RAGSDALE, Virginia. December 13, 1870–June 4, 1945.
Guilford College (BS 1892), Bryn Mawr College (BA 1896, PhD 1904).

Virginia Ragsdale's parents, Emily Jane (Idol) (1841–1934) and Joseph Sinclair Ragsdale (1836–1903), natives of North Carolina, met and were married in 1866, after Joseph Ragsdale's return from fighting in the Civil War. There were four children of the marriage: Lula May, born in May 1867 and died in July 1867; (Julia) Ida (1868–1911); Virginia; and William Gannaway (1874–1929). Before her marriage Ragsdale's mother had attended various boarding schools and seminaries in Davidson County, North Carolina, and had taught in county public schools. Virginia Ragsdale was born in Jamestown, North Carolina, and her father, who owned and taught in a small private school early in his career, became a cotton manufacturer there and a prominent business man in the state.

Virginia Ragsdale first attended the private Flint Hill School in Jamestown. Other early education was obtained at the high school in Jamestown, at the Salem Female Academy, and by private study. She entered the Salem Female Academy as a junior and graduated as valedictorian with an extra diploma in piano in 1887, three years before the academy was renamed Salem College. In 1891 Ragsdale entered Guilford College in Greensboro, North Carolina, a coeducational institution that had been founded by the Society of Friends in 1837 and was known as the New Garden Boarding School until 1889. She graduated after one year with the class of 1892.

Upon graduation Ragsdale became the first person to receive Bryn Mawr College's newly established scholarship of four hundred dollars for being the Guilford woman with the highest scholastic average in her class. She spent the next five years at Bryn Mawr, and, although listed on the commencement program for 1904 as a graduate student in mathematics during that period, she actually studied for a second bachelor's degree that she received after four years in 1896. She completed her mathematics major by 1894 and then took post-major courses, that is, courses open to graduate students and undergraduates who had completed the major. These courses included the theory of functions, modern analytic geometry, and algebra. Before 1896 Ragsdale also took both major and minor courses in physics, minor courses in chemistry, and several German and Latin courses. She was elected European fellow for the class of 1896. Rather than immediately taking the fellowship, Ragsdale remained at Bryn Mawr for a year as both an assistant demonstrator in physics and as a graduate student in mathematics, taking post-major courses in higher plane curves and the theory of substitutions and auditing classes in German literature and Italian art. During that year, 1896–97, Ragsdale also participated in the newly formed Mathematical Journal Club, which met every other week to "receive reports on special topics and listen to outline accounts of interesting theories that do not naturally present themselves in the regular graduate work" (Bryn Mawr College, President's Report to the Board of Trustees 1896–97). In addition to the Bryn Mawr faculty and graduate students, both Frank Morley and E. W. Brown of Haverford presented papers at the journal club.

In March 1897 Charlotte Scott wrote to Felix Klein that she was "expecting to send two of [her] best students to Göttingen next year" (Felix Klein Nachlass XI, Universitätsarchiv Göttingen, Niedersächsische Staats- und Universitätsbibliothek).

Scott was referring to Ragsdale and Emilie Martin, an 1894 Bryn Mawr graduate in mathematics who also continued as a graduate student and who had also been awarded a fellowship to study in Europe. Ragsdale spent the year 1897–98 studying with Felix Klein and David Hilbert at the university in Göttingen. Both Ragsdale and Martin attended Klein's lectures on "Mechanik." When she returned from Germany Ragsdale did not immediately return to her formal graduate studies. Rather, she taught mathematics and science at the Bryn Mawr School in Baltimore for three years. It was not until she received in 1901 a fellowship awarded by the Baltimore Association for the Promotion of University Education of Women that Ragsdale returned to her studies. She studied at Bryn Mawr College 1901–03 and held the resident fellowship in mathematics in 1902–03. Ragsdale spoke to the Bryn Mawr journal club in December 1901 on the topic in algebraic geometry of her dissertation, which was directed by Charlotte A. Scott. She passed her examination for the PhD in September 1903, presenting as her major subject pure mathematics and as her minor subjects, physics and applied mathematics. Ragsdale's fellowships to Bryn Mawr ended in 1903, and she returned to teaching, this time in New York City at Dr. Sachs' School for Girls.

Ragsdale's PhD was conferred at the 1904 commencement. Her dissertation was not published until 1906, and this later date often appears as the date of her degree, including on Bryn Mawr College registers of alumnae. However, according to the secretary to the president of Bryn Mawr writing to Helen Owens in May 1936, "the dates of publication of the Bryn Mawr PhD Theses ... do not correspond in any regular way with the dates of conferring the degrees. Our general rule about publication is that the dissertation must be published within three years of the conferring of the degree" (Owens Papers).

In her dissertation Ragsdale proved that if all smooth sixth degree curves that have the maximum number of components arise in one of two ways, then certain restriction must hold on the number of ovals that can lie inside other ovals. What has become known as the "Ragsdale Conjecture" is that those restrictions always hold. This conjecture, never explicitly made by Ragsdale, is a generalization of the assertion David Hilbert made in 1891 that a smooth sixth degree curve that has a maximum number of components has at least one oval that is internal to another oval. The Ragsdale Conjecture was proved to be incorrect in 1979 by Oleg Viro and much has been written on it since then, including a 1996 expository article by Viro and Ilia Itenberg. Articles have continued to appear that address the characteristics of counterexamples to the conjecture.

Ragsdale continued to teach at Dr. Sachs' School for Girls until 1905 and then was at her home in North Carolina the following year. She resumed teaching and was head of the department of mathematics at the Baldwin School in Bryn Mawr 1906–11. During this time she maintained her connections with Bryn Mawr College; she spoke in the journal club, and from 1908 to 1910 she assisted Scott as a reader.

After the death of her sister in 1911, Ragsdale moved back to North Carolina to take a position at the State Normal and Industrial College in Greensboro, chartered twenty years earlier as the first state-supported school for the higher education of women in North Carolina. It was renamed North Carolina College for Women in 1919 and is now the University of North Carolina at Greensboro. During the years 1911 through 1926 she was instructor, associate professor, and then professor, and was head of the department from 1926 until 1928. She had taken a leave of absence

during the academic years 1913–14 and 1914–15, and spent most of that first year at the Highlands Camp Sanatorium, with a lung lesion, later determined not to be tubercular. In 1928, when she was not yet fifty-eight, Ragsdale retired to be with her mother and help manage a family farm. Helen Barton had joined the faculty at the college the previous year.

After her mother's death in 1934, Ragsdale had a house built on the Guilford College campus and became part of the Guilford community. She was a member of the executive committee of the Guilford College Alumni Association, belonged to the Friday Afternoon Book Club and the college Art Appreciation Club, and was a member of the Society of Friends at New Garden Friends Meeting. She was an avid and skilled gardener and was a devoted and much loved aunt to her thirteen surviving nieces and nephews. She was interested in genealogy and submitted a question to the *William and Mary Quarterly* that was published in 1930.

Virginia Ragsdale died at Wesley Long Hospital in Greensboro at age seventy-four in 1945 after several months of declining health. Interment was in Deep River Friends Meeting Historic Cemetery in nearby High Point, North Carolina. Her house was bequeathed to Guilford College and now stands as Ragsdale House, the home of the president of the college. In 1950 the Dr. Virginia Ragsdale Residence Hall was built on the campus of the University of North Carolina at Greensboro.

Organizational affiliations: AMS, MAA (charter member).

Dissertation:

1904 On the arrangement of the real branches of plane algebraic curves. PhD dissertation, Bryn Mawr College, directed by Charlotte Angas Scott. Printed version, 1906, Lord Baltimore Press, Baltimore, MD, reprinted from *Amer. J. Math.* 28:377–404.

Publication:

1906 On the arrangement of the real branches of plane algebraic curves. *Amer. J. Math.* 28:377–404. Published version of PhD dissertation. Reviews: *Bull. Sci. Math.* 2nd ser., 31, pt. 1: 266–67 (J. Tannery); *JFM* 37.0595.02 (E. Meyer); *Rev. semestr. publ. math.* 15, pt. 2: 2 (P. H. Schoute). Presented to the AMS, New York City, 29 Apr 1905; abstract: *Bull. Amer. Math. Soc.* 11:464 #4.

References to: BioWMath, WomWWA.

"Death Claims Dr. Ragsdale." unidentified newspaper clipping, 5 Jun 1945.

Gilbert, Dorothy Lloyd. "Virginia Ragsdale." *Guilford College Alumni Journal* 38 (December 1945): 4, 15.

Viro, Oleg. "Curves of Degree 7, Curves of Degree 8 and the Ragsdale Conjecture." English translation, *Soviet Math. Dokl.* 22 (1980): 301–6.

Itenberg, Ilia and Oleg Viro. "Patchworking Algebraic Curves Disproves the Ragsdale Conjecture." *Math. Intell.* 18 (4) (1996): 19–28.

Related manuscript material:

Ragsdale, Virginia, 1870–1945. Friends Historical Collection. The Library. Guilford College. Greensboro, North Carolina.

Other sources: PhD dissertation life 1906; Owens questionnaire 1940; Owens Papers; Bryn Mawr College Archives and correspondence with archivist; Universitätsarchiv Göttingen, Niedersächsische Staats- und Universitätsbibliothek (Felix Klein Nachlass) and correspondence with archivist; Guilford College Friends Historical Collection; University of North Carolina at Greensboro Archives; Kenschaft, "The students of Charlotte Angas Scott"; US Census 1870, 1880, 1900, 1910, 1920 NC, 1900 MD.

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