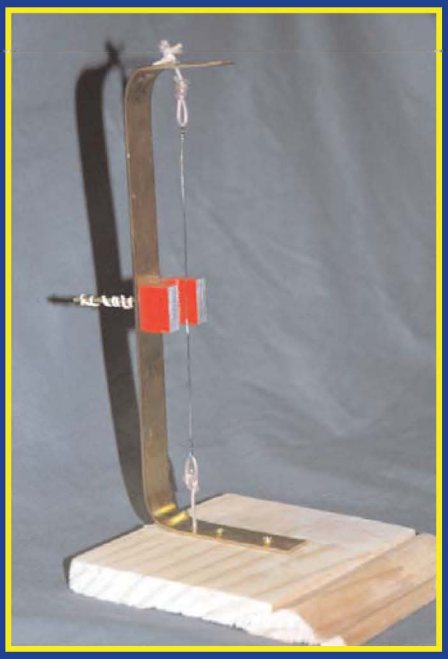
Experiment:

Electricity and motion

1. This experiment repeats Michael Faraday's early observation into the relationship between electricity and motion. This realization led first to the development of simple continuous motion electrical devices and, shortly thereafter, to the electric motor.

Faraday stretched a flexible wire between the poles of a horseshoe magnet. When a current was run through the wire, the wire was deflected/attracted toward the poles of the horseshoe magnet by the magnetic field created by the current flowing through the wire.

2. This is an easy apparatus to create. As shown, a brass bar is bent in an elongated "C" shape. (These bars are readily available at hardware stores.) Holes can easily be drilled through the soft metal. Three holes should be drilled on the bottom of the "C", two to secure the bar to a wooden block and one to secure the flexible wire. A hole halfway up the bar is used to secure the horseshoe magnet. Some horseshoe magenets may have a predrilled hole and can be fastened by a machine screw. Otherwise, devise some sort of a clip with hardware from the store. A final hole on the top secures the top of the wire. Be sure to measure the distance to the tips of the horseshoe magnet's poles and use this distance to drill the holes securing the flexible wire. A rubber band can be tied to the wire on the top to produce tension on the wire. (See detail.)



3. Connect two wire leads from the battery terminals. Alligator clips are helpful for securing the opposite ends of the leads to the flexible wire. (Be sure to strip or sand the insulation from the flexible wire to insure good contacts.) A switch in the circuit can aid in your presentation. Observe the flexible wire move when the current is applied. The movement may be determined by the size, strength and exact shape of the horseshoe magnet.