Georg Simon Ohm:

Taking a Different Approach

Trying to change the way people think about things can be quite difficult. Georg Ohm, a mathematician and physicist, certainly found that to be true. In the early 19th century, Ohm conducted important research in electricity. However, he did not present his findings in the way most scientists of his day reported their scientific research. Ohm analyzed his data mathematically and demonstrated mathematical relationships between the data variables. At that time, most scientists did not use this kind of

LIBRARY OF CONGRESS, PRINTS & PHOTOGRAPHS DIVISION, LC-USZ62-40943

Georg Simon Ohm (1787–1854) is famous for his investigations of electrical resistance.

mathematical approach. As a result, Ohm found it difficult for other scientists to accept his findings.

Ohm grew up and attended school in Erlangen, Bavaria (now Germany), but most of Ohm's early education came from his father, Johann. He gave his son a strong background in science and mathematics.

Ohm Gets to Work

In 1811 Ohm received a doctorate in mathematics from the University of Erlangen. He stayed on there as a lecturer, but he was frustrated with the low wages and lack of prestige of the job. He really wanted to be a professor at one of the Germany's great universities—the University of Munich, for example.

So Ohm left Erlangen in 1812. During the next few years, he dedicated most of his time to studying the works of other scientists and mathematicians. Ohm was especially intrigued with the work of Oersted, the discoverer of electromagnetism. Inspired by Oersted's work, Ohm began conducting his own experiments in electricity. In 1827, Ohm published a book on his theory of electricity.

Ohm's Law

One of the Ohm's experiments was an investigation of the relationship of voltage and current in electrical elements. He analyzed his data and used mathematics to show how voltage, current, and something called "electrical resistance" are related in an electrical circuit. That relationship—voltage equals current times resistance, or $V = IR$—is now known as Ohm's Law. Today it is recognized as a significant discovery and a very useful formula, but at the time, Ohm's German colleagues were not impressed. They did not believe in his mathematical approach to physics.

However, the value of Ohm's work slowly gained recognition. He received the Copley Medal from the Royal Society in 1841. In 1845 he became a member of the Bavarian Academy, a prestigious group of scientists. In 1852, Ohm realized his lifelong dream. He became a professor at the University of Munich.

Ohm's contributions are still recognized today. If you visit his hometown of Erlangen, you'll see a school and a square named in his honor. And students everywhere say his name when they learn about the ohm—the unit of electrical resistance. □