

A Crystal Set for the Boy Builder

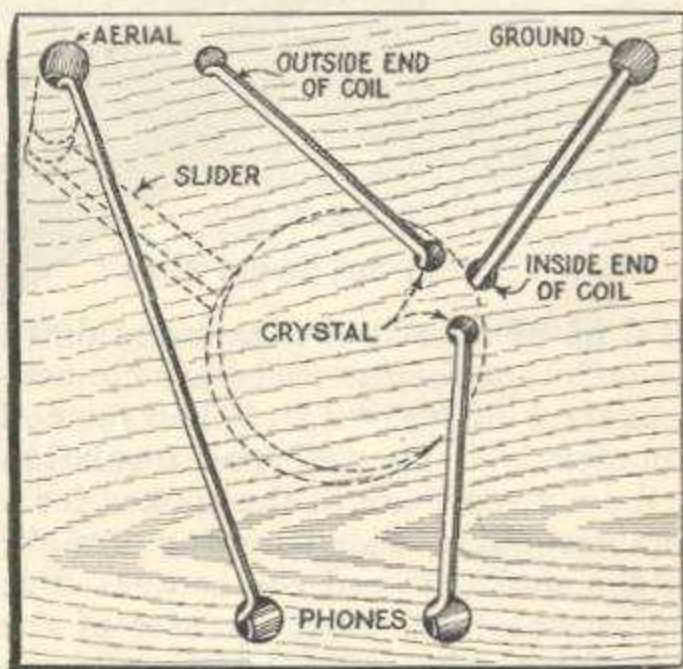
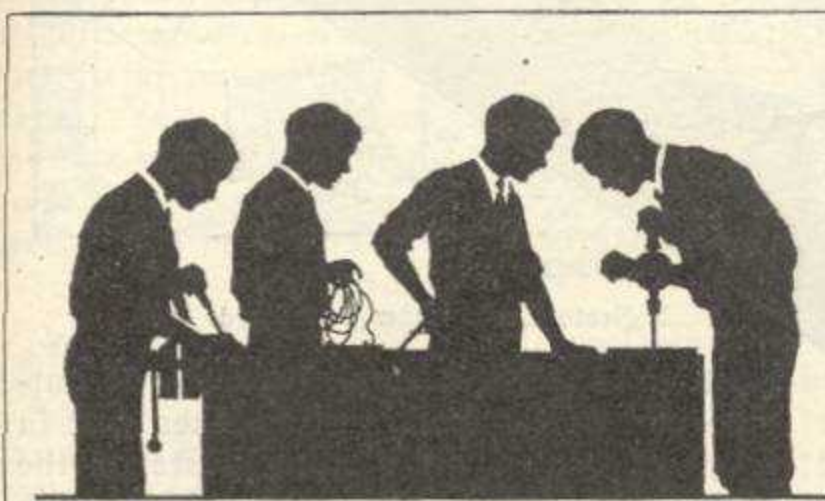
By WILL H. BATES

THIS little set is recommended for the boy builder, although the grown-ups also will enjoy it. Exclusive of the phones, the cost should not exceed \$1. Surprising volume is obtained on the local stations, and the set is more selective than the average receiver of this type.

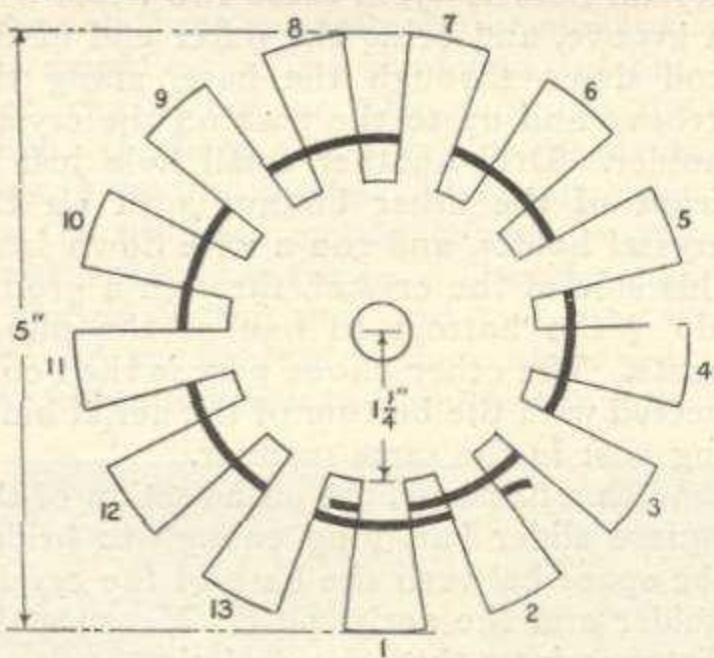
Very few parts are required. The wood base may be made of scrap material found around the home. The other items can be bought at the 10-cent store, with the exception of the crystal holder. For this, an upright type, as illustrated, should be

coat of mahogany or walnut stain. Drill it for the four binding posts, which are located as shown in the illustration of the under side of the base. A $\frac{1}{2}$ -in. bit is used to countersink these holes halfway through the board from below.

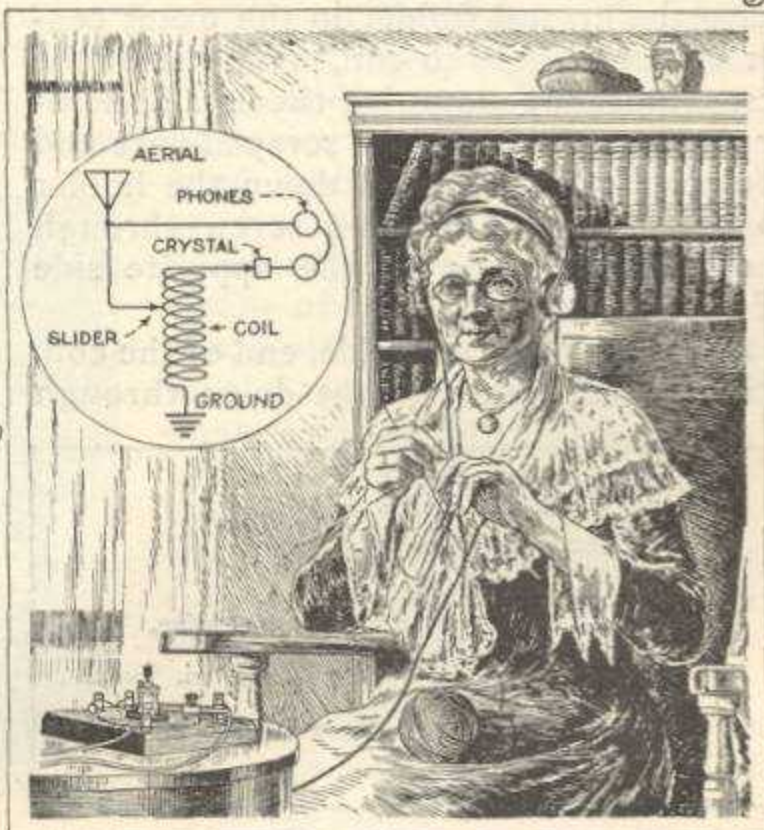
The spiderweb coil is wound on the form shown in the diagram; this form may be cut from fiber or cardboard, and the dimensions should be followed. The thirteen spokes are $1\frac{1}{4}$ in. long, leaving an uncut center $2\frac{1}{2}$ in. in diameter. Wind the turns of No. 24 d.c.c. magnet wire alter-



WIRING ON UNDER SIDE OF BASE



Left, Construction Details of Coil Form; Black Line Shows Method of Winding; Insert at Right, Schematic Circuit Diagram

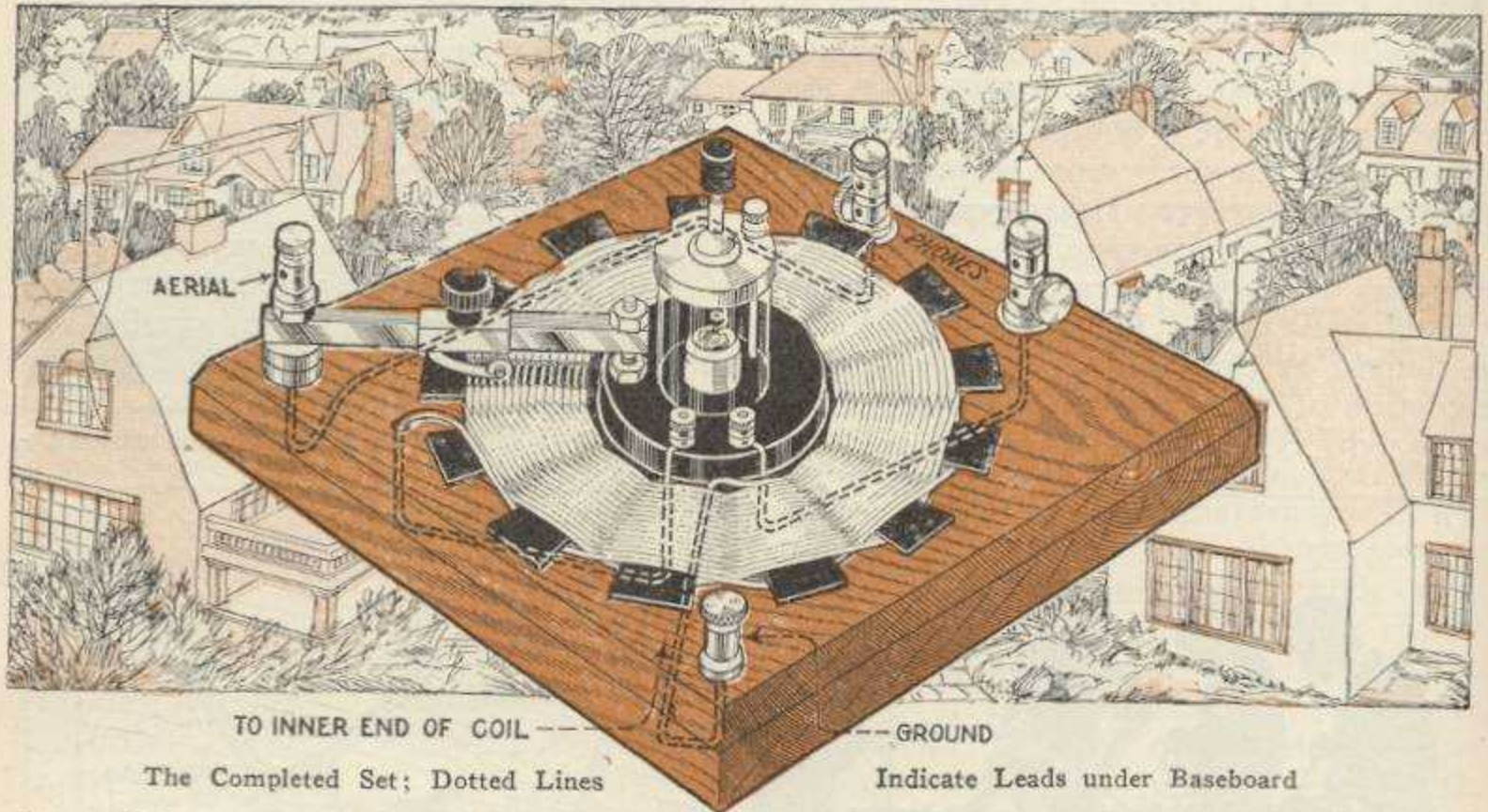


selected, and may be obtained for about 25 cents. A good pair of 2,000-ohm phones should be used and these are available for about \$2.50.

The base may be beveled on the top edges, sanded down, and then given a

nately over and under the spokes, as indicated by the heavy line. When doing this keep count of the turns by marking one spoke and counting one each time this is passed. Fifty turns are required. Leave

the base, and on the under side, cut a groove in a straight line from this hole to the ground binding post. Run the inside end of the wire down through this hole and along the groove to the ground



about 6 in. of wire at the start and finish of the coil, to make the necessary connections to the binding posts. When the coil is completed, scrape off the insulation from the wires on one of the spokes for a space about $\frac{1}{4}$ in. wide, running straight down the spoke toward the center. Put the spiderweb form on the center of the baseboard with the scraped section of the wire pointing to the aerial post. Then place the crystal holder in the exact center of the spiderweb coil, with one of the screw holes for mounting the crystal holder in direct line with the scraped wire and the aerial post. Fasten down the holder to the base with a wood screw through the mounting hole on the opposite side of the crystal holder.

At the starting, or inside, end of the coil, drill a small hole straight down through

post. Also drill a small hole at the outside end of the coil, and another just in front of one of the binding posts on the crystal holder. Join these two holes with a groove, and bring the outer end of the coil down through the base, along the groove and up to the post on the crystal holder. Drill another small hole just in front of the other binding post on the crystal holder, and run a wire down from this side of the crystal, through a groove along the bottom to one of the phone posts. The other phone post is then connected with the bottom of the aerial binding post in the same manner.

With a hacksaw, cut off a section of the square slider bar, long enough to bridge the space between the base of the crystal holder and the aerial post. Measure the distance from the screw hole in the flange of the crystal-holder base to the aerial post, and drill holes in the slider bar accordingly. A 6-32 brass machine screw, $1\frac{1}{2}$ in. long, is brought up through the baseboard, and through the opening in the flange. This hole is drilled down through the flange, using the hole in the crystal holder as a template. The hole on the under side of the base is countersunk for the head of this screw, which is

MATERIAL LIST

- 1 wood base, $\frac{3}{4}$ by 6 by 6 in.
- 4 binding posts.
- 1 spiderweb form.
- 1 small spool No. 24 d.c.c. magnet wire.
- 1 slider bar, 3 in. long, with slider.
- 2 6-32 brass machine screws, $1\frac{1}{4}$ in. long.
- 1 wood screw, 1 in. long.
- 1 crystal and holder, upright type.
- Washers and extra nuts.

not shown in the illustration as no circuit wires go to it. A nut is fitted on the end of the screw protruding through the holder flange above, and the slider bar slipped down on the nut, where it is held by another nut. At the aerial post, a brass machine screw of the same size is passed up through the baseboard, the lead from the phone post first being securely fastened to the head of the screw on the under side. Washers or a bushing should be used to level the bar. Put the slider on the bar and mount on the screw. The aerial binding post is then screwed down, and the set is ready for use.

To operate the receiver, use a one-wire aerial, about 75 or 80 ft. long, and connect a lead from the ground post to a clamp attached to a cold-water pipe. Then insert the phone-cord terminals in their posts. Tune by moving the slider along the bar until a station is heard at maximum volume and adjust the crystal to the spot where best results are obtained.
