

*Series and Shunt Resistances.*—There are two ways in which a resistance can be placed in relation to the electrical circuit and the patient. It may be (1) in series (Fig. 3), as is presumed in the foregoing remarks. Here all the current passes through the resistance and the patient. (2) In shunt (Fig. 4), where the resistance is arranged to form one alternative path for the current.

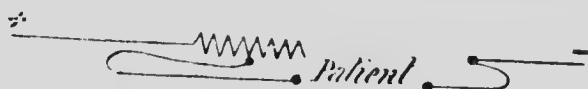


FIG. 3.—SERIES RESISTANCE.

The action of these two arrangements is different. The series resistance primarily controls the amperage, the shunt resistance (often called a volt-selector) primarily controls the voltage. A consideration of Fig. 4 will help to explain how this is brought about.

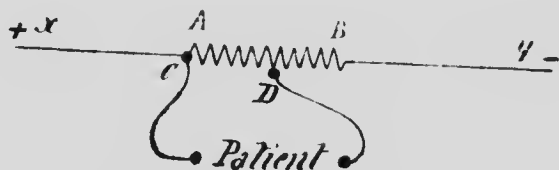


FIG. 4. SHUNT RESISTANCE.

X and Y are the poles of a dynamo generating current at 100 volts. A, B, is a heavy resistance coil placed in the circuit. The fall of potential between X and Y is 100 volts, but since the fall of potential in any part of a circuit is in direct proportion to the ratio which the resistance of that part of the circuit bears to the resistance of the remainder of the circuit, and since nearly all the resistance of the circuit X to Y lies in A, B, it is obvious that nearly all the fall in potential will take place in A, B. Suppose the