John Douglas Cockcroft, Sir Biography

John Douglas Cockcroft, Sir

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Biography

Sir John Douglas Cockcroft made substantial contributions to the field of **nuclear physics**, designing the first particle accelerator and discovering the transmutations of atomic nuclei induced by artificially accelerated particles. Along with his collaborator, Irish physicist Ernest T. S. Walton (1903-1995), Cockroft received the Nobel Prize in physics in 1951 for research that profoundly influenced the subsequent course of nuclear physics.

Cockcroft was born in Todmorden, England, on May 27, 1897, where his family manufactured cotton products for several generations. He studied mathematics at Manchester University and served in World War I in the Royal Field Artillery. After the war, Cockroft returned to study mathematics and electrical engineering at St. John's College, Cambridge. Graduating in 1924, Cockroft began working under English physicist **Ernest Rutherford** (1871-1937) at the Cavendish Laboratory at Cambridge and collaborated with Russian physicist Pyotr Kapitza (1894-1984) on the production of intense magnetic fields and low temperatures. Cockcroft then turned to nuclear physics, focusing on how to accelerate protons with high voltages. In 1929, Cockcroft and Walton developed the **voltage** multiplier, which became known as the Cockcroft-Walton generator. It disintegrated lithium atoms by bombarding them with protons and, in the process, produced alpha particles. For the first time, a nuclear transmutation was produced artificially by means entirely under human control. Cockcroft and Walton continued working on the "splitting" of other atoms and, in the process, pioneered the use of **accelerators** as tools for nuclear research.

As World War II dawned, Cockcroft was appointed assistant director of scientific research in the British Ministry of Supply, where he began developing a new **radar** defense system. In 1944, he took charge of the Canadian Atomic Energy Project and in 1946, became director of the British Atomic Energy Research Establishment in Harwell, England. Cockcroft, who married Eunice Elizabeth Crabtree in 1925, had four daughters and a son. In addition to the Nobel Prize, Cockroft received numerous awards and recognition, including a knighthood for his accomplishments in 1948. Author of *Problems of Disarmament*, a treatise on nuclear bomb proliferation and disarmament, he was awarded the Atoms for Peace Award in 1961. He died in Cambridge, England, at the age of 70.