

RADIO DIRECTORY

What to Buy and Where

CITIES

- AERIAL MASTS** Domestic Radio Co., Ltd.,
300 Queen Street, Auckland.
- ALTONA & HAMMARLUND-ROBERTS SETS.** Johns, Ltd.
Chancery Street, Auckland.
- AMPLION LOUDSPEAKERS** . All Radio Dealers.
- BURGESS RADIO BATTERIES,** All Radio Dealers.
- CROSLEY RADIO RECEIVERS** G. G. Macquarrie, Ltd.,
120 Willis Street, Wellington.
- CROSLEY RADIO** Abel, Smeeton, Ltd. Rep.: G. MOSES,
James Street, Mangere.
- DAYTON All-Electric Radio** Superadio, Ltd.,
147 Queen Street, Auckland.
- EMMCO RADIO PRODUCTS** Johns, Ltd.,
Chancery St., Auckland.
- EMMCO RADIO PRODUCTS** Thos. Ballinger & Co., Ltd.,
Victoria St., Wellington.
- EMMCO RADIO PRODUCTS** L. B. Scott, Ltd.,
Worcester St., Christchurch.
- KING RADIO RECEIVERS** F. J. W. Fear & Co.,
63 Willis Street, Wellington.
- LISSEN RADIO PARTS AND KITS** All Radio Dealers.
- LOUDSPEAKER AND TRANSFORMER REPAIRS** A. E. Strange,
404 Worcester Street, Christchurch.
- MAJESTIC RADIO RECEIVERS** Kirkcaldie & Stains,
Chief Wellington Agents, Lambton Quay.
- MULLARD VALVES** All Radio Dealers.
- PILOT 1930 PARTS AND KITS, ETC.** Abel, Smeeton, Ltd.,
27-29 Customs Street East, Auckland.
- PILOT 1930 PARTS—PILOT SUPER WASP KITS, GILFILLAN, KELLOGG and ATWATER KENT SETS** Harrington's, N.Z., Ltd.,
138-140 Queen St., Auckland.
40-42 Willis St., Wellington.
- RADIOLA RECEIVERS and Expert Radiola Service.** Farmers' Trading Co., Ltd.,
Hobson Street, Auckland.
- RADIO REPAIRS AND SERVICE** E. G. Shipley,
185 Manchester Street, Christchurch.

COUNTRY TOWNS

- CROSLEY RADIO** J. C. Davidson,
Main Street, Pahiataua.
- CROSLEY SETS** Abel, Smeeton, Ltd. Rep.: C. Ruscoe,
409 Devon Street, New Plymouth.
- CROSLEY RADIO** D. A. Morrison & Co.,
Victoria Avenue, Wanganui.
- MAJESTIC ELECTRIC RADIO** Berryman's, The Home of Music,
Palmerston North.
- MAJESTIC, ATWATER-KENT AND RADIOLA ELECTRIC SETS** Radio House, Hamilton.
G. S. Anchor, Manager.
- PHILIPS VALVES AND APPARATUS** All Good Radio Dealers.

1.3 amps., $1.3 \times 1.3 \times 2.2 = 3.72$ watts. The high-voltage secondary, having a mean turn of 12in., assuming it is wound on next over three or four layers of Empire cloth, will require about 2½lb. of No. 28 d.c.c. Its resistance will be 140 ohms, and its I²R loss at full load 1.4 watts.

The grid-bias winding, wound on next over adequate insulation, needs only about ½lb. the losses in it being negligible. The two 16-volt plate windings for the charger, each of 48 turns, need altogether about ½lb. of No. 20 d.c.c., while the filament winding will require 5 turns of No. 14 d.c.c. The losses in these windings will be only about 0.6 of a watt.

The high-voltage rectifier filament winding, 22 turns of No. 14 d.c.c. will need ½lb. of wire, the losses amount-

voltage windings well, the filament windings for the high-voltage rectifier and the grid-bias rectifier must be insulated from each other and from the receiver filaments with extreme care; the voltage between these windings being very high. The power valve filament winding should be also reasonably well insulated. Theappings on the high-voltage winding will present a little difficulty, and should be brought out between two layers of Empire cloth or oiled silk.

In joining the wires from the two bobbins to form the centre tap for each winding, it must be clearly understood that the wires must cross over through the windows in the manner illustrated in Fig. 2. Otherwise the transformer will blow the house fuses as soon as it is connected to the mains.

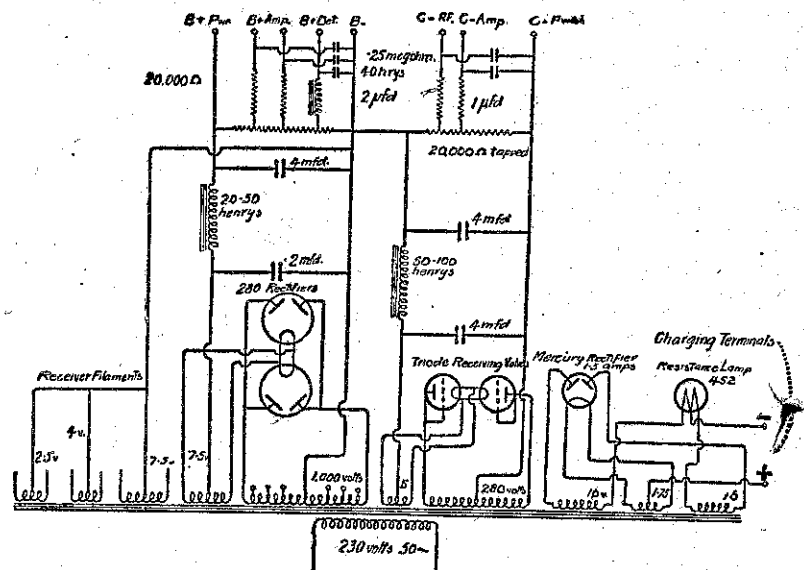


Diagram 3.

ing to 1.25 watts at full load. The filament winding for the bias rectifier may be wound from No. 18 d.c.c. left over from the primary, the losses in it being negligible.

The power valve filament winding is the same as the high-voltage rectifier filament winding, and, running four 250's and 210's, contributes a further 1.25 watts loss.

The other filament windings, wound with 12 D.C.C., will probably take a little over one pound, depending on just what windings are included, and the loss will not be more than about 1 watt.

THE copper losses total 9.22 watts, while the iron loss, it will be remembered, was about 10 watts. Thus, not only does the design fulfil the well-known condition that for maximum efficiency copper and iron losses must be approximately equal, but the efficiency is round about 90 per cent. (even allowing for regulation losses) instead of the 80 per cent, which it was thought necessary to attain. The cooling surface is ample to dissipate the heat generated by the very modest losses, and the transformer will run practically cold.

In insulating the windings one from the other (Empire cloth, obtainable from Johns' or Ballingers' is probably the best) it must be remembered that in addition to insulating the high-

If both bobbins are wound and mounted in the same direction, the starting, or inner ends, should be joined to form the centre tap; if this instruction is followed there will be no possibility of error.

It is probable that our original correspondent has already worked out the details of the remainder of the power supply and charger. However, for the benefit of anyone else wishing to copy his very ambitious ideas, a complete circuit diagram is reproduced in Fig. 3, aiming at an ideal rather than at economy. Suitable chokes have been previously described in the "Radio Record" (see, for example, the issue of June 14 last).

The rather detailed exposition of the process of transformer design given here has, of course, been given with the idea of enabling readers so inclined to copy the procedure and design their own transformers for their individual requirements. Nevertheless, any reader mistrusting his ability in the direction of transformer design is cordially invited to indicate his requirements to the "Radio Record" information service, when a suitable design will be briefly outlined in the "Questions and Answers" page.

WANTED AND FOR SALE.

For column of casual advertisements see page 32.