



Michael Faraday

1791-1867

Michael Faraday was a great English physicist and chemist, whose experiments contributed greatly to our understanding of electromagnetism. He discovered how a moving magnet can create a current, just as a current can move a magnet. ***The electric current created, he claimed, was proportional to the number of lines of magnetic force that the wire cuts.*** In a more modern form this remains a basic law of electromagnetism.

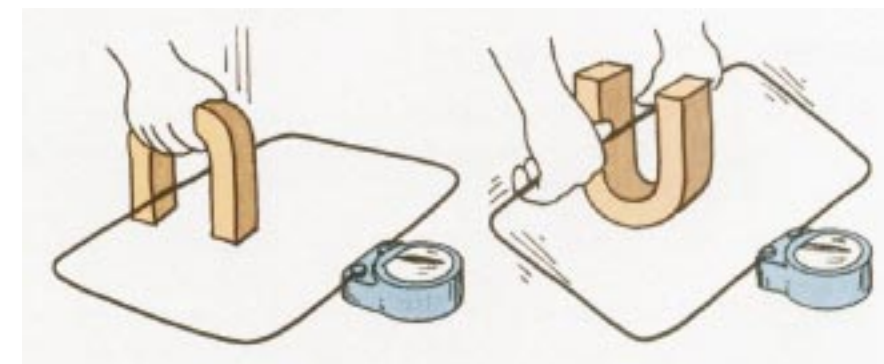
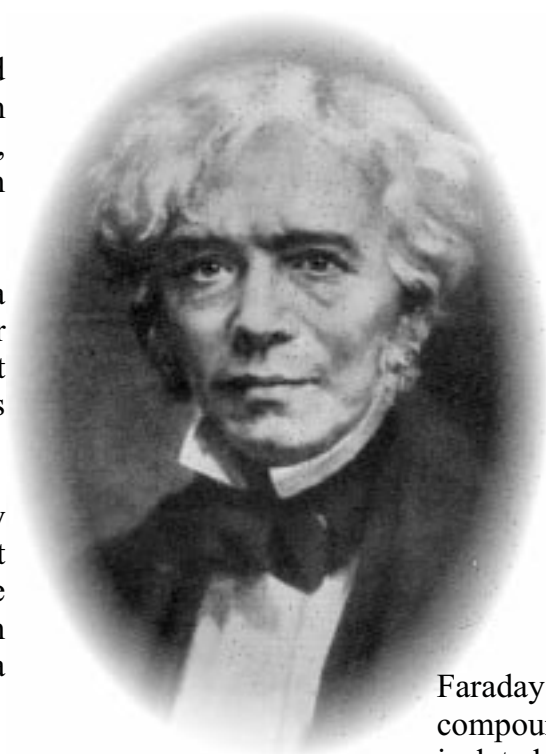
He was born at Newington Butts on September 22nd, 1791. His father, James Faraday, was a working blacksmith who very often suffered from poor health. His mother, Margaret, daughter of a farmer, was wise and calm, who 'supported her son emotionally through a difficult childhood'. Faraday was one of four children. The family belonged to a small Christian sect; this provided spiritual sustenance to Faraday throughout his life.

Michael received very little formal schooling, learning to read and write in a church Sunday school. At an early age he began to earn money by delivering newspapers for a bookdealer and at the age of 14 he was formally apprenticed to learn the trade of bookbinding. Faraday took the opportunity to read some of the books brought in for rebinding. An article on electricity in 'Encyclopaedia Britannica' particularly fascinated him. Using old odds and ends he made a crude electrostatic generator and did simple experiments.

Once he was offered a ticket to attend chemical lectures by Sir Humphry Davy at the Royal Institution in London. He took notes of these lectures and wrote them out carefully. Hoping for a job at the Royal Institution, he sent the notes to Davy, who was impressed by the young man and very soon offered Faraday a post as his laboratory assistant. The salary was a guinea a week (less than Faraday had been earning as a bookbinder).



*Faraday's
laboratory
at the
Royal
Institution*



*Moving the magnet or the
wire produces a current*

Faraday's first real successes were made in chemistry. In 1820-1823 he produced the first known compound of carbon and chlorine. In 1825, as a result of research on illuminating gases, Faraday isolated and described benzene. He also conducted an investigation of steel alloys, helping to lay the foundations for scientific metallurgy. While completing an assignment of optical glass for telescopes he produced glass of very high refractive index, that was to lead him, in 1845, to the discovery of diamagnetism.

In 1820, Michael met a large eyed girl, the 21 year old Sarah Barnard. He fell in love with her and in 1821 they married. His marriage was extremely happy. Mrs. Faraday proved to be exactly the companion he needed, and he loved her to the end of his life.

In 1831, in a series of historic experiments, he discovered the phenomenon of electromagnetic induction. He published several volumes of his researches in electricity, chemistry and physics and wrote science books for children. Childless, himself, he had a great affection for all children. It is said that he was at his colorful best when lecturing, especially to children. However, he had no pupils and hardly a disciple.

In spite of his intensive work, Faraday was always able to relax and enjoy himself. In 1826 he built himself a velocipede (bicycle) and illustrated its performance to awed onlookers by dashing around the corridor surrounding the lecture theatre of the Royal Institution.

He continued to work hard, despite suffering from a progressive illness, and died on August 25th, 1867.

From the age of fifty, however, he had been the grand old man of British science.