Edna Kramer Lassar

Edna Ernestine Kramer Lassar (May 11, 1902 – July 9, 1984) greatly influenced those who, like her, believed that if mathematics is to be made meaningful to students and non-mathematicians it would be necessary to enrich presentations with the history of mathematical concepts and mathematicians. To this end Kramer published two of the best expository books written on mathematics in the 20th century. Having long collected historical, cultural, and recreational mathematics materials, she combined these with her knowledge of the applications of mathematics to produce the enjoyable *The Main Stream of Mathematics* (1951) and its sequel *The Nature and Growth of Modern Mathematics* (1970).

Kramer was born in Manhattan, the daughter of Jewish immigrants. She was named for her uncle Edward, who had shown a gift for mathematics but died shortly before her birth. It was her childhood ambition to honor him by doing her very best in mathematics. Kramer originally intended to become a German teacher but WWI ended that plan. Fortunately, as a freshman at Wadleigh High School, she met a mentor and friend for life. John A. Swenson, the chairman of the mathematics department, changed her life by inspiring her to choose a mathematical career.

Kramer majored in mathematics at Hunter College, where she received her B.A. degree summa cum laude and was elected to Pi Mu Epsilon and Phi Beta Kappa. With some help from Swenson, she arranged to continue her mathematical studies at Columbia University while teaching high school mathematics. She earned her M.A. in 1925 and her Ph.D. in 1930. Her doctoral dissertation was on the geometric properties of polygenic functions, supervised by Edward Kasner who had invented polygenic functions around 1927. A polygenic function is one that has infinitely many derivatives at a point. If a function is not polygenic it is monogenic, that is it has a single derivative at a point as the point is approached from different directions in the complex plane. Most complex-valued functions are

polygenic. Either the derivative has one value or an infinite number – there is no intermediate number of values.

In 1929 Kramer became the first female mathematics instructor at the New Jersey Teachers College, later named Montclair State University. During the depression there were few college jobs for anyone, let alone a married Jewish woman. She married Benedict Taxier Lassar, a French teacher and guidance counselor in 1935. Because of the hostility of her chairperson at Montclair, Kramer returned to teaching mathematics in the New York City school system. She combined her high school teaching with consulting while teaching college courses at Brooklyn College. From 1943 to 1945, Kramer contributed to the war effort as a statistical consultant at Columbia University, concentrating on probabilistic strategic tactics for anti-aircraft fire control. An adjunct professor at the New York Polytechnic Institute from 1948 to 1965, Kramer retired from her teaching position at Thomas Jefferson High School in 1956.

Besides her interest in mathematics Kramer, inspired by her former teacher Swenson, championed good mathematical teaching. She stressed the understanding of concepts over the mastery of manipulation techniques. In addition to her articles on teaching mathematics, Kramer wrote *Mathematics Takes Wings (1942)*, which showed the relation of aeronautics to high school mathematical topics. In *The Integration of Trigonometry with Physical Science* (1948), she demonstrated the role of trigonometry in the areas of electricity, sound and light. She also assisted Kasner prepare his popular *Mathematics and the Imagination,* written in collaboration with James R. Newman, and advised Richard Courant in the writing of *What Is Mathematics?* In addition Kramer produced important biographies of women mathematicians for the journal *Scripta Mathematica* and *The Dictionary of Scientific Biography.*

Even after her retirement Kramer remained active in her own education, attending classes at the

Courant Institute from 1965 to 1969. She was a member of many of the American mathematical and scientific associations as well as a few in Europe. In 1973 she traveled to Nanyang University in Singapore to give an invited address, *The Contributions of Women Past and Present to the Development of Mathematics*. For the last ten years of her life Kramer suffered from Parkinson's disease, and she died from pneumonia at her Manhattan home in 1984.

Quotation of the Day: "To understand the development of mathematics, we must have a picture of the men who made the science." – Edna Kramer

Sadly, Kramer must have believed at the time it would not do to amend this statement to read, "… the picture of the men and women who made the science."