

**BURKE, Sister Leonarda.** November 24, 1900–March 1, 1998.

EMMANUEL COLLEGE (BA 1926), BOSTON COLLEGE (MA 1928), CATHOLIC UNIVERSITY OF AMERICA (PhD 1931).

Ethel Louise Burke was born in Boston, Massachusetts, the daughter of Caroline Dorcas (Leonard) (1860–1934) and James Henry Burke (1857–ca. 1904). Her parents were born in Boston and were educated in the Boston public school system. They were married in about 1883 and probably had five children survive to adulthood of eight born. Of these Ethel was the youngest. Her siblings were sisters, Annie (b. 1890) and Carrie (b. 1893), and brothers, William (b. 1895) and Thomas (b. 1897). Her mother was a housewife, and her father was chief telegrapher for Western Union in Boston before his death in his late forties.

Ethel Burke's primary and secondary education was obtained in Boston public schools. After her high school graduation in 1918, she attended the Boston Normal School for three years, 1918–21, to obtain her certification to teach in the Boston school system. Each summer for six years after her high school graduation she worked as playground instructor for the Boston public schools; the two years after she received her certification she taught in public elementary school in Boston.

In 1923 Burke entered the Congregation of Sisters of Saint Joseph in Boston. A year later Sister Mary Leonarda Burke began a seven-year period of studying for her undergraduate and graduate degrees. Her two years, 1924–26, at Emmanuel College, founded in 1919 as New England's first Catholic college for women, resulted in her bachelor's degree as a mathematics major in 1926. Sister Leonarda earned her master's degree from Boston College by studying part time while also teaching mathematics, French, and history at the secondary level in the Boston diocesan schools. In the first year of her master's work she took courses on weekends; during the second year she took courses after classes finished at her school. Her 1928 thesis had as its topic calculus in high school mathematics.

From 1928 to 1931, Sister Leonarda was in residence at the Catholic University of America, where she studied mathematics, education, and physics. She was among a group of five students, four women religious (Burke, [Sr. Mary de Lellis Gough](#), [Sr. Charles Mary Morrison](#), and [Sr. Mary Felice Vaudreuil](#)) and one lay man (James Norman Eastham), who earned their PhD's in 1931 under the direction of Aubrey E. Landry. All five wrote dissertations describing and counting the different types of polygons in-and-circumscribed to a rational quartic curve with variously specified singularities and symmetries.

In the fall of 1931 she began her long association with Regis College, a Catholic college for women in Weston, near Boston, founded by her order and opened just four years earlier. In 1981 Sister Leonarda recalled, "The foresight and aspirations of the foundress of Regis College, Mother Mary Domitilla, C.S.J., motivated and enhanced my involvement in mathematics when she was aspiring to have a strong faculty in the early years, and her efforts provided the departments Latin, History, Greek, French, Mathematics, Biology, Chemistry, etc. in that order" (Smithsonian questionnaire).

Sister Leonarda served at Regis College in a variety of capacities: as teacher, administrator, and as researcher. From 1931 to 1964, as professor of mathematics and chairman of the department, she taught a full complex of courses including work in analysis (calculus, advanced calculus, and numerical analysis); statistics

(descriptive and mathematical); modern algebra and projective geometry (offered as electives during the late 1940s and early 1950s); junior and senior seminars; and computer programming. She engaged in post-doctoral research at Catholic University in the summer of 1940. She also studied modern mathematical techniques in teaching at the University of Chicago in the summer of 1950. From 1963 to 1965 she served as director of the computer center at Regis.

For twenty-five years, 1953–78, Sister Leonarda was director of the Regis College Research Center and principal investigator for contractual work for the Air Force Research Center, Hanscom Field. Her work involved mathematical analysis primarily associated with climatology, meteorology, ionospheric studies, and interplanetary studies. After 1978 she held the title Research Analyst, Institutional Research, at Regis. She also held the rank professor emeritus after her retirement from teaching in 1964.

Sister Leonarda Burke received the Outstanding Educator Award from Regis College in 1975. She was given a special achievement award in acknowledgment of twenty-five years service in support of the research mission of the Geophysics Laboratory of the Air Force on November 15, 1978.

For more than thirty years, Sister Leonarda was a member of the Association of Teachers of Mathematics in New England. From 1958 she made tape recordings for the blind of books from a variety of fields for the Communication Center, Massachusetts Association for the Blind. One project, for example, involved recording the six volumes of Andrew R. Forsyth's *Theory of Differential Equations*.

Sister Leonarda Burke died at age ninety-seven at the Bethany Health Care Center in Framingham, Massachusetts, in 1998. She is buried in St. Patrick Cemetery in Natick.

**Organizational affiliations:** AMS, MAA, NCTM, Amer. Meteorological Soc., Sigma Xi.

**Thesis and dissertation:**

**1928** Calculus in high school mathematics. MA thesis, Boston College.

**1931** On a case of the triangles in-and-circumscribed to a rational quartic curve with a line of symmetry. PhD dissertation, Catholic University of America, directed by Aubrey Edward Landry. Printed for The Catholic University of America, Washington, DC. Review: *JFM* 57.0826.01 (F. Schaale).

**Publications:**

**1941** Two ways of setting up the symmetric correspondence  $C_{2,2}$  and a relation connecting them. *Natl. Math. Mag.* 16:29–33.

**1950** [Sister Mary Leonarda] Seminar program in mathematics at Regis College. *Amer. Math. Monthly* 57:254–56.

**Technical reports:**

**1958** Return to base of planes under automatic control (predicting problems in field of air traffic control). Contract AF19(604)-2423. US Air Force Cambridge Research Center, Navigation Laboratory.

**1973** Upper atmospheric data analysis from data recorded at Thule Air Base, Greenland. Contract F19628-71-C-0172. US Air Force Cambridge Research Laboratories, Bedford, MA.

**1974** Meteorological and mathematical analysis. Contract AFCRL-TR-74-0558. US Air Force Cambridge Research Laboratories, Hanscom AFB, MA.

**1976** with J. M. Ward, M. R. Hermann, H. J. Pratt, R. M. Glasser. Visibility measurements for probability forecasts, MCIDAS system configuration and capabilities, radiative

change of surface air temperature. Contract AFGL-TR-76-0250. US Air Force Geophysics Laboratory, Hanscom AFB, MA.

**1979** Meteorological studies: atmospheric analysis, automated weather system development, satellite studies. Contract AFGL-TR-79-0047. US Air Force Geophysics Laboratory, Hanscom AFB, MA.

**References to:** AmMWSc 13P, 14–17; LAmSci 7; OutEdAm 1974; WorWhoW 5.

**Other sources:** PhD dissertation vita 1931; Owens questionnaires 1937, 1940; Smithsonian questionnaire 1981; Smithsonian meeting tapes 1981; Religious Women in Mathematics Survey 1983; communication with Congregation of Sisters of Saint Joseph Archives; US Census 1900, 1920 MA.

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