BOWER, Julia Wells. December 27, 1903–February 19, 1999.

Julia Wells Bower was born in Reading, Pennsylvania, the second of three daughters of Maud Estella (Weightman) (1874–1968) and Andrew Park Bower (1869–1949). Her parents, natives of Pennsylvania, had married on April 10, 1893. They had attended elementary school, her father through fifth grade. He later supplemented this education with night classes and a year at a business college in Reading. Her mother was a housewife; her father was a cigar maker and a labor leader and mediator. He was active at the local and national levels of the Cigar Makers' International Union of America and was national vice president for many years and then president in the 1940s; in the latter role he was editor of the union's publication. He was also vice president of the Pennsylvania Federation of Labor for forty years, and held offices in the Cigarmarkers' Co-operative Association and other state and local labor associations. He was involved in many charitable and religious activities at the community level. These included serving in leadership positions with the Berks County Tuberculosis Society, with the American Red Cross, and with the First Baptist Church of Reading. His political affiliation was Socialist.

Julia Bower's older sister, Esther Weightman (1900–1994), held a master's degree in child development from Pennsylvania State College and was at various times a public school teacher, a home demonstration agent, and the director of a child care center and of the Lancaster, Pennsylvania, nursery school opened by the Harvard trained educator Psyche Cattell. Bower's younger sister, Philippa Park (b. ca. 1906), died in childhood.

Julia Bower attended the public elementary school and high school in Reading. In 1985 she credited the support she received from her family, including that of an aunt who taught junior high school mathematics in Reading, for motivating her. After graduating from high school as salutatorian she went to Syracuse University as holder of a Reading High School alumni scholarship during her first year. While an undergraduate she served as librarian, secretary, and member of the scholarship committee of the Syracuse chapter of Pi Mu Epsilon. After receiving her bachelor's degree in 1925, she continued at Syracuse one more year as a teaching fellow and received her master's degree the next year. While at Syracuse she was elected to several honorary societies.

In 1926 Bower was appointed to a temporary instructorship at Vassar College to replace Mary Evelyn Wells, who was on leave to serve as department head at Women's Christian College at the University of Madras in India during 1926–27. The next three years Bower was instructor at Sweet Briar College in Virginia, where Eugenie Morenus was chair of the department. Bower also was instructor in the summer school at Syracuse during the summers of 1927 through 1931.

Bower began her graduate work for the PhD at the University of Chicago in October 1930 and remained there, except in summers, through June 1933. At that time, she received her degree, having written a dissertation in the calculus of variations as a student of Gilbert Ames Bliss. She held a fellowship 1931–32 and 1932–33 and taught a freshman course during the first quarter of 1932–33.

After receiving her doctorate, Bower went to Connecticut College for Women in New London as instructor in the fall of 1933 and remained there throughout her career. The college, established in 1911, became coeducational and adopted

its present name, Connecticut College, in 1969, shortly before Bower's retirement. While there she was instructor 1933–38, assistant professor 1938–42, associate professor 1942–53, professor 1953–72, and professor emeritus after 1972. She served as department chairman 1943–69. She taught a broad range of courses for majors and, after about 1955, for non-majors, later using her 1965 text, *Introduction to Mathematical Thought*. Her second book, *Mathematics: A Creative Art*, was published the year after she retired. From 1961 to 1967 she served as director and as instructor in NSF in-service institutes for high school teachers that had weekly sessions during the school year.

Bower had a variety of summer teaching experiences. In the summers of 1943–46 she was director and instructor of a training course for engineering aides for the research division of United Aircraft Corporation. She was visiting professor at Washington Square College of New York University in the summer of 1950 and at Boston University in the summer of 1954 and was visiting scholar at the University of Miami in 1962–63.

She was particularly active in the Connecticut Valley Section of the Association of Teachers of Mathematics in New England (ATMNE). She served as secretary 1941–43, vice president 1949–50, president 1950–51, and director 1951–52. She also represented her college at a conference on a general curriculum in mathematics called by the MAA Committee on the Undergraduate Program in Mathematics and held in New York in 1966. That same year she gave a talk at the Senior High School Section of an NCTM meeting in Hartford, Connecticut. She was a fellow of the AAAS.

Bower was a Baptist, was a member of the League of Women Voters, and was active in Pan-Hellenic and sorority work from the early 1920s to the early 1940s; she was national president of Beta Phi Alpha from 1936 to 1940. She was at various times a local officer in AAUW, AAUP, and Phi Beta Kappa and was also a member of Phi Kappa Phi and Pi Lambda Theta. She indicated in 1985 that her hobbies were reading and swimming. Some time after her retirement she moved to Florida, where in 1984 she wrote a history of John Knox Village of Central Florida, a retirement community in Orange City.

Julia Wells Bower died in Florida Hospital Fish Memorial in Orange City, Florida, in 1999 at age ninety-five. She was cremated and her ashes placed in Mid-Florida Crematory in DeLand. Before her death, an anonymous donor established the Julia Wells Bower prize for mathematics in her honor at Connecticut College, which also presents an annual Julia Wells Bower lecture.

Organizational affiliations: AMS, MAA, NCTM, AWM, AAAS, AAUW, AAUP, Sigma Delta Epsilon, Phi Beta Kappa, Sigma Xi, Pi Mu Epsilon.

Dissertation:

1933 The problem of Lagrange with finite side conditions. PhD dissertation, University of Chicago, directed by Gilbert Ames Bliss. Typescript. Private edition, 1937, distributed by the University of Chicago Libraries, reprinted from *Contributions to the Calculus of Variations, 1933–37*, 1–51.

Publications:

1937 The problem of Lagrange with finite side conditions. In *Contributions to the Calculus of Variations, 1933–37*, 1–51. Chicago: University of Chicago Press. Published version of PhD dissertation. Reviews: *JFM* 63.0480.04 (H. Boerner); *Zbl* 018.02801 (A. Dresden). Review of volume: *Bull. Amer. Math. Soc.* 44:604–09 (A. Dresden). Presented to the AMS, Chicago, 19 Jun 1933; abstract: *Bull. Amer. Math. Soc.* 39:512–13 #237.

1943 The effect of war on college women and mathematics. *Math. Teacher* 36:175–78.

1945 A training course for engineering aides. *Math. Teacher* 38:323–26.

1951a An application of determinants to the probability of mated pairs. *Amer. Math. Monthly* 58:238–44. Reviews: *MR* 12,665e (J. Riordan); *Zbl* 042.13701 (A. Sade).

1951b Review of *Primer of College Mathematics*, by J. F. Randolph (New York: The Macmillan Co., 1950). *Amer. Math. Monthly* 58:350.

1954 Mathematics as a creative art. *Math. Teacher* 47:2–7.

1965 *Introduction to Mathematical Thought*. Prelim. ed. San Francisco: Holden-Day.

1973 *Mathematics: A Creative Art*. San Francisco: Holden-Day. Reviews: *Amer. Math. Monthly* 80:1155 (F. L. Wolf); *Math. Mag.* 47:164–65 (R. Longcore).

Presentations not listed above:

Discontinuities. Presented to the ATMNE, Deerfield, MA, 1943.

Geodesics on a polyhedron. Presented to the ATMNE, Boston area, 1950.

Cartesian rather than Euclidean geometry. Lecture series at ATMNE Summer Institute, Cambridge, MA, 1951.

Non-Euclidean geometry. Presented to the ATMNE, Cambridge or Boston, MA, 1953.

Matrices. Lecture series at ATMNE Summer Institute, Cambridge, MA, 1954.

Mathematical proof. Presented to the ATMNE, Cambridge or Boston, MA, 1955.

Theory of numbers. Lecture series at ATMNE Summer Institute, Kingston, RI, 1959.

References to: AmMSc 6–8, 9P–11P; AmWom 1935–40; WhoAmW 5–6; ConAu 41R. Hostinsky, Aileen L. "Julia Wells Bower" in "Retirements." *Connecticut College Alumnae News*, n.d.

"Julia Wells Bower." (Obituary) *Orlando Sentinel*, 23 Feb 1999.

Other sources: PhD dissertation vita 1933; Owens questionnaire 1937; Smithsonian questionnaire 1985; Owens Papers; communication with Connecticut College Archives; NatCAB 38 (Bower, Andrew Park); US Census 1900, 1910, 1920, 1930 PA; Florida death certificate; SSDI.

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