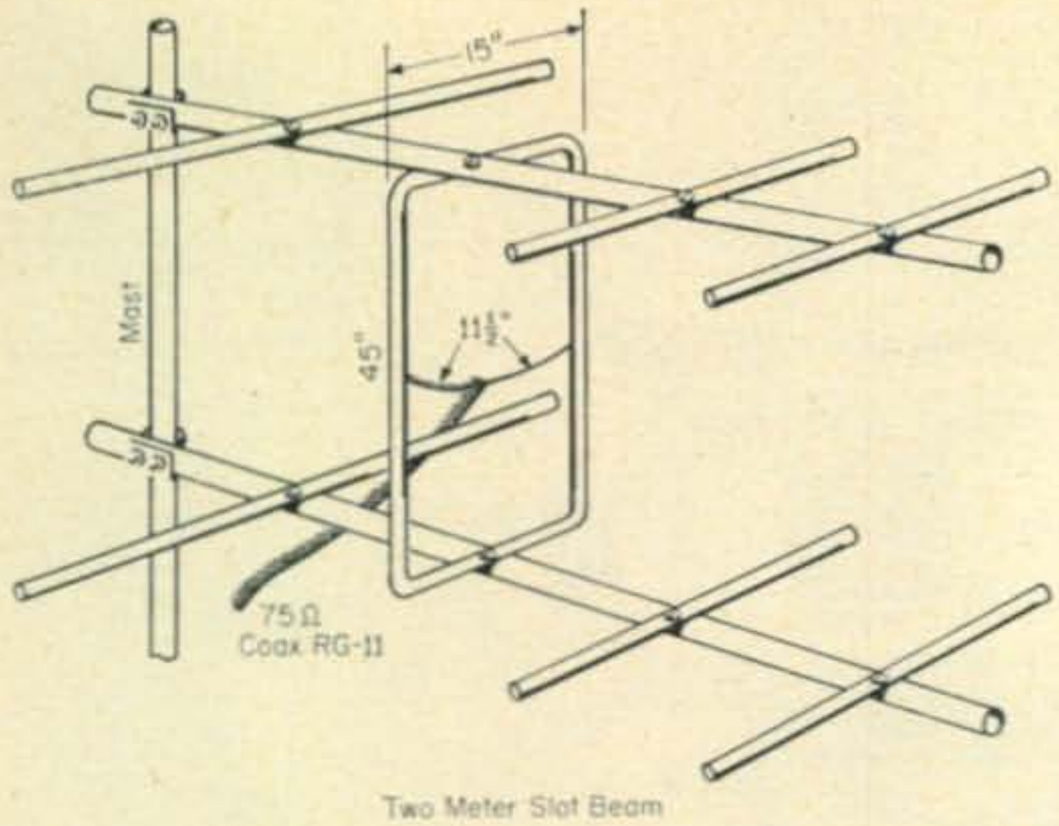
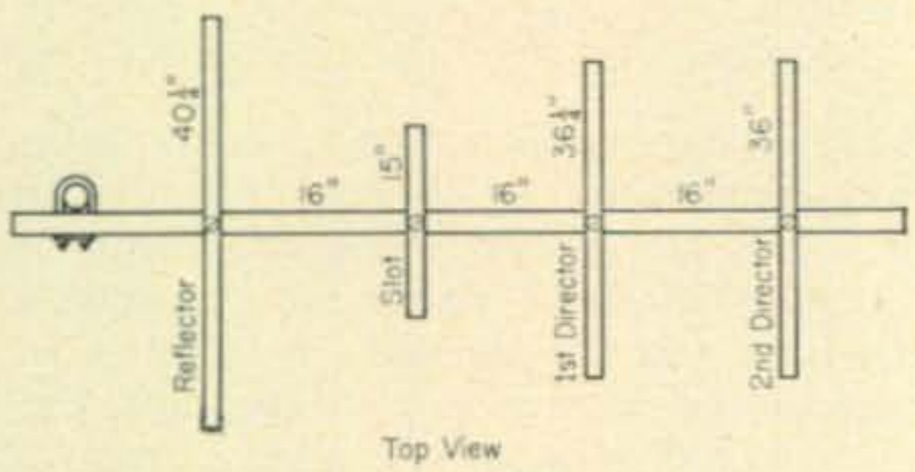


Two Meter Slot Beam



Top View

Fig. 1—Two views of the slot antenna for two meters. Aluminum and all hardware was salvaged from TV antennas.

The Homebrew Slot Antenna

BY R. M. BALDWIN,* K4ZQR

Improve your signal on two meters with this simple slot antenna.

ARE you tired of picking up the pieces of your bedspring after every windy day? Do you want to be asked when you made the switch to a kw rig? Then try a Home Brew Slot for two meters. Chances are you may be able to substantially improve your signal and at the same time decrease your wind loading.

Our British cousins are hard to beat on a lot of things concerning amateur radio, and on this side of the pond we have the highest respect for their Eddystone dials and G4ZU beams, to name a couple of examples.

One statement by W1HDQ in a magazine article[1] struck me as significant and worthy of investigation. Speaking of two meters, he said, "There is almost complete standardization on one type of antenna for home station work, the skeleton slot, an array just coming to the attention of American v.h.f. men." Since the article provide the details of the slot element which consist of two horizontal dipoles stacked approximately ⅝ wavelength apart, I figured perhaps with this help, maybe I could brew up a beam.

The driven element of the slot is an elongated rectangle with rounded corners, and it helps if you will first visualize two stacked dipoles ⅝ wavelength apart. Now bend the ends of each dipole toward the other dipole leaving about 15" of each dipole horizontal. The ends you bent do not reach far enough to connect the two dipoles, but if you now insert a phasing line while still maintaining ⅝ wavelength spacing, you form a complete loop which is 15" across the top and bottom and 45" on each side. Feed this at the exact mid point of each side with 75 ohm coax by fanning out the center lead 11½" to feed one side, and the braid 11½" to feed the other—and you have the driven element of the skeleton slot antenna. This is all the detail provided in the article, but it was the important part.

Construction

A trip to our local radio store netted several channel 9 Yagi's for free. How they acquired them, I don't know, because we have no channel 9 here. Any old TV antenna, however, will provide a source of aluminum.

Make the driven element first by using TV antenna elements which are around ⅜" in diameter. You will, of course, have to use several to make the slot. When joining them together, crimp the end of one for a force fit into the end of the next piece and then drill the two and drive in a self-tapping screw. If you want to get fancy, you can make a bending jig to round the corners of your slot. I just bent mine with pliers, and while there are some irregularities, you can't see 'em when it's up in the air. Complete the driven element by drilling two mounting holes in the center of each 15" horizontal side, and thread two self-tapping screws with lock washers into holes at the mid point of each 45" side. These are for attaching the coax later.

The boom material I used was 1⅛" stuff from the booms of the channel 9 TV antennas. If you can't scrounge enough stuff for the booms, you may have to buy some aluminum tubing. Minimum length for each boom is about 54"—which allows for 16" spacing between all elements plus enough boom behind the reflector to attach the two beams to the mast with TV U clamps.

Dimensions of each element are given in fig. 1 and are figured from handbook formulas.

[*Continued on page 102*]

*409 Kaelin Drive, Louisville 7, Kentucky.

[1]Tilton, E. P. "World Above 70 Mc.," *QST*, November 1963, p. 55.

Homebrew Slot Antenna [*from page 26*]

If a third director is desired, cut it to 35¼" and space it 16" out from the second director. Of course, a longer boom is necessary here.

Fasten all elements, including the slot, to the booms with long screws through the boom and element, then a lock washer and wing nut. Tighten down enough to slightly compress the ⅜" tubing used for the elements. The spacing on assembly is determined by the slot element, and the entire structure becomes rigid when fastened to the mast with U clamps.

Feeding

Fed with RG-11 coax as specified, the s.w.r. is better than 1.2 to 1 even down on 143.46 mc, which is our MARS net frequency. The design frequency of this slot element is 145 mc, according to article, so it's quite frequency tolerant.

On comparison test with a three element beam I was formerly using, the average report was at least plus 3 db from the local crowd. The biggest surprise, however, came on reception. With the same equipment, fellows I could never copy before on our net came in loud and clear.

Considering the cost, which in my case was zero, since the aluminum was scrounged and I had the coax, I'd say that the British have done it again, by Jove. If you work two meters, and share my respect for British ingenuity, put up a slot and hear the difference. ■

Need A V.F.O. [*from page 25*]

Normally, a broad tuning range is not compatible with optimum performance.

After proper feedback is chosen, temperature compensation is accomplished by standard methods illustrated in amateur handbooks. With the unit shown, the author has achieved opera-

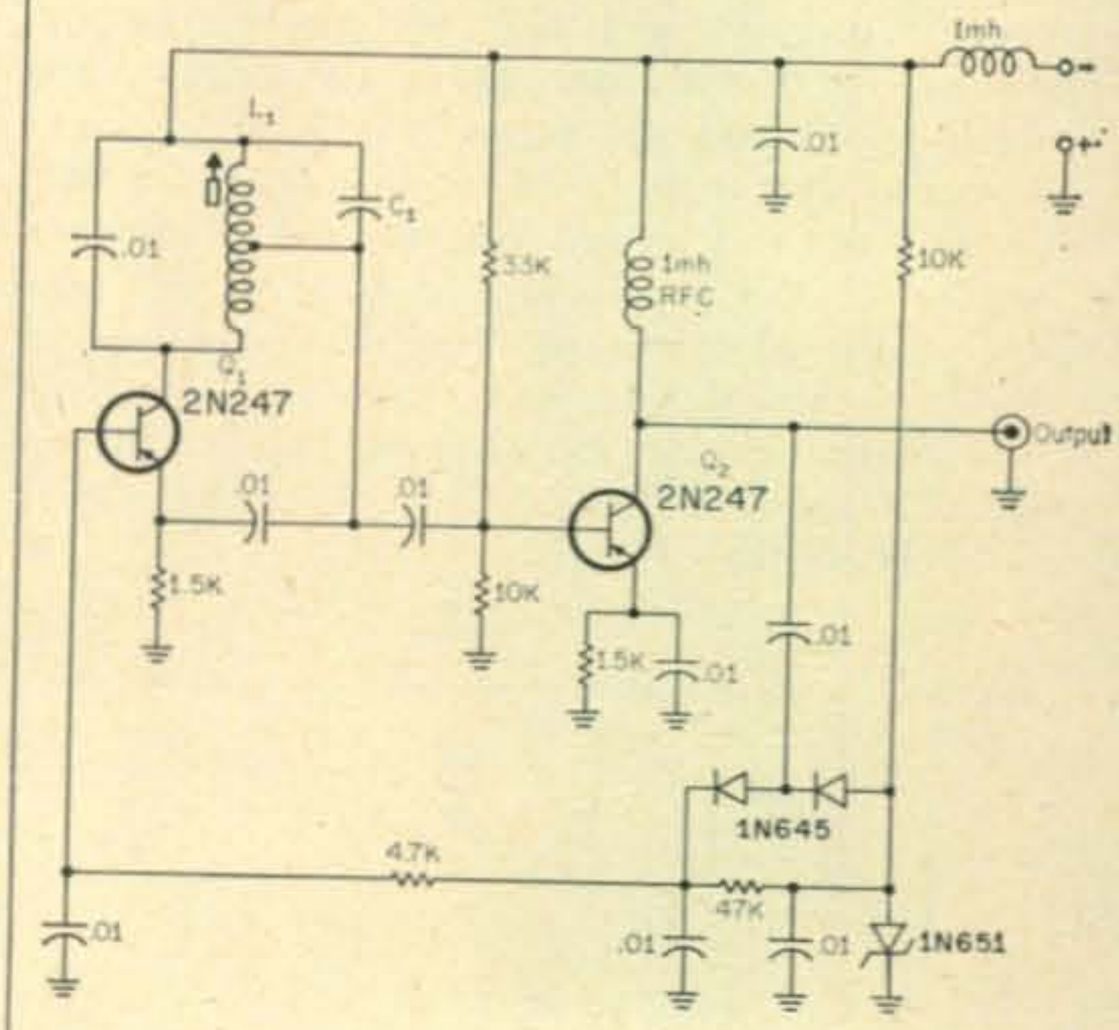


Fig. 2—Circuit of a stable transistorized v.f.o. As explained in the text and shown in fig. 1, the stability is controlled by the location of the tap on the oscillator coil, the value of C_1 and the value of the supply voltage. The mechanical construction methods, as always, are also important. More details are given in the text.