Winifred Merrill

Winifred Edgerton Merrill (September 24, 1862 – September 6, 1951) was the first American woman to be awarded a doctorate in mathematics. She had to overcome the stubbornness of the Board of Trustees of Columbia University in believing that a well-bred woman should not enter into the male oriented world. Born in Ripon, Wisconsin, Edgerton's early education was provided by private tutors. At Wellesley College in Massachusetts, she showed exceptional talent in both mathematics and astronomy. After graduation (1883) she worked at the Harvard Observatory, where she made an independent calculation of the orbit of a comet. She applied for admission to graduate school at Columbia, then an all-male institution, but her application was denied.

The question of admitting women to Columbia had raged for most of a century. A growing number of young women with the leisure, money, and inclination sought to improve their minds at universities. State universities began admitting women during the Civil War. Vassar College was established in 1865, followed by Wellesley and Smith in the 1870s. New York City reformers and sympathetic newspapers took up the cause of women's education, and in 1876, the city's foremost women's club, Sorosis, petitioned the Board of Trustees of Columbia to admit women students. Had the matter been left up to Columbia's president, Frederick A.P. Barnard, instrumental in the founding of the National Academy of Sciences, women would have been accepted much earlier. A Yale trained mathematician, who assumed the presidency of Columbia in 1864, Barnard believed that women were a civilizing

influence. He was certain it would be only a matter of time before women were welcomed at every great university. But the decision wasn't his alone. The Board of Trustees had to give its approval, and powerful factions on it led by the Reverend Morgan Dix, rector of Trinity Church, strenuously opposed opening Columbia's doors to women and allowing females and males to take classes together. Dix was concerned that if women were allowed to matriculate the University would attract what he called "persistent agitators of the Boston type," who were at the forefront of the suffrage movement that Dix opposed. Even worse in his eyes was his belief that most such women rejected marriage and practiced a so-called "Boston Marriage," a euphemism for the unspeakable term "lesbianism."

As eager as Barnard was to see his university coeducational, one of his brightest stars, John W. Burgess, Professor of Political Science, believed that Columbia could become a great university like Harvard, Yale, Princeton and German Universities only if it was a serious institution and this could only happen if it remained an all-male school. The following were his reasons for excluding women from a "serious" institution.

1. Women would distract the attention of male students from their "proper work."
2. Women would depress the intellectual level and ultimately debase the school's reputation.
3. On account of their "physical infirmities" women could match neither men's "evenness of scholarship" nor their "constancy of attendance."
4. To be scholars women would put their future as mothers at risk.
5. Since New York City fathers usually sent their sons to colleges outside the city and preferred to keep their daughters at home, Columbia ran the risk of becoming nothing more than a female seminary.
6. Then there was the danger that allowing female matriculation would lead to accepting the daughters of immigrants and worse reduce the school to a "Hebrew female seminary."

Edgerton met Barnard through Melvil Dewey, the inventor of the famed Dewey Decimal System for classification of books, who had moved from Wellesley to become Columbia's librarian. Barnard urged Edgerton to apply again and suggested that she make personal appeals to each of the Columbia Trustees. She did so, arguing that in order to study astronomy she needed access to a telescope and only Columbia University had one, as well as a professor of astronomy who needed an assistant. She gained the support of all of trustees including the Reverend Dix, who gave his reluctant support when Edgerton pointed out that she was not making application to the College but only to the graduate school. This technicality satisfied Dix, who assumed she would only pursue her advanced studies on a tutorial basis. This wasn't the case as she took several classes with male students.

One of her sons reported "that a condition of her admission was to dust the astronomical [instruments] and so comport herself as not to disturb the men students. … When working alone in the observatory she would arrange dolls around the room to keep her company. If she heard someone coming she hid them in a window box." On completing the required course of study and submitting an original thesis, dealing with geometric interpretations of multiple integrals and translations and relations of various systems of coordinates, she applied to the trustees for a doctorate. In 1886 she received a Ph.D. *cum laude*.

Edgerton turned down an offer to become a professor of mathematics at Smith College in Massachusetts in 1887 to marry Frederick Merrill. He received a doctorate from Columbia in 1890 and served as the New York State geologist from 1899 to 1904. The Merrills had three children, two sons and a daughter. In 1889 Winifred Merrill was a member of a committee urging Columbia to establish Barnard College for women. Frederick forced his wife to resign from the committee claiming it was unseemly for women to attend meetings held in men's offices. When the couple moved to Albany, the

Lieutenant Governor asked her to serve on the local school board, but her husband forbade her to participate in anything so unladylike. Although she took on the trustees of Columbia and prevailed, she could not stand up to her husband who ruled the roost until he died in 1916.

In 1906 Winifred Merrill founded the Oaksmere School for girls, in New Rochelle, New York and moved it to Orienta Point, Mamaroneck, New York in 1914. Noted for its high standards, it even had a branch, called Oaksmere Abroad, which was opened in Paris in 1912. In its 1920-21 catalog, its rationale for being was given as: "The inspiration of Mrs. Merrill's School for Girls is a concept of the position of the modern woman in her home, in the social organization, in business life, and of the education and training the girl should receive to give her distinction in these activities." The 1922-23 *American Private Schools* made the following financial observation about Oaksmere: "For some years it has maintained the reputation of being the highest price school and is patronized by those who spend freely." Tuition that year for its 75 students was a staggering $2000. The same entry described Merrill as "a woman of personal charm and an unusually capable business executive." Working with Robert Bennett, who taught music at the school and was married to her daughter, Merrill developed a theory that people's signatures translated through a mathematical formula onto a musical scale could reveal the person's character!

Merrill continued working at Oaksmere until it closed in 1926, at which time she took a position as the librarian at the Barbizon Hotel for women in New York City. While residing at the hotel she wrote articles on education for publication in journals and became a popular speaker on educational matters. She was a trustee of Wellesley, and on the fiftieth anniversary of her graduation from the school, a portrait of her by H.E. Ogden Campbell was presented to Columbia. It hangs in the office of the Executive Vice President in Low Library with the inscription "She opened the door." She was residing with her son, Hamilton Merrill, in Fairfield, Connecticut, when she died at age 88. In an obituary

appearing in the *New York Times*, was the sentiment: "All those interested in educational progress owe a debt of gratitude to the late Mrs. Winifred Edgerton Merrill … in the old battle for their higher education, in which she played so notable a part."

Although Merrill was the first American woman to be *awarded* a doctorate in mathematics, technically she was not the first woman to *earn* a Ph.D. in mathematics. That distinction goes to Christine Ladd-Franklin, who graduated from Vassar in 1869 and for the next ten years taught school and published mathematical articles. She applied to Johns Hopkins to study mathematics, encouraged by James Joseph Sylvester, then the head of the mathematics department. At the time Hopkins did not admit women, but she was given permission to attend Sylvester's courses. She also took courses from other members of the department, and continued to contribute articles to mathematical journals. In 1882 she wrote a dissertation, directed by Charles Sanders Peirce. However, Hopkins refused to confer upon her a doctorate. Forty-four years later, when she was 78, Hopkins finally awarded Ladd-Franklin her Ph.D.

Quotation of the Day: "In this age of innovation perhaps no experiment will have an influence more important on the character and happiness of our society than the granting to females the advantages of a systematic and thorough education. The honor of this triumph, in favor of intellect over long established prejudice, belongs to the men of America." – Sarah Josepha Hale, 1828