

Figures and Captions

Figure 1: Multiplier

The original used a few turns of wire wound around a magnetic compass. More turns multiply (increase) sensitivity to weaker electric currents. Even though it had no scale, the needle's deflection angle indicated the strength and direction of current flow, making comparative current measurements possible for the first time. It will become the "galvanometer" (in honour of Luigi Galvani). Credit: National MagLab, Magnetic Academy.

Figure 2: Solenoid

From an ancient Greek word meaning "tubular". When current flows through a solenoid, it becomes a polarized electromagnet. In this example, a ferrous plunger is pulled inward toward the north (pole) end and compresses a spring. When the current stops, electromagnetism stops, and the plunger rebounds to its starting position. Credit: HowStuffWorks.com and <https://tinyurl.com/ye25sjei>.

Figure 3: Portrait of Mr. Michael Faraday

Credit: Thomas Phillips, 1842. Wikipedia.

Figure 4: Portrait of Sir Humphry Davy

Credit: Thomas Phillips, 1821. Wikipedia.

Figure 5: Converting Electrical Energy to Mechanical Motion

Faraday proved electromagnetic rotation was reciprocal, either when a bar magnet was fixed and the current-carrying wire was free to rotate or vice versa (insert), either clockwise or counterclockwise depending on battery polarity. Credit: National MagLab, Magnetic Academy. Insert: *Experimental Researches in Electricity, Volume 2*—M. Faraday, 1844.

Figure 6: Faraday's Electric Magnetic Rotator

On display in his restored basement laboratory. Credit: The Royal Institution. Insert: Faraday's pocket version—just add mercury! *Experimental Researches in Electricity, Volume 2*—M. Faraday, 1844.