Frank Leslie Howard, 1903 to 1997

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Frank L. Howard, emeritus professor of plant pathology at the University of Rhode Island, Kingston, died on 11 January 1997 at the age of 93. Dr. Howard was a pioneer in the *in vitro* culture of slime molds and in chemotherapy of diseases of trees. He was also an outstanding teacher of undergraduates in plant pathology. Dr. Howard was born in Los Angeles, CA, on 11 June 1903, the son of George W. and Henrietta (Hanzsche) Howard. He received a B.S.

degree from Oregon State University, Corvallis, in 1925. It was during his undergraduate studies that he became interested in plant pathology and mycology under the influence of H. Barss. In 1930, he completed a Ph.D. degree in mycology at the University of Iowa, Iowa City, under the direction of G. W. Martin. The title of his dissertation was "The Life History of *Physarum polycephalum*." During a 2-year postdoctoral National Research Council Fellowship at Harvard University, Cambridge, MA, Dr. Howard continued his studies on his doctoral research topic under the direction of the distinguished mycologist W. H. Weston. Dr. Howard's publications, based on these studies, are considered to be research classics on myxomycetes. Among other findings during this period, he devised the rolled oats agar method that greatly facilitated studies on the growth and development of the various stages in the life history of *Physarum polycephalum*. This medium is still in use in research on slime molds. Dr. Howard also demonstrated conclusively that mitotic divisions in plasmodia are essentially synchronous, occur only in actively growing portions of the plasmodia, and are of brief duration. This research was completed without the sophisticated microscopic equipment now considered essential of this type.

In 1932, Dr. Howard joined the faculty of the Department of Botany at Rhode Island State College, Kingston, and worked there actively until his retirement in 1971. Initial emphasis in his program of research was in the area of chemotherapy and evaluation of the effective use of organic fungicides for the control of diseases of vegetables and turf. J. G. Horsfall, in his text *Fungicides and Their Action* (1945), prepared a listing of landmarks in fungicide history. Included in the list was the following: "Howard's work (1941) appears to date the modern interest in chemotherapy." This statement referred to a paper by Dr. Howard entitled "Antidoting the Toxin of *Phytophthora cactorum* as a Means of Plant Disease Control" (*Science* 94:345). This paper indicated the potential for control of tree diseases by chemotherapy and stimulated the prospects for control of such devastating vascular tree diseases as the Dutch elm disease.

Under Dr. Howard's leadership, a strong program in turf management and disease control was developed at the University of Rhode Island, Kingston. Two of his major contributions with respect to turf disease control were the development of an eradicant fungicide for dollar spot control and a broad spectrum fungicide based on Malachite Green, which also served to "green-up" turf that

was off-color. Both treatments were popular with golf course managers for a period of time.

Dr. Howard had a deep commitment to teaching introductory plant pathology. As a result of his high level of enthusiasm for the field of plant pathology and ability to transmit this excitement to his students, it is likely that more undergraduates entered the field of plant pathology on a per capita basis from the state of Rhode Island than from any other state. This record is even more remarkable when considering the lack of agricultural focus that characterized Rhode Island during this period. One of his greatest pleasures was to follow the progress of "his boys" and to continue to provide advice and encouragement to them after they had become established in the field of plant pathology. Many students who became interested in plant pathology under his influence attained distinction in their own careers; several became chairs of Departments of Plant Pathology, two were elected to the National Academy of Sciences, and seven received the Fellow Award and one the Award of Distinction from The American Phytopathological Society (APS). Dr. Howard was also interested in international agriculture. Among several international assignments, he worked in Guatemala on a disease of chincona, in Italy on a problem on lemon trees, and in Costa Rica as a consultant on the Panama disease of bananas.

Dr. Howard received the Fellow Award of APS (1967) and was selected as a charter member of the College of Resource Development Hall of Fame of the University of Rhode Island (1992). He was a motivating force for the establishment of the Northeastern Division of APS and served as its fifth president. He also served as the first chair of the Finance and Investment Committee of APS Foundation (1984 to 1990). Throughout his life, Dr. Howard also continued to be a strong supporter of the Mycological Society of America (MSA) and provided assistance in the development of the MSA Foundation Fund. After his retirement in 1971, he continued to attend national and international meetings and participated actively in the financial affairs of APS.

Early in his career, Dr. Howard married Dorothy Lee, who strongly supported his research activities. Her contributions were acknowledged with appreciation in publications of research in which she assisted him. She and one daughter preceded him in death. After the death of his first wife, Dr. Howard married Katherine Winslow, who survives him along with his two daughters, Mrs. Dorothy Congdon and Mrs. Henrietta Howard-Moineau; three stepdaughters; two stepsons; 13 grandchildren; and 16 great-grandchildren.

Dr. Howard made many significant contributions in research and service to his University and profession. In particular, he will be remembered for his positive impact as an enthusiastic teacher of plant pathology. The Frank C. Howard Undergraduate Fellowship Program has been established under APS Foundation to provide funds to support undergraduates to work as summer interns in the laboratories of scientists involved in plant pathology research. (Howard Fellowship, c/o APS Foundation, 3340 Pilot Knob Road, St. Paul, MN 55121-2097.)