

Pioneering *Plant Pathologists*



Roland Thaxter 1858–1932

Thaxter studied under W. G. Farlow, receiving a Ph.D. degree in natural history from Harvard in 1888. He was the first plant pathologist hired under the Hatch Act and became the first plant pathologist stationed at the Connecticut Agricultural Experiment Station. He described many diseases and discovered the cause of potato scab in 1890. Thaxter also designed a knapsack sprayer and was a pioneer in introducing fungicides into the U.S., including one of the first used for control of a soilborne disease (onion smut). Thaxter returned to Harvard after three years at the experiment station and went on to become a world-renowned mycologist.



William Gilson Farlow 1844–1919

Farlow was America's first plant pathologist. He graduated from Harvard University in 1870 and after studying in Europe for two years with Anton deBary, spent the remainder of his career as a professor of cryptogamic botany at Harvard. Farlow developed the herbarium at Harvard and worked on Peronosporaceae. He was a founder of the journal *Annals of Botany* and instructed many of America's outstanding early plant pathologists, teaching the first plant pathology course in the U.S. Farlow was a charter member of APS.



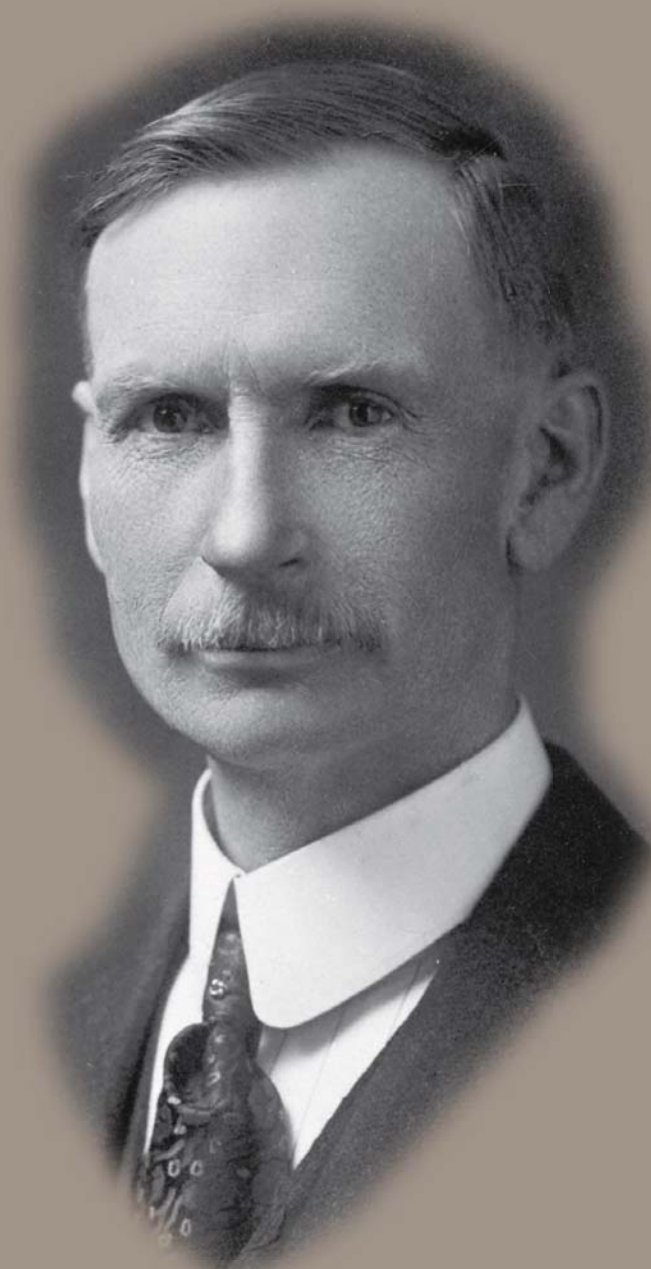
Benjamin Minge Duggar 1872–1956

Duggar received an A.M. degree from Harvard University, working under W. G. Farlow and R. Thaxter, in 1895 and a Ph.D. degree from Cornell University in 1898. He was a charter member of APS and served on the first council. He wrote the first plant pathology textbook in this country, *Fungous Diseases of Plants*, published in 1909, and in 1924 completed a second textbook, *Plant Physiology, With Special Reference to Plant Production*. After becoming an emeritus professor in 1943, Duggar continued to work as a consultant for Lederle Laboratories, where he discovered new antibiotics in soil. Duggar made advances in the understanding of cotton root rot and discovered the conidial state of the pathogen, which resulted in the transfer of the species from *Ozonium* to *Phymatotrichum*. He also worked with crown gall and TMV and was the first to estimate the size of the virus particle.



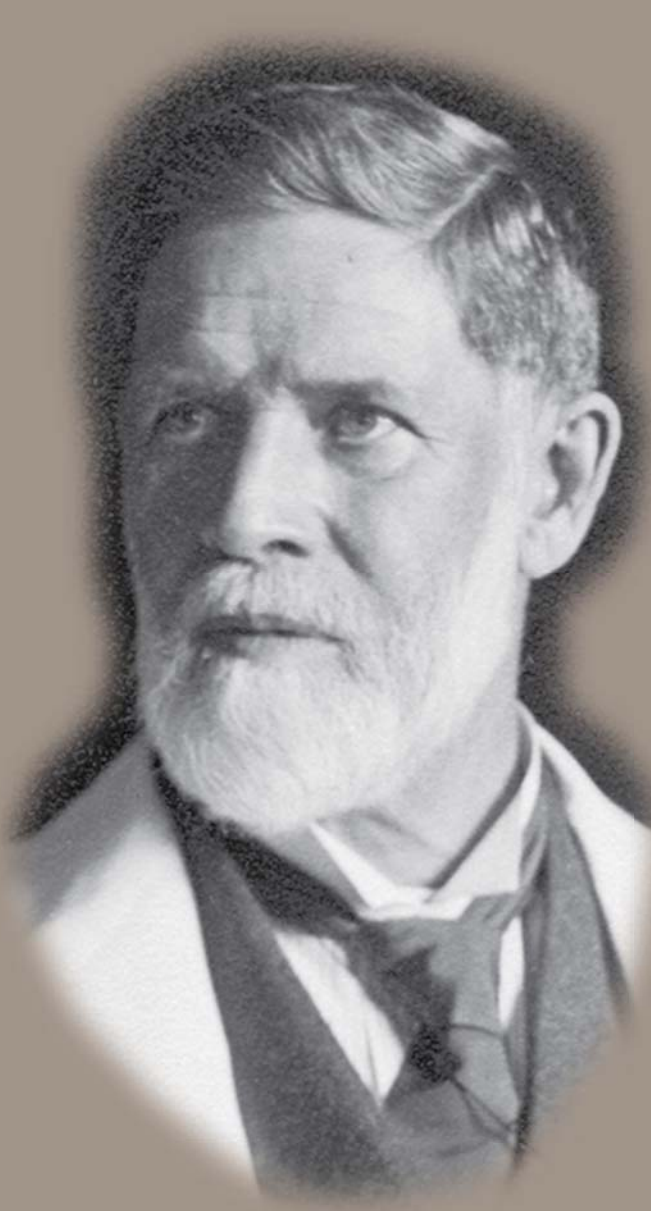
Lewis Ralph Jones 1864–1945

Jones was a charter member of APS, the first president of the society, and the first editor-in-chief of *Phytopathology*. Jones completed a bachelor's degree at the University of Michigan in 1889 and worked on early and late blight of potato and soft rot diseases at the University of Vermont. He demonstrated the usefulness of Bordeaux mixture as a suitable control measure for late blight in the U.S. and collected late blight-resistant varieties of potato from Europe for use in breeding programs in the U.S. His work on soft rot of carrot was the basis for his Ph.D. thesis, received from the University of Michigan in 1904. In 1910, Jones became the first chair of the Department of Plant Pathology at the University of Wisconsin. He promoted a very high quality of education and research at Wisconsin, rapidly elevating this department to become a leader in plant disease research.



Cornelius Lott Shear 1865–1956

Shear was a charter member of APS. He studied under C. E. Bessey at the University of Nebraska, receiving a B.S. degree in 1897 and an M.A. degree in 1900. He began employment with the USDA's Bureau of Plant Industry in 1901. During his career, Shear worked on a number of diseases, most notably, cranberry diseases, Texas root rot of cotton, and black rot of grape. Shear was highly regarded among fellow plant pathologists and was one of the most influential pathologists of his time. This level of leadership and respect positioned Shear to be one of the primary leaders in seeing the need for and establishing APS.



Erwin Frink Smith 1854–1927

Smith obtained a bachelor's degree in 1886 from the University of Michigan, and in 1889, he was awarded a doctor's degree for work on peach yellows. In 1886, Smith was employed by the USDA, a position he held for 40 years. Smith played a major role in establishing the field of phytobacteriology, and in his effort to demonstrate the importance of bacteria in plant disease, he showed that the U.S. was becoming a leader in plant pathology research. His interest in bacteriology was driven partially by his desire to discover the cause of peach yellows. He also spent a portion of his career working on *Fusarium* diseases of a variety of crops. He collaborated with W. A. Orton, and their work led to the development of disease resistance. Smith was a charter member of APS.

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Herbert Hice Whetzel 1877–1944

Whetzel was a charter member of APS. He began his graduate work at Cornell in 1904. Just two years later, he became an assistant professor and the following year a professor and the head of the Department of Plant Pathology. He remained head until 1922, opting then to leave administration and return to a career in teaching and research. Whetzel authored over 300 publications, had major roles in organizing two scientific societies, and had developed a worldwide reputation for his energetic research and teaching. He was also instrumental in the development of the Cornell Herbarium, which had over 30,000 accessions at the time of his death. Whetzel had great enthusiasm and passion for teaching, in both the classroom and the field, and was a strong advocate of extension research.



Ralph Eliot Smith 1874–1953

Smith graduated from the Massachusetts Agricultural College at Amherst in 1894, where he remained until 1903. He then moved to California to help work on asparagus rust, which he discovered could be controlled by sulfur dust. As the only plant pathologist in the state and backed by the state's agriculture industry and legislature, Smith led the way in bringing the study of plant pathology to the University of California campuses. His research program spanned a wide array of crops and diseases, including brown rot of stone fruits, olive knot, peach shot hole, and celery blight. Smith was a charter member of APS and served as the first president of the Pacific Division.



Beverly Thomas Galloway 1863–1938

Galloway was the most influential figure in the early growth and development of plant pathology and plant science within the USDA, starting in 1887. Promoted to section chief in 1888 and Director of the Office of Plant Industry in 1900, Galloway oversaw the expansion of plant disease research within the USDA. He rose through the ranks of the USDA, becoming the Assistant Secretary of Agriculture in 1913. He spent the last 16 years with the USDA as an advisor, primarily on foreign plant introductions and quarantines. He studied a number of diseases and provided information on basic biology. He also expanded the USDA fungal herbarium from 3,000 to over 14,000 specimens in only a few years, resulting in the hiring of F. S. Earle and F. W. Patterson. Galloway was a charter member of APS.



Flora W. Patterson 1847–1928

Patterson was the first woman mycologist at the USDA. She began working with the Bureau of Plant Industry in Washington, DC, in 1896. Her career focused on systematics research of plant-pathogenic fungi and inspection of agricultural commodities. Patterson had a very broad knowledge of fungi and spent most of her career managing and contributing to a fungal collection. She helped to develop and added more than 90,000 specimens to the U.S. National Fungus Collections (now the Systematic Botany and Mycology Laboratory, Agricultural Research Service).



Elvin Charles Stakman 1885–1979

Stakman received an M.A. degree from the University of Minnesota in 1910 and a Ph.D. degree in 1913 under the direction of E. M. Freeman. In 1913, Stakman became head of the Section of Plant Pathology and Agricultural Botany at the University of Minnesota, a position he held until his retirement in 1953. Stakman aided in describing physiological races of rust, a discovery that led to an effort to breed resistant wheat. He also was instrumental in starting the program to eradicate barberry bushes in 1918, a major undertaking to eliminate this alternate host for the black stem rust pathogen. Stakman published over 300 papers and several books and made a tremendous effort to engage and challenge students and promote a high quality of education. He served as president of APS in 1922 and received the Award of Distinction from the society in 1967.



Effie A. Southworth 1860–1947

Southworth graduated from the University of Michigan in 1887. She was the first woman plant pathologist to be hired by the USDA, following the recommendation of E. F. Smith. She worked on the diagnosis of plant diseases and made recommendations for disease control on a range of crops. Her most significant contribution to the science of plant pathology was her work on cotton anthracnose and describing the causal agent as *Colletotrichum gossypii*.

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Nathan Augustus Cobb 1859–1932

Cobb earned his Ph.D. degree at the University of Jena in Germany in 1889 and was hired by the USDA in 1907. He was a leader in nematology research and trained the first generation of nematologists in the U.S., making him the Father of Nematology in North America. His contributions included advances in understanding nematode anatomy and the description of more than 1,000 species. He developed sampling/extraction techniques and microscopic methods and in 1913 started the publication *Contributions to a Science of Nematology*. Cobb also was among the authors of the Plant Quarantine Act passed in 1912, stemming from the discovery of a root-knot nematode in a shipment of cherry trees gifted to the U.S. by the Japanese government in 1910.



Charlotte Elliott 1883–1974

Charlotte Elliott studied at Stanford University and completed her graduate work at the University of Wisconsin. She was hired by the USDA as a plant pathologist. Her career focused on bacterial diseases of plants, resulting in the description of several new species and more than 20 papers. Elliott is best known for her 1930 *Manual of Bacterial Plant Pathogens*, which became one of the most widely used publications in the early decades of the twentieth century.



Anna E. Jenkins 1896–1972

Anna Jenkins studied at Cornell University and received her Ph.D. degree in 1927. She was employed by the USDA and worked on scab diseases, which provided a wealth of information on the systematics of *Elsinoë* and its anamorph, *Sphaceloma*, including the description of many of its species. In addition to her work with this challenging fungus, she was involved in plant quarantine and the movement of pathogens into and out of the country.



Frederick DeForest Heald 1872–1954

Heald studied under W. F. P. Pfeffer and received a Ph.D. degree from the University of Leipzig in 1897. Heald's career took him to Iowa, Nebraska, Texas, Pennsylvania, and finally to Washington, where he drove the establishment of the Department of Plant Pathology at Washington State College in 1918. He served as chair of this department from 1918 until his retirement in 1941. Heald studied a variety of diseases, including chestnut blight, cereal smut diseases, and postharvest diseases of apples. In 1926, he authored the widely used *Manual of Plant Diseases*, one of the first comprehensive plant pathology texts. Heald was a charter member of APS and served as its president in 1932.



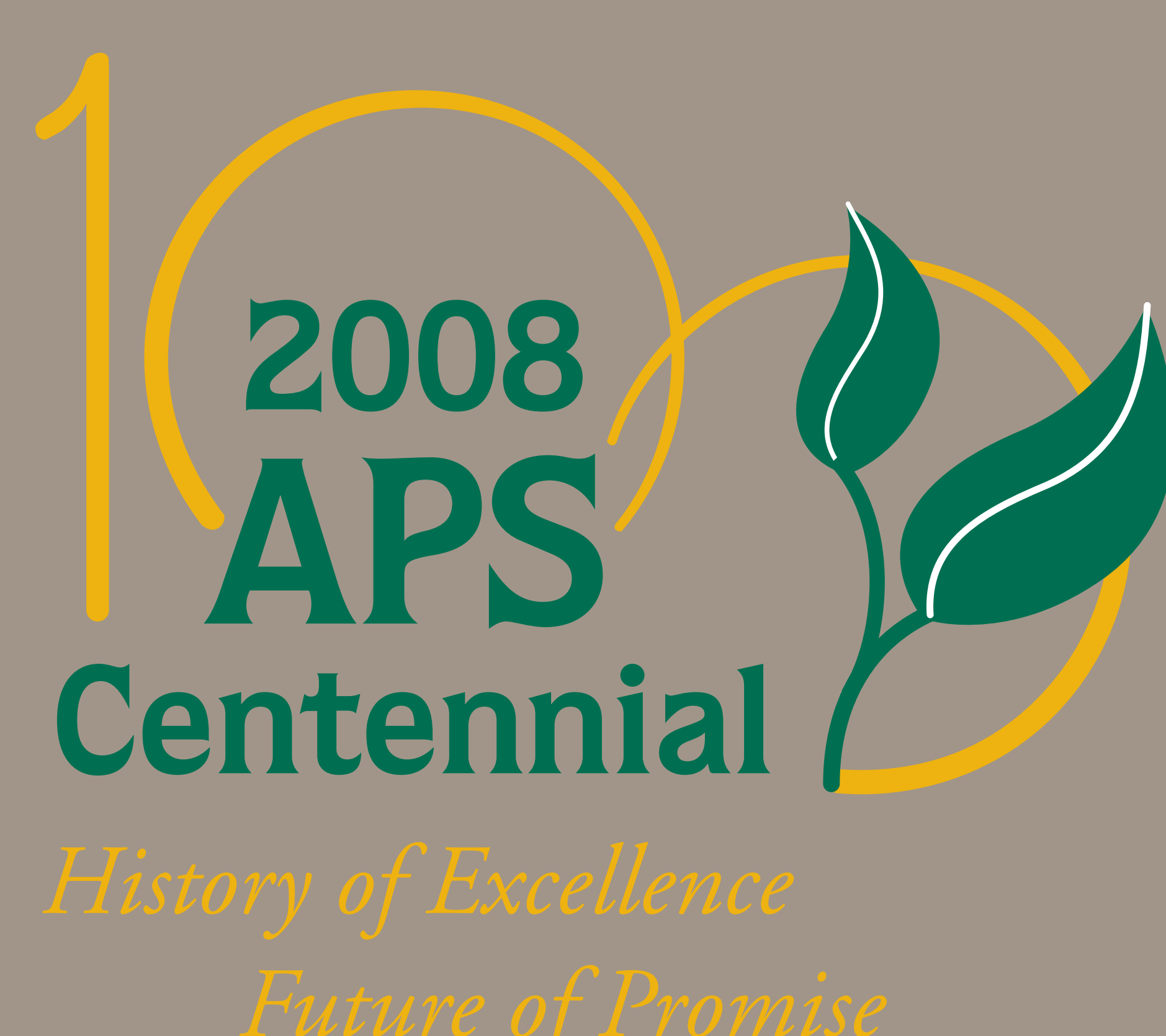
Ruth F. Allen 1879–1963

In 1909, Allen became the first woman to obtain a Ph.D. degree from the Department of Botany at the University of Wisconsin. During her career, she investigated the cytology of rust fungi, which led to an understanding of disease development within plant tissue, greatly advancing our knowledge of rust fungi. In 1965, the Ruth Allen Award was established in her honor. She had incredible observational skills and produced superb hand drawings throughout her career at Michigan Agricultural College, Wellesley College, the USDA, and the University of California, Berkeley.



Vera Charles 1877–1954

Vera Charles began working for the USDA in 1903. She spent 40 years working on a wide range of fungal pathogens, including fungi that parasitize insects. Charles made significant contributions, investigating fungi imported into the United States on plants and agricultural commodities. She also described a diverse collection of fungi sent to the laboratory, making many additions to the U.S. National Fungus Collections (now the Systematic Botany and Mycology Laboratory, Agricultural Research Service).



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Jessie Roy Christie 1889–1978

In 1922, Christie began working with N. A. Cobb at the USDA Bureau of Plant Industry, where he remained for 31 years. In 1954, he joined the faculty at the University of Florida and established a nematology program. Christie worked with nematode parasites of insects and later focused on foliar and root-knot nematodes. He was a pioneering nematologist, developing nematicides and other nematode-management strategies. His greatest contributions included chemical nematode control work in the 1940s that led to the widespread use of ethylene dibromide and the discovery that ectoparasitic nematodes were of major economic importance. Christie was elected a fellow of APS in 1972.



Edna M. Buhner 1898–1988

Edna Buhner investigated nematode diseases for nearly 40 years with the USDA in Beltsville, MD, starting in the 1920s, a time when most growers doubted that nematodes could significantly impact crops. She worked with several prominent nematologists, including N. Cobb, B. G. Chitwood, J. R. Christie, and G. R. Thorne. Buhner helped to describe the pinewood nematode and other important species, publishing nearly 40 papers on plant nematology. She was also involved in illustrating the developmental stages of the golden nematode (*Globodera rostochiensis*) shortly after it was found in Long Island, NY.



Grace W. Sherman Cobb 1905–1993

Cobb worked for the USDA in Beltsville, MD. She was an authority on cyst nematodes, receiving samples from throughout the country for identification. Cobb identified and described a number of novel, introduced species of nematodes and worked on the development of control measures for the diseases they caused. She discovered that a race of *Ditylenchus dipsaci*, a stem and bulb nematode, had a much broader range than previously thought. For 10 years, Cobb also annually compiled nematology literature from around the world for the Nematology Laboratory.



Walter Hagemeyer Burkholder 1891–1983

Burkholder obtained a Ph.D. degree from Cornell University in 1917 and remained at Cornell until his retirement in 1959. He was a pioneer in bacterial taxonomy, sorting out the major genera of plant-pathogenic bacteria that had been lumped into the genus *Phytomonas*. Burkholder's classification scheme was used in *Bergey's Manual of Determinative Bacteriology*, and he served as editor of the phytopathogenic bacteria section for many years. Burkholder's scheme broke *Phytomonas* into the genera *Agrobacterium*, *Corynebacterium*, *Erwinia*, *Pseudomonas*, and *Xanthomonas*. He also worked on bacterial physiology and developed resistant bean cultivars. He first described *Pseudomonas cepacia* (*Burkholderia cepacia*) in 1949 as a cause of rot on onion bulbs. The genus *Burkholderia* is named in his honor.



John Charles Walker 1893–1994

Walker was attracted to the field of plant pathology after observing the results of a destructive cabbage disease near his home in Wisconsin. In 1910, Walker began his college career at the University of Wisconsin and in 1918, earned his Ph.D. degree. Walker's greatest research achievement was in breeding vegetable crops for disease resistance. He successfully incorporated disease resistance into beans, cabbage, cucumber, onions, and peas. Equally important, he made uniquely significant contributions to education, directing the thesis research of some 75 graduate students, and authored two major textbooks as well as more than 400 research articles. Walker was president of APS in 1943, was elected a fellow of the society in 1965, and received the APS Award of Distinction in 1969.



William Cowperthwaite Snyder 1904–1980

Snyder received a B.S. degree from the University of California in 1927 and a Ph.D. degree from the University of Wisconsin in 1932, where he studied with J. C. Walker. He joined the Department of Plant Pathology at the University of California, Berkeley, in 1935 and remained there for his career. Snyder was an authority on the genus *Fusarium*, advancing a workable taxonomic key and combining 165 species into nine based strictly on morphology. Snyder's work in collaboration with H. N. Hansen stimulated global attention to the study of *Fusarium* ecology, taxonomy, and diseases. Snyder served as president of the Pacific Division in 1949 and as president of APS in 1959, was elected a fellow of the society in 1966, and received the Ruth Allen Award in 1969.

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Julian Gilbert Leach 1894–1972

Leach received an M.S. degree from the University of Minnesota in 1918 and a Ph.D. degree from the same institution in 1922 under the direction of E. C. Stakman. During his career, Leach was a faculty member at the Colorado Agriculture College and the University of Minnesota and served as head of the Department of Plant Pathology and Bacteriology from 1938 to 1960 at West Virginia University. Leach was a pioneer in insect transmission of plant diseases and theories of parasitism, beginning with a paper in 1919 on biological forms of wheat stem rust. In addition to his research, he was highly regarded as a teacher. Leach served as president of APS in 1941 and president of the Potomac Division in 1956 and was elected a fellow in 1965.



Harold Henry Flor 1900–1991

Flor received a Ph.D. degree in 1929 from the University of Minnesota. He worked for the USDA for three years at Washington State University and then for the remainder of his career at North Dakota State University. In the 1940s, Flor developed the gene-for-gene concept to explain the genetic interactions between *Melampsora lini* and flax. His theories were put to use in Flor's own flax breeding program to successfully develop rust-resistant flax. This concept provided the underpinnings for research on the genetics of host-pathogen interactions for the next 70 years. Flor was elected a fellow of APS in 1965, received the Ruth Allen Award in 1966, was president of the society in 1967, and received the prestigious Award of Distinction in 1980.



Albert Eugene Dimond 1914–1972

Dimond was a pioneer in disease physiology and conducted studies on Dutch elm disease and wilt diseases. He developed chemotherapy to control Dutch elm disease and conducted fungicide research, aiding in the development of ethylenebisdithiocarbamate (EBDC) fungicides. Dimond studied at the University of Wisconsin and received his Ph.D. degree in 1939 under the direction of B. M. Duggar. He spent most of his career at the Connecticut Agricultural Experiment Station. Dimond coedited *Plant Pathology, An Advanced Treatise* with J. G. Horsfall in 1959. Dimond served as APS president in 1964 and was elected a fellow of the society in 1966.



James Gordon Horsfall 1905–1995

Horsfall was granted a Ph.D. degree from Cornell University in 1929. He accepted a position at the Agricultural Experiment Station in Geneva, NY, in 1929. In 1939, he moved to the Connecticut Agricultural Experiment Station in New Haven. Horsfall referred to himself as a "squirt gun" plant pathologist. He was involved in testing numerous fungicides and aided in developing the ethylenebisdithiocarbamate fungicides, which revolutionized chemical disease control. Horsfall's work with fungicides also led him to develop several concepts in epidemiology and to develop the Horsfall-Barratt scale for disease evaluation. He published two series of treatises on plant pathology and led the first editorial committee of the *Annual Review of Phytopathology*. He was elected a fellow of the society in 1965 and received the APS Award of Distinction in 1972.



Helen Margaret Gilkey 1886–1972

In 1915, Gilkey became the first woman to earn a Ph.D. degree in botany from the University of California, Berkeley. She was an excellent mycologist and pioneered the study of Tuberales in North America. Gilkey was also a superb illustrator, documenting her own work as well as providing illustrations for other botanists. Her art was featured in the Hunt Botanical Library Exhibit of 20th Century Botanical Art and Illustration at the 1969 International Botanical Congress. During her 33-year career at Oregon State University, Gilkey oversaw the herbarium, which increased from 25,000 to 75,000 plant specimens under her direction. She wrote *Handbook of Northwest Flowering Plants* in 1936, a book still in print today. The latest edition was published in 2001.



James Geere Dickson 1891–1962

In 1918, Dickson began working with the USDA and received a joint appointment at the University of Wisconsin in 1919. He worked primarily on cereal and forage crops, studying a wide variety of pathogens and diseases. He taught a field crop diseases course, for which he wrote the popular *Diseases of Field Crops*, first printed in 1947. He helped to develop soil temperature tanks at Wisconsin, worked on Fusarium head scab, and studied the role of soil temperature on seedling blight of wheat and corn. In the 1930s, Dickson made a trip to Europe and the USSR to collect germplasm for breeding programs in the U.S.

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Katherine Esau 1898–1997

Katherine Esau worked on the development of resistance to *Curly top virus* (CTV) in sugar beets with Spreckles Sugar Company. She was recruited to the University of California, Berkeley, by the chair of the Botany Division at Davis. Esau received her Ph.D. degree in 1931, continuing her work on CTV. She worked on plant anatomy, studying virus movement in the plants, and was the first to demonstrate virus movement through the phloem. She became one of the foremost plant anatomists in the world and received several prestigious awards, including membership in the National Academy of Sciences and the President's National Medal of Science. She wrote a widely used textbook in 1953 called *Plant Anatomy* followed by *Anatomy of Seed Plants* in 1960.



Helen Hart 1900–1971

Helen Hart obtained her Ph.D. degree in plant pathology from the University of Minnesota in 1929. After graduating, she continued her career at the University of Minnesota working on stem rust of cereals. Her work with cereals included studies on physiologic races and development of host plant resistance to stem rust. Hart had superb language and editorial skills and used these talents to train many students in the department and edit hundreds of manuscripts. She was very active in APS, serving on Council for 12 years and becoming the first woman president in 1955. She was elected a fellow of the society in 1965.



Gerald Thorne 1890–1975

Thorne received a Ph.D. degree in 1918 from the Utah Agricultural College. Most of his career was spent with the USDA Division of Nematology, stationed in Utah. During his career, Thorne described some 467 species of nematodes and initiated or established 70 genera, 23 subfamilies, 20 families, 8 superfamilies, and an order. He made tremendous strides in demonstrating the crop damage caused by nematodes, working particularly with the sugar beet cyst nematode, *Heterodera schachtii*. He was also on the faculty at the University of Wisconsin beginning in 1956 and after his retirement worked at South Dakota State University as a visiting professor. Of his hundreds of research articles and books, his 1961 book, *Principles of Nematology*, proved to be an invaluable classic and is still widely used today. In 1965 Thorne was elected a fellow of APS.



Benjamin Goodwin Chitwood 1907–1972

Chitwood was a pioneering nematologist, hired by N. A. Cobb in 1928 to work with the USDA Bureau of Plant Industry. One of Chitwood's greatest contributions to nematology was his book *An Introduction to Nematology*, written with his wife, M. B. Chitwood, and released in 1937. Additional volumes followed in 1938, 1940, and 1941. These books served as the first major teaching tools for nematology students worldwide. Chitwood also revised the taxonomy of the root-knot nematode and while working with the USDA in New York, identified *Globodera rostochiensis* on Long Island, naming it the "golden nematode."



Myron K. Brakke 1921–2007

Brakke was a pioneer in virology and the biophysical properties of viruses. In 1950, he developed density gradient centrifugation, a tool that allowed for the purification of virus particles and ushered in a new era of virology and molecular biology research. Brakke worked with a diverse array of viruses, including *Barley stripe mosaic*, *Potato yellow dwarf*, *Soilborne wheat mosaic*, *Tomato spotted wilt*, and *Wound tumor viruses*. Brakke was awarded the Ruth Allen Award in 1968, was elected a fellow of APS in 1972, and received the Award of Distinction in 1988. He spent most of his career with the USDA-ARS at the University of Nebraska, Lincoln.



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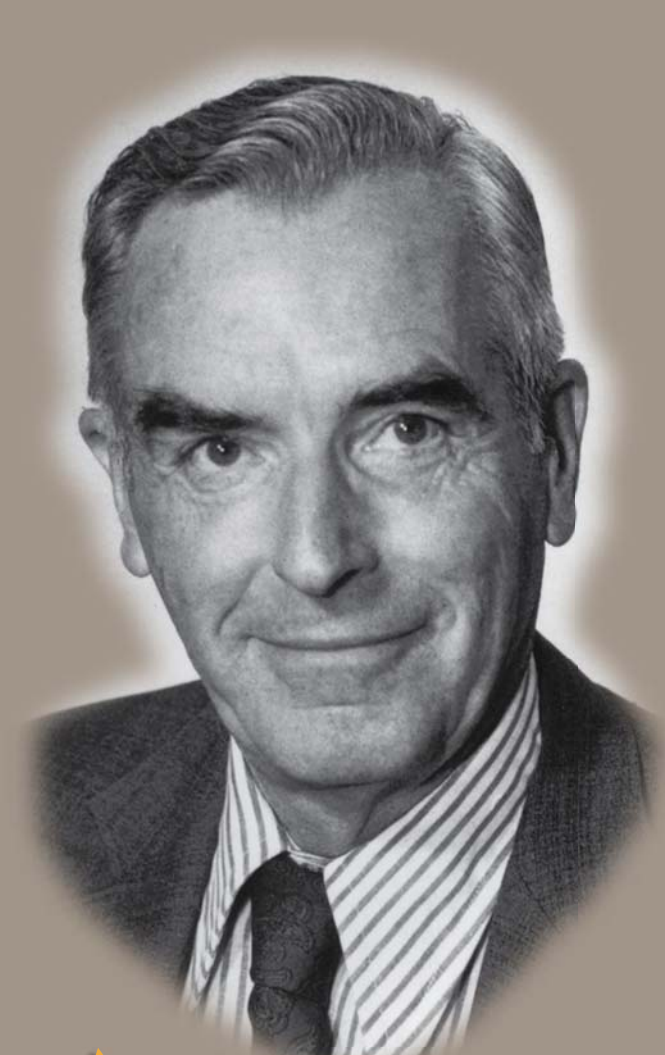
Cynthia Westcott 1898–1983

Westcott received her Ph.D. degree from Cornell University in 1932. She is credited with opening the nation's first ornamental disease diagnosis business (Plant Doctors). Her expertise in diseases of roses and other ornamentals was highly regarded, and she conducted garden courses for Macy's and Bamberger's department stores. She was among the first to successfully use bisdithiocarbamates for plant disease control. Cynthia Westcott wrote a number of books about disease and insect control in ornamentals, including *The Gardener's Bug Book* (1946), *The Plant Doctor* (1937), and the widely used *Plant Disease Handbook* (1950), now in its 6th edition (2001). She was elected a fellow of the society in 1973.



Kenneth Frank Baker 1908–1996

Baker was a pioneer in nursery and ornamental pathology, soilborne pathogens, and biological control. His 1957 publication *The U.C. System for Producing Healthy Container-Grown Plants* revolutionized the nursery industry. He coauthored the first major book on biological control of plant pathogens with R. J. Cook in 1974, titled *Biological Control of Plant Pathogens*. In 1939, he began working at the University of California, Los Angeles, and transferred to the Berkeley campus in 1961. He retired to Oregon and became a collaborator with the USDA and emeritus professor at Oregon State University. Baker participated in launching the *Annual Review of Phytopathology* and served on the editorial board from 1962 to 1977. Baker was elected a fellow of APS in 1969.



George A. Zentmyer 1913–2003

Zentmyer started his career as a forest pathologist at both the USDA and Connecticut Agricultural Experiment Station, where he studied the biology and control of white pine blister rust and Dutch elm disease. Later he became a world authority on *Phytophthora* as he studied avocado diseases at the University of California, Riverside. He established many new concepts, including chemotaxis, chemotropism, and heterothallism. He also implemented biological control methods and determined the bases for their effects. Zentmyer served as APS president in 1966, was elected a fellow of the society in 1968, and received the APS Award of Distinction in 1983. He was also elected to the National Academy of Science.



Arthur Kelman

Kelman, professor emeritus at the University of Wisconsin and North Carolina State University, is recognized for his excellence in science, mentorship, and scholarship in plant pathology. He championed the importance of increasing our level of understanding of complex pathosystems and made numerous fundamental and practical contributions to the mechanisms of virulence and pathogenesis and the ecology and control of phyto-bacteria. During his tenure as a distinguished fundamental scientist, he was also recognized by numerous commodity groups for the impact he had on controlling bacterial diseases of those crops. Kelman served as APS president in 1967, was elected a fellow of the society in 1969, received the APS Award of Distinction in 1983, and is a fellow of the National Academy of Science.



Raymond G. Grogan

Grogan spent his entire career at the University of California, Davis, after studying under J. C. Walker. He developed an innovative, diverse, and creative research program that included foliar and soilborne diseases of vegetable crops caused by viruses, bacteria, fungi, and abiotic factors. He solved problems like necrotic disease of bean, seed transmission of the halo blight pathogen in bean, June yellows and big-vein in lettuce, and many more. Grogan is a classical plant pathologist who shared with his students the excitement and fun of solving complex disease problems. He is an APS fellow and received the APS Award of Distinction in 1987.

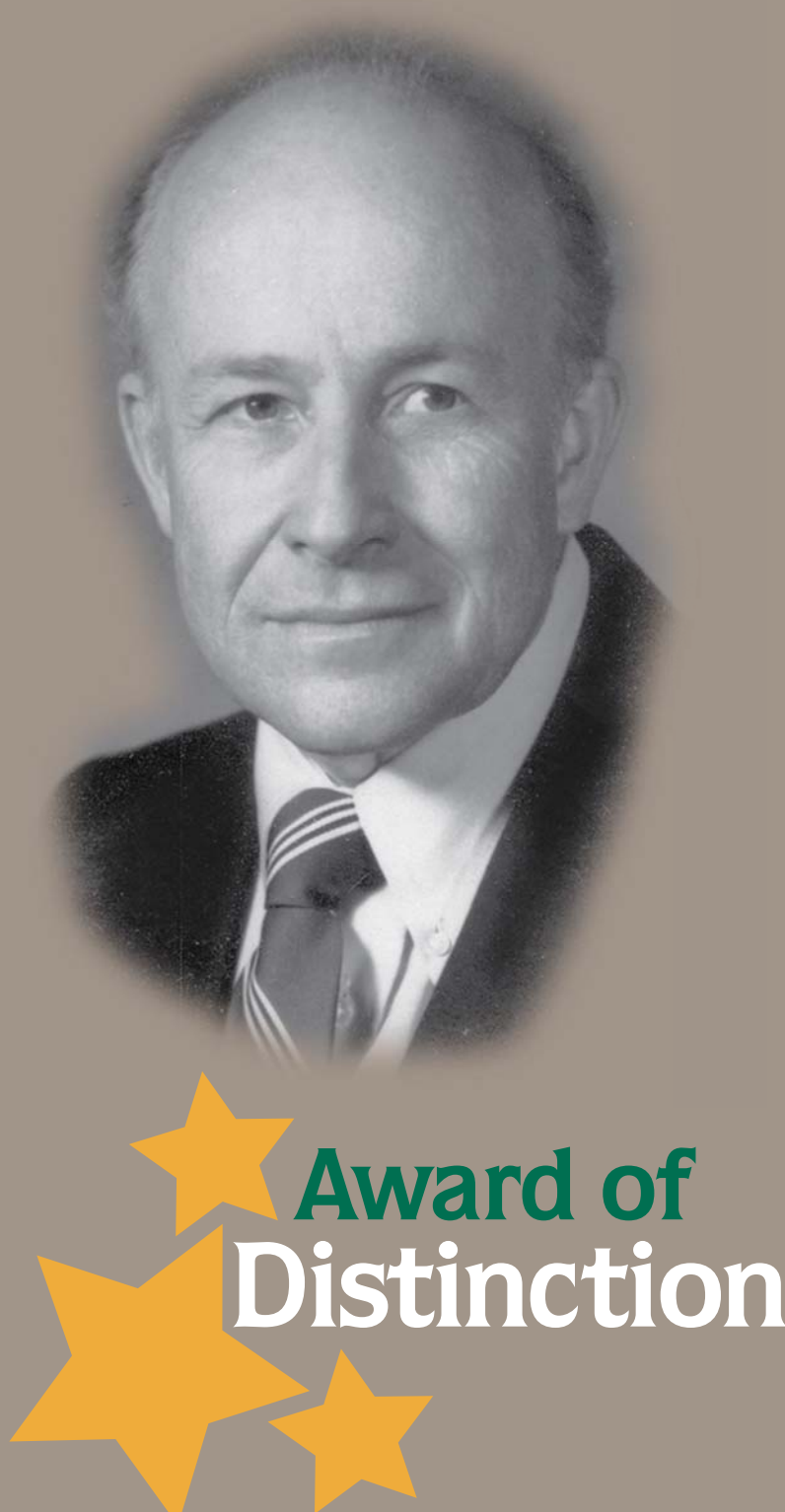


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R. James Cook

Cook, recently retired from USDA-ARS and Washington State University, has had a distinguished career conducting research on biological approaches to control root diseases of wheat. He led the team of researchers who made the first field test of a genetically modified organism in the Pacific Northwest for control of the disease. Cook served as APS president in 1984. His awards include the USDA-ARS Distinguished Scientist of the Year and USDA-ARS Science Hall of Fame; APS fellow in 1980, APS Award of Distinction in 1994, and Ruth Allen Award in 1997; and fellow of the American Association for the Advancement of Science. He is also a member of the National Academy of Sciences.



Luis Sequeira

Sequeira, Emeritus J. C. Walker Distinguished Professor of Plant Pathology and Bacteriology at the University of Wisconsin-Madison, developed the leading program in bacterial disease physiology. He used the model system of *Ralstonia solanacearum* on bananas and lettuce to understand the interactions between bacterial pathogens and host cells. His early use of RFLP emerged as a means of reevaluating the taxonomy and evolution of *R. solanacearum*. Sequeira served as APS president in 1986, was elected a fellow of the society in 1971, received the APS Award of Distinction in 1994, and was elected to membership in the National Academy of Sciences and the American Academy of Microbiology.



Anne K. Vidaver

Vidaver, University of Nebraska, has helped create the foundation of modern phytobacteriology. Of special importance are her fundamental studies of bacteriocins and the phi 6 bacteriophage. Her phi 6 bacteriophage formed the basis of a new family of viruses and now serves as a model dsRNA virus system. Her research with gram-positive plant-pathogenic bacteria forms the foundation of much of the current research with these important, but intransigent, plant pathogens. She is a strong supporter of science policy, both within APS and at the national level. Vidaver served as APS president in 1987, was elected a fellow of APS in 1983, and is a fellow of the American Association for the Advancement of Science and the American Academy of Microbiology. She also received the APS Award of Distinction in 1998.



Milton Zaitlin

Zaitlin, retiree from Cornell University, is a distinguished virologist who specialized in virus replication and the investigation of virus mutants at the University of Missouri, University of Arizona, and Cornell University. He generated important new understanding, including the dispensability of virus coat protein for infection and symptom induction, virus uncoating, proteins and nucleic acids of replication, relationships between virus cell-to-cell movement and plant resistance, subgenomic RNA structure and function, the genetic map of TMV, and engineered resistance against viruses. Zaitlin was elected a fellow of APS in 1978 and received the APS Award of Distinction in 2006. He is also a fellow of the American Association for the Advancement of Science.



Norman E. Borlaug

A geneticist and plant pathologist, Borlaug, retiree from CIMMYT and Texas A&M University, has been a central figure in the “green revolution.” He collaborated with Mexican scientists on problems of wheat improvement and more recently with scientists from other parts of the world, especially India and Pakistan, in adapting the new wheats to new lands and in gaining acceptance for their production. His steadfast commitment to improved grain varieties for developing countries has gained him numerous awards from many different countries. Among the awards are the APS Award of Distinction in 2007 and the Nobel Peace Prize in 1970.