

If the reader is any hand at wood-work, he can proceed to dovetail the four pieces of oak or rimu together to form an oblong, with inside measurements 18 inches x 13 inches x 7½ inches, and a rabbet on each side the thickness of the three-ply and ¼ inch deep, to allow the three-ply sides to be glued and nailed in position. Quite a presentable container can be made by just glueing and nailing the four pieces together, but the two side pieces will have to be cut down to 18 inches long, so that the inside measurements are the same as specified.

The outside of the box can now be cleaned up with sandpaper, and the position for the saw cut to divide the lid from the box can be marked. This is a line right round the top, two ends, and the bottom. It is 6 3-16 inches from one side and 13-16 inches from the other side. This leaves two parallel lines 1-8 inch apart, and gives plenty of room for a saw cut and the necessary cleaning up. When the edges are planed up the lid can be fitted with hinges at one end and temporarily hung. An attache case lock gives the whole a distinctive appearance, and is fastened to the opposite end of the lid to the hinges. Three small pins projecting about ¼ inch should be fitted to the edge of the lid with corresponding holes in the edge of the body to carry the weight of the lid and frame aerial when the box is closed.

Now unscrew the hinges and lock and fix the shelf inside on which the receiver rests. As the ebonite panel is five inches deep, this ledge will have to be five inches from the inside of the top. The top being when the box is standing with the hinges on the left. This is only a three-ply shelf and need not be very strong, as the set is arranged on a baseboard, and the whole

er, and if possible should be rather heavier than three-ply. Five-ply would be more suitable, although the three-ply in the set made by the writer seems to be O.K. A circle should be scribed on this cover with the centre 5½ in. from the right-hand side, and 4 in. from both top and bottom. It should have a radius of 3½ in. Plain bars or

so that the cover can be screwed tightly and the front be flush with the edges of the box.

Before going further the whole box container will have to be stained and polished. This is not a difficult job and a better method than applying the coloured varnish direct to the wood is to stain with either water or spirit

will not end up as intended. A good water stain is a solution of permanganate of potash in water. A saturated solution is perhaps too dark, so try a little first on a small piece of scrap wood. The pink colour when first applied soon changes to a brown, and an idea of the finished colour can be obtained when the wood is still wet. Run over the surface quickly and allow to thoroughly dry before giving a brush over with shellac dissolved in methylated spirits. If a more polished finish is desired than that given by two or three coats with the brush, the whole should be rubbed with a cloth moistened with the varnish. If inclined to stick or drag the rubber should be lubricated with a small quantity of linseed oil.

Next connect the frame aerial. This is arranged in the lid and consists of 20 turns of 22 enamelled s.w.g. wire. It would be preferable to employ the special loop aerial wire sold for that purpose if obtainable, but the enamelled wire was proved quite suitable by the writer.

A glance at the small drawing will give the reader an idea how to tackle the problem. Four pieces of ebonite, ¼ in. square and 5 in. long, are cut and a countersunk hole ¼ in. from each end; take two small screws to be fastened in each corner of the lid. Twenty cuts are made with a hacksaw at an angle, 1-8 in. deep. These will have to be 3-16 in. apart. A blade with a fairly coarse tooth setting is advisable, so that the wire will slip in easily. This coil is tapped in the centre and the three ends brought out to three terminals on a small ebonite block screwed to the lid close to the top hinge. When using the frame aerial alone the two outside ends are fastened by flex-

(Continued on page 30.)

## Components for "Rotorua" Portable

**Wooden Carrying Case, as specified.**

**Philips P.C.J.J. Speaker Unit.**

**2 Hellesens 45V Batteries, WIPYT Type.**

**2 No. 6 Dry Cells.**

**1 C Battery.**

**Ebonite Panel, 18 in. x 5 in. x 3-16 in.**

**3 Variable Condensers, .0005 m.f.d. (Formo).**

**1 R.C. Unit (Meter or Polymet).**

**1 "Audio" Transformer (Philips)**

**4 Valve Sockets (Antimicrophonic).**

**1 Neutralising Condenser.**

**1 Grid Leak (5 meg.), and Condenser (.00025 m.f.d.).**

**1 .1 m.f.d. Condenser.**

**1 .0005 Fixed Condenser.**

**1 12 to 15 ohm Rheostat.**

**1 Doz. Small Terminals.**

**Aluminium or Brass Coil Shield.**

**4 in. Ebonite or Cardboard Former, 2½ in. dia.**

**1½ in. Ebonite or Cardboard Former, 2½ in. dia.**

**¼ lb. 22 Enamelled Wire, S.W.G. or stranded, silk-covered loop wire.**

**2 ozs. 30 D.C.C. S.W.G. Wire.**

**¼ lb. 24 D.C.C. S.W.G. Wire.**

**2 XA209 Philips Valves.**

**1 XA225 Philips Valve.**

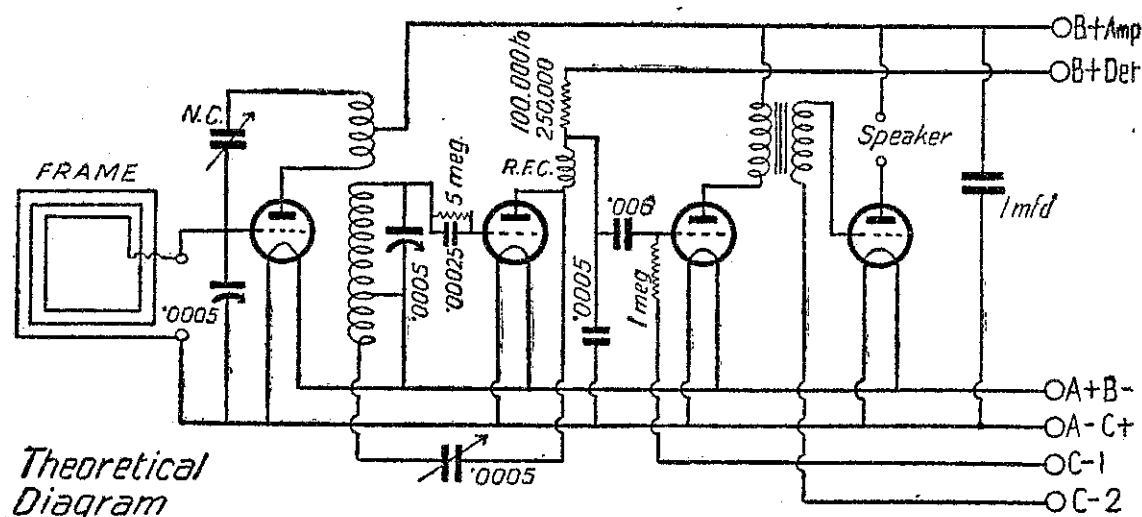
**1 XB205 Philips Valve.**

**Insulated Sleaving, etc.**

any fancy design can be drawn on the woodwork, and the space between cut away with a fretwork saw. This is to accommodate the speaker and will be found to be the correct size, allowing for the flange through which

dye first and then apply plain shellac varnish.

An alternative is to cover the whole with imitation morocco leather, but this is a tedious job and unless the constructor has done that work before it



can sit on bearers on each end of the box. The diagrams will help considerably to make these small points clear and should be referred to from time to time.

The front battery cover comes next. This also acts as a baffle for the speaker.

screws can be placed to clamp the speaker unit to this cover. Coloured silk fabric makes a very neat job if a piece of this material is fixed at the back between the diaphragm and the cover. Four or five small wooden brackets are now fixed inside the box

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