

MILLER, Bessie Irving. November 4, 1884–February 4, 1931.

WOMAN'S COLLEGE OF BALTIMORE (BA 1907), JOHNS HOPKINS UNIVERSITY (PhD 1914).

Bessie Irving Miller was born in Baltimore, Maryland, the only child of Bessie (Knotts) (1864–1914) and Irving Miller (1858–1946), both natives of Maryland, who married in 1882. Her father was a surgeon, and in 1900 the household on St. Paul Street in Baltimore included four boarders, a cook, two house maids, and two trained nurses in addition to the three family members.

Miller attended the Girls Latin School, the preparatory department for the Woman's College of Baltimore (Goucher College after 1910), which she then attended and from which she graduated in 1907. According to Cockey's "Mathematics at Goucher," "mathematics was her second choice of interest, chosen when she realized that poor eyesight would make it impossible for her to become a surgeon ..." (p. 11). In 1903–07, while Miller was a student at Woman's College of Baltimore, the mathematics department there consisted of William H. Maltbie, who had earned his PhD from Johns Hopkins in 1895, and [Clara Latimer Bacon](#), who had earned an MA from the University of Chicago in 1904.

In 1907–08, the year following her graduation from college, Miller was a graduate student in mathematics and physics at the University of Chicago with a fellowship sponsored by the Woman's College of Baltimore. In October 1908 she entered the Johns Hopkins University as a graduate student in mathematics, astronomy, and classical archaeology. This was just a year after Bacon, her college mathematics instructor, entered Johns Hopkins when the trustees voted to allow women to be admitted to graduate courses without special permission.

In 1911 Miller interrupted her graduate studies to become an instructor of mathematics at Kemper Hall in Kenosha, Wisconsin. Kemper Hall, closed in 1975, was an Episcopal school for girls that had preparatory and collegiate departments when Miller was there. Two years later she returned to Johns Hopkins and finished her doctoral work as a university fellow during the year 1913–14. The notes she took her final year for a course on groups taught by Arthur B. Coble, together with her own writings on elliptic functions, are preserved as the Bessie Irving Miller Papers at Johns Hopkins. Miller passed written exams in mathematics, astronomy, and classical archaeology and art, and wrote her dissertation in algebraic geometry under the direction of Coble, who was an early student of Frank Morley at Johns Hopkins. Miller was one of Coble's first two doctoral students. The letter of May 30, 1914, by Morley and Coble recommending the acceptance of her dissertation notes, "She applies effectively geometrical methods to an analytical problem, and obtains results both novel and interesting. The style is good and gives clear evidence of a well-balanced and mature mind" (Student folders, Ferdinand Hamburger University Archives, Johns Hopkins University). When Miller received her doctorate from Johns Hopkins in 1914, she became the first of ten Goucher graduates to obtain a PhD in mathematics before 1940; seven of these were granted by Johns Hopkins. Bacon had become the first woman to receive a PhD in mathematics from Johns Hopkins in 1911. Miller remained at Johns Hopkins the year after receiving her doctorate and was later described as a research worker that year.

In 1915 Miller became head of the mathematics and physics departments at Rockford College in Illinois, where she was to remain for thirteen years. Rockford

College, originally a female seminary, granted its first degree (baccalaureate) in 1882 and remained a women's college until 1958. Institutional changes in titles and department structures over the years resulted in Miller's later being professor of mathematics and physics and then professor of mathematics. During her tenure at Rockford, her primary department's name was mathematics, then mathematics and physics, and finally mathematics and astronomy. Through all these changes Miller was usually the professor teaching the majority of the mathematics, physics, and astronomy courses. By 1920 she was the most senior faculty member at the college. For the year 1919–20 she was joined by associate professor [Jessie M. Jacobs \(Offermann\)](#), who had just earned her PhD at the University of Illinois. Jacobs was also a student of Arthur B. Coble, who had moved to the University of Illinois in 1918 from Johns Hopkins. Jacobs remained one year at Rockford before moving to the University of Texas as instructor of pure mathematics.

In addition to her regular teaching and administrative duties at Rockford, Miller remained intellectually active in broader areas. She again studied at the University of Chicago during the summer of 1920. During her years at Rockford, she greatly expanded and broadened the course offerings in mathematics and science. She introduced courses in differential equations, history of mathematics, mathematical drawing, statistics, projective geometry, applications of mathematics, philosophy of mathematics, and theory of investments, as well as courses for teachers of mathematics. At Rockford she introduced an elective course that covered a broad range of topics in mathematics and science. Her 1924 book *Romance in Science* was based on lectures developed for this course. Similar talks, with titles “The Fourth Dimension” and “The Einstein Theory” had also been given by Miller at meetings of a student mathematics club that was begun two years after Miller's arrival at Rockford.

While Miller was at Rockford, she was especially active in the MAA. She was a charter member of the MAA and was elected secretary of the Illinois Section in May 1924. The following three years she was secretary-treasurer of the section. In addition to talks she presented at MAA meetings, her interest in mathematics education was evident in her participation in the section meetings, where she was a discussant for talks given in 1919 on the training of mathematics teachers and in 1926 on undergraduate mathematics courses in geometry.

Miller had a leave of absence from Rockford College in the spring term 1927–28. She then took a position as instructor at the University of Illinois in 1928. It is unclear what prompted her move to Illinois after that leave. It is possible that she was encouraged to come by Arthur B. Coble, her dissertation advisor, who had spent 1927–28 back at Johns Hopkins before returning to Illinois. It is likely that Miller had contact with Coble that year since in May 1928 she gave a talk to the Maryland-District of Columbia-Virginia Section of the MAA. At Illinois, she directed the master's thesis of [Josephine Chanler](#) and possibly others. She also published another research paper in her field, the first since her earlier work based on her dissertation. In addition to her work in the mathematics department at Illinois, Miller was involved in vocational guidance for women for the Woman's League, a University of Illinois organization for female students.

Miller played violin, attended movies, theater productions, and the symphony (Cockey, 11). She was an Episcopalian. Miller's eyesight became increasingly bad during the 1920s, and she frequently used a scribe for her correspondence.

Bessie Irving Miller died at age forty-six on February 4, 1931, in Burnham Hospital in Champaign as the result of a “streptococcic [*sic*] infection of the throat and mucous surfaces of head: nose ears etc” (Illinois death certificate). She had become ill a few days earlier, and an operation to open the ear drums was performed on February 3. Before her death she was living with [Echo D. Pepper](#), a colleague at Illinois. Miller was buried in Lorraine Cemetery just outside Baltimore. The Bessie Irving Miller scholarship at Rockford College, first given in 1950, provides the income from \$7,000 for a female mathematics major each year.

Organizational affiliations: AMS, MAA (charter member), ASA, AAAS, Phi Beta Kappa, Pi Mu Epsilon.

Dissertation:

1914 A new canonical form of the elliptic integral. PhD dissertation, Johns Hopkins University, directed by Arthur Byron Coble. Printed version, 1916, Press of the New Era Printing Co., Lancaster, PA, reprinted from *Trans. Amer. Math. Soc.* 17:259–83.

Publications:

1913 The derivation of a syzygy between the Hessian and Jacobian of a binary n -ic. *Johns Hopkins Univ. Circular* 7:56–58. Review: *JFM* 44.0140.01 (W. Fr. Meyer).

1915 A new canonical form of the elliptic integral. *Proc. Natl. Acad. Sci. USA* 1:274–75. Reviews: *JFM* 45.1338.01 (G. Szegő); *Rev. semestr. publ. math.* 24, pt. 1: 6 (D. J. (Korteweg)). Presented to the NAS USA, 25 Mar 1915; abstract: *Science* n.s., 41:945. Also presented to the AMS, New York City, 27 Dec 1915; abstract: *Bull. Amer. Math. Soc.* 22:269 #8; review of abstract: *JFM* 46.0601.01 (G. Szegő).

1916 A new canonical form of the elliptic integral. *Trans. Amer. Math. Soc.* 17:259–83. Published version of PhD dissertation. Reviews: *JFM* 46.0601.02 (A. Krazer); *Rev. semestr. publ. math.* 25 pt. 1: 12 (P. Mulder). Presented to the AMS, New York City, 27 Dec 1915; see **1915** above for abstract.

1922 Romance in science: an experimental course offered by a department of mathematics. *Math. Teacher* 15:416–22. Talk with same title presented to a meeting of the MAA, Rockford, IL, 28–29 Apr 1922; abstract: *Amer. Math. Monthly* 29:236 #3.

1924 *Romance in science: lectures from a course called “Browse.”* Boston: The Stratford Co. Review: *Amer. Math. Monthly* 33:330–31 (W. A. Granville).

1930 An unusual use of the nodal cubic in the plane. *Amer. Math. Monthly* 37:240–41. Review: *JFM* 56.1210.01 (E. Scholz). Reprint: 1994. In *A Century of Mathematics: Through the Eyes of the Monthly*, ed. J. Ewing, 69–70. Washington, DC: Mathematical Association of America.

1931 Perspectives between the fundamental p -edra associated with the elliptic norm curve Q_p in S_{p-1} where p is an odd prime. *Amer. J. Math.* 53:139–42. Reviews: *JFM* 57.0762.05 (F. Schaale); *Zbl* 001.02402 (E. Bessel-Hagen).

Abstracts not listed above:

1925a Browse: a course in scientific literature. *Amer. Math. Monthly* 32:154 #10. Presented to the MAA, Washington, DC, 1 Jan 1925.

1925b The next step in a unified mathematics course for freshmen. *Amer. Math. Monthly* 32:329–30 #1. Presented to a meeting of the MAA, Peoria, IL, 8–9 May 1925.

1928 A cubic curve and a reflector. *Amer. Math. Monthly* 35:275 #2. Presented to the MAA, Annapolis, MD, 5 May 1928.

References to: AmMSc 3–4, BiDWSci.

“U. of I. Math Teacher Dies of Infection.” *Champaign (IL) News-Gazette*, 6 Feb 1931.

Related manuscript material:

Bessie Irving Miller Papers, 1913–1914, Ms. 101, Special Collections, Milton S. Eisenhower Library, The Johns Hopkins University.

Other sources: PhD dissertation biographical note 1914; Ferdinand Hamburger University Archives, Johns Hopkins University; communications with Baltimore Public Library, Champaign Public Library, Goucher alumnae office, Lorraine Park Cemetery, and Rockford College Archives; Cockey, "Mathematics at Goucher"; US Census 1880, 1900, 1910 MD, 1920, 1930 IL; Illinois death certificate.

Last modified: March 8, 2009.