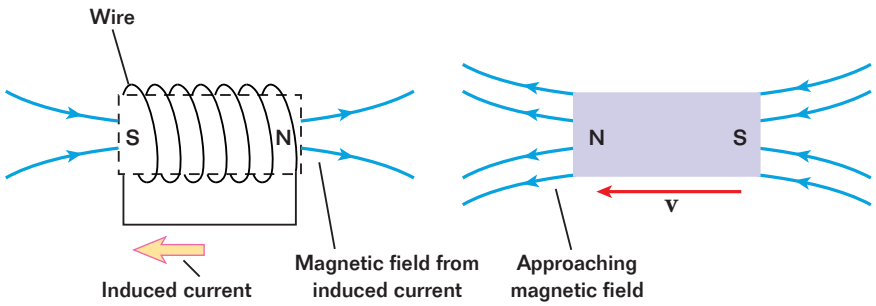

Figure 4
When a bar magnet is moved toward a coil, the induced magnetic field is similar to the field of a bar magnet with the orientation shown.

The induced magnetic field is similar to the field of a bar magnet that is oriented as shown in **Figure 4.** The coil and the approaching magnet create a pair of forces that repel each other.

If the magnet is moved away from the coil, the magnetic field passing through the coil decreases in strength. Again, the current induced in the coil produces a magnetic field that opposes the decreasing strength of the receding field. This means that the magnetic field that the coil sets up is in the same direction as the receding magnetic field.

The induced magnetic field is similar to the field of a bar magnet oriented as shown in **Figure 5.** In this case the coil and magnet attract each other.

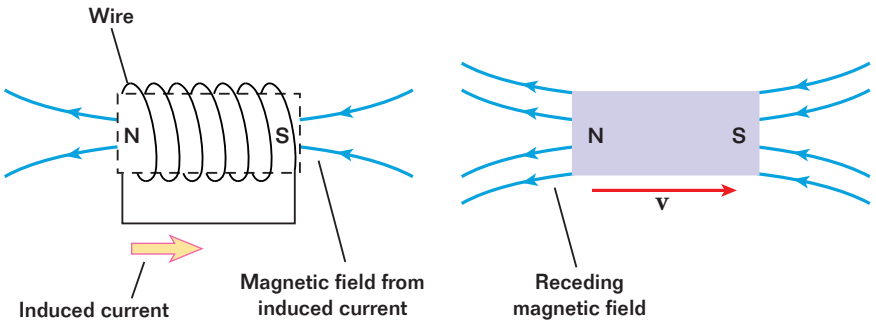

Figure 5
When a bar magnet is moved away from a coil, the induced magnetic field is similar to the field of a bar magnet with the orientation shown.

Why it Matters

Conceptual Challenge

1. Falling Magnet A bar magnet is dropped toward the floor, on which lies a large ring of conducting metal. The magnet's length—and thus the poles of the magnet—is parallel to the direction of motion. Disregarding air resistance, does the magnet fall toward the ring with the constant acceleration of a freely falling body? Explain your answer.

2. Induction in a Bracelet Suppose you are wearing a bracelet that is an unbroken ring of copper. If you walk briskly into a strong magnetic field while wearing the bracelet, how would you hold your wrist with respect to the magnetic field in order to avoid inducing a current in the bracelet?