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WEEKS, Dorothy W. May 3, 1893–June 4, 1990.

WELLESLEY COLLEGE (BA 1916), MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MS 1923, PhD 1930), SIMMONS COLLEGE (MS 1925).

Dorothy Walcott Weeks was born in Philadelphia, Pennsylvania, the second of three children of Mary (Walcott) (ca. 1869–1932) and Edward Mitchell Weeks (1866–1959) who married in 1889. Her mother was born in New York and graduated from the Girls' High and Normal School (now Philadelphia High School for Girls), a secondary school, in 1887. Her father was born in New Jersey and studied art in Philadelphia and at the Corcoran Art School in Washington, D.C. Later he was a law student at George Washington University, received an LLB in 1907, and practiced patent law for a time. Primarily, however, he worked as an engraver, first for private companies and then for the US Bureau of Printing and Engraving.

Her brother, Robert Walcott Weeks (1890–1964), was born in New York City and received a bachelor's degree in 1913 and a master's degree in 1914 from the Massachusetts Institute of Technology. Both Dorothy Walcott Weeks and her sister, Ruth Walcott Weeks (b. ca. 1897), fulfilled a longstanding dream of their parents that if they ever had a daughter she would go to Wellesley. Ruth Weeks, who was described as musical by her sister, graduated from Wellesley in 1919, three years after her older sister.

The Weeks family moved from Cheltenham, Pennsylvania, to Washington, D.C., in 1900. Dorothy Weeks attended public schools there and graduated from Western High School, where her freshman and sophomore mathematics teacher, Nannie J. McKnight, was a Wellesley graduate who had been in the same class as [Helen Merrill](#). Weeks credited McKnight with stimulating her interest in science and mathematics and enrolled at Wellesley College with the intention of studying those subjects. She graduated in 1916 with a mathematics major, having taken all the courses in physics, mathematics, and chemistry that were offered, including three full-year mathematics courses from Helen Merrill and two full-year physics courses from Louise Sherwood McDowell, her mentor and later closest friend. While there she was also a member of the Shakespeare Society and continued her interest by attending meetings of the society when she lived in the Boston area in the 1920s. It was through the Shakespeare Society that Weeks had informal contact with many faculty members including Ellen Fitz Pendleton, president of the college and former member of the mathematics department, and Louise McDowell.

Until she graduated from college, Weeks had intended to teach high school mathematics. She wrote in her unpublished memoir "Fun on the Fringes": "I was shocked to hear that a classmate who had flunked Mathematics in college was to teach that subject in a high school! I realized then that this kind of position would not interest me. Financially it was out of the question for me to do graduate work. There were few assistantships and fellowships available at that time" (p. 501). She reported that women were then not being hired by the National Bureau of Standards so she decided to become an assistant examiner in the US Patent Office in Washington, D.C. There were six examinations to pass: mathematics, physics, chemistry, scientific French or German, mechanical drawing, and "technics." She later wrote that "before I passed these examinations and received an appointment to the U. S. Patent Office, I registered as a substitute teacher in the high schools of Washington. . . . The principal of Fairmount Seminary . . . was in need of someone that fall of 1916 to teach most of the liberal arts courses" ("Fun on the Fringes," 503). She was hired to teach eight classes, six of which had only one or two students: chemistry, two algebra courses, plane geometry, beginning Latin, and Cicero and Horace. She also taught two classes of rhetoric with six and twelve students, one of whom was the actress Tallulah Bankhead. Weeks described her as "the most outstanding student I had, not necessarily academically" ("Fun on the Fringes," 504).

In spring 1917, still having trouble scoring high enough on the mechanical drawing and “technics” examinations, Weeks was a statistical clerk with the Office of Farm Management in the Department of Agriculture. She passed the patent office exams on her fourth try (the average number of attempts before passing was five) and in August 1917 joined one other woman among the four hundred examiners. She was the third woman to have been appointed a patent examiner, one having already retired. She also recalled that one did not have to wait as long as earlier since men were being drafted for World War I. She continued, “This is one thing that I’ve always resented, that my opportunities have come through wars, which is no way for women to get their opportunities” (Sopka interview, 6).

In order to qualify for a promotion, which she received, Weeks studied Substantive Patent Law at George Washington University for a year in the evenings. In March 1918 she applied to Cornell University to study physics and chemistry and was admitted. In July of that year she was admitted to candidacy for an MA degree with experimental physics as her major subject and theoretical physics as her minor subject. She studied at Cornell during the summers of 1918 and 1919. On October 13, 1919, Weeks wrote to the dean of the Graduate School at Cornell that she had “registered at George Washington University for an M.S. degree” in physics and wanted her work at Cornell to be counted. However, it appears that she never attended classes at George Washington. In 1920 she worked for the National Bureau of Standards, accepting a lower salary but attending classes given there by the physics faculty of the Johns Hopkins University. She returned to the Patent Office in June 1920.

During the summer of 1920, Edwin Wilson, the head of the physics department at MIT, wrote to the heads of physics departments at several women’s colleges, including Louise McDowell at Wellesley, seeking to hire assistants. In September 1920 Weeks joined the instructional staff of the physics laboratory at the Massachusetts Institute of Technology as a laboratory assistant in the electrical laboratory; in 1922 she was made an instructor. She also studied while working at MIT and received her MS in experimental physics in June 1923. She chose the subject of her master’s thesis because she was assisting Newell C. Page in his work with x-rays. After receiving her degree she taught college preparatory courses in physics part time at the Buckingham School in Cambridge, Massachusetts, while retaining her instructorship at MIT. In January 1923 Samuel Stratton became president of MIT. Stratton had been director of the National Bureau of Standards and only allowed women employees there when forced to during World War I. That spring Weeks began considering leaving MIT. In November 1923 she wrote to Cornell University to find out how much credit she could receive towards a PhD. She learned that no summer work would count toward residency and that her MIT work would not be evaluated until after she had registered; she did not return to Cornell. Instead, she attended the Prince School of Retailing at Simmons College 1924–25 while working at Filene’s and became a supervisor for women at the Jordan Marsh department store in Boston in 1925 while still studying. She received a master’s degree from Simmons in 1925. She became hiring supervisor at Jordan Marsh and remained in that position until September 1927. She then held a temporary position doing statistical work for a researcher at the Harvard Medical School.

In February 1928 Weeks returned to MIT for graduate work. She was also a three-quarter-time instructor of physics at Wellesley College 1928–29. During the summer of 1929 she taught mathematics at her alma mater, Western High School. Although she was offered a position teaching physics in a women’s college in India, she decided to remain a student at MIT and in 1929–30 held a Horton-Hallowell fellowship given by the Wellesley alumnae association. Courses in theoretical physics, by then her real interest, were offered in the mathematics department. Her dissertation advisor was Norbert Weiner, but she also worked with D. J. Struik in connection with the matrices developed in her dissertation, which she described as both physical and mathematical. She received her PhD in 1930.

During the summer of 1930 she worked in Washington, D.C., as an expert technical advisor to the US Civil Service Commission.

After receiving her PhD, Weeks went to Wilson College, a women's college in Chambersburg, Pennsylvania, to develop the physics department and serve as the professor and head. It was only ninety miles from Washington, and early in her first years at Wilson she frequently drove home to see her family, especially the first two years when her mother was ill. The summer after her first year at Wilson she taught mathematics and chemistry at Central High School in Washington. She spent the summer of 1932 doing research in Cambridge, England. That summer she attended the International Congress of Mathematicians in Zurich and the International Federation of University Women convention in Edinburgh. She traveled to Europe with Louise McDowell in the summer of 1934 and returned to Cambridge for several weeks that summer. The following summer she returned to MIT and began a research program in atomic spectroscopy. She was not the only woman who was involved with spectroscopy. In fact, the abstract of Weeks's papers at MIT that appears in WorldCat notes that her papers "include material concerning the MIT 'Charm School', the women who gathered together during summer terms to work ... in the spectroscopy lab."

Weeks had become fascinated with spectroscopy several years earlier and thought it was a subject that could be understood by her undergraduate students at Wilson. She later explained that it was through Louise McDowell at Wellesley that she "became aware of the need for continuing growth of the faculty if students were to receive an enriched education. It was therefore necessary for [her] ... to continue research, in a field not only interesting to [her] but also readily understood by undergraduates" (1974, 32). Her research was supported by a grant from the American Academy of Arts and Sciences when she spent the first semester 1937–38 at MIT. Through 1950, except for the war years, she returned to work in MIT's spectroscopy laboratory during her vacations and while on sabbatical. This research led to a 1944 paper in the *Transactions of the American Philosophical Society*.

During World War II, Weeks first taught electricity and mechanics for an engineering science management war course at Wilson. From 1943 to 1945 she worked as a technical aide in the liaison office of the US Office of Scientific Research and Development (OSRD) supervising the British reports section. After the war she returned to Wilson College as professor of physics and head of the department but continued her position with the OSRD on a part-time basis through the end of 1946. She was a Guggenheim fellow at MIT and at laboratories in England and northern Europe 1949–50 and was a consultant to the National Science Foundation 1953–56. In 1954 she served as secretary, and then vice president, of the newly formed Central Pennsylvania Section of the American Association of Physics Teachers.

Weeks retired from Wilson in 1956 and moved to Wellesley to live with Louise McDowell (1876–1966), her former Wellesley physics teacher, mentor, and long-time friend. In Massachusetts Weeks began an eight-year association as a physicist with the Ordnance Materials Research Office of the Army Materials Research Agency at the Watertown Arsenal. She soon became their technical representative to the Committee on Radioactive Shielding. From 1956 to 1962 she coordinated a project that developed shielding material for use against nuclear weapons. In September 1964, two months after she was forced to retire from her position with the army, Weeks went to the Harvard College Observatory as a part-time spectroscopist as a member of the NASA-supported Solar Satellite Project. She stayed there twelve years, until her final retirement in 1976 at age eight-three. In 1966–71 she was also a physics lecturer at the Newton College of the Sacred Heart, where she worked to set up an undergraduate physics major.

Dorothy Weeks and Louise McDowell had traveled together over the years, and they purchased a summer cabin in the White Mountains in Randolph, New Hampshire, in 1946. Their last European trips together were to Paris in 1956 and to Helsinki in 1959. McDowell required full-time care from late 1960 until her death in 1966. In 1961 Weeks

bought McDowell's house in order to ensure that McDowell could remain there; Weeks subsequently bequeathed the house to Wellesley College.

In 1973 Weeks spoke at a panel, "Change and Continuity," when MIT commemorated a century of granting degrees to women. That year she also wrote her memoir "sitting at the table desk that was Miss [Helen] Merrill's" ("Fun on the Fringes," 405). It was deposited at the American Institute of Physics, Center for History of Physics.

Inspired by Ellen Fitz Pendleton, Weeks was active in the AAUW throughout her career and received its achievement award in 1969. She joined the Washington Branch in 1916, when it was still called the Association of Collegiate Alumnae (ACA), and was its treasurer 1918–20. Later she served as president of the Pennsylvania-Delaware Division 1938–40, as a member of the fellowship awards committee 1944–53, as chairman of the international grants committee 1946–53, as a member of the college faculty awards committee 1961–64 and 1965–66, and as president of the Boston Branch 1963–67. She was also active in the International Federation of University Women and was a member of the relief committee 1947–53 and the fellowship awards committee 1954–59. Just before retiring from Wilson College, she was president of the Central Pennsylvania Section of the American Association of Physics Teachers 1955–56, having previously been vice president. She was also a member of the board of corporators of the Woman's Medical College of Pennsylvania from 1946 to 1955 and was a member of the Washington Philosophical Society. She was the Wellesley College reunion chairman several times before World War II and then again for her fiftieth and fifty-fifth reunions. In 1973 she wrote, "Now I have been appointed reunion chairman for life" ("Fun on the Fringes," 1508).

Weeks received honorary degrees from Regis College, MIT, and the Medical College of Philadelphia. She was one of forty-five graduates to be interviewed on their college experience for a Wellesley centennial publication, *Wellesley After-Images*. On May 12, 1980, she was interviewed for the Wellesley Oral History Project, which retains a tape recording of that interview. Wellesley's alumnae association gave her its alumnae achievement award in 1983 to recognize "her career as teacher, physicist and leader in women's education" (Hartmann, "There are Diversity of Gifts").

In a letter written in October 1986 that appeared the following June under the heading "Women in physics," Weeks replied to a series of letters on that topic. She described herself as "a retired woman physicist who this past May had her 93rd birthday. I retired when I was 83. I have just attended my 70th class reunion at Wellesley College." She described her career and noted that "the responsibilities assigned me were independent of sex. Education, ability and personality are the important factors that should be considered when a person is appointed to a position" (*Physics Today* 40 (6): 15).

Dorothy W. Weeks had been living in Wellesley before she died, following a stroke, at the Newton-Wellesley Hospital in Newton, Massachusetts, at age ninety-seven in 1990. She was survived by her sister. A memorial service was held at St. Andrew's Episcopal Church in Wellesley.

Organizational affiliations: AMS, Amer. Assoc. of Phys. Teachers, Amer. Phys. Soc., Optical Soc. of Amer., AAAS, AAUW, Internat. Federation of Univ. Women, Phi Beta Kappa, Sigma Xi.

Thesis and dissertation:

1923 The determination of the crystalline structure of some metals and oxides by x-rays. MS thesis (physics), Massachusetts Institute of Technology, directed by Newell Caldwell Page.

1930 A study of the interference of polarized light by the method of coherency matrices. PhD dissertation, Massachusetts Institute of Technology, directed by Norbert Wiener. See also **1934a** and **1934b**.

Publications:

1934a Three mathematical methods of analyzing polarized light. *J. Math. Physics* 13:371–79. Part one of published version of PhD dissertation. Reviews: *JFM* 60.0755.03 (J. Picht); *Zbl* 011.18902 (J. Picht). Presented as “A study of the interference of polarized light by the method of coherency matrices” to the AMS, Providence, RI, 12 Sep 1930; abstract: *Bull. Amer. Math. Soc.* 36:642 #365.

1934b A study of sixteen coherency matrices. *J. Math. Physics* 13:380–86. Part two of published version of PhD dissertation. Reviews: *JFM* 60.0756.01 (J. Picht); *Zbl* 011.18903 (J. Picht). Presented as noted in **1934a** above.

1944 An analysis of the Zeeman patterns of the spectrum of Fe 1. *Trans. Amer. Philos. Soc.* n.s. 34, pt. 2: 181–206. Part 2 of monograph “The arc spectrum of iron (Fe 1)” by H. N. Russell, C. E. Moore, and D. W. Weeks, *Trans. Amer. Philos. Soc.* n.s. 34, pt. 2: 113–206. Review of monograph: *J. Roy. Astron. Soc. Canada* 39:320–21 (F. S. Hogg).

1946 with L. Pearce. The problem of atomic energy. *J. Amer. Assoc. Univ. Women* 39:81–82.

1951 After our international students return home. *J. Amer. Assoc. Univ. Women* 44:89–90.

1955 Woman power shortage in the physical sciences. *J. Amer. Assoc. Univ. Women* 48:146–49.

1960 Women in physics today. *Phys. Today* 13 (8): 22–23.

1962 Editorial: The Land-Grant colleges. *J. Amer. Assoc. Univ. Women* 55:109.

1971 Women – who extend scientific knowledge. *Wellesley Alum. Mag.* 55 (Summer): 1–2.

1974 The best possible education. In *Wellesley After-Images: Reflections on their College Years by Forty-Five Alumnae*, 31–33. Los Angeles: Wellesley Club of Los Angeles, 1974.

1975 with H. B. Creighton. The early years in the sciences: pioneer professors. *Wellesley Alum. Mag.* (Winter) 59:28–29.

Technical report:

1967 with E. A. Simpson. *Absorption Spectrum of Iron in the Vacuum Ultraviolet 2950–1588 Å*. Harvard College Observatory Scientific Report no. 19. Cambridge, Mass.: Harvard College Observatory.

Abstracts not listed above:

1938 with G. R. Harrison. New survey of the spectrum of the international iron arc in the range 10,000 to 200Å. *Phys. Rev.* 54:312 #4. Presented to a meeting of the Amer. Phys. Soc., Toronto, ON, Canada, 24–25 Jun 1938.

1953 What can the small college do in the way of a modest research program in physics? *Amer. J. Phys.* 22:149 #2. Presented to a meeting of the Amer. Assoc. Phys. Teachers, Lewisburg, PA, 23–24 Oct 1953.

1965 Absorption spectrum of Fe I in the vacuum ultraviolet. *Astron. J.* 70:696. Presented to a meeting of the Amer. Astron. Soc., Ann Arbor, MI, 3–6 Aug 1965.

References to: AmMSc 5–8, 9P–11P; AmMWSc 12P–13P, 14–18; AmWomTe; BiDWSci; DcWomW; OutEdAm 1970; WhoAmW 1–6; WomFir.

“Dorothy W. Weeks – 1969 Achievement Awardee,” *AAUW Journal* 63 (1970): 89.

“Dorothy Weeks, 97, A Physicist Who Led in Variety of Careers.” (Obituary) *New York Times*, 8 Jun 1990.

“Dorothy Weeks, Was Physicist, Educator and Researcher; at 97.” (Obituary) *Boston Globe*, 9 Jun 1990.

Hartmann, Shannon W. “There Are Diversities of Gifts, But the Same Spirit...” *Wellesley Magazine*, Winter 1991, inside back cover.

Related manuscript materials:

Weeks, Dorothy Walcott. Papers, 1940–1980, MIT Archives and Special Collections.

Response to 1988 History of Nuclear Physics Survey (bound, unpublished memoir entitled “Fun on the Fringes”). American Institute of Physics, Center for History of Physics. College Park, Maryland.

Unpublished interviews:

Weeks, Dorothy Walcott, 1893–1990. Interview by Katherine Russell Sopka, 19 Jul 1978. American Institute of Physics, Center for History of Physics, College Park, MD. Transcript. Dorothy Weeks. Interview by Barbara Viechnicki, 12 May 1980, 28 Dover Rd., Wellesley, MA. Wellesley Oral History Project, Wellesley Historical Society.

Other sources: PhD dissertation vita 1930; Division of Rare and Manuscript Collections, Cornell University Library; NCAB 46 (Weeks, Edward Mitchell); US Census 1910, 1930 DC, 1930 MA.

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