CARLSON, Elizabeth. October 2, 1896–November 1, 2000.
University of Minnesota (BA 1917, MA 1918, PhD 1924).

Sally Elizabeth Carlson was born in Minneapolis, Minnesota, the third of five surviving children of six born to Alice (Alise) (Johnson) (1870–1956) and Carl Emil Carlson (1858–1950). Both of her parents were born in Sweden and emigrated several years before their marriage in 1891. Her mother had an elementary school education, and her father had no formal education, although he was literate in Swedish and English. He was a stone mason in Minneapolis. Her eldest brother, Oscar E. (1892–1958), was a salesman, having had some high school and business college, while her next oldest brother, A. Paul (1894–1973), was an electrical engineer with a BS in engineering. Her sister, Esther A. (1904–1975), with a high school and Bible school education, served forty-six years as a missionary to Venezuela, and her youngest brother, Clifford N. (1907–1939), was a lawyer.

In 1913 Carlson graduated as valedictorian from South High School in Minneapolis and remained in that city for her collegiate and most of her professional career at the University of Minnesota. Even though her parents were not supportive of her desire for a college education, she received her bachelor's degree in 1917 and her master's degree in 1918, after which she taught at McIntosh High School in northern Minnesota for nine months. She was an instructor of mathematics and physics at Knox College in Illinois during 1919–20. Carlson returned to the University of Minnesota in 1920 where she was a teaching assistant in mathematics her first year and remained an assistant until she received her PhD four years later. She and Carey Morgan Jensen (a male) received the first two PhD's in mathematics at Minnesota in 1924, both as students of Dunham Jackson in analysis and both with minors in physics.

Elizabeth Carlson remained at Minnesota until her retirement as professor emeritus in June 1965. She was instructor 1924–28, assistant professor 1928–50, associate professor 1950–63, and professor 1963–65, a pattern very similar to that of Gladys Gibbens, her slightly older colleague. Carlson taught at Hunter College in the summer session of 1930, having exchanged positions with a faculty member from there. In the fall of 1965, just after her retirement, she taught at Macalaster College as a visiting professor. During her career at Minnesota she taught elementary and advanced undergraduate courses, was advisor for a number of MA candidates, and won a Distinguished Teacher Award in 1962. In the late 1930s, she joined with Raymond W. Brink and Ella Thorp, who together had earlier published a book of exercises for trigonometry, in producing a set of exercises for Minnesota's intermediate algebra course. She also taught a reading course for advanced mathematics students during the summers, sometimes with other faculty and sometimes alone.

Carlson published three papers based on her dissertation, two in the *Transactions* of the AMS and one in the *Bulletin* of the AMS. Two decades after she retired, she wrote that she "considered being a good teacher more important than any mathematical research [she] might do" (Smithsonian questionnaire 1985). She was active in the mathematical community through the early 1960s; she was an associate editor of the *American Mathematical Monthly* 1927–31, served on the executive committee of the Minnesota Section of the MAA 1961–62, and refereed for the *Monthly* in 1962.

Carlson was an active member of the Evangelical Free Church of America and helped start the Central Evangelical Free Church in downtown Minneapolis. She taught Sunday school, was deaconess, and sang in the choir and in a mixed quartet at the Central Evangelical Free Church, which is now closed. She served as faculty advisor for the Minnesota Christian Fellowship and for the Inter-Varsity Christian Fellowship chapter at the University of Minnesota and was active in the faculty Bible class. She also conducted Bible studies in her home and elsewhere, especially after her retirement. Carlson traveled extensively throughout the world and retained her fluency in Swedish.

Warren Loud, a former colleague of Carlson, reported to one of the authors in an e-mail message on March 3, 1998, that "she was strong and vigorous right up to retirement and beyond. As an undergraduate she lived about three miles from campus and always walked both ways every day, (not an easy thing in a Minneapolis winter!) although when I knew her, she drove to and from the university. I recall meeting her in downtown Minneapolis in 1984, when she was eighty-eight. She said she was doing an errand for one of the older ladies in her retirement home."

Elizabeth Carlson died at the Augustana Home of Minneapolis at age 104 in November 2000. The following fall the mathematics library at the University of Minnesota mounted an exhibit, "Elizabeth Carlson, notable alumna."

Organizational affiliations: AMS, MAA, Phi Beta Kappa, Sigma Xi.

Dissertation:

1924 On the convergence of certain methods of closest approximation. PhD dissertation, University of Minnesota, directed by Dunham Jackson. Printed version, 1926, Lancaster, PA, reprinted from *Trans. Amer. Math. Soc.* 26:230–40, *Trans. Amer. Math. Soc.* 28:435–47, and *Bull. Amer. Math. Soc.* 32:639–41.

Publications:

1924 Extension of Bernstein's theorem to Sturm-Liouville sums. *Trans. Amer. Math. Soc.* 26:230–40. Part one of published version of PhD dissertation. Reviews: *JFM* 50.0314.01 (E. Hille); *Rev. semestr. publ. math.* 32, pt. 1: 14 (P. Mulder). Presented by title to the AMS, Rochester, NY, 7 Sep 1922; abstract: *Bull. Amer. Math. Soc.* 28:381–82 #12.

1926a On the convergence of certain methods of closest approximation. *Trans. Amer. Math. Soc.* 28:435–47. Part two of published version of PhD dissertation. Reviews: *JFM* 52.0456.01 (H. Grunsky); *Rev. semestr. publ. math.* 33, pt. 2: 20 (P. Mulder). Presented to the AMS, Chicago, 19 Apr 1924; abstract: *Bull. Amer. Math. Soc.* 30:396 #12.

1926b On the convergence of trigonometric approximations for a function of two variables. *Bull. Amer. Math. Soc.* 32:639–41. Part three of published version of PhD dissertation. Reviews: *JFM* 52.0275.04 (H. Grunsky); *Rev. semestr. publ. math.* 33, pt. 2: 7 (D. J. Korteweg). Presented as "On the approximate representation of periodic functions of two variables" by Prof. Jackson to the AMS, Chicago, 14 Apr 1922; abstract: *Bull. Amer. Math. Soc.* 28:290 #8.

Abstracts not listed above:

1922 An analytic geometry treatment of the nature of conics generated by projective ranges and pencils. *Amer. Math. Monthly* 29:239 #4. Presented to the MAA, St. Paul, MN, 27 May 1922.

1928 A simplified proof for the extension of Bernstein's theorem to Sturm-Liouville sums. *Bull. Amer. Math. Soc.* 34:416 #42. Presented by title to the AMS, Chicago, 7 Apr 1928.

1929 Teaching higher algebra in large classes. *Amer. Math. Monthly* 36:414 #6. Presented to the MAA, St. Paul, MN, 11 May 1929.

1936 A course in synthetic metric geometry. *Amer. Math. Monthly* 43:596 #5. Presented to the MAA, St. Peter, MN, 16 May 1936.

References to: AmMSc 4–8, 9P–11; AmWom 1935–40; BiDWSci.
"Sally Elizabeth Carlson, 100th Birthday Celebration, October 5, 1996." Privately printed program.
Her, Lucy Y. "Former 'U' Math Prof. Sally Elizabeth Carlson Dies at Age 104," *Minneapolis Star Tribune*, 3 Nov 2000.

Other sources: PhD dissertation vita 1924; Owens questionnaire 1940; Smithsonian questionnaire 1985; University of Minnesota mathematics department; communications with Warren Loud, former colleague, and with University of Minnesota Archives; US Census 1910, 1920, 1930 MN.

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