

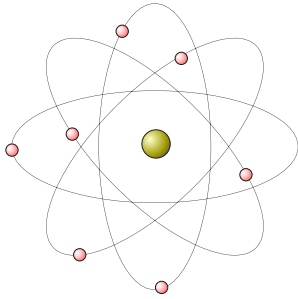
Illustrated Guide to Electricity Show
"Shocking Facts About Electricity"

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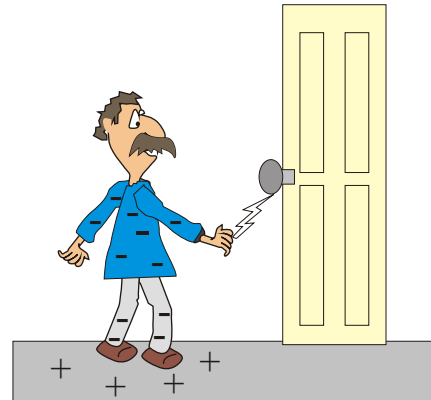
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Static Electricity



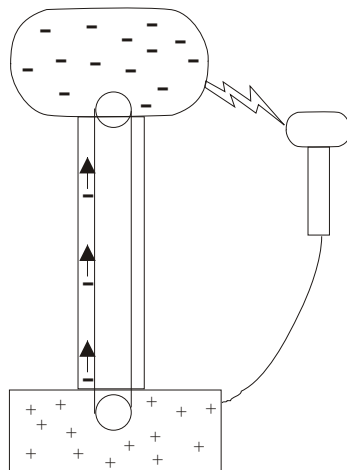
Everything is made up of atoms.
Atoms are too small to be seen.
Atoms are made up of a positive nucleus in the center and negative electrons circling around it. The atom is held together by electrical force.

Electrons can jump from one atom to another.

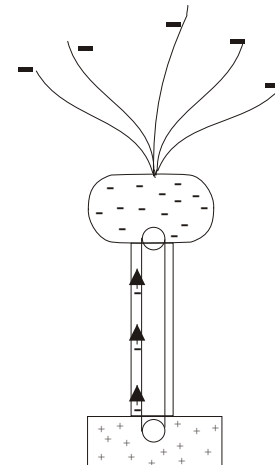


When you walk across a carpet the carpet gives you electrons. The carpet becomes positive and you become negatively charged.

When you get near something like a door knob the electrons jump to the door knob causing a spark and you get a shock.



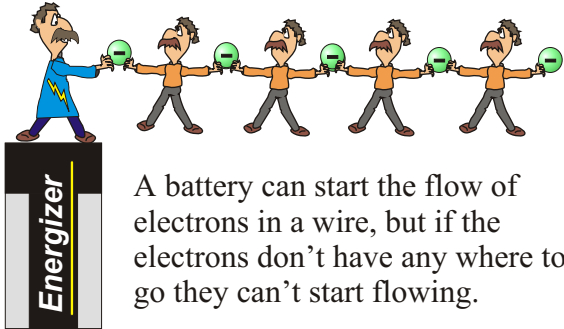
The Van de Graaff generator uses a moving belt to take electrons from the plastic roller on the bottom and move them up to the dome where they are stored until they find a way back to the ground.



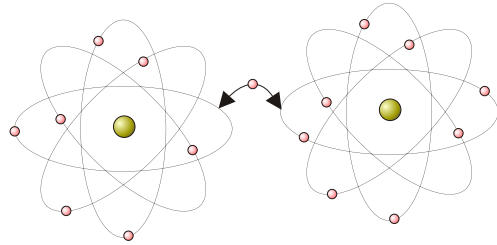
When atoms have extra electrons then they are negatively charged. Anything touching the negatively charged dome will also become negatively charged. If two things are both negatively charged they push away from each other.

Getting Electricity to Flow

Electricity is the flow of **electrons**.



A battery can start the flow of electrons in a wire, but if the electrons don't have any where to go they can't start flowing.



Everything is made up of atoms. Atoms are too small to be seen. Atoms are made up of a positive nucleus in the center and negative electrons circling around it. The atom is held together by electrical force.

In a conductor the electrons can jump from one atom to the other. **Electricity** is this movement of electrons.

⚡ Electricity Facts ⚡

The word electricity comes from the Greek word "electron" meaning amber. People found that when you rubbed amber it would attract small things like feathers.

1570 - William Gilbert found that many materials had "electric force" and would attract things when they were rubbed.

1745 - Peter van Musschenbroek stores static electricity in a **Leyden jar** and gets the first real electric shock.

Ben Franklin studies electricity. Wonders if lightning is really electricity. Story goes that he flew a kite in a thunder storm to test theory. Probably not true.

1794 - Alessandro Volta makes first battery out of copper, tin and salt water. First dependable source of power for experiments.

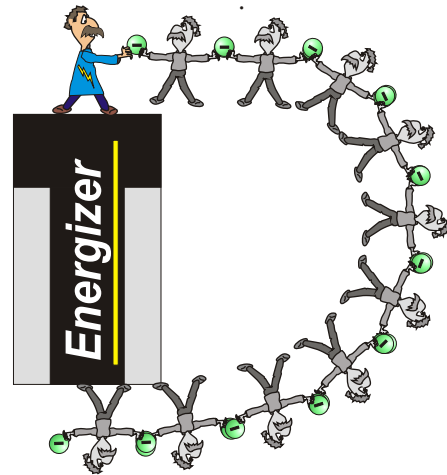
1829 - Hans Christian Oersted found that if you ran current through a wire it acted like a magnet.

1831 - Michael Faraday showed that if you spin copper plate in a magnetic field you get electric current. (First generator)

1844 - Samuel Morse sends message using electricity.

1876 - Alexander Graham Bell made electric current get weaker or stronger to produce sound waves. (Telephone)

1879 - Thomas Edison runs electricity through a carbon thread in a vacuum container. Produces light.



To Keep the electrons moving you need to connect the other end of the wire to the other terminal of the battery. Now they can flow in a **circuit**.

The movement of electrons through a wire is called **electric current**.

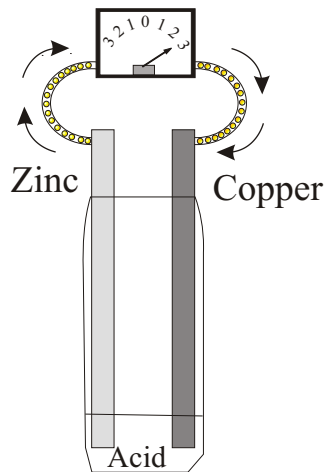
The number of electrons flowing through a wire at a given time is measured in **amperes (amps)**

The force that moves electrons through a wire is measured in **volts**.

To increase **electrical power** you can increase the amps, the volts or both.

Ways to Make Electricity

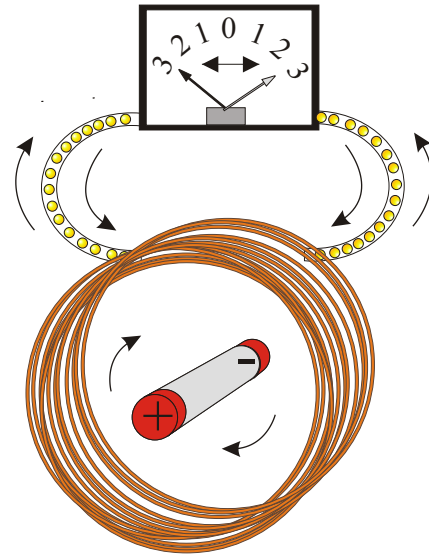
Wet Cell Battery



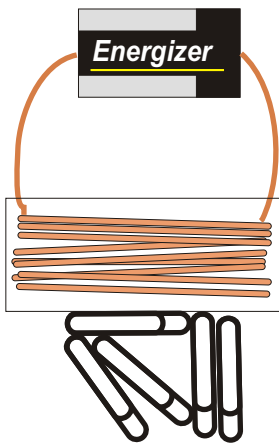
A wet **cell** uses two different metals in an acid to cause the electrons to flow in one direction
Direct Current (DC)

Solar cell - Turns sunlight directly into electricity

AC Generator



When a magnet spins past a coil of wire it starts electrons flowing in the coil. As the north and south pole of the magnet pass by the coil the electrons change direction back and forth. This is **Alternating Current (AC)**



Pass electric current through a wire coil and it becomes an electromagnet.

Electric current is generated when a coil of wire passes by a magnet

Ways to turn a generator to produce power

1. Wind
2. Water Power
3. Steam- Water is turned into steam using:
 - Coal, Oil, Gas, Geothermal (using the earth's heat)
 - Nuclear Power (using Uranium as a fuel to produce steam)
 - Solar Furnace (using sunlight to produce steam)