

Drawn to Science

Illustrated Guides to Key Science Concepts

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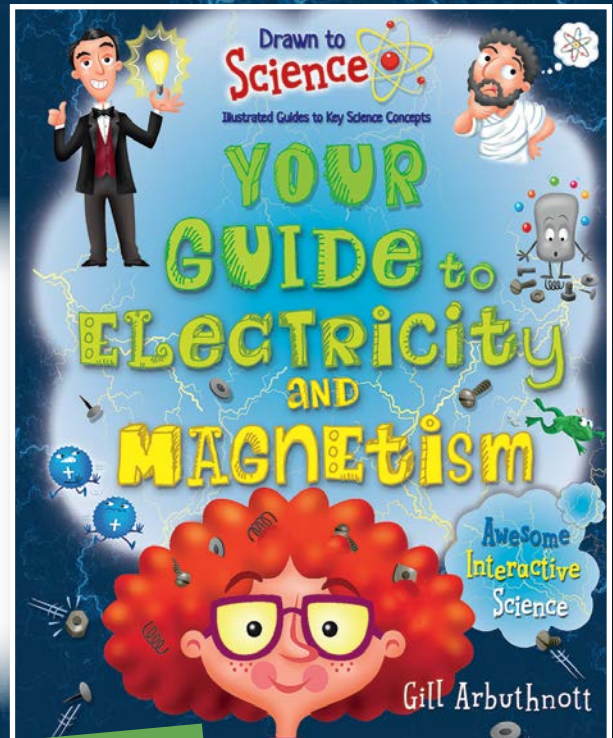
Author Gill Arbuthnott adds a new title on electricity and magnetism to this highly appealing science series. An effective combination of illustrations, instructive diagrams, and hands-on investigations and experiments makes core science concepts accessible and engaging.



Your Guide to Electricity and Magnetism by Gill Arbuthnott

From the first discovery of atoms to modern superconductors, this appealing guide explains the fascinating facts about electricity and magnetism. Readers can perform fun, easy science experiments that will allow them to make a battery out of fruit and design an electronic quiz board. Entertaining illustrations and explanatory diagrams give details that help explain these forces of energy and motion.

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From Your Guide to Electricity and Magnetism

From Frogs to Frankenstein

An Italian scientist named Luigi Galvani began to experiment on frogs in the 1790s. He found that if the nerve in a dead frog's leg was touched with a piece of metal charged with electricity, the muscles would tighten and make the frog's leg twitch. He called this effect "animal electricity," which later became known as Galvanism. His theory was that animals had some sort of electric fluid flowing through their bodies. Later experiments proved that theory wrong.

Amazing electric cows!

Galvani's nephew, Giovanni Aldini, continued the work. He attached wires charged with electricity to the heads of dead cows. He found he could make their mouths open and close, and their tongues stick out.

Frankenstein

A young novelist named Mary Godwin had read about these experiments when she was on holiday in Switzerland. She and her companions, the great poets Percy Shelley and Lord Byron, as well as writer and physician John Polidori, decided to have a competition to see who could write the best horror story. Mary remembered reading about Galvanism and the attempts to bring dead bodies back to life. This was one of the ideas she used to write what would become the famous novel *Frankenstein*. (She later married Percy Shelley and became better known as Mary Shelley.)

John Polidori used the story that Byron wrote that night as the basis for his novel *The Vampyre*—the very first novel about vampires. What a night!

Aldini also tried to bring dead bodies back to life—without any success, of course.

The first battery

Italian scientist Alessandro Volta noticed that in Galvani's twitching frog experiments two different metals were used to touch the nerve in the frog's leg to make the muscle twitch.

Volta tried a range of different metals and found that zinc and copper worked best to make the muscle move. Volta used this discovery to make the first battery out of discs of zinc and copper separated by paper soaked in salty water. Volta's work is the start of what we think of as electricity. Other scientists used Volta's battery to do experiments using a flow of electricity, or an electric current. Unlike static electricity (see page 8), a current could be easily controlled.

You can try a version of the twitching frog experiment yourself—but using a lemon instead of a frog! You'll find instructions on page 55. Ask an adult for permission and help before getting started.



Alessandro Volta

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