needle moves over the full scale it will show that the actual mutual conductance value is equal to the published mutual conductance value.

5   With the valves which have more than one electrode assembly inside the same glass envelope it is necessary to test each electrode assembly separately. This applied to such valves as Class B valves,
10 QPP valves, triode pentodes, double diode triodes and pentodes, and full wave rectifiers. For this purpose the appropriate anode is selected by the anode selector AS.
15 With the anode selector switch AS set at " normal " the instrument is correctly set for testing all valves with a single electrode assembly such as triodes, pentodes, S.G. valves, also one half of valves
20 with two assemblies such as the triode portion of triode pentodes, one triode in a Class B valve. With the switch set at A2, the valve tester is ready for testing the other half of dual valves such as the
25 pentodesection of triode pentodes, the remaining triode in Class B valves.
    The positions D1, and D2, are for the testing of both anodes of full wave rectifying valves, the two diodes in double
30 diode valves and also the diodes in double diode triodes and the like.
    For the purpose of measuring the cathode to heater insulation of an indirectly heated valve, the key is pressed
35 in the direction marked INS. By this operation (A) the grid potential is changed to one volt in phase, (B) the anode is disconnected from the normal source of potential via the switch " An," and con-
40 nected through a condenser of .05 mfd to the 75 volt tapping on the transformer M, (C) the connection between cathode and heater is broken and (D) the MA/V shunt and backing off control V is dis-
45 connected from the meter circuit and the unshunted meter (having a full scale deflection of .66 mA), is connected through the resistance Do between Anode and heater of the valve. The connection
50 of the meter to the anode of the valve takes place through a part of the resistance of the MA/V shunt, which resistance, for the purpose of this test is negligible.
55 The action of this arrangement is then as follows: —
    When the cathode is hot due to the valve having been on test, and the key is pressed in the direction " INS," an
60 AC voltage is applied through the .05 condenser between anode and cathode of the valve. (The " in phase " voltage is applied to the grid to lower its effective impedance as a rectifier). This causes
65 rectification to take place and a rectified

voltage to appear between cathode and anode of the valve. If now any high resistance C/H appears between heater and cathode of the valve this causes the circuit through the meter to be completed 70 via the resistance Do, the meter, and the resistance C/H. This will cause a current reading to appear on the meter due to the aforementioned rectified voltage. The magnitude of this current will, of course, 75 be inversely proportional to the resistance C/H and the meter can accordingly be calibrated in megohm. The condenser (.05 mfd) is inserted to prevent the D.C. current from flowing back into the trans- 80 former, thus upsetting the meter readings. It will be seen that this arrangement will also show up any bad insulation between windings on the transformers, and the latter, therefore, have to be care- 85 fully impregnated.
    It will be noticed that on the anode voltage switch An are two positions marked " D₁₂ " and " REC." These are for emission tests on diodes and mains 90 rectifiers. To test diodes or double diodes, the anode volts switch An is turned to the position marked " D₁₂," which applies 12 volt A.C. through a resistance of 500 ohms to the diode under test. The result- 95 ant reading on the meter shows the rectified D.C. current passed under the given conditions and from this reading the state of the diode can be estimated. As long as the rectified current is greater than 100 ½ mA, the diode is taken as being in good condition. The actual current value obtained, of course, varies considerable with the characteristics of the valve. A similar test is applied to rectifying valves. 105 For this purpose the switch An is turned to position marked " REC." This arrangement applies a voltage of 30 volts through a resistance of 75 ohms to the rectifier anode. The rectified D.C. cur- 110 rent passed under these conditions is measured on the meter (100 mA scale) and can be compared with the figure given for a good valve of the type under test.
    Having now particularly described and 115 ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is: —
    1. A method of testing and indicating 120 the mutual conductance of a radio valve which consists in applying the requisite volts to the filament or heater, applying to the anode an alternating voltage and measuring the change in anode current 125 by a suitable meter after impressing equal and opposite potentials on the grid, characterised in that the voltages applied are related to the meter scale on the basis that when the meter scale is based on milliamp 130