



Ernest Rutherford

1871-1937

Awarded the Nobel Prize for Chemistry in 1908

Ernest Rutherford, a great physicist, was recognized as the 'father' of nuclear physics. He was born in Spring Grove, New Zealand, on August 30th, 1871, the fourth of the 12 children of James and Martha Rutherford. His father was a wheelwright, and his mother a schoolteacher. In 1887 Ernest won a scholarship to Nelson College, a secondary school, where he was a popular boy, clever with his hands and a keen footballer. He was good at history and languages as well as mathematics. He graduated from Canterbury College with a B.Sc. in 1894.

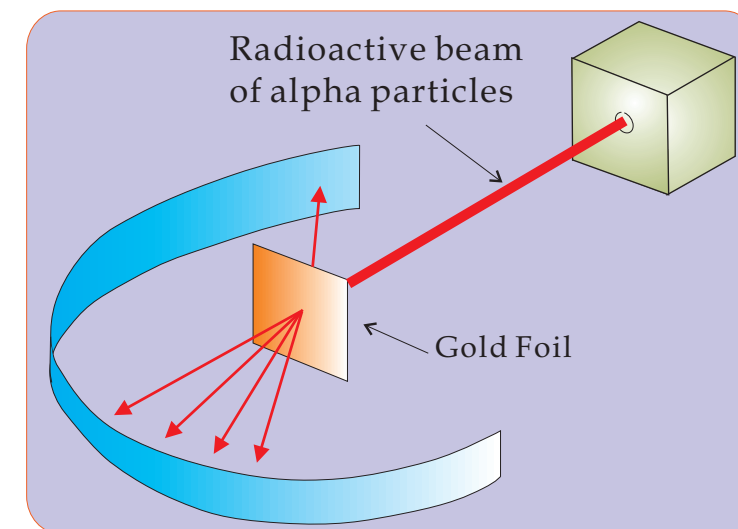
Ernest was by nature a brilliant experimentalist, whose great ability was to look deeply into a scientific problem. His remarkable scientific career started when he made his first research. Examining the magnetization of iron by a rapidly alternating electric current, he found that he could detect electromagnetic waves, newly discovered by the physicist Hertz, even after they had passed through brick walls. Publication of this work won for him an '1851 Exhibition' Scholarship which provided for further education in England.

Rutherford came to Cambridge in 1895 and began to work under J.J. Thomson, who was the leading authority on electromagnetic phenomena. They discovered that X-rays produced large quantities of charged particles, positive and negative ions, in a gas. Then Rutherford discovered that uranium rays produced the same kind of ions in a gas as did X-rays. Later he determined that uranium gave out two kinds of radiation which he named alpha and beta.

After research at McGill University in Canada, from 1898 to 1907, Rutherford moved to the University of Manchester. He, with his wife, Mary Newton, and their six year-old and only child, Eileen, settled in Manchester in a medium sized, well planned house. Soon he became the most popular person in the University.



He was a keen footballer



He showed that alpha particles could be occasionally scattered backwards

In 1908 Rutherford was awarded the Nobel Prize for his 'investigation into the disintegration of the elements and the chemistry of the radioactive substances'.

Rutherford with his remarkable pupils made his greatest contribution to science in 1911. Observing the scattering of alpha particles by metal foils, they noticed that a few of them were deflected in the backward direction. Rutherford explained that this is possible if the atom has a positively charged nucleus of very small size. He returned to Cambridge University in 1919.

Rutherford has been described by his biographers as a 'tribal leader'. They have also pointed to his honesty, 'gentleness on occasion', kindness of heart and intelligence. He was not modest. **He could be aggressive, even hard, when his work or that of his pupils was criticized.** His talk abounded in slang and epigrams. Everybody in the laboratory knew his loud voice and laugh as he heard unexpected news.

It is said that once at a formal lunch a bishop asked him, how many people there were in the South Island of New Zealand? The bishop was surprised to learn that there were not more than only 250,000 and he compared Rutherford's 'lovely New Zealand' to that of a small town in England, Stoke on Trent. Rutherford answered, 'every single man in South Island could eat up the whole population of Stoke on Trent, every day before breakfast, and still be hungry'.

Rutherford was knighted in 1914. In 1932 he was made Baron Rutherford of Nelson. He died in 1937 after a short illness. His ashes were placed close to Newton's tomb in Westminster Abbey, in London.