Name _____ # ____ Name _____ # ____

Lab # ___ Date _____

A Simple Galvanometer

MATERIALS: D-Cell battery (1.5 V), battery holder with contacts, switch, 3 connecting wires with alligator clips, cork, 2 pins, thread, bar magnet, wire coil, wooden coil support

PREPARING THE COMPASS:

( )1. Push a pin longitudinally through a small cork . Stick another pin vertically into the top of the cork for attaching the thread. Tie approximately 6 inches of thread to the upright pin head. Double knot the thread and remove the excess thread.

( )2. Stroke the pin point with the north pole of the bar magnet. The pin has now been magnetized and the point is now which magnet pole? _____ Set the compass aside for later use.

CIRCUIIT CONSTRUCTION:

( )1. Check to make certain the alligator clips at the coil ends are attached to the small nails in the wooden support.

( )2. Attach one end of a wire connector to the left nail on the support stand and the other end to a switch post.

( )3. Connect the other end of the switch to the - (CATHODE) of the battery.

( )4. Connect the + (ANODE) of the battery to the right nail on the support stand.

USING THE GALVANOMETER:

( )1. Holding the end of the thread, hang the pin compass in front of the coil opening so that it will turn freely. Turn the support stand so that the pin point is parallel with the coil opening and not touching the stand.

( )2. Press the switch to close the circuit. What happens?

QUESTIONS:

( )1. What makes the compass turn in general?

( )2. What does the coil turn into when a current passes through it?

( )3. What will make the galvanometer more sensitive?

( )4. What two things does a galvanometer measure?

( )5. Using the left hand rule in which direction was north in the coil's magnetic field? Use a diagram to help me understand your answer.

EXPLANATION:When an electric current is led through a coil, the coil is turned into a magnet. A magnetic field is thus created around the compass, when a small current passes through the coil, and this field deflects the compass needle. The more windings in the coil, the stronger the magnetic field and thus the more sensitive the instrument.

The stronger the current passing through the coil, the stronger the magnetic field created around the coil and the more the compass needle will deflect. A larger deflection therefore indicates a larger current. When the current is passed in the opposite direction through the coil, the magnetic poles switch and the compass needle deflects in the opposite direction. The instrument therefore, not only measures the strength but also the direction of weak currents.

FOLLOW-UP: Each laboratory partner is to copy the above explanation on a separate sheet of paper and attach it behind this page before turning the lab in for a grade.