



# William Lawrence Bragg

1890 - 1971

Awarded the Nobel Prize for Physics in 1915

William Lawrence Bragg was born on March 31st, 1890, in Adelaide, Australia, the first son of William Henry Bragg and Gwendoline Todd. His father, professor of physics and mathematics, had come to Adelaide after he had graduated from Cambridge University in Britain. His mother was the daughter of the government astronomer, who had lived in Australia since 1855 and had been given the particular task of installing an electric telegraph system in South Australia.

Bragg attended a convent school when he was five. Still a small boy, he was pushed by his younger brother while riding his tricycle and damaged his left elbow. After home treatment he was left with a slightly shorted hand. Only 40 years later he had an operation to relieve the pressure on the nerve that was paralysing his left hand. This event brought Bragg into his first encounter with X-rays, which had just been discovered. His father set out the apparatus for the first time to examine his son's elbow; **it was the first recorded medical use of X-rays in Australia.**

At about 11 years, the young Bragg was sent to St. Peter's College, where he learned languages, literature, mathematics and chemistry. Bragg was 15 when his father decided that he should enter Adelaide University.

In 1909 Bragg's father accepted the Chair of Physics at Leeds University in England and the family left Australia. Following his father's example, Bragg entered Trinity College, Cambridge.



*Bragg was very proud of his roses*

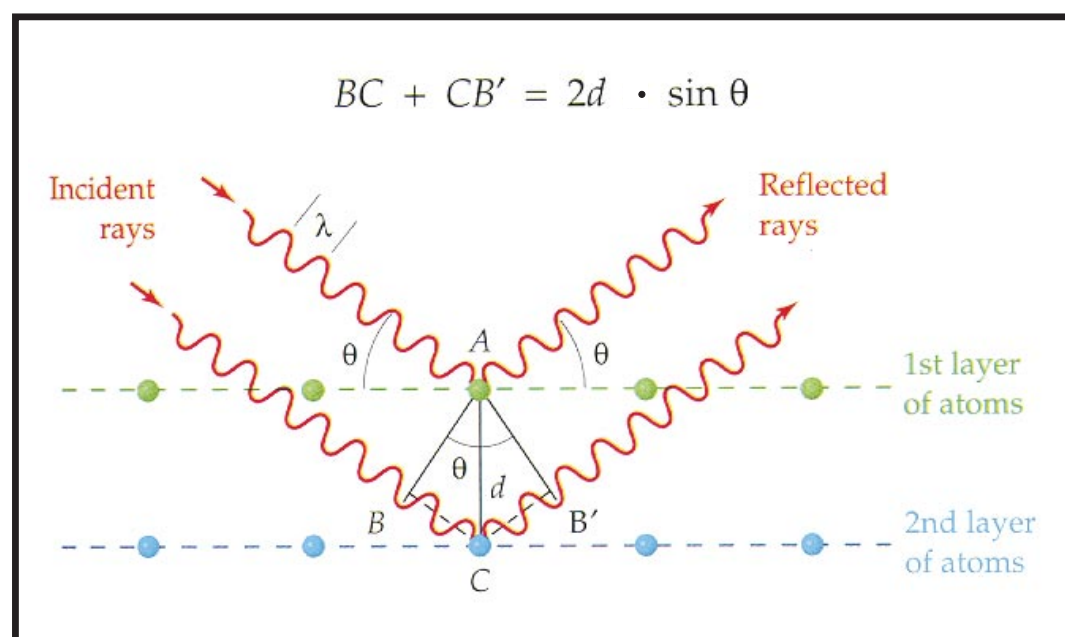
During the summer of 1912 Bragg discussed a recent book on the work of the German physicist Max Von Laue, who assumed that X-rays could be diffracted by crystals. After several original experiments the young Bragg obtained an equation which described the connection between the X-ray diffracted angle, wavelength and distances between the atoms in a crystal lattice. It was named 'Bragg's Law' and is essential in the determination of crystal structure. i.e. the atomic arrangement in a crystal. Meanwhile, his father designed a new instrument for measuring the wavelengths of X-rays, which was named the *spectrometer*. William Lawrence and his father were awarded the 1915 Nobel Prize in Physics for their work.

After World War I, Bragg was appointed professor at the Victoria University of Manchester and later succeeded the famous Ernest Rutherford at Cambridge. He was knighted in 1941. During his career Bragg studied metals and alloys, silicates and proteins.

In 1921 he married Alice Hopkinson, the daughter of a physician. They had two daughters and two sons. His charming wife greatly helped him throughout his busy life.

In 1954 Bragg was appointed as the Director of the Royal Institution in London. He devoted much of his time to year-round lectures for schoolchildren, illustrated by the demonstration of interesting apparatus. He also gave popular and successful lectures for civil servants.

Although he worked until the end of his life Bragg spent many holidays sailing with his family. Sometimes, before getting down to business, he proudly demonstrated another of his hobbies, his latest roses.



*Bragg's Law:*  $n\lambda = 2d \cdot \sin\theta$