

Marjorie Lee Browne

Marjorie Lee Browne (September 9, 1914 – October 19, 1979) overcame society's prejudice against both her race and her gender to become a pioneer for African American women mathematicians, and one of the first females of her race to receive a doctorate in mathematics. She was born in Memphis, Tennessee. Her father, a railway postal clerk, attended college for two years and had a talent for mental arithmetic. He imparted his enthusiasm for mathematics to his very bright daughter.



Browne, whose mother died when she was two. Her schoolteacher stepmother taught her arithmetic and reading before she entered school. After grade school, Browne enrolled in LeMoyné High School, a private Methodist school started after the Civil War to educate Blacks. While there she won the city singles tennis championship. Despite graduating when the country was in the throes of the Depression, she was able to scrape together enough money, through a combination of loans, jobs and scholarships, to attend Howard University in Washington D.C. She graduated *cum laude* with a B.S. in mathematics (1935). She taught mathematics and physics for one year at Gilbert Academy, a private secondary school for Black students, in New Orleans. She then enrolled at the University of Michigan and in 1939 received an M.S. in mathematics. She joined the faculty of Wiley College in Marshall, Texas, and began working towards her doctorate at Michigan during summers. Browne became a teaching fellow at the University of Michigan in 1947 and two years later earned her Ph.D. in mathematics. Her thesis was on “The one parameter subgroups in certain topological and matrix groups” written under the direction of Georg Yuri Rainich.

Browne joined the mathematics department at North Carolina Central College (NCCC) in 1949 and remained there until her retirement in 1979. For the first 25 years of her tenure she was the only mathematics faculty member with a doctorate. She taught five courses a semester at both the undergraduate and graduate level, supervised ten masters' theses and in 1951 became the chair of the department, a post she held until 1970. During the period 1952-53, she won a Ford Foundation fellowship that allowed her to study combinatorial topology at Cambridge University. Browne showed her interest in the continuing education of secondary school mathematics teachers by running summer institutes at NCCC. Through her efforts NCCC became the first predominantly Black institute in the United States to be awarded National Science Foundation funds for this purpose. She authored four sets of notes explicitly for use in these institutes: “Sets, Logic, and Mathematical Thought”, “Introduction to Linear Algebra”, “Elementary Matrix Algebra,” and “Algebraic Structures.” In 1960 Browne

was the principal writer of a proposal for a \$60,000 grant from IBM to fund one of the first Electronic Digital Computers to be used for academic computing. Her only published research article is “A Note on Classical Groups.” Classical groups, so named by Hermann Weyl, are groups of matrices or quotients of matrix groups by small normal subgroups. Weyl called the general linear group, “Her All-embracing Majesty.” Four years before her retirement, Browne became 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 (NCCTM). The award, named in memory of W.R. Rankin, a Duke University mathematics professor, is the highest honor NCCTM can bestow upon an individual. During the last part of her life Browne used her own funds to help gifted mathematics students continue their education. She was always willing to help doctoral students. Browne died at her home of a heart attack at the age of 65.

There has been some dispute as to the actual year Browne received her Ph.D. She completed all the requirements for the degree in 1949, but the earliest graduation ceremony wasn't until February of the next year. Browne always maintained that she had obtained her Ph.D. in 1949. The significance of the conflicting dates is that if 1950 is the official year of her degree, she becomes only the third African-American woman to earn a Ph.D. in mathematics, with Evelyn Boyd Granville moving into second place, following Euphemia Lofton Haynes, who in 1943 was the first African-American woman to earn a Ph.D. in mathematics. It seems appropriate to say a few words about these other two remarkable African-American mathematicians and educators. Martha Euphemia Lofton (1890 – 1980) was born in Washington D.C., the daughter of prominent dentist and financier of black businesses. Lofton received a B.A. from Smith College (1914), a M.A. from the University of Chicago (1930) and a Ph.D. from Catholic University (1943). In 1917 she married educator Harold Appo Haynes. She taught in the Washington D.C. public schools for 47 years and in the early 1960s served as president of the District of Columbia Board of Education. Granville was born in Washington, D.C. on May 1, 1924, and like Lofton-Haynes, she attended Smith College, graduating *summa cum laude*. She received her Ph.D. in mathematics from Yale University in 1949 and subsequently taught at Fisk University, followed by appointments with IBM, the U.S. Space Technology Laboratories, California State University in Los Angeles, and the University of Texas at Tyler. When asked what she considered to be her major accomplishments, Granville replied, “First of all, showing that women can do mathematics [and] being an African American woman, letting people know that we have brains too.”

This is also a good time to say something about Browne's Ph.D. director, Georg Yuri Rainich. He was born in Russia in 1886 and studied mathematics in Odessa, Göttingen, and Munich, taking his final exam at the University of Kazan in 1913.

He taught at Kazan and Odessa until 1922, when he moved to the United States. He was at Johns Hopkins from 1923 to 1926 and then became a professor of mathematics at the University of Michigan. A relativity theorist, he refereed some of Albert Einstein's papers. Rainich claimed that he really learned to teach mathematics during the Russian Revolution and the aftermath when the country was invaded by troops from the West. He taught in a classroom in subbasement often without lights. He observed that if you were able to lecture effectively when you can't see your students and they can't see you, you really knew how to teach. He said teachers should practice their teaching skills by explaining mathematics to others over the telephone. Rainich did not tolerate talking with one's hands and forbade any gesticulation of any sort while discussing mathematics or making classroom presentations. If students forgot and began to wave their hands about while visiting Rainich's office, he ordered the offenders to sit on them for the duration of the meeting. He was a wonderful man, an excellent teacher, and a marvelous mathematician. He was eccentric, a bit absentminded, but not in the least bit demented. Once after WWII, Rainich was talking with an American mathematician, who asked him about a Russian mathematician named Rabinowitz who had written several important papers before WWI, but afterwards none of his work was found in journals. Rainich explained that this was a phenomenon not restricted to Rabinowitz among Russian mathematicians. The government didn't allow mathematicians to publish their work if it was deemed essential to the security of the state. As for the fate of Rabinowitz, he announced, "I am Rabinowitz." As a Jew he found it necessary to change his name to survive various Soviet purges.

Quotation of the Day: "Mathematics is a genderless world." – Karen Uhlenbeck