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Credited 5th 6-weeks
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Lord Rayleigh

Nobel Prize for Physics-1904

Lord Rayleigh was given the Nobel Prize in physics for his work on the densities of some of the most vital gases and for his discovery of argon in connection.

Biography:

John William Strutt was born on November 12, 1842, in Langford Grove, Maldon, Essex, United Kingdom. His parents were John James Strutt and Clara Elizabeth La Touche, and he was a third Baron Rayleigh. His maternal grandfather, Captain Richard Vicars, was one of the few members to be in the high nobility and to be a prominent scientist.

During John William's childhood, he was sick often due to his frail body. This caused interruptions in his education and concern that he might not live very long, however, he continued to learn at such schools as Eton, where he spent most of his time in the sanatorium, Wimbledon for three years, Harrow, and finally, four years at Torquay with Reverend George Townsend Warner.

Strutt began attending Trinity College, Cambridge, in 1861. Here he learned mathematics, and at first he was behind compared to his classmates due to his interruptions in his studies, but soon he showed himself to be a mathematical prodigy. When he graduated in

the Mathematical Tripos in 1865, he was Senior Wrangler and a Smith's Prizeman. He continued to attend Trinity, this time on a fellowship, until 1871.

In 1872 he has a severe attack of rheumatic fever and was forced to spend the winter in the south, away from the dreary English winters, so he went to Egypt and Greece. After his return to England his father died, leaving him with the title of Baron and management of the estates. The family seat was in Terling Place , at Witham, Essex, and he ran the 7,000 acres of the estate more advanced by applying scientific and acquired knowledge to better manage the agriculture.

He left his estate in the care of his brother and returned to the field of science again in 1876. He was the Professor of Experimental Physics and Head of Cavendish Laboratory in Cambridge, which he left in 1884 to go back to his county seat. He then became Professor of Natural Philosophy for the Royal Institution of Great Britain. He was the President of a Government Committee on Explosives, the Scientific advisor to Trinity House, and Lord Lieutenant of Essex.

Lord Rayleigh was a member of the House of Lords, but didn't intervene into politics often because he didn't want politics to interfere with science. Titles and prizes he held include: Chancellor of Cambridge, Justice of the Peace, honorary science and law degrees, Fellow of the Royal Society(Secretary 1885-1896 and President 1905-1908), Recipient of Order of Merit, Privy Councilor, awarded Copely, Royal, and Rumford Medals of the Royal Society, and Noble Prize in 1904.

He married Evelyn, who was the sister of the future prime minister, the Earl of Balfour, in 1871. They had three sons, one of which was the Professor of Physics at Imperial College of Science and Technology in London. His hobbies included traveling, tennis, photography, and music. He died on June 30, 1919 in Witham, Essex.

Scientific Work:

In the beginning of Lord Rayleigh's research, he worked primarily with the math concerning optics and vibrating systems. At the end of his career, he had researched topics covering most of the field of physics, including sound, wave theory, color vision, photography, elasticity, capillarity, viscosity, density of gases, hydrodynamics, electrodynamics, electromagnetism, light scattering, and the flow of liquids. He helped to establish standards of resistance, current, and electromotive force, including the ohm.

He won the Nobel Prize for discovering Agron in 1985. He also predicted the existence of the surface waves which are now named after him. His discovery of Argon was aided by Sir William Ramsay. Argon makes up 0.93% of the atmosphere and is the third most abundant gas, being a byproduct of oxygen and nitrogen, It is used to fill incandescent and fluorescent light bulbs because it prevents the oxygen from corroding the filament. It is also used in arc welding and the growing of semiconductor crystals because it provides shielding fron the other atmospheric gases.

In the 1890s, Lord Rayleigh developed the Duplex Theory, which is about human sound localization. He determined this using interaural time delay and interaural level difference. Because humans receive sound spatially, we use the difference in the phase of the sound and the amplitude between the two ears. His theory suggests that we use two primary cues for horizontal location and for 3-D bearing (can place a sound using x, y and z axes)

He was patient and conducted delicate experiments, but also was a good teacher. He helped to sat up a system of teaching at Cambridge for an advanced school for experimental physicists. He also wrote very well, including publishing *Theory of Sound* , which clairifies mechanics of vibration and acoustic wave propagation ,and other papers in his six- volumed *Scientific Papers.* He has also written some parts of the *Encyclopedia Britannica.* His Theory of Scattering was the first work to explain scientifically ad correctly why the sky is blue.

Sources:

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