

KATHLEEN LONSDALE – FAMOUS IRISH SCIENTIST

By

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Science traditionally was largely a male preserve, but today things are different. Girls are coming into science, particularly the biological sciences, in large numbers. Two-thirds of the biological sciences intake at UCC is female. Today I write about an Irish woman, Kathleen Lonsdale, who made her mark in science when women were the exception rather than the rule.

Kathleen Yardley was born in Newbridge, Co. Kildare on 28 January, 1903, the youngest of 10 children, 4 girls and 6 boys. Four of the boys died in infancy. Kathleen's father Harry, an ex-British Army sergeant major, was postmaster at Newbridge, near the Curragh Camp, and dealt with mail for the Black and Tans. Harry kept his wife short of money, and, overall, the family was poorly off. Harry was intelligent, read widely, and Kathleen inherited her passion for facts from him.

Kathleen's mother, Jessie Cameron, was of Scottish descent and of strong character. Jessie was a Baptist and raised her children in that tradition. She persuaded them to 'take the pledge' at an early age. Kathleen's earliest memories were of religious services in Newbridge. She was happy in the local school where she learned to count using yellow balls. However, Jessie, worried at the unsettled state in Ireland, took the children to Seven Kings, Essex in 1908.

Kathleen won a scholarship to attend the County High School for Girls at Ilford from 1914 to 1919. She also took classes in physics, chemistry and higher mathematics at the County High School for Boys, the only girl to do so, since these subjects were not taught in her school.

Kathleen won a County major scholarship and the Royal Geographical Society's medal for the highest marks in geography. She enrolled in Bedford College for Women, in London, at the age of 16, to study mathematics.

At the end of first year at Bedford she won a university scholarship and changed from mathematics to physics. Kathleen studied hard, but she also coxed the college eight and was secretary of the Music Society. In 1922 Kathleen topped her class in the honours B.Sc. examination, and the eminent crystallographer W.H. Bragg offered her a place in his research group at University College, London. Her yearly grant of £180 allowed Kathleen to contribute handsomely to family expenses.



Kathleen Lonsdale

Kathleen used X-ray diffraction to study molecular structure. This technique is used to work out the structure of a molecule by analysing how a crystal formed by that molecule scatters a beam of X-rays. In 1923 W.H. Bragg moved to the Royal Institution and Kathleen Yardley went with him.

Kathleen met her future husband Thomas Lonsdale when he was a research student at University College London. Thomas helped Kathleen put her apparatus together. They married in 1927 and moved to Leeds where Thomas got a job. Kathleen thought of leaving research and settling down to homemaking but Thomas declared he had not married to get a free housekeeper. Thomas and Kathleen had 3 children.

During their stay at Leeds, Kathleen made her most important scientific contribution. By studying crystals of hexamethyl benzene she showed that the benzene ring, a most important compound in organic chemistry, is flat, and she worked out its dimensions fairly accurately.

The Lonsdales returned to London in 1930 and Kathleen worked for the next 15 years at the Royal Institution. In 1949 she was appointed Professor of Chemistry and Head of the Department of Crystallography at University College, London. Her research group studied solid state reactions, pharmacological compounds and the constitution of bladder and kidney stones. She edited the International Atlas for X-ray Crystallography, the standard work in the field.

Kathleen became a Quaker during her time at Leeds and she became convinced that war is a totally evil thing. When World War 2 began in 1939 Kathleen refused on conscientious grounds to register for civil defence duties. She was summoned and fined. She refused to pay and was sent to Holloway gaol for 1 month.

Kathleen found prison life tough. She had to do heavy work, cleaning and scrubbing the prison officers' quarters. She collapsed after one heavy duty. The Governor allowed her colleagues to send her scientific papers and instruments to work on in her cell in the evenings.

Kathleen talked to her fellow prisoners about their lives and many of them were kind to her. One advised her not to leave anything lying about, saying – 'There are thieves, dearie, even in here'.

After leaving prison Kathleen made suggestions to the Governor for prison improvements. Many of her suggestions were implemented and Kathleen later became a prison Visitor. She was also a tireless campaigner in the cause of international peace.

The Royal Society in London, founded 1660, is one of the oldest and most famous scientific societies and election to Fellowship is one of the top distinctions a scientist can achieve. On 22 March 1945 Kathleen Lonsdale and Marjory Stephenson were together the first women to be elected into Fellowship. Kathleen was also the first woman President of the British Association for the Advancement of Science. In 1965 she was created a Dame Commander of the Order of the British Empire.

Thomas Lonsdale retired in 1960, aged 60, and helped Kathleen in the cause of peace and prison reform. In 1970 Kathleen became ill with leukaemia and died in hospital on April 1st, 1971.

Kathleen Lonsdale is remembered today in her native Kildare at NUI Maynooth where the Lonsdale Prize is awarded to the student obtaining the best First Class Hons. degree in chemistry. The inaugural prize in 2001 was awarded to Ms. Elaine Lawless.

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