



## Oliver Heaviside

1850-1925

The words inductance, capacitance, and impedance were given to us by the great English physicist and engineer, Oliver Heaviside, who also pioneered in the use of Laplace and Fourier transforms in the analysis of electric circuits, first suggested the existence of an ionized atmospheric layer (now called the ionosphere) that can reflect radio waves, and is said to have predicted the increase of mass of a charge moving at great speeds before Einstein formulated his theory of relativity. He not only coined the word impedance but introduced its concept to the solution of ac circuits.

Heaviside was born in London, the youngest of four sons of Thomas Heaviside, an engraver and watercolorist, and Rachel Elizabeth West, a sister-in-law of the famous physicist Sir Charles Wheatstone. Young Oliver's schooling ended when he was 16, but he trained himself at home in languages, mathematics, and the natural sciences. He became a telegraph operator in 1870, but in 1874 he was forced to retire because of increasing deafness. From then until his death he led a hermit like existence, devoting himself to investigations of electrical phenomena and publishing such works as *Electrical Papers* in 1892 and a three-volume treatise, *Electromagnetic Theory* (1893 – 1912). His free and original use of mathematics was decades ahead of his time and evoked controversy with his contemporaries. Nevertheless, his fame spread, and because of his great store of knowledge and the scientific help he generously extended to all who sought it, his home became known as The Inexhaustible Cavity. He was elected Fellow of the Royal Society in 1891 and received an honorary doctorate from the University of Gottingen. To solve the problem of his sometimes being unable to pay his dues, the Institution of Electrical Engineers made him an honorary member, and shortly before his death awarded him its first Faraday Medal.

(Source: D. Johnson, J. Johnson and J. Hilborn, *Electric Circuit Analysis*, Prentice-Hall, 1989)