SIR JOSEPH LARMOR (1857-1942): Theoretical Physicist
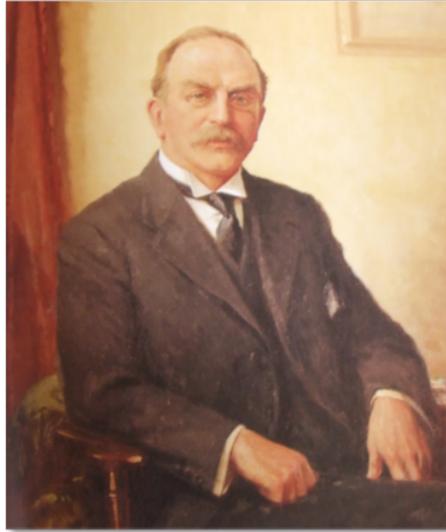
Born at Magheragall, County Antrim on 11 July 1857, Larmor was educated at the Royal Academical Institution and gained his BA and MA from Queen's University, Belfast. He entered Cambridge University in 1877, gaining a fellowship in 1880. He was appointed Professor of Natural Philosophy at Queen's College, Galway, in 1880, but returned to St John's five years later as a lecturer in Mathematics and in 1903 became Lucasian Professor of Mathematics. He was elected Fellow of the Royal Society in 1892 and became its Secretary, having earlier received the Society's Royal Medal and the Copley Medal. In 1909 he was knighted and was Unionist Member of Parliament for the University of Cambridge from 1911 to 1922. He was given the freedom of the city of Belfast and many honorary degrees. On retirement in 1932 he moved to Holywood, County Down where he died on 19 May 1942. A lunar crater, on the far side of the moon, has been named after him.

Larmor was a great mathematical physicist, and a great Irishman after the manner of MacCullagh, Rowan Hamilton and FitzGerald, the "three Irish giants" in whose steps he walked and whom he worshipped 'this side of idolatory'. His central interests were in applied mathematics and physics, specifically in electromagnetic theory, optics, mechanics, and the dynamics of the Earth. Like the work of his contemporary, Hendrik Lorentz, Larmor's work belongs to the final phase of classical physics that paved the way for the revolutions of relativity and quantum theory. An example of Larmor's basic scientific conservatism was his support of the concept of the ether as the wave-bearing medium thought to pervade all space and his work, published in 1900 as Aether and Matter, on the motion of matter through the ether. He believed that matter could only interact with the ether through the effects of electrically charged particles that formed part of the ether.

Larmor made two particularly important contributions to electrodynamics. He was the first to predict in 1897 the Larmor precession. This is the wobbling motion of the orbital plane of an electron moving in an atom when subjected to a magnetic field. The axis at right angles to the plane of the orbit sweeps out a conical area. Larmor also derived a non-relativisitic formula that expresses the power radiated by an accelerated electron as being proportional to the square of the product of charge and acceleration.