



Image: From title page of original Latin Edition of *De Magnete* (London, 1600)

William Gilbert

GO 521 History of Geology
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Born: May 24, 1544 Colchester, Essex
Died: December 10, 1603 London, England

Abstract

William Gilbert, known as the ‘father of electricity’, began his career as a successful physician. Gilbert conducted extensive research on magnets and magnetism, disproving commonly held beliefs, and discovering the laws of attraction and repulsion between magnets, and the meaning behind ‘magnet dip’ (Hutchinson, 2009). Gilbert’s conclusions also differentiated between magnetic attraction and electrical attraction (static electricity) that laid the groundwork for later discoveries about electricity. Gilbert’s rigorous methods also became the model for the scientific method.

Introduction and Early Life

William Gilbert was born on May 24, 1544 in Colchester, Essex. Gilbert attended St. John’s College, Cambridge where he earned an M.D. in 1569. Gilbert became a senior fellow at the college and held several offices. In 1573, Gilbert moved to London and set up a successful medical practice. In 1599, he was elected president of the Royal College of Physicians (Van Helden, 1995). Gilbert was later appointed physician to Queen Elizabeth I and briefly to her successor James I before Gilbert passed away later that year (Hutchinson, 2009).

The British maritime trade was expanding with the use of the compass needle for navigation and improved charts. The increased interest in compass navigation may have inspired William Gilbert to pursue his investigations with the lodestone (Faul & Faul, 1983).

Scientific Contribution

William Gilbert’s research on magnetism and electrical attraction was his most important contribution to science. Gilbert’s research disproved many common beliefs about the lodestone (magnetic iron oxide) including ideas that it cured physical ailments. During his research, Gilbert discovered the laws of attraction and repulsion and also about ‘magnetic dip’. From studies with small magnets, he concluded that the Earth acts as a giant magnetic with a magnetic pole near the

geographic pole. Gilbert's discoveries included that the strength of a lodestone could be increased by combining with soft iron; that iron and steel can be magnetized; and that heating an iron magnet to red-heat causes it to lose magnetization and it cannot regain its magnetization until cooled. Gilbert also researched static electricity and differentiated between magnetic attraction and electric attraction (Hutchinson, 2009).

Gilbert's research methods were also a valuable contribution to science. Gilbert performed extensive, well documented hands-on experiments to draw conclusions about magnetism. Galileo recognized the importance of Gilbert's work and considered Gilbert to be the true founder of the experimental method. Gilbert's investigations and studies were so extensive, that new knowledge on magnetism did not develop until 1825 when William Sturgeon created the first electromagnet and Michael Faraday began studying magnetism (Hutchinson, 2009).

Major Works

In 1600, William Gilbert published the book *De magnete, magneticisque corporibus, et de magno magnete tellure/Concerning Magnetism, Magnetic Bodies, and the Great Magnet Earth*. In his book, Gilbert reviewed previous literature on magnetism, and gave detailed accounts of his investigations and discoveries about magnetism (Van Helden, 1995).

In 1651, Gilbert's younger half-brother published a collection of unfinished and unpublished works by Gilbert in *De Mundo Nostro Sublunari Philosophia Nova/New Philosophy about our Sublunary World* (Van Helden, 1995).

Historical Assessment

Gilbert's studies in magnetism were incredibly thorough as evidenced by the fact that no new knowledge was developed until 1825. Today, gilbert is the name used for a unit of magnetomotive force. Gilbert was well regarded by his contemporary Galileo, who gave credit to Gilbert for inventing the scientific method with his extensive experiments and documentation to prove or disprove theories. His research on static electricity and creation of new terminology to describe electric forces laid the groundwork for later scientists to discover positive and negative charges.

References

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- Faul, H., & Faul, C. 1983. *It Began with a Stone*. New York: John Wiley & Sons, Inc., p. 39.
- Van Helden, A. 1995. *William Gilbert*. Retrieved January 27, 2013, from The Galileo Project: <http://galileo.rice.edu/sci/gilbert.html>.