BERNSTEIN, Dorothy L. April 11, 1914–February 5, 1988.
University of Wisconsin (BA 1934, MA 1934), Brown University (PhD 1939).

Dorothy Lewis Bernstein was born in Chicago, Illinois, the eldest of four surviving daughters and one son of Tillie (Loyev, later Lewis) (1887–1969) and Jacob Louis Bernstein (1880–1956). Both parents were born in Russia and immigrated early in the century. Her father came to New York in 1902 and her mother to Milwaukee in 1907, at which time her mother's family assumed the name Lewis. Her parents were married in Milwaukee in 1912 and were naturalized in 1915. The first three children, Dorothy, Naomi (1915–1996), and Myrtle (1917–1992), were born in Chicago where her father had started a dairy business in 1911. In 1918 the family moved to a farm in Jackson, Wisconsin, about thirty miles northwest of Milwaukee. The next two children, Elinor (1919–1920) and Clarice (b. 1922), were born in Jackson. In 1924 the family moved again, this time to Milwaukee where, in 1925, her father started another dairy, and where their last child, Sheldon, was born in 1927. All of the surviving children earned advanced degrees, Myrtle (LeBow) an MD and all the others PhD's: Sheldon in 1952 (University of Wisconsin, biochemistry), Naomi (Golan) in 1969 (University of Chicago, social work), and Clarice (Yaffa Draznin) in 1985 (University of Southern California, history). In 1972 Yaffa Draznin published *It Began with Zade Usher: The History and Record of the Families Bernstein–Loyev/Lewis–Mazur*, for which Dorothy Bernstein wrote the foreword.

Bernstein attended public primary and secondary schools in Milwaukee and graduated from high school as valedictorian in 1930 at age sixteen. She then entered the University of Wisconsin, where she majored in mathematics. By October 1932, when she was just over eighteen, the department voted that she be permitted to follow a program of advanced independent study. During the next two years she worked with Mark H. Ingraham, Rudolf Langer, and Theodore Bennett and received her bachelor's and master's degrees in 1934 on the basis of a single examination and a thesis on finding the complex roots of polynomials by an extension of Newton's method. Her last year as an undergraduate she was a University scholar. She was first in a class of two thousand, and her bachelor's degree was awarded summa cum laude. After receiving her degrees, she remained at Wisconsin as a University fellow for the year 1934–35, doing further graduate work and teaching.

Bernstein continued her graduate studies at Brown University, where for two years, 1935–37, she held a scholarship and taught at Pembroke College, Brown's coordinate women's college. She completed her dissertation on the Laplace double integral and received her PhD from Brown in 1939. She was also an instructor at Mount Holyoke College from 1937 to 1940.

Bernstein reported a Milwaukee, Wisconsin, mailing address for the September 1940 AMS membership list. In 1941 she returned to the University of Wisconsin for a year as an instructor. In June 1942 she became a research associate to the statistician Jerzy Neyman working on theoretical problems in probability at the Statistical Laboratory of the University of California, Berkeley, where she also taught a graduate course in probability theory in the mathematics department. In her 1978 contribution to an AWM panel, published in 1979, she notes that she left after only eight months because "Neyman and I did not see eye-to-eye on what was the mathematical justification of a statistical procedure" (p. 10). Erich L. Lehmann, a graduate student at Berkeley at the time, later quoted Neyman as saying that

"Dorothy Bernstein ... has just come to me and said she doesn't like the kind of stuff that we do because it's not really nice mathematics. She wants to leave" (DeGroot 1986, 244). Bernstein was unemployed for several months, but in fall 1943 she moved to the University of Rochester as an instructor. In 1946 she was promoted to assistant professor, in 1951 to associate professor, and in 1957 to professor. She spent three years as acting chairman of the department. She also directed three PhD dissertations, including that of her later collaborator and close friend, Geraldine Coon, in 1950. Her other two doctoral students were John M. Perry, 1960, and David M. Burton, 1961.

While at Rochester she was asked by C. B. Tompkins, who was working at Engineering Research Associates on a contract from the Office of Naval Research, to undertake a study of the current state of knowledge of existence theorems in partial differential equations. As she explained in her 1978 AWM talk, "some of the proofs could be used as basis for the computational solutions of non-linear problems that were just being tackled by high-speed digital computers." Her 1950 book with Princeton University Press was the result of this undertaking. She spent the year 1950–51 as a member of the Institute for Advanced Study and the year 1957–58 as a visiting professor at the Institute for Numerical Analysis of the University of California, Los Angeles. During the 1950s she wrote more than fifty reviews for *Mathematical Reviews*.

In 1959 Bernstein went to Goucher College as professor and remained there until she retired in 1979 as professor emeritus. She was chairman of the department from 1960 until 1970 and director of the computer center from 1962 until 1967. She spent the year 1966–67 as visiting professor of applied mathematics at Brown. She returned to Brown in the fall of 1973 and spent the spring of 1974 at the University of Tennessee. While at Goucher, Bernstein became very active in the uses of the computer in education and in the spring of 1971 was part of a group that founded the Maryland Association for the Educational Uses of Computers. She was instrumental in obtaining funds for computers at Goucher and helped run an NSF summer institute in computer-based mathematics for high school teachers. At her retirement Goucher presented her with an award for distinguished service to the college. In 1981 Towson State University awarded her an honorary Doctor of Humane Letters (LHD). She was a fellow of the AAAS.

In 1985 Bernstein received a Certificate for Meritorious Service from the Maryland-District of Columbia-Virginia Section of the MAA, having served the section as governor 1965–68 and the national MAA in many capacities. She served on and chaired various committees and was a member of the editorial board of the *Two-Year College Mathematics Journal*. At the national level she was first vice president 1972–73 and president 1978–80, the first woman in this role in the MAA's history. From the early 1970s through the early 1980s Bernstein was often an invited speaker at sectional meetings of the MAA. In addition to her work with the MAA, she served on advisory panels of other national associations and for the National Science Foundation.

At the time of her retirement from Goucher College in 1979, a pair of articles appeared in the *Goucher Quarterly*, "Bernstein on Coon" and "Coon on Bernstein." Geraldine Coon, Bernstein's 1950 doctoral student, came to Goucher in 1964 and retired the same year as Bernstein. After giving a detailed description of Bernstein's mathematical activities and work at Goucher, Coon added that in addition to her

duties as president of the MAA, "whenever possible, she indulges in her favorite hobbies of gardening, canning, and freezing. She intends to maintain the famous Bernstein Box at the Preakness, where annually the laws of probability and statistics fall into complete disarray" (17). Coon remained at Goucher an additional year before she returned to her home on the Pawcatuck River in Connecticut. Bernstein and Coon shared the home until Bernstein's death.

For several years after her retirement Dorothy L. Bernstein maintained an affiliation with Brown University, which was about forty-five miles from her Connecticut home. She died at the Rhode Island Hospital in Providence in February 1988 at the age of seventy-three. She was survived by her three sisters, Dr. Naomi Golan and Dr. Myrtle LeBow, both of Israel, and Dr. Yaffa Draznin of Los Angeles; and by her brother, Dr. Sheldon Bernstein of Milwaukee. She was buried in Milwaukee.

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

Thesis and dissertation:

1934 Some problems in the approximation of the roots of polynomials. MA thesis, University of Wisconsin. Typescript.

1939 The double Laplace integral. PhD dissertation, Brown University, directed by Jacob David Tamarkin. Typescript. Printed version, 1941, reprinted from *Duke Math. J.* 8:460–96.

Publications:

1941 The double Laplace integral. *Duke Math. J.* 8:460–96. Based in part on PhD dissertation. Reviews: *JFM* 67.0386.03 (G. Doetsch); *MR* 3,38e (R. P. Boas, Jr.).

1950 *Existence Theorems in Partial Differential Equations.* Annals of Mathematical Studies, no. 23. Princeton: Princeton University Press. Reviews: *Bull. Amer. Math. Soc.* 57:323–25 (F. John); *MR* 12,262c (M. Janet) (this review also appears as *Zbl* 066.07601). Reprint: 1965. New York: Kraus Reprint Corp.

1953 with G. A. Coon. Some properties of the double Laplace transformation. *Trans. Amer. Math. Soc.* 74:135–76. Reviews: *MR* 14,639b (W. Saxer); *Zbl* 087.31002 (A. Zitarosa).

1961 Review of *Einfuhrung in Theorie und Anwendung der Laplace-Transformation*, by G. Doetsch. *Math. Comp.* 15:100.

1963 with G. A. Coon. Some general formulas for double Laplace transformations. *Proc. Amer. Math. Soc.* 14:52–59. Reviews: *MR* 26 #558 (T. E. Hull); *Zbl* 112.33603 (G. Doetsch).

1965 with G. A. Coon. On the zeros of a class of exponential polynomials. *J. Math. Anal. Appl.* 11:205–12. Reviews: *MR* 32 #1327 (M. Marden); *Zbl* 136.37302 (M. Kuczma).

1972 Foreword. In *It Began with Zade Usher: The History and Record of the Families Bernstein—Loyev/Lewis—Mazur* by Y. Draznin, vii–viii. Los Angeles: JAMY Publications.

1979a Bernstein on Coon. *Goucher Quart.* 58 (1): 18–20.

1979b The role of applications in pure mathematics. *Amer. Math. Monthly* 86:245–53. Reviews: *MR* 80d:00031 (Editors); *Zbl* 415.00030 (Author's abstract). Presented by invitation at meetings of the MAA, Clemson, SC, 31 Mar–1 Apr 1978, and Cedar Falls, IA, 21–22 Apr 1978.

1979c with M. G. Humphreys, A. F. O'Neill, and M. Rees. Women mathematicians before 1950. *AWM Newsletter* 9 (4): 9–18. Transcription of a panel discussion sponsored by the AWM, Providence, RI, 9 Aug 1978, ed. P. Kenschaft. Reprint of pages 9–11, with editorial revisions: 2005. The real world of the 1930s. In *Complexities*, eds. B. A. Case and A. M. Leggett, 204–05. Princeton, NJ: Princeton University Press.

Abstracts:
1942 with S. M. Ulam. On the problem of completely additive measure in classes of sets with a general equivalence relation. *Bull. Amer. Math. Soc.* 48:361–62 #169. Presented by Bernstein to the AMS, Chicago, 17 Apr 1942.
1952 Functions of subdivisions and their use in advanced undergraduate mathematics. *Amer. Math. Monthly* 59:589 #6. Presented to the MAA, Geneva, NY, 10 May 1952.

Presentations not listed above:
Application of the Laplace transform to partial differential equations. Presented to a meeting of SIAM, Baltimore, MD, May 1960.
How to make and break codes – cryptanalysis and mathematics. Presented by invitation to the MAA, Butler, PA, 5 May 1973.
How to make and break codes. Presented by invitation to meetings of the MAA, Little Rock, AR, 5 Apr 1974; Austin, TX, 6 Apr 1974; and Vermillion, SD, 19–20 Apr 1974.
A differential equation of literary criticism. Presented by invitation to meetings of the MAA, DeKalb, IL, 27 Apr 1979, and Boulder, CO, 28–29 Mar 1980.
Preparation for careers in applied mathematics. Presented by invitation to a meeting of the MAA and Kansas Association of Teachers of Mathematics, Manhattan, KS, 11–12 Apr 1980.
Mathematical modeling and existence theorems. Presented by invitation to meetings of the MAA, Wooster, OH, 26–27 Oct 1979; Ruston, LA, 15–16 Feb 1980; Monterey, CA, 23 Feb 1980; Jacksonville, FL 7–8 Mar 1980; Manhattan, KS, 11–12 Apr 1980; Crete, NE, 18–19 Apr 1980; Fulton, MO, 25–26 Apr 1980; New York City, 2 May 1981; and Trenton, NJ, 24 Oct 1981.
Who is the MAA? Presented by invitation to a meeting of the MAA, Ruston, LA, 15–16 Feb 1980.
A small college's experience with applications in the mathematics curriculum. Presented by invitation to a meeting of the MAA, Crete, NE, 18–19 Apr 1980.
The biography of a theorem. Presented by invitation to a meeting of the MAA, Hartford, CT, 20–21 Apr 1981.
Mathematical expectation. Retiring presidential address presented to a meeting of the MAA, Cincinnati, OH, 14–17 Jan 1982.

References to: AmMSc 7–8, 9P–11P; AmMWSc 12P–13P, 14–18; AmWomTe; BioW-Math; EncWB 2; NotMat; NotSci 2; NotTwCS 1; Sc&ItsT 7; WhoAm 38; WhoAmW 3–8; WhoWorJ 1972, 1978.
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"Dorothy L. Bernstein: 1914–1988." *Notices Amer. Math. Soc.* 35 (1988): 543.

Related manuscript materials:
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