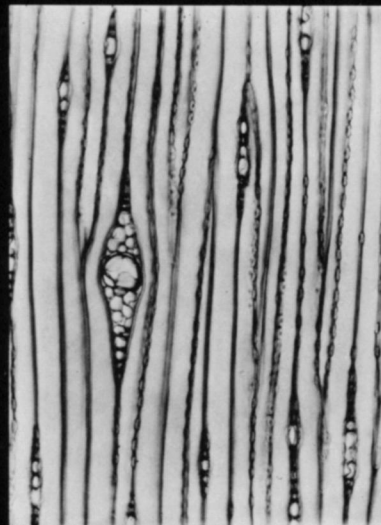
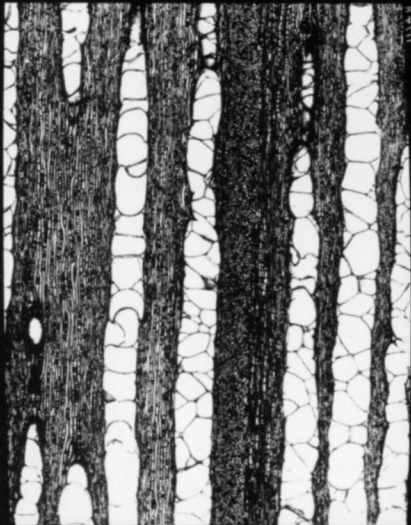




A WOMAN OF FOREST SCIENCE



All photographs in this article were provided by the Forest Products Laboratory, courtesy of the author. Top: Eloise Gerry, probably in 1908 at graduation from Radcliffe College. Left: Tangential view of post oak, magnified fifty times, showing tyloses (see also caption for cover photo, page 127). Right: Tangential view of shortleaf pine, magnified twenty-five times, giving an end-view of resin ducts, which radiate out from the center of the tree. Systematic wounding of the tree yields a basic raw material for the naval stores industry.

Eloise Gerry

by Lida W. McBeath

DIMINUTIVE FIVE-FOOT Eloise Gerry arrived in the university town of Madison, Wisconsin, in early June of 1910. Born in Boston twenty-five years before, she bade goodby to her native New England and embarked on a long, adventuresome, and distinguished career as a wood microscopist with the U.S. Forest Service at its newly built Forest Products Laboratory (FPL).

This purposeful young lady held both bachelor's and master's degrees from Harvard University's Radcliffe College for women, where she had specialized in the anatomy of wood and trees and their physiological responses. When the Forest Service offer reached her, she held a fellowship at Smith College, Northampton, Massachusetts. By 1921 she would earn a Ph.D. from the University of Wisconsin. Gerry was the first woman appointed to the professional staff of the laboratory and one of the first women in the United States to specialize in forest products research.

Perhaps the inspiration for Gerry's choice of career went far back into her childhood. Although born a city child, she had been suddenly transplanted from Boston to a country community. For a few years she lived in the foothills of the White Mountains at the boundary between New Hampshire and Maine. She remembered in particular a teacher in the country school near a pine woods. The teacher taught not only from books but offered and shared her enthusiasm, appreciation, and understanding of the migrating birds, the spring wildflowers, and particularly, the trees of that area. It was not surprising that later in college she majored in botany. She wrote a master's thesis entitled "Distribution of 'Bars of Sanio' in the Coniferales."

She readily admitted that she was offered a job at FPL because she had something the laboratory was looking for and needed — highly specialized training for cutting wood specimens and preparing photomicrographs. At Harvard she had mastered Professor Edward C. Jeffrey's exceptionally fine technique for cutting hardwood tissues that show the distribution and appearance of wood cells. When Jeffrey was asked to recommend someone, he recommended Eloise Gerry. "I must admit the Forest

Service did not want a woman," she recalled, "but as it happened there wasn't any man willing to come and do the work."¹ She entered the Forest Service as an expert, without examination — salary \$1,000 per annum. Only five months later, however, she had to spend an entire day in the old post office building on Madison's Capitol Square writing a Civil Service examination for the position of microscopist.

She had arrived a few days after the laboratory's formal opening and dedication. Soon after she was fortunate to meet Chief Forester Gifford Pinchot. She remembered Pinchot as dynamic enthusiasm personified. "Along with the handful of other young and eager workers, I was presented to him, and I shall never forget his friendly handshake and his 'Ah! I always believed that there was much to be gained by research with the microscope!'"²

In the summer of 1910, FPL had neither a microscope nor a microtome. The botany department of the University of Wisconsin provided quarters in Science Hall for Gerry, as well as the use of a microscope. Jeffrey loaned her one of his German microtomes until the laboratory could obtain one suitable for slicing wood.

In 1910 professionally trained wood technologists were a rarity. The staff of the laboratory was assembled from various other laboratories throughout the United States where timber had been tested. Thus the staff was largely and necessarily young men. The first director, McGarvey Cline, too, was a young man, but Gerry remembered him as having all the dignity and calm of an elder statesman when he handled the new and rapidly increasing problems and demands that were immediately submitted from the field services and from industry.

Gerry's first project was collecting woods of the United States. She recalled, "We had very few samples, mostly samples discarded when expositions and fairs were dismantled." Harry D. Tiemann,

¹An Oral History Interview with Dr. Eloise Gerry, conducted by Donald G. Coleman (Madison, Wisconsin: Forest Products Laboratory, 1961), p. 2.

²Eloise Gerry, "Some Highlights from Forty-four Years at the Forest Products Laboratory," paper presented at laboratory forum, Forest Products Laboratory, Madison, Wisconsin, 3 November 1954, p. 3.

chief of the Section of Timber Physics and her first supervisor, had done some field collecting of authentic material, and gradually four-foot logs cut and finished to show bark, end, and side began to decorate the halls.³

Her job was to prepare microtome sections and photomicrographs of all of the native species. When she began, the FPL wood collection contained only a few hundred samples. Today the collection, the world's largest, holds about 100,000 specimens, including about 20,000 species from more than 2,000 genera.

In the first years, Gerry amassed data on native woods useful in wide areas of wood utilization — from analyses of the relation between wood properties, tree growth conditions, and preservative treatments to aircraft fabrication. Her work on wood structure included radial, tangential, and cross-sectional slides of native species. A single key to the slides makes it possible to identify almost any specimen submitted to the laboratory.

Always one of diverse interests, Gerry felt that after the novelty of the work wore off, she would settle into a few years of rather monotonous routine—cutting, staining, mounting, and photographing seemingly endless thin slices of wood. But the “monotony” was brief.

Treating wood with preservatives was comparatively new, and the laboratory was carrying out research to standardize treating methods. Effective treatment was directly related to the problem of how moisture moves through wood. Gerry's investigations with the microscope helped to correct some misconceptions about water movement, and offered new findings as well.

IN 1914 HER fundamental research resulted in a publication on tyloses, the plugging of wood cells which restricts the movement of liquid, and their importance to cooperage and wood preservation industries. “Tyloses: Their Occurrence and Practical Significance in Some American Woods” appeared that year in the first volume issued by the U.S. Department of Agriculture's *Journal of Agricultural Research*. Gerry believed that she practically introduced and made tyloses a word for the scientific household. Until then it was almost unheard of by young engineers, chemists, and even some foresters. Her microscope work led early in her career to a long and intimate association with the southern naval stores industry. It was to be one of her most significant contributions to the economic well-being of the United States.

In the early years of this century, the South's naval stores industry was thought by many to be dying. Primitive methods of obtaining oleoresin



from southern yellow pines was a major problem, because the trees could not survive the destructive wounds from large hacks. The Forest Service was experimenting with modified methods of tapping trees. Gerry was asked to study the problem by cutting thin slices of tree tissue to find out how and where the oleoresin was produced. She did, but in her own way.

Many unsolved questions were being referred to the laboratory; Gerry received her share of them. Finally she balked. She felt the questions could not be answered without more direct information from the living trees, obtainable only in the forest itself. “Impossible,” her supervisors said, “No place for

³*Ibid.*, p. 3.



In the 1920s Eloise Gerry made thorough studies of the effect of various methods of chipping on the physiology of southern pines. This research led to important reforms in the production of naval stores. In the series of photos at left, Gerry demonstrates the benefits (more turpentine and less scar) of chipping at a lower height. The middle photo shows the former Forest Service method, and the photo at right indicates the common practice of the time.

By 1916 Gerry headed for Columbia, Mississippi. The FPL was involved in developing a new turpentine hack and started a double-chipping experiment. She packed microtome and microscope and set up a laboratory on a pine table in a cottage in the piney woods. Each day she walked three miles into the timber. It was then perhaps that she adopted her almost lifelong habit of wearing dark brown stockings and brown hi-laced shoes or sturdy oxfords.

In the southern woods her microscope revealed evidence to back up the theory that less scar meant healthier trees and more turpentine.

The Lab sent me on to New Orleans to the industrial leaders, and the novelty and femininity of a woman thinking she could give advice gained me entree into their inner offices [she was then thirty-one years old]. My letter of introduction was a photomicrograph. "Did you ever see the inside of your trees?" I would ask. "These are resin ducts!" Oldtimers were intrigued into listening and later into cooperating.⁶

Gerry, clad in the uniform of the U.S. Forest Service, worked in Florida's Choctawhatchee National Forest. "I rode horseback with the ranger and traversed many a crop in a Model T Ford making its way through sandy 'Lizzy wallows.' That was the beginning of more than 15 years of intensely interesting work."⁷

World War I interrupted the naval stores project, and Gerry turned to developing better methods of selecting wood for the exact uses in aircraft, and in teaching the fundamentals of wood structure. "World War I claimed our attention before all else. The results of the Laboratory's early work were invaluable for the National defense program and the Laboratory expanded into a number of University buildings on the agriculture campus. New research

a woman." Snakes were the least of the deterrents enlarged on!⁴

Dr. B. Francis Kukachka, who pioneered research in descriptive anatomy of wood at FPL, remembered that Gerry could be intractable if she was convinced that she was right. Others remember her as being "the earnest little woman with microscopes, projection slides, and friendly manner . . . [and] a persistent little dynamo of feminine energy."⁵

⁴*Ibid.*, p. 8.

⁵F. A. Streng, "We Present Eloise Gerry," *Journal of Forestry* 45 (November 1947): 827.

⁶Gerry, "Some Highlights from Forty-four Years," pp. 8-9.

⁷*Ibid.*, p. 8.

and teaching and training Army personnel quickly took shape, for wood played a *conspicuous* part in the War.”⁸ In 1917 she participated in a series of lectures at Cornell University entitled “Wartime Uses of Our Forests.”

Her most intensive work on naval stores was undertaken after World War I. The earlier pioneering in oleoresin production on a part-time basis led to establishment of year-round naval stores stations of the Southern and the Southeastern Forest Experiment Stations and to their continuing contributions to reduce timber damage and costs of operation. She worked in cooperation with veteran forester Dr. Austin Cary of the Washington Office, who was then working in the field. Cary wanted explanations for what he saw in turpentine yields and the responses in trees. Gerry worked with him in the test plots in several states. It was during this period in 1921 that she was granted a Ph.D. by the University of Wisconsin. Her seventy-six page dissertation on work she knew well was titled “Oleoresin Production: A Microscopic Study of the Effects Produced on Woody Tissues of Southern Pines by Different Methods of Turpentine.”

Drs. Gerry and Cary learned to know the men of the naval stores industry, the timber owners, the children of the piney woods schools, and the woods operators. They talked in small-town movie theaters, YMCAs, and commissary stores of the naval stores operators. This team also worked with men from the bureaus of Chemistry, Entomology, and Plant Industry, and other groups, including the Pine Institute of America, the Southern Forestry Congress, and the American Forestry Association. In later years, Gerry told her colleagues, “Such experience

⁸*Ibid.*, p. 9.

teaches that the Laboratory does not stand alone but is an integral part of a splendid team, an agency of the American people, all having a share to make democracy work.”⁹

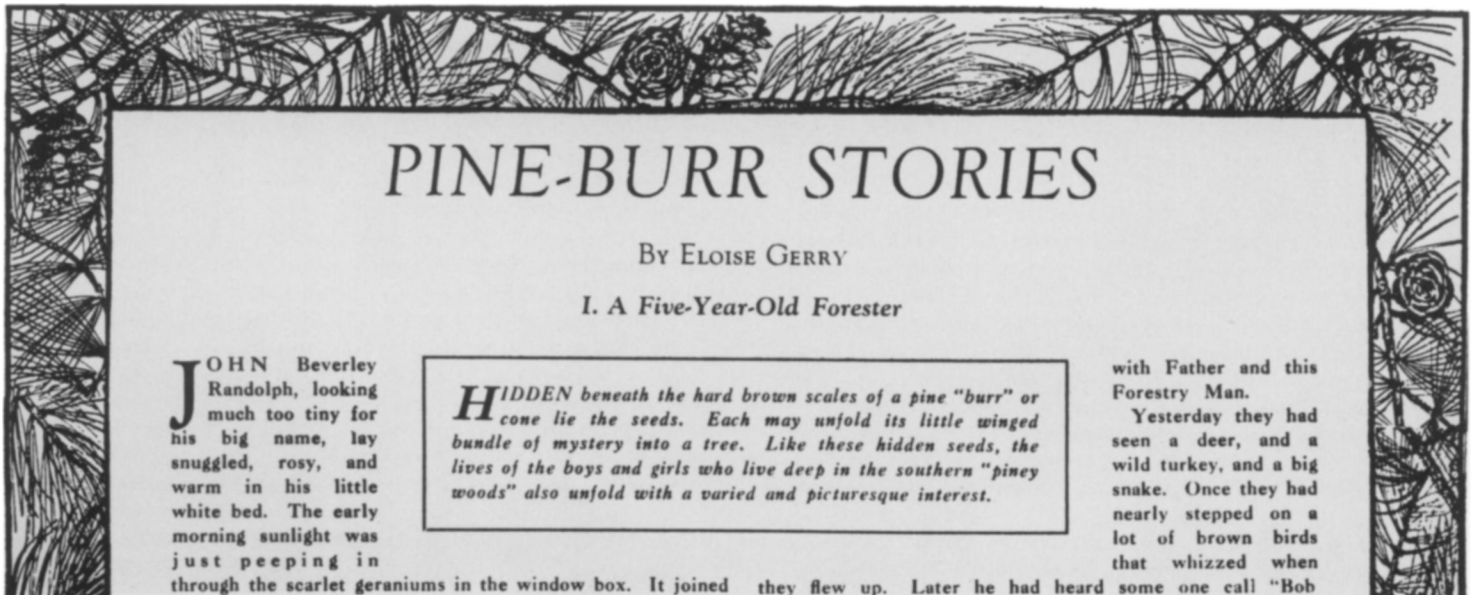
The summation of the naval stores work was published in 1935 in the comprehensive *Naval Stores Handbook*. Gerry edited the 201-page book and contributed chapters on wood structure, physiology, and foreign naval stores production. The handbook climaxed a series of publications on naval stores in periodicals, both technical and trade, and in government reports and papers.

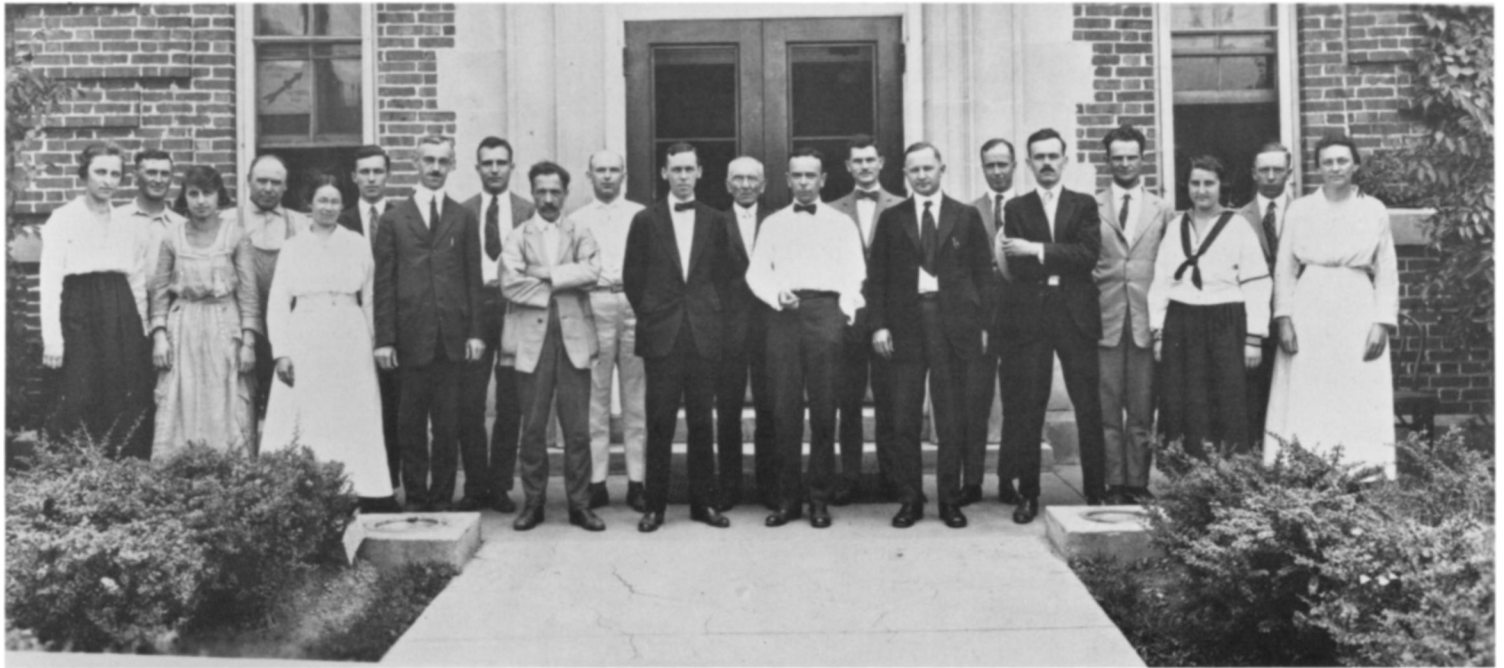
In her travels through the piney woods, Gerry remembered the children and their need to understand their forests and their forest crop. She lifted many a youngster to look through her microscope at the minute, intriguing structures that exist inside a tree. Her concern led her to write a series of short stories for children, “Pine-Burr Stories,” that were published in *American Forests and Forest Life*.¹⁰

DURING WORLD WAR II, longtime FPL Director Carlile P. (“Cap”) Winslow (1917-46), as he had in World War I, anticipated a need for instructional courses in packaging. Although World War I had been concentrated in Europe, the second was global; materials had to be packaged for climates as diverse as those of Alaska and the tropics. Winslow turned over to Gerry the task of assembling all of the available information that might be used in

⁹*Ibid.*, p. 10.

¹⁰Eloise Gerry, “Pine-Burr Stories,” *American Forests and Forest Life*, Pt. 1, “A Five-Year-Old Forester,” 30 (October 1924): 618-19; Pt. 2, “Virginia’s Visit,” 30 (November 1924): 666-67; Pt. 3, “Makin’ Christmas,” 30 (December 1924): 736-37, 764, 766; Pt. 4, “What Uncle Nathan Did,” 31 (January 1925): 48-49.





Gerry, the third woman from left, posed with some of the staff members of the Forest Products Laboratory about 1917. Director Carlile P. ("Cap") Winslow, in white shirt and bow tie, stands at center.

courses on boxing and crating, kiln drying and seasoning, and aircraft inspection. She wrote FPL war-time publications on defects in woods used for trainer aircraft and gliders—the objective was to use precious wood most wisely. She shared in an investigation of Douglas-fir bark to determine whether it could be a source of cork, because traditional sources from North Africa and southern Europe were curtailed.

After the war, she took over new and important work on foreign woods that had been handled by Dr. Warren D. Brush. The first letter given her to answer in 1910, the year she arrived at FPL, had been an inquiry about a foreign wood. She insisted that she “just naturally” accumulated information on foreign species — their habitats, nomenclatures, descriptions, and physical and mechanical properties.¹¹ The results of fifty-six investigations at FPL are reported in a Foreign Wood Series that begins with “agba” and ends with “wusizi.” She had resisted offers to specialize in the foreign woods area, preferring research of physiology and response mechanisms. But reluctantly she admitted that work on foreign woods was both essential and interesting.

Dr. Robert L. Youngs, director of the laboratory, recalled: “I was just a rookie at the Lab in the few years before Dr. Gerry retired. Answering letters seeking information on wood drying was one of my first assignments. I soon learned that Dr. Gerry was a reservoir of information on properties of for-

eign woods.”¹² In 1954 in an all-laboratory forum, just prior to her retirement, she reminded fellow staffers that most of them knew her as a sort of “file cabinet on foreign woods.”¹³ Actually she had become an international expert on properties of commercially used species of foreign woods.

Gerry noted to FPLers: “We forget that each day counts, and there are all too few for significant living. That is why one may feel an unexpected ‘lift’ when, after long hours spent answering a particularly difficult letter (on a foreign species) instead of working on a more tempting project, an acknowledgment arrives: ‘Thank you so much; you told us just what we needed to know. We did not realize that such helpful information existed.’”¹⁴

Her ability to use words is reflected in the more than 120 publications in technical and trade journals, in FPL publications as well as those of the Forest Service and the U.S. Department of Agriculture. Her “Trees for Turpentine and Timber May Pay on Poor Cropland” appeared in the 1928 *Yearbook of Agriculture*. In 1933 she was the only woman of FPL’s staff to participate in the first radio broadcast from the lab on a national hookup, a part of the National Farm and Home Hour.

Her efficient and crisp manner of speaking is well remembered by those who either heard her speeches to scientific societies, her lectures on forest products to classes at the University of Wisconsin, or her

¹¹Gerry, “Some Highlights from Forty-four Years,” p. 12.

¹²Personal communication, R. L. Youngs to author.

¹³Gerry, “Some Highlights from Forty-four Years,” p. 12.

¹⁴*Ibid.*, p. 12.

programs on wood products from the University of Wisconsin radio station WHA. Her subjects ranged from structure of wood, tree growth, forest products from living trees, and maple sap to oleoresin from southern pines. In 1945 her topic on WHA was "Forest Products War Research Brings Better Things for Peacetime."

WHAT CAN WE tell of this scientist and her attitude toward women's liberation? It is just possible that Dr. Gerry wanted not only to be known, but to be remembered as "Eloise" Gerry. Rarely if ever did she use only her given initial. Of the two women of the FPL staff listed in the index of the *History of the U.S. Forest Products Laboratory*, she has her given name included, while Dr. C. Au-

drey Richards, chief of the Pathology Division, is listed as "C. A. Richards."¹⁵ She was well on the way to liberating herself in 1904 when she enrolled at Radcliffe College. In 1921 a writer asked: "Is work such as this [investigating the structure of wood by microscope] a possible sphere for other women?" She was enthusiastic, she was definite, she was thirty-six years old, and she answered: "Emphatically, yes! Not a large number of workers, either men or women, are working, or are likely to work in the rather highly specialized field of study of the structure of wood, but there is a certain steady demand for a limited number of such workers."¹⁶

In 1933 *The National Altrusan* asked: "Does this field offer opportunities for other women?" She

Portraits of Gerry from the 1930s: at right, with microtome and microscope; below, with her dog.



replied, although less emphatically: "Broadly, yes. Scientific research whether Federal, State, or private is an excellent and satisfying, if not a highly remunerative field, for a well-trained worker. Being a woman is now less of a handicap than in many other lines of work. . . ."¹⁷ Shortly before she retired, she was circumspect to her colleagues: "I

¹⁵Charles A. Nelson, *History of the U. S. Forest Products Laboratory* (Madison, Wisconsin: Forest Products Laboratory, 1971), pp. 167, 173.

¹⁶"How a Northern College Girl Became Interested in the Naval Stores Industry," *Savannah Weekly Naval Stores Review and Journal of Trade* 10 (October 1921): 15, 34.

¹⁷"Through the Microscope in Forest and Laboratory: The Trail in Industrial Advancement in Modern Times Is Blazed by Research," *The National Altrusan* (March 1933), pp. 5-7.



In 1961 Donald G. Coleman, chief of the Laboratory's Division of Research Publications and Information, interviewed Eloise Gerry about her long career. The transcript of the interview is one of the sources for this article.

could say a few words about the position of women in the Forest Service, a general subject of very great interest to me, but it has constantly, if slowly, improved through the years, so I refrain. The numbers and opportunities have steadily increased. I, myself, would never have been here in the first place had Dr. Warren Brush, formerly of the Washington Office, been willing to leave Washington in 1910. They desired a man for the job."¹⁸

Six years after her retirement, she was asked: "If you were just starting out after your university years, would you recommend that the opportunities are here to continue in forestry in your type of work?" She replied, this time with more caution: "Definitely limited and much more difficult for women still, although opportunities for women have increased, and the Forest Service has a number of women who made real contributions. Some of them married the men they worked with, too, you know!"¹⁹

She held numerous offices and memberships with Forestettes (women's organization at FPL), the National League of American Pen Women, the Madison Colony of New England Women, the P. E. O. Sisterhood (a philanthropic educational organization for women), Altrusa (a women's service club), the Dane County Humane Society, the Wisconsin Women's Legislative Council, the American Association of University Women, the Badger Kennel Club, and the State Historical Society of Wisconsin as well as its Women's Auxiliary. She belonged to several garden clubs, including that of suburban Shorewood Hills. There she had built and maintained her home surrounded by a miniature woodland filled with prolific wildflowers. There she overlooked Lake Mendota, which borders the University of Wisconsin and the Forest Products Laboratory.

Her professional and honorary memberships were also numerous and included Phi Beta Kappa, Sigma Delta Epsilon, Sigma Xi, American Chemical Society, American Forestry Association, Society of American Foresters, Forest History Society, and International Association of Wood Anatomists. She was a fellow of the American Association for the Advancement of Science.

Throughout her long, active life until her final illness, Eloise enjoyed remarkably good health. After her retirement, she was game, eager to be an active member of her clubs and social groups. She had learned to drive a car early in her adult life and could transport herself with dispatch. On the night of her eightieth birthday, a cold January 12th in Madison, she was her usually peppy, brisk self. When her lighted birthday cake was carried in, her eyes beamed with pleasure and she seemed proud: "I'm 80 years old today!"²⁰

She was dedicated to her work, she loved her friends, her dogs, and found time for the volumes of books that lined her office shelves and those in her spacious living room. She had an excellent collection of publications by Wisconsin authors. "I always intended to go back to New England, but I became so interested in the work here — and when you put your roots in as long as 44 years, you belong."²¹

A longtime dear friend, neighbor, and FPL colleague, the late Benson H. Paul, said of her: "She has given of herself not only in scientific fields but in the world about her with the generous impulses of a warm heart. Evidently, she has made a life pattern from the living forest that gives and gives yet seeks nothing in return."²² □

²⁰Observations of the author.

²¹Jo Ann Beier, "Dr. Gerry's New Life Starts at 71," (Madison) *Wisconsin State Journal*, 16 September 1956, sect. 6, p. 6.

²²Donald G. Coleman, "Eloise Gerry — Forest Products Laboratory," *Wisconsin Academy Review* (Spring 1955), pp. 26-29.

¹⁸Gerry, "Some Highlights from Forty-four Years," p. 7.

¹⁹*An Oral History Interview with Dr. Eloise Gerry*, pp. 11-12.