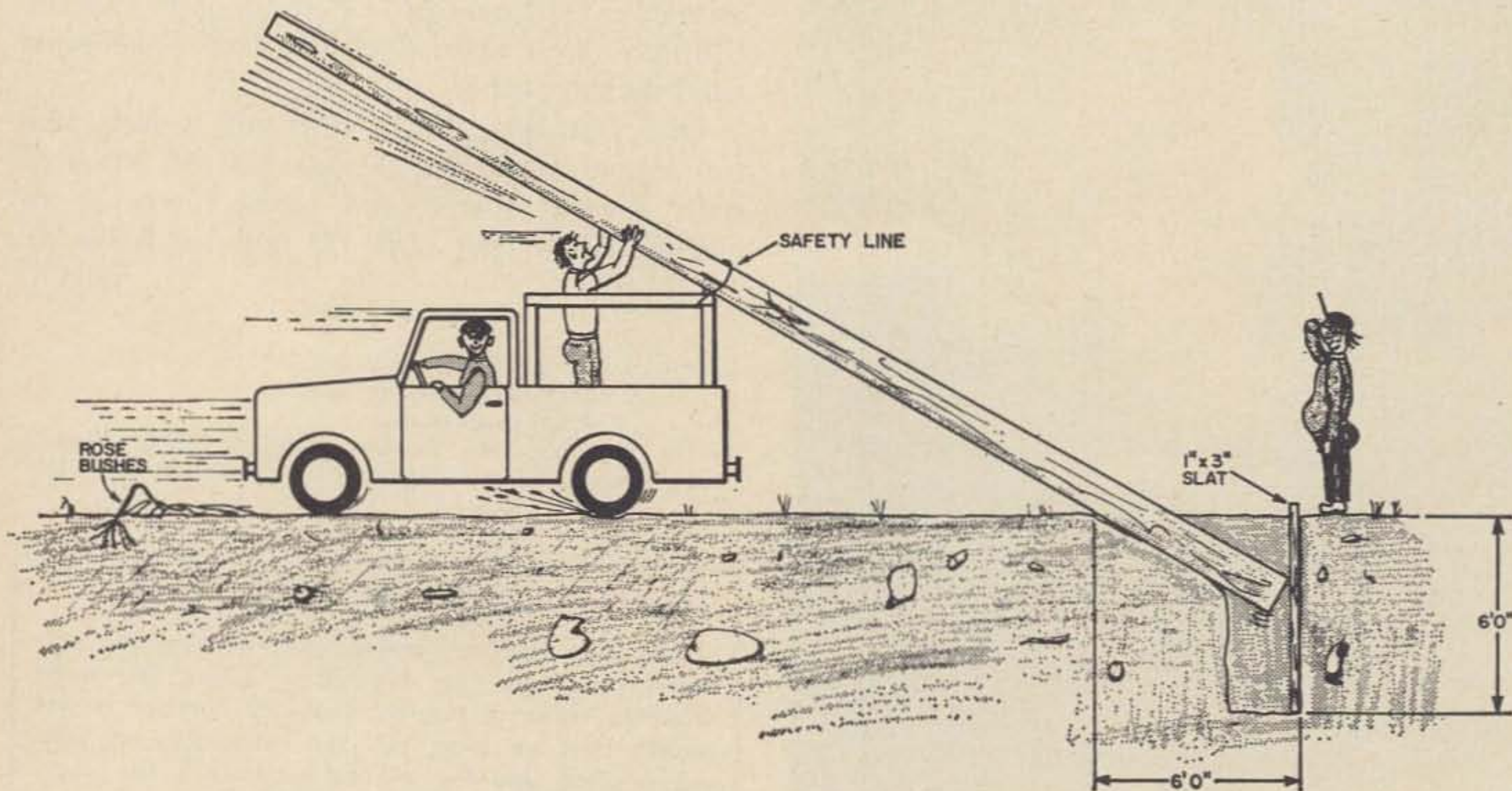
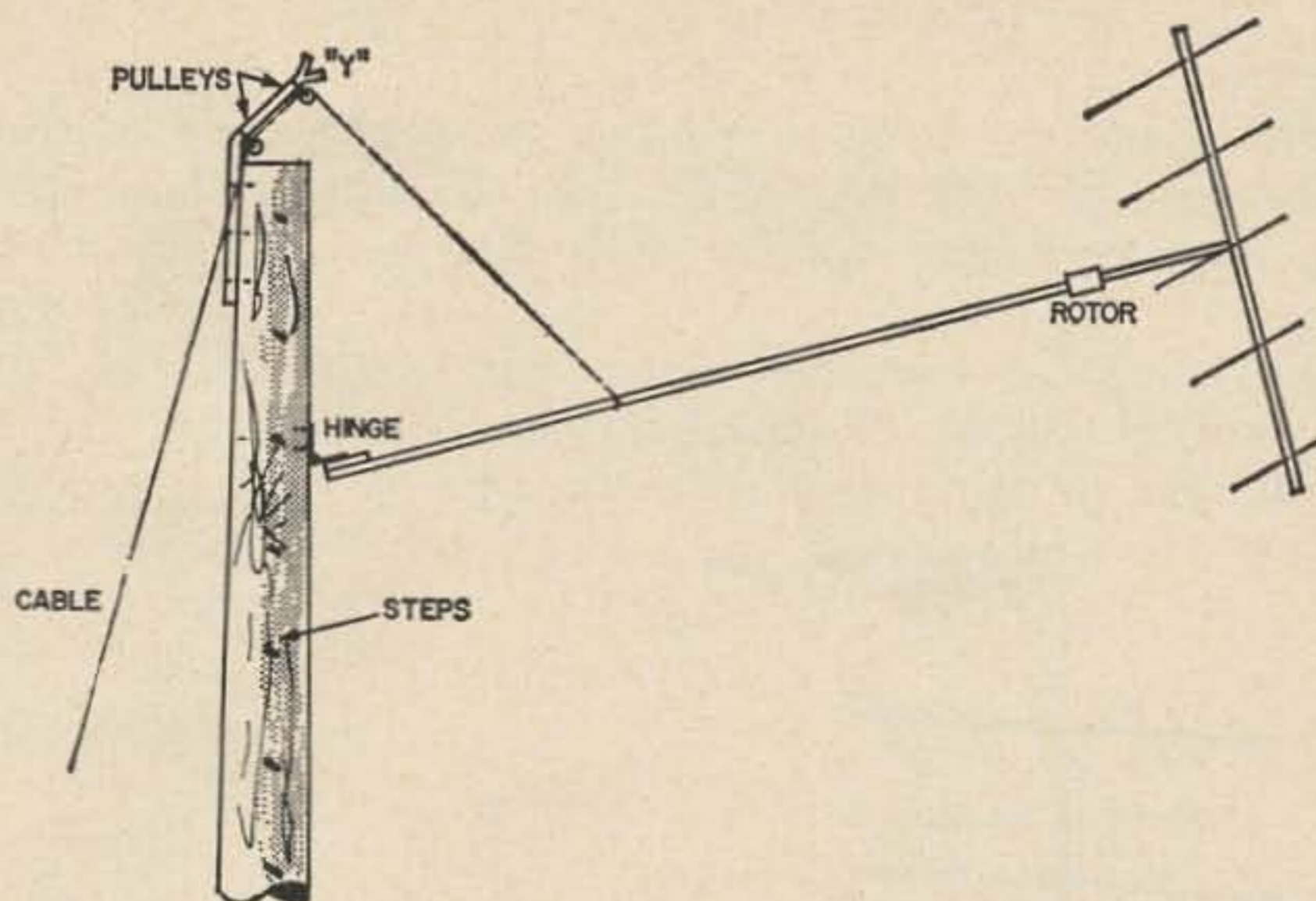


Fig. 1. Easy does it. Actually it is simple. Just make sure the driver is sober!

Fig. 2. "Tilt-over" for UHF beams. Great for the VHF beams of under six elements, 6 meters that is.



hardest. When you find the answer to the problem, any that follow will seem to be easier.

Having less than 2500 men, women and pets in town means I have to rely on "unskilled" labor. To recruit help I use the brew method, and rate all tasks by the six-pack or case. Hollering, "Pole Party at Peterson's house," will bring enough backs to get the job done. If there are high school athletes around, so much the better, cokes and snacks are cheaper.

Take a Pole

Finding a pole in Arizona is not difficult. Farms ranches and small towns seem to have an abundance of them scattered around. These can usually be had for little or nothing, depending on your tact.

If these means are not available, try the utility company. They usually have poles that have been replaced for one reason or another but are still sound. You may have to shell out a few pesos and sign a release, but it should be nominal. New poles of 30 or 40 feet in length usually run about a dollar a foot, and a used one will run in the neighborhood of ten to twenty dollars, if you can't get it for your good looks.

Add One Hole

Prepare the "pole hole" before bringing the pole home. Storage creates a problem.

For depth, I was told that one fifth of the pole should go in the ground, but that is for utility service, all those wires have a lot of wind drag. If the soil is sandy it should be no less than seven feet deep.

The soil here is dry, but hard as rock. I buried my pole six feet, and with proper tamping, it turned out like it grew there.

The diameter needs only to be about 12 inches larger than the pole's diameter for this method, versus several feet larger when using a boom truck.

Slant the hole on the side you intend to erect the pole from, as in Fig. 1. With the hole slanted, there will be more of the butt in the ground, sooner. Also, less dirt will get peeled off the near-side of the lip, and there will be less jerking as you near the upright position.

Bring Together

Since the pole was mine for the taking, I had to devise a plan to get it home. All of three miles and across a U.S. highway.

A trailer used for hauling a jeep to the back country was the answer. The trailer was towed to the pole, facing the top end and about in the middle.

Three of us lifted the light end over our heads while the fourth man wheeled the trailer under the butt end as far as it would go. When we lowered it down the pole was balanced just right for towing. We secured the pole to the trailer hitch and the rear cross member with $\frac{3}{4}$ inch nylon rope.

To fasten the cludge to the vehicle, a ball socket should be attached to the light end with bolts or large lag screws.

We took a heavy chain, and with a clove hitch around the pole and a loop around the ball, were about ready to go. To further secure the chain, we put $\frac{3}{8}$ inch bolts through the links to hold the chain securely.

It didn't slip, but this method isn't ad-

vised, Mr. Law becomes unhappy with such practices.

Don't forget to hang a red flag (or shirt) on the rear of your semi-pole, and, if possible, have someone follow with four-way flashers.

This operation cost the better part of a half case of Rocky Mountain Water, consumed back in the safety of the yard.

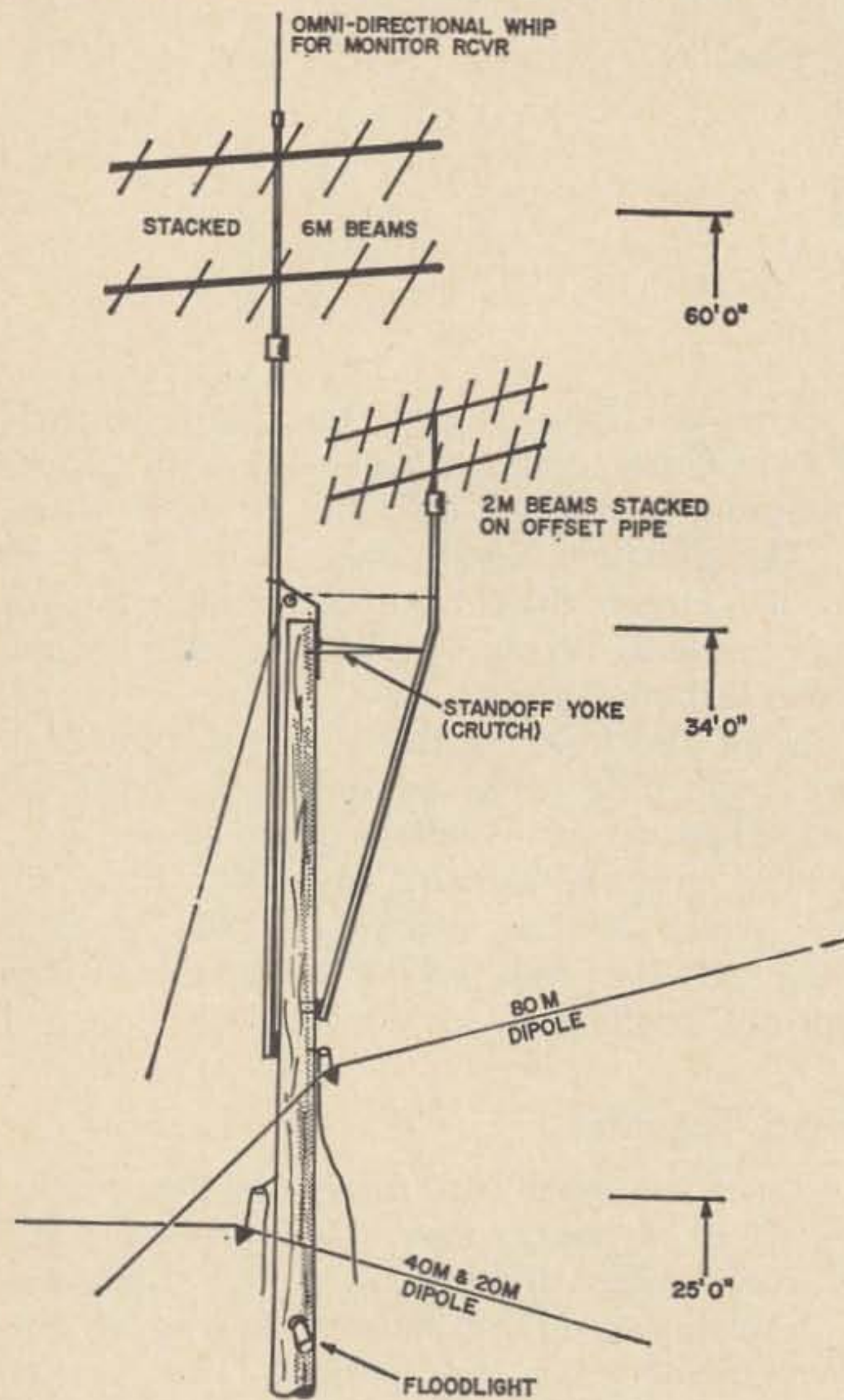


Fig. 3. Why not?

Garnish With Steps

Now, before you try to get that son-of-a-gun airborne, consider "stepping" it now. (Steps?) You are gonna hafta climb it, like it or not.)

We drilled $\frac{5}{8}$ inch holes for the steps, but, again not thinking too far ahead, listened to experts. It may take an extra fifteen minutes to set a pole with the steps installed, but it is much easier than a two hour stint later.

The holes are drilled three feet apart on a side and staggered from side to side to form 18 inch steps.

A sledge hammer is used to drive the steps in almost to the marking ring located about three inches from the threaded tip. Then the step is screwed in a couple of times to seat it.

Oh, one small detail, scrounge up around fifteen steps or reasonable facsimile unless you are adept with climbing hooks.

On good advice, I borrowed another friend's belt and hooks and such a hair-raising ordeal I never had! It was the first, and I hope the last time for that scene. Unless you have used hooks before . . . forget it . . .!

Double stepping approximately five, and again at six and a half feet from the top makes working up there much simpler and safer. If your feet aren't on the same level you will get darn tired fast.

Climbing with steps is tolerable, but a belt of some sort is still necessary to free your hands safely.

Combine Ingredients

Now to put your pride and joy up where the neighbors can admire it, in all its splintery splendor.

We placed the butt over the hole, with the pickup at the other end. A couple of 1 x 3 inch slats were placed against the back of the hole, to keep the pole from hanging up and gouging dirt into the hole.

While two of us held the pole up, the third man backed the truck under far enough for us to place the pole on a sturdy pipe or ladder rack installed on the back of the pickup. From then on it was smooth sailing. With one man at the butt, and one in the back of the truck, the third man moved the truck back VERY slowly, a few inches at a time.

The man in back kept the pole from moving sideways, while the man at the butt kept it feeding properly by kicking it down, as it had a tendency to bind on the slats.

A roller of some sort on the rack would be desirable, and would make the operation a lot smoother, but isn't necessary.

After the pole is elevated to 45 degrees, it starts to get top heavy and much care need be taken. A loose loop of line was tied to the rack, around the pole, and again tied to the rack. This allowed the pole to move upward on the rack, but would have snubbed it if it had tried to go to the side. Remember, SLOW . . . Keep it centered at

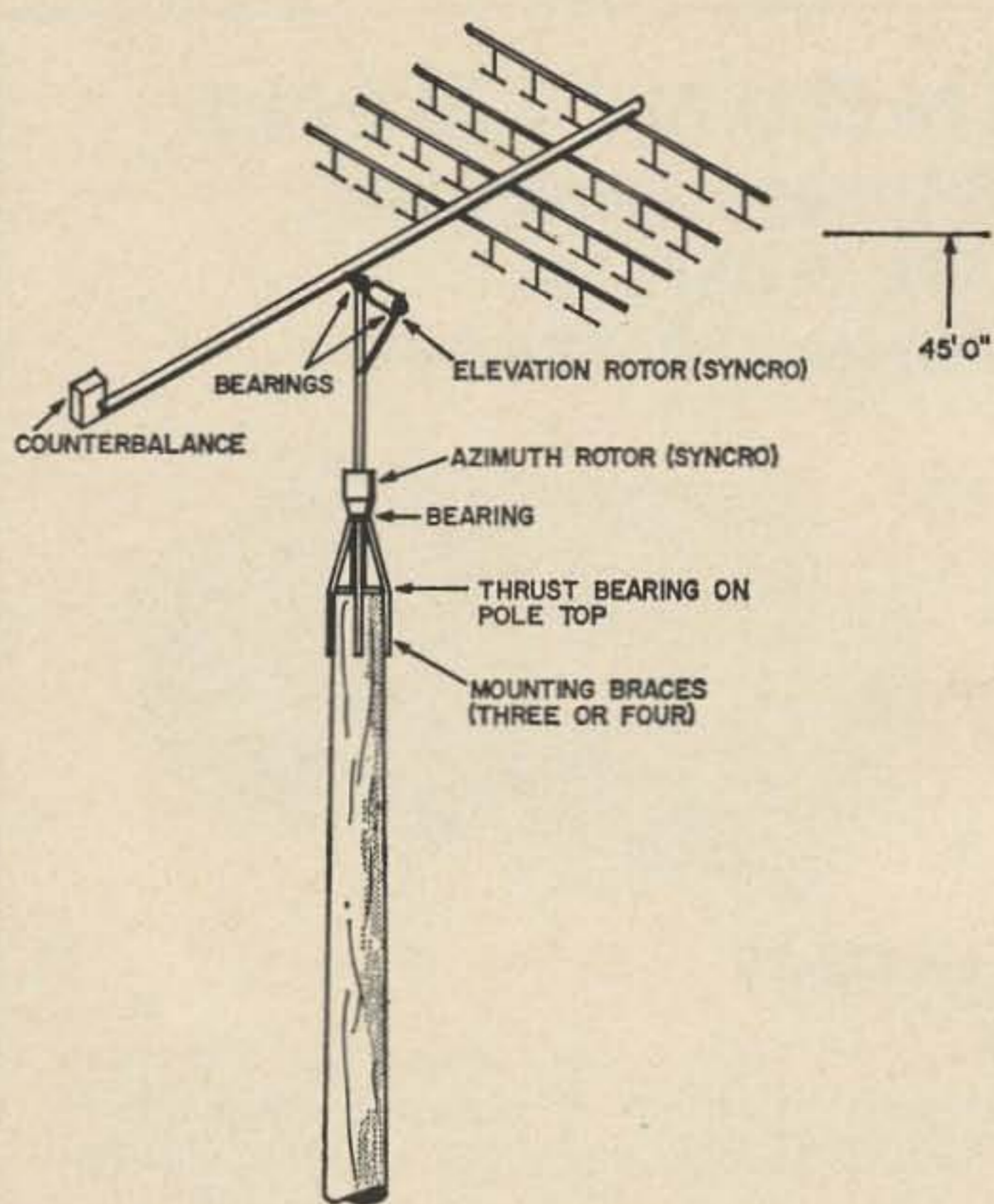


Fig. 4. Moonbounce, anyone? Eliminate the counterbalance by making the array larger and putting the elevation rotor in the center!

all times. If that beast gets away, something is going to get bent . . . and bad!

Keep the truck against the pole when it is vertical, and cinch up the snubbing line. Two men can hold the pole vertical while the third shovels in dirt. Pack it solid now and no loosening will occur.

One shoveling and three tamping is the rule. Tamping cannot be overdone! With a foot or so of loose earth around the pole, use a tamping bar or pipe until your arms ache. Add more dirt and repeat. Doesn't that brew taste good?

The tab for this part of the pole party came to one case, most of it lying on our backs and admiring our handy-work.

To thwart would-be Tarzans, there shouldn't be any steps below 7 or 8 feet. There are removable steps that hang on lag bolts screwed almost flush, but if they aren't available, you can use regular steps and remove them when not in use.

To enhance the appearance of your new marvel, try painting the first 6 or 7 feet white, and, if you have a feud going with the lid next door, continue on up with red and white, alternately.

Attaching Antenna Masts

Now that the pole is up it is useless without a few antennas hanging from it. I won't

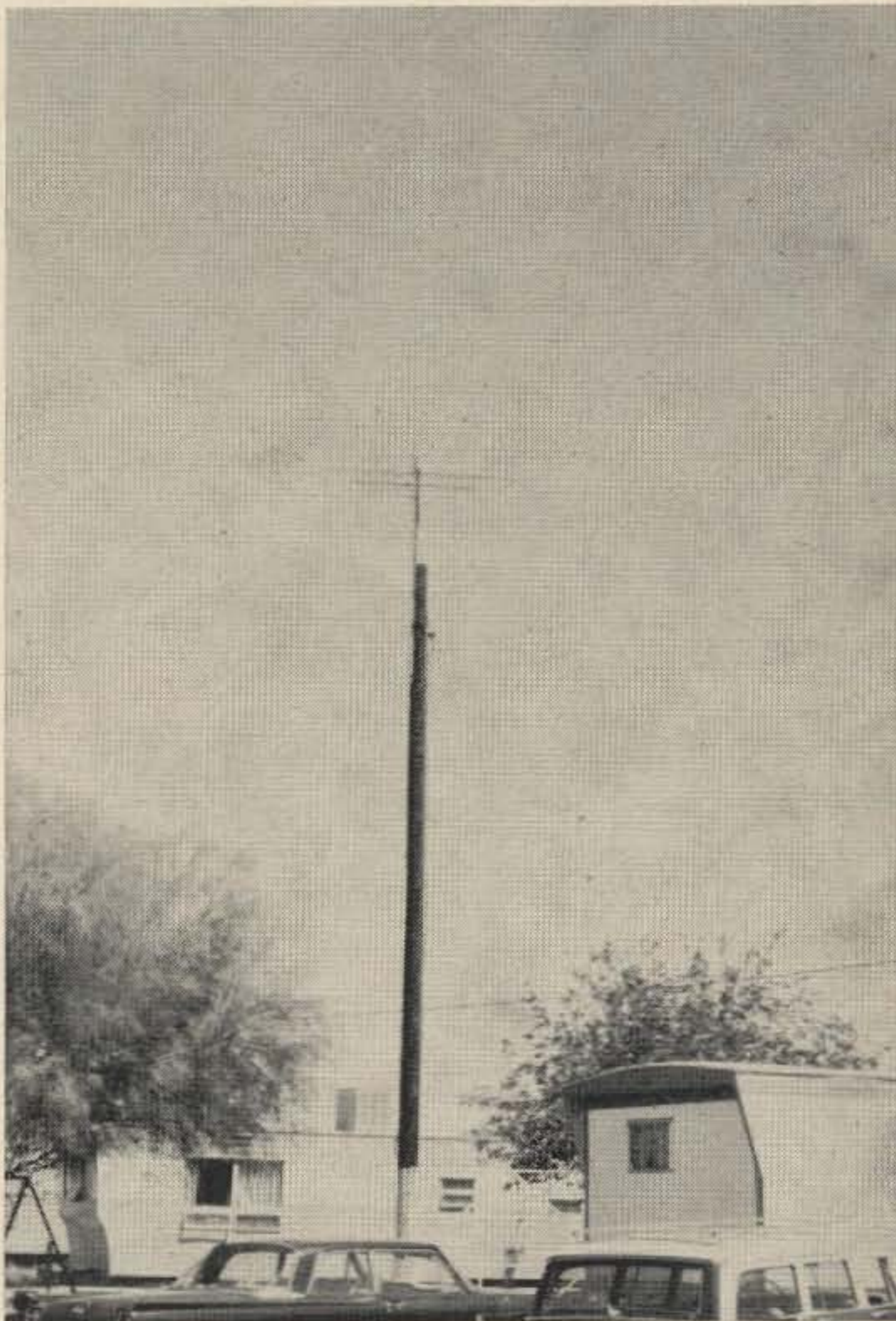
elaborate on methods of mounting antennas of this type of pole. The variables of location, band requirements, and the individual Amateur's tastes are many and would require many pages of print. There have been numerous articles for specific installations so I will briefly cover a few which have struck my fancy and may stimulate your imaginations.

By looking at K4FQU's article in the November issue of 73, and another in the ARRL Antenna Book dealing with a 60 foot tilt-over made of will casing, you should be able to come up with a few ideas for mounting the larger 10 thru 20 meter beams, VHF collinear arrays and such.

For VHF beams, Fig. 2 will be more than adequate. This installation works well for the larger TV Yagis around town and we get some fairly powerful dust storms.

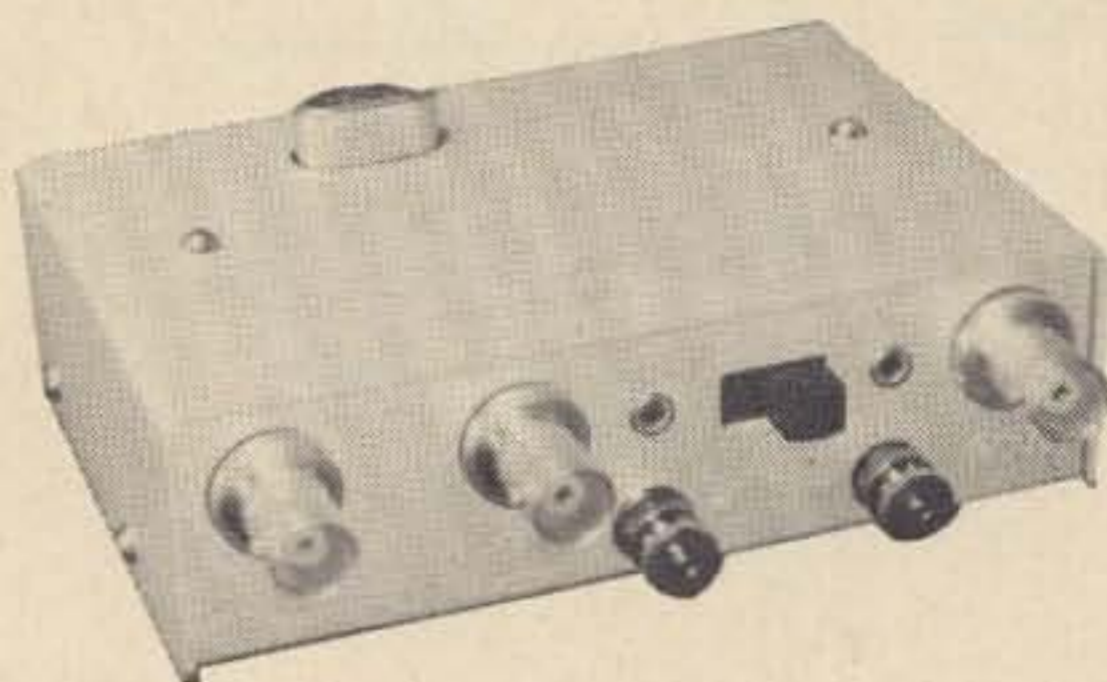
All that is needed is a 6 foot piece of heavy angle iron, a pair of large pulleys, barn door hinge, a 10 to 20 foot piece of 2 to 2.5 inch water pipe or equivalent, and some large lag bolts.

If need be, K4FQU's latch arrangement can be incorporated, or the angle iron can



Painting the bottom part to match the background helps to make the pole disappear?

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be bent as shown, and a "Y" attached to cradle the mast when it is upright.

The hinge should be located down from the top of the pole a distance equal to at least one third the length of the pipe and antenna support.

The cable should be attached to the pipe at the point that is directly opposite the upper pulley when the mast is upright.

The hinge is welded to the pipe and attached to the pole with large lag bolts, with the hinge being closed when the mast is up.

With this arrangement antenna adjustments or experiments will be simplified.

For a full quarter-wave 80 meter vertical I have only a start at the present, an old trapped vertical with the traps removed. The top of the vertical is 63 feet above the ground. I plan to bring heavy copper wire down from it's base, (bypassing the insulator) to one foot off the ground.

PLEASE INCLUDE YOUR ZIP CODE
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With proper radials it should load easily. Tuning will be with an SWR meter and a sliding tap.

I will cover the lower 8 feet with a piece of wood or fiberglass molding to prevent the possibility of someone getting an rf burn. (Leaving the base of the molding open for drainage.)

With a 2 x 4 and 2 x 2's laid across the top of the pole it would be possible to construct a "Lazy H" from a pair of 40 meter inverted "V"s suspended from the ends.

The possibilities are endless, take a look at Fig. 3. If that doesn't start you looking for a pole for your backyard, I wish you luck on your cross-town DX. Hi!

I got a bit carried away with Fig. 4, but the moonbounce boys can have a ball with this idea. With all the expensive receivers and arrays needed, the added cost of a tower has squelched a few would-be moonbouncers.

I hope to see a few new poles around with all types of goodies sprouting from their tops. If I can be of more help, I will answer any questions if at all possible. I'm in the book.
 . . . K7VBQ