

## 6 TEXT-BOOK OF RADIOLOGY.

the electro-motive force in that circuit and inversely as the resistance of the circuit.

Expressed in symbols it is:—

$$C = \frac{E}{R} \quad \text{where}$$

C = the current ;

E = electro motive force ;

R = resistance.

From the above equation we obtain—

$$E = CR.$$

$$R = \frac{E}{C}$$

so that with any two of the factors given, the value of the third is obtainable by a simple calculation. The student should take any necessary trouble to become thoroughly familiar with this law and all that it means, for which he will be well repaid.

**Shunt Resistance.**—Before leaving the subject of resistance it may be well to explain another arrangement by which we can adjust the *voltage* to suit most ordinary requirements. It is by what is known as a *shunt* resistance, and this is very useful for many purposes, but many beginners find it very difficult to understand how it works. Let us return to the case of our water tank 100 feet high, and at the end of the down pipe let us join another at right angles and parallel with the ground, also 100 feet long, and provided with 100 small stop cocks one foot apart for testing the pressure. The water is allowed to escape freely at the distant end and there the pressure will be nil. Where the horizontal pipe joins the upright one the pressure is 100, so that as we test the water pressure from this end to the other we shall find that there is a steady fall of pressure all the way. Half way along it will be 50, and the pressure between any two stop-cocks will be as the number that separate them. We may have them all numbered from 1 to 100, starting from the open end, and