laminations firm. These are hardwood strips, 1 inch x 3-8 inch thick (oak is suitable). By referring to the diagram it will be seen clearly how these are assembled. Two small brackets can be screwed on the bottom wooden strips to fix the transformer to the baseboard. On the sides of the two clamps at the top, two ebonite terminal strips are screwed. On one side, half an inch from the top, four terminals are arranged in two sets of two. The sets over the coil are arranged for the mains supply, while the other two are for the high voltage secondary. On the other side, five terminals are arranged—a set of two over the coil, and a set of three opposite the high voltage terminals on the other side. Lengths of spagette insulated sleeving can be used to join the leads to their respective terminals. The group of three goes to the filament windings for the rectifying valve next the middle terminal for the centre tap. The remaining two on the same strip are joined to the two leads from the amplifying valve filament. In the case of the split primary, four terminals instead of two are placed on the side of the mains input, the two centre ones being the end of first half and beginning of the second half.

Starting from one end, the four terminals are arranged thus—"In" of first half. "Out" of first half. "In" of second half, "Out" of second half. Care should be exercised in arranging these correctly, otherwise, if a mistake is made, the primary winding is liable to be burnt out when the current is switched on. Here are the instructions for using with either voltage. If a reader is on 110 volts, and is expecting to be changed to the 230v supply, the directions should be copied out, and kept safely for future reference. For 110 supply. Join terminals one to three, and two to four. Supply leads join to one and four. In other words, join the two "ins" together, and the two "outs" together, so that the two coils are in parallel.

For the 230 volts supply, join the two centre terminals together, and the two outside ones to the mains. In this case, the two halves of the coil are in series.

The Choke.

THIS finishes the description of the power transformer. In the list of components, a low frequency choke is mentioned. If the reader wishes to construct this himself, an excellent one can be made out of the laminations of a burnt-out transformer. If the secondary is intact, this can be used, although the extremely fine wire, generally 46's, is liable to break down after a few weeks' use. After dismantling the old transformer, a bobbin can be made to fit in the place of the old windings. This can then be mounted in the winding jig, a geared handbrace makes an excellent jig for this job, and the bobbin filled with 38SWE enamelled wire. Flexible leads are taken out from the beginning and end of the winding. The wire is just run on without paper to separate the layers. Ideas will, no doubt, occur to the constructor for arranging a terminal strip for the two leads, and if the transformer had a metal shroud before, this can be put on again to effectively prevent any stray magnetic fields.

Assembly.

IN the diagram, a dotted line is shown separating the crystal set from the amplifier. No doubt, some readers will have crystal sets already and only wish to make up the amplifying portion. In this case, the crystal set can be omitted, and a small terminal block made for the two leads that cross the line. If this is done, always try reversing the leads from the crystal set, as it will be seen that one terminal of the transformer primary is earthed. Although it does not run directly to earth, the secondary winding of the power transformer has a capacity to the primary, which is earthed via the mains. The space occupied by the crystal portion is about five inches, so that the baseboard will have to be 11 inches x 7 inches, if the set is omitted.

A baseboard, 16 inches x 7 inches is planed, and two small strips fixed at each end underneath. These need only be about 1 inch x ¼-inch, so that it lifts the base a little, so that the filament wiring can be done underneath. The panel, either three-ply, varnished, or ebonite, is 7 inches high x 11 inches long. The diagram shows the plan, and an idea of the disposition of the parts is easily obtained. The variable condenser is fastened to the left of the panel, with two terminals, aerial, and earth at the bottom. Output speaker terminals are arranged on the same level as the aerial and earth terminals. Between the condenser and the speaker terminals is mounted the semi-permanent dector, with the adjusting knob on the front panel. A 200 or 400 ohm potentiometer fixed in the position shown, finishes the panel drilling.

It will be noticed on the right-hand side a small fuse block is arranged for the two main leads and the high voltage secondary leads. Two ebonite blocks about 1½in. square are drilled

Components to be Used for Crystal and Amplifier.

	£	s.	d.
1 lb. 32 s. S.W.G. Enamelled Wire	0	6	0
1 lb. 36 s. S.W.G. Enamelled Wire	0	8	0
¾ lb. 22 S.W.G., D.C.C. Wire	0	3	0
2 Condensers, 2 m.f.d. each	0	18	0
2 Valves	1	7	0
2 Valve Holders	0	5	0
1 Choke, L.F.	0	15	0
1 Transformer, Ratio 1—5	0	17	6
Black Iron (sufficient quantity)	0	2	6
Crystal Detector	0	3	6
4 inch Length Ebonite Tube, 3 inch dia.	0	2	8
Variable Condenser, .0005 m.f.d.	0	7	6
Potentiometer	0	2	6
Fixed Condenser, .001 m.f.d.	0	2	6
Baseboard, 16in. x 7in. x ½in.			
Panel (Wood or Ebonite).			
Terminals, Insulated Sleeving, etc.			