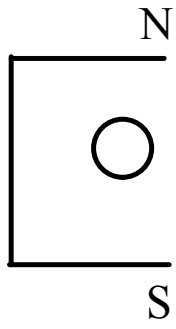
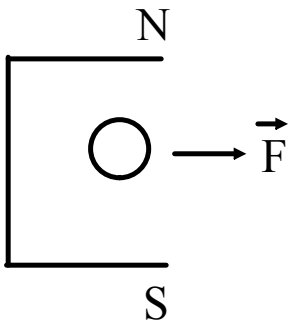
Electromagnetic Induction...is the creation of electric current by a *changing* magnetic field.



No current induced



*Current induced

or...

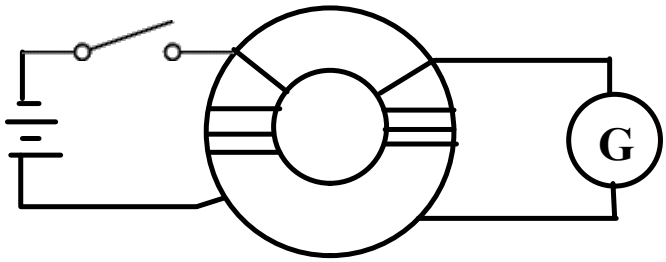
stationary conductor with moving magnet

*If the wire or the magnet moves

Faraday's Law of Electromagnet Induction

Whenever the magnetic field in the region around a conductor changes, electric current is induced in the conductor.

Faraday's Ring



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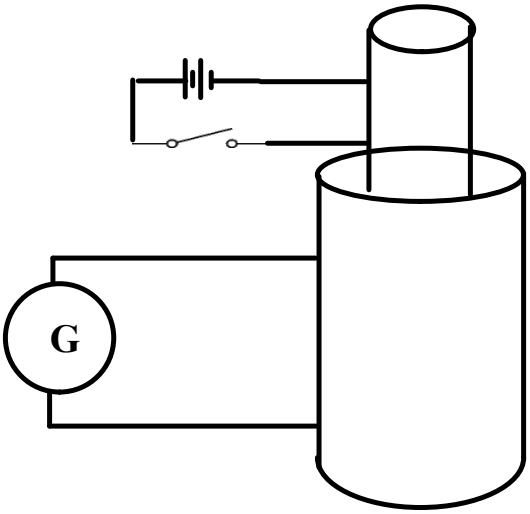
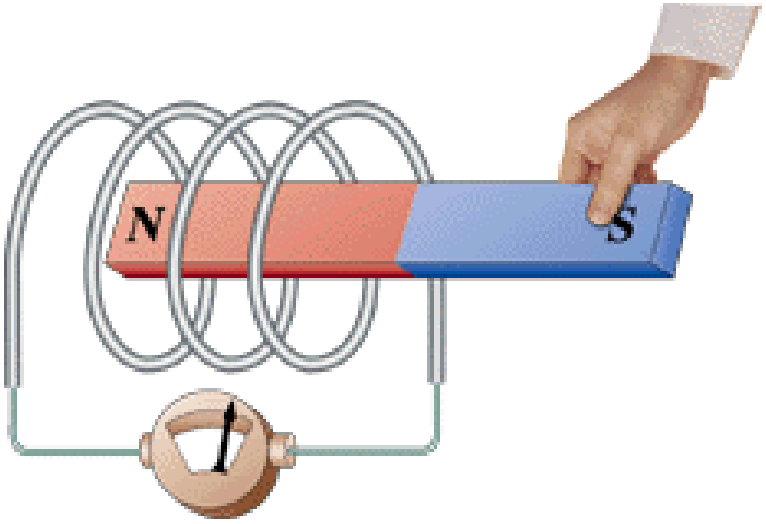
Faraday actually used an electromagnet...



could use AC source

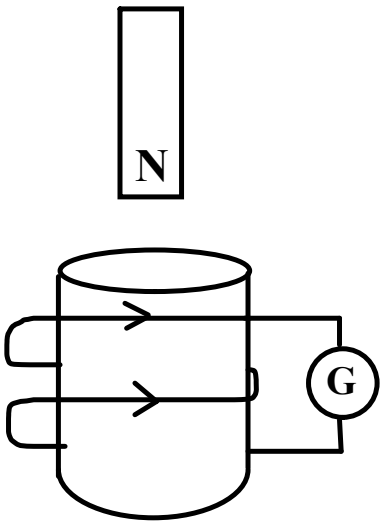
Factors Affecting Induction...

1. Strength of the magnetic field
2. # coils
3. Speed of motion


N
S

Lenz's Law

(for determining the *direction* of induced current)

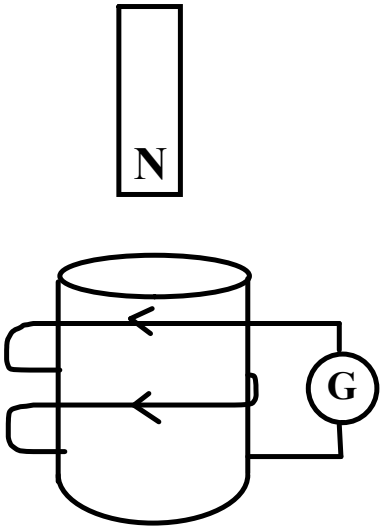


Where is N pole of the coil?

North pole of magnet attracted to South pole of coil.

Magnet moves in to the coil on its own - no energy used/work done!

No energy put in, but electrical energy produced ...is this possible?!



So ...current must flow the other way.

Check Conservation Law...

Lenz's Law

When current is induced, it creates an induced magnetic field that opposes the motion of the inducing (original) field.

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