



# MICHAEL FARADAY



Born: 22<sup>nd</sup> September 1791 in South London

Died: 25<sup>th</sup> August 1867 at Hampton Court

Michael worked out how to make electric motors, which use electricity to make things move. He discovered that moving a magnet through a coil of wire makes an electric current and found out how to turn certain gases (for example chlorine) into liquid.

## LIFE

Faraday was the third child of poor parents. His father was a blacksmith and before marriage, his mother had been a servant. His family were not well off and Faraday received only a basic formal education. When he was 14, he was apprenticed to a local bookbinder and during the next seven years, he educated himself by reading books on a wide range of scientific subjects. In 1812, Faraday attended four lectures given by the chemist Humphry Davy at the Royal Institution. Faraday subsequently wrote to Davy asking for a job as his assistant. Davy turned him down but, in 1813, appointed him to the job of chemical assistant at the Royal Institution. Faraday worked at the Royal Institution for 54 years, helping other scientists with their experiments as well as carrying out his own.

## MAIN ACHIEVEMENTS

**1821: Discovery of Electromagnetic Rotation** - This would eventually become the electric motor.

**1823: Gas Liquefaction and Refrigeration** - He showed that ammonia could be liquefied under pressure, and then evaporate to cause cooling. He showed that mechanical pumps could change a gas at room temperature into a liquid. This could then be evaporated, cooling its surroundings. The gas could then be collected and compressed in a pump to liquid again. This led to refrigerators as we know them today.

**1825: Discovery of Benzene** - This is one of the most important substances in chemistry as it can make new materials and also helps to understand chemical bonding. He discovered this in an oily deposit left behind from producing gas for lighting.

**1831: Discovery of Electromagnetic Induction** - This was a very important discovery for the future of science and technology. He discovered that a varying magnetic field causes electricity to flow in an electric circuit. Moving a magnet causes a current to flow. The stronger the magnet is, the bigger the current is. Pushing a bar magnet into coil of wire can create a larger current. People had only been able to produce electric currents with batteries, but now Faraday had shown that movement could be turned into electricity. The power we have in our homes today is based on this discovery.

**1836: The Faraday cage** - A Faraday cage is a piece of equipment that acts as a shield against electrical current and is based on Faraday's work. Faraday cages are still used by people working with electricity today. Standing behind a Faraday cage prevents people from being harmed by the strong electrical current.





## SCIENTIFIC TERMINOLOGY

Michael Faraday was partly responsible for introducing scientific words that are still used to describe electricity today. These include:

**cathode** – A type of electrode.

**electrode** – An electric conductor that carries electric current.

**Farad** – A unit of measure used for showing how much electricity something is capable of conducting. It is named after Michael Faraday.

**ion** – An atom with an electrical charge.

## MEMORABLE DATES

1821 - Published his work on electromagnetic rotation (principle behind the electric motor)

1823 - Gas liquefaction and refrigeration

1826 - Founded the Royal Institution's Friday Evening Discourses and Christmas lecture, both of which still continue today.

1831 - Discovered electromagnetic induction (principle behind the electric transformer and generator)

1836 - Invention of the Faraday cage

## FIND OUT MORE...

<https://www.bbc.co.uk/teach/class-clips-video/science-ks2-discovering-the-work-of-Michael-Faraday/zj7f47h>

<https://www.bbc.co.uk/programmes/p018rxtv>

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## EXAMPLE QUESTIONS

1. Faraday discovered electromagnetic rotation, what did this become?
2. Gas liquefaction and refrigeration was another important discovery, what household item still uses this today?
3. What is a Farad?
4. What is a Faraday cage?
5. How many years did Faraday work at the Royal Institutes?