Sir William Henry Bragg

William Henry Bragg (1862-1942) became Cavendish Professor of Physics at the University of Leeds in 1909. From 1912 he became interested in the patterns of spots produced on photographic plates when crystals are exposed to X-rays. His son, William Lawrence Bragg, then a student at the University of Cambridge suggested that X-rays were being reflected through layers of atoms acting as a lattice or diffraction grating. He proposed a mathematical equation, **$n\lambda=2d \sin\theta$** to explain the results. This has become known as Bragg's Law. With an instrument, an X-ray spectrometer devised in the Leeds workshop, father and son uncovered the structure of a number of crystals. In 1915 they were jointly awarded the Nobel Prize for Physics.

William Henry Bragg left the University of Leeds in 1915 to become Quain Professor of Physics at University College London. In 1923 he moved to lead the research laboratory of the Royal Institution. There he encouraged a generation of crystallographers, including William Astbury, J D Bernal and Kathleen Lonsdale, who themselves went on to glittering careers. William Henry Bragg received many honours. He was knighted in 1920 and admitted to the Order of Merit in 1931. From 1935 to 1940 he was President of the Royal Society.

William Lawrence Bragg became Langworthy Professor of Physics at the University of Manchester. In 1939 he moved to Cambridge, where in 1953 two young researchers in his laboratory, Francis Crick and James Watson proposed a double helical structure for deoxyribonucleic acid, DNA, the chemical of genes.

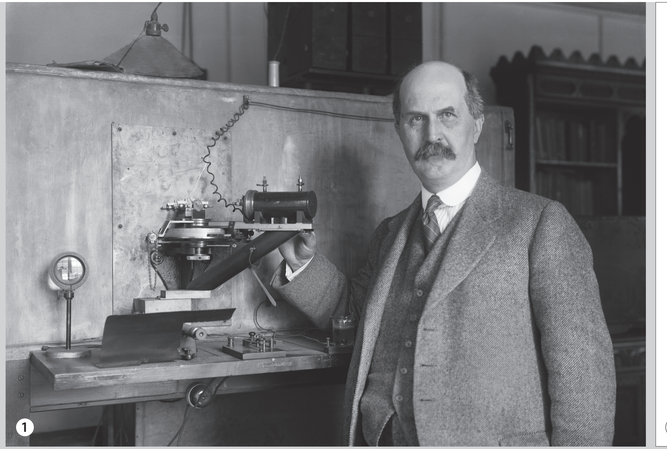
Bragg's Legacy at Leeds

In 1928, William Astbury moved to the University of Leeds as lecturer in the Department of Textiles. His team suggested that the protein molecules of wool were complex folded structures. In the 1950s Gordon Cox and Durward Cruikshank introduced new computational methods, persuading the University to purchase its first computer, a Ferranti Pegasus. This made possible research into even larger and more complex molecules. Since the 1980s Tony North, Simon Phillips and their successors have used computer graphics to work out the structure of very large biological molecules including enzymes and antibodies. This work continues to make a significant impact on our understanding of the processes of life and the challenges of disease.

1 William Henry Bragg and spectrometer (Courtesy of the Royal Institution Archive)

2 Simon Phillips was part of the team that published the first antigen-antibody 3-d image in 1986 (Courtesy of Simon Phillips)

3 Page from Bragg's notebook containing experimental data from 1913 (Leeds University Library)



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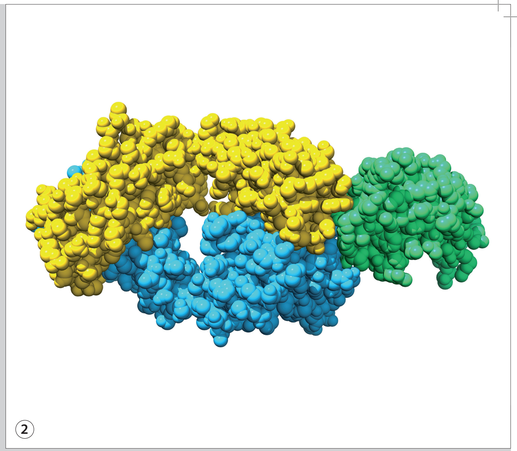

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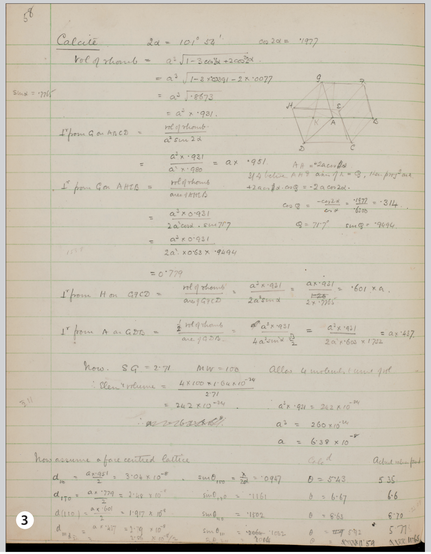

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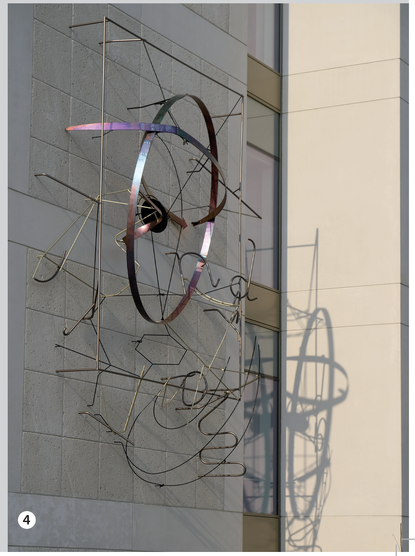
Sara Barker (b.1980)
The Worlds of If
2020
Welded aluminium with anodised metallic and iridescent paint
Commissioned by the University of Leeds, 2020

Barker's composition, on the exterior of this building, responds to the beauty seen in crystal structures as well as the techniques and theories initiated by William and Lawrence Bragg, which were extended by many of their successors.
(Photo courtesy of Steve Gilley)



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