



From the Annals of the World History

Michael Faraday

(22 September 1791 - 25 August 1867)



Michael Faraday was an English scientist who contributed to the fields of electromagnetism and electrochemistry. His main discoveries include those of electromagnetic induction, diamagnetism and electrolysis. Although Faraday received little formal education he was one of the most influential scientists in history. It was by his research on the magnetic field around a conductor carrying a direct current that Faraday established the basis for the concept of the electromagnetic field in physics. Faraday also established that magnetism could affect rays of light and that there was an underlying relationship between the two phenomena. He similarly discovered the principle of electromagnetic induction, diamagnetism, and the laws of electrolysis.

His inventions of electromagnetic rotary devices formed the foundation of electric motor technology, and it was largely due to his efforts that electricity became practical for use in technology. As a chemist, Faraday discovered benzene, investigated the clathrate hydrate of chlorine, invented an early form of the Bunsen burner and the system of oxidation numbers, and popularized terminology such as anode, cathode, electrode, and ion. Faraday ultimately became the first and foremost Fullerian Professor of Chemistry at the Royal Institution of Great Britain, a lifetime position.

Faraday was an excellent experimentalist who conveyed his ideas in clear and simple language; his mathematical abilities, however, did not extend as far as trigonometry or any but the simplest algebra. James Clerk Maxwell took the work of Faraday and others, and summarized it in a set of equations that is accepted as the basis of all modern theories of electromagnetic phenomena. The SI unit of capacitance, the farad, is named in his honour.

Personal Life

This British scientist was born in Newington Butts, London on 22 September 1791. Faraday was born as the third-child in a poor family, where his father James was a blacksmith. Due to the poor family background young Faraday could not enjoy the niceties of a big school and had to largely educate himself. He developed a great love for reading after he became apprenticed to a local bookbinder and bookseller George Riebau. After studying the work of great scientists and authors he developed an interest in science, particularly in electricity. It was his early reading and experiments with the idea of force, that enabled him to make imperative discoveries in electricity later in life.

Faraday was always extremely curious and inquisitive. After the end of his apprenticeship (at the age of twenty), he began to attend lectures of different famous chemists in the quest to learn more. During this time he also applied for a job to Humphrey Davy, his chemistry lecturer who later appointed him as Chemical Assistant at the Royal Institution in 1813. Few years later in 1821, Faraday married Sarah Barnard whom he met at the Sandemanian church. After Davy retired in 1827, Faraday replaced him as lecturer of chemistry at the Royal Institution and published all his research work related to condensation of gases, optical deceptions and the isolation of benzene from gas oils.

Scientific Contributions

During the time when he was hired as an assistant to Professor Davy, Faraday discovered two new chlorides of carbon, conducted experiments on the diffusion of gases, investigated the alloys of steel, and produced several new kinds of glass intended for optical purposes.

Faraday is best recognized for his contributions to electricity and magnetism. In 1821 after being inspired by the work of Danish physicist and chemist, Hans Christian, he began experimenting with electromagnetism and by signifying the conversion of electrical energy into motive force, devised the electric motor. For the next few years he continued conducting experiments from his initial electromagnetic discovery. In 1831 Faraday discovered the induction of electric currents and constructed the first electric dynamo. In 1839 he conducted several experiments to determine the fundamental nature of electricity and established that electrostatic force consists of a field of curved lines of force and conceived a specific inductive capacity. This led to the development his theories on light and gravitational systems. His other prominent discoveries

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include: the process of diamagnetism, the Faraday Effect, Faraday cage and many more.

Two of his famous books are the 'Experimental Researches in Electricity' and the 'Chemical History of the Candle.'

Later years

During the later years of his life he made several other achievements: received a Doctor of Civil Law degree in 1832 by the University of Oxford granted Faraday, elected as a foreign member of the Royal Swedish Academy of Sciences in 1838 and the French Academy of Sciences in 1844. For his great contribution to science, the British government granted him a pension and a house in Hampton Court, where he spent the rest of his life after his retirement in 1858.

The great British scientist departed from this world on 25 August 1867.