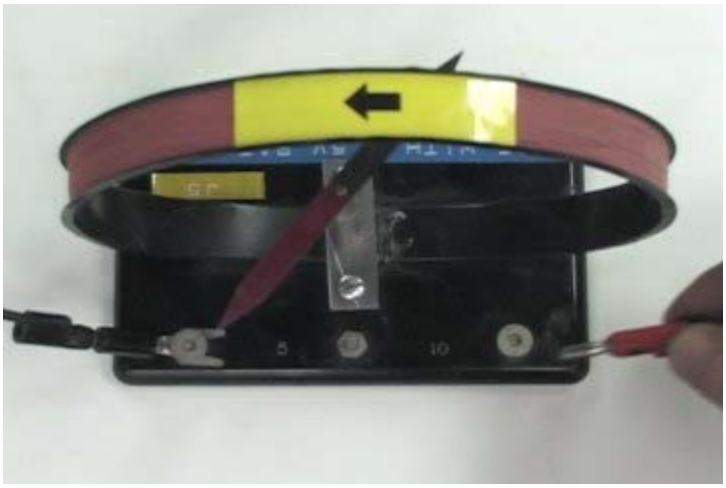
Question #329

It's about time, so we are finally off the topic of sound and on to other important issues.

The photograph below shows a compass, with the red end of the compass pointing toward the north, inside a coil. Notice that Dan is about to connect a wire to the second contact of the coil so that about ten amperes of current will flow in the coil. The direction of the (positive) current in the coil is shown by the arrow on the coil. If it matters, the coil contains 10 turns of wire, and is about 7cm in radius.



When Dan connects the coil, it might cause the needle to deflect in a different direction, if the field is strong. On the other hand, if the magnetic field of the coil is a different type of field from that of the earth, perhaps nothing will happen. Or maybe the needle will just deflect slightly from where it is with no current in the coil.

When Dan connects the coil, what will happen?

- (a) The compass needle will point in the upward direction in the picture.
- (b) The compass needle will point in the downward direction in the picture.
- (c) The compass needle will point to the left in the picture.
- (d) The compass needle will point to the right in the picture.
- (e) The compass needle will remain where it is after the coil is connected.
- (f) The compass needle will deflect only slightly from where it is before the coil is connected (Specify which direction.)

Enough information has been given above so that a simple calculation can be made, if it is actually appropriate.

Click here for Answer #329 after November 24, 2008.

Question of the Week

Outreach Index Page

Lecture-Demonstration Home Page

For questions and comments regarding the *Question of the Week* contact Dr. Richard E. Berg by e-mail or using phone number or regular mail address given on the Lecture-Demonstration Home Page.