Manchester Science

A guide for teachers and group leaders

Manchester Science: Discoveries that Changed the World
The gallery tells the stories of achievement, endeavour and discovery by Manchester's scientists, past and present.

Using the gallery
The gallery is on the first floor of the Main Building, a former railway warehouse

National Curriculum
The gallery relates to the following curriculum areas:

- Science SC3 (materials and their properties)
- Science SC4 (physical processes)
- KS3 History (Britain 1750 –1900 & A world study after 1900)

What's in the gallery?

Timeline 1800 - 2010
The timeline depicts how people in Manchester have encountered scientific advances as reported by the media over the last two hundred years. The display includes reproductions of newspaper articles about important scientific breakthroughs. The timeline begins in 2000 with a DNA Model and an article about the Human Genome Project and extends back to 1790 with a barometer built by Baptist Ronchetti in Manchester. Objects on display related to various scientific discoveries, such as a light bulb from 1882 - the year electric light was introduced in Blackpool - or at a model of Stephenson's Rocket.

Manchester Scientists
Four rooms with objects, images and multimedia shows tell the life stories of four significant Manchester scientists and their discoveries.

John Dalton (1766–1844) – A new atomic theory
Dalton came to Manchester in 1796 and worked as a teacher and lecturer. He was a self-educated man who lived a simple life and never married. His achievements were recognised in his lifetime and venerated on his death when over 40,000 mourners filed past his coffin as in lay in state in the old Manchester Town Hall on King Street.

Dalton is considered a founder of modern chemistry. He kept a daily record of the local weather, from his childhood until his death. His interest in the atmosphere led to the study of mixtures of gases in general. A display of fizzy drinks on the gallery relates to Dalton's pioneering work on the absorption of gases in water. The process forcing carbon dioxide gas into a drink to make bubbles would be very familiar to Dalton. He formulated the Law of Partial Pressures (Dalton's Law), which explains why the gases in air are mixed up and not separated into layers.

Dalton formulated a new atomic theory to explain chemical reactions, based on the concept that all elements are composed of tiny, indestructible particles called atoms. He anticipated the modern Periodic Table by assigning weights to the atoms of the twenty elements that were known in his time set out the first table of atomic weights. Dalton also pioneered the use of ball-and-stick models to illustrate the three-dimensional structure of molecules.

James Prescott Joule (1818-1889) - Converting work into heat

Joule was the son of a leading Salford brewer. He conducted electrical and magnetic experiments at a laboratory built in the cellar of his father's home and studied under John Dalton. His work in as a brewer led to research on how to improve the quality of beer and investigations into the topic of heat. Joule was fascinated by the way that energy changes from one form to another and began to link together electricity, heat and mechanical power by observing the transformations they went through. His work proved that heat is a form of energy. He formulated a law (Joule's Law) stating that heat is produced in an electrical conductor. The international unit of energy, the joule, is named after him.

Ernest Rutherford (1871-1937) – Splitting the atom

Rutherford was a New Zealander and one of the leading physicists of the early twentieth century whose early work showed that radioactivity was a process in which atoms of one element decayed spontaneously into atoms of another. In 1907 he took the chair of physics at Manchester University in 1907. His experimental work explored the internal structure of atoms, led to the model of the atom as a miniature solar system with a nucleus at its centre and electrons orbiting around, and laid the foundation for the development of the atom bomb and nuclear power:

Bernard Lovell (born 1913)

As a boy Lovell was fascinated by radio, making several of his own sets. He came to Manchester in 1936 to lecture in physics at the University of Manchester. After working on radar during the Second World he obtained an ex-army mobile radar unit in order to study transient radar echoes – a phenomenon he had observed on radar screens during the War. He found that they came from the ionised trails of meteors. He developed the world's largest radio telescope at Jodrell Bank in Cheshire, which measures the radio signals coming from objects in space. In 1957, the radio telescope tracked the Soviet rocket - 'Sputnik' - the world's first artificial satellite. In 1959, the telescope recorded the first photographs of the hidden side of the Moon and in 1966 it recorded the first photographs from the Moon's surface.