Michael Faraday was an experimental genius with unparalleled accomplishments. His inexhaustible thirst for knowledge led him to explore a variety of vital problems in chemistry and physics. He has left a legacy of such splendour that it continues to evoke admiration and awe from every generation. Faraday was 'not of an age, but for all time'.

Michael Faraday was possibly one of the greatest experimental philosopher the world has known. It is difficult to think of another experimental scientist who has left such an indelible mark of achievement in pure and applied science as Faraday. His monumental contributions to science span a variety of fields, including chemistry, physics, materials science and engineering. One is left wondering whether such an individual ever lived. Clearly Faraday was a unique human being gifted with extraordinary imagination and experimental creativity. His life has elicited a romantic response one generation after another. We get some insight into the personality of Faraday through his own words:

Do not suppose that I was a very deep thinker or was marked as a precocious person. I was a very lively imaginative person and could believe in the Arabian Nights as easily as in the Encyclopaedia. But facts were important to me and saved me. I could trust a fact and always cross-examined an assertion.

He possessed a child-like awe and a great sense of purpose combined with humility. Faraday was not spoiled by formal education; he was self-taught. He left school at the age of thirteen and started his career as an errand boy, then as a bookbinder, and rose to become one of the greatest scientific giants. He was a prolific writer and wrote about 450 research publications. There is not a single mathematical equation in any of his works, because he knew no mathematics. Yet, as Albert Einstein remarked, Faraday was responsible, along with Maxwell, for the greatest change in the theoretical basis of physics since Newton.

**Biography**

Faraday was the third child of a blacksmith, born in Newington Butts near London on 22 September 1791. After merely learning elementary reading, writing and arithmetic, he left school and worked first as a newspaper boy and then learnt the art of bookbinding. While doing so, he also took interest in the contents of scientific books and began to do simple experiments in chemistry by spending a few pence every week. He attended some of the lectures of Sir Humphry Davy in 1812 at the Royal Institution in London and became so impressed by what he heard and saw that he sought an appointment under Davy. He accompanied Davy as his secretary and scientific assistant for 18 months on an European tour during 1813-1815. During this period, although France and Britain were at war, Napoleon had decreed that scientists were free to meet and exchange ideas. On this tour Faraday met great scientists such as Ampere, Dumas, Guy Lussac, Humboldt and Volta. On his return from Europe in 1815, Faraday was appointed assistant and superintendent of apparatus at the Royal Institution. He wrote his first research paper in 1816 on the analysis of native caustic lime. He was married in 1820, and was elected fellow of the Royal Society in 1824.

During the mid-1820s, Faraday initiated his educational experiments and his communication with the public through popularization of science. Faraday’s evening discourses soon became famous. His Christmas lectures became legendary. Faraday was not a born lecturer. Yet, by common consent, he became easily one of the greatest lecturers. He had much to say on how to lecture (see Box 1). Faraday’s most famous lecture series on ‘The chemical history of a candle’ (first published in 1850) has become a classic.
Faraday became the first Fullerian professor of chemistry at the Royal Institution in 1834 and continued to work there till his retirement. His last major publication in chemistry was in 1857 on 'Experimental relations of gold and other metals to light' and dealt with colloidal metals. (Some of the metal sols made by Faraday are still preserved.) His last major papers in physics were in 1862 on the influence of a magnetic field on the spectral lines of sodium, and on the lines of force and the concept of a field.

In 1855 Queen Victoria granted Faraday the favour of a house at Hampton Court, where he died peacefully on 25 August 1867. He was buried in a simple grave not far from that of Karl Marx. On the grave of Karl Marx is written, 'Philosophers interpret the world, the task however is to change it.' Today, it is not difficult to decide who really changed the world, Karl Marx or Michael Faraday.

Scientific Contributions

Faraday's contributions to science are truly mind-boggling, considering their originality and quality and also the fact that they were all carried out by a single person. One can classify his contributions under the broad headings of physics and chemis-