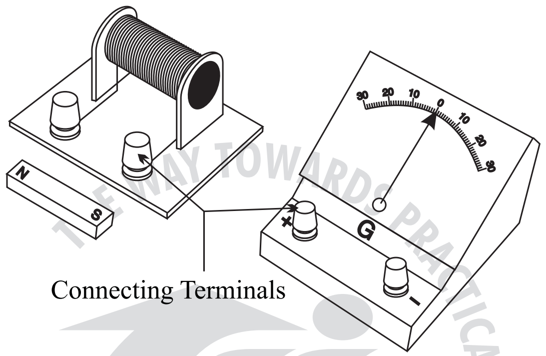
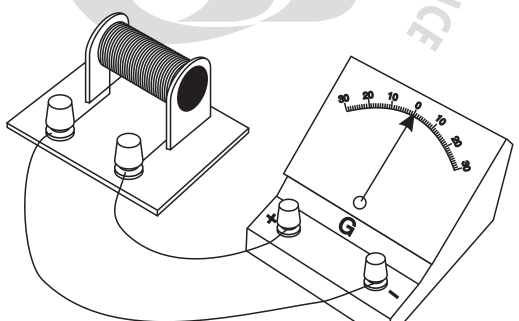
# ELECTRO MAGNETIC INDUCTION

***Faraday's magnet and coil experiment.***

***Assembly :***
A coil made of insulated copper wire wound on a hallow plastic tube. The coil is fixed on a clear plastic base with connecting terminals. You need a strong bar magnet and a sensitive galvanometer to do the experiment .

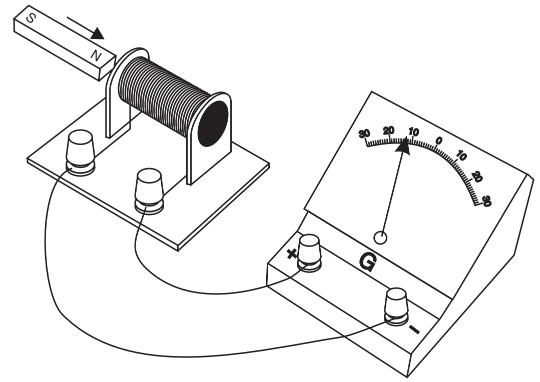



***To do and observe***

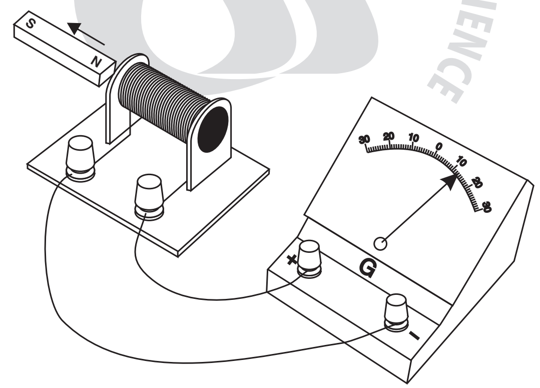



Step-1 : Connect the coil to galvanometer using connecting wires



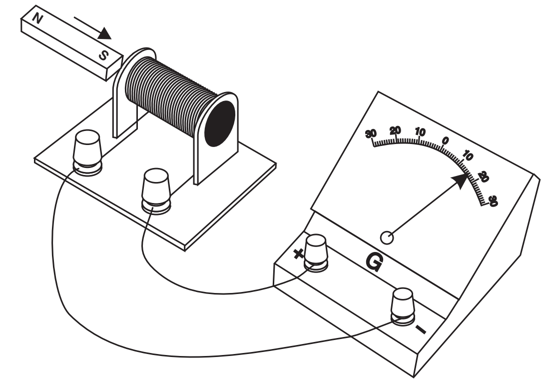



Step-2 : Move the N-pole of the bar magnet towards the coil and observe the deflection in G

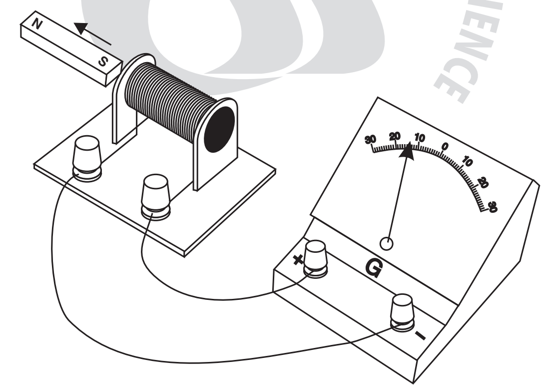



Step-3 : Move the N-pole of the bar magnet away from the coil and observe the deflection in G

TARANG S CIENTIFIC INSTRUMENTS




Step-4 : Move the S-pole of the bar magnet towards the coil and observe the deflection in G




Step-5 : Move the S-pole of the bar magnet away from the coil and observe the deflection in G

Step-6 : See what happens when magnet is kept inside the coil

Step-7 : Move the bar magnet in and out the coil with greater speed & what do you observe? Note it.

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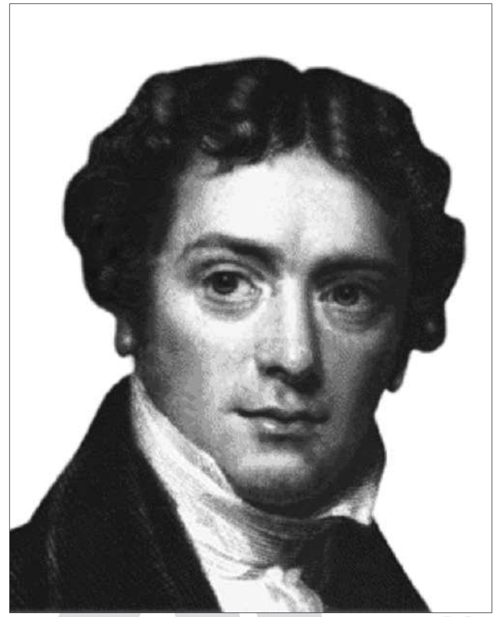
**What is going on?**

When you move magnet towards the coil, the magnetic flux (no. of lines of forces/unit area) linking with the coil increases. This increasing flux induces an e.m.f in the coil. This e.m.f in turn induces current in the coil which is detected by the deflection in the galvanometer. Similarly when you move the magnet away from the coil, the flux linking with the coil decreases. This decreasing flux again induces an emf in opposite direction and hence induced current flows in the circuit opposite direction. This can be detected by the deflection in the galvanometer opposite direction.

When you move the magnet in faster way, the flux linking with the coil changes in faster way. Therefore the induced emf in the coil increases faster hence the deflection in the galvanometer is larger. When you keep the magnet inside the coil, both the magnet and coil are stationary and hence there is no deflection, in the galvanometer. Thus it becomes clear from this experiment that there must be a relative motion between coil and magnet to induce current in the coil.





Michael Faraday
(1791-1867)



THE WAY TOWARDS PRACTICAL SCIENCE

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