



ERNEST RUTHERFORD

Ernest was born in Brightwater 30 Aug 1871, the 4th of 12 children born to James and Martha Rutherford who migrated to NZ in 1843. He attended Foxhill School and later Havelock School. He attended Nelson College from Form 5, where he rose to sergeant in the Nelson College Cadet Corps, graduating as Head Boy in 1889 with a scholarship to attend Canterbury College in Christchurch.

Rutherford attained a BA in mathematics and physical science [practical physics] in 1892 and an MA a year later. In 1894 he tried his hand at teaching at Christchurch Boys High School. He researched magnetism and radio wave detection for 2 years before taking up a scholarship at the Cavendish Laboratory in 1895. By 1896 he was studying the ionisation of gases and the newly discovered radioactivity. He then moved to Montreal on the offer of a full Professorship at the age of 26. Engaged to be married to Mary Newton the offer was too good to refuse. They were married in NZ in 1900. During 9 years at McGill University in Canada he explained radioactivity as the natural transmutation of atoms, discovered radon, and dated the age of the Earth. In 1907 he was head-hunted by Manchester University, where he discovered the nuclear structure of atoms, and became the first person to split an atom. . In 1908 he was awarded a Nobel Prize, the first for a New Zealand educated person and the first for research carried out in Canada.

He was knighted in New Year Honours of 1914. This year was the conference of the British Association for the Advancement of Science and over 300 British and European scientists came to Australia with plans for a smaller group to include NZ as well as part of the itinerary. Three days before docking in Australia the ships wireless picked up the news that war had started in Europe. By and large the Conference continued as planned with the British Association providing funding support for their German counterparts until leaving from Adelaide as first stop back to Britain where they were interned. They remained as part of the delegation throughout the Conference in all five states. Mary was very keen to reach NZ before her younger brother [Capt Charles Newton, a doctor] left for the war. She and daughter Eileen met him briefly in Wellington before he went into camp. They went on to Christchurch to stay with her mother until Ernest arrived. They then visited all members of the family throughout the country enjoying receptions and meetings along the way. Finally the Rutherfords departed from Auckland on the ss Niagra on 1 December 1914. They arrived back in England to find the Universities were drained of young able researchers and many died in the war – something ER campaigned about for some time. The futility of war was demonstrated by the fact that two scientists who had worked together on crucial atomic experiments before the war, found themselves in opposing trenches in the same sector of the front line in France. While there Ernest Marsden was appointed to Victoria College in Wellington and Hans Geiger wrote a letter to congratulate him. May Rutherford busied herself producing medical supplies and visiting wounded Canadian and Canterbury soldiers throughout Manchester. Ernest's cousin William Rutherford joined the CMR having already served, and been wounded, in the Boer War. He was killed at Gallipoli on 13

July 1915. Rutherford's father and Uncles were good shots with a rifles in the Waimea Volunteers and Ernest won a medal for rifle shooting while at Cambridge.

Meanwhile Charles Newton whilst coordinating a hospital medical field station at Gallipoli recorded the successful evacuation of troops at the end of the campaign in letters written to his sister and in his personal diary. 'Over 8000 Australian and NZ troops lie buried there' he wrote. In 1916 Rutherford joined the Admiralty's Board of Invention and Research to research submarine detection. In part the work was triggered by the loss of 1000 troops on ships torpedoed in the Aegean Sea in 1915. His first (secret) reports concluded that a submerged submarine could only be detected by the underwater sounds it emitted, and that the best platform for listening was a submerged submarine. Rutherford developed a unidirectional hydrophone which was fitted to ships from the start of 1917. 1916 – on the prospect of a nuclear bomb.

Fortunately at the present time we had not found out a method of so dealing with these forces, and personally I am very hopeful we should not discover it until man was living at peace with his neighbours.

Marsden meanwhile departed from England for his position at Victoria College in NZ but later joined the NZ Army as a signals officer and served with distinction in France winning the Military Cross and twice mentioned in dispatches.

In April of 1917 America belatedly joined the Allied war efforts and Rutherford was part of a joint French-British delegation that travelled to the USA to transfer knowledge to American scientists. On returning to the UK he began work again on the proton emissions from gaseous materials bombarded with alpha particles. In December of 1917 Rutherford wrote to Neils Bohr that "I am also trying to break up the atom by this method . . . Regard this as private." After the war the scientists who survived slowly picked up the relationships the war had split apart. Rutherford donated 270 pounds to the impoverished Radium Institute in Vienna repaying a debt from before the war. He was made Baron Rutherford of Nelson in 1931 and became President of the Academic Assistance Council to help German refugees.

He died in Cambridge (UK) 19 October 1937

Biography prepared by Peter Millward, Nelson Provincial Museum, with support from Dr John Campbell in 2014.