FOCKE, Anne (Bosworth). September 29, 1868–May 15, 1907.
Wellesley College (BS 1890), Georg-Augusts-Universität Göttingen (PhD 1900).

Anne Lucy Bosworth was born in Woonsocket, Rhode Island, the only surviving child of Ellen (Metcalf) (1843–1929) and Alfred Bosworth (b. ca. 1846), both from Rhode Island. It appears that her mother was widowed some time in the early 1870s. Mrs. Ellen Bosworth was working at the Harris Institute Library in Woonsocket in 1874; in 1880 she was described as a librarian, and she, her sister, and Anne were living with Anne's maternal grandmother in Woonsocket. In the early 1890s, Ellen Bosworth and her sister were living at the same address.

After attending public schools in Woonsocket, Anne Bosworth entered Wellesley College in 1886 and graduated in 1890, in the same class as Grace Andrews, Clara Latimer Bacon, and the mother of Dorothy Kohlmetz.

Bosworth spent the two years after her graduation from Wellesley as a high school teacher in Amesbury, Massachusetts, before moving, in 1892, to Rhode Island College of Agricultural and Mechanical Arts (now University of Rhode Island) in Kingston as professor of mathematics. It was in 1892 that the college first offered instruction at the postsecondary level. During the summer quarters of 1894, 1896, and 1897, she studied with E. H. Moore and Oskar Bolza at the University of Chicago.

In April 1898, Anne Bosworth was granted a year's leave from Rhode Island College for study in Göttingen. That summer she attended Felix Klein's lectures in Mechanik, along with Emilie Norton Martin and Virginia Ragsdale, both graduates of Bryn Mawr College, who had studied at Göttingen the previous winter as well. While at Göttingen, Bosworth also heard lectures by Arthur Schönflies, Issai Schur, and Woldemar Voigt. In the winter semester 1898–99, Bosworth attended David Hilbert's lectures on Euclidean geometry; it was from these that she derived the basis for her subsequent dissertation work. Her daughter recalled in 1978:

> According to my grandmother, [my mother] had no plan for a doctorate – just a year's study. . . .
>
> In the spring she was "summoned" to tea with her professor, & she dressed her best, gloves, hat & all. After a ceremonial tea, her professor asked her when she expected to take her doctoral examinations. She said she had not any such intention, had not even thought of a dissertation topic! The professor said, "But your dissertation is finished"(!). It appeared she had done a special exercise for him, and it was considered an entirely original approach & acceptable as a thesis. So instead of spending her summer travelling in Italy, Greece, etc. she remained at Göttingen & took her exams & and passed with honor.

Bosworth took her oral examination on July 31, 1899, just over a year after she had arrived in Germany, and, accompanied by her mother, returned to the United States in August 1899. According to Renate Tobies, Hilbert assessed Bosworth's dissertation as "eine tüchtige und selbständige Leistung von wissenschaftlichen Werte" [a sound and independent achievement of scientific value] (our translation) (p. 136). The PhD from Göttingen was awarded in 1900. She became a member of the AMS

at about that time. In 1901, G. B. Halsted referred to her dissertation in a supplementary report to his bibliography on non-Euclidean geometry that was first published in 1878. He wrote that her dissertation "is a beautiful piece of non-Euclidean geometry, and is, so far as I know, the first feminine contribution to our fascinating subject" (*Amer. Math. Monthly* 228, *Science* 715).

Bosworth then returned to Rhode Island College and remained for the next two years, living with her mother in Kingston. While in Göttingen, however, she had met Theodore Moses Focke, who studied mathematics and physics there 1896–98 and received his PhD in 1898. On August 7, 1901, they were married in Kingston, Rhode Island. Theodore Focke was born on January 3, 1871, in Massillon, Ohio, and was an 1892 graduate of the Case School of Applied Science (later Case Institute of Technology, now Case Western Reserve University) in Cleveland. After his studies abroad, he returned to Case Institute of Technology, where he was an instructor of mathematics and civil engineering at the time of his marriage.

Anne Bosworth Focke left her position in Rhode Island and moved to Cleveland. Her daughter reported in 1978: "After their marriage, Mother did not teach again, but worked with Father, grading papers, being a good faculty wife, & having three children, of whom I am the oldest." The children were: Helen Metcalf, born June 10, 1902; Theodore Brown, born September 16, 1904; and Alfred Bosworth, born September 30, 1906.

On May 15 1907, Anne Bosworth Focke died at age thirty-eight of pneumonia, when her children were not quite five, three, and one. She was buried in Massillon, Ohio, her husband's birthplace. In 1910 her mother and aunt were both living in the Focke household in Cleveland.

Theodore M. Focke became Kerr professor of mathematics and head of the department at Case School of Applied Science in 1908 and then served as dean of the faculty from 1918 until his retirement in 1944, when he was awarded an honorary doctorate by that institution. He died on March 1, 1949. After earning a BA in chemistry and an MA in geology from Western Reserve University, Helen Focke remained there and received a BS in library science; she spent most of her career on the faculty of the School of Library Science of Case Western Reserve. She died in October 1997. Theodore Brown Focke received a DSc from the University of Nancy in France and, after serving as an engineer and then as an executive for various companies, was the president and director of a tire sales company in Johnstown, Pennsylvania. Alfred Bosworth Focke received a PhD in physics from the California Institute of Technology and ended his career as professor and chairman of the physics department of Harvey Mudd College. Theodore Brown Focke and Alfred Bosworth Focke died within three days of each other in June 1986.

Organizational affiliation: AMS.

Dissertation:

1899 [Bosworth, A. L.] Begründung einer vom Parallelenaxiome unabhängigen Streckenrechnung. PhD dissertation, Georg-Augusts-Universität Göttingen, directed by David Hilbert. Printed version, 1900, Druck der Dieterich'schen Universitäts-Buchdruckerei (W. Fr. Kaestner), Göttingen. PhD granted 1900.

References to: AmMSc 1, BioWMath.

Other sources: PhD dissertation vita 1900; correspondence between Helen Focke and one of the authors 1978; Universitätsarchiv Göttingen, Niedersächsische Staats- und Universitätsbibliothek; communications with Cleveland Public Library, South Kingstown (RI)

Public Library, and University of Rhode Island Archives; George Bruce Halsted, "Supplementary report on non-Euclidean geometry," *Amer. Math. Monthly* 11 (1901): 216–30 and *Science* n.s., 14 (1901): 705–17; Tobies, "Mathematikerinnen und ihre Doktorväter"; NatCAB 42 (Focke, Theodore Moses); BiDrLUS 5 (Focke, Helen M.); WhAm 9 (Focke, Alfred Bosworth); WhAm 9 (Theodore Brown Focke); US Census 1860 RI, 1870 NY, 1880, 1900 RI, 1910, 1920, 1930 OH.

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