20, 58in. Wound upon a narrow strip adopt a single output valve and an which gives 182 and 177 volts respectof fibre they may be tapped by twist-extra r.f. stage, but this is not recomtively—the maximum for the 171 bethe correct position, not omitting to desired. scrape the nichrome bright.

## Plate Supply.

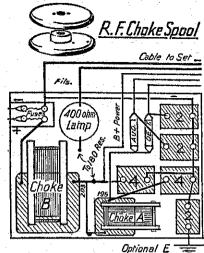
CURRENT drawn by the five valves as specified will total as follows: R.f. 2.5 m.a., detector 4 m.a., audio 7 m.a., 171's 40 m.a., or a total of 53.5 m.a. The 171 plate current does not traverse the small choke, which leaves it 13.6 m.a. to handle. Specifications for this choke are given later as "Choke A." Passing 13.5 m.a. the drop in this choke will be 7 volts, leaving 196 volts. The audio filament is 61 volts above zero potential, so this must be deducted from the 196 volts, leaving 135 volts for the plate of the first audio 112A, for which the correct bias is 9 volts, 10 being provided for.

For the 112A as anode bend detector, a plate voltage of 60 to 70 will be found suitable, with 30,000 or 35,000 ohms resistance. About 6 to 9 volts bias will probably be required.

For the r.f. valves, one or two, 196 less 71 leaves 125 volts to be reduced to 90 volts by 14,000 ohms, or to 70 volts by 22,000 ohms. Half these resistances for two valves. Plate resistances need only be 5-watt rating. Ferrantis specialise a wide range of wirewound resistances. By using two in series almost any value may be approximated. By-pass condensers are 2 mfds., 500 test.

An extra r.f. valve is worth while, because the filament current costs nothing extra, and the extra plate current is negligible. Deduct 20 ohms extra valve.

ing a piece of copper wire round at mended if good quality and volume are ing 180 volts. Where it is noted that



Wiring Plan

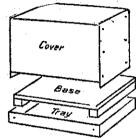


Plate current for the 171's will have from the "extra resistance" for each an actual effective potential of 203 Some constructors may volts less the potential of each filament,

on 110-volt circuits only 90 volts can be put on the plates of 171's, constructors working on 230 volts may feel well satisfied, as the amplifier will also give good reproduction on gramophone records. A probable drop of about 5 volts in the primary of the output transformer has not been taken into account.

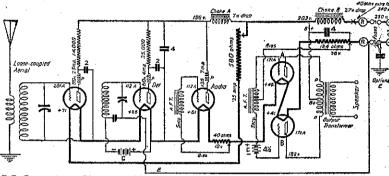
In making up a series filament circuit, the valves may be placed in any order, but each filament has also to carry the plate current of preceding valves, and for this reason the power-

purely radio portions of the circuit are mostly omitted, and the location of a primary winding in the plate circuits is indicated by a few turns and the letter "P."

## 240-volt Mains.

TF 240-volt mains are to be the supply, add a 40-ohm resistance of nichrome wire (9ft. 8in.), as used for other resistances, placing it in the positive lead before the large choke. Other resistance values in the circuit will then remain as shown,

At this point the description will be held over till next week, when the



D.C. Operation—Plate and Filament Supply

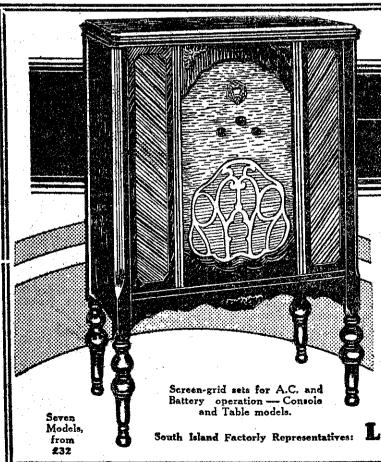
valves are placed last in the circuit, series of articles will be concluded so that their plate current does not traverse other filaments.

The 171 bias resistor should be placed in the receiver, obviating an extra lead. If the 1 mfd. plate by-pass condensers are placed in the receiver, connect as shown to associated filament at L, M, N, but if they are in the eliminator connect as shown there.

For clearness in the diagram the chorage insecure.

with a description of how to alter or build a d.c. mains operated receiver.

DO not secure the stays for a tall mast to an ordinary wooden stake driven in the ground, as damp soil is very liable to render this form of an-



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