very little to carry over the wire, but a great length and a high resistance. In the telephone, the magnetizing effect of the sound wave; in the X ray, the bombardment of a few particles of rarified air in a Crook's tube; and in the transmission of energy the pressure or voltage is used. In the plating battery we have the plating material which is a large quantity and the fluid has a low resistance, therefore we require a large amount of current.

The unit resistance is the olm, which may be defined as the resistance of a uniform column of mercury 106.3 c.m. long and one square millimetre in section at 0° C.

The unit current is the amphere, which may be defined as a current which deposits silver at the rate of 0.001,118 grams per second.

The unit electromotive force is the volt, which is that E.M.F. that will cause a current of one amphere to flow in a circuit whose resistance is one ohm.

Ohms law may be expressed as follows: $C=\frac{E}{R}$ $E=CxR$ and $R=\frac{E}{C}$.

Energy is the power of doing work. It is present in some form throughout all nature. We cannot increase or diminish the total quantity of energy; we cannot create nor can we destroy it. We can only change its form. Energy may either be potential or kinetic; it is said to be potential when at rest and kinetic when in action. There are three forms of energy; namely, thermal, chemical and mechanical.

The potential energy in coal may, when the coal is burned, be changed into kinetic energy of steam. Zinc and copper when immersed in diluted sulphuric acid and connected outside of the acid may have their potential energy transformed into the kinetic energy of heat, gases and electricity. The potential energy in your arm and may be changed into kinetic energy of motion when you turn the handle of a grindstone. The energy of coal may be changed into that of steam, the energy in steam may be transformed into the energy of motion. This may be transformed again into electrical energy, and this again into heat, light and power.

When we raise one pound through ten feet of space we perform a certain amount of work, which is the same whether we take ten minutes or one hundred minutes. But the rate of doing work or power expended, is very different in the two cases, being ten times as great in the first as in the second. So you see there is an important difference between work and power. When we raise one pound 33,000 feet, in one minute we are working at the rate of one horse power. The one pound multiplied by 33,000 feet equals 33,000 foot pounds, as does 1,100 pounds multiplied by thirty feet. In fact any product of pounds and feet equalling 33,000 when expended in one