

## Fellows of The American Phytopathological Society

Eight members of The American Phytopathological Society were elected Fellows of the Society at the 1974 Annual Meeting in Vancouver, B.C., Canada. Election as a Fellow of the Society is a reflection of the high esteem in which each is held by his colleagues. The award is given in recognition of outstanding contributions in extension, research, teaching, or other related activity to the science of plant pathology, to the profession, or to the Society.



**GEORGE WILLIAM BRUEHL**, born in Mentone, Indiana in 1919, received the B.S.A. from the University of Arkansas in 1941 and the Ph.D. from the University of Wisconsin in 1948.

Dr. Bruehl has devoted his career of research and teaching to diseases of cereals and grasses. His first appointment was with the U.S. Department of Agriculture, South Dakota State University from 1948 to 1952, where his responsibilities, regional in scope involving South Dakota and adjoining states, were directed primarily toward research on cereal root rots. He transferred to Puerto Rico where he worked from 1952 to 1954 on diseases of sugarcane, particularly virus diseases. He assumed his present position at Washington State University, Pullman, in 1954 and advanced through the ranks to Professor of Plant Pathology in 1962.

Dr. Bruehl is one of the leading authorities in the United States on the diseases of cereals and grasses. He has published on virus diseases of sugarcane, oats, barley, wheat and other grasses; root and vascular diseases of wheat, barley and grasses, foot rots of wheat and snow molds of wheat and barley.

In a series of classical studies, Dr. Bruehl and his students demonstrated that the vascular parasite of wheat, *Cephalosporium gramineum*, survives in soil in nearly pure culture in the vascular tissues of buried straw, because it produces a wide-spectrum antibiotic that prevents other potential colonists from occupying the straw. Laboratory mutants incapable of producing the antibiotic, although still pathogenic to wheat, are overgrown by other fungi when infested straw is buried in soil. Subsequently he has studied occupancy of tissues by other soil fungi and has developed the significant "possession" concept as it applies to soil microorganisms.

Dr. Bruehl delves deeply into problems but always keeps the objective of developing effective control procedures foremost in mind. Consequently, he has done considerable work on the development of varieties with disease resistance. For example, he was heavily involved in the development of the Cayuse variety of oats with some resistance to yellow dwarf virus and the Sprague variety of wheat, the first good agronomic variety with resistance to snow mold developed in the U.S.A.

Dr. Bruehl is an outstanding, enthusiastic teacher with

unusual depth and perception. He teaches formal courses on diseases of crop plants and several students have completed advanced degrees under his direction.

Dr. Bruehl has served the Society: as Assistant Editor of *Phytopathology* in 1967 and as Editor-in-Chief in 1968 and 1969; as President of the Pacific Division, and as Councilor-at-Large.



**STEPHEN DIACHUN** was born August 20, 1912 in Phenix, Rhode Island. He received a B.S. degree from the University of Rhode Island in 1934 followed by a M.S. degree in 1935 and a Ph.D. in 1938 from the University of Illinois. He joined the University of Kentucky in 1937 as Assistant in Plant Pathology, advanced through the ranks, and in 1968

was appointed to the position he now holds, Chairman of the Department of Plant Pathology. His 37 years of continuous service at the University of Kentucky was interrupted only by a period in 1967-68 spent on leave as Visiting Professor of Plant Pathology at the University of Wisconsin.

Dr. Diachun has made significant contributions to plant pathology as a researcher, as an educator, and as an administrator. His early research with Valleau and Johnson led to an understanding of the diversity and nature of diseases of tobacco, particularly those of bacterial and viral etiology. This work led, in turn, to the development of disease resistant varieties and to cultural practices which are still of importance in Burley tobacco production. His contributions to our understanding of the ecology and mode of infection of certain bacterial pathogens are of particular significance. More recently his studies, with Henson, of the inheritance of resistance to a number of pathogens of red clover have resulted in clones with multiple disease resistance which are now being used in the development of red clover varieties.

During his entire career, Dr. Diachun has been actively involved in teaching. In addition to introductory and advanced courses in plant pathology, he has taught general botany, general agronomy, and mycology. His ability as a teacher was recognized when he was selected

to serve for five years as the first Director of the University of Kentucky Honors Program. In spite of his present administrative responsibilities, Dr. Diachun continues to teach introductory plant pathology and to participate in teaching of advanced courses.

It is in the areas of leadership and policy making at the departmental, college, and university levels that Dr. Diachun has made what are perhaps his most significant contributions. His service as a member of the Board of Trustees, as Chairman of the University Senate Council, and as presiding officer of the University Senate gained him the respect of both the faculty and members of the administration. He responded not by seeking prestige for himself, but by constantly stressing the importance of plant pathology as a discipline and as a science. In the words of a colleague, "Stephen Diachun is respected for his thoughtfulness, for his open-minded conservatism, and for his dogged insistence on excellence and good educational policies." It is these qualities that have made Dr. Diachun an outstanding leader and administrator. In recognition of his achievements, he was named, in 1974, University of Kentucky Alumni Professor.



ROBERT N. GOODMAN was born December 15, 1921, in Yonkers, New York. After a period of service in the U.S. Army Air Force during the second world war, he enrolled in the University of New Hampshire and was granted a B.S. degree in 1948 and a M.S. in 1950. He then entered the University of Missouri, received the Ph.D. in 1952, and accepted

a position in the Department of Horticulture as Assistant Professor. He advanced through the ranks to Professor in 1961 with his title changing to Professor of Plant Pathology in 1967. Shortly thereafter he assumed his present position of Chairman of the Department of Plant Pathology.

Dr. Goodman has distinguished himself as a scientist, as a writer, and as an administrator. His initial assignment was to control fire blight of apples and he was among the first to demonstrate the efficacy of streptomycin sprays. He and his associates have continued to make significant contributions to our understanding of bacterial pathogens and the nature of host responses to these organisms. During a leave spent in Gäumann's laboratory in Zurich, he furthered his interest in plant- and pathogen-produced antimetabolites. Following an extended visit to Budapest, Dr. Goodman developed an exchange program between Hungarian scientists and those in his department. A result of this program was an extensive study of compatible and incompatible interactions between bacteria and their hosts. Another leave spent in the Biophysics Department of the University of Leeds led to the development of a well-equipped electron microscope facility and a series of papers dealing with ultrastructural host responses to infection. Most recently he and his students have revealed

and described the toxin produced by the fire blight pathogen. It is the first host-specific toxin to be recorded for a plant pathogenic bacterium. In addition to more than 80 scientific papers, Dr. Goodman coauthored with Kiraly and Zaitlin a book which is widely used as a reference and text.

As an administrator, Dr. Goodman has demonstrated exceptional ability in the recruitment of faculty, in developing new programs, and in obtaining financial support for those programs. He has served his discipline as a member of the APS Bacteriology Committee and the International Cooperation Committee. He was also instrumental in developing the journal, *Physiological Plant Pathology*, on which he serves as a member of the editorial board.



ARTHUR LEE HOOKER was born on a farm near Lodi, Wisconsin on October 12, 1924. He received his education in the institutions of that state and obtained B.S., M.S. and Ph.D. degrees from the University of Wisconsin, the doctorate in 1952. His World War II service was overseas with the U.S. Army. After holding positions with Iowa State University (1952-1954) and the U.S.D.A. Agricultural Research Service (1954-1958) he joined the faculty of the University of Illinois at Urbana where he advanced from assistant professor to full professor between 1958 and 1963.

At Illinois Dr. Hooker has been an active participant in both teaching and extension but his major activity has been in research. He is vitally interested in the interacting genetics and physiologies of host and pathogen and disease control through host resistance. Hooker published researches on soil-borne wheat mosaic and on Septoria infections of oats but he is best known for his extensive contributions on diseases of *Zea mays*: on Pythium disease of seedlings, Helminthosporium leaf spot, stalk rots, rusts, northern leaf blight (*Helminthosporium turcicum*) and southern leaf blight (*H. maydis*).

Dr. Hooker has an international reputation as a scientist and leader in corn disease resistance work. He has been a member of several state, national, and professional committees relative to agricultural research and crop improvement. He is a frequent speaker at national and international meetings. He has served the Society in several capacities, advised numerous graduate students and research associates, is a Guggenheim Fellow and the recipient of other honors.

Since 1960 seed corn producers have benefited by Dr. Hooker's knowledge and plant breeding work on disease resistance in corn. In 1963, he discovered a major gene, *Ht* which controls resistance to *H. turcicum*. The *Ht* gene is widely used in commercial corn hybrids to increase resistance to this disease. His work also led to the discovery and utilization of genetic resistance to corn rust, stalk rots, leaf blights, and other diseases.

Hooker's calm methodical approach to problems and his expert knowledge of corn diseases and genetics of resistance was of great importance to the country in 1970. In that year the corn crop of the U.S. was nearly devastated by an epiphytotic of southern corn leaf blight. The loss has been estimated at about 30%—the greatest economic loss from any plant disease in one year on record. Because of the extremely high proportion of the country's corn plantings shown to be vulnerable a crisis nearing panic developed. Unless effective remedial action could be devised quickly the menace of even more severe losses in 1971 was real.

Hooker and his associates showed that there were two races of *Helminthosporium maydis*. They named these races O and T and proved that the epiphytotic was caused by race T which was virulently pathogenic on any corn with T cytoplasm for male sterility. Race O, the formerly predominant race, was not, and southern leaf blight had not been of major economic importance in the Corn Belt. It has been estimated that at that time about 70-80% of the corn crop of the U.S. possessed T cytoplasm because of the facility with which it permitted the production of hybrid seed. Hooker and his associates showed which corn cytoplasm was resistant to race T. They showed that race T produces a specific toxin causing the disease and with this toxin they developed a simple test for demonstrating resistance or susceptibility in roots of germinating corn. In cooperation with the U.S.D.A., they released more than two dozen sources of male-sterile cytoplasm resistant to race T. Hooker also released stocks carrying the resistance gene *rhm*. These discoveries and their prompt release to the corn industry were major factors in bringing the "new" disease under control very rapidly.

In 1971, the Senate of the Illinois General Assembly adopted a resolution commending Dr. Hooker for his outstanding performance in helping to minimize damage from southern corn leaf blight. His contributions also brought him the Paul A. Funk Recognition Award in 1973.



THOMAS ALLEN SHALLA, born May 7, 1933, in Grand Island, Nebraska, received the B.S. degree from Colorado State University in 1955 and the Ph.D. degree in plant pathology from the University of California, Davis, in 1958. He joined the staff of the Department of Plant Pathology, University of California, Davis, in 1959 and

advanced through the ranks to Professor of Plant Pathology in 1970.

Dr. Shalla has pioneered in use of the electron microscope for investigation of alterations in the cytology of virus-infected cells and for localization of virus synthesis. He pioneered in the use of the thin-sectioning technique for plant cells and has developed and improved methods and techniques applicable for this work,

particularly methods for staining viruses in thin sections and for ferritin-antibody labeling. He has determined differences between virus strains with regard to localization of virus in cell organelles. For example, he has shown that some strains of tobacco mosaic virus occur in chloroplasts and nuclei but others do not. Other studies have shown that the tubular structures in TMV-infected cells, pinwheel structures characteristically formed in tobacco-etch-virus-infected cells and potato virus X inclusion body components, are not composed of virus coat protein as revealed by failure to bind with ferritin-labeled antibodies specific for coat protein. Dr. Shalla has developed methods for obtaining tobacco leaf protoplasts in quantity and has established synchronous infections with PVX and PVX-RNA and has monitored development of the infection process with the electron microscope and fluorescent antibodies. His research is distinguished by consistent high quality and has contributed significantly to the better understanding of the infection and development processes of plant viruses.

Throughout his career Dr. Shalla has been involved both with graduate and undergraduate instruction. He has organized and presented formal courses on plant and general virology and has directed the research of a number of advanced degree students.

Dr. Shalla has served on the editorial board of *VIROLOGY* for a number of years and presently is serving as Editor of that journal.



JOHN TIMOTHY SLYKHUIS was born near Carlyle, Saskatchewan, Canada, on May 7, 1920. He studied at the University of Saskatchewan where he received the BSA degree in 1942, and the MSc degree in 1943. His PhD degree was earned from the University of Toronto in 1947. During the research for the doctorate thesis

on seedling diseases of grasses he recognized the spermatosphere (spermosphere) as a zone within which seeds germinating in soil induce changes in the microbiological balance. In 1947 he joined the staff of the Canadian Department of Agriculture at Harrow, Ontario, where he continued his early interest in fungi, and identified specific conditions and soil fungi that caused failure of sweet clover in Ontario.

His outstanding career as a plant virologist began in 1949 when he accepted an appointment as Assistant Plant Pathologist at South Dakota State College. During his investigation of the epidemiology of wheat streak mosaic, he discovered wheat striate mosaic virus, and identified its leafhopper vector, the first description of a leafhopper-transmitted virus of small grains in America. He returned to Canada in 1952 to join the staff of the Canadian Department of Agriculture at Lethbridge, Alberta. His demonstration in Alberta of transmission of wheat streak mosaic virus and wheat spot mosaic virus by *Aceria tulipae* provided the first clear evidence of mite

transmission of plant viruses. The work has stimulated discoveries and understanding of other mite-transmitted viruses throughout the world. The studies of Dr. Slykhuis on wheat streak mosaic extended beyond the laboratory to result in effective, practical control measures for this important disease. While a visiting scientist at Rothamsted Experimental Station in 1956-57, he found ryegrass mosaic virus in England and discovered European wheat striate mosaic virus, demonstrating its transmission by a planthopper, including transovarial transmission. His work on viruses of small grains continued from 1957 to 1970 when he served as Head of the Plant Virology Section, in research institutes of the Canadian Department of Agriculture, Ottawa, Ontario. Since 1970 he has been Cereal Virologist at the Ottawa Research Station, Agriculture Canada. His balanced emphasis on identification of viruses and development of control measures has made him an international authority on viruses of small grains and grasses. Dr. Slykhuis has been invited to make surveys of virus diseases of Gramineae in many areas of the world. He has stimulated workers in several countries to study the diseases he helped identify, and other new viruses described included *Hordeum* mosaic virus, *Poa* semilatifolius virus, and a unique soil-borne virus of wheat named wheat spindle streak mosaic virus.

Dr. Slykhuis has served as President of the Canadian Phytopathological Society, as an Associate Editor of *Phytopathology*, and as a member of the Virology Committee of APS. His publications include reviews of mite transmission of plant viruses and of virus diseases of cereals.



**FREDERICK LOVEJOY WELLMAN** was born in 1897 while his parents lived abroad in the village of Kamundongo, Angola (Portuguese West Africa). After boyhood years in Angola, he lived in Wichita, Kansas, where he received the BA degree with honors at Fairmount College (now Wichita State University). Graduate studies at the

University of Wisconsin led to the PhD degree in 1928.

Dr. Wellman's career began as Principal Pathologist for the United Fruit Company working on Panama disease of banana in Central America. Most of his distinguished professional life was spent in the tropics. He served as Pathologist and as Plant Explorer for the U.S. Department of Agriculture, and on many foreign assignments for the U.S. Government as Pathologist and Agricultural Consultant. Dr. Wellman helped establish research programs in El Salvador, Costa Rica, Cuba, Guatemala, and Peru. In 1947 he moved to the Interamerican Institute of Agricultural Sciences in Turrialba, Costa Rica, where he made some of his most important contributions to tropical plant pathology. Some 300 students, who studied under his direction at the Institute, went on to pursue careers in 14 Latin American

countries, and in other areas throughout the world. In 1957 Dr. Wellman became Head of the Department of Plant Pathology and Botany of the Agricultural Experiment Station of the University of Puerto Rico, Rio Piedras. When he retired from this position in 1963, he was appointed Visiting Professor, and in 1971, Professor Emeritus, of North Carolina State University, where he continues to be an active writer.

In research Dr. Wellman always stressed the unique aspects of plant diseases in the tropics. His contributions on the use of spreaders and stickers to improve effectiveness of sprays under tropical conditions and controls through husbandry practices are of continuing importance. His organized studies on phanerogamic parasites in the American tropics have given some unusual insights into parasitism. Perhaps his greatest contribution was publication of "Coffee; Botany, Cultivation and Utilization" in 1961. This outstanding book is still a standard text for coffee production.

Dr. Wellman was a founder of the Caribbean Division of the American Phytopathological Society, and served as its first President. He has also served as Councilor of that Division, and as Chairman of the APS Committee on International Cooperation. In 1969 he received the Award of Merit from the Caribbean Division for distinguished services to tropical plant pathology. Dr. Wellman's productive career following retirement has been an inspiration to all his colleagues. His recent books include "Plant Diseases, an Introduction for the Layman", published in 1971, and "Tropical American Plant Disease", published in 1972.



**STEPHEN WILHELM**, born in Imperial, California, in 1919, received the A.B. and Ph.D. (1948) from the University of California, Berkeley. From 1942-45 he served as a medical mycologist in the Fitzsimmons Army Hospital, Denver, Colorado, and since 1948 has been a member of the staff of the Department of Plant Pathology, Berkeley,

proceeding through the ranks to Professor of Plant Pathology in 1960.

Throughout his career, Dr. Wilhelm has exhibited dedication to the development of practical plant disease control by application of fundamental principles. Although he has always emphasized the development of procedures economically beneficial to the farmer, he also has always investigated the biological background of the crops and pathogens with which he has worked. Much of his research program developed around a search for methods to control the *Verticillium* wilt disease of many crops, by cultural practices, chemical soil fumigation, and breeding for resistance. He pioneered use of chloropicrin-methyl bromide mixture for soil fumigation and has made significant contributions to the development of commercial methods for application to large areas of crop land. These methods have been successfully employed to

control Verticillium wilt of strawberries and are now routinely used by strawberry growers in California. Dr. Wilhelm has developed Verticillium wilt-resistant breeding lines of strawberries and has shown that this resistance is dominant and linked to resistance to powdery mildew.

He has studied the cortical root rot disease of strawberries caused by a species of *Ceratobasidium*, and a grey sterile fungus which kills strawberry rootlets. With Paul E. Nelson, he erected the new fungus genus *Iдриella*, pathogenic to strawberry roots. His efforts have contributed greatly to the outstanding success enjoyed by the strawberry industry in California at present. As a result of his long interest in the strawberry and its problems, he and J. E. Sagen have written a book published in 1974, entitled *A History of the Strawberry From Ancient Gardens to Modern Markets*. This book presents details concerning original sources of the garden and other strawberry varieties, first notices of diseases, and a description of the development of the industry in California and the United States.

In recent years, Dr. Wilhelm has provided assistance to cotton growers whose crops are severely damaged by Verticillium wilt. He has found sources of wilt-resistance in *Gossypium barbadense* and *Gossypium hirsutum* race *mexicanum* and has transferred resistance to Upland types of cotton.

His interest in fumigation for the control of plant diseases led him into a research program on broomrape (*Orobanche ramosa*). Through laboratory, greenhouse, and field studies he has contributed much to our

understanding of this potentially dangerous seed plant parasite.

Dr. Wilhelm also has pioneered in the study of diseases of bramble fruits. He demonstrated that the dwarf disease of Loganberry was caused by a graft-transmissible virus which would not infect Boysen- or Youngberries and that the Raspberry was a symptomless carrier of the virus. Also, he demonstrated that a baffling winter die-back of Boysen- and Youngberry probably was caused by deficiency of winter rainfall.

Dr. Wilhelm is a sound and effective teacher. He has a tremendous wealth of knowledge and a sincere and helpful attitude in working with students. This broad experience and his personal conviction that new training programs are needed to meet the crop protection needs of the present have led him to active participation in the development of a new curriculum in pest management.

In 1958, Dr. Wilhelm was awarded a Guggenheim Fellowship and spent a sabbatical leave at the Institut für Phytopathologie der Justus Liebig Universität, Giessen, Germany, studying *Verticillium albo-atrum*.

He served four years on the APS Classics Committee and was chairman of that committee in 1968-69. He also served for two years on the APS Publications Committee and was APS Councilor from the Pacific Division from 1967 to 1968. He has been active for 20 years in the Pacific Coast Conference on the Control of Soil Fungi and served as Chairman in 1960. He has presented invitational lectures at a number of International Symposia and Congresses.