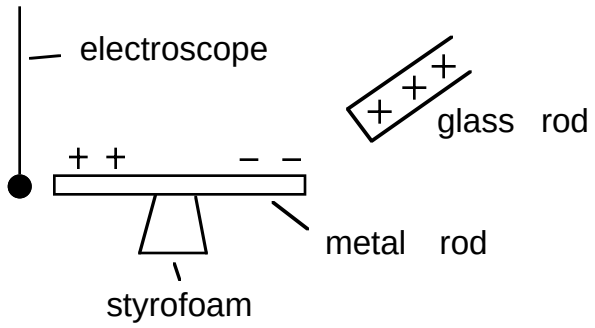
Current Electricity : Notes-10

Current Electricity is electricity that is moving. It consists of electrons moving through a conductor.

We can show that electrons can move through metal by the experiment below.



In this device, a charged glass rod is brought close to the insulated metal rod. Electrons move to the right leaving the left end positive. The styrofoam ball is neutral and moves right until touches the metal and becomes positively charged. It is then repelled to the left.

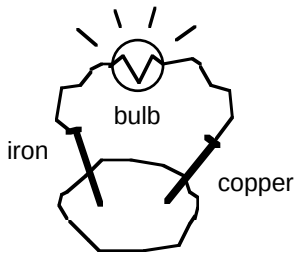
This brief movement of electrons in the metal is a current.

There are two main devices that are used to produce a continuous current. A **cell** (or **battery**), and a **generator**.

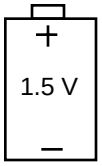
The Cell

In a cell, a chemical reaction takes place that produces a continuous current. A simple cell can be made using two different metals and some acid. An example is the lemon cell. We can make a lemon cell by sticking two different metals (e.g. iron and copper nails) into a lemon and connecting each nail to a small light bulb. The light bulb will go on indicating a current.

The type of cell used in a flashlight is called a dry cell. It also uses a chemical reaction to produce a current.



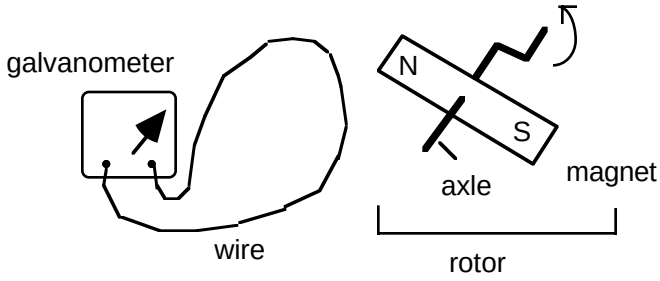
lemon cell



dry cell

The Generator

The most common way to produce a current is with a generator. A simple generator consists of a loop of wire and a magnet. If the magnet moves near the loop, a current is produced in the loop. The current can be detected with a **galvanometer**. If the current is big enough it will cause a light bulb to go on. A simple generator is shown below.



The Generator

The above generator is not very efficient. The current produced is small. The current can be increased by using a bigger magnet, moving the magnet faster, and by increasing the number of loops. In a large generator, moving water, wind or steam is used to move the rotor.

There are several other devices that can produce a current such as solar cells. Solar cells can power a calculator.

The **electric motor** is very similar to the generator. A generator produces electricity when the rotor is moved. A motor has a rotor that will move when current is supplied. A motor can be used as a generator.