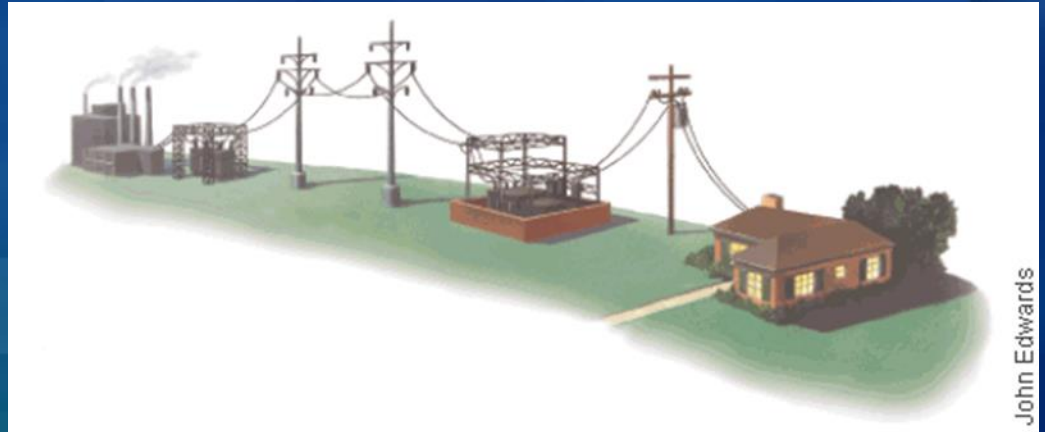


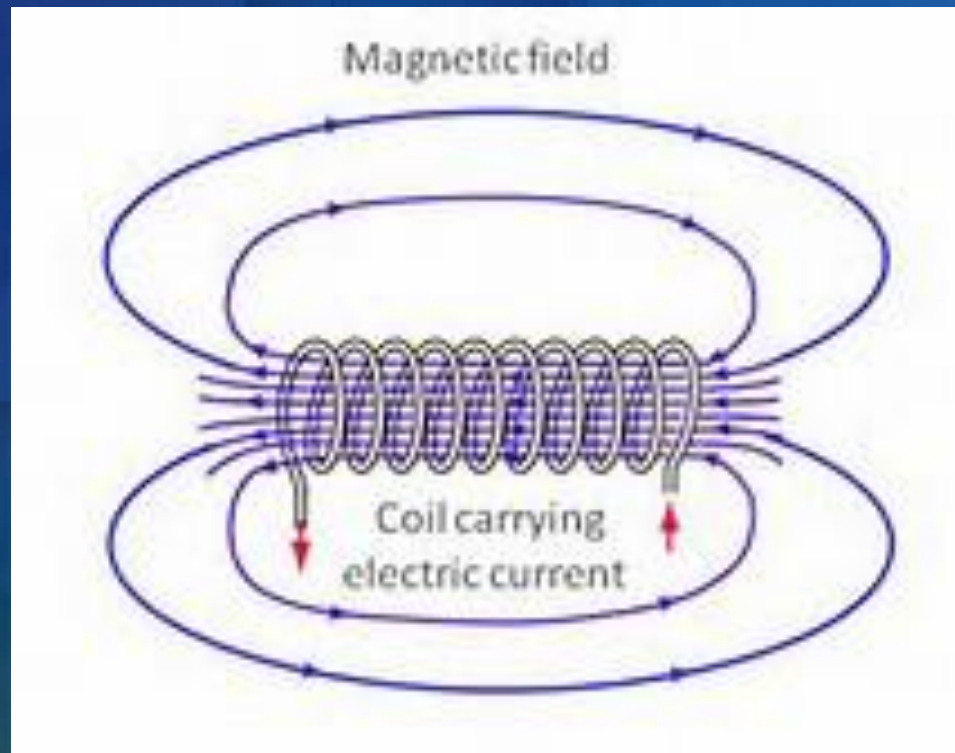
Using Electricity and Magnetism

Chapter 21



21.1 What Is Electromagnetism?

- An electric current produces a magnetic field.



21.1 What Is Electromagnetism?

- The magnetic field produced by a current has three characteristics.
 - The field can be turned on or off,
 - have its direction reversed,
 - or have its strength changed.

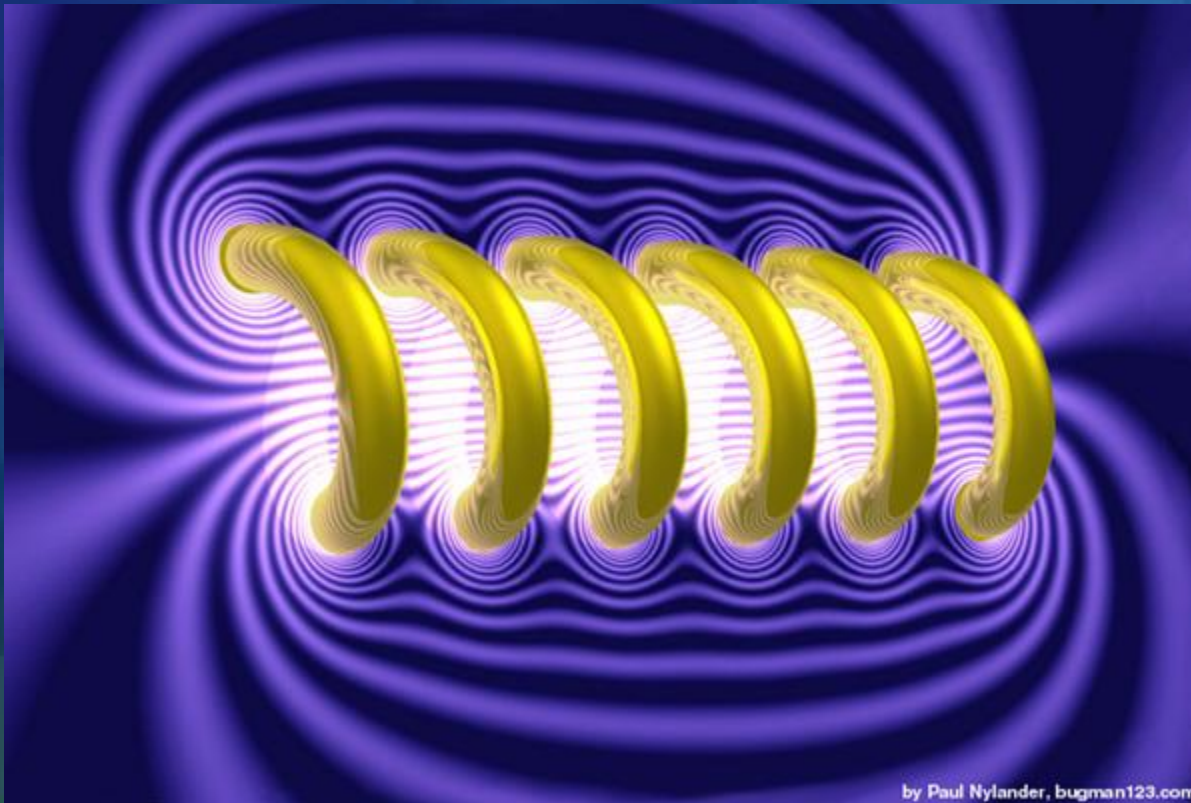
21.1 What Is Electromagnetism?

- An electromagnet is a strong magnet that can be turned on and off.



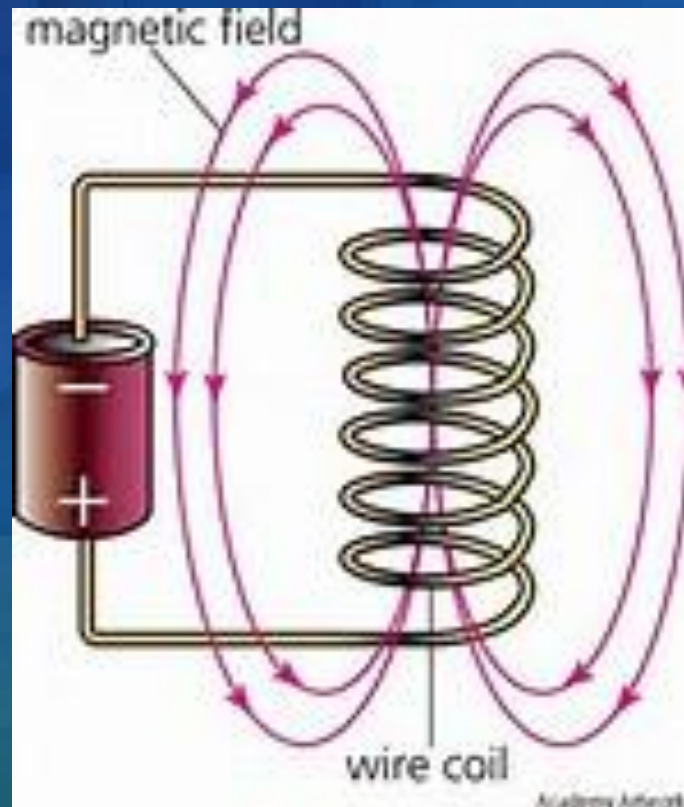
electromagnetism

- The relationship between electricity and magnetism.



solenoid

- A coil of wire with a current that acts as a bar magnet.



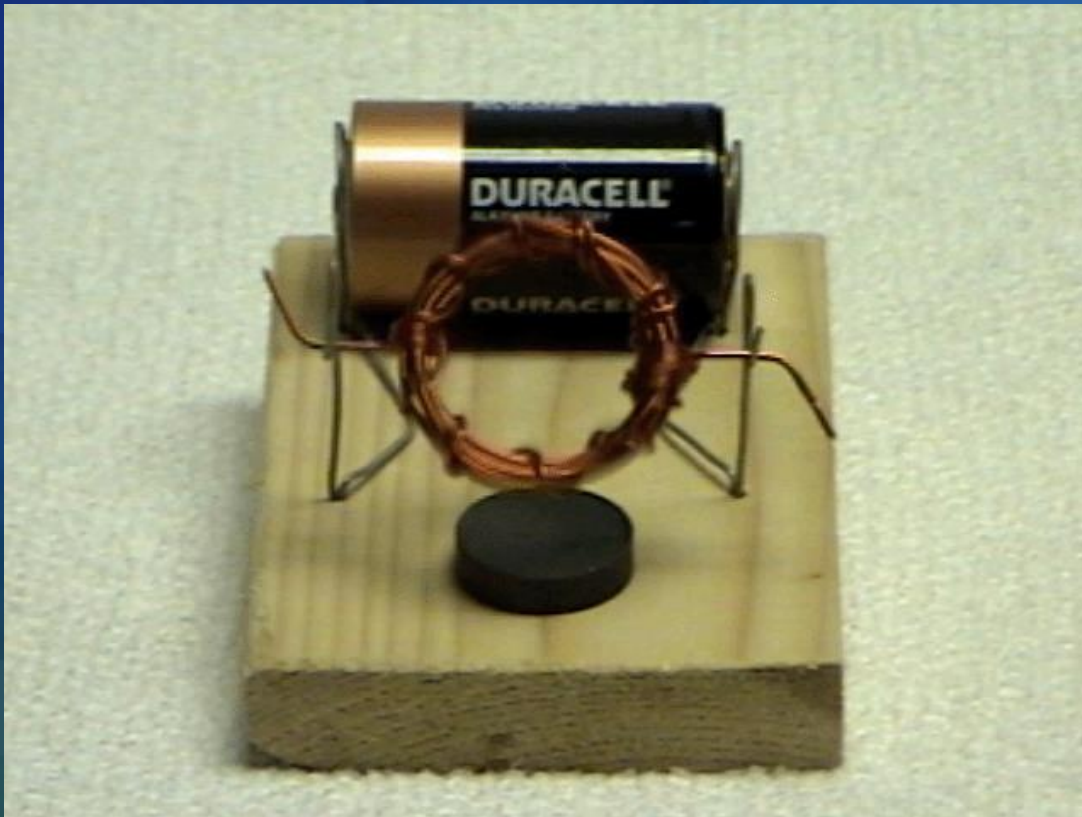
electromagnet

- A magnet created by wrapping a coil of wire with a current around a ferromagnetic core.



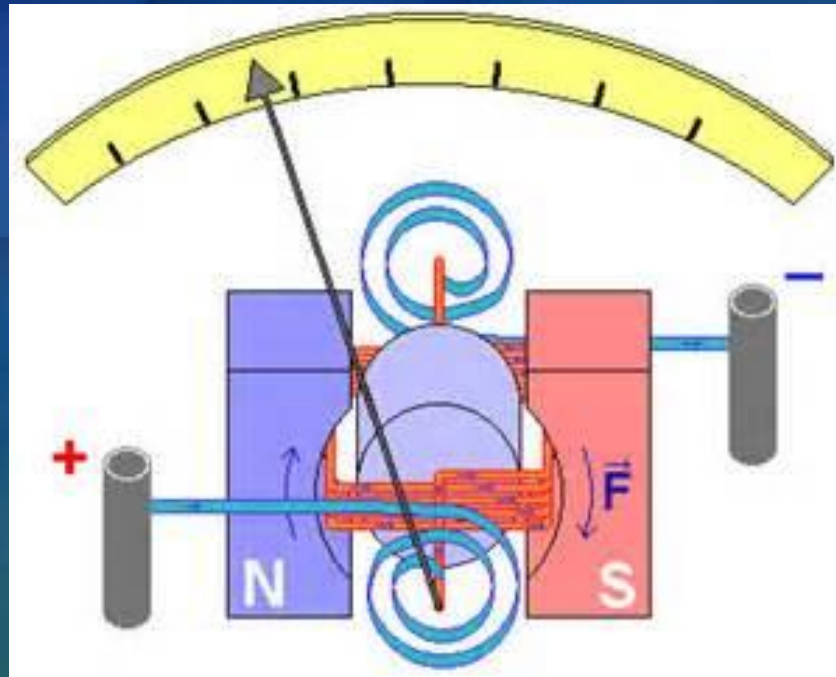
21.2 Electricity, Magnetism, and Motion

- When a wire with a current is placed in a magnetic field, electrical energy is transformed into mechanical energy.



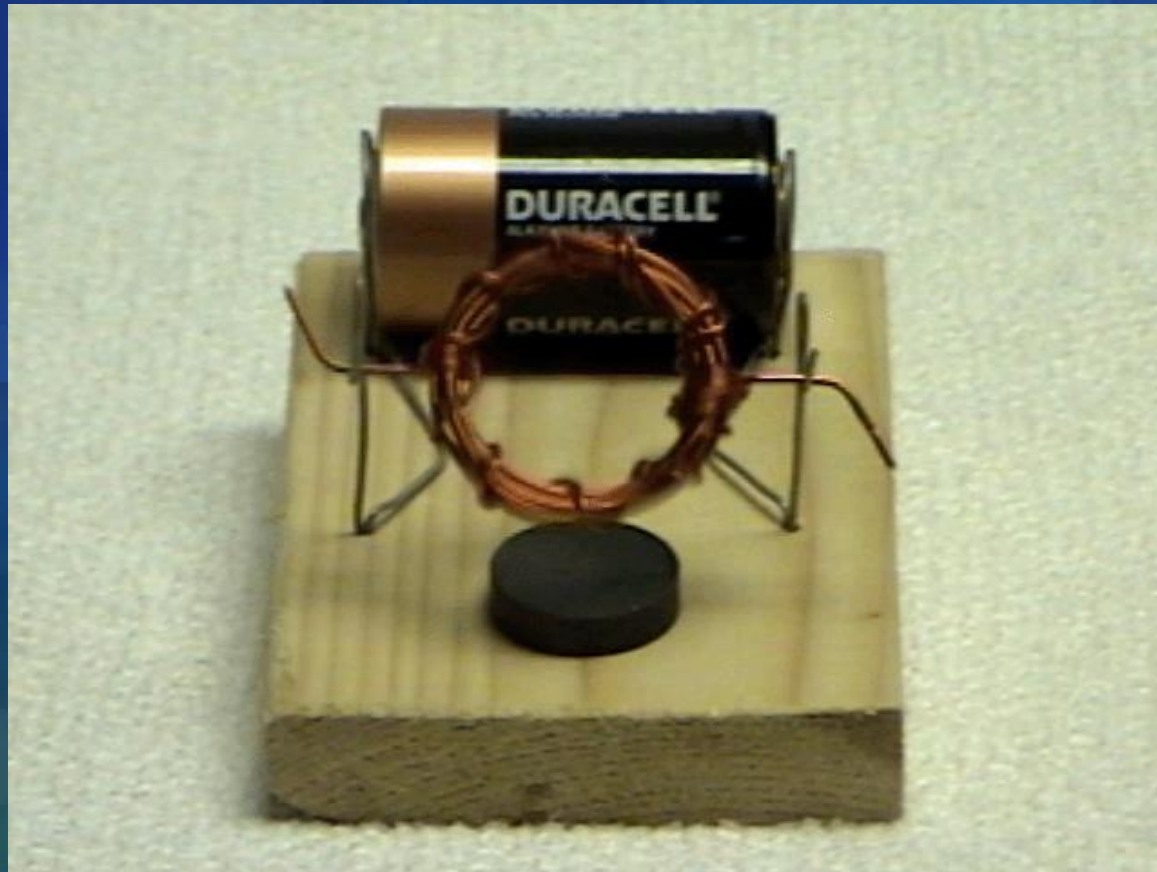
21.2 Electricity, Magnetism, and Motion

- Electric current is used to turn the pointer of a galvanometer



electric motor

- A device that transforms electrical energy to mechanical energy



energy

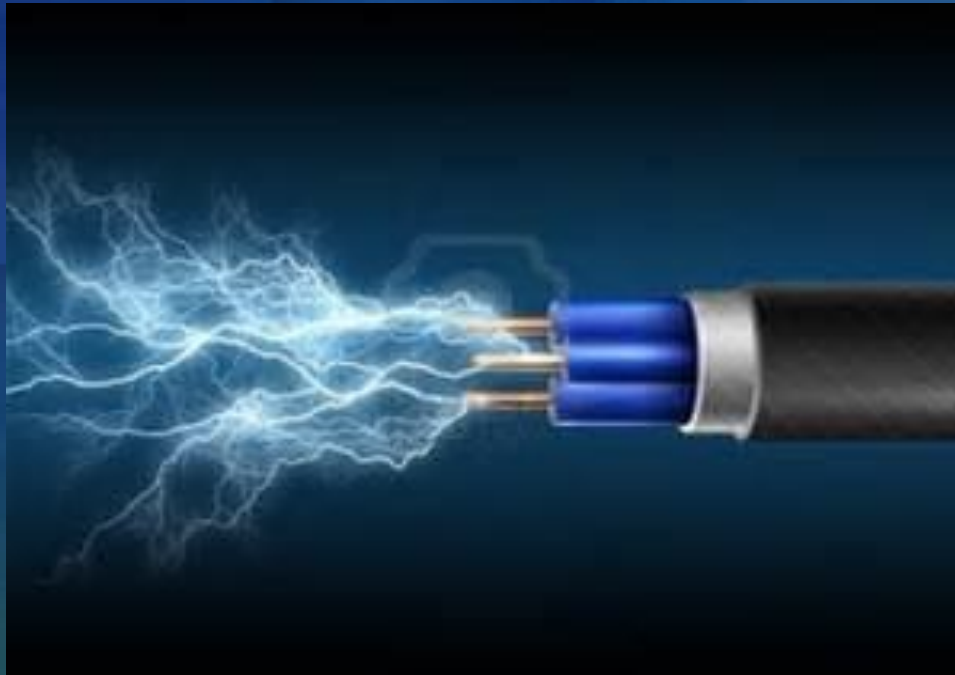
- The ability to do work or cause change.

Energy
is
the
ability
to do
work.



electrical energy

- The energy of moving electrical charges.



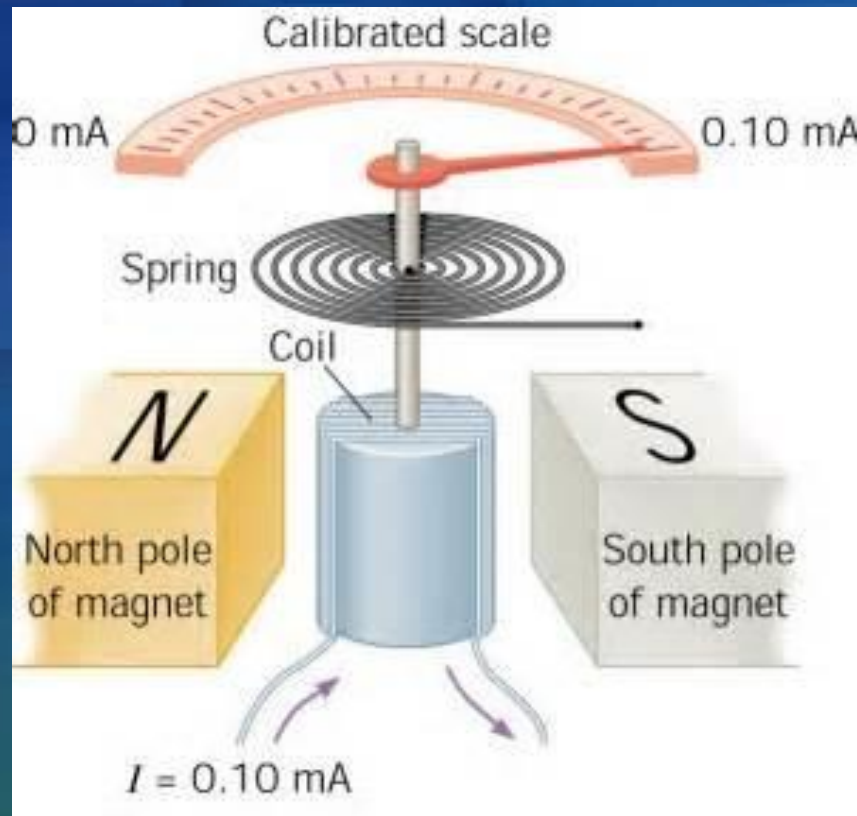
mechanical energy

- Kinetic or potential energy associated with the motion or position of an object.



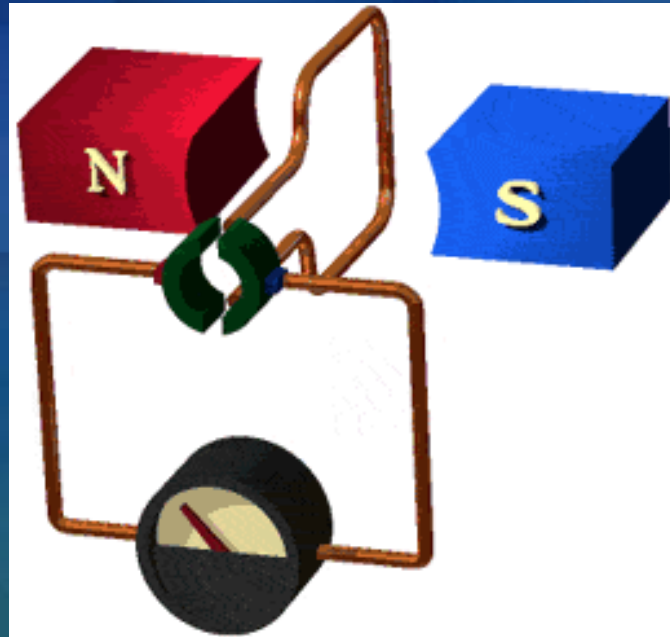
galvanometer

- A device that uses an electromagnet to detect small amounts of current.



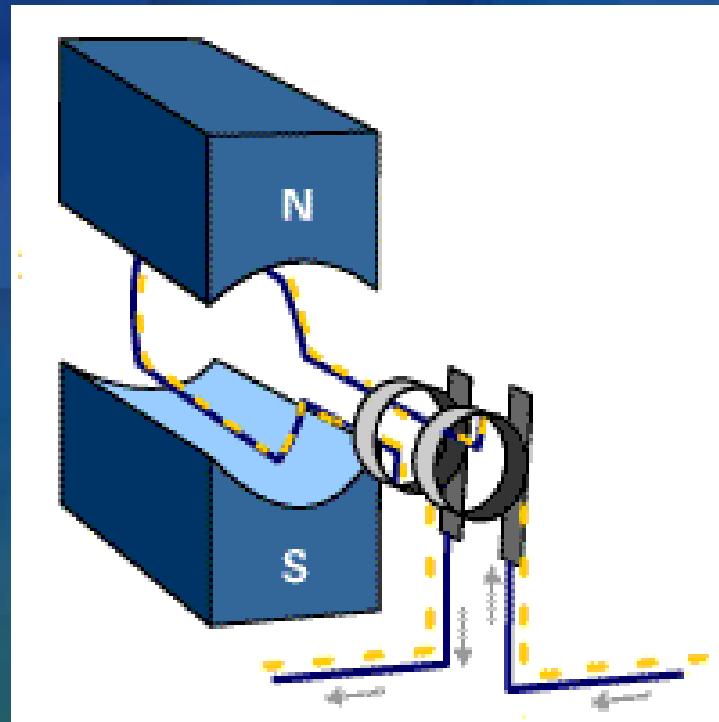
21.3 Electricity From Magnetism

- An electric current is induced in a conductor when the conductor moves through a magnetic field.



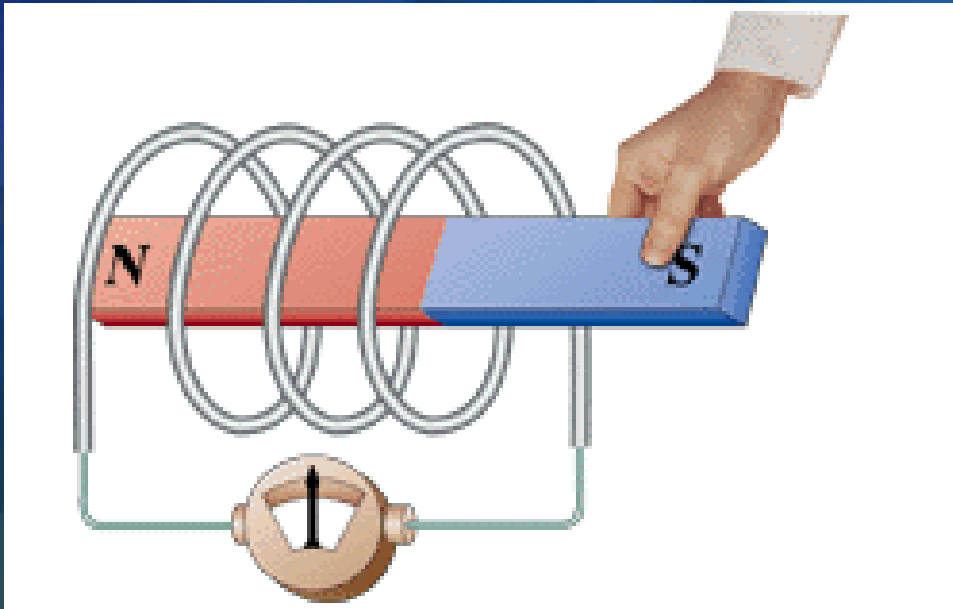
21.3 Electricity From Magnetism

- A generator uses motion in a magnetic field to produce an electric current.



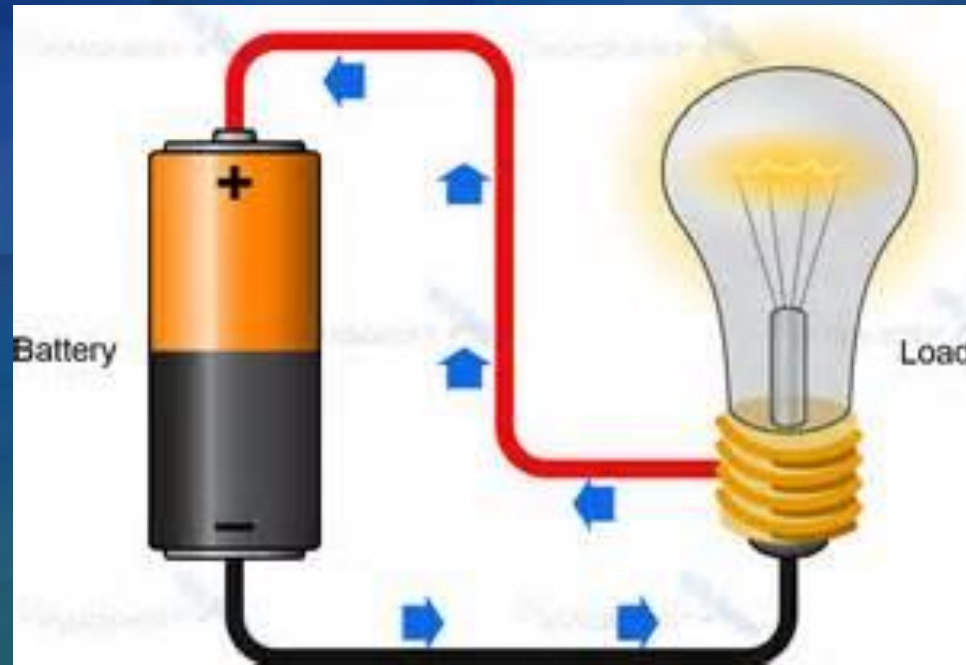
electromagnetic induction

- The process of generating an electric current from the motion of a conductor through a magnetic field.



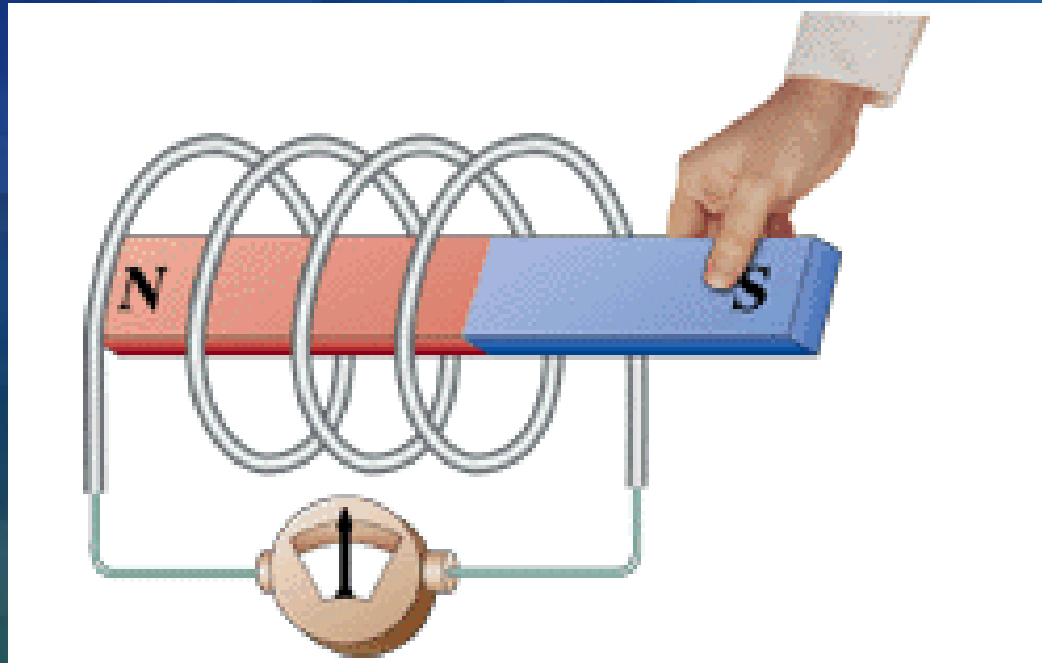
direct current

- Current consisting of charges that flow only in one direction in a circuit.



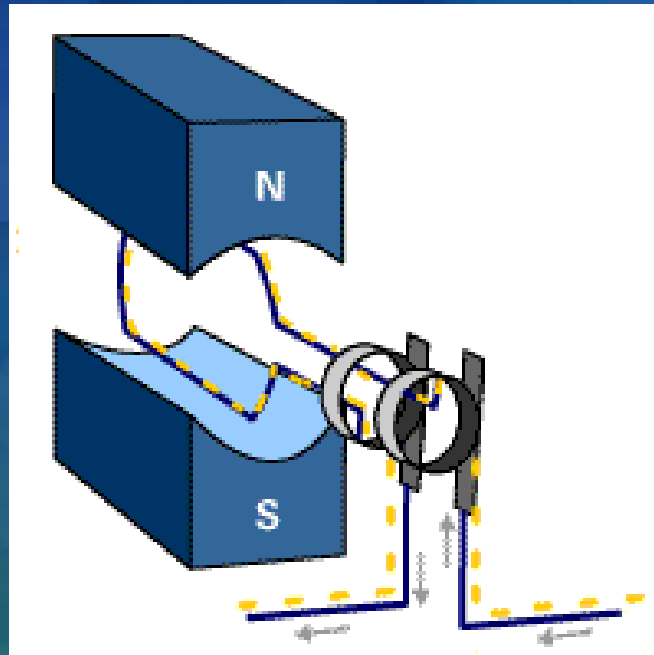
alternating current

- Current consisting of charges that move back and forth in a circuit.



electric generator

- A device that converts mechanical energy into electrical energy.



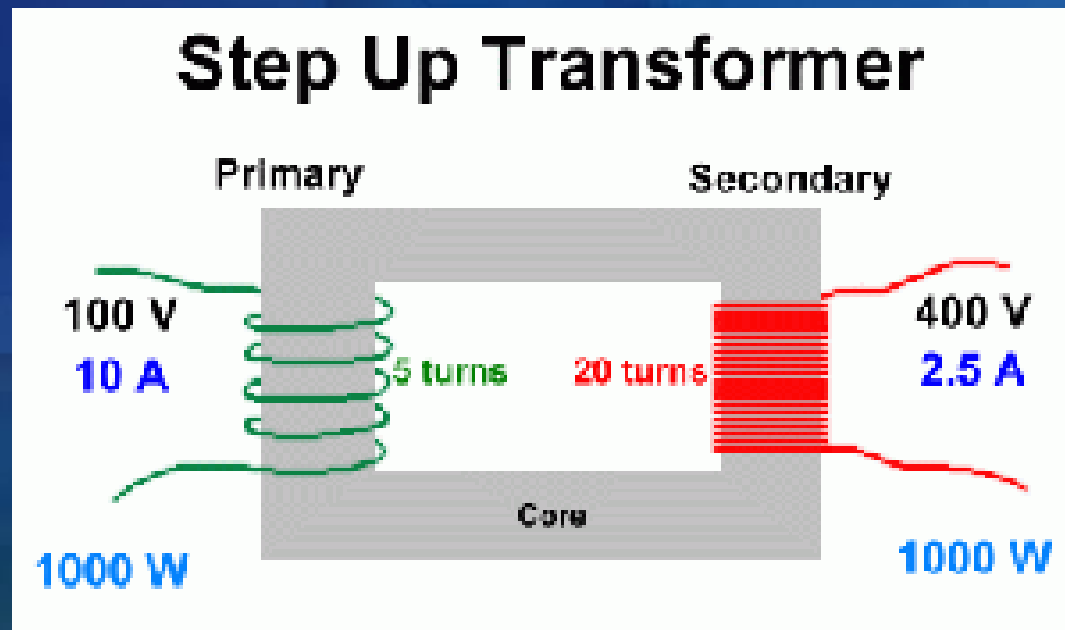
transformer

- A device that increases or decreases voltage.



step-up transformer

- A transformer that increases voltage.



step-down transformer

- A transformer that decreases voltage.

