



NEWS OF

OLD RESERVE

"Oh, long may time these things preserve"

Morley's meteoric career began on the historic campus of WRA

Although his only formal training in science consisted of a single course in chemistry he had taken at Williams College, Edward Williams Morley (1838-1923) became one of the most noted American scientists of the 19th and 20th centuries. While his fame often rests on his work as a chemist, he was a highly accomplished scientist who was equally at home with physics, mathematics and astronomy. By the end of his life he had received several honorary degrees, won three gold medal awards and had been nominated for the Nobel Prize in chemistry in 1902.

Morley was a consummate scientist, a scholar and a gentleman, and his notable career began on our campus when it was still the home of Western Reserve College.

Born in Newark, N.J., where his father was on temporary assignment, Morley's family included a scholarly minister for a father and a school-teacher mother. Morley was schooled entirely at home in West Hartford until age 19 when he entered Williams College. After graduation in 1860, he spent a year studying astronomy under Prof. Albert Hopkins (the observatory at Williams was opened in 1838, the same year as the Loomis Observatory on our campus), where he learned the intricacies of astronomical calculation and wrote the first of his 52 scholarly papers.

He spent three more years earning a theology degree at Andover Seminary and was licensed as a preacher in 1864, the same year he was elected to Phi Beta Kappa. He spent the last year and a half of the Civil War working for the U.S. Sanitary Commission at Fort Monroe, Va.

Unable to find a position as a

The inaugural Morley Science Medal honors seven.
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minister after the war, the young Rev. Morley taught for nearly three years at the South Berkshire Institute where he met his future wife, Isabella Birdsall. In the fall of 1868 he accepted the appointment of pastor at the Congregational Church in Twinsburg, where he remained for a short time before accepting the more challenging position of professor of chemistry, botany and mineralogy at Western Reserve College in Hudson. Morley continued to be a devout Christian but felt that he was called to science rather than the ministry. The move to Hudson also made possible his marriage to Miss Birdsall.

During their first years in Hudson, the Morleys boarded in a house with other faculty members and took their meals at the home of the retired college president, George E. Pierce. In the spring of 1871 they moved into the cottage on Hudson Street that since has been called Morley Cottage.

Professor Morley proved to be a relaxed, genial and popular teacher, but one who expected accuracy and exactitude from his students. He was largely responsible for obtaining the apparatus needed to set up a chemistry laboratory at the Athenaeum, the main academic building on campus in the early 1870s that was designed with individual workstations for each student. As early as 1871 Morley began sending "standard time" signals to Cleveland via telegraph. Morley's own scientific experimentation broadened as his teaching career expanded.

He was also a practical man and



Edward Morley was nominated for the Nobel Prize in chemistry in 1902.

something of an ingenious tinkerer in solving everyday problems. He and his wife loved house plants and tried to keep them alive and growing during the frigid winters before central heating. When they lost all their plants during a cold spell in early 1872, Morley decided to devise an alarm that would ring when the temperature fell below a certain point. By 1874 he had perfected his "thermal telegraph" so a bell rang when the houseplants were in danger.

In 1877, he extended the idea by installing a burglar alarm at Morley Cottage that would ring if one of the windows was opened more than six inches. The following year, he installed a similar alarm system at old South College where rifles and other military equipment was stored. These were the first burglar alarms in Hudson – years before electricity was available, and a century before their widespread application in American society.

Among his campus responsibilities was the care of the sidereal clock purchased in London by Prof. Elias

Loomis in 1837. Morley was a trained astronomer and was able to provide accurate reports for various Cleveland

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with a telegraph relay system on campus. He began by wiring his house to his laboratory in the Athenaeum, presumably to alert his wife when he would be home for dinner. But within two years, Morley's experiment had become a network of 13 stations on campus that linked the campus together and formed "the equivalent of a private telephone exchange."

Morley also taught at the Medical College in Cleveland and became an expert on forensic medicine, frequently called on as a witness in cases involving poison. During these years he produced 21 more publications while living on the Hudson campus. By 1878, his state-of-the-art laboratory at the Athenaeum was able to analyze gases, and he pioneered a study of analyzing air samples in Hudson. These were the earliest experiments relating to pressure and oxygen content in air that prefigured his later work with Michelson.

In the summer of 1882, Morley moved to the new campus in Cleveland with the rest of his college colleagues. He had acquired so much furniture, lab equipment, books and other items that he needed a freight car to move his personal belongings. It was there that Morley began his successful collaboration with Professor Albert A. Michelson of the Case School of Applied Science.

In 1887, the two conducted an experiment "to see if light travels in the same velocity in all directions." They devised an interferometer,

jewelers who needed the data to set their own clocks.

By May of 1872 he reported that he had been providing this service for a year and had earned \$25. He later expanded his clientele to Columbus and, by 1877, decided to experiment

A BIBLIOGRAPHICAL NOTE

The only biography of Morley is *Edward Williams Morley: His Influence on Science in America* (1957) by Howard R. Williams, chemistry master at Western Reserve Academy from 1925 to 1955. Williams recounted that he became interested because he was "in almost daily contact with the buildings where he worked, the house where he lived, the campus views, which he looked upon."

Williams began his study of Morley in 1939 because there had been "no organized attempt to preserve his memory for posterity." Williams interviewed 21 people who either knew Morley in Hudson or Cleveland or who were professional colleagues and corresponded with more than 100 others. In late 1939, Williams located Morley's nephew in Minneapolis who had nearly 1,200 letters or documents – including 800 letters written by Morley to family members beginning in 1851. Williams received a grant from Williams College in the writing of this well-documented biography. The current location of the 1,200 Morley letters is unknown.

Morley himself gave his scientific papers to his alma mater, Williams College, along with a large bequest. Other papers are in the Case Western Reserve University Archives, including letters and a journal dating from his Hudson years. Other articles consulted in the preparation of this article include: *Morley: The Hudson Years* by Ruth W. Helmuth in the *WRU Outlook*, summer 1967; David Park's *Who is Williams' most famous graduate?* in the *Williams Alumni Review*, spring 1983; and Daniel D. Skwire and Lawrence J. Badar's *The Life and Legacy of Edward William Morley in The Physics Teacher*, December 1987.

Western Reserve Academy's Archives have a number of secondary sources about Morley Cottage including an article, *Home of Many Famous Hudsonites* by Thomas L. Vince in the *Hudson Hub*, Nov. 9, 1972, several short articles from the *Reserve Record*, many photographs of the house, and a transcript of a letter about Morley from Addison M. Chapin, WRC class of 1869. Reserve's archives also have photographs of Morley himself and what appears to be an honorary degree given by the University of Aberdeen in 1906.

which became the conduit for the experiment, usually considered one of the most important landmark scientific experiments in history. The true value of their work was not appreciated until Albert Einstein credited the experiment as "the beginning of relativity." Morley taught at Western Reserve University in Cleveland until his retirement in 1906, although he ceased doing research some 10 years earlier.

Morley's importance as a chemist and research scientist had many practical applications, especially in his suggestions to the Standard Oil Co. about how to improve their refining process. He helped turn around Dow Chemical and received a modest stipend and a place on its board and eventually 250 shares of stock. During World War I, the stock value increased dramatically and Morley became moderately wealthy. He and his wife had retired to West Hartford, Conn., where Morley had spent part of his youth, and where they lived happily until Isabella Morley's death late in 1922. Morley himself died a

few months after and left his library and papers and most of his estate to his alma mater, Williams College. He is buried in Pittsfield, Mass.

Several years ago, a physics professor at Williams identified Morley as "the most famous Williams graduate" who also could be its "least known alumnus." The college finally recognized their distinguished alumnus by naming a new research center for him in 2000. Closer to home, Case Western Reserve University in Cleveland has a Morley-Michelson Award as well as a sculpture on campus named in their honor.

Here at Reserve, where this world-class scientist began his career, we have a modest marker on the house where Morley lived and where he began his research experiments. It seems altogether fitting that the new Morley Science Medal will further honor the memory of this illustrious scientist.

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If you have any questions or comments about this story, you may contact Archivist & Historian Tom Vince at vincet@wra.net.