

STUDENT PROJECT
ON
WOMEN MATHEMATICIANS - II

Submitted by

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WOMEN MATHEMATICIANS - II

6. Charlotte Barnum

May 17, 1860 - March 27, 1934

Charlotte Cynthia Barnum was born in Phillipston, Massachusetts, the daughter of the Reverend Samuel Weed Barnum and Charlotte Betts Barnum. Her early education was by private study and her preparation for college was at the Hillhouse School in New Haven. She graduated from Vassar College in 1881. After various teaching positions at Bett's Academy (Stamford, Connecticut), Hillhouse School, and Smith College, where she taught astronomy, Barnum returned to study mathematics, astronomy, and physics at John Hopkins University from 1890 until 1892. In 1892 she moved to Yale University, where her father had studied, and in 1895 she became the first of three women to receive Ph.D.'s in mathematics from Yale before 1900. Her dissertation was on "Functions Having Lines or Surfaces of Discontinuity." Barnum joined the American Mathematical Society in 1894, the first year of the Society's existence after its change in name from the New York Mathematical Society.

After receiving her Ph.D., Barnum taught mathematics for one year at Carleton College. Between 1898 and 1913, she held various jobs in the insurance industry as an actuary, at the U.S. Naval Observatory, the U.S. Coast and Geodesic Survey, and with the U.S. Department of Agriculture as an editor for the Biological Survey. In some publications it is reported that Barnum did editorial work for the Yale Peruvian Expedition and after that worked as a proofreader for the scientific publications at Yale University. There is no mention of her as an employee at Yale in their personnel records; she may have worked as a volunteer. Between 1921 and 1923 she returned to teaching mathematics at Scovill and Columbia Preparatory schools in New York and then at Walnut Hill, Natick, Massachusetts. In the fifth edition of *American Men and Women of Science*, she listed her research interests as functions having lines or surfaces of discontinuity, tides and currents, annuities, and social legislation.

7. Lida Barrett



May 21, 1927 -

Lida K. Barrett is a mathematician and mathematics educator. Born in Houston, Texas, she holds a baccalaureate from Rice University (1946), a masters from the University of Texas (1949), and a doctorate from the University of Pennsylvania (1954)--all in mathematics. Her dissertation at the University of Pennsylvania was on "Regular Curves and Regular Points of Finite Order," written under the supervision of John Kline.

Immediately following graduation from Rice she was employed as a mathematician at the Schlumberger Well Surveying Corporation. The academic year 1947-48 she taught at the Texas State College for Women (now Texas Woman's University.) Following her doctorate she taught one year at the University of Connecticut while her husband held a postdoctoral appointment at Yale.

She has served as a mathematics faculty member at the University of Utah and the University of Tennessee and as Head of the mathematics department at the University of Tennessee from 1973 to 1980. She has served as an administrator and mathematics faculty member at Northern Illinois University, where she was Associate Provost, and at Mississippi State University, where she was Dean of Arts and Sciences. After retirement as Dean Emerita from MSU, she was a Senior Associate to the head of the Education Directorate at the National Science Foundation for three years and then a Professor of Mathematics at the United States Military Academy at West Point for three years.

While at Tennessee, during her husband's tenure as department head, she ran an independent mathematical consulting business, including editorial work for book publishers, primarily for calculus texts, and work at the Oak Ridge National Laboratory. Her thesis work and initial publications were in General Topology. At Oak Ridge, her work and publications were in applied mathematics. Her recent work and publications have been in mathematics education.

She has been active in the American Mathematics Society, including chairing the Committee on Employment and Educational Policy (1979-82). In the Mathematical Association of America she served on a large number of committees and as President in 1989 and 1990.

She was on the planning committee for the International Congress in Mathematics Education in Madrid, Spain, in July of 1996. She was a member of the advisory committee of the Harvard Calculus Consortium and of the Adolescence and Young Adult/Mathematics Standards committee for the National Board of Professional Teaching Standards.

8. Agnes Baxter



March 18, 1870 - March 9, 1917

Agnes Baxter was born in Halifax, Nova Scotia, Canada. She was a student at Dalhousie University from 1887 to 1892. In 1891 she received her BA with first class honours in Mathematics, the first woman to receive this distinction at Dalhousie, and was the winner of the Sir William Young Gold Medal. In 1892, she received an MA in Mathematics, also from Dalhousie.

From Dalhousie, Agnes Baxter went to Cornell University where she did graduate work in mathematics, won a fellowship, and was awarded the degree of Ph.D. in 1895. Her thesis, "On Abelian Integrals, a Resume of Neumann's Abelsche Integral with Comments and Applications" was written under the direction of J.E.Oliver. She was the second Canadian woman to receive a Ph.D. in mathematics in North America. (Baxter and [Charlotte Barnum](#) both received their degrees in the same year, thus sharing the

distinction of being the "fourth" woman to receive a Ph.D. in mathematics in North America.)

In 1896 Baxter married A. Ross Hill, also a graduate of Dalhousie with an 1895 Ph.D. in Philosophy from Cornell University. In 1908 Ross Hill became president of the University of Missouri. Unfortunately, Agnes Baxter Hill was in ill health for many years. After her untimely death at the age of 47, President Hill made a gift of books to Dalhousie "... to perpetuate the memory of one of its loyal graduates, who gave her life to assist in my educational work instead of making an independent record for herself." In 1988, Dalhousie dedicated the [Agnes Baxter Reading Room](#) in the Department of Mathematics, Statistics and Computing Science

9. Alexandra Bellow



1935-

Born in Bucharest, Romania. Received her Ph.D. from Yale in 1959 with a dissertation on *Ergodic Theory of Random Series*. Worked in the area of ergodic theory. Became a full professor at Northwestern University in 1968, and retired as Professor Emeritus in 1998 after a distinguished career.

10. Suzan Rose Benedict



Smith College Archives, Smith College

November 29, 1873 - April 8, 1942

Suzan Benedict was born in Norwalk, Ohio in 1873, the daughter of David and Harriet (Dever) Benedict. She received her B.A. degree in 1895 from Smith College with a major in chemistry and a minor in mathematics, German, and physics. She taught high school mathematics in Norwalk from 1895 to 1905 while also working as a real estate agent. She then entered Columbia University, receiving her master's degree in the history of mathematics in 1906. That same year she started teaching mathematics at Smith College where she remained for the rest of her professional career. She continued her graduate studies while teaching and in 1914 became the first woman to receive a Ph.D. in mathematics from the University of Michigan. Her dissertation was on "A comparative study of the early treatises introducing into Europe the Hindu art of reckoning" [[Summary](#)].

At Smith Benedict continued her research in the history of mathematics, publishing papers in the *Mathematics Teacher* and the *American Mathematical Monthly* ("The Algebra of Francesco Ghaligai," May 1929, 275-278 [[Summary](#)]). Through her efforts the Smith College library developed a large collection of rare books on the history of mathematics. She was promoted to the rank of Professor in 1921. Benedict was also a charter member of the Mathematical Association of America, founded in 1915.

Benedict retired from Smith in February, 1942. She died from a heart attack two months later. At that time the Smith College Faculty adopted the following resolution in her honor:

As a teacher her standards were high and her interests wide. She was impatient with those who suggested that any branch of science was too difficult for girls to attempt, yet her less gifted pupils found her patience endless. She was a friendly person, tolerant of failings, modest as to her own attainments but ungrudging in praise of others. These qualities did much to make her department united and harmonious. They endeared her to her classes. The mathematics club has been raising a prize fund in her honor and the amount already collected (more than \$1000) is a proof of her popularity with her students as well as with a wider circle. She was one of the first Class Deans and the members of 1922 and 1926 had reason to be grateful for her appointment. In the words of one of them, "She left an imprint upon our lives which the years will never dim."

Her friendliness was not confined to the College. To her an acquaintance was a friend and people of all sorts and conditions in the town felt that they knew her and will miss her.

As a member of the faculty she had served on every important committee. She had the courage of her convictions and her convictions commanded respect. her colleagues will not forget her sincerity, her intellectual honesty, her unfailing loyalty.

The Suzan Rose Benedict Prize described above was established in 1942 by the President of Smith College and former members of the math club to be given to "a member of the freshman or sophomore class who has done outstanding work in differential and integral calculus."

11. Elizabeth Ruth Bennett

October 9, 1880 - October 15, 1972

Elizabeth Bennett was the first woman to receive a Ph.D. in mathematics from the University of Illinois, and the second Ph.D. overall from that department. She was born in 1880 in Shawnee, PA., and received her A.B. degree in 1903 from Ohio University in Athens, OH. She held a scholarship in mathematics at Illinois for 1907-1908, and a fellowship from 1908-1910. She received her master's degree in 1908 and her Ph.D. in 1910 with a thesis on "Primitive groups with a determination of the primitive groups of degree 20," written under the direction of G. A. Miller. The thesis was later published in the American Journal of Mathematics, Vol 34, No. 1, pp1-20 [[Abstract](#)]. She married John Grennan.

The Elizabeth R. Bennett Scholarship in Mathematics was established in 1974 at the University of Illinois through a bequeath by Elizabeth Bennett. The funds provide scholarships to undergraduate junior and senior math majors.

12. Dorothy Lewis Bernstein



April 11, 1914 - February 5, 1988

First woman President of the Mathematical Association of America (1979-1980).

The following obituary appeared in the July 1988 issue of SIAM News. It is reprinted here with permission of the SIAM News.

Dorothy L. Bernstein, professor emeritus of mathematics at Goucher College, died on February 5 at the age of 73.

After simultaneously receiving bachelor's and master's degrees from the University of Wisconsin in 1934, Bernstein graduated from Brown University in 1939 with a PhD in mathematics [with a dissertation on "The Double Laplace Integral" ([Abstract](#))]. She taught at Mt. Holyoke College, the University of Wisconsin, and the University of Rochester [1943-1959] before joining the Goucher faculty as a professor mathematics in 1959. She taught at Goucher for 21 years, serving as department chair from 1960 to 1970 and 1974 to 1979.

Bernstein was among the early proponents of the use of computers in college mathematics courses. In 1961, largely as a result of her efforts, Goucher College became the first women's college to have its own computer. She was one of the three founders of the Maryland Association for the Educational Uses of Computers and, by developing and directing summer programs, was instrumental in introducing computers into the Baltimore County high school mathematics curriculum.

In the 1970s Bernstein organized a cooperative program for mathematics majors at Goucher College, establishing internships in local industries, business, and government.

During a sabbatical at the Institute for Advanced Study in Princeton, she wrote the book *Existence Theorems in Partial Differential Equations* ([Preface](#)). In addition to her numerous papers, talks, and lectures, she served on many national committees and on the advisory panels of professional societies and the National Science Foundation.

President of the Mathematical Association of America from 1979 to 1981, Bernstein was the first woman to hold that office. She was later elected a Fellow of the American Association for the Advancement of Science. Other honors include an honorary degree from Towson State University for her leadership among mathematician-educators and

citations from MAA for her role in advancing the status of women in mathematics. She was also a member of the American Mathematical Society and SIAM.

13. Joan S. Birman



May 30, 1927 -

Joan Sylvia Lyttle Birman was born in New York City. She attended an all-girls' high school, then went on to Swarthmore College. She transferred to Barnard College of Columbia University, where she received her B.A. in 1948, and then earned an M.S. in physics from Columbia in 1950. That same year she married Joseph Birman, a theoretical physicist. After working for various companies that designed electronic equipment for aircraft and raising three children, Birman returned to school to pursue graduate studies at the Courant Institute of Mathematical Sciences at New York University. She received her Ph.D. in 1968 with a thesis on "Braid Groups and Their Relationship to Mapping Class Groups" [[Abstract](#)]. After teaching for a few years at the Stevens Institute of Technology, Birman joined the faculty at Barnard College in 1973, chairing the department in 1973-1987, 1989-1991, and 1995-1998. She is currently Research Professor Emeritus at Barnard.

Birman has been awarded an honorary doctorate by the Technion (Israel Institute of Technology) as well as other honors such as a Sloan Foundation Fellowship, 1974-76, and a Guggenheim Fellowship, 1994-1995. Her research has been in topology and knot theory in which she has written over 60 research manuscripts and 5 books. The 1996 Chauvenet Prize for expository writing was awarded to Joan Birman by the Mathematical

Association of America for her article "New points of view in knot theory," which appeared in the *Bulletin of the American Mathematical Society* 28 (April 1993), pages 253-287 [[Abstract](#)]. In 2005 she received the New York City Mayor's Award for Excellence in Science and Technology.

Read her [profile](#) from the AWM Emmy Noether Lectures.

Read an [interview](#) with Joan Birman from the January 2007 issue of the Notices of the American Mathematical Society.

See some [Book Reviews and Papers](#) in the Bulletin of the American Mathematical Society written by Joan Birman.

14. Gertrude Blanch



February 2, 1897 - January 1, 1996

Contributed by Dr. David Greer, George Washington University

Gertrude Blanch (1897-1996) was a pioneer in numerical analysis and computation. She was born in Poland, emigrated to the United States in 1907 and graduated from Brooklyn's eastern District High School in 1914. For the next fourteen years, she worked as a clerk in New York so that she might be able to save money for college. She enrolled in NYU night school in 1928 and graduated four years later, Summa Cum Laude, a member of Phi Beta Kappa. She received her Ph.D. from Cornell in Analytic Geometry in 1936 ["Properties of the Veneroni Transformation in S_4 " ([Abstract](#))]. The Depression

was a difficult time to start a mathematical career and she was able to find only a substitute teaching job at Hunter College. In 1938, she became technical director of the Mathematical Tables Project in New York City, a WPA human computer group. At the Math Tables Project, Blanch oversaw 450 human computers who were calculating tables of functions. In all, the group produced 28 volumes of tables, many of which contain no known errors.

During World War II, Blanch and the Math Tables Project worked for the Applied Mathematics Panel of the Office for Scientific Research and Development. She oversaw calculations for the Army, Navy, Manhattan Project and dozens of defense industries. After the war, she joined first the Institute for Numerical Analysis at UCLA and later the Aerospace Research Laboratory at Wright Patterson Air Force Base. She published over thirty papers on functional approximation, numerical analysis and Mathieu functions. She was elected a Fellow in the American Association for the Advancement of Science in 1962 and was given the Federal Woman's Award from President Lyndon Johnson in 1964

15. Lenore Blum



December 18, 1942 -

Written by Lisa Hayes, Class of 1998 (Agnes Scott College)

Lenore Blum was a bright and artistic child who loved math, art, and music from her original introductions to them. Blum finished high school at the age of 16, after which she excitedly applied to MIT, who turned her down for the first of several attempts to

enroll. She began college at Carnegie Tech in Pittsburgh studying first architecture and then math, her real love. For her third year, she enrolled at Simmons, a women's college in Boston, only to find the math courses not challenging enough. She cross-registered at MIT, her first successful foot-in-the-door attempt, and this would prove its worth - she graduated from Simmons but then received her Ph.D. in mathematics from M.I.T. in 1968 ["Generalized Algebraic Theories: A Model Theoretic Approach"]. After this, Blum came to UC Berkeley as a postdoctorate student and lecturer. This only lasted for two years, after which she began to become eminent in the women's mathematics scene, which was in the midst of massive change and re-organization. She was one of the first members of the Association for Women in Mathematics, of which she was later president. In 1973 she was hired at Mills College to teach an algebra class - an experience that she was not satisfied with, and that she was determined to change, to make more interesting and more enjoyable for both instructor and student. She founded the Mills College Math and Computer Science department, serving as its head for 13 years. In the 1980's she decided to become a full-time research mathematician, a decision which has paid off for her, as proven by the numerous talks she has given at international conferences for mathematicians, including a presentation of her work at the 1990 International Congress of Mathematicians in Kyoto, Japan. Since 1988 Blum has been a research scientist in the Theory Group of the International Computer Science Institute, and since 1989, an adjunct professor of computer science, at The University of California at Berkeley. She served as vice president of the American Mathematical Society from 1990 to 1992. From 1992 to 1997 she was Deputy Director of the Mathematical Sciences Research Institute (MSRI) at Berkeley, where she continued to strive towards eliminating negative math stigma for girls and making closer the worlds of mathematicians and math educators in such pursuits.

Blum has been widely recognized as a champion for women and girls in mathematics. As was said, she was a charter member of the Association for Women in Mathematics, as well as a president of the organization from 1975 to 1978. After she transformed the Mills College math courses and became the head of the new department, more and more women there were encouraged to pursue science and math-intensive fields, which in

many cases had not been considered. Blum was also instrumental in founding the Math/Science Network, which started out as Math for Girls, an after-school problem-solving program designed to get girls interested in logic and math. The Math/Science Network now travels nationwide with the same message in the form of workshops and lectures from interested scientists and educators. In 1991, Blum presented a talk on the history of women in mathematical history at the AWM; she represented the AMS at the Pan-American Congress of Mathematicians. Ever since that conference, she has been instrumental in constructing an electronic communications link between America and Africa.

Blum's research, from her early work in model theory, led to the formulation of her own theorems dealing with the patterns she found in trying to use new methods of logic to solve old problems in algebra. She turned her work on this project into her doctoral thesis, which was rewarded with a fellowship. Another of her projects concerned a paper that she and her husband, Manuel, wrote together that proposed designing computers that could learn from examples, much in the way that small children do.

Other highlights of Blum's career include being the first woman editor of *International Journal of Algebra and Computation* (1989-1991) and being elected as Vice-President of the American Mathematical Society (1990-1991).

Lenore Blum spent 1996 to 1998 as a Visiting Professor of Mathematics and Computer Science at the City University of Hong Kong where she co-authored a book on *Complexity and Real Computation* with Filipe Cucker, Mike Shub, and Steve Smale. In the fall of 1999 she became the Distinguished Career Professor of Computer Science at the School of Computer Science at Carnegie Mellon University. Blum presented the 2002 AWM Emmy Noether Lecture on "Computing Over the Reals: Where Turing Meets Newton."

On May 16, 2005, President George Bush announced Lenore Blum as one of the recipients of the 2004 *Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring*. The press release about the award says that

"Lenore Blum of Carnegie Mellon University helped pioneer the Expanding Your Horizons program at Mills College in 1973. The program—designed to introduce young female students to women in science and related careers—has since gone national through the Math/Science Network. Blum's leadership has also been instrumental in transforming the culture of computing at Carnegie Mellon to embrace diversity as critical for the field and future of our nation and by creating a model mentorship organization, Women@SCS, for women students in computer science."

16. Mary Everest Boole



1832 - 1916

Written by Michelle Frost, Class of 1997 (Agnes Scott College)

Mary Everest Boole was born in England in 1832. It was not long thereafter that her father, Dr. Thomas Everest, a minister, moved the family to Poissy, France in order to cure his serious illness. At the time, Mary was five years old and her brother, George, was only two. Although growing up in Poissy gave Mary a chance to be exposed to a different culture and language, life was sometimes difficult and lonely. For example, it was hard for the Everest's, coming from the tradition of an English minister, to live in a town that was French Catholic.

Dr. Everest believed strongly in homeopathy, a medical system whose main objective was to promote health and prevent disease. Some customs of homeopathy were extreme, such as baths in ice water to help resist disease. It was during Dr. Everest's curing process

that Mary stayed very loyal to him, even participating in some of the homeopathic customs.

It was Mary's uncle, George Everest, who made the family name famous. Colonel Sir George Everest was the Surveyor General of India. He was largely responsible for completion of the trigonometric survey of India along the meridian arc from the south of India extending north to Nepal. The completion of the Indian survey allowed the subsequent survey of Mt. Everest (at the time un-named) and calculation of its summit height. It was later renamed in honor of George Everest. Mary and her Uncle George were very close and George had hoped to adopt her. But Mary loved her parents too much to ever agree to the adoption.

Mary's first introduction to mathematics came from studies with her tutor, Monsieur Deplace, of whom she was very fond. His particular style of teaching made it easy for Mary to do well in her studies and this was something she never forgot. Mary once recalled, "Monsieur Deplace is the hero of my idyll. I wish, though I know that the wish is vain, that I could convey any adequate impression of the way in which he enveloped my life with a protecting influence without the slightest interference with either my thoughts or my feelings" (Tahta 9).

The family moved back to England when Mary was eleven. It was there that Mary was taken out of school and became her father's assistant. Mary did such tasks as teaching a Sunday School class and helping her father with his sermons. Yet, Mary did not end her studies altogether. She used the books in her father's library to teach herself calculus. Although she enjoyed math very much, Mary still had many unanswered questions about her studies. It was when Mary visited her aunt and uncle in Cork, Western Ireland that she had the opportunity to have her questions answered.

Through her uncle, Mary met George Boole, an already famous mathematician. Mary enjoyed her time with Boole both socially and intellectually. After her departure back to England, Mary wrote to him. George then came to England two years later to teach Mary

more about mathematics. In addition to tutoring, George was also in the process of writing a book, *Laws of Thought*, to which Mary greatly contributed as an editor.

Mary's father died a few years later and George was a great friend throughout this difficult time in Mary's life. It was from this consolation that a serious relationship grew and, within the year, the two were married. Even though Mary was 17 years younger than George, they were still very close companions and had a very successful marriage. During the next nine years, Mary and George had five daughters named Mary, Margaret, [Alicia](#), Lucy, and Ethel. Yet, this happiness would not last for long. Tragically, George caught pneumonia and died leaving Mary alone with her youngest child only six months old.

In the following year, Mary accepted a job at Queens College, the first women's college in England. During this time, women were not allowed to either receive degrees or teach at the college, so, although her love was teaching, Mary accepted a job working as a librarian. It was through this job that Mary became an unofficial advisor to the students. She realized that not only did she love teaching but also that she was good at it.

Eventually, Mary began to teach children. Mary soon became recognized by even the Head of the London Board of Education as being an outstanding teacher. One of Mary's pupils was to write later, "I thought we were being amused not taught. But after I left I found you [Mary] had given us a power. We can think for ourselves, and find out what we want to know" (Tahta 6).

Due to a controversy over one of her books, Mary was forced to quit her job at the college. Mary found another job as a secretary for her father's friend, James Hinton. Through Hinton, Mary became interested in evolution and the art of thinking. She believed that it was possible to express all basic notions of the universe with numbers and symbols. At the age of 50, Mary began writing a series of books and articles, publishing them regularly until the time of her death.

Mary wrote and published her first book, *The Preparation of the Child for Science*, in 1904. This book ultimately had a great impact on progressive schools in England and the

United States in the first part of the twentieth century. She also invented curve stitching, or what we call today, string geometry, to help children learn about the geometry of angles and spaces.

Mary Boole had a fascination with the science of the psychic or spirit world. It took over fifteen years to get her next book, *The Message of Psychic Science for Mothers and Nurses*, published due to the controversy over the subject matter. It was over this book that Mary lost her job as a librarian.

As time passed, Mary's health began to fail. She died in 1916 at the age of 84. Mary Everest Boole was a miraculous woman who, widowed for fifty years, raised her five daughters and made countless contributions towards the mathematical education of many girls and boys.

Mary considered herself a mathematical psychologist. Her goal was to try "...to understand how people, and especially children, learned mathematics and science, using the reasoning parts of their minds, their physical bodies, and their unconscious processes." (Perl 56). Many of Mary Boole's contributions can be seen in the modern classroom today.

17. Valentina Mikhailovna Borok



[Click](#) for another photo

July 9, 1931 - February 4, 2004

Written by [Svetlana Jitomirskaya](#), USC Irvine

Valentina Mikhailovna Borok was born on July 9, 1931, in Kharkov, Ukraine. Her father, Michail Borok, had a PhD in chemistry and was an expert in material science. His genealogy can be traced back to Vilna Gaon. Her mother, Bella Sigal, was an economist. A top student, Bella began graduate school in the early 1920s, but was soon commissioned for a government job. In the early 1930s she held one of the top positions in the ministry of economics of Ukraine. Because of her mother's position, Valentina had a (relatively) privileged early childhood. Yet, as a Jewish woman at such a high position in the government, Bella couldn't possibly have been spared the repressions of the late 1930s. However, unlike most others, she had a remarkable wisdom to foresee what was about to happen and the ability to act on it. In the beginning of 1937, she voluntarily resigned from her position (giving up the many perks that came with it) by citing family reasons, and took instead a low-key job. That saved her and her family. From that time on, Valentina fully shared the hardships of the majority of the population of Ukraine, including the very difficult years of evacuation during World War II.

In 1949, by the advice of her high school teachers, Valentina decided to study mathematics and was admitted as a math student to Kiev State University. There she met and later married a fellow math student, Yakov Zhitomirskii. They were inseparable for the next 54 years. In her second year of undergraduate studies, Valentina (along with Yakov) started research under the supervision of Georgii Shilov, and quickly established herself as a serious player in her area. Her undergraduate thesis on the distribution theory and applications to the theory of systems of linear PDEs was noted as outstanding and published in a top Russian journal. It was later selected (in 1957) for one of the first volumes of the AMS translations. In 1954, Valentina graduated from Kiev University and moved (following G.E. Shilov) to the graduate school at Moscow State University, where she received a PhD in 1957 ["On Systems of Linear Partial Differential Equations with Constant Coefficients"]. From 1960 to 1994 Valentina Borok worked at Kharkov State University. She became a full professor there in 1970, and from 1983 to 1994 she was the Chair of the analysis department.

Starting in the early 1970s, Valentina founded a school on the general theory of PDEs in Kharkov. Her papers lay a foundation for the theory of local and non-local boundary value problems in infinite layers for systems of PDEs. These results have been further developed and extended by her students. One of her earlier important works includes results on the uniqueness and well-posedness of the solutions of the Cauchy problem for evolutionary systems. These results are still being widely cited 40 years later. Valentina also discovered a number of characteristic properties of parabolic and hyperbolic systems. Her other important contributions were in the area of difference, difference-differential, and functional-differential equations. She was, as many believe, the most prominent female mathematician in Ukraine during most of the 1970s and 1980s.

During her lifetime, Valentina published some 80 papers in top Russian and Ukrainian journals. She supervised 16 PhDs and many more master theses. Students started working with her as undergraduates and then continued through graduate school. However, this was not so for several of her students, including some of the very best ones, who were denied entrance to graduate school because of their Jewish nationality. Instead they had to take mandatory post-graduate full-time jobs, leaving little time for research. Valentina continued working with them informally and encouraged them to pursue their research. After their theses were ready, she worked very hard to organize their defenses at universities in other countries of FSU with other formal advisors. Valentina was a true mother figure to all of her students, and was very much involved in and always ready to help with various aspects of their lives.

Valentina Mikhailovna was considered THE teacher of rigorous analysis in Kharkov State University. That was the course in which all the ambitious math students at Kharkov State got their first taste of research through her famous sets of "creative problems," which were required to get an A. She also developed and published original lecture notes on a number of other core courses, as well as more specialized courses, in analysis and PDEs. She established the curriculum and set the tradition that is being actively used more than 30 years later. Valentina Borok was a brilliant lecturer and an extremely dedicated teacher to her undergraduates.

In 1994, a grave illness forced Valentina to urgently retire and emigrate to Israel, as the necessary medical treatment was unavailable in Ukraine. The last ten years she lived in Haifa. She enjoyed very close relationships with her two children, who often sought her advice and wisdom on various aspects of their lives. Her children, Michail Zhitomirskii and [Svetlana Jitomirskaya](#), both became successful research mathematicians. Valentina Borok was actively involved in raising and educating her five grandchildren at all stages of their growth. Her grandchildren ranged in age from 5 months to 24 years at the time of her death in 2004. At least some of them are continuing her legacy.

18. Marjorie Lee Browne



September 9, 1914 - October 19, 1979

By Erica Fogg, Cecilia Davis, and Jennifer Sutton, students at Carnage Middle School in Raleigh, N.C.

Marjorie Lee Browne was born to Mary Taylor Lee and Lawrence Johnson Lee, in Memphis, Tennessee, on September 9, 1914. Marjorie was encouraged to study math by her father and step-mother (her mother died when she was two).

Marjorie went to LeMoyne High School (a private school) after attending public school in Memphis. Then she went on to graduate cum laude from Howard University in 1935.

She briefly taught at Gilbert Academy in New Orleans. She earned her M.S. in mathematics from the University of Michigan in 1939, then joined the Wiley College

faculty in Marshall, Texas, and started working on her doctorate in Michigan during summers. She became a teaching fellow in 1947 at the University of Michigan. In 1949, Marjorie earned her doctorate in mathematics. She was one of the first two Black women to earn a doctorate in mathematics. [[Evelyn Boyd Granville](#) also received a Ph.D. in mathematics in 1949, from Yale University.]

Doctor Browne went to North Carolina College (now North Carolina Central University) where she taught mathematics after graduating from Michigan University. She soon became the chair of the Mathematics department in 1951; she resigned as department chair in 1970. She stayed at NCCU until she retired in 1979.

In the years of 1952-1953, Marjorie won a Ford Foundation fellowship to study combinatorial topology at Cambridge University and traveled throughout western Europe. Dr. Browne was a National Science Foundation Faculty Fellow studying computing and numerical analysis at the University of California at Los Angeles. When she studied differential topology at Columbia University in 1965-66, she won a similar fellowship.

Four years before Marjorie's retirement, in 1975, Dr. Browne was the first recipient of the W.W. Rankin Memorial Award for Excellence in Mathematics Education, given by the North Carolina Council of Teachers of Mathematics. "She pioneered in the Mathematics Section of the North Carolina Teachers Association, helping to pave the way for integrated organizations," as the award states.

In the last years of her life, Marjorie Lee Browne used her own money to help gifted math students pursue their education. Some students came to her with less than adequate preparations and she helped them pursue study of mathematics and complete their Ph.D. degrees. Unfortunately, on October 19, 1979, Dr. Marjorie Lee Browne died of a heart attack at the age of 65.

Additional Remarks

Marjorie Lee Browne's Ph.D. dissertation was on "Studies of one parameter subgroups of certain topological and matrix groups," written under the direction of G.Y. Rainich at the

University of Michigan. Her paper, "A Note on the Classical Groups," was published in The American Mathematical Monthly, June-July 1955, 424-427. This paper set forth some topological properties of and relations between certain classical groups. Browne writes in the paper that "while much of the material included here may be known to a few, the main interest of this paper lies in the simplicity of the proofs of some important, though obscured, results."

In addition to her own grants and fellowships to pursue mathematical studies, Browne received several grants to support the teaching of mathematics at North Carolina Central University. This institution became the first predominantly Black institution to be awarded an NSF Institute for secondary teachers of mathematics, a program Browne directed for 13 summers. In 1960, through her efforts, NCCU received a grant from IBM for the support of academic computing. In 1969 she obtained for her department the first Shell Grant for awards to outstanding mathematics students. For twenty five years she was the only person in the mathematics department at NCCU with a Ph.D. in mathematics. She taught both undergraduate and graduate courses, and served as an advisor for ten Master's degrees in mathematics.

19. Josephine Elizabeth Burns

July 22, 1887 - ??

Josephine Burns was the second woman to receive a Ph.D. in mathematics from the University of Illinois. Born in Greenville, Illinois, she received her A.B. in 1909 and her Master's degree in mathematics in 1911, both from the University of Illinois. She spent a year at the University of Wisconsin, then returned to Illinois to complete her Ph.D. in 1913 with a thesis on "The abstract definitions of groups of degree 8," written under the direction of G. A. Miller. Her thesis was published in the American Journal of Mathematics, vol 37, no. 2 (April 1915) [[Abstract](#)]. She married Robert D. Glasgow and later became the State Entomologist for the state of New York.

Resources on Women Mathematicians and Scientists

- [Books and Articles about Women in Mathematics](#)
- [Association for Women in Mathematics](#)
Home page for the AWM
- [European Women in Mathematics](#)
EWM is an affiliation for women bound by a common interest in the position of women in mathematics. The organization was founded in 1986 and has its office in Helsinki, Finland.
- [Emmy Noether Lecturers](#)
Profiles of the women who have given the Emmy Noether lectures for the Association for Women in Mathematics.
- [Biographies of Women Mathematicians](#) at the AWM web site.
- [MacTutor History of Mathematics](#)
Biographies of many mathematicians, including a growing list of biographies of women mathematicians.
- [The Davis Archives: Mathematical Women in the British Isles, 1878-1940](#)
This archive contains details of the approximately 2500 women who graduated in mathematics from universities in Britain and Ireland before 1940.
- [Math Medley](#)
From the archives of the weekly radio show hosted by Professor Pat Kenschaft. Discussions with Judy Green ("Women in Mathematics"), Gloria Hewitt ("From My Life and Thoughts"), Jean Taylor ("The Many Facets of Mathematics"), Evelyn Boyd Granville ("Looking Back...Looking Forward"), James Tattersall ("Women in Mathematics"), and Gloria Gilmer ("Ethnomathematics"), among many others.
- [Black Women in Mathematics](#)
Web page by Scott William describing the first thirty years of Black Women doctorates in Mathematics, with information about the women and other interesting and important historical occurrences.

- [A Brief History of Women and Mathematics at Wisconsin](#)
A chronological list of some women mathematicians who received their PhDs at the University of Wisconsin. Also includes a list of all women who received a PhD in mathematics from Wisconsin.
- [4000 Years of Women in Science](#)
The stories of creative women of the past. This includes inventors, scholars and writers as well as mathematicians and astronomers.
- [Distinguished Women of Past and Present](#)
This site has biographies of women who contributed to our culture in many different ways. There are writers, educators, scientists, heads of state, politicians, civil rights crusaders, artists, entertainers and others. Some were alive hundreds of years ago and some are living today.
- [The Ada Project](#)
A collection of resources about women in computing.
- [Women In Mathematics](#)
A web service from the Canadian Mathematics Society for the promotion and celebration of women in mathematics.
- [Posters Celebrating Women in Mathematics](#), created in honour and recognition of some of the world's renown female mathematicians, as part of the displays during the Workshop "Connecting Women In Mathematics Across Canada," December 7-8, 2006 at the Fields Institute, Toronto, Canada.
- [History of Mathematics](#)
Links to many topics in the history of mathematics. maintained at Clark University.
- [Women in Math \(WIM\) at UMCP](#)
Women in Math is an organization at the University of Maryland College Park dedicated to serving the needs of women mathematicians.
- [ECHO Science and Technology Virtual Center](#)
This site was established to catalog, annotate, and review sites on the history of science, technology and medicine. It includes a section on mathematics.

- [Women of Science at the Marine Biology Laboratory \(Woods Hole Inst.\)](#)
Features women scientists representative of the many distinguished women who studied at the MBL in its earliest days.
- [Women of NASA](#)
The "Women of NASA" resource was developed to encourage more young women to pursue science and math based fields.
- [Contributions of 20th Century Women to Physics](#)
An archive presenting and documenting some important and original contributions made before 1976 by 20th century women.
- [Archives of Women in Science and Engineering](#)
The Iowa State University Library documents the history of women in science and engineering--their social history as well as the story of their scientific achievements.
- [Women Nobel Prize Laureates](#)
A list of all the women who have won the Nobel Prize, with links to other sources and organizations about women in science.