



# The Power of the Cell

## Michael Faraday and electricity

### Transforming electricity

Michael Faraday made a lot of important discoveries about electricity. Before Faraday, electricity was something that was interesting - but rather useless. After Faraday, electricity became a source of energy that has changed our lives!



### Faraday's early life

Faraday was born near London in 1791. His family was poor, and so he did not get much education as a child. However, he was fascinated by science and very keen to learn, and so he decided to teach himself. When he was 13 or 14, he started to work for a London bookseller and bookbinder called George Riebau. When he wasn't running errands, he filled his time by reading lots of books. He particularly loved to read about science.

### Starting out in science

When Faraday was 20, he set about trying to get a job in science. This was not easy, because Faraday had never been to school, and he did not come from a rich family.

Fortunately, one day Faraday got tickets for a series of lectures by the chemist Humphry Davy. Faraday was so impressed by the lectures that he took detailed notes - which he then sent to Davy, asking him for a job. Davy was pleased, but he didn't have a job for Faraday at once. However, the following year, Davy needed a Chemical Assistant, and Faraday got the job.

### Clever chemistry

As Chemical Assistant, Faraday began to research and do experiments with chemicals such as chlorine. He designed clever experiments and made several important discoveries. He even invented an early type of Bunsen burner - a gas flame that is used to do chemical experiments.



## A major breakthrough

Faraday never gave up his interest in electricity, and in 1831 he made his most important discovery - electromagnetic induction. This is the production of an electric current in certain types of metal (known as 'conductors') when they pass back and forth over a magnet.

This discovery led to many more breakthroughs in the use of electricity. Eventually, it led to all the electric-powered things we take for granted today, such as electric lights, television and computers.

## Electrical experiments

In the early 1820s, many scientists were becoming interested in electricity. They wanted to find a way to harness the power of electricity so that it could be used as a source of energy to drive a motor.

Faraday's boss, Humphry Davy, had been trying to invent an electric motor for a long time - but he couldn't do it. Faraday and Davy discussed the problems, and Faraday went on to invent not one but two types of simple electric motor.

### Fact

#### Upsetting the boss

Faraday worked out how to make an electric motor before his boss, Humphry Davy. Unfortunately, Faraday published his ideas without mentioning all the work that Davy had done. Davy was not pleased! So, for a while, Faraday had to move away from electricity and on to other types of scientific work.

## Some more websites to explore

- A website for children by the US Energy Information Administration, with information about Faraday and his inventions related to electricity: [http://tonto.eia.doe.gov/kids/energy.cfm?page=fp\\_faraday](http://tonto.eia.doe.gov/kids/energy.cfm?page=fp_faraday)
- A webpage from the Royal Institution, where you can see and read about one of Faraday's most important electrical inventions - the induction ring: <http://www.rigb.org/>
- A BBC webpage about Faraday: [http://www.bbc.co.uk/history/historic\\_figures/faraday\\_michael.shtml](http://www.bbc.co.uk/history/historic_figures/faraday_michael.shtml)
- A website with facts and explanations related to electricity: <http://www.explainthatstuff.com/electricity.html>

