





Lansing E. Williams (1921–2015)

PLANT PATHOLOGY IN OHIO

A History of the Discipline at The Ohio State University
and the Ohio Agricultural Research and Development Center

(SECOND EDITION)

Author and Editor



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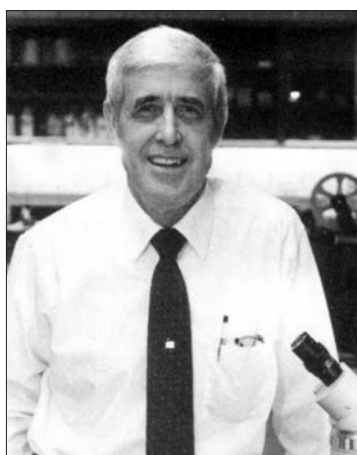
Front cover, clockwise from upper left:

Pierce Paul (right), 2015; Landon Rhodes (right), late 1980s;
Sally Miller (left), 2010; Guo-Liang Wang, 2012;
Michael Ellis, 1988; Ira Deep, 1984

Back cover, clockwise from upper right:

Fritz Schmitthenner (left) and Lansing Williams (right), 1974;
students using confocal microscope, Selby Hall, 2016;
David Coplin, 1982; Wayne Ellett, 1957;
Anne Dorrance (left) and Patrick Lipps (right), 1998; Augustine Selby, 1902;
Phillip Larsen, 1979; Blair Janson (left) and Wilmer Stover (right), 1947;
Terrence Graham (left), 2008; Harry Young, 1957

Dedication



Ira W. Deep

This second edition of the history of plant pathology in Ohio is dedicated to Dr. Ira W. Deep and Dr. Lansing E. Williams for their monumental roles as the founding leaders of the modern Department of Plant Pathology at The Ohio State University. Beginning when the department was founded in 1967, and continuing over the next two decades, they partnered in organizing the new department, uniting its two parts on the Columbus and Wooster campuses, bringing talented new faculty and staff to the department, and providing the overall guidance and leadership that was needed to establish the foundation on which the department is built today.

Ira W. Deep was a professor in the Department of Botany and Plant Pathology at Oregon State University when he was attracted to come to Ohio State as the first chairperson of the new Department of Plant Pathology. He was appointed professor and chairperson in 1968, a position he held until 1984, when he returned to full time teaching, research, and Extension activities on the faculty. When he arrived in Columbus, the new department had only four faculty besides himself on that campus, only a few graduate students, and not even an effective office filing system.



Lansing E. Williams

Lansing E. Williams earned his Ph.D. at The Ohio State University in 1954 and was a professor on the plant pathology faculty at the OARDC in Wooster when Deep asked him to serve as Associate Chairperson of the new department in 1968. At that time, there were eleven plant pathology faculty at Wooster, and that portion of the new department was well organized and fully functioning. Deep “realized that there was much work to be done in building the teaching program and bringing unity to the two parts of the department in Columbus and Wooster” and asked Williams to partner with him in building the new department. He remained as Associate Chairperson for 21 years until his retirement in 1989.

Within five years, under the joint leadership of Deep and Williams, the department had grown to 26 faculty and 17 graduate students, and teaching credit hours had increased six-fold. Working closely with the faculty, they united the young department and provided the leadership that was needed to begin moving plant pathology at Ohio State to the position of national leadership that it occupies today.

Table of Contents

Preface to Second Edition.	ix
Preface to First Edition (ca. 1996)	x
Acknowledgements.	xi
Lineage of Plant Pathology at The Ohio State University and at the Ohio Agricultural Experiment Station . .	1
Chapter 1 Origins and Early Development of Research and Teaching in Plant Pathology on the OSU Columbus Campus (1873–1917).	3
Chapter 2 Formation of the Ohio Agricultural Experiment Station and Early Research in Plant Pathology on the Wooster Campus (1881–1923)	12
Sidebar 1 Frederica Detmers (1867–1934) Pioneering Woman in Ohio Plant Pathology	27
Chapter 3 Advances in Research, and Development of Graduate Education and Extension Programs in Plant Pathology on the Columbus Campus (1918–1947).	29
Chapter 4 Development of Research and Extension Programs at OAES in Wooster (1924–1947)	33
Chapter 5 The Department of Botany and Plant Pathology Unites Activities on the Columbus and Wooster Campuses (1948–1965)	41
Sidebar 2 Graduate School and Young Faculty Experiences in the 1950s and early 1960s: Lansing Williams and Fritz Schmitthenner.	52
Chapter 6 Founding and Early Development of the Department of Plant Pathology (1966–1983).	60
Sidebar 3 Building the New Department of Plant Pathology (1968–1975), Ira W. Deep	86
Chapter 7 Advancing Ohio State Plant Pathology to National Prominence (1984–2005)	90
Sidebar 4 The Maize Virus Research Team: An Interdisciplinary Collaborative Effort among OARDC and USDA/ARS Scientists.	110
Chapter 8 Ohio State Plant Pathology in the Twenty-First Century (2006–2017).	115
Chapter 9 Adjunct and Courtesy Faculty Associated with the Department of Plant Pathology	124
Chapter 10 Staff on the Columbus and Wooster Campuses	128

Table 1 Plant Pathology Staff at Columbus with at Least Two Years Service.	143
Table 2 Plant Pathology Staff at Wooster with at Least Two Years Service	145
Chapter 11 Plant Pathology Extension and Outreach in Ohio	148
Sidebar 5 The Plant and Pest Diagnostic Clinic	160
Chapter 12 Leadership in International Programs by OSU Plant Pathology Faculty	166
Chapter 13 Undergraduate and Graduate Education in Plant Pathology at The Ohio State University	176
Table 3 Courses Taught by the Department of Plant Pathology, by Decades, Since Its Founding in 1967 . .	182
Appendix 1 Leadership in Professional Service by Plant Pathology Faculty	192
Appendix 2 Students Who Have Received the Master's Degree from The Ohio State University with a Focus on Plant Pathology or Related Areas in the Department of Botany (1891–1947), the Department of Botany and Plant Pathology (1948–1966), and the Department of Plant Pathology (1967–2016)	194
Appendix 3 Students Who Have Received the Master in Plant Health Management Degree from The Ohio State University in the Departments of Plant Pathology and Entomology (2014–2016)	202
Appendix 4 Students Who Have Received the Ph.D. Degree from The Ohio State University with a Focus on Plant Pathology or Related Areas in the Department of Botany (1929–1947), the Department of Botany and Plant Pathology (1948–1966), and the Department of Plant Pathology (1967–2016)	203
Appendix 5 Postdoctoral Researchers and Visiting Scientists by Decades	214
Appendix 6 Historical Group Photos	220
Sources for Further Information.	226
Index	229

Preface to Second Edition

It has been my good fortune to have been an active faculty member of the Department of Plant Pathology at The Ohio State University through nearly all of the 50 years of the department's existence. I have personally known all the department faculty, and many of the staff and students, who have made this department the top academic unit that it is today.

Development of this record of the history of plant pathology in Ohio began for me in 2012 when Terry Niblack, department chairperson, asked if I would like to update the first edition of the department history, which was written in the late 1980s and early 1990s. Though I had never thought of doing that, it seemed like an interesting challenge. After my initial study of the first department history and other historical sources, I began to realize that more than an update could be done. Thus, I undertook a thorough examination of all that had gone before, since plant pathology first began in Ohio in the 1880s. Many of our "ancestors" had great stories to tell and their lives and contributions needed to be brought forward for modern readers to understand and appreciate. Furthermore, a treasure trove of historical and current photographs was available, just waiting to be found. All of us build our lives on the shoulders of those who have gone before us, but so often these people are forgotten over time. Here was a chance to bring these people "back to life" and tell some of their amazing stories. Fortunately, publication technology has greatly improved in the last 20 years, which allowed many more photos to be used, including color and text enhancements.

The first short history of the department was written by Wayne Ellet in 1969, at the time of The Ohio State University centennial. He and Lansing Williams, then wrote the first book-length department history, which came out in the mid-1990s. Early in my career, Lansing was the department leader at Wooster and one of my mentors. In the years just before and after his retirement in 1989, I well remember him going through old

correspondence and publications preparing to assemble that detailed history. He and Wayne Ellett knew the people of the department back to the early 1950s, so they had personal experience with events from the post-WWII era forward. Their history provided a tremendous amount of information that was the foundation for this book. As I and others dug deeper into sources, we found stories about some of our early founders, such as William Kellerman and Frederica Detmers, that revealed much more significant roles for them than any of us had previously known.

The search for pictures was the most fun. I found an enormous number of historical photographs that I had never seen in files at the OARDC and in the OSU Archives. Sadly, that was not the case in department or college files in Columbus. The department had several boxes of memorabilia that Wayne Ellet had kept, and there I found a few treasures from the Stover and Allison eras. Aside from the OSU Archives, most main-campus photos had not been retained. As my quest for photos progressed, several people gave me more that they had found in their own collections.

It has been a tremendous challenge to prepare this history, but I have found it exceptionally interesting and satisfying. With all the many details in this work, there will surely be some errors or omissions found, and for that, the responsibility lies with me. It is my hope that this book will provide all of us, current and former faculty, staff, students, and department friends, a much better idea of how plant pathology in Ohio developed into what it is today. The people profiled in this book all struggled with their daily challenges and setbacks, just as we do. And yet they worked hard throughout their careers and accomplished some very great things. To all of them, we owe a great debt of gratitude.

RANDALL C. ROWE
Wooster, Ohio
January, 2017

Preface to First Edition

The authors of this history have witnessed many of plant pathology's major advancements and have known the majority of its faculty and staff at The Ohio State University and the Ohio Agricultural Experiment Station (OAES). This intimacy not only whetted our already existing interests in history but also served to give a personal and historical perspective to this narrative. The will to write this history developed from the large role these institutions have played in our lives. We wished to record their history before another generation had passed.

We have attempted to assemble information concerning the development of plant pathology in Ohio from its early beginnings. The authors trace developments in teaching, research, and Extension from their infancy to the present. The important service provided by faculty and pertinent staff is included as well.

Although a Department of Plant Pathology was not established at The Ohio State University until July 1, 1967, research and teaching in plant pathology in Ohio are almost as old as the University itself, which was established in 1870. The first students enrolled in the University in 1873, and discussions of plant diseases were included in courses taught in the Department of Horticulture and Botany as early as 1882. By 1892, plant pathology was taught as a special course in the Department of Botany.

In 1882, the Ohio Agricultural Experiment Station (OAES) was established and located on The Ohio State University campus in Columbus. Ten years later, the research station moved to its present location near Wooster, Ohio. From the first days of the Experiment Station, plant diseases received major attention.

Many individuals have contributed both information and time as we prepared this history. We have examined documents and files of The Ohio State University Board of Trustees and annual reports of the Ohio Agricultural Experiment Station, plus other materials available in department files and University archives.

We especially acknowledge Marilyn Snyder for typing and arranging the manuscript, and Arthur Olah and Ira Deep for editing and recommending changes in the manuscript. The authors also express sincere appreciation to all others who have provided us with information that has better enabled us to complete this history. Finally, and most importantly, we wish to acknowledge our spouses, Mildred "Midge" Williams and Mary Ellett for their understanding, encouragement, and patience during the writing of this history.

It is likely that some important events have been overlooked and that errors may have occurred. For these, we assume full responsibility.

LANSING E. WILLIAMS and C. WAYNE ELLETT
circa 1996

Acknowledgements

You cannot write a book like this by yourself! It took many people to make all this history over the past 125 years, and it took quite a few to gather together all the information presented in this book. First of all, I want to thank those who went before me. Ira Deep, Fritz Schmitthenner, and Lansing Williams lived much of this history before I did, and they were invaluable for providing their memories of Ohio plant pathology in the early years of the department and before. After Lansing's death in 2015, his son, Lance Williams, gave me a box of Lansing's photo albums and slide collections in which I found some key images. Of course, Lansing and Wayne Ellett wrote the first department history which provided the foundation materials for this book. Though Wayne died well before this book began, a box of his archival materials from Columbus provided several key images from the 1940s and 1950s.

I sincerely appreciate those people who gave considerable time to the development of this book by writing specific chapters. Sally Miller wrote the chapter on international programming and enthusiastically sought out historical details of the professional lives of William Kellerman, Frederica Detmers and C. C. Allison. Luis Camargo, Department of Phytopathology and Nematology, University of Sao Paulo, Piracicaba, Brazil, worked with Sally to learn more of what Allison did when he was there in the 1960s. Mike Boehm did extensive work with OSU reference librarians to find dates, advisors, and thesis titles for our many M.S. and Ph.D. graduates. Mike Ellis wrote most of the chapter on extension and outreach, and Nancy Taylor provided the historic details of the Plant and Pest Diagnostic Clinic. Tom Mitchell and Monica Lewandowski worked closely with me as we all prepared the chapter on undergraduate and graduate education. Skip Nault, Peg Redinbaugh and Ray Louie wrote the history of the Maize Virus Research Team.

Finding all the pictures and biographical information that make this history so interesting was a major task, and I thank the many people who were so very helpful. Ramona Powell dug through department records again and again to assemble considerable details on staff, faculty, postdocs, and students at both Columbus and Wooster. She and Monica Lewandowski worked diligently to get pictures and biographies of the Columbus staff. Jo Hershberger, Laurel Leedy, and Carol Musselman met with me several times over lunch as they worked together to obtain photographs and biographies of the Wooster staff. Anne Dorrance provided details of the Master in Plant Health Management program.

The numerous pictures in this book came from many diverse sources. Quite a few people contributed their own personal photos. Monica Lewandowski gave me a large group of recent images from Columbus. Michelle Dropik, OSU reference archivist, located many historical photographs from the OSU archives. Ken Chamberlain, OARDC photographer, provided many recent portrait photos. He gave me free access to the OARDC photo archives, where I found a lot of historical images, many of which I had never seen before. Gwen Short, OARDC librarian, helped me find some key images in early OAES and OARDC publications in the OARDC library. Several came from the American Phytopathological Society.

Finally, I owe a great debt to David Wiesenbergh of The Wooster Book Company. David worked very closely with me throughout this process, gave me a lot of suggestions and encouragement, scanned most of the photographs into digital format, drafted the lineage diagram, and actually created the book in its final format.

The entire process of preparing this book was a group effort. I am extremely grateful to everyone who worked with me to make it happen. Thanks!!

LINEAGE OF PLANT PATHOLOGY AT THE OHIO STATE UNIVERSITY AND AT THE OHIO AGRICULTURAL EXPERIMENT STATION

Columbus campus

Wooster campus

1870	• Ohio A&M College founded	
1873	• Ohio A & M Department of Agriculture established	
1878	• The Ohio State University named	
1881	• OSU Department of Horticulture & Botany established	
1882	• OAES founded • Botanist hired (<i>Devol</i>)	
1889	• OAES entomologist and botanist hired (<i>Weed</i>)	
1891	• OSU Department of Botany & Forestry established • Chairperson hired (<i>Kellerman</i>) • OAES botanist hired (<i>Detmers</i>)	
1892		• OAES moved to Wooster, Ohio
1894	• OSU Department of Botany established	• OAES botanist and chemist hired (<i>Selby</i>)
1902		• OAES Department of Plant Physiology & Pathology established • Chief and botanist appointed (<i>Selby</i>)
1909		• OAES Department of Botany established
1924		• OAES Department of Botany & Plant Pathology established
1948	• Departments of Botany & Plant Pathology on both campuses combined into one department	
1965		• Name changed from OAES to OARDC
1967	• Department of Plant Pathology established (botanists joined the new College of Biological Sciences)	
1981		• OARDC merged into OSU as an administrative unit
2017	• Department of Plant Pathology celebrated fifty years as academic department at OSU	

Chapter 1

Origins and Early Development of Research and Teaching in Plant Pathology on the OSU Columbus Campus (1873–1917)

In the years following the tragedy of the potato late blight epidemic in Ireland (1845–47), and the confusion that followed regarding the cause of this devastation, considerable progress had been made in Europe in understanding the true nature of plant disease. Louis Pasteur, working in France in the early 1860s, had shown that fermentation was caused by the action of microorganisms and did much to disprove the widely-held ideas of “spontaneous generation”. About the same time, Anton de Bary, working in Germany, had considerably advanced knowledge of the true nature of potato late blight, wheat stem rust, and other fungal diseases through careful studies of the pathogens themselves and their processes of infecting plants. By the end of that decade, his work had advanced knowledge on the true cause of plant diseases well beyond what was known in animal medicine. The science of plant pathology was now well on its way.

At that time, understanding of plant diseases in North America lagged behind that in Europe. However, in 1862, during the Civil War when Abraham Lincoln was president, Congress passed two bills of landmark legislation that had a profound impact on the development of the science of plant pathology in the United States. First, was the establishment of the U.S. Department of Agriculture, which by 1871, had issued its first publication on plant diseases caused by microscopic fungi. The second was the Morrill Act, signed into law by Abraham Lincoln on July 2, 1862. Commonly known as the Land Grant Act, under this law some eleven million acres of public land were appropriated and then granted to each state, in proportion to the size of its representation in Congress. From the sale of each “land grant,” the states were to finance colleges whose “leading object” was

to “promote the liberal and practical education of the industrial classes,” primarily in the areas of agriculture and mechanics. This legislation revolutionized the approach to higher education in the United States, bringing it within reach of all who had the desire and ability to profit from it. Under terms of the Land Grant Act, Congress granted the state of Ohio 630,000 acres of land.

The State Board of Agriculture took the initiative to sell Ohio’s 630,000 acres of public land to finance the Land Grant ideal. The Land Grant sales financed the beginning of The Ohio State University, and income from the resulting fund supported the institution for its first 20 years. On March 22, 1870, the Ohio General Assembly chartered the university with “An Act to Establish and Maintain an Agricultural and Mechanical College in Ohio.” There was a wide diversity of opinion as to the use of the funds resulting from the land sale, and many locations offered land or other support if selected as the site for the new Land Grant college. The Ohio legislature and its committees and commissions considered many sites over a period of eight years, including Miami University (at Oxford), Urbana, and London. Several Ohio communities made determined efforts to obtain the new educational institution. None were accepted, however, and when the first Board of Trustees for Ohio’s Land Grant University was appointed in 1870, steps were quickly taken to settle the controversy over the location.

At the Board’s meeting on September 6, 1870, proposals from Montgomery, Franklin, Champaign, and Clark Counties were received. The Franklin County offer, which included a donation of \$300,000 in county bonds and private subscriptions of \$28,000, was accepted. The Trustees then considered several

locations within Franklin County, and the Neil farm site was approved on the fifth ballot. Located two miles north of downtown Columbus, the Neil farm consisted of 327 acres and cost \$117,508.

As difficult as it was to select a site, scarcely less difficulty was experienced in deciding the scope of courses to be offered. The college's curriculum was a matter of bitter dispute among politicians, the public, and educators alike. The subject was fought over in newspaper editorials, letters to the editor, and speeches before the Ohio General Assembly for several years before a decision was finally reached. Those espousing a narrow view held that the institution should devote itself solely to the teaching of agriculture and the mechanical arts. Those with a wider vision wanted a broader program that featured English and ancient and foreign languages as well. The liberals on the Board of Trustees finally won—by one vote. Thus, from the very beginning, the University was devoted to offering a broad variety of educational opportunities to its students.

Classes began at the new Ohio Agricultural and Mechanical College on September 17, 1873. Twenty-four students enrolled on the day of the school's opening. They came from six Ohio cities in addition to Columbus. The youngest, a daughter of one of the school's professors, was only 13. Among them was Harriett Townshend, who, at the time of her death on April 29, 1950, was the last surviving member of this class. Later enrollment brought the first year's attendance to a grand total of 50, with instruction offered by a seven-member faculty. The college offered seven areas of study: agriculture, ancient languages, chemistry, geology, mathematics, modern languages, and physics.

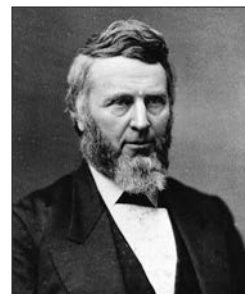
Long before the Department of Plant Pathology was established on July 1, 1967, research and instruction in plant pathology at The Ohio State University had been underway for over 75 years. Departments of Botany, Horticulture, and Vegetable Physiology were recommended in the early plans (1871–72) for the University. When the first 24 students met to begin their studies at the new college in the fall of 1873, work in botany and all other areas of plant science was placed under the Department of Agriculture. Dr. **Norton S. Townshend**, a member of the school's Board of Trustees, was asked to resign from the Board to become

the first professor of agriculture and to chair this department. He would have responsibility for teaching botany, horticulture, and all aspects of agriculture, as well as managing the college's farm.

Townshend, although trained in medicine, had a great love for agriculture and had attempted to establish an agricultural institute at Oberlin College and in Cleveland. Both failed because of a lack of students. Townshend was president of the State Board of Agriculture when the U.S. Congress debated the Morrill Act to establish land-grant colleges, and he strongly backed its passage.

An act of the Ohio General Assembly, in 1878, changed the school's name from the Ohio Agricultural and Mechanical College to The Ohio State University. The first class of six men graduated that year, and in 1879, the first woman graduated. Within the University, there were no units called colleges until 1896, but the unit that eventually became the College of Food, Agricultural, and Environmental Sciences existed from the beginning.

Change of the school's name to The Ohio State University intensified the cool reception of the institution from the rural population, who already thought the school was too "classical" in nature and violated the intent of the Morrill Act. They also believed that agricultural courses were not taught with a distinctive, practical application to farming. Therefore, they did not enroll their children in the University. After five years of operation, only 18 students were



OSU Archives



OSU Archives

Norton Townsend in his office, OSU, Columbus, 1883

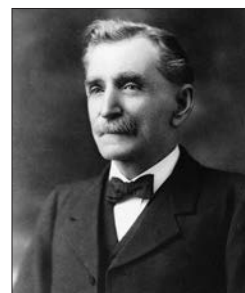
enrolled in agriculture. The college farm was poorly equipped, and livestock was of inferior quality, which was also disappointing to farmers. Townshend was an able teacher and admired by the farming community, but he was not a particularly good record keeper and manager. In 1877, the Board of Trustees hired a young man, **Charles Embree Thorne**, to manage the farm. Thorne soon corrected many of the problems, but in 1881, he left this post to become editor of *Farm and Fireside* magazine in Springfield, Ohio. He later became the first full-time director of the Ohio Agricultural Experiment Station.

Although courses in structural and physiological botany, economic botany, and systematic botany were organized and apparently taught from 1874 to 1881, there is no evidence that information on plant diseases or disease-causing organisms was included in these offerings. On January 5, 1881, after repeated requests from Townshend, the Board of Trustees created a chair of botany and horticulture to be placed under an assistant professor. **Andrew Price Morgan** of Dayton, Ohio, was elected to chair this new department, effective spring term 1881, at a salary of \$1,500 a year. It is interesting to note that, before appointing Morgan, the Trustees reviewed the credentials of a number of persons, including W. A. Kellerman, a native of Pickaway County, Ohio. Kellerman became chairperson of botany at the University ten years later. Another candidate was J. C. Arthur of Madison, Wisconsin, who became professor of botany and plant pathology at Purdue University in 1887 and a world authority on the biology and taxonomy of the rust fungi.

Morgan was primarily known as a mycologist. He apparently had no formal training as a botanist, but self study made him a leader in U.S. mycology at that time. After only three months, his professorship at the University was terminated by action of the Trustees. He was commended by the Board for his “extensive attainments in scientific botany” and for his “unusual skill as a teacher.” After leaving the university, Morgan lived on a farm in southwestern Ohio and, for the next 23 years, collected, described, and published findings on Ohio fungi.

The principal objective of the Board in establishing a chair of botany and horticulture at the university had been to develop the “practical side of instruction in the subjects named, and thus furnish the experimental

investigations and practical guidance for the farmers and horticulturists of the state.” To accomplish goals set forth for a Department of Botany and Horticulture, the Trustees appointed **William R. Lazenby** of Cornell University as chairperson, effective fall term of 1881, at a salary of \$2,000 per year. Lazenby continued in this position until 1891, at which time the department was divided. During this time he also served as vice director and as the first part-time director of the Ohio Agricultural Experiment Station.



OSU Archives

As Lazenby organized courses of instruction in botany and horticulture, there is evidence that diseases and disease-causing fungi received attention. In annual reports of the university for 1882 and 1883, Lazenby lists disease problems on apple, pear, quince, raspberry, peach, and plum as topics discussed in the fruit culture course. Under fungi, in a botany course, he reports, “special study is made of those forms producing rust, mildew, blight, etc., which prove so destructive to cultivated plants.” Lazenby’s lectures in an 1883 horticulture course included discussions of raspberry rust, gooseberry mildew, grape mildew, grape rot, black knot of plum, peach yellows, pear and quince blight, and apple diseases, such as scab, bitter rot, and water core.

Lazenby was instrumental in having a bill introduced in the Ohio General Assembly that, in 1882, established the Ohio Agricultural Experiment Station at the University. Although the bill was designed without knowledge of the OSU Board of Trustees, it had the support of farm organizations in the state. Despite objections from the Board of Trustees, the experiment station had a separate administrative Board of Control and Lazenby became its first director.

The first facility on The Ohio State University Columbus campus for botany and horticulture was authorized in 1883 by the Board of Trustees. The legislature appropriated \$15,000, and construction was completed late in 1884. During the first ten years, it was referred to as Horticultural and Botanical Hall, or as Horticultural Hall. This building was located on what later became South Oval Drive and in front of what is now the Faculty Club Building. It included a basement, two stories, and attic space, plus a small



Botanical Hall on OSU Columbus campus, 1895

greenhouse. Small additions were added in 1896, and greenhouse space was increased. The 14 rooms included a large lecture room, three laboratories, store rooms, drying rooms, offices, a museum, and a herbarium. Prior to occupancy of this facility, courses in botany under Townshend and Lazenby were apparently taught in University Hall, completed in 1873.

By 1882–83, enrollment in the University had reached 362, and Lazenby reported 17 students enrolled in cryptogamic botany. In 1886, W. A. Kellerman of the Kansas Agricultural College presented a collection of fungi to the Department of Botany and Horticulture. The library was receiving *Botanical Gazette*, *Journal of Botany*, *Bulletin of the Torrey Botanical Club*, and *Biologisches Centralblatt*, and by 1889, *Annals of Botany*. In 1887, at the request of Erwin F. Smith of the U.S. Department of Agriculture, the experiment station's Department of Horticulture consented to cooperate in an investigation of "peach yellows." By 1888–89, Lazenby was receiving "volunteer" aid in teaching from Moses Craig, a senior in agriculture; W. J. Green, horticulturist; and Clarence M. Weed, entomologist and botanist, at the Ohio Agricultural Experiment Station on campus. During the Lazenby era, registration in botany far exceeded that in horticulture.

Walter Q. Scott was elected the second president of The Ohio State University in 1881. Under his two-year leadership, organizational changes included the formation of four schools—Agriculture, Arts and Philosophy, Engineering, and Science. However, it was not until 1896, when James Canfield became the University's fourth president, that these schools were

designated as colleges and their administrative heads were called deans.

Although still of vigorous mind, Townshend asked to be relieved of his duties at age 75 and was named the University's first professor emeritus in 1891. At his death, Edward Orton Jr., Ohio State's first president, stated: "The most important single line of service which he has rendered has been in connection with the transformation of the art of agriculture to the science of agriculture." At this time, the School of Agriculture included Departments of Zoology and Entomology, and Botany and Horticulture. After the split of Botany and Horticulture in 1891, Lazenby remained in charge of horticulture, and a new Department of Botany and Forestry was established.

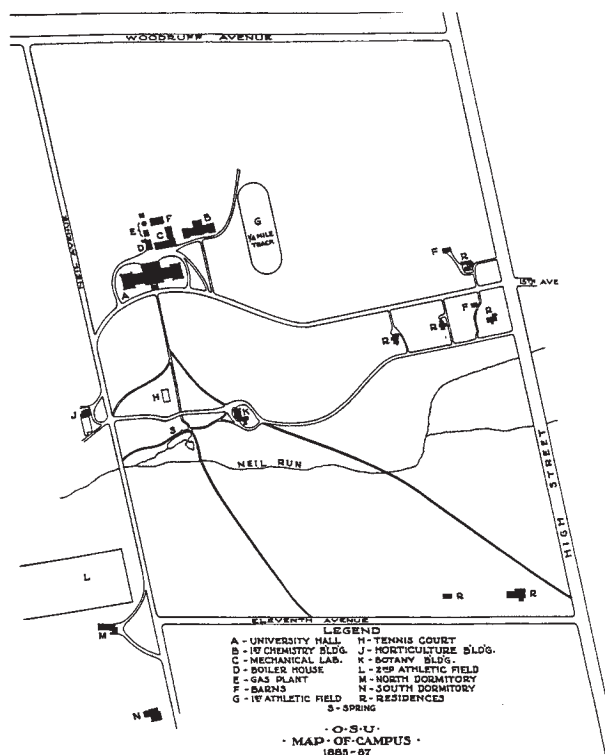
Lazenby was primarily a horticulturist, and with increasing numbers of students, it became apparent that the University needed to apply more attention to instruction in the physiology, pathology, taxonomy, and anatomy of plants. In 1891, the Department of Botany and Horticulture was divided, and the Department of Botany and Forestry was established.

William A. Kellerman, professor of botany at Kansas State Agricultural College, was appointed to chair the new department. Kellerman received his B.S. from Cornell and Ph.D. at Zurich, Switzerland. He was a native of Pickaway County, Ohio, and had already become widely recognized for his studies on the rust and smut fungi and diseases they caused. In 1894, forestry was transferred to the horticulture department, and the department became the Department of Botany. That name continued until 1948, when plant pathology was added, and the unit became the Department of Botany and Plant Pathology.

In 1892, Horticultural Hall was officially re-named Botanical Hall. The Department of Horticulture moved from Botanical Hall to the recently vacated experiment station building, as the experiment station had just moved to Wooster. Botanical Hall was only the fourth classroom building on The Ohio State University campus and was a campus landmark until it was torn down in 1940–41. Botanical Hall was the



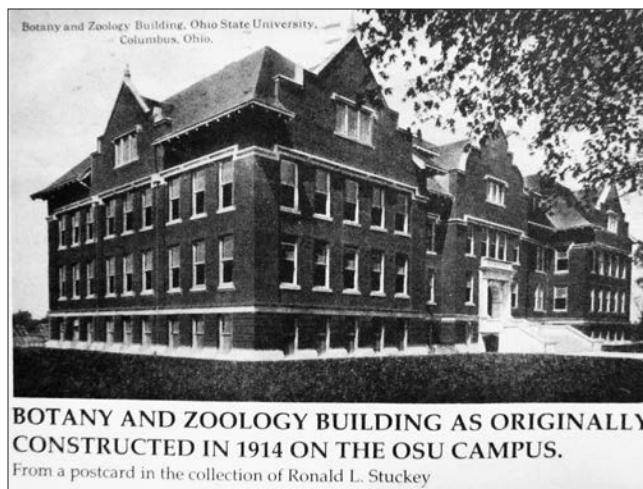
OSU Archives • 1890



Map of the OSU campus in Columbus, 1885–1887

home for the Department of Botany until 1914 when the Botany and Zoology Building was completed on Neil Avenue. From 1914 until it was demolished in 1940–41, Botanical Hall was used by the State Board of Health.

The first course in plant pathology at any American university was taught at Harvard University in 1875. **WITH THE APPOINTMENT OF KELLERMAN, THE FIRST COURSE IN PLANT PATHOLOGY WAS TAUGHT AT OHIO STATE.** *Botany 3*, called *Special Botany* in the 1891–92 catalog, was taught each of the three terms, the third term being *Vegetable Pathology*. Fourteen students enrolled in the course in 1892 and used Worthington G. Smith's *Diseases of Field and Garden Crops* as a text. In 1894, 20 students were enrolled in *Vegetable Pathology*, as it was a required course in agriculture. The 1896–97 University catalog listed two courses in plant pathology—*Botany 8: Economic Botany and Vegetable Pathology* and *Botany 64: Structure and Diseases of Timber*. The 1898–99 catalog listed *Botany 8* as *Vegetable Pathology*. In the 1901–02 catalog, *Botany 8: Vegetable Pathology* was listed for five hours' credit, with lectures three times each week and laboratory and field work



B & Z building on OSU Columbus campus, as originally constructed in 1914

twice each week. Masee's *A Textbook of Plant Diseases* was used by 1902. *Botany 11: Special Investigations in Economic Botany and Vegetable Pathology*, appeared in the University's 1901–03 catalogs. In 1903, the Board of Trustees approved a special appropriation of \$85 to the Botany department to be used the spring term for "carrying on investigations on vegetable parasites." Thirty-six students were enrolled in *Vegetable Pathology* in the spring term, 1903. By 1903–04, two courses in plant pathology, in addition to *Botany 8*, were listed—*Botany 18: Normal and Pathological Histology of Wood* and *Botany 19: Forest Ecology and Pathology*. By 1907–08, *Vegetable Pathology* appeared to be required for all students enrolled for Bachelor of Science degrees in agriculture, horticulture and forestry, and pharmacy.

During the winter months of 1905–07, Kellerman made three trips to Guatemala to collect parasitic fungi. He also collected considerable vascular plant material. Early in 1908, while on his fourth trip to Guatemala, Kellerman died. On this trip, he was to establish a Tropical School of Botany as a part of The Ohio State University. From his fungus collections in Guatemala, at least 21 fungal taxa (mostly rust fungi) and numerous vascular plant taxa have been described. (See Chapter 12 for additional details of his explorations)

DURING KELLERMAN'S TENURE, PLANT PATHOLOGY BECAME AN ESTABLISHED DISCIPLINE WITHIN THE DEPARTMENT OF BOTANY. According to the first edition of *American Men of Science* (1904), Kellerman was one of the 100 leaders in American botany. While still at Kansas in 1885, Kellerman, with help from J.



OSU Botany Field Trip, May 21, 1898, Sugar Grove, Fairfield County, Ohio
William Kellerman, second row, left side, with beard, dark suit, and bow tie
Frederica Detmers, second row, third person to right of Kellerman, with large checkered scarf
Robert Griggs, seated in front, left of fern
John Schaffner, back row, third from left, in dark suit and hat (see: Stuckey page 000).

B. Ellis and B. M. Everhart, started the publication, *Journal of Mycology*. For five years in the early 1890s, the Division of Pathology of the U.S. Department of Agriculture took over the responsibility of publication. From 1902 until his death, Kellerman again published and edited this important early journal covering aspects of mycology and plant pathology. This journal was superseded in 1909 by *Mycologia*, which in 1933 became the official organ of the Mycological Society of America. In 1903, he commenced publication of the *Mycological Bulletin*, which he continued to edit and publish until his death. Kellerman was a charter member of the Ohio State Academy of Science and served as its president in 1897. He was a member of a committee of The Ohio State University Biological Club that

founded *The Ohio State University Naturalist* in 1900. This name was changed to *The Ohio Naturalist* in 1901, and it served as the official organ of the Ohio State Academy of Science. In 1914, the Ohio State Academy of Science became The Ohio Academy of Science, and in 1915, *The Ohio Naturalist* became *The Ohio Journal of Science*. Kellerman was a regular contributor to *The Ohio Naturalist* and a member of its advisory board. All of these journals contained papers on plant pathology. Between 1901 and 1905, Kellerman published and distributed *Ohio Fungi Exsiccati*, most of which were plant pathogens. He is considered the founder of the herbarium at The Ohio State University in 1891. He and his students collected vascular plants and plant parasitic fungi from all parts of Ohio.

Since 1993, the herbarium has been housed in a new modern facility, the Museum of Biological Diversity. Included in the herbarium are the Department of Plant Pathology's extensive collections of plant parasitic fungi. Individuals responsible for the majority of these collections include W. A. Kellerman, F. L. Stevens, A. D. Selby, Moses Craig, W. H. Aiken, W. G. Stover, A. L. Pierstorff, and C. W. Ellett. The plant disease collections at the Ohio Agricultural Experiment Station (OARDC) are now part of these collections.

As Bernard Meyer, a later chairperson of the Department of Botany, reported in his history of the subject, "Ohio State University botany came to life under Kellerman." He brought the first expert and professional knowledge of fungi and plant pathology to the University, comparable to what A. D. Selby did for the Ohio Agricultural Experiment Station.

Following Kellerman's death in 1908, University President William Oxley Thompson called for **John**



OSU Archives

H. Schaffner to return from his studies at the University of Zurich in order to become chairperson of the Department of Botany. Schaffner was born in Marion County, Ohio, but spent most of his boyhood in Kansas. He had been brought to the Ohio State faculty by Kellerman

in 1897. Schaffner had interests in many areas of botany, including ecology, taxonomy, evolution, cytology, and genetics. Of the more than 300 papers he published while at Ohio State, only one was on plant pathology. This paper, published in 1931, was titled *Injurious Fungus Parasite of Equisetum*. Schaffner became internationally recognized for his studies on *Equisetum*, and this paper included an Ohio report of *Stammnaria*, an ascomycete parasite of *Equisetum*. The University catalog in the early 1900s listed Schaffner, along with Kellerman, as instructors in the *Vegetable Pathology* course. However, it is not known whether Schaffner ever actually taught it.

Schaffner was one of the outstanding botanists of his time. His 316 publications were on subjects ranging across the entire field of botany. Many were not in national journals, but most were of significance. He was the only editor for 15 years of the *Ohio Naturalist* and of two volumes of its successor, *The Ohio Journal of*

Science. He served the Ohio State Academy of Science as president in 1901. Schaffner retired as chairperson in 1918, but remained on the faculty until he died in 1939 at age 73. According to Bernard Meyer, he was not a good lecturer, but in a tutorial situation with individuals or small groups, he was very effective. Most who knew him would subscribe to the statement that "... he was a great man and a botanist's botanist."

Robert F. Griggs (1881–1962). B.S. (1903), The Ohio State University; M.S. (1906), University of Minnesota; Ph.D. in botany (1911), Harvard University. Griggs was appointed to the OSU faculty in 1906 and handled instruction in plant pathology after the death of Kellerman. He was the son of the engineer who built the well-known Griggs Dam on the Scioto River north of Columbus, Ohio. He was listed as the instructor for *Botany 8*, called *Plant Pathology* for the first time, in the 1908–09 catalog. Duggar's *Fungous Diseases of Plants*, published in 1909, was used as the text in 1909–10. Griggs continued to teach some plant pathology courses for several years, even after W. G. Stover was appointed to the faculty in 1910.

Griggs had wide interests in botany, primarily in ecology and taxonomy. Beginning in 1912, he became involved in botanical expeditions in Alaska. He led major scientific expeditions there to the Katmai region in 1916, 1917, and 1919. During the 1916 expedition, he and his team made his most famous discovery, the



National Park Service

Robert F. Griggs on Alaskan expedition (1916–1919)

Valley of Ten Thousand Smokes, a unique Alaskan geological area that resulted from a major volcanic eruption in 1912. Over the next several years, he led a national effort advocating that the Katmai region be made a national park, noting the similarities to Yellowstone. The region was given national monument status in 1918, but it was not until 1980 that it finally became Alaska's Katmai National Park. In 1959, in recognition of Griggs' pioneering activities in the region, the second highest peak in Katmai National Park, overlooking the Valley of Ten Thousand Smokes, was renamed Mt. Griggs. His remains, along with those of his wife and son, are buried on the peak. Griggs was a charter member of the American Phytopathological Society. He left Ohio State in 1921 for George Washington University and retired there as head of the Department of Botany. Griggs had a long, productive, and varied career, and was honored in many ways. (See Chapter 12 for additional details of his explorations.)

Frederica "Freda" Detmers (1867–1934). B.S. (1887), M.S. (1891) and Ph.D. in ecology (1912),



Ohio Academy of Science

all from The Ohio State University. She was the daughter of Henry J. Detmers, the first professor of veterinary science at Ohio State. Her M.S. thesis on rust fungi of Ohio, entitled *Descriptive Catalog of the Uredineae of Ohio*, was **THE FIRST IN THE FIELD OF PLANT PATHOLOGY AT OHIO STATE**. From

1889 to 1892, she was an assistant botanist, then botanist, at the OAES while it was located in Columbus. She worked on apple scab, wheat scab, diseases of raspberry and blackberry, and *Septoria consimilis* on lettuce, perhaps the first pathogen reported on cultivated lettuce. A preliminary list of rusts in Ohio also was published. Her publications were in OAES Bulletins and in the *Journal of the Columbus Horticultural Society*. After the OAES moved to Wooster, she taught science and German at North High School in Columbus from 1893 to 1906. Detmers was appointed to the Ohio

State faculty in 1906 as an instructor in the Department of Botany and earned her Ph.D. in ecology in 1912. This was **THE SECOND DOCTORAL DEGREE GRANTED BY THE OSU DEPARTMENT OF BOTANY**. Her research on the ecology of Buckeye Lake was a comprehensive study that combined several ecological aspects into one presentation. Having training and experience in plant pathology, it is likely that she contributed to the development of plant pathology during her time on the faculty, however, her principal responsibilities involved teaching general botany. Detmer's research at Ohio State emphasized floristic and ecological surveys, particularly in the Buckeye Lake region. She was promoted to assistant professor in 1914, but was reduced to instructor in 1917, as a result of a salary dispute. She resigned her position in 1919, but then resumed her career in Wooster with OAES that same year. Details of the rest of her career are in Chapter 2.

An event of great significance in the development of plant pathology in the United States was the organization of the American Phytopathological Society in 1909. Among the 130 charter members of this now internationally known and respected scientific organization, were five persons who had taken all or part of their education at The Ohio State University—Melville T. Cook, Robert F. Griggs, A. D. Selby, F. L. Stevens, and E. M. Wilcox. At least two others, Thomas F. Manns and James Van Hook, were plant pathologists at the experiment station for short periods in the early part of the twentieth century (see Cook, *Memorable Milestones*). The pioneering role of Augustine Selby in the development of the society and its research journal, *Phytopathology*, is discussed in the next chapter.

Wilmer G. Stover

(1881–1961). B.S. (1909), M.S. (1910), both from Miami University (Ohio); Ph.D. in plant pathology, (1921), University of Wisconsin. Stover was hired in the Department of Botany in 1910 as a substitute instructor and was ap-



OSU Archives • 1939



In September, 1914, the original section of the present Botany and Zoology Building on the Ohio State Columbus campus opened for classes. This resulted in a great improvement in research and teaching facilities over those existing in the old Botanical Hall on the slope northeast of Mirror Lake. Additional course offerings in plant pathology began to appear in the University catalogs, including two levels of *General Plant Pathology*, *Methods in Plant Pathology*, and *Research in Plant Pathology and Mycology*. In 1915, Stevens' *Fungi Which Cause Plant Disease* and Stevens and Hall's *Diseases of Economic Plants* were being used, along with Duggar's text. By the early 1920s, courses in *Diseases of Fruit Crops*, *Diseases of Garden Crops*, and *Diseases of Farm Crops* were being offered.

pointed instructor in 1912. His primary interests were plant pathology and mycology. From 1912 until his retirement in 1952, he was involved in teaching, in Extension plant pathology, and in the training of graduate students in plant pathology. After Stover's appointment, there was increasing activity at the graduate level in plant pathology, and a number of Master of Science degrees were awarded, beginning in 1915. This was somewhat due to Selby encouraging OAES faculty to seek graduate degrees by taking classes at Ohio State and doing relevant research at the Experiment Station. Stover loved to discuss fleshy fungi, and in 1913 published a monograph on the *Agaricaceae of Ohio*. He served as part-time Extension specialist in plant pathology from 1918–20, until E. E. Clayton was hired. Stover was a close friend of the department at Wooster and spent some summers there doing research and disease surveys. One six-month period was spent at Wooster doing research on mosaic diseases. In the late 1920s and early 1930s, Stover assisted in a successful and historical apple scab prediction program. During many summers of the 1930s and 40s, Stover did rust surveys of small grains for the USDA. After mandatory retirement at the age of 70, Stover commuted from Columbus to teach at Urbana College for four years before his death in 1961.

Chapter 2

Formation of the Ohio Agricultural Experiment Station and Early Research in Plant Pathology on the Wooster Campus (1881–1923)

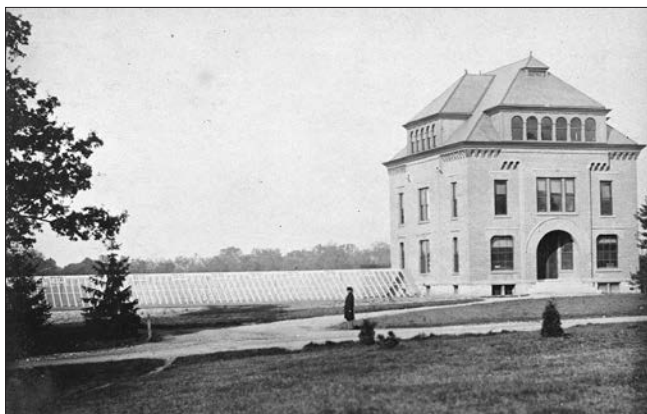
Agricultural research officially began in Ohio when Norton S. Townshend was assigned the Ohio Agricultural and Mechanical College's farm to conduct field tests in 1873. As described in Chapter 1, this effort was not too successful, and farming interests around the state were as critical of this effort as they were of the college's curriculum. The bill to establish the Agricultural Experiment Station with a separate administrative Board of Control had been designed by William Lazenby without consultation with the University Board of Trustees. He later said he did so because he believed it would be easier to

get appropriations if the Station were set apart from the University, with a separate Board of Control for its guidance. Governor Charles Foster signed the bill to become effective April 17, 1882, with the Station to be located on The Ohio State University campus, although he disagreed, as did the University Trustees, with the provision of separate administration. Needless to say, agricultural interests in the state supported a separate board and won.

Lazenby became the first director of the Station, on a part-time basis along with his university teaching duties, and was succeeded by Townshend in 1886. The



First Ohio Agricultural Experiment Station grounds and building on OSU Columbus campus, located on 30 acres of land west of Neil Avenue, 1888



First Ohio Agricultural Experiment Station building and greenhouses on OSU Columbus campus, 1889; located on site now occupied by Lazenby Hall

station's budget from the state Legislature was \$3,000 annually, with the University providing 30 acres of land along the west bank of the Olentangy River, west of Neil Avenue. Laboratory research activities were in the Chemistry Building for the first two years, then were moved to two rooms provided in the new Horticultural Hall on the Columbus campus.

W. S. Devol, B.S. in agriculture (1896), the second degree in agriculture given at Ohio State. Devol was appointed as the Station's botanist in 1882, charged with weed identification, seed testing, and investigation of plant diseases. He also served as bursar and superintendent of field work for the Station during part of his tenure. He did little, if any, work on plant diseases but spent his time on weeds and seeds. Plant disease reports came from other agriculturists, particularly **W. J. Green**, horticulturist. Devol served the experiment station in Columbus from 1882 to 1889, when he left to become the director of the Nevada Agricultural Experiment Station.

Clarence M. Weed succeeded Devol and was appointed as the station's entomologist and botanist in 1889 when the two disciplines were temporarily combined. Weed was primarily an entomologist, but did some work with plant diseases during his three years, reporting on potato rot, potato blight, and downy mildew and brown rot of grapes. In 1891, he earned a Doctor of Science degree from Ohio State in entomology and later that year joined the New Hampshire Experiment Station as a professor of entomology.

The rift between the Experiment Station Board of Control and the University administration widened further when the U.S. Congress passed the Hatch Act in 1887, establishing Agricultural Experiment Stations with the Land Grant colleges and providing \$15,000 per year to each state, with the provision that the funds could go directly to stations that were separate from the colleges. Neither Lazenby nor Townshend wished to relinquish their teaching duties to lead expanded operations at the Experiment Station, so with the new funding, the Board of Control, in 1887, hired **Charles Embree Thorne** as the first full-time director of the Experiment Station. Thorne was a native of Greene County, Ohio, and had some farming experience and some college education at Michigan State and Antioch Colleges. He had previously been employed by the University for several



Director Charles Thorne in his office at OAES, Wooster

years (1877–1881) as farm foreman and had become disenchanted with his job and agricultural education in the institution. In 1881 he became associate editor of *Farm and Fireside*, an influential farm journal that persistently attacked the University for developing a comprehensive curriculum, to the neglect of agricultural technology, thus subverting the prime objectives of the Morrill Act. This did not bode well for his relationships with the University after becoming director, and the uneasy partnership between the Experiment Station and the University was not improved.

In 1888, the Ohio Agricultural Experiment Station, made possible by the new Hatch funds, built its own building on the site now occupied by Lazenby Hall. It was a small two-story structure with a basement (39 by 45 feet). Later, greenhouses and some outbuildings were added.

Attempts to bring the Experiment Station and the University closer included appointment of a Board of Control member to the Board of Trustees, joint Board meetings arranged by former U.S. President and “peacemaker” Rutherford B. Hayes (who was president of the Board of Trustees at the time), and awarding Charles E. Thorne an honorary Master of Agriculture degree. These attempts were of little avail, and within a short period, Thorne and others recommended removing the Experiment Station from the University campus.

This move was made possible in 1891 by an act of the Ohio Legislature drafted by the Experiment Station Board of Control. The act authorized counties to raise money to enable them to recruit the Station to locate within their boundaries. Warren, Clark, and Wayne Counties submitted

"Who left not Himself without a witness, in that He did good and gave us rain from heaven and fruitful seasons, filling our hearts with food and gladness. —Acts 14:17."

PROGRAM OF
Dedicatory Exercises
Of the
Ohio Agricultural Experiment Station.

Wooster, Ohio, Thursday, June 3rd, 1897.—2:30 P. M.

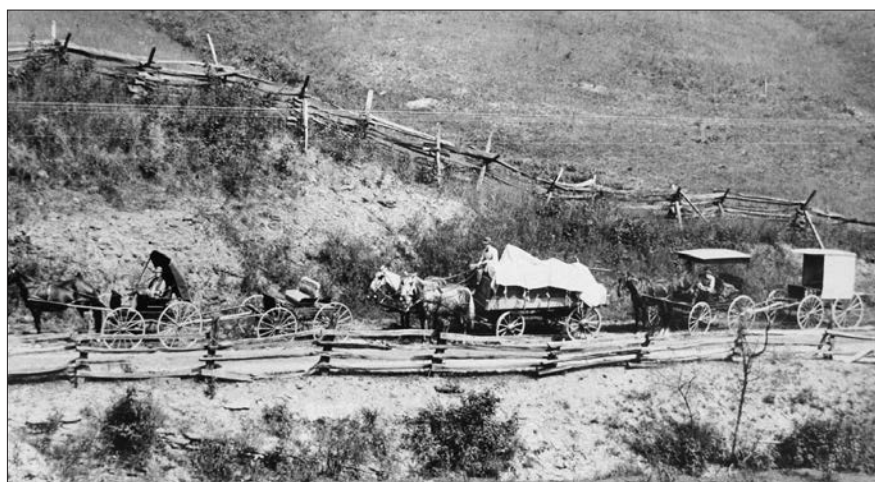
Music,	-	Eighth Regiment Band, O. N. G.
		American Overture—Catlin.
Prayer,		Rev. S. F. Scovel, President University of Wooster
Song,	-	Wesleyan Male Quartet
		"Sunday on the Ocean."
Address,		His Excellency, Asa S. Bushnell, Governor of Ohio
Address,		Hon. J. H. Brigham, Asst. Sec'y of Agriculture, U. S. A.
		"The Ohio Agricultural Experiment Station, Its History and Work."
Music,	-	Band
		"Gems of Steven Foster"—Tobani.
Address,	-	-
		W. I. Chamberlain, L. L. D., Associate Editor Ohio Farmer
		"The Educational Value of Agricultural Experiment."
Song,	-	Quartet
		"A Little Farm Well Tilled."
Address,	-	-
		Dr. E. W. Allen, Assistant Director, Office of Experiment Stations, U. S. Department of Agriculture.
		"The Experiment Station Movement."
Music,	-	Band
		"Experiment Station March"—Miller.
		Reception by the Governor in the Corridors of the Administration Building, - - - 5 to 6 P. M.

Dedication program for original OAES building at Wooster, 1897

bids and the Station accepted Wayne County's high bid of \$85,000 in land and funding. Although the citizens of Wayne County had voted for a tax levy to fund the move,

a subsequent lawsuit that reached the Ohio Supreme Court resulted in a decision that it was unconstitutional to tax Wayne County citizens for work that an institution would do to benefit all of Ohio. The bonds were assumed by the state in 1894.

In September of 1892, the Ohio Agricultural Experiment Station moved from the university at Columbus, to Wooster, Ohio, in Wayne County. The move was done by rail car and by wagon train, following the present Route 3 from



Wagon train relocating OAES from Columbus to Wooster, 1892

Columbus to Wooster. The Station took possession of 470 acres of farmland just south of the town of Wooster. The bulk of the land was composed of the two “Rice Farms” established by Barnhart and Simon Rice in 1822. Both of the original farm houses still stand on campus today as historical landmarks. The Barnhart Rice Stone House, near the present rose garden, was built of hand-cut sandstone that was quarried on the farm. It remains nearly unchanged, and is one of the best examples of early German architecture in Wayne County.

Once at Wooster, Thorne moved quickly to build the Station. The first building erected at Wooster in 1893 was a boiler house and office attached to greenhouses. At first, many, if not all, faculty and administrators had offices in the Adam Foss Building in downtown Wooster. In 1897, the east wing of the large, sandstone building that housed OAES activities was dedicated and faculty moved there. The Department of Botany occupied two rooms in that facility and a small section of greenhouse behind the original building. For the next century, this building was the center of activities on the Wooster campus, and remains today as a significant local Wayne County landmark. In 1898, another small building, called the Biology Laboratory, or “Pathologium” as Selby called it, was erected on the south side of the main building. It had two greenhouses and was the main laboratory for the study of insects and plant diseases. It still stands today and has had many uses over the years.

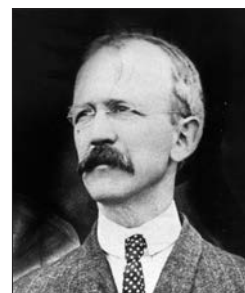
During Thorne’s time as Director, hundreds of one-tenth acre fields were used by him and his staff to illustrate to both Ohio farmers and those of the entire Midwest how to bring old, “farmed-out” land back to maximum productivity. This work made Thorne famous throughout the country. The additional work of the station staff in areas of pest control, animal nutrition, and animal husbandry brought considerable attention to the OAES. Director Thorne retired in 1921, after 34 years of service, with a worldwide reputation as an agronomist, and left behind a solid, well-operating agricultural experiment station. He was succeeded by Carlos G. Williams, a long-time associate in agronomy since 1903. Thorne remained chief of the soils department until it became part of the Department of Agronomy, at which time he was appointed consulting chief in agronomy and served



Plant pathologist working with fungal cultures in OAES laboratory, Wooster, in early 1900s

until his death in 1936. Under Thorne’s leadership, the Ohio Agricultural Experiment Station became a highly respected and admired institution for its work in soils, crops, animal nutrition, plant diseases, and insects.

One of the most significant acts of the Ohio Agricultural Experiment Station (OAES) was the appointment of **Augustine D. Selby** (1859–1924)—not only for the research and academic development of the fledgling institution itself, but also for the development of the new science of plant pathology in Ohio, the United States, and the world.



Director Charles Thorne wrote of him:

My first acquaintance with Mr. Selby was when, as a young student at The Ohio State University, he applied for employment on the University farm. I have always carried, in the picture gallery of my memory, a view of his pleasant address when we first met, and when, in 1894, his name was suggested by my coadjutor, W. J. Green, for the position of Botanist and Chemist at the Experiment Station, I was glad to invite him to that position.

At that time the Station had just been relocated in Wayne County, a relocation involving serious differences of opinion and tedious legislation, and its resources were not such as to justify the employment of separate heads for these two important lines of work, but Mr. Selby entered upon the work with enthusiasm

In Wooster, History Is Written in Stone.



First set of buildings constructed on OAES campus, Wooster, photo from 1898.
Main building with tower is on left, small building on right is Selby's "Pathologium."



Original stone OAES building (1897), still standing on the OARDC campus, Wooster, is a significant Wayne County landmark



Selby's "Pathologium" (1898)
still stands on the OARDC campus at Wooster, 2014



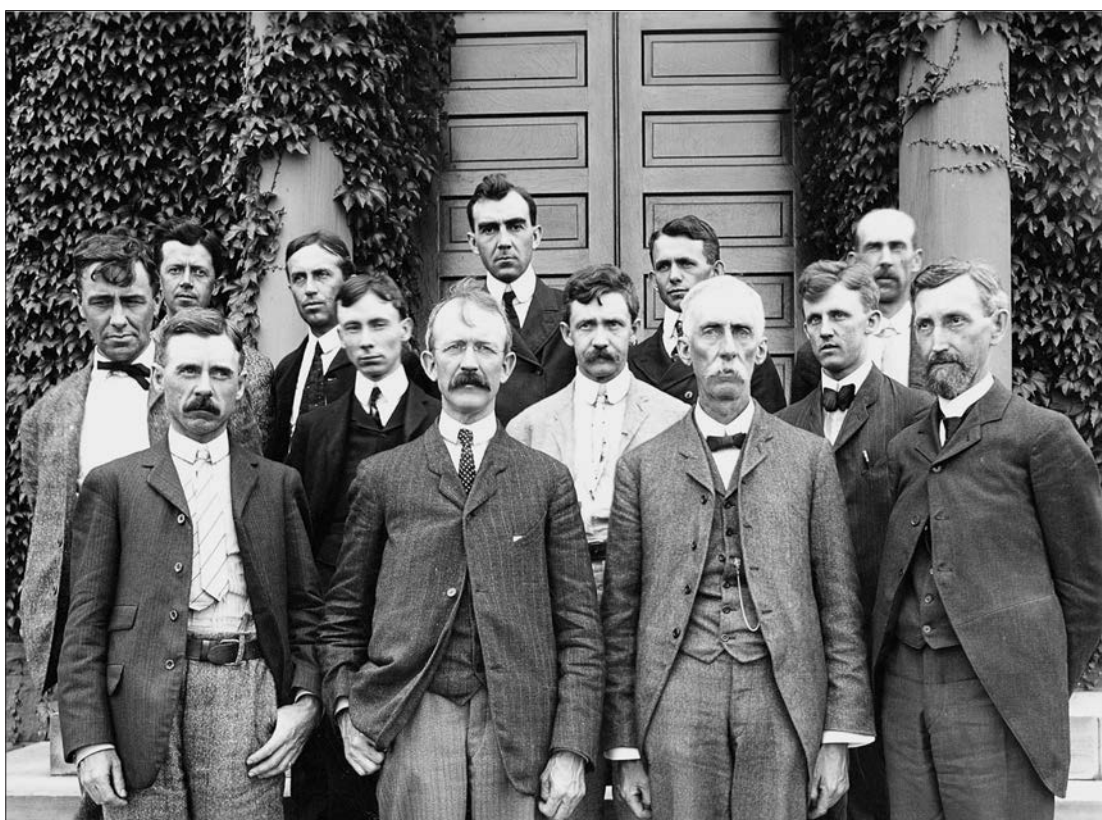
Barnhart Rice Stone House, built mid-1800s,
remains on OARDC campus, Wooster, 2014

and ability, soon calling young assistants to his aid, and thus he carried the work forward until increasing support of the Station's work made it possible to release him from responsibility for the chemical work and concentrate his energies upon his favorite studies in Botany and Vegetable Pathology.

Born and reared on an Ohio farm, a farm of which he eventually became the owner, and possession of which he retained through life, he always maintained a sincerely appreciative interest in the farmers' problems, and his publications on the control of weeds and plant diseases were prepared with the actual conditions of the farm always in view. He was constantly on the lookout for new dangers threatening the interests of the farm in his field of work, and was always ready to devote his energies to their control.

His health was never perfect, and he spent parts of several winters on leaves of absence in southern climates—Italy, Cuba, the Isle of Pines, and South America.

Selby was born and raised on a farm near Sharpsburg in Athens County, Ohio, in 1859. As a young man, he served in public schools in Huntington, West Virginia, and in Ironton and Columbus, Ohio, in superintendent and principal positions. He taught botany at the Columbus High School from 1889 to 1894. During that time, he studied at Rutgers University and The Ohio State University, receiving a B.S. from Ohio State in 1893 at age 34. B. D. Halsted at Rutgers and W. A. Kellerman at Ohio State greatly influenced his scientific outlook. He later had additional studies at Washington and Columbia Universities and the Missouri Botanical Garden when on leave from his duties at OAES. In requesting a two-month leave to study at the Missouri Botanical Gardens, Selby reminded the Board of Control of paid sabbatical leaves at universities and that experiment stations were developing similar policies. He emphasized the importance of keeping abreast of new information and methods of investigation.



OSU Archives

OAES Directors and Staff, Wooster, 1905
Front row from left, C. G. Williams, A. D. Selby, W. J. Green, C. E. Thorne

When first hired by OAES in 1894, Selby's title was botanist and chemist. Other members were assistants under his supervision. Later, the areas of botany and chemistry were separated so that Selby could do more work in botany, including weeds, seeds, plant breeding, and plant diseases. Resources for research were painfully small when Selby first arrived at Wooster, but he immediately began accumulating some equipment and key library materials. He was appointed chief and botanist of a new Department of Plant Physiology and Pathology in 1902, when the station formally put disciplines into these units with chiefs as administrative heads. He served in this capacity until his retirement in 1923. The department was designated as Plant Physiology and Pathology from 1906–08, then as the Department of Botany, starting in 1909.

Early work in the department, in addition to plant diseases, involved seed testing, weed identification and control, and plant breeding. Seed testing was done without charge until 1914, when a charge of 25 cents each was instituted for purity and for germination tests for seed dealers. Early in the 1900s, Selby requested that the State Board of Agriculture do the testing. Corn breeding was done in the department until at least 1908, when Selby's #175 was released to farmers. Oat breeding was transferred to agronomy in 1912 and wheat breeding somewhat later. Tobacco breeding (primarily at Germantown, Ohio) remained in the department until June 1924, when the program was discontinued under H. C. Young's administration and never resumed by the Station.

Selby was a consummate writer and enjoyed a close working relationship with Director Thorne, often assisting him in writing and editing station publications and correspondence. Selby's research and writings, at one time or another, dealt with diseases and their controls for most of Ohio's major crops, including fruit, ornamental, vegetable, and field crops, resulting in numerous publications. He was the first to recommend the use of the formaldehyde drip method to control onion smut, to describe (with T. F. Manns) a new *Colletotrichum* disease on cereals, and to report the occurrence of *Thielaviopsis basicola* in the United States. He, along with an OAES chemist, did an extensive study on the yields, sugar content, solids, and production problems of sugar beets to aid the development of the industry in Ohio. In 1897 and 1906

he published the first and second *Ohio Weed Manual* (OAES Bulliten 83) which was used extensively. His *A Condensed Handbook of Diseases of Cultivated Plants in Ohio* (OAES Bulliten 121) was published in 1900 and revised in 1910. At the time of its publication, **IT WAS THE ONLY GENERAL COMPILATION OF THE AMERICAN ASPECTS OF PHYTOPATHOLOGY.** As such, it became widely used as a textbook in plant pathology in several states. Selby had 2,000 copies of this publication bound for distribution in 1912 at a cost of six cents per binding per copy. His extensive list of publications is published in his obituary in *Phytopathology* 15:1–10, written by W. G. Stover.

Selby served many roles on important committees. Among those, in 1895 he helped form The Ohio State University Agricultural Student Union (the forerunner of 4-H and FFA clubs) and served as president (1903); he was a member of the six-member first committee of the newly formed (1908) U.S. and Canada Association of Official Seed Analysts; he was a member of the Interstate Committee for the Pine Blister Rust (1916); and the American Plant Pest Committee (1919). Selby was a Fellow of the American Association for the Advancement of Science and member of its Council (1911), and a charter member of the Ohio Academy of Science, having served as president in 1901.

Selby had a long and warm friendship with Professor L. R. Jones of the University of Wisconsin. Both, along with a few others, had a great interest in the future of plant pathology in the United States, and many plans for a future professional society to improve the science's growth were formulated in their minds. A great deal of their correspondence on the formation of the American Phytopathological Society and the initiation of its publication, *Phytopathology*, is available.

Dr. R. James Cook, of Washington State University, wrote a 100-year history of the American Phytopathological Society (APS) on the centennial of its founding. This was published by APS as *Memorable Milestones* (2008). Cook described how APS was begun, and highlighted the role of Selby and other founders.

It was under the auspices of AAAS that USDA plant pathologist C. L. Shear organized a meeting, held on December 30, 1908, during the annual meeting of AAAS held that year in Baltimore, to discuss the formation of an independent American scientific society for plant pathologists. Fifty-four people

attended the organizational meeting led by Shear. The statement released from that meeting read: 'It is our opinion that an American Phytopathological Society, placed upon a broad and generous foundation, may be of invaluable aid in promoting the future development of this important and rapidly growing subject in America, and that its influence may be made of international importance ...'. The first officers of APS were elected at that 1908 organizational meeting: President L. R. Jones, University of Wisconsin; Vice President A. D. Selby, Ohio Agricultural Experiment Station; Secretary-Treasurer C. L. Shear, USDA; and Councilors J. B. S. Norton, University of Maryland, and B. M. Duggar, Cornell University ... The first meeting of APS was held jointly with AAAS the following year, on December 30–31, 1909, in Boston; 50 members attended and 45 papers were presented. The new officers elected at that first official meeting were President F. L. Stevens, North Carolina State University; Vice President A. F. Woods, University of Minnesota; Secretary-Treasurer C. L. Shear; and Councilors L. R. Jones, A. D. Selby, and H. H. Whetzel, Cornell University.

Not only was Selby a primary founder of the American Phytopathological Society, he went on to serve as the **THIRD PRESIDENT OF THE SOCIETY** in 1911. He was also one of the first associate editors of the APS journal *Phytopathology*. Other official Charter Members of APS who were faculty members of OSU or OAES include: R. F. Griggs, T. F. Manns, and J. M. Van Hook (then at Indiana

University). Other Charter Members who held advanced degrees from Ohio State include: M. T. Cook, F. O. Stevens, and E. M. Wilcox.

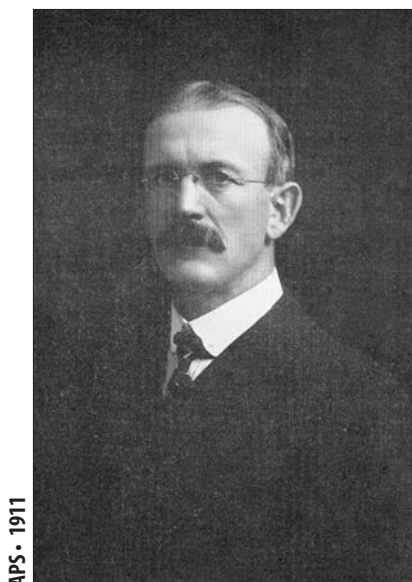
Much of Selby's very considerable contributions to the development of the science of plant pathology remains unknown to most modern pathologists because his work was

done prior to the development of large graduate departments, and he was not a member of a university faculty. However, unlike Thorne, Selby wholeheartedly embraced close ties with The Ohio State University. He always reminded his OAES co-workers they were "scholars." He was probably the first strong advocate of an arrangement with The Ohio State University to allow OAES associates and assistants to take a leave of absence to attend classes, and then return to OAES and do their research for a graduate degree.

Unfortunately, Selby suffered from poor health. As early as 1904, he requested a six-month leave of absence for exhaustion. And, as indicated, many of his winters were spent in warmer climates. He retired, with little warning, in July of 1923. In May, 1924, he died at age 64, three weeks after a stroke that occurred on his Selby Heights Farm, a fruit farm in Bern Township, Athens County, Ohio. He is buried in the Wooster Cemetery and his tombstone can be seen today when driving up Madison Hill towards the OARDC.

During Selby's tenure, the average stay for an assistant or associate was somewhat short, perhaps for several reasons. Many went on to better positions. The institution's administration, and perhaps the department's as well, was quite autocratic and imposed heavy demands on staff time and behavior. It was rumored that Selby was somewhat "high strung." In 1912, five of the six department staff either resigned or were terminated en masse. There was dissatisfaction with pay and time spent in "Extension" (lecturing at Farmers Institutes), when they were hired primarily to do research. In fact, three of his faculty told Selby that they would not attend Farmers Institutes. Travel to these functions by trolley and train was, at best, laborious. In a letter to Professor Anderson of Wabash College, Selby wrote:

As you are aware, I have been here since 1894 and I have found the working conditions of the station and the requirements imposed such that I could cheerfully perform and continue to be busily happy at work. However, some of the young men who have recently been here have not found a working Experiment Station just like a teaching institution and have criticized it from that point of view.



APS - 1911

INDEPENDENT FARMERS' INSTITUTE

Schoenbrun, O., February 29, 1908.

PROGRAMME

MORNING SESSION—10:00 O'CLOCK

Invocation.....Rev. Petty
Address of Welcome.....O. J. Demuth
Response.....C. F. Myer
Song by Grange.....
Lecture—Smuts of Grain.....Prof. A. D. Selby
Recitation.....Miss Maud Watkins
Corn—Its Improvement.....C. F. Myer
Discussion.....Philip Bair
Duet.....Amanda and Bertha Schneider
Lecture—Corn Leaf or Blade Blight and Corn Mold
.....Prof. A. D. Selby
Song by Grange.....

AFTERNOON SESSION—1:00 O'CLOCK

Music.....
Lecture—Bad Weeds and Impure Seeds..Prof. A. D. Selby
Recitation.....Mrs. June Frey
Swine Growing For Profit.....Harry S. Bartles
Discussion.....James Watkins
Recitation—"The Day the Hogs Go Off".....
.....Miss Erma Williams
Lecture—Potato Blight and Potato Rot.Prof. A. D. Selby
Duties of a Farmer's Wife.....Mrs. James Watkins
Music.....

EVENING SESSION—7:00 O'CLOCK

Music.....
Recitation.....Miss Berth Kelly
Song.....
The Farm, School and Home.....P. C. Knisely
Recitation.....Miss Erma Williams
Lecture—Notes of Travel.....Prof. A. D. Selby
Recitation.....
Song by Grange.....

Program from Independent Farmer's Institute, 1909—
note how many times Selby is on the program
and other unique program items

Selby was recognized by OAES when Selby Road was named in his honor in the early part of the 20th century and Selby Hall (housing the Department of Plant Pathology and the Electron Microscope Laboratory) was named for him in 1977. In his book *Seeds of Change: A History of the Ohio Agricultural Research and Development Center* (2000), Christopher Cumo, who delved into the history of the OARDC for his Ph.D. in history from Akron University, recognized the importance of Selby's contributions in its early development.

As a scientist, Selby was a pioneer in Ohio. He was the first at the station to identify himself as a plant

pathologist on his letterhead. In doing so, he was nearly seventy years ahead of his time, for only in 1967 would the station formalize the Department of Plant Pathology. Furthermore, he was among the first in Ohio to embrace Mendelian genetics for describing the mechanism of heredity. His weed manuals and his handbook of diseases of cultivated plants were encyclopedic in their coverage and served as college textbooks even after his death.

Selby was equally adept in organizing and promoting scientific societies. He was a charter member of the Ohio Academy of Science and a frequent speaker at its meetings. At the national level, he helped found the American Phytopathological Society and its journal, Phytopathology. In these labors, Selby, like Thorne, built a national reputation for himself and for the station.

Joseph W. T. Duvel (1873–1946). B.S. (1897), The Ohio State University. He was at the OAES in 1898–99, but then left to attend the University of Michigan where he received his Doctor of Science degree in 1902. While at OAES, he assisted in food, feed, and grain analyses. This evidently influenced his career choice, since, after receiving his Ph.D. from the University of Michigan, he spent a lifetime of work with seed and grain in the USDA as an assistant in a seed laboratory, in charge of grain standardization, as grain exchange supervisor, grain futures administrator, and commodity exchange administrator.

John F. Hicks served as assistant botanist from 1899 to 1903. We have no record of his education, but he evidently did not have a college degree. He published bulletins with Selby on *Clover and Alfalfa Seeds* and *Spraying for Grape Rot*. In the station's annual report to the Board of Control for the year ending June 30, 1903, it was stated that:

In June, Mr. John F. Hicks who on Saturday before had resigned his position as Assistant Botanist to enter upon private business was murdered on the streets of Wooster, under circumstances altogether creditable to himself.

G. M. Lummis was appointed some time after Hicks' death but resigned in December 1903 and was replaced by J. M. Van Hook.

James M. Van Hook (1870–1935). B.A. (1899) and M.A. (1900), both from Indiana University. Van Hook was a plant pathologist at the New York Experiment Station from 1902 to 1904. While at OAES (1904–07), he published articles on apple scab, blighting of field and garden peas, grape stem blight (with A. D. Selby), and celery root rot. Both at Cornell and OAES, he investigated diseases of ginseng, a crop grown extensively under glass. He returned to Indiana University as a faculty member in 1907, teaching and conducting mycology research until his death in 1935. He was a charter member of the American Phytopathological Society (1910) and of the Mycological Society of America.



James M. Van Hook
taken from group photo,
1905

OADDC

True Houser attended The Ohio State University and studied agronomy, but did not complete a degree. He was appointed assistant in plant breeding in 1906 and served until 1924. He primarily worked in plant breeding, first with wheat and corn. He then was based at Germantown, Ohio, where a breeding program for cigar filler varieties of tobacco was established in April, 1911. In 1902, the Ohio General Assembly made an appropriation to the station for a substation or test farm in the Miami Valley, with the provision that one of its dominant programs would be a study of the problems related to the culture of tobacco. The Tobacco Growers Association of Germantown, Ohio, purchased 53 acres and leased it to the station for 10 years with an option to buy during that period. By 1914, with the development of new varieties by Selby and Houser, Ohio trailed only Kentucky, North Carolina, and Virginia in tobacco production. Houser collaborated with the USDA and did full-time plant breeding, primarily tobacco, until the tobacco program was discontinued in 1924. At that time, he retired from OAES and became a full-time farmer. He published a bulletin in 1912 on tobacco growing and cigar filler varieties. In 1921, in an OAES monthly bulletin entitled *New Cigar Tobacco Varieties*, he described three new high-yielding varieties.

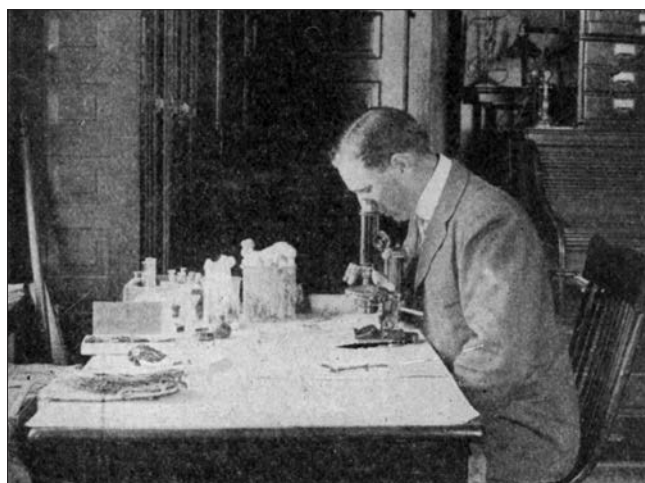
Thomas F. Manns (1876–1954). B.S. (1901) and M.S. (1903), both from North Dakota State College.

Manns was born in Ontario, Canada but moved to North Dakota at an early age, where he grew up on a pioneer farm there. He was an assistant botanist at North Dakota State College and was a secondary school teacher and principal in the Philippines before joining A. D. Selby and



OADDC

True Houser at OAES. He served as assistant botanist from 1907 to 1910, and soil bacteriologist from 1910 to 1912. As indicated in his obituary in *Phytopathology* by Dr. J. W. Heuberger, Manns had an inquisitive and inventive mind that ranged far afield from plant research. He described a bacterial blight of oats and the causal agent as *Pseudomonas avenae*. This disease described by Manns may have been what we now know as barley yellow dwarf. His description appears to be the first for this virus-caused disease, but its true cause was not identified until many years later. He published bulletins on *The Fusarium Blight and Dry Rot of Potato* and *Two Recent Important Cabbage Diseases in Ohio*. With Selby, he published a bulletin on *Studies in Diseases of Cereals and Grasses. I. New anthracnose diseases of certain cereals and grasses. II. The Fungus of wheat scab as a seed and seedling parasite. Also general on small grains*. The publication contained important new information and descriptions of a new species of *Colletotrichum*. In 1912, he left the OAES to become head of the department of plant pathology and soil



OADDC

Thomas Manns in laboratory at OAES, Wooster

bacteriology at the University of Delaware, retiring in 1947 after a distinguished career of 35 years. After retirement, he was active in the mushroom industry until his death. While at OAES, he became a charter and life member of the American Phytopathological Society.

Warren Selby, A. D. Selby's son, joined the department for part, or all, of 1909 as an assistant botanist. After completing a B.S. degree at Ohio State, he entered law school at the University of Akron and then practiced law in that city for a period of time.

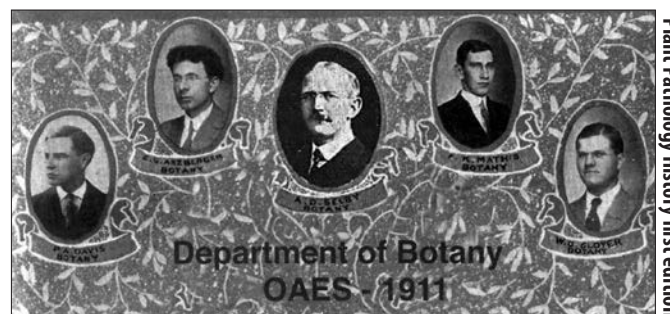
Albert G. Woods (1881–1948). B.S. (1904), Valparaiso University; M.A. (1908), Indiana University. He did graduate work under E. M. Wilcox toward a master's degree at the University of Nebraska. Wood joined OAES in 1910 to work on diseases of forest, shade, and ornamental trees. He remained in the department about six months, when he resigned to travel with and care for a younger brother who was seriously ill with tuberculosis. He later taught high school in Colorado and then completed his master's degree at the University of Nebraska in 1916. He was a professor of biology at Trinity and Baker Colleges and at Grove City College, Pennsylvania, where he eventually (1927) completed his professional career. Woods was a life member of the American Phytopathological Society.

Harry J. Christoffers, B.S., University of Wisconsin, was appointed later in 1910 to succeed Woods as assistant botanist, working on fruit tree diseases. Within two months, he resigned from the department to accept a job with the U.S. Commission on Fish.

Walter O. Gloyer, B.A. (1909) and M.A. (1910), both from University of Wisconsin. He also joined the department in 1910 as an assistant botanist to work on fruit diseases. In 1912, Gloyer accepted a position as assistant botanist at the New York Agricultural Experiment Station at Geneva. His work at OAES and Geneva included research on apple cankers and scab, diseases of China aster, cabbage, beans, and other crops.

Emil G. Arzberger (1877–1930). He had a degree from the State Normal School, Whitewater, Wisconsin (1903), and a Bachelor of Philosophy degree from the

University of Wisconsin (1906). He remained there for several years as a graduate student and assistant in botany. During the 1909–10 academic year, he was a Fellow at the Missouri Botanical Garden in St. Louis and received an M.A. from Washington University. From 1910 to 1912, he was assistant botanist at the OAES, working on diseases of cereal and vegetable crops. He published a bulletin on cob rot of corn. He resigned, with several other staff members, in December 1912. During the summer of 1913, he had a research scholarship at the New York Botanical Garden. He then was appointed as assistant pathologist in the Office of Nematology, Bureau of Plant Industry, USDA, a position he held until his death. Evidently, his research dealt mostly with fungi inhabiting roots and with mycorrhizae.



A. D. Selby and OAES Department of Botany, 1911

Paul A. Davis, B.S. in agriculture (1908), University of Massachusetts, taught science in a New Jersey high school. In 1910, he was appointed as assistant botanist to investigate diseases of forest and shade trees and ornamentals. He remained at OAES for one year, resigning in 1911.

Herbert R. Watts, B.S. in horticulture and forestry (1910). He did some graduate work in botany and entomology, including courses in bacteriology and systematics of fungi. After graduation, Watts had a position with the W. M. Ritter Lumber Co. in Columbus (1910), then joined the Bureau of Entomology, USDA, in Wellington, Kansas, working with cereal and forage crop insects. He was offered and accepted the Davis position as soon as Selby knew Davis was leaving in 1911. Watts had been offered

a position in 1910 but declined, since he was still a student at Ohio State and business manager for the *Agricultural Student*. Selby wrote to Watts, "I did not take the pains to inquire about your training in modern languages. If you have not already a reading knowledge of German, it will be necessary that you prepare for this instruction, which can no doubt be arranged without very large expense here in Wooster." This opens the question as to whether this was a general requirement to be hired as one of Selby's assistants or associates. Watts had the background in schooling and experience that was needed for research on tree diseases and timber rots in the department, and also for a research project with the Rodgers Catalpa Tree Nursery in Mechanicsburg, Ohio. The latter involved antiseptic treatments (primarily asphaltum) to cut-off stumps and pruning wounds. His first report on his work to Selby in April, 1912, included data on collecting forest fungi, mushrooms, diseases of maple trees, diseases of *Catalpa speciosa*, and wound treatments. Watts resigned, with other assistants, at or near the end of 1912.

J. T. Rogers, M.S., Virginia Polytechnic Institute and State University, joined the department in June 1912, as an assistant to study fruit diseases. He was one of five who resigned at or near the end of 1912.

Juan B. Demaree, B.S. (1910), Purdue University, served as assistant botanist at the Maryland Agricultural Experiment Station (1910–12). In 1912, he came to OAES as an assistant to study truck and forage crop diseases. He resigned with the others in 1912. He then worked for Pennsylvania State College and the USDA as associate pathologist, pathologist, and senior pathologist until he retired in 1951. His research dealt with diseases of pecans and small fruits.

Leo E. Melchers, B.S. (1912), The Ohio State University, accepted a position as assistant botanist at OAES to work on fruit diseases. He, too, resigned with the others at the end of the year. At the time, he was enrolled in the Graduate School at Ohio State. He reentered the University and completed a M.S. degree in 1913, but with a new research problem not under Selby's direction. Melchers accepted a position at Kansas State College (1913), eventually becoming head of the department of botany and plant pathology,

a position he held until his retirement (1952). His research was primarily with diseases of cereals, but also included forages and fruits.

Ernest L. Nixon (1888–1969). B.A. (1912), Ohio University. Before and after he graduated, he served as a field assistant at OAES. He was an agent with Forest Pathology, Bureau of Plant Industry, USDA, surveying Ohio for chestnut blight (1912). In 1913, Selby appointed him assistant botanist and leader in fruit disease investigations. At that time, he had enrolled in the Graduate School at Ohio State. In 1914, he resigned to manage a commercial fruit and poultry farm in southern Ohio. Selby, in a letter to Thorne, expressed regret at losing a man of Nixon's attitude and abilities, but stated that he could not meet the 50 percent increase in salary. Nixon finished a M.S. at Ohio University (1916) and then enrolled for a year in Columbia University, working on a Ph.D. that he finished in 1927. In 1917, he was appointed to the faculty of Pennsylvania State College, where he remained for 23 years. The first half of his career was served in Extension and the last in research at the agricultural experiment station. His work with potatoes was so successful that Pennsylvania, which ranked 26th among potato-growing states, would become second in 1928. "Doc" Nixon became known as the "Potato Wizard of Pennsylvania." He remained a close friend of OAES, exchanged information, and sometimes went on potato tours through northern Ohio when asked. He purchased a farm near State College, Pennsylvania, on which potatoes and Christmas trees were grown that was later managed by his children. At age 57, he left the university and became counselor to the Pennsylvania Chain Store Council. His nephew, former President Richard M. Nixon, was said to have been inspired by Ernest Nixon, the only member of his father's family to get a college education.

Jesse H. Muncie (1890–1954). B.A. (1912), Wabash College. From April to October, 1913, he served as assistant botanist at OAES, investigating vegetable, field, and greenhouse crop diseases. He then went to Michigan State College where he worked primarily on diseases of beans (1913–17) and later finished his master's degree at Cornell University.

Duane C. Babcock, B.A. (1911), Wabash College. He spent one year with the Pennsylvania Chestnut Blight Commission in charge of a laboratory at Charter Oak, Pennsylvania, then accepted a position in 1913 as assistant botanist at OAES to investigate truck, forage, and cereal crop diseases. At OAES, Babcock published on diseases of forest and shade trees, ornamental plants, and potatoes. His poster “Learn to Know Potato Diseases” was one of the projects to aid the World War I effort. It was widely distributed and used in Ohio, and adopted by 22 other states and England. In the latter part of his OAES career, Babcock was involved in wheat stem rust surveys and barberry eradication as a collaborator with the USDA. These projects were under the direction of E. C. Stakman of the University of Minnesota. He resigned in 1919 to accept a job in fertilizer sales as associate agriculturist with the Barrett Manufacturing Company, and was stationed in Medina, Ohio.

Richard C. Walton (1886–1926). B.S in horticulture (1911), Pennsylvania State College. He served with the Pennsylvania Chestnut Blight Commission for 2½ years, then came to OAES in 1914 to work on fruit diseases, replacing Nixon. He published research in *Phytopathology* and the *Ohio Monthly* on fire blight; black knot of plum and cherry; frog-eye on apple; apple cedar rust; and spray injury on apple, peach, and pear. While at OAES, he enrolled at Ohio State for graduate study. When Pennsylvania State College established a field station at Arendsville, Pennsylvania, he resigned from OAES in 1917 to accept a position there as a plant pathologist, where he continued work on fruit diseases until his early death at age 40.

Alfred S. Orcutt, B.S. and M.S., Denison University. He had three summers’ experience on disease investigations with the USDA and eight months in the Department of Plant Pathology at the University of Wisconsin before being appointed as assistant botanist by Selby in 1914. He investigated diseases of field and truck crops in 1914 and left OAES in 1915.

J. Galen Humbert, B.S., Michigan State College, was appointed as assistant botanist in 1914 to investigate forage, truck, and greenhouse crop diseases. He

published monthly reports on disinfecting tobacco beds, seed and soil treatments for diseases, disease-resistant varieties of tomatoes, and a comprehensive bulletin on tomato diseases. He and S. N. Green, in the Department of Horticulture, were successful in developing resistance to Fusarium wilt of tomato. He also worked with resistance in cabbage to yellows. He left OAES in 1917.

Wayne Van Pelt (1892–?). B.S. (1916), Ohio University. He was employed by the department during the summers of 1914 and 1915, primarily at the Hamilton County Experiment Farm at Mt. Healthy, Ohio, assisting in fruit disease work. In 1916, he was appointed assistant botanist at OAES to study diseases of cereal, forage, and truck crops. Van Pelt investigated black mold of stored onions, cabbage yellows, and resistance to Fusarium wilt in tomato lines. He also described alfalfa and clover diseases in Ohio and investigated seed treatments of garden beans and oat smut control. He resigned in 1920 to manage his father’s farm in Highland County.

Roy C. Thomas (1887–1981). B.A (1913), The College of Wooster; M.S. (1917), University of Michigan. An Ohio native, Thomas taught high school a few years, attended Ohio State for a short period, and then did graduate studies at the University of Michigan. He was appointed as temporary assistant botanist at the OAES in June 1917, but in early 1918 was drafted into the U.S. Army. During WWI, he was stationed at base hospitals, first at Camp Sherman, Chillicothe, Ohio, then later in France. While in the Army, OAES attempted to have him released so that he could conduct plant disease research, an important war effort, but to no avail. After his discharge (1919), he was reappointed as assistant botanist in the department, where he was actively involved in research until his retirement in 1952. Thomas was a brilliant man, perhaps ahead of his time in the amount of research that he accomplished over a wide range of topics. These included seed potato problems, lettuce diseases, brown rot of peaches, clover



OADRC



Harmon Runnels (left) and Roy Thomas working with fungal cultures, OAES, Wooster. Probably in the 1930s

and corn root rots, *Botrytis* rot and wilt of tomato, Brooks spot of apple, smuts of wheat and oats, nutrition of bacteria, fungal biochemistry, and bacteriophages. He did pioneering work on the composition and structure of fungal hyphae, but is best known for his early work with phages, including sources for their isolation, methods of isolation, their specificity and use in identifying bacteria, and their long-term storage. Following retirement, he lived to the age of 94. During his career, he worked under the first three OAES directors and met the next two.

Frederica “Freda” Detmers (1867–1934). B.S. (1887), M.S. (1891), Ph.D. (1912), all from The Ohio State University. Detmers served as assistant botanist, then botanist at the OAES from 1889 to 1892, while it was located in Columbus, but resigned when the station moved to Wooster. During these years she conducted research on *Septoria* leaf spot of lettuce, apple scab, lettuce mildew, wheat scab, diseases of raspberry and blackberry, and published an extensive list of rusts on Ohio plants. From 1893 to 1906 she taught high school in Columbus, earned her Ph.D. from Ohio State, and then served on the faculty of the Department of Botany. Details of this period of her career are in Chapter 1.

In 1919, she joined the Department of Botany at OAES in Wooster as assistant botanist, first on a part-time basis, then full-time in 1920. In 1925, her title was changed to systematist, perhaps to more accurately reflect some of her duties that included plant taxonomy and curator of the department’s herbarium. She spent

considerable time identifying plants and plant diseases submitted to OAES. The department herbarium was donated by the department to Ohio State’s herbarium in 1968 and became part of the Kellerman herbarium. Her research covered many topics including weed control, particularly Canada thistle, twig blight of elm, *Dothichiza* canker on Norway poplar, oat diseases, gladioli diseases, and broken stem disease of rye (*Mycosphaerella*). Detmers was a charter member of the Ohio Academy of Science, serving as vice president in 1918. She was a member of the Board of Directors of The Ohio State University Alumni Association in 1924–25. She resigned from OAES in 1928 and, in 1929, joined the Department of Botany, University of Southern California, where she was herbarium curator. She died there in 1934 at the age of 67.

William J. Young, B.S. in botany (1904), Syracuse University; M.S. in horticulture (1913), Washington State College, where he had been an assistant horticulturist. He worked at the Delaware Experiment



Freda Detmers (front, in patterned blouse) and members of the OSU Alumni Association Board of Directors, 1925

Station as assistant horticulturist, then at the South Carolina Agricultural Experiment Station as associate horticulturist. In 1921, he was appointed assistant botanist at OAES to work on diseases of cereals and forage crops. Young worked on several breeding programs to develop disease resistance—cabbage resistance to yellows; potato resistance to scab, mosaic, and leaf curl; tomato resistance to *Fusarium* wilt; and clover resistance to root rot. He also initiated similar programs with floral crops. Young resigned in 1924 to work for the newly formed Essential Oil Company in field development. Within months, the company was in financial difficulty, and his position was terminated. He reapplied to the department, but H. C. Young indicated there were no openings.

Sidebar 1

Frederica Detmers (1867–1934) *Pioneering Woman in Ohio Plant Pathology*

DR. FREDERICA “FREDA” DETMERS was born January 16, 1867, in Dixon, Lee County, Illinois. She earned her B.S. (1887), M.S. (1891), and Ph.D. (1912) degrees from The Ohio State University. Detmers, the daughter of Henry J. Detmers, the first professor of veterinary science at Ohio State, was the **FIRST STUDENT TO OBTAIN AN M.S. DEGREE FROM THE OSU DEPARTMENT OF BOTANY**. Her M.S. thesis on rust fungi of Ohio, entitled *Descriptive Catalog of the Uredineae of Ohio*, was **THE FIRST IN THE FIELD OF PLANT PATHOLOGY AT OHIO STATE**. This work was published in 1892 as Bulletin #44 of the Ohio Agricultural Experiment Station (OAES).



OSU Archives

Throughout her early teaching and research career, Prof. William A. Kellerman was her primary mentor. From 1889 to 1892, she was assistant botanist, then botanist at OAES, while it was located on the Columbus campus. In addition to rust fungi, she worked on apple scab, wheat scab, diseases of raspberry and blackberry, lettuce mildew, and *Septoria consimilis* on lettuce, perhaps the first pathogen reported on cultivated lettuce. Publications were in OAES Bulletins and in the *Journal of the Columbus Horticultural Society*. After the OAES moved to Wooster, she taught science and

German at North High School in Columbus from 1893 to 1906.

Detmers was appointed to The Ohio State University faculty in 1906 as an instructor in the Department of Botany. Having training and experience in plant pathology, it is likely that she contributed to the development of plant pathology during her time on the faculty, however, her principal responsibilities involved teaching general botany. Following extensive field research, she completed a Ph.D. dissertation entitled “An Ecological Study of Buckeye Lake: A Contribution to the Phytogeography of Ohio.” This was a comprehensive work that combined data from floristic, ecological, physiographical, and phytogeographical viewpoints, the first such study that combined these topics into one presentation. Her Ph.D. in ecology in 1912 was **THE SECOND DOCTORAL DEGREE GRANTED BY THE OHIO STATE UNIVERSITY DEPARTMENT OF BOTANY**. She was promoted to assistant professor in 1914. However, as the result of a salary dispute, she was reduced to instructor in 1917, and then resigned her position in 1919.

That same year, Detmers joined the Department of Botany at OAES in Wooster. She began there as assistant botanist, first on a part-time basis, then full-time in 1920. Her research covered many topics including weed control, particularly Canada thistle, twig blight of elm, Dothichiza canker on Norway poplar, oat diseases, gladioli diseases, potato anthracnose, and broken stem disease of rye (*Mycosphaerella*). She was heavily involved in outreach work with the public on identification and management of both

plant diseases and weeds. In 1925, her position title was changed to systematist, perhaps to more accurately reflect some of her duties that included plant taxonomy and curator of the department's herbarium. She spent considerable time identifying plants and plant diseases submitted to OAES. The department herbarium was donated by the department to The Ohio State University herbarium in 1968 and became part of the Kellerman herbarium.

Frederica Detmers was a pioneering woman in plant science and plant pathology who is credited with several "firsts:"

- **HER M.S. THESIS ON RUST FUNGI OF OHIO WAS THE FIRST IN THE FIELD OF PLANT PATHOLOGY AT THE OHIO STATE UNIVERSITY**
- **SHE WAS THE FIRST SCIENTIST WITH A PH.D. HIRED ON THE WOOSTER CAMPUS WITH RESPONSIBILITIES IN THE AREA OF PLANT PATHOLOGY.**
- **SHE WAS THE FIRST WOMAN IN OHIO TO HOLD A POSITION ENTIRELY DEVOTED TO BOTANICAL RESEARCH.**

During her career, Detmers published at least 28 technical papers, mostly on diseases of vascular plants caused by fungi and on weed control. She was a charter member of both the Ohio Academy of Science (1891) and the Ecological Society of America (1917). She presented papers at ten annual meetings of the Ohio Academy of Science, and served as vice president in 1918. In 1915, she was elected a Fellow of the American Association for the Advancement of Science. She was a member of The American Association of University Professors and, in 1924–25, served on the Board of Directors of The Ohio State University Alumni Association.

In 1928, at the age of 61, Detmers resigned from OAES and relocated to southern California. She became herbarium curator in the Department of Botany at the University of Southern California in 1929, where she was known as an authority on native grasses. In March, 1930, she was seriously injured in a fall during a botanical collecting trip in southern California. Though she continued her work, she never fully recovered from her injuries, and died at her home in Los Angeles in 1934 at the age of 67.

Chapter 3

Advances in Research, and Development of Graduate Education and Extension Programs in Plant Pathology on the Columbus Campus (1918–1947)

After J. H. Schaffner retired in 1918, **Edgar N. Transeau** (1875–1960), B.A. (1897), Franklin and Marshall College; Ph.D. (1904), University of Michigan, was appointed chairperson of the Department of Botany. Transeau, an ecologist and physiologist, served as department chairperson until his retirement in 1946.



OSU Archives

During this period, department activities were centered in the Botany and Zoology Building (known as the B&Z Building). This facility, referred to in earlier plans as the “New Botanical Building” or “New Botany Building,” was built in four stages, from 1914 to 1962. The original building on Neil Avenue (now 1735 Neil Avenue) consisted of a basement, first and second floors, an unfinished attic, and greenhouses. An addition was added in 1932, which included a north wing with sub-basement, basement, and first floor. Also, the unfinished attic of the original building was remodeled and completed as an additional floor.

Wilmer Stover was the backbone of the teaching program in mycology and plant pathology from the time he was hired in 1912 until his retirement in 1952. From 1912 to 1935, Stover taught most mycology and plant pathology classes offered by the department, though Robert Griggs taught some plant pathology until he left in 1921. **Raymond A. Dobbins**, a graduate student, also helped teach from 1924–26. Working under Stover, Dobbins received an M.S. in 1922, with a thesis on tomato mosaic, and later earned a Ph.D.

in ecology. **S. Sherman Humphrey**, an instructor of botany from 1925 to 1933 and from 1935 to 1965, taught introductory plant pathology at least once. Humphrey, also working under Stover, received an M.S. in 1923 with a thesis on a clover root rot. His later research was a study of Ohio species of *Stereum* and related fungi, work that was never published.

In 1935, Stover received assistance in the teaching of plant pathology when **Benjamin H. Davis**, B.A., Wabash College, Ph.D. in plant pathology, Cornell University, was appointed to the botany faculty. He taught one year in the Virginia State Teachers College at Fredericksburg before coming to OSU. Davis was the first appointment in plant pathology resident instruction in more than 20 years, and **THE FIRST TO HOLD A PH.D. IN PLANT PATHOLOGY AT THE TIME OF APPOINTMENT**. During his four years at Ohio State, he helped teach introductory plant pathology and developed a special introductory course for students of floriculture and ornamental horticulture. Davis resigned in 1939 to take a position in plant pathology at Rutgers University and the New Jersey Agricultural Experiment Station. He later became chairperson of the department of plant biology at Rutgers, where his specialty was vegetable diseases.

When **Arthur L. Pierstorff** transferred from Extension to resident instruction in 1938, he shared with Stover the teaching of plant pathology. Likewise, when **C. C. Allison** transferred to resident instruction in 1946, he also became heavily involved in plant pathology instruction, especially at the graduate level. The first time Stover had help in teaching mycology came in 1947 with the appointment of **William D. Gray** as associate professor of botany. Gray taught basic courses

in mycology and developed strong programs in industrial mycology and fungal physiology. He resigned in 1964 to accept a position at Southern Illinois University.

Edward E. Clayton (1895–1974). B.S., The Ohio State University; M.S., University of Chicago; Ph.D., University of Wisconsin. In 1920, Clayton was appointed as **THE FIRST FULLTIME EXTENSION PLANT PATHOLOGIST IN OHIO**. W. G. Stover had part-time Extension duties, intermittently, for a few years. Clayton was involved in cereal smut control, barberry eradication, corn root rot studies, clover disease surveys, potato seed treatment demonstrations, and programs to encourage the use of disease-resistant varieties. In 1922, he resigned to accept a position with the New York Agricultural Experiment Station in Geneva, New York. This Extension position was not refilled for eight years. In 1931, Clayton joined the USDA in tobacco research, winning a Distinguished Service Medal in 1952 for research on the pathology and genetics of tobacco. He was elected a Fellow of the American Phytopathological Society in 1970.

Arthur L. Pierstorff (1900–1947). B.A. (1919), The Ohio State University; Ph.D. (1929), Cornell



OSU Archives • 1928

University. Pierstorff was hired in 1928 as Extension Plant Pathologist, filling the position that had been held by Clayton. He served in the U.S. Army field artillery (1918). Prior to coming to Ohio, he was assistant county agent in Rochester and Fredonia, New York, (1921–

22); plant disease director of the New York State Spray Service, Cornell University (1924–26); and Extension horticulturist, Rutgers University (1926–27). One of Pierstorff's major accomplishments in Ohio was to take the Centralized Scab Spray Service for orchardists, originally pioneered and developed by W. G. Stover and H. C. Young, Sr., to a degree of effectiveness that made it one of the best in the nation. He received assistance in his Extension work from **Russell Hyre** (1930–31), who had just received a B.S. from Ohio State, and from **Howard Lamb** (1932–33), a graduate student in plant pathology. In 1938, Pierstorff resigned his Extension position and became a professor of botany

in the department and worked to develop the graduate program in plant pathology. Unfortunately, his career was ended by his early death at age 47 in 1947.

Clyde C. Allison (1905–90). B.S. (1928), M.S. (1930), Ph.D. (1935), all from the University of Minnesota.

His graduate studies were under the direction of E. C. Stakman and J. J. Christenson. He spent two years as a USDA associate plant pathologist at the Tobacco Experiment Station in Greenville, Tennessee, working on root rot resistance and the genetic variability of pathogens. In 1938, he joined the faculty at The Ohio State University in Columbus, succeeding Pierstorff as Extension Plant Pathologist. From 1946, until his retirement in 1972, he was a professor of botany and/or plant pathology.



OSU Archives • 1950

As Extension Plant Pathologist, Allison developed a comprehensive program with statewide meetings, short courses, and field demonstrations. One of his early accomplishments was the promotion of wheat seed treatments to control stinking smut. The disease was severe in 1940, but it was difficult to find a few years later. In 1946, after WWII ended and many new students were coming to campus, the focus of Allison's work changed from Extension to teaching. Under his early leadership, an outstanding graduate program in plant pathology was developed by the department. During the early years of the program, **HE PERSONALLY ADVISED ALL THE GRADUATE STUDENTS AND TAUGHT ALL THE PLANT PATHOLOGY CLASSES**. As he taught graduate classes in plant pathology and advised graduate students, Allison's goal was to help students learn to think and write in a logical and critical manner. This was stressed through weekly formal and informal seminars where literature surveys and seminar papers on specialized topics were presented and defended. He emphasized scientific thinking, based on an understanding of concepts and principles, rather than learning definitions and detailed information. Allison had a great ability to motivate students and instill in them a pride in being a plant pathologist, and he took a deep personal interest in them. Over the course of his



career, he advised and supervised the research of 45 Ph.D. and 50 M.S. students, including many international students. He received a Distinguished Teaching Award from The Ohio State University in 1964 and served in the Faculty Senate.

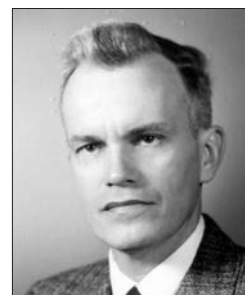
In the 1950s, Allison supervised several research projects to evaluate new fungicides and nematicides. He also studied environmental effects on disease development and the effect of internal, non-pathogenic fungi in inhibiting Fusarium wilt of tomato, cotton, and cowpea. He was an active member and supporter of the American Phytopathological Society, serving on several committees and as APS secretary (1942–44).

Allison focused the latter part of his career on international plant pathology, contributing his expertise to improving teaching, research, and Extension programs in several countries. He held a Fulbright Lectureship at the University of Rhodesia (1960) and spent five years at the University of Sao Paulo, in Piracicaba, Brazil, under a technical assistance contract with OSU (1964–69). In the Department of Plant Pathology at the University of Sao Paulo, he played an important role in developing their post-graduate program. In his first semester of teaching *Principles and Concepts of Plant Pathology*, he used a translator, but subsequently lectured in Portuguese. In 1966, he encouraged the formation of a new Brazilian Society of Phytopathology. He served as a councillor of the society for several years and was elected an honorary member for his assistance in its foundation. He proposed and

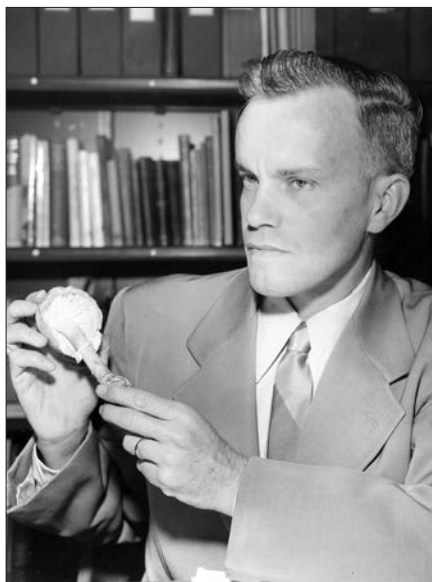
promoted publication of the *Manual de Fitopatologia* (600 pp.) by the faculty of the Department of Plant Pathology, University of Sao Paulo. He also helped form the Paulista Grupo of the Brazilian Society. A tribute to him, written by Ferdinanda Galli, appears in Volume I of the Society's journal, *Summa Phytopathologica*. (see Chapter 12 for more details of his time in Brazil). Through a significant contribution by Allison (and continuing contributions from his many students and friends), the C. C. Allison Fund in Plant Pathology was established in 1984. Income from this fund continues to be used annually for presentation of the **C. C. Allison Award** to an outstanding graduate student in the Department of Plant Pathology. (See Chapter 13 for award winners.)

C. Wayne Ellett (1916–2006). B.S. (1938), Kent State University; M.S. (1940), and Ph.D. (1955), both from The Ohio State University. Ellett served as an assistant in botany and Extension plant pathology at OSU, Columbus, (1939–44) and in the U.S. Navy in Okinawa (1944–46). He was appointed instructor in the Department of Botany, The Ohio State University, in Columbus (1946), while continuing studies for a Ph.D. in plant pathology. He was promoted to assistant professor (1956), associate professor (1959), and professor (1967). He retired in 1981.

During the post-World War II years, when plant pathology was expanding at Ohio State as a major strength of the Department of Botany and Plant Pathology, both Ellett and C. C. Allison played major roles in the teaching program. Ellett's interests were in both plant pathology and mycology. Early in his career, along with most all department faculty in Columbus, he took responsibilities in the heavy teaching load of *General Botany*. He specialized in diseases of field crops and ornamentals, and taught courses in both those areas for many years. In the 1960s, he worked with Extension pathologists R. E. Partyka and B. F. Janson to operate a part-time plant disease clinic. In 1970, clinic operations were expanded and Ellett was appointed the first director and supervisor of the clinic. Under his leadership (1970–81) the clinic attained increased visibility



C. C. Allison with graduate students at his retirement party, 1972

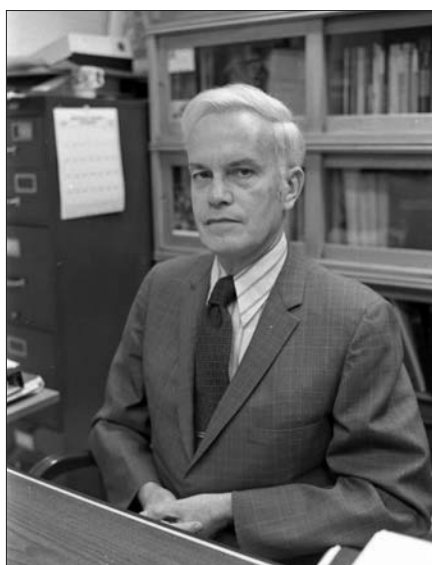


Wayne Ellett discussing mushroom fruiting body, 1957

whenever suspected cases of mushroom poisoning occurred. He gave many presentations to audiences throughout Ohio on "The Wonderful World of Mushrooms."

In 1964 and 1965, Ellett was active with USAID in India. OSU and USAID had a contract with the government of India to operate summer science programs there aimed at helping improve college teaching in the sciences and mathematics. Ellett served as a consultant in biology and teacher in institutes held at Banaras and Kalyani Universities. He was a founding and charter member of the North American Mycological Association (NAMA) and served as a trustee and membership secretary.

In 1974, he received NAMA's annual award for contributions to amateur mycology. He was elected a Fellow in the Ohio Academy of Science and served as its treasurer and president (1976). For several summers in the 1960s and



Wayne Ellett in his OSU office, Columbus, 1974

statewide and provided expanded services to many agricultural industries. In addition to his expertise in plant pathology, Ellett was an excellent botanist whose taxonomic expertise was used extensively. His considerable knowledge of mushrooms was called upon by Columbus and area hospitals

in the 1970s, he did surveys for the USDA and the Ohio Department of Agriculture for various disease and insect problems.

After retirement, Ellett worked part time as a diagnostician for Chemlawn Service Corp. in their plant diagnostic laboratories in Columbus (1981–87). As professor emeritus, along with some teaching, he put major emphasis on completion of an Ohio Plant Disease Index, published in 1989. This significant historical and reference document includes many first reports of plant diseases for Ohio and several for the United States. As part of the centennial celebration of The Ohio State University, Ellett wrote the first history of plant pathology in Ohio in 1969. Then, with co-author L. E. Williams, he wrote the first history of the Department of Plant Pathology at The Ohio State University, published in the early 1990s (the first edition of this book). In 1995, in honor of his many efforts in development and advancement of the plant disease clinic, the OSU Board of Trustees officially named the clinic the C. Wayne Ellett Plant and Pest Diagnostic Clinic.

Thomas H. King (1912–?). B.S. (1934), North Dakota State College; M.S. (1939) and Ph.D. (1946), both from the University of Minnesota. King was appointed Extension plant pathologist in 1946 to replace Allison. After two years, he resigned to return to the University of Minnesota, where he remained on the faculty of plant pathology until his retirement.

William D. Gray (1912–90). B.A. (1933), DePauw University (Indiana), Ph.D. in mycology (1938) University of Wisconsin. He was a research mycologist with Seagrams Corp., and served on the faculties of Miami University (Ohio) and Iowa State College. In 1947, he was appointed associate professor in the Department of Botany, The Ohio State University, Columbus. Gray taught mycology and did research in several areas of mycology, industrial mycology, and physiology of fungi. He resigned his position in 1964 to take a position as professor of botany at Southern Illinois University.



Chapter 4

Development of Research and Extension Programs at OAES in Wooster (1924–1947)

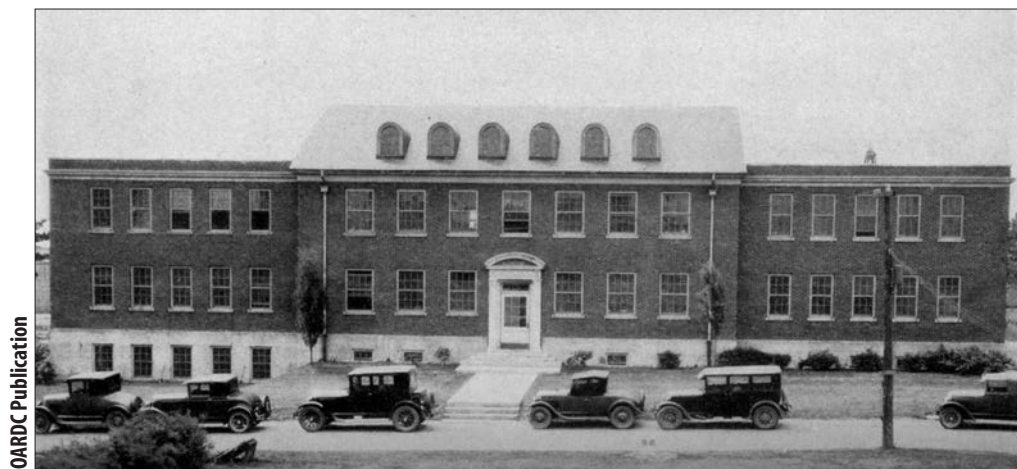
Following the retirement of Charles Thorne as Director in 1921, and A. D. Selby in 1923, around whom the early programs in plant pathology developed, leadership at the OAES in Wooster passed to a new generation. Over the next 25 years, two directors led overall operations on the Wooster campus: Carlos Williams, an agronomist (1921–37), and Edmund Secrest, a forester (1937–48). **Harry C. Young** became Chief of the Department of Botany at OAES in 1923, and provided leadership to plant pathology programs on the Wooster campus for the next 35 years. In 1924, the name of the department at OAES was changed to Botany and Plant Pathology to better describe its programs.

When Young began as Chief, space for the department included two rooms in the Administration Building, rooms in the Biological Laboratory (Pathologium), and a small section of greenhouse at the rear of the Greenhouse Building. However, in 1924, Thorne Hall was completed and department activities were moved into this new facility. The building housed

the Departments of Agronomy, Botany and Plant Pathology, and Zoology and Entomology. Botany and Plant Pathology was assigned a portion of the second floor (along with entomology), a small portion of the basement, and two ranges of greenhouses. In 1928, two wings were added to Thorne Hall that allowed expansion of the academic departments and inclusion of Public Information offices and printing and mailing facilities in the southwestern wing.

In about 1950, H. C. Young prepared a short history of the department, including lists of present and past personnel. In the following account, he provides insight into how the department operated during the previous quarter century under his leadership.

When the Station was moved to Wooster, Mr. A. D. Selby was put in charge of the Botany Department, as it was then called. The major work from then on was not so much in the line of mycology, but more on practical control. It must be realized that with the discovery of fungicides, the pressure brought on



Thorne Hall, newly built, on OARDC campus, Wooster, 1924

a department such as this was tremendous for the formulation of definite control procedures. It might be added too, that this phase of the work of plant pathology at the Ohio Station has been a major one up to the present time. The Department has never spent very much time in the mycological phase. It has attempted to emphasize physiology, chemistry, and genetics, instead. The present members of the Department have not been able to do the amount of fundamental work in plant pathology that they would have liked. The current demand of the growers, and particularly the specialty groups, has required a tremendous amount of their time. There seems to be no let up of this type of demand, and it is going to be difficult for an institution of this kind to work on basic principles.

Harry C. "Doc" Young (1888–1970). B.S. (1913), Ohio University; M.S. (1915), North Carolina



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State College; Ph.D. in crop protection (1923), Washington University, St. Louis. Young grew up in Holmes County, Ohio, just south of Wooster. He served in the U.S. Army medical corps (1918–19) and was an instructor in the Department of Botany, Michigan State College (1916–17, 1919–22). In 1923, he was hired at OAES, Wooster, as Chief of the Department of Botany, following A. D. Selby's retirement. Young served as the administrative leader in plant pathology at Wooster, both as chief of Botany and then as associate chairperson of the Department of Botany and Plant Pathology, until his retirement in 1958.

When Young arrived at OAES, the department's professional staff was down to five, much smaller than it had been in the past, so rebuilding the staff was one of his early priorities. Over his 35 years of department leadership, Young provided strong guidance to plant pathology programs in Ohio as they continued to grow. His research was focused on improved methods of plant disease control, and he was also active in Extension programming. In the 1920s, he and W. G. Stover designed an apple scab forecast and spray program that was used in several states. He initiated control of virus diseases of raspberry through nursery



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H. C. "Doc" Young working in OAES laboratory, Wooster, 1957

stock inspection and organized the Ohio Small Fruit Improvement Association, which then handled these programs. Young and associates focused much of their early research on the fungitoxic properties of sulfur, which led to the isolation of pentathionic acid and the discovery of its role in fungitoxicity. His work with sulfur also involved control of certain human skin disorders in studies with dermatologists at the Cleveland Clinic and elsewhere. Practical evaluation of micronized or particulate sulfurs, fixed coppers, and later the antibiotic and organic fungicides led to significant advances in control of fruit and vegetable diseases. His concentrated efforts to evaluate fungicide spray schedules led to improved understanding of the value of application timing. To provide this information to growers more efficiently, Young helped to establish the Ohio Spray Service Program. He also evaluated methods of fungicide application, and worked closely with the design and performance of machinery utilizing the concept of concentrate spraying. In order to improve understanding between pesticide manufacturers, dealers, farmers, and those doing research, Young and others formed the Ohio Pesticide Institute in 1947. He was involved in leadership roles and as publication editor in this organization until his

retirement. Young was among the first to perceive the significance of Dutch elm disease on American elms, and was instrumental in organizing OAES and USDA laboratories in Ohio as centers for research on this disease. He was an active member of the American Phytopathological Society, and was elected as **THE FIRST PRESIDENT OF THE APS NORTH CENTRAL DIVISION**. He also served as a representative of APS to the Council of the American Association for the Advancement of Science.

In addition to his work at OAES, Young was also a successful business man. He and his son Robert ran a fruit farm near Moreland, Ohio (just south of Wooster), that grew into a large commercial business. Another son, Harry Jr., became a distinguished professor of plant pathology at Oklahoma State University. He and his son sold the fruit operation (now Moreland Fruit Farm) and entered the retail grocery business, forming Young's IGA in Wooster, an operation that grew into Young's Supermarkets, Inc. After retirement, he grew Barbados cherries in Florida. Young received honors from many grower organizations in Ohio and other states. His highest honor was being selected as one of the 100 persons awarded the Centennial Award for Distinguished Service by The Ohio State University's College of Agriculture on its 100th anniversary in 1970.

Paul E. Tilford (1900–1986). B.S. (1924), Michigan State College; M.S. (1926), The Ohio State University;



Ph.D. (1935), University of Wisconsin. In 1924, he was appointed assistant botanist at OAES to work on vegetable diseases, particularly potato. He had been H. C. Young's laboratory assistant at Michigan State College and also served three summers in Michigan in

a USDA barberry eradication program. Tilford was Young's first appointee to the staff, and came with the understanding that he could also pursue graduate studies. A policy was established very early in the department at OAES, enabling staff to enroll at Ohio State, take graduate courses, and conduct their thesis research at the station. Tilford earned his M.S. at Ohio State under W. G. Stover. After obtaining his Ph.D. at the University of Wisconsin (1935), he returned to

OAES and was promoted to associate plant pathologist.

Although Tilford was originally employed to work on vegetable diseases, he later shifted his work to ornamentals and shade trees and became a leading national authority in that area. His early work focused on potato diseases and testing Bordeaux formula mixtures and spray schedules to make potato production in Ohio economical. He showed that copper could be reduced in the spray formulation and that high magnesium lime could be incorporated. Tilford developed yellows-resistant chrysanthemums that helped revive commercial production in Ohio. He also discovered the cause of and controls for the hyperplastic (fasciation) disease of mums, sweet pea, dahlia, and geraniums. He named the causal bacterium *Phytoplasma fascians* (later named *Corynebacterium fascians*). In 1943, he and colleagues described a graft transmissible disease of American elm.

In 1946, Tilford resigned his position with OAES to become the executive secretary of the National Arborist Association (now the Tree Care Industry Association). He held this position for 20 years and was instrumental in building this association to its primary position among commercial tree care providers. He served as editor of the *Proceedings of the International Shade Tree Conference* for 30 years. He received the Award of Merit from the International Society of Arboriculture (1963) and the Award of Merit from the National Arborist Association (1978). He was responsible for much of the national recognition of the value of shade trees and had the distinction of having the Tilford red maple tree named in his honor. He was also one of the 100 persons presented a Centennial Award for Distinguished Service by The Ohio State University College of Agriculture on its 100th anniversary (1970). After his retirement, Tilford served as mayor of the city of Wooster (1968–1972), and as a charter member of the Wooster Shade Tree Commission, and president of the Wooster City School Board.

Robert E. Fennell was appointed assistant plant pathologist in 1924, and resigned five months later.

Curtis May (1897–1995). B.A. (1924), M.A. (1925), and Ph.D. (1935) in plant pathology, all from The Ohio State University. He was **THE SECOND PH.D. AWARDED IN PLANT PATHOLOGY FROM OHIO STATE**.

He also did graduate work at the University of Vienna, Austria, and at the Willie Commelin Scholten Phytopathological Laboratory in Baarn, Holland, while on a leave of absence from OAES. In 1926, May was appointed assistant plant pathologist at OAES to work on fruit diseases. He was promoted to associate plant pathologist in 1929. He resigned in 1935 to join the Bureau of Plant Industry, USDA, Washington, D.C., in forest pathology.

At OAES, May published on the timing of apple scab sprays with H. C. Young; the relation of lime sulfur sprays to abscission of young apples with Freeman Howlett; the effect of Bordeaux mixture on the internal temperature of potato leaflets; studies on apple blotch in Ohio; the effect of grafting on the susceptibility of tomato to *Fusarium* wilt; and on control of damping-off of conifer seedlings. In 1929, his responsibilities shifted to diseases of ornamentals and trees, for which he became internationally known. He was the first to publish a description of Dutch elm disease in the United States, which was found in 1930 in Cleveland and Cincinnati. He continued to lead research on this new disease after he joined the USDA Bureau of Plant Industry. May served as secretary of the American Phytopathological Society (1947–50).

Lexemuel “Lex” R. Hesler (1888–1977). B.A. (1911), Wabash College; Ph.D. (1914), Cornell University. He was assistant professor in plant pathology at Cornell (1914–19) and then was appointed professor in the Department of Botany, University of Tennessee (1919), where he taught plant pathology. During the summers of 1924–1927 and 1929, Hesler was appointed associate pathologist at OAES. He was a Fellow at OAES in 1926. In 1935, he was appointed dean of the Liberal Arts College at the University of Tennessee, where he served until his retirement in 1958. At OAES, Wooster, Hesler worked on fruit diseases, primarily on strawberry, raspberry, and peach, and did some disease survey work on dusting materials for fruits and vegetables. At Tennessee, Hesler co-authored *Manual of Fruit Diseases* with H. R. Whetzel, a classic publication in plant pathology, along with many other papers. In the early 1930s, his interests shifted more to mycology, and he published extensively, mostly on the taxonomy of selected genera of the Agaricales. He authored and co-authored six

books. His works were highly admired, and he received many honors. He was a life member of the American Phytopathological Society.

Allan G. Newhall (1894–1995). B.S. (1918), University of Minnesota; Ph.D. (1929), Cornell University. He was instructor in botany at Grinnell College (1919–20), then was a Fellow and assistant in the Department of Plant Pathology at Cornell (1920–1924) while working on a Ph.D. For six months each year, he conducted research at a field laboratory at Williamson, New York, on muck crop diseases and pests. In 1925, Newhall was appointed assistant plant pathologist at OAES to work on diseases of greenhouse and field vegetables. In Ohio, he worked on lettuce tip burn, dusting of celery beds, celery blight, and the use of forced air ventilation to control *Cladosporium* leaf mold on greenhouse tomatoes. In 1928, while on leave from OAES, he continued graduate work at Cornell. After obtaining his Ph.D., Newhall accepted a faculty position at Cornell in 1929 and continued to work there on vegetable diseases until his retirement in 1960.

Harmon A. Runnels (1897–1969). B.S. (1923), M.S. (1925), both from The Ohio State University. In 1927, while studying towards a Ph.D., he accepted a position as assistant pathologist at the OAES in Wooster, where he remained as an active member of the faculty for the rest of his career. (see photo on page 25) He was given an academic position as assistant professor in 1961 and retired in 1968.



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Much of Runnels' early work was on ginseng disease control with fungicides, weed control studies, influence of spray materials on plant transpiration with J. D. Wilson, and developing resistance to *Fusarium* and *Verticillium* wilts of chrysanthemum and China aster with P. E. Tilford. Later, he and J. D. Wilson worked on control of anthracnose of tomato and bean. In the latter part of his career, he spent most of his time on ornamental diseases, especially those of gladiolus and dahlia, and on turfgrass diseases. Runnels' primary contribution was his Extension outreach work on

diseases of ornamentals, turf, and trees. He lived on the Wooster campus in a small house behind the administration building. Throughout his career, he spent a great deal of time graciously responding to numerous verbal or written questions sent to him regarding plant identification and diseases. For many years, he assisted in the development of an apple scab warning service, developed primarily at Wooster, and launched as a radio venture. This successful program was copied by several other states. Though his contributions in plant pathology covered a wide spectrum, he was best known for his great knowledge of the flora of Ohio and beyond. His ability to quickly and willingly identify plant specimens for colleagues and citizens earned him the informal title of “Mr. Botany.” His and John Schaffner’s “Manual of Ohio Weeds” (illustrated by his wife, Margaret Runnels) was widely used for many years in a multi-state area. Runnels also wrote publications on poisonous plants.

Jasper D. Sayre (1893–1987). B.S. (1917), M.S. (1920), and Ph.D. in plant physiology (1922), all from



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The Ohio State University. In the Department of Botany, at Columbus, he was appointed assistant (1916–20), instructor (1920–25), and assistant professor (1925–27). He was appointed half-time assistant pathologist at OAES, Wooster, (1926–27), spending half his

time at each institution—teaching at OSU and conducting research at OAES on corn root rots and cereal seed treatments. He was employed by both OAES and USDA Crops Research Branch (1928–31) and then from 1931–61, he was a USDA plant physiologist located in the Department of Agronomy, OAES, where his research dealt primarily with radioisotopes, spectroscopy, and mineral nutrition of corn. He retired in 1961.

J. (James) Dean Wilson (1895–1968). B.S. in horticulture (1922), Michigan State College; Ph.D. in plant physiology (1926), Johns Hopkins University, Baltimore. After obtaining his B.S., Wilson worked at the Desert Laboratory of the Carnegie Institute in Tucson, Arizona. When he was at Michigan State,

Wilson had been a student in a plant physiology class taught by H. C. Young. In 1926, Young hired Wilson as assistant plant pathologist at OAES, in Wooster, to work with vegetable and fruit diseases. He was promoted to associate professor in 1950, when OAES used academic ranks for faculty after OAES became part of The Ohio State University, and professor in 1952. He retired in 1966.



APS

One of his first research accomplishments was finding (with A. G. Newhall) that forced air in a greenhouse would control the serious *Cladosporium* leaf mold problem on tomato. Wilson conducted extensive studies (with H. A. Runnels) on the effect of various spray materials, particularly Bordeaux mixture, and on plant injury due to increased transpiration. He published an extensive bibliography on the effect of environmental factors on plant disease and injury, as well as a 10-year summary of evaporation rates, monthly rainfall, wind velocity, sunlight, and relative humidity at a Wooster location. He also modified the Livingston atmometer, an instrument for measuring evaporation, making it useful for determining appropriate irrigation needs for good growth of lawns and vegetables. Because cucumber mosaic virus was limiting cucumber production in Ohio, Wilson initiated a breeding program and released three mosaic-resistant cucumber varieties.

Wilson is best known for his pioneering work with fungicides. Because of the transpiration problem associated with use of Bordeaux mixtures, Wilson investigated “fixed” coppers for use on vegetables. Following WWII, organic fungicides became available, particularly the dithiocarbamates, which were highly effective and less injurious. Wilson then focused all his research on testing and development of materials for vegetable disease control. His extensive field testing program became very well regarded and surrounding states followed his recommendations. Due in great part to Wilson’s work, Ohio became a leader in field tomato production, with several national processors locating in the state. He worked closely with USDA agricultural engineers, particularly Orve Hedden and Frank Irons, in the Department of Agricultural Engineering, at Wooster, to develop air-blast and low-volume spray equipment and study spray droplet size in relation to disease control. In

the 1960s, on a leave of absence, Wilson visited leading USDA and state institutions with nematode research programs. He realized that many vegetable disease problems were below ground and initiated research on the use of soil fumigants and crop rotation to combat these fungal and nematode pathogens.

Wilson was a charter member of the Ohio Pesticide Institute, serving as its secretary (1952–59), and being selected to receive the OPI Man of the Year Award in Ohio Agriculture (1966). He was a prodigious worker with over 300 publications when he retired in 1966. At the time of his death two years later, he was still working on publications and planning to conduct some field research in Wooster. In 1975, the OARDC honored him by naming the road in front of Selby Hall as Wilson Road.

Carlyle W. Bennett (1895–1981). B.S. (1917), University of Kentucky; M.S. (1919), Michigan State College; Ph.D. (1926), University of Wisconsin. Bennett taught courses in plant pathology at Michigan State (1926–29) and worked on small fruits, particularly virus diseases of raspberries. In 1929, H. C. Young, who undoubtedly knew him as a student when he taught at Michigan State, brought Bennett to OAES to conduct research on peach yellows and small fruit mosaic diseases, and particularly to continue his work on raspberries. However, the following year, Bennett left for a position with the USDA Sugar Plant Investigations at Riverside, California. Bennett's work dealt with virus transmission and movement in tissues, and relationships of viruses to their vectors and plant hosts. He developed an international reputation and received many honors, including election as Fellow of the American Phytopathological Society.

Luster M. Cooley (1905–94). B.S. (1926), Ohio University; M.S. (1930), University of Tennessee. At Tennessee, he was a student of L. R. Hesler. Cooley worked as a summer assistant in the department at OAES (1926, 1929) and in 1930 was appointed assistant plant pathologist at OAES to work on diseases of small fruit, particularly raspberry and strawberry. While in Ohio, he published research on mild streak of raspberry. After only a year, he left for a similar position at the New York Agricultural Experiment Station at Geneva, where he continued research on virus diseases

of raspberry. He returned to Ohio around 1958 and worked for the Ohio Department of Agriculture for several years as a nursery inspector and coordinator of the agricultural laboratories at Reynoldsburg.

H. Frank Winter (1906–89). B.S. (1928), The Ohio State University. Winter grew up in Mentor, Ohio, where his father was a vegetable grower and head landscaper-gardener at the Garfield Estates. After graduation, he worked in a commercial fruit orchard and then, in 1929, H. C. Young offered him a part-time position as assistant at OAES that allowed him also to pursue graduate studies at Ohio State. In 1931, Winter was appointed assistant pathologist to work on fruit diseases, following Cooley. While still at OAES, he worked for the USDA, Division of Forest Pathology (1933–35), where he served as an advisor for conservation programs for the Civilian Conservation Corps and did research on a willow disease that was destroying susceptible willows used in stream bank protection. Then, when C. May resigned in 1935, Winter was reappointed as assistant pathologist. He was promoted to associate professor in 1962, when OAES used academic ranks for faculty after OAES became part of The Ohio State University, and served on the Wooster faculty until his retirement in 1967.



OARDC • 1967



OARDC

Frank Winter in greenhouse with apple seedlings, OAES, Wooster

Along with H. C. Young, Winter published a detailed study of the pathogen causing Brooks fruit spot of apple and methods of control, and also on quality, size, and color of sour cherries. He and J. D. Wilson published research on the value of fixed coppers as fungicides for control of vegetable diseases. During his career, Winter also published with C. R. Cutright (entomologist), C. Leben, and G. C. Daft. His primary work focused on development of new fungicides for fruit crops and new application methods. He also investigated the use of streptomycin to control fire blight. Using heat treatment, he developed virus-free stocks of common apple varieties in Ohio and shared this germplasm with others. He helped design regulations and develop procedures for state certification of raspberry stock. Winter was widely known and respected by the fruit industry in Ohio and was involved extensively in Extension activities. After H. C. Young retired in 1958, he served as acting associate chairperson of the department for 18 months, until C. Leben was appointed associate chairperson.

Outside his OAES activities, Winter served the Wooster community in many ways, including as school board president. He had his own commercial fruit farm, Winterhaven, first located on Route 585 on the outskirts of the city and then on Batdorf Road, where Maurer's Fruit Farm is now located. It was known for high-quality fruit, particularly raspberries and peaches. He received a citation of merit from the Ohio State Horticultural Society and Man of the Year Award from the Ohio Pesticide Institute.

Leonard J. Alexander (1903–86). B.S. in botany and agricultural education (1926), Louisiana State



APS

University; M.S (1926), and Ph.D. in plant pathology (1934), both from the University of Wisconsin. Alexander was born on a farm in Iowa, but at an early age moved to a cotton plantation in Louisiana. As class valedictorian, he won a 4 year scholarship to LSU. He then pursued graduate studies at the University of Wisconsin. In 1930, before completing his Ph.D., he was appointed assistant plant pathologist at OAES, responsible for vegetable diseases, particularly greenhouse vegetables. He returned to the University of Wisconsin for two quarters in 1933 and 1934 to



OADDC

Leonard Alexander cross-pollenating tomatoes in OAES greenhouse, Wooster

complete his Ph.D. He was promoted to associate plant pathologist in 1938 and professor in 1951, when OAES used academic ranks for faculty after OAES became part of The Ohio State University. He retired in 1970.

Alexander's first research at OAES was the determination (with H. C. Young) that *Pythium ultimum* (primarily) and *Rhizoctonia solani* were the causes of damping-off of tomato seedlings in the greenhouse and could be controlled by disinfesting with a formaldehyde dust. He then began a long series of research projects in which he described several races of *Cladosporium fulvum*, the cause of tomato leaf mold, and methods of control, including host resistance, fungicides, and greenhouse ventilation. In 1938, he introduced the leaf mold-resistant cultivar Gobelle (cultivar Globe x *Lycopersicon pimpinellifolium*), resistant to races 1, 2, 3, and 4 of *Cladosporium fulvum*. However, its usefulness was short-lived due to its susceptibility to new or undescribed races. He then began working with Fusarium wilt of tomato and discovered race 2 of *Fusarium oxysporum* f sp. *lycopersici* in an Ohio greenhouse. This probably did not spread because of the yearly steam sterilization of soil that he promoted. In 1942, Alexander organized an international committee of pathologists and breeders to evaluate tomato accessions for disease resistance. This foresight proved extremely valuable when race 2 did

threaten the industry 20 years later, because resistance had already been identified. In 1947, he introduced his W-R3 greenhouse tomato that was resistant to race 1 of *Fusarium oxysporum* f sp. *lycopersici*, a release that greatly strengthened the Ohio greenhouse tomato industry and was said to have saved the Ohio industry over \$1 million per year. Other W-R cultivars followed, that also carried resistance to blotchy ripening (W-R7, W-R27, and W-R29), and these dominated the Ohio industry for 18 years. Recognizing the value of Alexander's work, in 1950, the Ohio greenhouse tomato industry presented him a personal monetary award, funds for technical support, and financial support to build a 5,500 square foot research greenhouse at OAES. While investigating tobacco mosaic virus (TMV), he and co-workers identified five distinct strains of the virus. They located a single dominant gene in a wild tomato species (*Lycopersicon peruvianum*) that was almost incompatible with cultivated tomato but conveyed resistance to all five TMV strains. Consequently, a series of new cultivars (M-R) were released by Alexander or his successors that became the major cultivars planted in Ohio greenhouses, based on the Tm2^a and I resistance genes. This innovation saved the Ohio industry many millions of dollars. Late in his career, in cooperation with Lansing Williams, he isolated, purified, and produced antiserum for a newly discovered virus of corn and named it maize dwarf mosaic virus (MDMV).

After the departments at Wooster and Columbus were merged in 1948, Alexander taught a class on plant pathology techniques on main campus one

quarter each year. He spent a sabbatical year (1961–62) at the Institute for Phytopathological Research at Wageningen, the Netherlands, and was a guest lecturer for two months in 1962 at the University of Bari in Italy. In 1968–69, he spent nine months as a visiting research professor at the University of Florida. He was very active in the American Phytopathological Society, serving as APS advertising manager (1948–56), Councilor (1963–69), and as President of the APS North Central Region (1968). Alexander was elected Fellow of the Ohio Academy of Science (1951) and APS Fellow (1970). He was a charter member of the Wooster, Ohio, chapter of Sigma XI and served as its first president. After retirement in 1970, he went on to serve 12 years at the University of Florida in Gainesville, working cooperatively with agronomists on seedborne pathogens of soybean. He then “retired” a second time, in 1983, at 80 years of age.

Donald H. Bowman (1911–?). B.S. (1933) and M.S. (1935), both from Kansas State College; Ph.D. (1939) in plant pathology and agronomy, University of Wisconsin. In 1939, he was appointed assistant pathologist with the Cereal Crops Research Branch, USDA, and was stationed at the OAES as assistant pathologist to work in corn breeding. He served in the U.S. Army (1944–46). Bowman was a plant pathologist at the Texas Agricultural Experiment Station (1946–48), then later an agronomist at the Delta Branch of the Mississippi Agricultural Experiment Station.

Richard S. Davidson (1918–?). B.S. (1940) and M.S. (1942), both from The Ohio State University; Ph.D. (1947), University of Minnesota. He was a summer assistant (1941) with J. D. Wilson, working in research plots at Bowling Green, Ohio and served as assistant professor at Rhode Island State College (1945–47). He was appointed assistant professor at OAES (1947) to conduct research on cereal crop diseases. He resigned in 1951 and was a professor at the Alabama Polytechnical Institute (now Auburn University). He then joined the Battelle Memorial Institute in Columbus, Ohio, as director of biosciences, where he remained until his retirement in 1983.



Leonard Alexander discussing new greenhouse tomato cultivar with Cleveland grower

Chapter 5

The Department of Botany and Plant Pathology Unites Activities on the Columbus and Wooster Campuses (1948–1965)

E.N. Transeau retired as chairperson of the Department of Botany at OSU in 1946, having led the department for 28 years. **Bernard S. Meyer** (1901–87), B.S. (1921); M.S. (1923); Ph.D. (1926) all from Ohio State, was



OSU Archives • 1962

appointed to succeed him. Meyer had been a faculty member since 1928, after spending two years with the Central States Forest Experiment Station. His research in plant physiology, emphasized water relations, photosynthesis, mineral nutrition, and photo-periodism. He was senior author

of a major textbook of plant physiology published in 1939 and revised in 1952, and a lower-level plant physiology textbook, published in 1960 and revised in 1972, that was translated into several languages. Meyer served as vice president and president (1943) of the American Society of Plant Physiologists, vice president of the Botanical Society of America, and vice president of the American Institute of Biological Sciences, as well as being on its governing board for six years. He also served as editor-in-chief of the *American Journal of Botany* and on other editorial boards. After retiring in 1971, he wrote a history of *Botany at The Ohio State University: The First 100 Years*, published in 1983 by the OSU College of Biological Sciences.

Meyer became chairperson of the Department of Botany just as many World War II veterans were returning to school, and many classes, particularly *General Botany*, were overflowing with students. In 1948, Leo L. Rummel, was appointed as both dean of the College of Agriculture and director of OAES. With the OAES director located in Columbus, William E. Krauss was appointed the first associate director of the

experiment station based at Wooster, a post he held until 1969. When Rummel was appointed, leaders at OSU had been seeking closer ties between the university and the experiment station, and he was given a mandate to coordinate programs in agricultural research, resident instruction, and Extension. Common departments at OAES and in the college were joined administratively, usually with the chairperson at Columbus and an associate chairperson at Wooster. H. C. Young, Sr., Chief of the Department of Botany and Plant Pathology at OAES, became associate chairperson of the combined department. “Plant Pathology” was added to the department name and **THE DEPARTMENT OF BOTANY AND PLANT PATHOLOGY WAS FORMED AS A NEW ADMINISTRATIVE UNIT IN THE COLLEGE.** Meyer, in his history of botany at Ohio State, wrote that he jokingly indicated to the dean that this was a “shotgun marriage,” but the dean was not amused. Academic titles were given to OAES staff for the first time, and many new professorial appointments at Wooster were approved by the Graduate School to supervise graduate students. These included Harry C. Young, J. Dean Wilson, Richard S. Davidson, and Leonard J. Alexander in Botany and Plant Pathology at Wooster.

In 1958, H. C. Young retired, having led plant pathology programs at Wooster for 35 years. H. Frank Winter served as acting associate chairperson for the next 18 months. A nationwide search was undertaken to find a new leader for the department at Wooster and, in 1959, Curt Leben was appointed as professor and associate department chairperson. He had been head of the Eli Lilly Agricultural Research Center in Greenfield, Indiana, and came to the department with the understanding that he would also conduct a substantial research program.



In 1960, things really began to change on both campuses when Roy Kottman became Dean of the College of Agriculture and Home Economics. He was also made Director of both OAES and Extension. Dean Kottman had a profound influence on the department from that point forward. In 1965, he changed the name of OAES to the Ohio Agricultural Research and Development Center (OARDC) and he was a prime mover in establishing the Department of Plant Pathology in 1967. Curt Leben served as acting chairperson of the new department for six months until the arrival of Ira Deep as chairperson, at which time Leben elected to devote full time to research. While Leben was associate chairperson, the Maize Virus Research Program was established and a new building for plant pathology was requested at Wooster, the Plant Disease Clinic was established at Columbus, and all the planning and preparation for the new department took place.

Facilities for the Department of Botany and Plant Pathology continued to improve on both campuses during the time of the combined department. In Columbus, a second addition to the B&Z building was completed in 1950, adding four floors of a south wing and one floor to the north wing. This addition provided much-needed space for plant pathology and included

offices, two teaching labs, a research lab, seminar room, and a graduate student room. Prior to this expansion, plant pathology space consisted only of offices for Stover, Pierstorff, and Davis and for the Extension plant pathologist, and one teaching/research lab and herbarium room, including desk space for graduate students. With the 1950 addition, the teaching/research lab and herbarium facility were remodeled to include office space for Extension plant pathologists, a plant diagnostic clinic, and secretarial services. Greenhouses constructed with the original building were demolished in 1950, and new ranges were built, in which plant pathology had space assigned. A third addition to B&Z, completed in 1962, included sub-basements, basements, and three floors as extensions to both the north and south wings. This provided additional space for plant pathology, including two additional offices, five research laboratories, a preparation lab, and a storeroom. In addition, controlled climate facilities, cold rooms, and other facilities were shared with other areas of botany.

In Wooster, the Department of Agronomy left Thorne Hall and moved into new facilities in Williams Hall, when it was completed in 1957. Thorne Hall then was renovated, and Botany and Plant Pathology occupied most of the first floor and basement. The Ohio greenhouse tomato industry donated money to support L. J. Alexander's tomato research by building a greenhouse range behind Thorne Hall that was finished in 1950. The two original greenhouse ranges there were extended in 1953. In the early 1960s, Thorne Hall was again renovated to make it more useable without adding additional space. In 1966 a new greenhouse range was added for corn virus research with money from federal sources.

Elton F. Paddock (1913–92). B.S. (1936), Whittier College; Ph.D. (1942), University of California, Berkeley. He was a postdoctoral fellow in the Department of Botany at Ohio State (1941–43), and then worked two years as a plant pathologist with the Texas Agricultural Experiment Station. In 1948, he was appointed assistant professor, Department of Botany and Plant Pathology



Botany & Zoology building on OSU Columbus campus showing third floor addition added in 1950; photo from 1959

in Columbus. Paddock was a geneticist and held a joint appointment at OAES (1950–1966). During this time, he spent many summers in Wooster doing research on tomato genetics. He worked with Leonard Alexander in breeding greenhouse tomatoes for disease resistance, particularly to *Fusarium* wilt and leaf mold, and developing interspecific hybrids of *Lycopersicon*. In 1968, he transferred to the newly created Faculty of Genetics (later Department of Genetics) in the new College of Biological Sciences. He retired in 1984.

Paul V. Weber, (1926–). B.S. (1943), Cornell University; Ph.D. (1949), University of Wisconsin.



OARDC

Weber was appointed as assistant professor in the Department of Botany and Plant Pathology at OAES, Wooster, in 1949 with responsibilities for research in soybean and forage crop diseases. He resigned in 1951 to take a position with the Campbell Soup Company as plant pathologist and geneticist.

Blair F. Janson (1918–2010). B.S. (1940), M.S. (1947), Ph.D. (1950), all from The Ohio State University.



OSU Archives • 1962

Following Thomas King's resignation in 1948, Janson was appointed assistant professor and Extension plant pathologist (1950) in the Department of Botany and Plant Pathology, Columbus. He was promoted to associate professor in 1955 and professor in 1962. He retired in 1976.

Until 1957, when R. E. Partyka was hired as a second Extension plant pathologist, Janson had responsibility for all Extension work in plant pathology in Ohio. "If there was a plant disease in Ohio, I had the responsibility for it," Dr. Janson once said, adding that solving the "puzzles" of various crop problems over the years made his job interesting. "No two days were ever the same," Dr. Janson acknowledged. He prepared many Extension publications on plant disease management, especially fruit and vegetable diseases, and worked closely with faculty conducting research

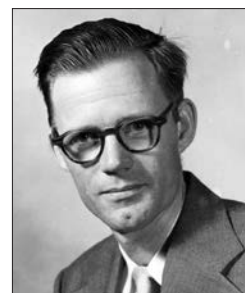


Blair Janson in his OSU office, Columbus, 1973

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in these areas. He wrote numerous articles on plant diseases and their control for various trade journals and agricultural organizations. For 25 years, Janson and colleagues in research and Extension, in both plant pathology and entomology, together prepared annual recommendations for disease and insect control of fruit crops, for use by both home producers and commercial orchardists. Janson was active in the Ohio Pesticide Institute and the Ohio Pesticide Education Association. After 1957, Janson focused his Extension program on fruit and agronomic crop diseases, and shared responsibility with Partyka for providing information on diseases of ornamentals. After retirement, Janson worked briefly as a plant pathologist with ChemLawn Corporation, in Columbus.

Thor Kommedahl (1920–2016). B.S. (1945), M.S. (1947), Ph.D. (1951), all from the University of Minnesota. Kommedahl was assistant professor in the Department of Botany and Plant Pathology at OAES, Wooster, (1951–1953) where he investigated corn root and stalk rot and soil microflora. In 1953, he left to join the faculty of the Department of Plant Pathology, University of Minnesota, where he had a highly distinguished career until his retirement in 1990. In Minnesota, his research focused on corn diseases, especially those caused by the *Fusaria*. His career achievements were widely recognized by election as Fellow of the American Association for the



OARDC • 1952

Advancement of Science (1947) and the American Phytopathological Society (1980). He provided considerable leadership to APS, holding many offices, including President (1971), and received the APS Distinguished Service Award (1984).

George J. Bart (1919–), B.S. (1948), Ph.D. (1956), both from The Ohio State University. In 1952, he

OSU Archives • 1967



was appointed instructor in the Department of Botany and Plant Pathology at OAES, Wooster, to study tree diseases, focusing his work on oak wilt and nursery crop diseases. He was promoted to assistant professor in 1964. Bart commuted to the new OSU regional campus at

Mansfield one quarter per year to teach *General Botany* (1958–60). In 1966, he left OAES to join the faculty at OSU-Mansfield where he taught *General Botany*, *General Biology*, and *Local Flora*. He served as acting director and assistant director of the Mansfield campus and retired in 1985.

August F. “Fritz” Schmitthenner (1926–). B.S. (1949), Gettysburg College, Pennsylvania; M.S. (1951) and Ph.D

OARDC • 1984



(1953), both from The Ohio State University. He was born and raised in India where his parents were missionaries, and served in the U.S. Army (1945–46) in the Philippines campaign. Schmitthenner was appointed instructor in the Department of

Botany and Plant Pathology at OAES, Wooster, in 1952, and was promoted to assistant professor (1953), associate professor (1960), and professor (1966). He spent a one-year sabbatical leave at the Imperial College in England, (1965–66) studying the physiology and taxonomy of *Pythium* in collaboration with Grace Waterhouse of the Commonwealth Mycological Institute, Kew, Surrey. He retired in 1996.

At OAES, Schmitthenner studied a new disease threatening soybeans in heavy clay soils of western Ohio. He and students isolated and described the pathogen (now called *Phytophthora sojae*) and studied the etiology of Phytophthora root rot. Working with

plant breeders in the Department of Agronomy, a source of resistance was found and used to develop new, *Phytophthora*-resistant commercial cultivars of soybean. Collaborating with L. E. Williams, they investigated interactions among crop rotation, soilborne pathogens, and changes in soil fungal populations. Schmitthenner developed two selective growth media that came into extensive worldwide use—“OAES medium,” effective for isolation of fungi from soil, and another for quantitative isolation of *Pythium* from soil and *Phytophthora* from diseased tissue. He demonstrated that, in addition to *Pythium*, *Aphanomyces*, and *Phytophthora* species also caused extensive damage to alfalfa stands. Working with H.A.J. Hoitink, he found that eight species of *Phytophthora* were involved in root rot and dieback of woody ornamentals in Ohio. His extensive work with *Phytophthora*, and later with *Pythium*, led to international recognition for his expertise in the taxonomy of these genera.

New races of *P. sojae* appeared in the 1960s and were characterized by Schmitthenner and his students. They screened soybean lines for new sources of resistance, which were used to develop multi-race resistant cultivars. It was estimated that use of these lines saved Ohio growers \$50 million annually. Faced with the continual appearance of new races, Schmitthenner and his students developed a new integrated control strategy, based on use of highly tolerant lines (susceptible, but



Fritz Schmitthenner examining fungal cultures in OARDC laboratory, Wooster, 1984

with minimal losses), use of *Phytophthora*-specific seed and soil fungicide treatments, tillage, improved drainage, and crop rotation. He continued searching for new sources of resistance to *Phytophthora* and found a Korean soybean introduction that was resistant to all known races of *P. sojae*. In 1995, he visited northeast China to search for *Phytophthora* root rot. Though the disease had been reported only once from China, he found it in 30% of the fields visited, but only one race of the pathogen was obtained. Later in his career, Schmitthenner studied the physiology of soybean tolerance to *Phytophthora* root rot. Work with A. F. Olah led to several improved methods for soybean breeding, including micropropagation, cell culture, and somatic embryogenesis, which were used to exploit existing genetic heterogeneity by selecting and increasing the highest-tolerant cultivars. They also developed protocols for *in vitro* screening of germplasm for *Phytophthora* resistance that minimized the space and time needed to develop new cultivars. In addition, their research emphasized *in vitro* crossings of races of *P. sojae* to evaluate the inheritance of virulence in the pathogen and serological quantitation of *Phytophthora* in diseased tissue and soil.

Schmitthenner was elected Fellow of the American Phytopathological Society (1984) and received the Distinguished Service Award from the APS North Central Division (1987). He served as associate editor of the APS journals *Phytopathology* and *Plant Disease*. During his career, he advised many graduate students and gave guest lectures in several plant pathology courses, particularly on *Pythium* and *Phytophthora* identification and diseases caused by these pathogens.

John L. Lockwood (1924–?). B.S. (1948) and M.S. (1950), both from Michigan State College; Ph.D.



OARDC • 1954

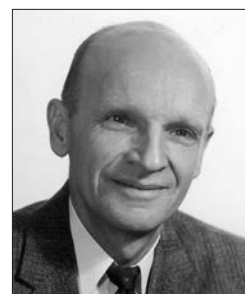
(1953), University of Wisconsin. He served in the U.S. Army (1943–46) in India and Burma. Lockwood was appointed assistant professor in the Department of Botany and Plant Pathology at OAES, Wooster, in 1953, where he investigated antibiotics as disease control agents and began

work on microbial antagonism in soil. In 1955, he left OAES to join the faculty of the Department of Bot-

any and Plant Pathology at Michigan State University, where he remained until his retirement in 1991. At Michigan State, Lockwood became internationally recognized for his research on the ecology of soil fungi that led to new concepts, one of which was the nutrient deficiency theory to explain soil fungistasis. He was one of the first to demonstrate degradation of chlorinated hydrocarbons by soil microorganisms. Lockwood was elected Fellow of the American Phytopathological Society (1977), and served as APS President (1985).

Lansing E. Williams (1921–2015). B.S. (1950), Morris Harvey College (now University of Charleston); M.S.

(1952) and Ph.D. (1954), both from The Ohio State University. During WWII, Williams served in the U.S. Marine Corps (1942–1946), primarily in the Pacific theater. In 1954, he was appointed instructor in the Department of Botany and Plant Pathology at OAES,



OARDC

Wooster, with responsibility for research on cereal crop diseases. He was promoted to assistant professor in 1956, associate professor in 1961, and professor in 1966. In 1968, soon after the new Department of Plant Pathology was formed, he was appointed associate department chairperson. He served as administrative leader for the Department of Plant Pathology on the Wooster campus from 1968–89. During that time, he provided considerable leadership to all aspects of the department, particularly at Wooster, and was a mentor to many young faculty there. He retired in 1989.

Early in his career at OAES (1957–60), Williams and George Bart taught *General Botany* at the OSU Mansfield campus when it was first formed. He worked with John Lockwood on control of Stewart's wilt of sweet corn with antibiotics, surface-active agents applied as seed treatments or foliar sprays, and with resistant hybrids. He spent several years collaborating with A. F. Schmitthenner, investigating factors affecting soil mycoflora and soilborne diseases. They focused on enumeration of fungal genera in Ohio soils; methods of isolating soil fungi and determining antagonism; and effects of crops, their residues, cultural practices, and crop sequence on fungal populations and diseases.

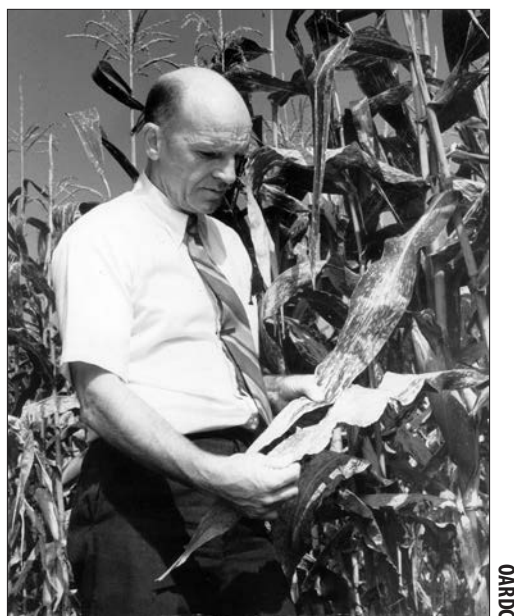


Corn breeder William Findley (left) and Lansing Williams examining virus-resistant corn seedling (mid-1960s)

Much of his work was with corn, particularly with stalk and root rots. Williams was first to report the occurrence of *Colletotrichum graminicola* in field corn in the U.S.

Following the report of a severe disease of corn in southern Ohio in 1962, Williams and L. J. Alexander isolated and named the viral agent, maize dwarf mosaic virus (MDMV), and the disease, maize dwarf mosaic. Working with corn breeders E. J. Dollinger and W. R. Findley, Department of Agronomy, he established a program to screen lines of corn in the greenhouse and field for tolerance or resistance to the disease. Seed of one of these selections was available, and it was used to alleviate the problem. With W. N. Stoner and L. J. Alexander, he demonstrated that the corn leaf aphid was a vector of MDMV, and with R. M. Ritter and W. R. Findley that the virus could be transmitted by seed. Later, Williams and colleagues L. J. Alexander, H. A. Runnels, and D. T. Gordon isolated another virus from red-streaked field corn kernels and identified it as wheat streak mosaic virus (WSMV), the first Ohio report of this virus on corn. Kernel red streak disease had appeared suddenly in Ohio and other Corn Belt states, leading to losses of several million dollars. Working with Williams, L. R. Nault and other

entomologists determined that kernel red streak was caused by feeding of the wheat curl mite, the vector of WSMV. Williams was instrumental in forming the interdisciplinary OARDC-USDA/ARS Maize Virus Research Team at Wooster and served as nominal group leader until his appointment as associate chairperson in 1968. In his early years as associate chairperson, Williams investigated issues related to feeding moldy corn to swine and other problems in the area of mycotoxicology. He worked with colleagues in the Department of Animal Science to conduct analyses of field and storage molds, and conduct feeding trials. During the southern corn leaf blight epidemic (1968–1970), he coordinated Ohio research on this problem and led the Ohio corn leaf blight watch. In 1968, he was a Rockefeller Institute consultant in Brazil, evaluating the effects of viruses on wheat production.



Lansing Williams examining virus-infected corn.

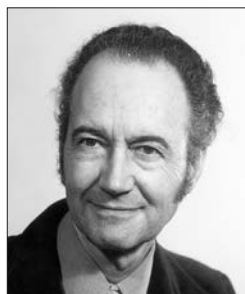
As associate chairperson, Williams partnered with I. W. Deep, chairperson of the new Department of Plant Pathology, and together they hired and mentored several new faculty and oversaw many details of building the new department. He chaired the faculty committee that planned and equipped the new plant pathology research building on the Wooster campus, which was dedicated in 1972, and later named Selby Hall. During the last five years of his career, he partnered with Charles Curtis when he came as the new department chairperson. Williams was a charter member of the



Charles Curtis (left) and Lansing Williams in Selby Hall,
OARDC Wooster, ca 1986

Wooster, Ohio, Sigma Xi Club and served as secretary, vice president, and president. He served as secretary-treasurer of the APS North Central Division (1974–1975), vice president (1982), and president (1983). After retirement, Williams spent several years collecting information on the history of plant pathology in Ohio. Then, he and co-author C. W. Ellett wrote the first history of the Department of Plant Pathology at The Ohio State University, published in the early 1990s (the first edition of this book).

Allen W. Troxel (1918–?). B.S. (1948); Ph.D. (1954), both from the University of California, Berkeley.



He served in the U.S. Army (1942–44) and the U.S. Air Force (1944–45). Troxel was appointed instructor in the Department of Botany and Plant Pathology, Columbus, in 1954. He was promoted to assistant professor in 1958 and associate professor in 1968. His

primary area of interest was virology, and he helped teach one of the early plant virology courses. For most of his 22 years at Ohio State he taught *General Botany* and *Introductory Plant Pathology*. He retired in 1976 and worked as a plant pathology consultant in California, and later, as a golf course superintendent in Arizona.

Leonard J. Herr (1928–2017). B.S. (1952), M.S. (1953) and Ph.D. (1956), all from The Ohio State University. He was appointed instructor in the Department of Botany and Plant Pathology at OAES, Wooster, in 1956, and was promoted to assistant professor (1957), associate professor (1963), and professor (1976). After Lockwood left for Michigan State, Herr was appointed to work on antagonism of fungi by soil actinomycetes, bacterial diseases, microbiology of silage, and antibiotics. He retired in 1995.



Herr's research interests were focused on soil microflora. He developed a triple-layer agar medium for the selective isolation of antagonistic actinomycetes and soil-dilution procedures to assay rhizosphere microorganisms. He investigated the comparative physiology of soil and rhizosphere actinomycetes and the effects of urea application on corn rhizospheres. He worked for a short time on diseases of floricultural plants, but then concentrated his efforts on sugarbeet diseases and their pathogens. He studied the nature of resistance in sugarbeet seedlings to black root caused by *Aphanomyces cochlioides*, developed techniques to study the host-parasite interaction, pathogen physiology, and histochemical and biochemical nature of host resistance. He made a concentrated effort on studies of *Rhizoctonia* crown rot of sugarbeets and the taxonomy of its pathogen. A *Rhizoctonia*-selective medium and a diskplate assay method for field assays were developed and used to study the ecology of *R. solani*. Cropping,



Leonard Herr doing sugar beet research in the OARDC greenhouse,
Wooster, 1986

overwintering, residue management, and weed hosts affected survival. Effects of composting on sources of *Rhizoctonia* survival in potting soils and bedding plants later were studied. Since *Rhizoctonia* has a wide host range of crops and exists as several species and strains, Herr gave considerable attention to *R. solani* strain identification by pathogenicity/virulence profiles and anastomosis grouping. He also studied the possibilities of biological control, especially by using binucleate *Rhizoctonia* spp.

In addition to his work on *Rhizoctonia*, Herr collaborated with P. E. Lipps in studying and reporting, for the first time, the occurrence of *Rhizoctonia cerealis* causing sharp eye spot of wheat in North America and *Alternaria helianthi* (leaf and stem blight of sunflower) in the United States. They also reported the first occurrence of stem canker of sunflower caused by *Diaporthe helianthi*. Herr cooperated with P. Sutton, Department of Agronomy, studying chemical and cultural controls and the use of resistant cultivars for control of tobacco diseases, particularly *Phytophthora* black shank and blue mold.

Robert E. Partyka (1930–2006). B.S. (1952) University of Rhode Island; Ph.D. (1958), Cornell



OARDC • 1967

University. In 1957, he was appointed assistant professor in Extension plant pathology in the Department of Botany and Plant Pathology, Columbus. For the first time in Ohio, there were now two full-time Extension specialists in plant pathology. He was appointed associate

professor in 1964 and professor in 1969. Because of his recognized expertise in turfgrass diseases, Partyka was offered a position as plant pathologist for the new ChemLawn Corp., a turf management company headquartered in Columbus. He left the department in 1974 and remained with ChemLawn until his retirement in 1991. In his early years with ChemLawn, he continued some involvement with the department as adjunct professor (1974–79).

In his OSU Extension role, Partyka worked closely with Ohio vegetable growers, both in the field and the greenhouse, helping them understand and control diseases. His responsibility also included working with

tobacco growers and with the turfgrass industry. His work on turfgrass diseases coincided with the rapid growth of lawn-care companies. This was the first time an Extension plant pathologist was available to provide significant help in disease management to the Ohio turfgrass industry. Together with B. F. Janson and C. W. Ellett, Partyka initiated a plant disease clinic in the department, in the 1960s, to better serve Extension clientele. His work with commercial growers of fresh market and processing vegetables, and with home producers, was widely recognized. He cooperated closely with J. D. Wilson and L. J. Alexander, working on vegetable crop diseases, and with Extension specialists in entomology and horticulture. In the 1960s and early 1970s, Partyka was widely invited as a speaker on vegetable and turfgrass disease management at meetings and conferences throughout the U.S. and Canada, and worked closely with the Ohio Vegetable and Potato Growers Association. He regularly prepared disease-control recommendations for commercial vegetable growers and home gardeners and wrote and updated disease control fact sheets.

Glenn E. Smith (1923–). B.S. (1952), Morris Harvey

College, now the University of Charleston; M.S. (1954) and Ph.D. (1960), both from The Ohio State University under the guidance of C. C. Allison. Smith served in the U.S. Navy for six years and graduated from the U.S. Navy School of Music in 1943. He was appointed



OARDC • 1958

instructor in the Department of Botany and Plant Pathology, Columbus, in 1957 and was promoted to assistant professor (1962). He taught courses in general botany and plant pathology. In the early 1960s, he obtained training in plant nematology and began a research program in that area. Smith taught the first course in phytonematology at The Ohio State University. In 1967, he resigned to become professor of biology at Morris Harvey College, Charleston, West Virginia, and a year later was appointed head of the department of natural sciences.

Curt Leben (1917–2008). B.S. (1940), Ohio University; Ph.D. (1946), University of Wisconsin.



OARDC • 1974

After remaining in the Department of Plant Pathology at Wisconsin for postdoctoral research, Leben was appointed to the faculty there as assistant professor. His research dealt with the use of antibiotics for plant disease control. An important discovery was Antimycin A,

which proved a useful tool in research on metabolism and in managing fish populations. He and colleagues studied seed treatments and demonstrated the vapor action of mercuries. In 1955, Leben joined Eli Lilly and Company, where he did research and later became head of the Lilly Agricultural Research Center in Greenfield, Indiana. In 1959, Leben came to OAES in Wooster as professor and associate chairperson of the Department of Botany and Plant Pathology, following the retirement of H. C. Young. It was understood that, in addition to his administrative duties, he would carry on a substantial research program. While Leben was associate chairperson, a new building for plant pathology at Wooster was requested, and a maize virus research program was initiated with federal and state support. When the new Department of Plant Pathology was formed in 1967, Leben served as acting department chairperson for six months, until I. W. Deep arrived. He then elected to return to full-

time research. He spent a year's sabbatical leave in the Department of Plant Pathology at the University of California, Berkeley (1968–69). He retired in 1988.

Leben's research covered diseases over a wide range of crop plants, including forest and shade trees. Topics included fungal nutrition and genetics, fungicides, seed treatments, virus inhibition, air pollution damage, and tree decay. He is best known for his pioneering studies on epiphytic bacterial microflora and pathogens of the phyllosphere. Isolation of non-pathogenic bacteria from apparently healthy leaves suggested that both pathogenic and non-pathogenic bacteria can have a "resident phase." This phase in the life cycle of bacterial pathogens is believed to be of major significance in increasing inoculum under some environmental conditions, and has been demonstrated in many pathosystems. Leben served the American Phytopathological Society on many committees and as an associate editor of the APS journal *Phytopathology*. He was elected an APS Fellow in 1981.

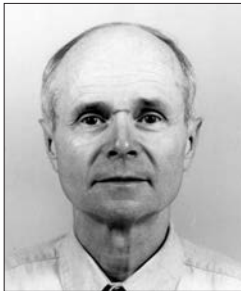
Donald K. Dougall (1935–). M.S. (1954), University of Western Australia; Ph.D. (1956), Oxford University. He was an associate in biochemistry at the University of Wisconsin (1956–59) and a lecturer at the University of Sydney, Australia (1959–63). In 1963, Dougall was appointed assistant professor in the Department of Agricultural Chemistry in the College of Agriculture at The Ohio State University. He was stationed at OAES, Wooster, where that department planned to build a portion of its faculty. However, in 1966, Agricultural Chemistry faculty in Columbus were transferred to the new College of Biological Sciences and organized as a new Department of Biochemistry. Dougall then transferred to the Department of Botany and Plant Pathology at Wooster, where he conducted research in biochemistry and experimental plant morphology. In 1967, he relocated to the Columbus campus, where he taught and did research in the Academic Faculty of Microbial and Cellular Biology. He was associate dean of Biological Sciences (1968–69) and resigned in 1971 to join the W. Alton Jones Cell Science Center at Lake Placid, New York.



Plant Pathology Department

Curt Leben in OARDC laboratory, Wooster, 1972

Donald T. Gordon (1935–). B.S. (1960), University of Cincinnati; Ph.D. (1966), University of Wisconsin.



OARDC • 1996

In 1965, Gordon was appointed assistant professor in the Department of Botany and Plant Pathology at OAES, Wooster, to conduct research in plant virology, and soon also assumed teaching responsibilities in that area. He was promoted to associate professor in 1970 and professor in 1977. He retired in 2002.

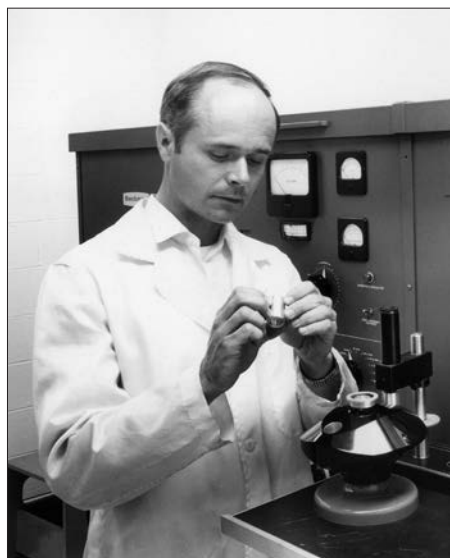


OARDC Publication

Don Gordon and Fritz Schmitthenner examining soybean plants from growth chamber, OARDC, Wooster, 1970

Gordon's research involved identification, characterization, and development of assays for viruses causing significant crop losses in Ohio. In cooperation with A. F. Schmitthenner, he studied soybean viruses, demonstrating that Ohio soybean cultivars were highly susceptible to two of the most commonly occurring soybean viruses, representing a potential hazard to soybean production. The primary focus of Gordon's research throughout his career was on maize viruses. Working with colleagues and many students, he worked to identify and characterize several maize viruses, and to develop effective diagnostic assays for them. Among these included characterization of strains A and B of maize dwarf mosaic virus (MDMV) and wheat streak mosaic virus; discovery of the maize chlorotic dwarf

virus (MCDV), necrotic streak virus, and maize fine streak virus; determination of the relative importance of MCDV and MDMV in corn-stunting diseases in the United States; and finding maize rayado fino virus in the United States. He was a member of a scientific team sent to China in 1991 to survey for maize viruses and develop cooperative research projects for their control.



Plant Pathology Department

Don Gordon in OARDC laboratory, Wooster, 1972

Gordon provided leadership to and was the primary spokesperson for the OARDC-USDA/ARS Maize Virus Research Team, an interdisciplinary research group that was very active during the 1970s and 1980s. Gordon set the agenda and chaired discussions on research planning and data, handled general correspondence, and served as a liaison with other institutions and for writing and submitting grant proposals. During this time, he co-chaired the planning and execution of two international colloquium-workshops on maize virus diseases and was a co-editor of the published proceedings. From 1970–89, Gordon and R. M. Ritter provided a service to maize virus researchers and agricultural libraries called the Maize Virus Information Service (MAVIS). It included references to the world literature and reprints available of publications on maize virus and virus-like diseases, beginning from when each disease was recognized. An updated list of titles, keywords, and authors was sent annually to 500–600 researchers and numerous libraries in the U.S. and foreign countries. MAVIS was

most useful to researchers in emerging countries who did not have ready access to modern library services.

Gordon was very active in the department graduate program, advising or co-advising numerous graduate students from many countries, especially Africa. From 1969–98, he taught *Plant Virology*. The course originally included both classroom and laboratory instruction, but later these two aspects were split into two courses taught in alternate years. In the 1970s, responsibility for virology instruction was shared with A. W. Troxel and M. O. Garraway.

Oscar E. Bradfute (1929–2014). B.S. (1951), M.S. (1953), both from The Ohio State University; Ph.D.



OARDC • 1974

(1963), University of California, Berkeley. Bradfute served in the U.S. Air Force (1953–56) and was a research fellow at the Cell Research Institute, University of Texas, Austin (1963–65). In 1965, he was appointed assistant professor and electron microscopist at

OARDC, Wooster, and was charged with establishing an electron microscope laboratory. His responsibilities included setting up the laboratory and guiding its service functions (2/3 time), and conducting research on ultrastructure of plant viruses and virus-infected tissues. By 1971, he and R. E. Whitmoyer, had designed and equipped a spacious electron microscope laboratory for use by all OARDC faculty that was located in a dedicated space in the new Selby Hall. Whitmoyer was then appointed as head of the EM

laboratory and Bradfute was appointed to the faculty of the Department of Plant Pathology (1971), with responsibility to detect and identify virus and virus-like disease agents of maize and other plants. Bradfute was promoted to associate professor and electron microscopist in 1969 and professor in 1979. He retired in 1994.

In collaboration with OSU plant pathologists and entomologists in the interdisciplinary OARDC-USDA/ARS Maize Virus Research Team, Bradfute used his expertise in electron microscopy to find several plant pathogens in infected plants, some for the first time, including: 1) virus particles and inclusions associated with the maize dwarf mosaic virus, 2) maize chlorotic dwarf virus, 3) maize rayado fino virus, 4) wheat spot mosaic virus and fig mosaic virus, 5) maize mosaic virus, and 6) the maize bushy stunt phytoplasma. Finding and describing these viruses and mollicutes in infected plant tissues were important contributions to the characterization of plant pathogens discovered by his colleagues.

It is of historical interest that Bradfute was not the first Oscar E. Bradfute to be associated with the agricultural experiment station and Ohio agriculture. His grandfather, with the same name, was a member of and secretary for the OAES Board of Control for several years in the early 1900s. He was honored as a member of the Ohio Agricultural Hall of Fame.



OARDC

Oscar Bradfute in electron microscope laboratory, OARDC, Wooster, 1984

Sidebar 2

Graduate School and Young Faculty Experiences in the 1950s and early 1960s —*Lansing Williams and Fritz Schmitthenner*

This account of their early experiences in the department was prepared by Randall C. Rowe based on oral history interviews he conducted with each of them in 2013 and 2015.

LANSING WILLIAMS (W) grew up in West Virginia and spent WWII as a Marine in the Pacific conflict. After the war, he earned a B.S. degree and, in 1950, started graduate school in plant pathology at Ohio State. After finishing his Ph.D. in 1954, he took a position at Wooster and was a member of the department faculty there until he retired in 1989. Lansing did research on cereal diseases, was involved with the early work on maize viruses, and was one of the founders of the interdisciplinary Maize Virus Research Group. He partnered administratively with Ira Deep to launch the new Department of Plant Pathology in the late 1960s, and served as associate chairperson at Wooster during the last 20 years of his career.

FRITZ SCHMITTHENNER (S) spent his childhood in India where his parents were missionaries. He served in the Army in the Philippines, then earned a B.S. degree, and

began graduate school in plant pathology at Ohio State in 1949. He started in Wooster as an instructor in 1952, finished his Ph.D. in 1953, and served as a member of the department faculty there until his retirement in 1996. Fritz devoted his long career to research on soybean diseases and made many important contributions to the understanding and management of *Phytophthora* root rot.

OADRC Publication



Fritz Schmitthenner and Lansing Williams examining diseased soybeans, 1974

Both Lansing and Fritz were in graduate school together in Columbus and then were young faculty colleagues when the department at Wooster was housed in the old Thorne Hall building. Prior to formation of the Department of Plant Pathology in 1967, they had many shared experiences in graduate school and during their early years as faculty members.

(W) C. C. Allison was my Ph.D. advisor—he was everyone’s advisor! Only two people taught plant pathology at that time, Allison and Wayne Ellett. Wayne had only an M.S. at the time, so could not handle grad students. C. C. Allison was the whole graduate program. I think he had about 20 students at one time. He was a good advisor. I loved the guy and owe him and his wife Pat a lot. He was not known as a great researcher. However, for the philosophy of plant pathology and making you proud of what you were doing, he was the best. Doing your student research, you have to think about why things happen. Allison developed this in us and taught us how to write and to be proud of being a plant pathologist.

(S) I came to graduate school at Ohio State to study botany. I took a plant pathology course from C.C. Allison and I liked it. He was a dynamic person, very persuasive. When I decided to study plant pathology, Allison was my advisor. He WAS the graduate program at that time. I remember he had about 15 students.

(W) Later in his career, Allison got heavily involved in international work. Ohio State had a project in Brazil and he volunteered to go down to Piracicaba, where he became well established, and spent several years there full time. At that time, he was no longer closely involved in our graduate program. He learned Portuguese there and taught classes in that language. Allison helped in forming the first plant pathology society in Brazil. He did a great job with graduate students there, just as he did in Ohio. All through his career, he did things for students that they did not realize he was doing.

Most of the classes were taught by one person who also advised most of the students. Wayne Ellett taught mostly general botany. Allison taught about all the plant pathology classes. They were mostly crops classes, diseases of this and diseases of that. Mycology was taught by someone in botany. We had genetics from someone else.

(S) Besides Allison, the only other faculty in plant pathology teaching classes was Wayne Ellett. Professor Gray taught mycology. We took all the botany courses, since our degree was in botany and plant pathology. So we interacted with a lot of the botany profs. I think every plant pathologist ought to be basically a botanist. I took everything they had: anatomy, cytology, mycology, ecology, plant physiology. I took biochemistry over in the medical school. I took physics. I don’t remember what plant pathology classes I took. Allison taught a lot of them. They were focused mostly on diseases of certain crops. Later on in my career, the plant pathology courses became a lot more technical, but I think I had a good, rounded background.

(W) They don’t make students take languages now. Then, you had to take a comprehensive exam in one language without a dictionary, or two with a dictionary. I told Allison I wanted to take a comprehensive in French, since I had taken a year of that. He said “No, you’re taking German.” It was one of the best things I ever had done to me.

(S) We did not have to take a language course, but you had to pass a reading and comprehension exam in two languages. The exams were given in the department. They gave you a section of a scientific paper in the language you chose and you had to read it and interpret exactly what it said. You had to choose two languages and I chose French and German. I took a course in scientific German and had taken German in high school, but I flunked my German exam my first time. I never took any French courses, but I passed that.

Allison was good at interacting with the graduate students. He had very interesting seminars on Wednesday nights. We were assigned topics to give papers on. It was a very interesting experience. Students gave a seminar and then we'd discuss the seminar. It lasted about 3 hours. Allison would sort of nail people when evaluating their seminars, but in a humorous way. He was sarcastic. That could be intimidating, but once you got used to it, it became an interesting experience. You knew what to expect, and you could participate in tearing down the paper too.



Graduate students at C. C. Allison's Wednesday night seminar, OSU, Columbus, 1948

Front table left-to-right: Koshy, Van Burgh, Reed, Swank, Norton, Kazmaier

Back table left-to-right: Rosberg, Crittenden, Palchefsky, Campbell, Kuehner, Spilker

Standing left-to-right: Janson, Allison (in doorway), Bart

(W) When I started graduate school, Allison had his Wednesday night 3-hour seminars. They were no-credit, and he just said, "You're coming." You had better be there. He assigned you a topic which you then researched and gave a seminar. I came in not knowing anything about plant pathology and I did not know a whole lot about plants. The title he gave me was "Growth substances synthesized by the suspect in relation to susceptibility." How would you like to start with that? It taught you how to go to the library and how to write it up. You then thought it was a great piece of work that you did and he would then rip it to shreds. I got into trouble with Allison one time. A student said something and he said, "That's not what Webster says is the definition of that." I said, "Since when do you accept the definition of Webster?" You know what he ordered me to do or else. "You come up with a write up of the taxonomy of nematology." There was only one nematologist in the whole U.S. at that time. And I had to do it! That was how he did things with students.

(S) There were about 30 grad students in the department. There were 5–6 ecologists, a bunch of physiologists, and about 15 plant pathologists. We were about half the students. As grad students, we interacted quite a bit among ourselves. A bunch of us would go out and eat together. We would go across the river to a Chinese restaurant where you could have beer with your dinner. Botany had seminars too and we all attended those. We interacted a lot with the other botany students. Sort of a nice big family. A lot of the students did not get their Ph.Ds then. They just got their master's and went into industry working for chemical companies. That was a typical thing to do then.

I did not have a close relationship with Allison as my advisor. He left me pretty much on my own. My thesis dealt with finding resistance to anthracnose in tomatoes. Leonard Alexander had a plant introduction collection of tomatoes. I went through the whole collection and found some lines that did not get any anthracnose. Alex did not direct my research, but he was interested. I don't remember how my research topic was chosen. I think I just chose it, but Allison might have been involved. He really didn't advise me on my research much. He was very good at inspiring people, but I don't think he really cared much about what you were doing, as far as research. We were always pretty much on our own with our research.

(W) I did my research on my own and went in to Allison and said, "I'd like to do my general exam for my Ph.D." He said, "You haven't done any research". I said, "Oh yes I have." He said, "Well, you never told me. You have something on my desk tomorrow and I'll think about it."

In Columbus, graduate students worked in a general lab and a few specialty labs, but nothing like today with the machinery they have now.

(S) We had two big communal labs we could work in. I had a bench to work on where I had my cultures incubating and put my tomatoes there after inoculating them and covered them with plastic. We had no clean-air transfer benches. The percentage of clean PDA plates was minimal sometimes. We had autoclaves, agar, a lot of needles, Bunsen burners. What more do you need for inoculating tomatoes?

(W) I got my Ph.D. in 1954, and was then hired, and immediately came to Wooster. Prior to that, I had no relationship to Wooster and did not really know what an experiment station was all about.

(S) I had just about finished my Ph.D. research, when I came to Wooster in the summer of 1952 and worked for J. D. Wilson spraying his research plots. There was an opening for a forage crops pathologist in Wooster and they asked me if I wanted the job. I couldn't believe it! That sounded good to me, so I started that fall as an instructor without a Ph.D. As an instructor, you can get fired at any time, so it was sort of a trial period. It took me two more quarters to write up my Ph.D. research while at Wooster. I graduated in 1953 and then became an assistant professor. I kind of liked Wooster. I had a few other offers later, but I thought, "What can they give me that I don't have here?" I had good support here and total independence in what I did. What else can you want?

(W) After the merger of botany and plant pathology in 1948, there was some resentment at Wooster to being put under someone at Columbus. Alexander came down to

campus and taught a class on plant pathology techniques once a year. He was the only one who ever taught in Columbus. You were 90 miles apart, so not a lot of interaction. Some grad students did come to Wooster in the early 1950s. Fritz came to Wooster as a grad student. After the merger, Wooster faculty were advisors for students. Some students moved up to Wooster to do research. Allison's role was still strong, but other faculty later became advisors. Ellett got his Ph.D. and started to advise students. Later, they hired Allen Troxel as virologist and he advised students.

- (S) I interacted more with the agronomy faculty than with the plant pathology faculty because I was in agronomic crops. There was a lot of back and forth with Columbus. We were on committees and Ph.D. exams on main campus in plant pathology and agronomy. That was before I-71 was built, so we drove down Route 3. I knew Route 3 so well that I knew how fast I could take every curve. The section between Mt. Vernon and Loudonville was the curviest part.

When I first came here, I was responsible for agronomic legume crops, mostly forages. I started out with some work on alfalfa, but no one had worked on soybean diseases. They developed a *Phytophthora* problem and asked me to look at that. Soybeans had been grown in Ohio since the 1920s, but they became a major crop during WWII because they needed soy protein for food for the troops. In 1954, we did soybean surveys to see how widespread this disease was and found it all over the state. The next year I had a series of variety plots in a big field where everything had been killed and I found two resistant types.

- (W) Wooster faculty were involved with growers and grower groups, just not officially in Extension. It was just part of your job. This was your crop and you interacted with growers and answered the questions. The corn growers were in my corner for some time.
- (S) I very quickly got involved with growers and agricultural organizations. Soybean growers were already very organized at that time. The agronomist working on soybeans got me in with the grower organizations.
- (W) Extension faculty were semi-independent at that time. Janson and Partyka operated out of Columbus. They were tenured in the department, but they handled their own programs. I don't know who they answered to. They were good Extension pathologists, but did not have much involvement with graduate students. Teaching and Extension were separate to a degree. Extension people were independent from teaching, and did not interact with Allison much. They were kind of separate empires in a way. Research people did not do Extension. They did collaborate, but professionally they were not tied together. No Extension work was done officially out of Wooster, but faculty did work with growers, it was just not called Extension. That went way back to Selby. Growers would call you and they had a lot of meetings on the Wooster campus. Growers even flew in and landed at the airport on campus.
- (S) Back then, all of our technicians were hired by the state. We didn't have any grants. They were all state technicians. So my position was assigned a technician. Later on,

I had two full-time technicians. I don't think I had a budget as such. I just ordered what I wanted and I got it. Of course expenses weren't as much back then. The department could afford a can of agar now and then. We had no problem getting cars or arranging for a combine to go out and harvest my plots. We had money for travel to meetings. That was a great deal. Later in my career, I started to get financial support from industry and grower sources as my money shifted from state support to outside support. When I first started, grower groups were not giving financial support. I did not need it at that time. Later on they provided money for a technician.

- (W) We started out in the old Thorne Hall where it was so crowded and ill-equipped. You had the departments of Agronomy and Entomology and the print shop and public information there too—all in the one little building. For many years, Fritz and I worked down in the dirty basement where you could look up and see the pipes up there covered with black soot. Despite that, we did quite well with our culture work. Back then, we did not even know what a clean air bench was. We washed the benches down with mercuric chloride. People now can't believe we were that dumb, but we did not know there was a problem. I enjoyed the research, but the conditions were meager.
- (S) We called it "Scorn Hall." Conditions were very primitive. My office was in the basement. Lansing was on one side and on the other side was one of the USDA guys from Agronomy. I had space in a common lab upstairs. After a few years, they moved us upstairs where the USDA had been. There was a room attached to my office which I turned into a lab. That worked out fine for culturing. I had control of it and washed the walls down to get the spores out of the air. It had a window air conditioner. I poured my plates there and did all my culture work there. It was better than Columbus, as far as contamination, because I had control of it. Thorne Hall was very limited. If you wanted to do work with equipment or needed autoclaves, you had to go down to the common lab.
- (W) We got along well with the older faculty. **Harmon Runnels** retired in 1968. I knew him very well. He was a very likeable person, a real gentleman. He knew plant pathology and diseases very well and could answer any questions. People came to him. He never published a lot. He lived on campus in a little house behind the administration building. He did great work, but it was all in answering questions and doing outreach work for the whole department.
- (S) Harmon Runnels never got his Ph.D. He worked on turf diseases, strictly practical stuff. He also worked on Dutch elm disease. He would isolate twigs coming in to verify they had Dutch elm.
- (W) **J. D. Wilson** worked on fungicides for vegetable crops. After WWII, organic pesticides came in and that was his whole program. He did the field work for many chemical companies. That was a responsible thing to do at that time and it paid off. Nearby states quit doing pesticide testing since they knew that Wilson would do it. He was responsible for controlling some tomato diseases that allowed vegetable processors to come into western Ohio. He was well liked and respected by the department.

(S) J. D. Wilson was a very “laid back” person. I liked him. He was just involved in applied work. He sort of supervised Frank Winter’s work.

(W) **Frank Winter** was fruit crops pathologist. He did not have an advanced degree, was not as well-known, and did not publish as much as Wilson, but was a good worker and had a good relationship with growers. He had a large commercial orchard east of town and said that was how he educated his children. Both he and Wilson were not involved much in research beyond fungicide testing. When Young retired, Wilson served as acting associate chairperson for several months.

(S) Frank Winter was the orchard man. He sprayed apples and peaches. He didn’t even have an advanced degree. He started as a technician and was offered a faculty job. But he never made professor because he didn’t have a Ph.D.

(W) **Leonard Alexander** was one of the big names. He was a great big man and a dominant character. He was like a bull in a china shop. He was the kind of guy who told everyone what to do. He was quite active in APS. All his work was with greenhouse tomatoes and he made the industry in Ohio. When he solved the problem of Fusarium wilt in the late 1930s, they say he saved the industry a million dollars a year—a lot of money back then. In the early 1960s he developed varieties with resistance to five races of TMV. That saved the industry \$5 million a year. They built a greenhouse for him and gave him an automobile. He was a good researcher. He did all the breeding himself. He was on the faculty here for 40 years (1930–70) and then, when he retired, he worked full time at the University of Florida for 10–12 years more.

(S) Leonard Alexander was the “know it all” tomato man. He was a very dynamic individual. But I knew him very well, since I had worked with him as a student, so I didn’t have to worry about him.

I don’t remember how we got tenured and promoted. It just happened. I got promoted to professor when I got back from sabbatical. It was not that big a process like it is now, but you could stay associate professor forever, and some people did. Some people made associate professor even though they had no Ph.D, but they could not go any higher.

(W) We had Meyer as department chairperson. He was a brilliant writer and a good teacher, but he was a poor department leader. He had direct effect on Wooster in money and promotion, but otherwise not much. He set salaries, and we were not well paid. He also did not buy us much equipment. Meyer’s view was that the faculty should not expect support money or to get paid much. After a while, people came to realize that we had to do what we had to do without much support.

(S) Meyer was the department chairperson in Columbus, but we only saw him about once a year. Maybe more often, but not much. We never had joint faculty meetings until later. Meyer would come up and talk with each of us once a year and find out what we were doing.

- (W) Young was associate chairperson when I came. Early in his career, when he was Chief of Botany, he had hired several new faculty and expanded research, but he was getting old at that point, and was heavily involved in his grocery business and his commercial orchards. He was not involved in his work as much as he should have been.
- (S) Young was associate chairperson when I started, but he was more interested in his business enterprises around town than he was with plant pathology. He had an IGA store and a farm down in Homestead, Florida. So he was pulled away by those things and did not interact much with the faculty. Lansing and I went straight to the administration when we needed something. We had good access to associate director Krauss, and he was interested in some of the things we were doing in Northwest Ohio. So, we were able to get a technician from him to do our work. He could approve technicians for us.
- (W) Leben replaced Young in 1959, eight years before the Department of Plant Pathology was formed. There was some change when Leben came. He rejuvenated some things in the department. He was a good researcher and leader in some ways. He got us more into basic research, though he was more in the frame of Meyer, being quite frugal.
- (S) Leben came as associate chairperson when Young retired in 1958. He was sort of an intellectual type, more interested in basic research. He took an interest in us faculty, but I don't think he had a very good relationship with the administration.
- (W) OAES and Extension directors were not involved that deeply with faculty research programs. Until Kottman came, they all wanted to run everything as cheaply as they could. They said it was all state money, and they wanted to spend it wisely. Dean Rummel really did not have the background to be in charge of a research institution. He came to Wooster now and then. He had an assistant named John Bragg, who always wore a white cattleman's hat. He had been in charge of state farms or something, but he mostly ran the place.
- (S) Dean Rummel could be swayed. He had an assistant who wore a white cowboy hat. If we could talk him into doing something, we could get it done. We were sometimes successful with him.
- (W) When Roy Kottman came as Dean, he shook things up pretty good. He brought us into the modern world. There were a few faculty who were well known before Kottman came, but not the institution itself. Kottman took over and gathered money. He said we have to dream a little bit, get basic research going, and look to the future. He was pushy at times and was resented by some people, but he was a great leader. He took over, built new buildings, got money for many things, and bought lots of equipment. I was a friend of Kottman, but he could be a tough cookie. He knew how to manipulate politics and interact with the general assembly. He brought in a very different philosophy than his predecessors. He knew you had to spend money to get what we needed. Kottman could gamble and get things done.

Chapter 6

Founding and Early Development of the Department of Plant Pathology (1966–1983)

Before it was finally realized, an academic department focused on plant pathology had been advocated and sought for many decades, particularly by faculty at OARDC (OAES). They had been independent for many years and were the largest group of plant pathologists in the system. Support also came from some plant pathology faculty in Columbus, particularly C. C. Allison and C. W. Ellett.

As early as 1911, A. D. Selby was appointed by the Ohio State Horticulture Society to chair an effort to obtain funding for a new building on the Columbus campus (now Lazenby Hall) and equipment for the Department of Horticulture and Forestry and a new Department of Plant Pathology. It appears that Selby had the full support of Dean Alfred Vivian of the College of Agriculture and the apparent consent of OSU President William Oxley Thompson. Where the negotiations for a department of plant pathology broke down at that time is unknown, but it may have been with the OSU President or the Board of Trustees.

The next formal request to establish a department of plant pathology, as far as is known, was made in late 1957 or early 1958. This arose from a meeting of the OAES faculty on November 22, 1957, to discuss the possibility and advantages of such a department. Professors Young, Alexander, Wilson, Winter, Runnels, Bart, Herr, Schmitthenner, and Williams were unanimously in favor of such a department. H. C. Young was elected as spokesman for the endeavor, Frank Winter co-spokesman, and Lansing Williams secretary. A request for the creation of a new department, combining plant pathology faculty at both OAES and OSU, was written and presented to Dean and Director Leo Rummel along with letters of support from individual OAES faculty. Despite these well-organized efforts, the request was denied.

Surmounting the hurdles of campus politics to gain approval for a new department

Success in establishing a separate department of plant pathology finally came only as part of a much larger reorganizational effort within the university. In 1962, the President's Permanent Planning Committee recommended the establishment of a College of Biological Sciences at The Ohio State University. On October 5, 1965, this proposal was endorsed by The Academic Board of the University, to be effective July 1, 1966. The Board also recommended that consideration be given to the creation of departments of entomology and plant pathology in the College of Agriculture, while zoology and botany would be transferred to the new College of Biological Sciences. This recommendation was referred to the OSU Council on Instruction, which gave approval on February 6, 1966, and submitted to the OSU Board of Trustees their recommendation that a College of Biological Sciences be formed effective July 1, 1966. Their recommendation was that faculties of the Department of Agricultural Biochemistry (to be known in the new college as the Department of Biochemistry), the Department of Botany and Plant Pathology, and the Department of Zoology and Entomology be transferred into the new college. However, recognizing that the College of Agriculture and Home Economics needed some instruction and research in the fields of entomology and plant pathology, they suggested that the faculty and dean could submit proposals to the Council to provide for those needs. Pending approval of such proposals, faculties in these disciplines would be given an opportunity, with approval of the deans of both colleges, to stay in the College of Biological Sciences or return to the College of Agriculture and Home Economics. In this plan, some plant pathology

faculty would be in the department at OARDC at Wooster (which at that time was still a tenuring unit), some in Extension in the College of Agriculture on the Columbus campus, and resident instruction would be in the new College of Biological Sciences. This proposed structure would have placed faculty at the OARDC at Wooster, and Extension and resident instruction faculty in two colleges on the Columbus campus, in an unhappy and unwieldy situation.

On April 19, 1966, Dean Roy M. Kottman appointed a committee consisting of Blair Janson, Curt Leben, Glenn Smith, Lansing Williams, and Wayne Ellett (chairperson) to prepare a proposal for the establishment of a department of plant pathology in the College of Agriculture and Home Economics. Prior to establishment of the new College of Biological Sciences, the resulting 25-page proposal (called the "Future of Plant Pathology" report by insiders) was presented to the Council on Academic Affairs, a subcommittee of the Faculty Council. It was also distributed to each department in the College. A similar request was made for a department of entomology.

The Council on Academic Affairs responded unfavorably to Dean Kottman's request to establish departments of entomology and plant pathology in the College of Agriculture and Home Economics. Following this decision, the College Executive Committee then approved a motion to have Dean Kottman submit this unfavorable decision for review by the full Faculty Council, who put it on the agenda for the February 14, 1967, meeting. In accordance with established procedures for abolishing or establishing departments, Dean Kottman called a special meeting of the college faculty on January 20, 1967, to obtain their consent to form the two new departments.

With the leadership of Curt Leben, associate chairperson of the current Department of Botany and Plant Pathology, the plant pathology faculty immediately began planning their strategy to get a favorable reception by members of the Faculty Council. A succession of speakers was chosen to present the need for and strengths of a separate department in the College of Agriculture and Home Economics. Others were selected to be prepared to address certain topics and issues, if they arose. The two days before the meeting, Fritz Schmitthenner and Lansing Williams were on campus in Columbus, advocating the case

to as many representatives on the Faculty Council as possible.

The evening before the meeting, after their talks with council members, Williams and Schmitthenner advised Dean Kottman that he would probably lose the motion on a new department of entomology, but win the one on plant pathology. In his usual optimistic and enthusiastic outlook, the Dean stated, "We'll win both of them." It was evident to Williams and Schmitthenner that members of the Faculty Council did not want a confrontation of deans, since this should be the prerogative of the faculties. Therefore, Dean Kottman was asked to propose the motion and allow the faculty to argue the case, to emphasize that it was a faculty proposal and not just a request from the dean of the College of Agriculture and Home Economics.

OSU President Novice G. Fawcett chaired the Faculty Council proceedings and many arguments, pro and con, were presented. After several hours of debate, the council voted and approved the motion,

that, as of July 1, 1967, Plant Pathology, which is now a part of the Department of Botany and Plant Pathology in the College of Biological Sciences, be established as a Department of Plant Pathology with the responsibilities of resident instruction, research, and Extension programs in the College of Agriculture and Home Economics.

The same motion for entomology was defeated. A possible explanation for this outcome was that the vast majority of faculty salaries in plant pathology were supported by OARDC and Extension funds, controlled by Kottman, while half or more of the faculty salaries in entomology were supported by OSU resident instruction lines needed by the new College of Biological Sciences.

The Department of Plant Pathology is born

Thus, on Valentine's Day, 1967, the Department of Plant Pathology at The Ohio State University became a reality! The satisfaction and excitement of having a new academic department was tempered by the realization of the hard work ahead if the department was to survive and grow. A new administration, table of organization, committees, new curricula, graduate program, space, equipment, expanded teaching, and many other details

had to be handled. Curt Leben, associate chairperson of the former department, was appointed acting chairperson of the new one and immediately initiated planning. Many joint faculty meetings and committee sessions were held at night at a motel on I-71 halfway between Columbus and Wooster.

Soon after the affirmative vote, Dean Kottman appointed a committee consisting of Leonard Alexander, Wayne Ellett, Donald Gordon, Blair Janson, Clarence Taft (Botany), and Lansing Williams (chair) to begin a national search for a chairperson of the new Department of Plant Pathology. Kottman expressed his hope that candidate interviews could begin by April 1. Candidate names were solicited nationwide, then narrowed to a few who were brought in for interviews. Ira W. Deep, an associate professor in the Department of Botany and Plant Pathology at Oregon State University, was appointed professor and chairperson, effective January 1, 1968. He appointed Lansing Williams as associate chairperson, effective on that same date.

A new department requires new, ambitious faculty to take on all the challenges presented by this opportunity. At formation, the department had fourteen faculty members, six in Columbus (C. C. Allison, who was on permanent assignment in Brazil, Wayne Ellett, Blair Janson, Robert Partyka, Glenn Smith, Allen Troxel), and eight in Wooster (Leonard Alexander, Don Gordon, Leonard Herr, Curt Leben, Harmon Runnels, Fritz Schmitthenner, Lansing Williams, Frank Winter). However, in less than a year, Runnels and Winter retired and Smith left the department. Fortunately, there was opportunity to bring in new faculty, and in the first four years, twelve new faculty and two USDA/ARS adjuncts joined the department. New faculty at Wooster were Oscar Bradfute, James Farley, Harry Hoitink, Brian Jones, Roy Gingery (adjunct), Raymond Louie (adjunct), Terry Miller, Ronald Muse, and T. Craig Weidensaul. At Columbus, new faculty were Ira Deep, Michael Garraway, Phillip Larsen, Charles Powell and R. Mack Riedel.

In a summary of advances in the first five years of the department's life, Ira Deep reported these new hires to the college administration along with many other accomplishments. These included an increase in graduate students enrolled from 6 to 17, an increase in undergraduate majors from none to 14, and an increase

in credit hours taught from 75 to 473. The graduate curriculum had been revised, moving away from an emphasis on crop disease courses to an emphasis on principles of plant pathology. Faculty on the Columbus and Wooster campuses had been brought together in a totally revised and integrated committee structure within the department. Furthermore, many faculty were now jointly appointed with responsibilities in both research (OARDC) and either teaching or Extension, thus drawing all faculty together into the academic life of the department. Under the leadership of Deep and Williams, and through the hard work and diligence of all the faculty and staff, the new department was now well underway.

New Facilities Are Built on Both Campuses

With many new faculty and expanded programs, new and bigger facilities were needed. Fortunately a new building was constructed on the Wooster campus in 1971 and occupied the following year. Changes took place more slowly in Columbus, but new facilities were constructed and occupied in 1981.

The OARDC capital improvements request submitted by Curt Leben, department associate chairperson, for the period 1967–1973, indicated that the first priority for Botany and Plant Pathology was a new building on the Wooster campus. As part of the OARDC capital budget for that period, the Ohio General Assembly appropriated \$3 million for such a building, and \$35,000 in federal funds were also made available. A building committee was appointed, composed of Williams (chairperson), Schmitthenner (secretary), Gordon, Gingery, Hoitink, Rod Johnson (head, OARDC Physical Plant), and Dave Van Doren (professor of agronomy). When it was decided that the Electron Microscope Laboratory would be included in the new building, EML head Bradfute, was added to the committee. All plant pathology faculty expressed interest in the EM lab's expansion and having it accommodated in the new building.

The building committee visited several universities that had recently built new plant pathology facilities (Michigan State, Iowa State, University of Minnesota) to confer with faculty and study their plans. Unique features and overall utility of these recent buildings were then blended with fresh ideas to fit local needs in Ohio. The committee decided that all building features

would be strictly for utility, as opposed to architectural beauty. All major wet laboratories would be located around a central utilities core, allowing quick, easy access to all services and utilities, and easy maintenance and flexibility for future needs. Laboratories also would be built in a modular size and design, following one of two basic designs (microbiology or physiology/chemistry). All faculty offices would be a standardized size and design, located on the outside perimeter of the building. Nineteen major laboratories, ten special-purpose laboratories, two cold laboratories, two walk-in coolers, and two walk-in freezers were designed. A large phytotron facility, located in the basement adjacent to the headhouse area, was designed to accommodate environmental growth chambers of various sizes. The building also included a research-service laboratory, five cold rooms, and one freezer for research and storage. Central services for cleaning and storage of glassware and other standard laboratory supplies were provided. The design provided for an Electron Microscope Laboratory containing 18 rooms, ranging from a small metal workshop to larger laboratories and rooms to contain three electron microscopes. The Electron Microscope Laboratory's location was in the building's lowest level, providing control of temperature, light, magnetic fields, mechanical vibrations, humidity, and air velocity. Total funds available for the facility and equipment were \$3,035,526.

The building, first called the Plant Pathology Facility, was completed late in 1971, the year carved on the cornerstone. It was one of the few state buildings to be finished on time and occupied without additional expense. Total space of the completed facility was 64,700



Selby Hall, new home for Plant Pathology on the OARDC campus, Wooster, 1972



Ribbon cutting at dedication ceremony for Selby Hall, OARDC, Wooster. October 13, 1972.

From right, Ira Deep, Chairperson of Plant Pathology, Dean Roy Kottman (in dark suit), Congressman Ralph Regula (with scissors). The rest are unidentified.

square feet, which included: laboratories, offices, and special purpose rooms (38,202 square feet); phytotron and headhouse areas (8,091 square feet.); greenhouses (11,832 square feet); and mechanical room, (6,615 square feet). Over several months in early 1972, the department moved from Thorne Hall into the new building. The official dedication was held on October 13, 1972.

In 1973, office, laboratory, and greenhouse space in the building was provided for the Laboratory for Environmental Studies, headed by Craig Weidensaul, since he was a department faculty member. On June 8, 1977, the OARDC Board of Control approved naming the building Selby Hall in honor of Augustine D. Selby, the first practicing plant pathologist in Ohio, who served on the OAES faculty from 1894–1923. An additional greenhouse range of 6,000 square feet was constructed in 1979.

On the Columbus campus, facilities for the new department remained as they were in the B&Z building. However, the need for new, modern facilities, and the desire for all departments within the college to be located together on the “ag campus” west of the Olentangy River, led to a request to the Ohio legislature for funding. In the 1975–77 biennium, the Ohio General Assembly appropriated \$294,000 for planning funds for a building to house the Departments of Agronomy and Plant Pathology and the School of Natural Resources. As plans developed,



Kottman Hall on OSU Columbus campus at 1981 building dedication. left-to-right, Berlie Schmidt, Agronomy chairperson, James Dowdy, School of Natural Resources, Ira Deep, Plant Pathology chairperson, Dean Roy Kottman, College of Agriculture

space was also included for Information and Applied Communications. During the 1977–79 biennium, \$13.2 million were appropriated to build the facility. A building planning committee was appointed that included Ira Deep (Plant Pathology), Frank Himes (Agronomy), and James Dowdy (Natural Resources). The finished building was dedicated in October, 1981. It had approximately 159,000 square feet and had four levels of brick, concrete, and limestone. The headhouse and greenhouses extended on the south side of the building. The building had two main entrances, one on the east side (Coffey Road) and the other on the west. The west entrance opened onto the Agricultural Quadrangle, with a two-story lobby area connecting them. A service corridor was constructed behind the third and fourth floor research and instructional laboratories that provided access to all utility systems for future program revisions. Energy conservation was a major design consideration to provide selected zones of heating and cooling.

First known as the Agronomy, Natural Resources, Plant Pathology Building (ANRPP), in 1982, it was officially named Kottman Hall, in honor of Roy M. Kottman who served as Dean of the college from 1960–82. The Department of Plant Pathology moved into the new building in December, 1981. At that time, the department occupied 2,403 square feet on the first floor, including three greenhouses, a cold room, and a pesticide storage room. In addition, 3,720 square feet were shared with Agronomy, including a headhouse, cold room, and offices. The Plant and Pest Diagnostic

Clinic, consisting of eight rooms (some 1,400 square feet), was also located on the first floor. Administrative offices, an office service room, conference room, and Extension offices and one laboratory comprising 3,182 square feet were on the second floor. The department occupied 9,123 square feet on the fourth floor, consisting of two teaching classrooms, eight research laboratories, several support laboratories, and faculty and graduate student offices.

Lowell R. “Skip” Nault (1940–). B.S. in entomology and parasitology (1962), University of California, Davis; M.S. (1964) and Ph.D. in entomology (1966), Cornell University. Nault was appointed assistant professor in the Department of Entomology, at OSU on the Wooster campus in 1966. He was promoted to associate professor in 1970 and professor in 1975. Nault served as associate chairperson, Department of Entomology (1991–93), Associate Director, OARDC (1995–2002), and Interim OARDC Director (1999). Throughout his career, he held a courtesy faculty appointment in the Department of Plant Pathology and worked collaboratively with many plant pathology faculty. He retired in 2002.



Nault worked at the interface of plant pathology and entomology, making significant contributions to both disciplines. Soon after joining the faculty, he and L. E. Williams established that kernel red streak disease of corn was caused by the feeding (toxin) of the microscopic wheat curl mite and not the mite-transmitted wheat streak mosaic virus. While working with the aphid vectors of maize dwarf mosaic virus (MDMV), Nault teamed with colleagues from New York and Massachusetts to conduct pioneering studies with aphid alarm pheromones. They isolated, identified, and synthesized the first aphid pheromones, studied their effects on aphid behavior, and proposed how pheromones could be used to stop spread of aphid-borne plant viruses.

In collaboration with colleagues in the interdisciplinary OARDC-USDA/ARS Maize Virus Research Team on the Wooster campus, Nault characterized the etiology and vector transmission of

most of the major corn virus and mollicute diseases in the U.S. and Latin America. He demonstrated that maize chlorotic dwarf virus (MCDV) was obligately and semipersistently transmitted by leafhoppers. This was key in identification and confirmation of MCDV as a major component in the severe corn virus epidemic first reported in the early 1960s in the Corn Belt and southern states. In addition to mites, leafhoppers, and aphids, he studied beetle- and planthopper-transmitted maize viruses. In the 1990s, Nault worked with OSU entomologists and plant pathologists on aster yellows phytoplasma in lettuce crops.

Nault's studies with vectors and maize pathogens expanded from the Gulf Coast States into Mexico, Central and South America. His research focused on the neotropical corn leafhopper, *Dalbulus maidis*, that is responsible for transmitting the corn stunt Spiroplasma, maize bushy stunt phytoplasma (that Nault discovered and described) and maize rayado fino virus, which collectively cause the most damaging maize diseases in Latin America. Nault also discovered and described a new *Dalbulus* leafhopper species living on the wild gamagrass relatives of maize. This led to a

17-year study of the evolutionary biology of *Dalbulus* leafhoppers, which proved to be a model system for understanding how a pest species evolves with its host plants and plant pathogenic mollicutes. For his research accomplishments, he was awarded the OARDC Distinguished Research Award for Senior Faculty (1989) and was honored in 1999, by selection as one of six Ohio State University Distinguished Scholars.

Nault is co-editor of the book, *The Leafhoppers and Planthoppers*, and gave numerous talks on vector biology and insect transmission of plant pathogens, both nationally and internationally. He took an active teaching role in both plant pathology and entomology. For several years, he gave lectures in *Plant Virology* and later developed a graduate course for plant pathology and entomology students on arthropod vectors of plant pathogens. He also co-taught a beginning entomology course at OSU's Stone Laboratory on Lake Erie (1986–1996). He advised numerous M.S. and Ph.D. students and hosted many postdoctoral associates and visiting scientists. Nault was program manager for the USDA Competitive Grants Office for Entomology, Nematology, Plant Pathology, and Weed Science (1982) and for the CRGO Entomology and Nematology program and the Insect Pest Science Program (1985). He served as associate editor for *Phytopathology*, on the editorial board of the *Journal of Economic Entomology*, and chaired the Publications Council for the Entomological Society of America (ESA). Nault served as President of ESA (1991) and was elected an ESA Fellow (1995) and ESA Honorary Member (2002). He was also elected Fellow of the American Association for the Advancement of Science (1991), the American Phytopathological Society (1992), and the Royal Entomological Society (1996).



OARDC

Lowell (Skip) Nault examining *Zea diploperennis*, wild relative of corn, 1980

Harry A. J. Hoitink (1938–). B.S. (1963), MacDonald College, Montreal; M.S. (1964), McGill University, Montreal; Ph.D. (1967), University of Wisconsin. Hoitink grew up in the Netherlands. In 1967, he was appointed assistant professor in the new Department of Plant Pathology, The Ohio State University, Wooster, with responsibility for research on bacterial pathogens and diseases



OARDC

of ornamental crops. He was promoted to associate professor in 1971 and professor in 1977. He retired in 2004.

Hoitink's early research focused on mechanisms of pathogenicity of the pseudomonads, particularly *Pseudomonas syringae* and *P. phaseolicola*. This work involved *in vitro* production, purification, and partial characterization of chlorosis-inducing toxins. He also demonstrated that protoplasts of *Pseudomonas tabaci* could not induce disease symptoms or a hypersensitive reaction. For the first time, his work established that pathogenesis factors were located in the cell wall of the bacterial pathogen. He also described the etiology of a stem rot of poinsettia caused by *Erwinia chrysanthemi*. During the 1970s, Hoitink collaborated with A. F. Schmitthenner on studies of the etiology, epidemiology, and control of Phytophthora diseases of ericaceous plants. Chemical, biological, and cultural control practices for Phytophthora root rot of rhododendron were developed and potential sources of cultivar resistance identified.

Hoitink's interest in compost science began after he found that composted tree bark suppressed root rots caused by *Pythium* and *Phytophthora* spp. Working with A. F. Schmitthenner, L. J. Herr and D. T. Gordon, the fate of several different soilborne plant pathogens during the composting process was identified and the use of pathogen-suppressive, compost-amended container media was expanded to include a broad spectrum of plant pathogens. Hoitink found that suppressiveness to *P. cinnamomi* was due to degradation products of waxes present in the bark. With several collaborators,

he developed procedures for composting pine bark and its formulation into suppressive media for use in floriculture. These procedures and media are now used worldwide for controlling soilborne diseases of containerized plants. During the 1980s, Hoitink and his students studied the biological components of disease-suppressive media. *Trichoderma* and *Gliocladium* were found to be the most important fungi involved in controlling *Rhizoctonia solani* in suppressive media. Synergistic interactions of several bacteria with these fungi were identified. A process was developed for producing container media that are predictably suppressive to Rhizoctonia, Pythium, Phytophthora, and Fusarium diseases by inoculating composts with specific microbial antagonists after peak heating.

After 1990, Hoitink and his students focused on mechanisms by which composts induce systemic resistance to disease in plants. *Trichoderma hamatum* 382 (T 382), the most effective strain to induce this effect in plants, was registered with US-EPA as a biopesticide and produced on a commercial scale. A PCR procedure for tracing T 382 in container media was developed in collaboration with S. A. Miller and their students. Finally, with S. Kamoun and several students, stress genes activated in tomato by T 382 were identified. Hoitink also directed an industry-university research project on factors affecting the rate of composting of municipal sewage sludge. Temperature-time guidelines were developed for the destruction of fecal coliforms and parasites for in-vessel composting systems. This technology was adopted by US-EPA as the 503 Regulations which govern composting of sewage sludge in in-vessel composting systems.

Hoitink was a Fulbright Lecturer at the University of Barcelona and an invited speaker at numerous international symposia. He advised many M.S. and Ph.D. graduate students and hosted numerous postdoctoral and visiting professionals. He chaired an international committee that started the journal *Compost Science and Utilization*, then served as Senior Editor. He organized the first international congress on composting (1992) and was senior editor for its proceedings *Science and Engineering of Composting*. He co-organized a second congress (2001) with F. C. Michel. Hoitink received the first National Award for Research on Composting from the U.S. Environmental Protection Agency (1988).



Harry Hoitink showing compost-amended container medium study in OARDC greenhouse, Wooster

OARDC

He received the OARDC Senior Faculty Research Award (1996) and was leader of the research team for the Composting Technology Program that received the first OARDC Interdisciplinary Research Award. He served on numerous committees of the American Phytopathological Society and as associate editor for the APS journal *Plant Disease*. Hoitink was elected an APS Fellow (1992) and received the APS Ruth Allen award for research (1998).

Raymond “Ray” Louie (1936–). B.S. (1958), University of California at Berkley; M.S. (1965)



and Ph.D. (1967), both from Cornell University. Louie was born in Canton, China, and served on active duty in the U.S. Army from 1959–61. In 1967, Louie was appointed research plant pathologist (USDA/ARS) and adjunct assistant professor in the Department of Plant

Pathology, The Ohio State University, Wooster, with responsibility for research on host-virus relationships of maize viruses and the biology and ecology of maize virus diseases. Research goals were to survey for disease extent and damage, to relate vectors to disease onset, to study modes of virus transmission and methods to evaluate corn lines for resistance, and to distinguish genotypic differences between resistant and susceptible lines. As a member of the multidisciplinary OARDC-USDA/ARS Maize Virus Research Team, he worked closely with J. K. Knoke, a USDA/ARS team member in the Department of Entomology, OARDC. Louie was promoted to adjunct associate professor in 1972 and adjunct professor in 1982. He retired in 2000.

Louie and Knoke designed and established a disease intensity concept to evaluate corn virus epidemics using trap plants to monitor vector-virus populations throughout Ohio. They determined seasonal occurrences of aphid vectors of maize dwarf mosaic virus (MDMV) and their relation to the development of MDM epidemics. They devised and conducted long-term research to produce databases for modeling disease onset and development. In cooperation with L. V. Madden, they developed and evaluated models of maize dwarf mosaic epidemics.

Louie discovered four new Johnsongrass-infecting strains in the maize dwarf mosaic virus group, demonstrated that MDMV is part of a complex group of viruses, and documented year-to-year variations in host resistance. He demonstrated that with variable virus populations, studies in the genetics of resistance are unreliable, found genetic variability in inbred lines, and modified field plot techniques for evaluation of virus resistance in corn lines. He discovered a local-lesion reaction on MDMV rub-inoculated leaves and used it for strain isolation, differentiation of host responses to infection, and development of near-isogenic lines. He documented the first occurrence of maize white line mosaic virus in Ohio and discovered and tentatively named two new soilborne viruses in Ohio, maize subtle mosaic virus and maize necrotic lesion virus.

Louie was a lead scientist in the discovery and understanding of maize chlorotic dwarf virus (MCDV) in the MDMV-MCDV virus complex, the first corn virus disease epidemic in the U.S. He and J. K. Knoke identified the original diseased plants, determined diagnostic symptoms, and collaborated on many related studies. His diagnostic symptomology facilitated the selection, development, and release of virus MCDV-tolerant inbred lines. In collaborations with USDA/ARS agronomists W. R. Findley and M. M. McMullen in the Department of Agronomy and with J. K. Knoke, he determined the genetic basis of MDMV resistance in corn and mapped the *Mdm1* gene to chromosome 6. McMullen and he identified the gene, *Wsm1*, which is tightly linked to *UMC85/po1*, for resistance to wheat streak mosaic virus. He identified the only sources of



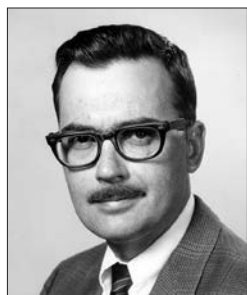
Ray Louie and John Knoke examining virus-infected corn seedling, OARDC Wooster, 1974

MCDV germplasm resistance in corn from the Virgin Islands, Cuba, and Dominican Republic and released the first MCDV resistant inbred, OhVI.

Louie developed an embryo vascular puncture technique in corn seeds for the mechanical transmission of most of the major maize viruses worldwide that previously were only obligately transmissible by arthropod and soilborne vectors. The protocol was used to isolate two new viruses in the U.S., subsequently named maize necrotic streak virus and maize fine streak virus, and separated high plains virus from mixed infections with wheat streak mosaic virus to document the etiology of the High Plains disease. He also used the protocol for transmission of viral DNA and RNA and transmission of viruses to seeds of wheat and soybean hosts.

Louie was research leader for corn virus research in the USDA/USAID Food Crops Research Project in Kenya (1977–79), a program that provided the Kenyan government with the first critical knowledge on effects of sugarcane mosaic virus in corn and how to assess its importance. He was a member of a scientific team sent to China (1991) to survey for maize viruses and develop cooperative research for their control. He served as Supervisor Research Plant Pathologist for the Corn and Soybean Research Unit (1991–2000). Louie contributed to department teaching by giving many guest lectures on epidemiology, symptomology, and inoculation techniques in the graduate course *Plant Virology*.

Brian M. Jones (1937–92). B.S. (1959), M.S. (1961), both from University of Missouri; Ph.D. (1967),



OARDC

Cornell University. Jones was appointed assistant professor (1967) in the Department of Plant Pathology, OARDC Wooster, with responsibility for tree and small fruit crop diseases, following the retirement of H. Frank Winter. A primary focus of his research was on methods

of chemical control and advanced testing of new fruit fungicides, particularly for apple. He also investigated stem pitting of peach, collar rot of apple, and root rots of strawberry. Jones established several new fruit plantings for research, including a 6A, multi-cultivar,

replicated apple orchard designed for evaluating pesticide applications. In 1974, Jones resigned to accept a fruit grower sales and service position with Grower Service Corporation.

Ira W. Deep (1927–). B.S. (1950), Miami University (Ohio); M.S. (1952), University of Tennessee; Ph.D. (1956), Oregon State University. He served in the U.S. Marine Corps (1945–46).



In 1956, Deep was appointed assistant professor in the Department of Botany and Plant Pathology, Oregon State University. There he taught general botany, introductory plant pathology, and bacterial diseases, and did research on bacterial crown gall and rose powdery mildew. He rose to the rank of associate professor and, the last two years there, served part-time as assistant dean of the graduate school. In 1968, Deep was appointed professor and chairperson of the newly formed Department of Plant Pathology, The Ohio State University, Columbus. He served as chairperson until 1984, when he returned to full-time teaching, research, and Extension activities on the faculty. He retired in 1998.

The new Department of Plant Pathology had been formed only six months before Deep began as the first department chairperson. Working closely with Lansing Williams, associate chairperson at Wooster, six new faculty were hired in the first two years. In the first five years, department faculty grew from 14 to 26, undergraduate student enrollment in the department went from zero to 14, and graduate students increased from 6 to 17. The curriculum was totally revised and within five years, annual credit hours taught increased from 75 to 473. In his early years as chairperson, Deep presided over an exciting time of department expansion. He also chaired a committee that designed and launched an interdisciplinary Plant Protection Program (1976) in which enrolled undergraduates could major in any of the four participating departments—agronomy, entomology, horticulture, or plant pathology. While Deep was chairperson, new buildings to house the department were built on both the Wooster and Columbus campuses. Selby Hall was in the planning

stages when Deep arrived and was completed in 1971. Deep represented the plant pathology department on the committee that planned the construction and equipping of Kottman Hall, a portion of which the department occupied in 1981.

Deep took a very active role in department teaching programs, both while department chairperson and afterwards. He taught *General Plant Pathology*, *Plant Pathogenic Fungi*, *Field Crop Diseases*, and the *Plant Protection Seminar*. In response to a university request for new undergraduate courses focused on contemporary issues, he chaired a committee that developed the course *Societal Issues: Pesticides, Alternatives, and the Environment*, which he led for several years. He provided leadership in admission and placement of graduate students and was appointed Professor of Plant Protection in 1985. Collaborating with P. E. Lipps, he conducted research on *Pythium* species associated with root decay of corn and contributed to field crop Extension programs. Following retirement in 1998, Deep continued involvement in department teaching programs for several years by assisting in several courses, particularly those dealing with Societal Issues and Bioterrorism.

During his long career, Deep served on many University committees and councils and was active in the American Phytopathological Society. He was president of the Ohio Chapter of Gamma Sigma Delta and received an Outstanding Service to Students Award from the Agriculture and Natural Resources Student Council (1987).

Philip O. Larsen (1940–). B.S. (1963), Iowa State University; M.S. (1964), Ph.D. (1967), both from



University of Arizona. In 1968, Larsen was appointed assistant professor in the Department of Plant Pathology, Columbus, with responsibilities for research and teaching on diseases of ornamentals and turfgrass. He was promoted to associate professor in 1974 and professor in 1981.

He resigned his position in 1984 to become head of the Department of Plant Pathology, University of Minnesota. He served as head until 1994, and then held several administrative positions with the U of M



Philip Larsen collecting experimental data from turfgrass plants, 1979

College of Agriculture and agricultural experiment station.

Within a few years after joining the OSU department, Larsen had developed a nationally prominent program on turfgrass diseases. He and his students studied the influence of environmental and plant host factors on the development of fungal turfgrass pathogens; the epidemiology and control of *Pythium* blight on creeping bentgrass; *Helminthosporium* leaf spot; and *Helminthosporium* “melting out” on Kentucky bluegrass. He and colleagues identified and described a leaf blight and crown rot of bentgrass caused by *Drechslera catenaria*. He placed considerable emphasis on evaluating fungicides for management of turfgrass diseases. Data from this research was helpful in registration of new fungicides for commercial use on turf, particularly a new systemic fungicide. He was co-organizer of a national symposium on turfgrass diseases (1979) and an international colloquium on plant cell and tissue culture (1977).

Larsen was heavily involved in the department teaching program as instructor or co-instructor for *Epidemiology and Control of Plant Diseases*, *Introductory Plant Pathology*, *Bacterial Plant Pathogens*, *Diseases of Turfgrasses*, *Advanced Plant Pathology*, and seminar programs. He served as advisor for many undergraduate and graduate students. For several years, he chaired the college’s interdisciplinary Plant Protection Program committee and headed a campaign to raise funds for its development. From 1981–84, when he left for University of Minnesota, he held the title “Professor of Plant Protection” as leader of the college Plant Protection Program, an interdisciplinary undergraduate curriculum that addressed integrated

plant pest management. This program included a diverse curriculum on a broad array of topics pertaining to plant pest management that spanned several departments in the College of Agriculture. It included an internship program that provided students relevant work opportunities in production agriculture and agribusiness and, frequently, subsequent career placement after graduation. An advisory committee composed of representatives from agri-business provided support for fund raising and technical advice. Funds from the Plant Protection Endowment were also used to support special activities such as field trips and scholarships to support work experiences with College of Agriculture faculty.

Roy E. Gingery (1942–). B.S. in chemistry (1964), Carnegie Institute of Technology (now Carnegie-Mellon University), Pennsylvania; M.S. (1967) and Ph.D. in biochemistry (1968), both from the University of Wisconsin.



OARDC

Gingery was appointed assistant professor at OARDC in 1968, with responsibilities for biochemistry, serology, characterization, and purification of

maize viruses as part of the newly-established, interdisciplinary OARDC-USDA/ARS Maize Virus Research Team. In 1969, he was appointed research chemist, USDA/ARS, within this group, and adjunct assistant professor, Department of Plant Pathology, The Ohio State University, Wooster. He was promoted to adjunct associate professor in 1974 and to adjunct professor in 1981. In 1986, he was appointed research leader of the USDA/ARS Corn and Soybean Research Unit at OARDC. Gingery was a member of the scientific team sent to China (1991) to survey for virus diseases and develop cooperative research for their control. In 1992, he accepted a temporary assignment as National Program Leader for Plant Health on the USDA/ARS National Program Staff in Beltsville, Maryland. This assignment became permanent in 1993. He returned to Wooster in 2001, resuming his positions as Research Leader and adjunct professor, until his retirement in 2007.

Gingery collaborated with his colleagues in the Maize Virus Research Team on the chemical, physical, and

serological characterization of the maize dwarf mosaic virus, maize chlorotic dwarf virus, maize stripe virus, maize rayado fino virus, maize white line virus, and maize chlorotic mottle virus. After developing a purification procedure that accommodated large amounts of diseased tissue, he performed the first physical and chemical characterization of the economically important maize chlorotic dwarf virus (MCDV). At the time, MCDV was recognized as unique among known plant viruses and eventually became the type member of a new plant virus group. In further studies on MCDV, he helped demonstrate that a virus-encoded protein is needed for leafhopper transmission. This “helper” protein may act as a “glue” to attach virus particles to the insect’s food canal. He also showed that severe maize chlorotic dwarf disease can be caused by a synergistic action of two separate viral strains, each of which alone causes only mild symptoms.

Gingery also developed a greatly simplified procedure for RNA molecular weight determination in sucrose density gradient centrifugation, a procedure that had general applicability in nucleic acid research. He also devised a technique for slicing polyacrylamide gels for liquid scintillation counting and other needs that was more versatile and accurate than other methods. It was particularly useful for studies in which products were radioactively labeled. His discovery of and work with the maize stripe virus (MStpV) from Florida led to new detection and isolation procedures and he demonstrated that MStpV had unprecedented properties. This work led to the eventual establishment of a new group of plant viruses. Gingery participated in the department teaching program by giving guest lectures in the graduate *Plant Virology* course and was co-advisor for several master’s and doctoral students in the department.

Michael O. Garraway (1934–1999). B.S. in agronomy (1959), M.S. in plant pathology (1962), both from McGill University, Montreal; Ph.D. in plant pathology (1966), University of California, Berkeley. He remained there on a postdoctoral appointment until 1968 when he was appointed assistant professor in the Department of Plant Pathology,



The Ohio State University, Columbus. Garraway was promoted to associate professor in 1971 and professor in 1978. He held a courtesy appointment as professor in the Department of Botany, now Plant Biology. He died in 1999, while still an active member of the department faculty.

Garraway's areas of research and teaching were in physiology of fungi and physiology of parasitism. He developed and taught graduate-level courses in both these areas, the first such courses in the department. Early in his career, he also taught *Plant Virology* and *Introductory Plant Pathology*. His research on the nutrition and physiology of *Armillaria mellea*, an important pathogen of forest and fruit trees, was extensive and widely recognized, leading to invitations to write chapters in two books on this work. Garraway's research on fungal parasitism was focused on corn. He worked to identify physiological or biochemical markers that could be useful in screening corn lines for tolerance to environmental stress and disease, particularly southern corn leaf blight caused by *Bipolaris maydis*. He also studied the effects of nutrition sources and vitamins on differentiation of fungal structures.



Mike Garraway with experimental corn plant in OSU greenhouse, Columbus, 1984

Garraway was an active graduate student advisor, and with a former student, co-authored a textbook, *Fungal Nutrition and Physiology*, published in 1984 and reprinted in 1991. He served on and chaired many committees in the College of Agriculture, the Graduate School, and the University, including service on Faculty Senate. He was elected a Fellow in the Ohio Academy of Science in 1977.

Ronald R. Muse (1940–). B.S. (1962) and M.S. (1964), both from Pennsylvania State University; Ph.D. (1968), Virginia Polytechnic Institute and State University. In 1968, he was appointed assistant professor, Department of Plant Pathology, The Ohio State University, Wooster, with responsibility for research on turfgrass diseases. Muse studied the nature of differential susceptibilities of common Kentucky bluegrass and merion Kentucky bluegrass to *Helminthosporium* species, pectolytic and cellulolytic enzymes, changes in phenols and fungitoxic materials, and phenylalanine ammonia-lyase and tyrosine ammonia-lyase activities. He also worked on screening fungicide materials for control of *Helminthosporium* diseases, stripe and flag smut, and *Sclerotinia* dollar spot. Muse resigned in 1973 to take a teaching position at Delaware State College, Doylestown, Pennsylvania.



OARDC

James D. Farley (1938–). B.S. (1961), Illinois Wesleyan University; M.S. (1963) and Ph.D. (1968), both in plant pathology from Michigan State University. He served in the U.S. Peace Corps in agricultural Extension in Colombia (1963–65) and did postdoctoral research at University of California, Berkeley (1968–69). Farley was appointed assistant professor in the Department of Plant Pathology, Wooster, in 1969 with responsibility for research on greenhouse and field tomato diseases. He was promoted to associate professor in 1974 and professor in 1980. In 1974, following the retirement of Robert Partyka, Farley transferred to the Columbus campus.



OARDC

There he took primary responsibility for Extension (75%) in vegetable crop diseases, partnering with Randall Rowe who focused mostly on research in that area. He served as consultant to the Farm Machinery Corporation in the Soviet Union (1978–79) where he supervised tomato transplant production on three collective farms and coordinated transplant research with scientists at the Moldavian Vegetable and Irrigation Research Institute. He resigned his position in 1981 to join the De Ruiter Seed Company as director of North American operations, concentrating on greenhouse-grown tomatoes.

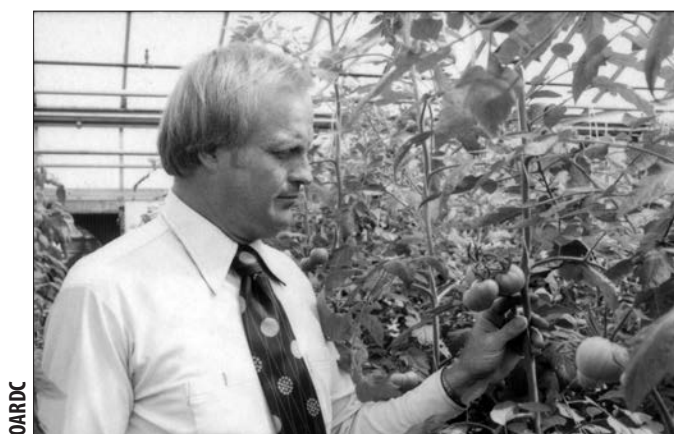
Farley's research initially dealt with diseases of field and greenhouse-grown tomatoes, but later focused exclusively on the Ohio greenhouse tomato industry, located primarily in the Cleveland area. He intensively studied the epidemiology of the tomato anthracnose pathogen, *Colletotrichum coccodes*, and developed a selective medium for its isolation that was widely used. He systematically evaluated fungicides and their application methods for disease control in greenhouse and field vegetables. He investigated the spread and control of bacterial canker in tomato transplants and developed a method of aerated steam treatment of greenhouse soils utilizing a low-temperature, air/steam pasteurization process. After the retirement of L. J. Alexander (1970), Farley assumed responsibility for the greenhouse tomato breeding program and screening of wild tomato accessions for resistance to several diseases. In 1973, he identified a new and serious disease of greenhouse tomatoes, Fusarium crown and root rot (FCRR), caused by a new species of *Fusarium*. In the

next few years, it spread widely throughout the Ohio and Canadian greenhouse tomato acreages and was found in seven other states. Yields were reduced 30–80 percent in affected ranges, and the Ohio industry was losing \$7 million annually. Working with R. C. Rowe, together they developed a novel chemical control procedure based on fungicide treatment of freshly steam-pasteurized soil that likely saved the industry. Farley later found a source of resistance to FCRR in a wild tomato accession from Japan and transferred it into commercial greenhouse tomato lines.

Richard “Mack” Riedel (1942–). B.S. (1964) and M.S. (1966) in botany and plant pathology, both from The Ohio State University; Ph.D. in plant pathology with specialization in plant nematology (1970), Cornell University. In 1970, Riedel was appointed assistant professor in the Department of Plant Pathology, The Ohio State University, Columbus, with responsibilities for research on nematode-caused diseases and teaching graduate-level courses in plant nematology. This was the first full-time appointment in nematology at Ohio State. Riedel was promoted to associate professor in 1974 and professor in 1981. He retired in 2004.



Riedel's early work resulted in many first reports for Ohio of plant parasitic nematodes from a wide variety of plants, fruits, vegetables, ornamentals, turfgrasses, and agronomic crops. As these problems were discovered, Riedel and his students investigated several of them in detail and developed appropriate management systems. In collaboration with R. C. Rowe and graduate students, Riedel devoted considerable research effort to studying potato early dying disease, a serious problem of potato production which involved both the soilborne fungus *Verticillium dahliae* and a root-lesion nematode, *Pratylenchus penetrans*. Using a field microplot system, together they showed that the disease resulted from a synergistic interaction between these two pathogens. Furthermore, the synergism was specific to *P. penetrans* and did not occur with other *Pratylenchus* species. Based on many years of data from controlled field inoculations, Riedel, Rowe, L. V. Madden, students, and postdoctoral



James Farley with breeding lines of greenhouse tomatoes in OARDC greenhouse, Wooster, 1979

scientists developed quantitative methods to forecast disease development based on pre-plant populations of these pathogens.

In the mid-1980s, Riedel expanded the scope of his work to include fungal diseases of processing and fresh-market vegetables, especially those produced on muck soils. Much of this research was aimed at the development of disease management programs that improved timing of fungicide applications and minimized pesticide residues. In the early 1990s, soybean cyst nematode (SCN) became a significant problem with Ohio soybeans. Riedel and colleagues screened public and private varieties for resistance to six races of SCN and developed an effective control method using a nematicide placed in-furrow at below-label rates. Working in cooperation with colleagues in Horticulture and Crop Science, and Entomology, an effective set of practices for management of SCN was developed.

Riedel was very active in both Extension outreach and classroom teaching programs within the department. He authored an extensive set of written materials providing information on management of vegetable crop diseases and nematodes in many host plants and was actively sought as a speaker at statewide meetings of commercial crop producers. From 1981–85, he served as director of the Plant Disease Clinic, following the retirement of C. W. Ellett, and until the appointment of S. T. Nameth as director of an expanded interdisciplinary clinic. Riedel developed and taught courses in nematology and nematode-caused diseases, including *Plant Nematology* and *Advanced Nematology*. He also taught *Fruit and Vegetable Diseases; Societal Issues: Pesticides, Alternatives, and the Environment*; and for several years served as coordinator and instructor for the team-taught course *Plant Disease Management*.

Riedel served as a USAID consultant on plant pathology research needs in south Asia (1978), Somalia (1980), and Uganda and Rwanda (1990). In 1978 he was on assigned research leave at CIAT, Cali, Colombia, surveying nematode-caused problems of *Phaseolus* beans.

Charles C. Powell Jr. (1942–). B.S. (1964), The Ohio State University; Ph.D. (1969), University of California, Berkeley. He was a postdoctoral research pathologist with USDA/ARS at Oregon State University (1969–70). In 1970, he was appointed assistant professor in the Department of Plant Pathology,

The Ohio State University, located in Columbus. This was a new position in Extension and research on ornamentals and turfgrasses with a 75% appointment in Extension. For the first time in the department, disease problems of ornamental plants, at both the production and user levels, received attention through plant pathology Extension programs. Powell was promoted to associate professor in 1975 and professor in 1982. He retired in 1994.

Working closely with ornamental industry leaders in Ohio, Powell identified major disease problems affecting nursery and floral crops. Through his Extension and research programs, he demonstrated and promoted preventive and control programs. In landscaping, he promoted practices such as use of disease-resistant species and cultivars of trees and shrubs, and also disease prevention through practices that maintained good health of landscape plantings, resulting in less likelihood of losses from disease. Over the years, he defined and popularized the concept of holistic plant health management. Powell wrote massive numbers of Extension publications and trade journal articles, and



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OARDC

Charles Powell examining disease specimen at extension meeting in the OARDC auditorium, Wooster, 1983

conducted programs and workshops on plant health maintenance throughout the country, especially with indoor foliage plants. He was author and co-author of several books and guides dealing with problems of ornamentals. Working with graduate students, Powell investigated powdery mildew of glasshouse roses, control of geranium and poinsettia diseases at the propagation and production levels, and prevention of disease losses during production of bedding plants. He conducted many fungicide evaluations to develop new product registrations for use on ornamentals. During the 1970s and 1980s, he was the pathology working group leader for the national ornamentals fungicide labeling initiative conducted by the USDA/CSRS-IR4 project.

Powell was active in the American Phytopathological Society, serving on various committees, instrumental in the formation of the APS Turf and Ornamentals Committee (1978), and as editor of *Phytopathology News* (1985–87). He received the Authors Citation from the International Society of Arboriculture for some of his books.

T. Craig Weidensaul (1939–). B.A. (1961), Gettysburg College, Pennsylvania; M.S. in forest pathology (1963), Duke University, North Carolina; Ph.D. in plant pathology (1969), Pennsylvania State University. He served on active duty in the U.S. Army Intelligence (1963–64) and as forest pathologist with the USDA Forest Service at Harrisonburg, Virginia (1964–66). Weidensaul



OARDC

did postdoctoral research at Penn State (1969–70) and, in 1970, accepted a position at OARDC, Wooster, as Director of the Laboratory for Environmental Studies, a new laboratory to study environmental influences on agricultural and forest plants. He also held a 25% appointment as assistant professor in the Department of Plant Pathology, the beginning of a long and close association between the two units. He was promoted to associate professor in 1973 and professor in 1979. In 1981, he was on sabbatical leave at the Kananaskis Centre for Environmental Research at the University of Calgary, Alberta, Canada, studying changes in soil acidity and mineral nutrition of alpine forest



OARDC

Craig Weidensaul looking over experiments with containerized tree seedlings in OARDC greenhouse, Wooster, 1980

trees associated with atmospheric sulfur deposition. Weidensaul served as OARDC assistant director (1986–87). When the Laboratory for Environmental Studies merged with the School of Natural Resources in 1990, he left his position in the department to become assistant director for research in the School of Natural Resources and professor of forestry. He retired in 1995.

Weidensaul coordinated and conducted research on atmospheric deposition effects on plants and soils, including acid rain and gaseous pollutants, interactions of gaseous and metallic pollutants with infectious plant diseases, and the use of sewage sludge for tree production. He published extensively and was a member of many university, national, and international councils and panels. He chaired the Ohio Scientific Advisory Task Force on acid rain, and was a member of the sulfur oxides panel of the National Academy of Sciences, and the Biophysical Research Committee of the Alberta Government-Industry Acid Deposition Research Program.

Weidensaul was a Fellow in the NASA Industrial Applications Center, University of Pittsburgh. He served the American Phytopathological Society on several committees and as associate editor of *Phytopathology* (1982–86).

Terry D. Miller (1944–). B.S. (1966), M.S. (1968), and Ph.D. (1970), all from Utah State University. He did postdoctoral research at the University of California, Berkeley, studying the epiphytic growth of

OARDC



Erwinia amylovora and DNA hybridization in the genus *Erwinia*. In 1971, he was appointed assistant professor in the Department of Plant Pathology, The Ohio State University, Wooster, with responsibility for vegetable disease research. While at

OARDC, Miller worked on angular leaf spot of bean, powdery mildew of cucurbits, and bacterial canker in tomato transplants. He resigned in 1973 and returned to Idaho to operate his family potato farm and establish a private pesticide field-research and consulting business.

Rodney W. Caldwell (1943–). B.S. (1966), University of Wisconsin; M.S. (1969) and Ph.D. (1974), both from Purdue University. In

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1974, he was appointed assistant professor in the Department of Plant Pathology, The Ohio State University, Wooster, with responsibility for research on cereal crop diseases and grain mycotoxins. Caldwell had gained considerable research experience

in mycotoxicology during his graduate studies. While at OARDC, he worked with plant breeders to develop improved genotypes of wheat and investigated mycotoxins in foods and feeds. He collaborated with colleagues in studying the prevalence and virulence of *Pythium* and other fungi associated with root rot of corn. Caldwell left in 1977 and returned to Wisconsin to manage his family's farm and do research in the Department of Plant Pathology, University of Wisconsin.

Randall C. Rowe (1945–). B.S. in botany (1967), Michigan State University; Ph.D. in plant pathology

OARDC



(1972), Oregon State University. His postdoctoral research at North Carolina State University (1972–74) dealt with the field biology of black rot, a new fungal root disease of peanut caused by *Cylindrocladium crotalariae*. He joined the faculty in the Department of Plant Pathology,

The Ohio State University, Wooster, in 1974 as assistant professor with responsibilities for research (75%) and Extension (25%) in vegetable crop diseases. He was promoted to associate professor in 1979 and professor in 1984. In 1989, he was appointed department associate chairperson, in Wooster. Following sabbatical leave in 1995 at Washington State University, Pullman, he became department chairperson, with responsibilities for department activities on both the Wooster and Columbus campuses. He retired in 2006.

Rowe's research led to several significant contributions to the understanding and control of vegetable crop diseases. His investigations with a new disease of greenhouse-grown tomatoes (*Fusarium* crown and root rot) that was threatening the United States and Canadian industries revealed an unusual pattern of epidemiology that led to its control. Airborne microconidia of the pathogen, *Fusarium radicle-lycopersici*, escaped soil steaming and then rapidly recolonized the steam-disinfested soil. Collaborating with J. D. Farley, he found this could be prevented by drenching the fungicide captan onto freshly-steamed soil. This process was quickly adopted by Ohio commercial greenhouse tomato growers and rapidly eliminated this disease as a threat to the industry until



Randall Rowe checking potato field microplot study, 1985

disease-resistant cultivars were developed. Rowe and R. M. Riedel, in collaboration with L. V. Madden, students, and postdoctorals, published a series of papers on the cause, development, and epidemiology of potato early dying disease, a poorly understood disease of worldwide importance. Using a field microplot system, they showed that a synergistic interaction between the root-lesion nematode, *Pratylenchus penetrans*, and a soilborne fungus, *Verticillium dahliae*, was responsible for the disease. Using vegetative compatibility analysis (VCG), Rowe identified several strains of *V. dahliae* from potato that were involved in the disease complex, and showed that only one interacted synergistically with *P. penetrans*. He developed a set of differential strains useful in VCG analysis which was used internationally by those doing similar research with *V. dahliae*. Quantitative disease forecasting methods were developed for use in management systems.

Throughout his career, Rowe was actively involved in problem-solving research for the Ohio vegetable industry. He and co-workers investigated powdery mildew, late blight, and pink rot of potato; determined cultivar and environmental relationships for radish clubroot; evaluated the potential for biocontrol of *Rhizoctonia* on radish; studied the effects of environment on gummy stem blight in greenhouse-grown cucumbers; and actively evaluated new fungicides and application schedules for disease control in several vegetable crops. Rowe closely integrated his research with Extension educational efforts for the Ohio vegetable industry. He served on many industry research or advisory committees, wrote numerous Extension bulletins and trade journal articles, made many presentations to grower groups in Ohio and nationally, and served as editor and author of the APS Press book *Potato Health Management* (1993). Rowe served as major advisor of both M.S. and Ph.D. students, regularly presented lectures in *Advanced Plant Pathology*, and *Plant Disease Management*, and for several years, shared responsibility for teaching *Diseases of Fruit and Vegetable Crops* with M. A. Ellis.

Rowe was the first chairperson of the Department of Plant Pathology to be located on the Wooster campus. While serving as chairperson (1996–2006), he worked closely with three colleagues on the Columbus campus who each served as associate chairperson: T. L. Graham, S. T. Nameth, and M. J. Boehm. Each did



Randall Rowe at his desk, Selby Hall, Wooster, 2004

an excellent job of managing day-to-day operations in Columbus, while working as a team with Rowe in overall department administration. Rowe's goals as chairperson were to facilitate faculty governance, improve the integration of department activities among the two campuses, increase undergraduate and graduate student enrollments, recruit and mentor new faculty of the highest quality, and assure the fiscal integrity of the department. His tenure as chairperson was concurrent with implementation of major changes in fiscal management within the university, referred to as "Responsibility Based Budgeting." This was a time of declining operating revenues available to departments from both the OARDC and Extension Service, and a shift in university policy towards tying operating revenues for departments to credit hours of teaching. Dealing with this necessitated working closely with faculty, developing creative approaches to budgeting, and increasing dependence on extramural funds for department operations. Rowe served as department chairperson until he retired in 2006.

Rowe took many leadership roles in the American Phytopathological Society. He chaired numerous committees and served as: vegetable section editor of *Fungicide and Nematicide Tests* (1979–83), north central division councilor (1984–87), councilor-at-large, (1987–1990), vice president (1991), and president-elect (1992). In 1993, he served as APS president, the second from Ohio after A. D. Selby. He received several awards, including one from the Ohio Potato Growers Association for his efforts to improve the Ohio potato industry (1986), the Wittmeyer Distinguished Service

Award from the Ohio Vegetable and Potato Growers Association (2005), the APS Ciba-Geigy Award for research (1985) and the APS Distinguished Service Award (2012). He was elected an APS Fellow in 1995.

Following retirement, Rowe served as APS Treasurer (2006–2012). He led a USAID international team that presented workshops on potato disease management to agricultural professionals in Guatemala and Honduras (2013–2017) and took leadership for preparation of this revised department history (2012–2017).

David L. Coplin (1945–). B.S. (1967), University of California at Davis; M.S. (1971) and Ph.D. in plant



pathology and bacteriology (1972), both from the University of Wisconsin. Coplin conducted postdoctoral research in the Department of Plant Pathology at the University of Nebraska (1972–74). In 1974, he was appointed assistant professor, Wooster, with responsibilities

for bacterial diseases, particularly those of vegetables. In 1988, he transferred to the Columbus campus. He was promoted to associate professor in 1980 and professor in 1992. He also held courtesy appointments in the Molecular and Cellular Developmental Biology Program and in the OSU Biotechnology Center. He retired in 2010.

Coplin's primary research interests involved the molecular biology of plant-bacteria interactions using Stewart's wilt of sweet corn as a model system. This disease is caused by *Pantoea stewartii* (formerly *Erwinia*) and is vectored by the corn flea beetle. He was one of the first plant pathologists to use molecular genetic techniques to dissect pathogenicity mechanisms by using mutagenesis to identify virulence genes and then cloning the genes and identifying their functions. An early finding was that *P. stewartii* was highly unusual in that over 20% of its genome was comprised of extrachromosomal elements (plasmids). He developed techniques for transposon mutagenesis and conjugative gene exchange and was one of the first researchers at OSU to clone genes. These efforts to develop genetic tools identified the capsular polysaccharide and slime (EPS) as an important factor in colonization and wilting of corn seedlings. He characterized the large gene cluster for EPS synthesis and a complex regulatory



David Coplin loading electrophoresis gel plate in Kottman Hall laboratory, OSU Columbus, 1982

pathway involved in activating them in response to environmental stress and plant signals. In collaboration with Klaus Geider (Max-Planck Institut, Germany), they determined the structure of the polysaccharide, identified the enzymes involved in its synthesis, and constructed a biosynthetic pathway.

Coplin also placed major research emphasis on identifying the mechanism involved in causing water-soaked lesions. Similar genetic studies identified the Hrp Type III secretion system as the primary pathogenicity factor. This system injects effector proteins directly into host cells to cause membrane damage and/or suppress host defense mechanisms. *P. stewartii* was one of the first systems in which *hrp* genes were characterized and the effector involved in water-soaking was identified. Coplin also characterized the complex regulation of the *hrp* genes. The effector protein responsible for causing water-soaking is WtsE, which has now been found in other plant pathogenic bacteria. He developed techniques for introducing WtsE alone into various plant cells and worked with D. Mackey (OSU Horticulture and Crop Science) to show that WtsE interacts with many host proteins and in particular disrupts phenylpropanoid metabolism. In collaboration with S. Hogenhout, he also discovered that another Type III secretion system is required for colonizing the flea beetle vector. Throughout his career, he also worked on several applied projects aimed at diagnosis and control of Stewart's wilt.

Coplin played key roles in the department graduate program. He taught the advanced graduate course *Plant-Bacteria Interactions* and shared responsibility for *Introduction to Bacterial and Viral Pathogens of Plants*, a course he helped design. He also was the lead professor for an introductory course *Introduction to Plant-Microbe Interactions* as well as leading several journal clubs. He advised many M.S. and Ph.D. students and chaired the graduate studies committee several times. Coplin served as associate editor and senior editor for *Phytopathology* and *Plant Disease* and also served on the editorial board of the *Journal of Bacteriology*. He was a member of numerous APS subject matter committees and chaired a USDA grant panel.

Robert A. Spotts (1945–). B.S. (1967) and M.S. (1969), both from Colorado State University; Ph.D.

in plant pathology (1974), Pennsylvania State University. In 1974, Spotts was appointed assistant professor in the Department of Plant Pathology, The Ohio State University, Wooster. He was responsible for diseases of fruit crops, following Brian Jones. In 1978, he



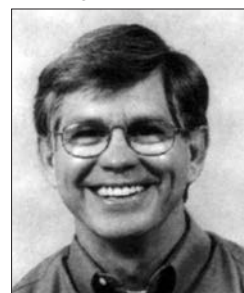
OARDC

resigned his position to accept a faculty position in the Department of Botany and Plant Pathology at Oregon State University. There he had responsibility for fruit disease research at that institution's Plant Biology Laboratory, Mid-Columbia Agricultural Research and Extension Center, Hood River, Oregon.

While in Ohio, Spotts' research on tree fruit diseases included evaluation of experimental fungicides, spray adjuvant effects on pathogen and host physiology, effect of misting for bloom delay on disease development, and biology and control of apple collar rot. He also studied the biology and control of *Gnomonia rubi* on thornless blackberry. Spotts developed an extensive program on the epidemiology and control of black rot of grape, caused by *Guignardia bidwellii*. He developed laboratory techniques for quantification of leaf surface conidia and for spermatia purification, growth chamber and greenhouse studies of environmental effects on sporulation and chemical eradication, and field studies on dissemination, epidemiology, and evaluation of a disease-forecasting system based on leaf wetness

duration and temperature. He was also involved in fruit crop Extension and taught the disease-forecasting section of *Advanced Plant Pathology*.

Landon H. Rhodes (1947–). B.S. in forestry (1970); M.S. (1975); Ph.D. in plant pathology (1976), all from the University of Illinois. In 1976, Rhodes was appointed assistant professor in the Department of Plant Pathology, The Ohio State University, Columbus. He was promoted to associate professor in 1982 and retired in 2010.



Throughout his career, Rhodes was widely recognized as a dedicated teacher, noted for his teaching excellence and talent for working closely with both undergraduate and graduate students. Upon joining the department, Rhodes assumed responsibility for teaching *Introductory Plant Pathology*, and taught the course for over 20 years. During this time he introduced many innovations into the course and was always well-regarded by students as he introduced them into the field. He also adapted and taught *Forest Pathology*, a course well received by undergraduates in the School of Natural Resources. In 1997, Rhodes developed a new course *Field and*



Plant Pathology Department

Lanny Rhodes with field plant pathology class

Woodland Fungi, which was taught annually until 2010. This was a field-based course which offered numerous forays to area woodlands where students could observe mushrooms and other macrofungi in their natural habitats. From 1999 to 2010, he taught *Mycology*, a comprehensive course on the taxonomy and biology of fungi. At various times, he also taught *Diseases of Ornamentals*, *Societal Issues: Pesticides, Alternatives and the Environment*, and served as coordinator and primary instructor for the team-taught course *Plant Disease Management*. Rhodes was widely recognized for his teaching excellence with numerous awards, including the College of FAES Recognition for Excellence in teaching (1994, 1995 and 1999), the College of FAES Pomerene Outstanding Teaching Award (1999 and 2003), and the Outstanding Professor Award, presented annually by the Students in Plant Science in the College of FAES (2002 and 2007).

Early in his career, Rhodes focused his research on mycorrhizal fungi and their role in improving plant growth, following up work he had done as a graduate student. He and his students did the first research in Ohio on vesicular-arbuscular mycorrhizae and their role in crop production. In 1981, Rhodes assumed responsibility for research and Extension programs on diseases of forage crops, particularly alfalfa, with efforts centered on understanding the pathological factors affecting stand establishment and persistence. Working with collaborators R. M. Sulc, D. K. Myers, R. W. VanKeuren, A. L. Barta (all with OSU Department of Horticulture and Crop Science), and R. B. Hammond (OSU Department of Entomology), his research efforts were directed primarily towards *Sclerotinia* crown and stem rot, a major alfalfa disease. Rhodes, along with colleagues and students, developed techniques for screening alfalfa germplasm and subsequently identified sources of resistance to *Sclerotinia*. He and Ph.D. student P. E. Pierson demonstrated that resistance to *Sclerotinia* could be increased through recurrent selection. Rhodes also developed a biological forecasting system that improved fungicidal control of *Sclerotinia* in alfalfa. His work on alfalfa diseases also included studies on foliar diseases and on *Fusarium* crown rot, including the interaction of potato leafhopper stress on disease development. Working with Ph.D. student J. J. Ariss, they showed the severe debilitating effects of the two stresses acting together.

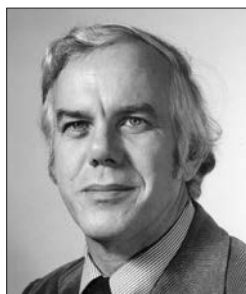
Later in his career, working in collaboration with R. M. Riedel, and with R. J. Precheur, and J. R. Jasinski (OSU Department of Horticulture and Crop Science), he studied white speck of pumpkin (*Plectosporium tabacinum*) and developed methods to screen for resistance to this disease, both in the laboratory and field. In 1996, Rhodes was honored for his research with *Sclerotinia* on alfalfa by receiving the Richard R. Hill, Jr. Award for Outstanding Contribution to Alfalfa Research, given by the North American Alfalfa Improvement Conference.

Rhodes also had Extension education responsibilities and often made presentations to various groups statewide on disease management in forage crops and pumpkins, and tree decay and decay fungi. Because of his expertise in mycology, he also spoke to various audiences on edible and poisonous mushrooms. He was a member of the American Phytopathological Society, the North American Alfalfa Improvement Conference, and the Mycological Society of America. Following retirement, Rhodes co-authored *Mushrooms and Macrofungi of Ohio and the Midwestern States: A Resource Handbook* and co-edited *A Compendium of Alfalfa Diseases, Third Edition*, published by APS Press.

Warren N. Stoner (1922–89). B.S. in entomology, University of California, Berkeley; Ph.D. (1949) in entomology with a speciality in insect vectors of plant diseases, University of California, Berkeley. After his undergraduate studies, he attended Naval Midshipmans School and was commissioned a line ensign. He had sea duty with the Pacific Fleet, where he participated in several campaigns. Beginning in 1950, Stoner held a number of positions, including assistant professor, Florida Agricultural Experiment Station; advisor to the Ministry of Agriculture of Venezuela; entomologist-plant pathologist for a firm appraising the agricultural and forestry potential of the state of Bolivar, Venezuela; and assistant plant pathologist and entomologist, University of Rhode Island. In 1961, he was appointed entomologist and leader of the insect vector section, USDA/ARS, at the Northern Grain Insects Research Laboratory, Brookings, South Dakota. He was also an adjunct professor at the University of South Dakota. In 1964, he consulted with the OARDC on the corn virus epidemic in southern Ohio, then spent three months at the OARDC, on loan from the USDA, working

with L. J. Alexander and L. E. Williams. Together, they demonstrated that maize dwarf mosaic virus was transmitted by the corn leaf aphid. In 1977, he was transferred to the Department of Plant Pathology, OARDC Wooster, where he was appointed adjunct professor. After two years, he received a medical retirement from the USDA and returned to his home in Brookings, South Dakota.

Charles L. Wilson (1932–). B.S. (1953), University of Virginia; M.S. (1956) and Ph.D. (1958), both from



OARDC

West Virginia University. In 1958, he was appointed assistant professor at the University of Arkansas in teaching and research. He was promoted to associate professor in 1963 and professor in 1966. In 1968, he moved to the USDA/ARS

as investigations leader and research leader at the Nursery Crops Research Branch, Delaware, Ohio. While there, Wilson became an adjunct professor in the Department of Plant Pathology, The Ohio State University (1971), and later transferred as an adjunct to the Wooster campus (1977). Wilson then relocated to Frederick, Maryland, as USDA/ARS research plant pathologist (1979), then soon thereafter moved to the Appalachian Fruit Research Station, Kearneysville, West Virginia.

While at Arkansas, Wilson worked on the physiology, ecology, and pathogenicity of *Ceratocystis fagacearum*, the oak wilt pathogen. He studied asexual nuclear division and behavior of several fungi, and several other tree diseases. He was the first to effectively use a plant pathogen, *Cephalosporium diospyri*, to control a weed tree, *Diospyros virginiana*. Better understanding of organelle behavior in fungi earned him a distinguished research award from the Arkansas Alumni Association. At Delaware, Ohio, he demonstrated the presence of lysosomes in a variety of fungi and higher plants and studied their role in normal and pathological processes. With C. E. Seliskar and C. R. Krause, he found that mycoplasma-like bodies were associated with elm phloem necrosis, which led to a cure for this disease using tetracycline antibiotics. His work in West Virginia focused on innovative ways to control fruit diseases. In 1988, he was selected as USDA/ARS North Atlantic

Area Scientist of the Year for his research on biocontrol of post-harvest diseases of fruit. Wilson was elected a Fellow of the American Phytopathological Society in 1994.

Raymond E. Hite (1932–). B.S. (1961) and M.S. (1963), both from The Ohio State University; Ph.D. (1972), Pennsylvania State University. Hite worked as a plant pathologist for Yoder Brothers, Inc., Barberton, Ohio (1965–68), primarily responsible for laboratory and greenhouse virus indexing procedures for certified chrysanthemum and carnation stock. He was USDA/ARS research plant pathologist with the U.S. Regional Pasture Research Laboratory, Pennsylvania State University (1972–77), working on oat diseases, primarily powdery mildew. In 1977, he joined the USDA Animal and Plant Health Inspection Service (APHIS). Hite was stationed in Ohio, in the Department of Plant Pathology, The Ohio State University, Columbus (1978–82), and later at the Ohio Department of Agriculture Laboratories, Reynoldsburg. He was appointed adjunct associate professor in the department in 1978. With APHIS, Hite originally was a survey plant pathologist concentrating on diseases of corn, wheat, and soybean, but later became a regional survey coordinator for APHIS plant disease survey and detection programs in several north central and eastern states. He retired in 1995.



Ray Hite examining specimen under dissecting microscope in Kottman Hall laboratory, 1979

OARDC

Michael A. Ellis (1949–). B.S. (1971) and M.S. (1973), both from Eastern Illinois University; Ph.D.



OARDC

(1976), University of Illinois. In 1975–76, he spent nine months as a visiting research associate at the Centro Internacional de Agricultura Tropical (CIAT) in Cali, Colombia, working on seed-borne bacterial and fungal diseases of dry bean. Ellis was assistant professor of plant

pathology at the University of Puerto Rico, Mayaguez (1976–79), where he did research on diseases and seed pathology of tropical legumes and taught in Spanish *Introduction to Tropical Plant Pathology*. During this time he was active in international agriculture, giving lectures and consulting on seed pathology in Central and South America. In 1979, Ellis was appointed assistant professor in the Department of Plant Pathology, The Ohio State University, Wooster, with responsibilities for research and Extension in fruit crop diseases. He was promoted to associate professor in 1983 and professor in 1988. He retired in 2014.

When Ellis came to Ohio, his professional experience had been almost entirely with seed pathology and bean diseases, but in a very short time he became nationally recognized for his expertise in fruit pathology. His research was focused on development

and implementation of integrated fruit disease management programs using cultural practices, disease-resistant varieties, and biological and chemical control. A large part of his work, in collaboration with L. V. Madden, research associate L. L. Wilson, and others, was aimed toward understanding the epidemiology of several diseases of strawberry, grape, and brambles and the development of disease-forecasting systems for the major diseases of fruit crops. Disease predictive systems were developed and validated for leather rot, Botrytis fruit rot, and anthracnose fruit rot of strawberry; and black rot, downy mildew, and Phomopsis cane and leaf spot of grape. A commercially available microprocessor-based disease predictor for grape black rot and downy mildew was marketed and used by several grape growers in the Midwest. His work with *Phytophthora* collar rot of apple led to the first federal label of a fungicide for its control. Other areas of research included the effects of powdery mildew on the physiology of apple leaves, etiology of *Alternaria* in causing apple moldy core, effect of row width on epidemiology and control of spur blight of raspberry, etiology of several fungi causing cane cankers of thornless blackberry, and evaluation of new experimental fungicides for fruit disease control. His collaborative work with L.V. Madden on the epidemiology of leather rot of strawberry, particularly the effect of rain-splash dispersal of inoculum, received wide recognition. During the later stages of his career, his research focused on developing integrated disease management programs for significant grape diseases and strawberry fruit rots in Ohio. In collaboration with L.V. Madden, L. L. Wilson, and several students, a series of research papers were published on Phomopsis cane and leaf spot of grape and leather rot of strawberry.

Throughout his career, Ellis placed major emphasis on communicating his research findings to fruit producers and developing and delivering educational programs and materials to commercial growers, home producers, and other fruit industry clientele. He was instrumental in developing the “Midwest fruit publication series,” which included fruit production guides with disease and insect control recommendations for grape, strawberry, raspberry, blackberry, and blueberry. A commercial tree fruit and small fruit spray guide was also produced and regularly revised. These regional publications were used by 11 states throughout the Midwest. Ellis was widely sought as a speaker and



OARDC

Larry Madden and Mike Ellis in grape plot with disease forecasting machine, OARDC research farm, Wooster, 1988



Mike Ellis discussing strawberry diseases with commercial growers

spoke annually at several fruit production conferences in Ohio and nationally. In 1993, he was appointed department Extension program leader. Ellis excelled in all his Extension and outreach responsibilities, and was recognized for his excellence in applied research and Extension by several awards including, a certificate of recognition from Epsilon Sigma Phi for special team teaching in the conduct of Extension's educational programs (1982); the North American Strawberry Growers Association's Award for research contributions (1985); the Ohio Fruit Growers Society's award for research contributions (1985); the APS Ciba-Geigy research award (1986); the Gamma Sigma Delta Award of Merit for Extension (2000); and the APS Excellence in Extension Award (2000). He was inducted into the Ohio Grape and Wine Hall of Fame in 2009.

Ellis played key roles in the department graduate program and advised many students to both M.S. and Ph.D. degrees. He chaired the graduate studies committee several times. Beginning in 1984, he co-taught *Diseases of Fruit and Vegetable Crops*, with R. C. Rowe, R. M. Riedel and S. A. Miller. He also taught a section on chemical control in *Plant Disease Management*. He was very active in the American Phytopathological Society, serving on many committees and positions, including section editor for *Fungicide and Nematicide Tests* (1982–85); senior editor of *Plant Disease* (1988–91); coordinating editor for the APS *Compendium of Raspberry and Blackberry*

Diseases and Insects (1989–91); Office of Public Affairs and Education (1997–2003); and Councilor-at-Large (2002–05). Ellis was elected a Fellow of APS in 2004.

Patrick E. Lipps (1952–). B.S. (1975), Miami University Ohio, M.S. (1977) and Ph.D. (1979), both from Washington State University. Lipps, a native Ohioan, was appointed assistant professor in the Department of Plant Pathology, The Ohio State University, Wooster, in 1979 to conduct research on corn and wheat diseases and to develop an Extension education program on all field crop diseases. He was promoted to associate professor in 1984 and professor in 1992. He retired in 2005.



Lipps' research was focused on solving disease problems and developing disease management practices for growers in Ohio and the region. He identified the influence of reduced tillage on field crop diseases and the relationship between inoculum density in no- and reduced-tillage systems and disease epidemics. He documented the spread of Anthracnose and gray leaf spot of corn from infested plant debris and showed how row orientation, plant density, and other factors influenced disease development. Together with L. J. Herr, they found that sharp eyespot of wheat was caused by *Rhizoctonia cerealis*, rather than *R. solani*, which greatly influenced the choice of rotational crops. Partnering with L. V. Madden, they characterized epidemics of powdery mildew of wheat in relation to genetic resistance and fungicide application. This research led to effective control with a single, well-timed application of fungicide, based on field scouting. Lipps made major contributions to understanding the genetics of resistance in wheat to powdery mildew and in corn to gray leaf spot. Working with crop breeders, he was instrumental in the development of several widely-planted commercial wheat cultivars with resistance to powdery mildew, Septoria diseases, and other pathogens. He found a new race of the northern corn leaf blight fungus, *Exserohilum turcicum*, in Ohio capable of infecting all commercial hybrids, which alerted corn breeders to develop and distribute resistant corn hybrids to avoid possible epidemics.

Lipps was a key player in the National Fusarium Head Blight Initiative and served as Epidemiology research leader for this nation-wide program that coordinated both research and Extension efforts on this important wheat disease. Working with L. V. Madden and post-doctoral students, they developed a computer-based, nation-wide predictive system and made it available to all wheat growers and researchers.



Pat Lipps checking wheat seedlings for disease, 1991

During his career, Lipps led a nationally respected, region-wide Extension education program on the management of diseases of soybean, corn, and wheat. His program emphasized the use of integrated disease management strategies to successfully manage field crop diseases. His Extension programing was highly valued for clarity and quality by crop producers, crop consultants, agri-business representatives, and county Extension agents. He was highly sought as a speaker for agronomic crop-producer meetings in Ohio and beyond. Lipps also provided Extension expertise to international programs in central Africa (Uganda) and Eastern Europe (Ukraine). With local researchers, he developed Extension bulletins and fact sheets as part of an International Integrated Pest Management Program. Throughout his career, Lipps gave hundreds of oral presentations on disease management and was very productive in preparing meeting proceedings,

newsletters and fact sheets. He was an integral part of the OSU Extension Agronomic Crops Team and a regular contributor to their weekly newsletter. For his many contributions, Lipps was presented the 2000 Excellence in Extension Award by OSU's College of Food, Agriculture, and Environmental Science. In 2001, he was nationally recognized for his work by receiving the Excellence in Extension Award from the American Phytopathological Society. During his career he received the Certificate of Excellence for Extension Publications Award (1992), the Certificate of Excellence for Educational Materials Award (1996, 2002), and the Agricultural Communicators in Education Gold Award (2000) from the American Society for Agronomy. Upon retirement, Lipps was honored by his colleagues with a Career Achievement Award from the OSU Extension Agronomic Crops Team and Ohio's Farmers, an Honorary Membership in the Ohio Association of Independent Crop Consultants, and the Ohio Seed Improvement Association Emeritus Membership Award for Contributions to Ohio's Certified Seed Industry.

Lipps actively served the department and college, as well as several professional societies and agricultural industry organizations. He served on many departmental, college, OSU Extension, and OARDC committees. He provided guest lectures in several courses each year and helped design and present a new course, *Genetics of Host Plant Resistance*, in the Department of Horticulture and Crop Science. His service to the American Phytopathological Society (APS) included serving as an editor for the journals *Plant Disease* (1988–1990), *Biological and Cultural Test Reports* (1991–2000), and *Fungicide and Nematicide Test Reports* (2004). He served on several APS subject matter committees and was elected APS North Central Division Councilor (1996–1999). He provided leadership on several national USDA committees and initiatives. Lipps was OSU Extension Liaison to the Ohio Association of Independent Crop Consultants (1995–1998) and served on the board of directors for the Ohio Seed Improvement Association (1997–2005) and the Ohio Wheat Growers Association (1999–2005). In 2000, he was recognized for career excellence by receiving the APS North Central Division Distinguished Service Award.

Ronald B. Hammond (1951–). B.S. (1973), M.S. (1975), and Ph.D. (1979), all from Iowa State University. In 1979, he was appointed assistant professor in the Department of Entomology with a 25% appointment in the Department of Plant Pathology, Wooster. In plant pathology, he was responsible for research with the soybean cyst nematode, a pest of increasing importance to the Ohio soybean crop. After about two years, Hammond became full-time in the Department of Entomology by the mutual consent of both departments.

Laurence V. Madden (1953–). B.S. (1975), M.S. (1977), Ph.D. (1980) in plant pathology, all from Pennsylvania State University. During his graduate studies he developed FAST, a forecasting system for *Alternaria solani* on tomato, and was heavily involved in developing new statistical methods for quantifying epidemics and yield losses. In 1980, Madden was appointed



OARDC

senior researcher in the Department of Plant Pathology, The Ohio State University, Wooster, to work with the OARDC-USDA/ARS Maize Virus Research Team. He was appointed assistant professor in 1983 and promoted to associate professor in 1986 and professor in 1991. In 2008, he was appointed the Distinguished Professor of Plant Protection. He was appointed department associate chairperson in 2007, and has served as interim department chairperson three times (2006–07, 2010–11, 2015–17).

Madden has been one of the leading plant disease epidemiologists in the world since the 1980s. He pioneered the use of many mathematical and statistical modeling approaches to analyze, compare, and understand the spatial and temporal components of plant disease epidemics. He has used the knowledge gained from these research advances to predict the risk of disease outbreaks and rates of disease increase in agricultural fields, and also to develop and test efficient disease management strategies. Madden is well known for his early work on the development and application of differential-equation nonlinear models for epidemics, and the evaluation of statistical methods for estimating and comparing model parameters. He and colleagues developed a coupled differential-equation model that

directly links the population dynamics of insect vectors with the temporal progression of plant viral diseases; using the model, the basic reproduction number (R_0) for predicting invasion and persistence of plant viruses of different transmission types was derived. He and colleagues have since derived R_0 for plant pathosystems of increasing complexity.

In long-term research, Madden has demonstrated the dynamic and predictable change of spatial patterns of disease over time in crop fields. He and Gareth Hughes (University of Edinburgh, Scotland) developed the binary power law to characterize the spatial heterogeneity of disease incidence and showed that diseased plants follow a beta-binomial statistical distribution. This work has led to development of revised methods of sampling for disease incidence, and predicting disease dynamics at multiple scales in a spatial hierarchy (such as leaves, plants, and fields). Over the past 15 years, he has been a leading proponent for the use of mixed models to analyze data in plant pathology. He is an authority on the use of meta-analysis (which depends on mixed models) to quantitatively synthesize results from published studies in agriculture.

Madden has studied the effects of the micro-environment on epidemic processes throughout his career, and has developed models to predict risk of disease outbreaks based on weather conditions. He



OARDC

Larry Madden with grape study in OARDC greenhouse, Wooster, 1996

and M. A. Ellis developed several forecasting systems for diseases of grapes and strawberries. Two strawberry disease forecasters they developed are now routinely used in Florida for timing of fungicide applications. Madden was also one of the developers of the prediction system for *Fusarium* head blight of wheat, which is used in 30 U.S. states. For more than two decades, Madden conducted research on the mechanisms of rain-splash dispersal of fungal and oomycete plant pathogens. He and his students and post-docs have characterized the physics of entrainment of spores into splash droplets, determined the physical relations between properties of impacting raindrops and resulting trajectories of splash droplets, showed the short trajectories of splash droplets, and demonstrated the pronounced effect of surface topography, plant canopy structure, and rain intensity on the dispersal of microscopic spores.

Shortly after joining the faculty, Madden developed a graduate-level course in *Plant Disease Epidemiology* and pioneered departmental use of computers in the classroom. In recent years, the course has been simultaneously taught to students at other universities using Internet video links. In 1990, Madden and C. L. Campbell, North Carolina State University, wrote the textbook, *Introduction to Plant Disease Epidemiology*, which became the standard reference for nearly two decades. In 2007, Madden, Hughes, and Frank van den Bosch wrote a new and more mathematically and statistically rigorous reference book on epidemiology entitled *The Study of Plant Disease Epidemics*.

Madden has always been a collaborative researcher, and has had joint research projects with colleagues in the department (P. A. Paul, M. A. Ellis, R. C. Rowe, P. E. Lipps, R. Louie, L. R. Nault) and worldwide (M. J. Jeger (Imperial College, London), G. Hughes (University of Edinburgh, Scotland), F. van den Bosch (Rothamsted Research, England), X. Xu (East Malling Research, Malling, England)). He has published heavily and is in high demand as an invited speaker. In addition, he routinely teaches workshops on contemporary methods in statistical analysis to national and international audiences.

Madden served as both senior editor and editor-in-chief of *Phytopathology*. He received the Ciba-Geigy Research Award from the American Phytopathological Society (APS) (1989), the OARDC Senior Research Award (1990), and The Ohio State University Distinguished Scholar Award (1991). He was elected

Fellow of the American Association for the Advancement of Science (1992) and Fellow of APS (1999). In 1994, Madden was elected vice president of APS, becoming president-elect in 1995 and president in 1996 (the third APS president from Ohio). He received the APS Ruth Allen Award for innovative research (2003), the E.C. Stakman Award from the University of Minnesota (2005), and the Jakob Eriksson Prize and Gold Medal from the Swedish Academy of Sciences (2008).

Robert E. Whitmoyer (1941–2011). B.S. (1965), Lycoming College, Pennsylvania; M.S. in botany and plant pathology (1969), Iowa State University. In 1969, he was appointed as instructor at OARDC, Wooster, to assist O. E. Bradfute in the development and operation of a research electron microscope laboratory for use by OARDC researchers. When Bradfute joined the research faculty of the Department of Plant Pathology (1970), Whitmoyer became head of the OARDC Electron Microscope Laboratory, directing its functions and consulting with faculty and graduate students on use of the facility. He later was appointed instructor in the Department of Plant Pathology (1983), where he served as a consultant in scanning and transmission electron microscopy, elemental analysis by X-ray spectroscopy, and several other areas. He was closely involved with research on small droplet application of pesticide chemicals. In 1985, Whitmoyer was also appointed OARDC historical records officer and was active in writing and publishing historical materials. He designed and directed the refurbishing of rooms in the old OARDC Administration Building at Wooster to establish the OARDC Museum, dedicated in 1992. He retired in 2002.



OARDC



OARDC Publication

Robert Whitmoyer preparing specimen in OARDC electron microscope laboratory, Wooster, 1982

Sidebar 3

Building the New Department of Plant Pathology —Ira W. Deep

Beginning in the mid-1950s, I was a faculty member in the Department of Botany and Plant Pathology at Oregon State University. There I taught *General Botany*, *Introductory Plant Pathology*, and *Bacterial Diseases*, and did research on bacterial crown gall and rose powdery mildew. My last two years there, I served part-time as assistant dean of the graduate school. In the summer of 1966, I went to Washington DC on a one-year leave of absence to work with the Commission on Undergraduate Education in the



Biological Sciences. While there, I met Roy Kottman, who was one of the commissioners. Three weeks after I returned to Oregon State, Dean Roy Kottman called me and asked if I would like to interview for chairperson of the new Department of Plant Pathology at The Ohio State University. This was especially surprising, since I had not applied for the job. Apparently Dean Kottman nominated me and the committee checked my qualifications and agreed to the interview. It was a pleasure to be named the first chairperson of the new department. The department actually had been established on July 1, 1967, and Curt Leben served as acting chairperson for the first six months.

I came to Ohio State on January 1, 1968, having spent several years at Oregon State University where the Department of Botany and Plant Pathology was strong and the two disciplinary areas were firmly united. There, as in most states, the agricultural experiment station was part of the university and was located on the campus in Corvallis. In Ohio, things were much different. The agricultural experiment station, later renamed the Ohio Agricultural Research and Development Center (OARDC), was located off-campus in Wooster. Furthermore, the OARDC was not officially part of the university. As Dean of Agriculture, Roy Kottman answered to OSU President Fawcett, but as Director of the OARDC, he held the entire responsibility for administration and budgeting, going directly to state and federal government sources for funding. This division had occurred in the 1890s when the agricultural experiment station had moved from Columbus to Wooster.

Although there were always strong ties between the two, this separation had a large influence on department operations. This situation did not change until the early 1980s, when Dean Kottman was about to retire. There was then a total merger of the OARDC with the university, and from that time forward, the OARDC was fully part of OSU.

In the 1950s and early 1960s, under the leadership of C. C. Allison and teaching by Wayne Ellett, many outstanding Ph.D. professionals in plant pathology were produced at Ohio State. Research at the agricultural experiment station (OARDC) was outstanding. When I arrived, there were eleven faculty at Wooster, including well-known researchers such as L.J. Alexander, Lansing Williams, and Fritz Schmitthenner, and outstanding young faculty such as Don Gordon, Ray Louie, and Harry Hoitink. In Columbus, there were just five faculty, including me, and only a few graduate students. C.C. Allison had been in Brazil on an international assignment for many years, and Wayne Ellett had decided to stay with the Botany Department when it split from plant pathology. There were two Cooperative Extension Specialists, Blair Janson and Bob Partyka, but only one Resident Instruction faculty, Allen Troxel.

In Columbus, the new department had no files and no filing system. Even routine things, like ordering supplies, were a chore. They provided me a full time secretary, Barbara Dille, but she also had no experience in running a department. On the other hand, in Wooster, the department had a long history, extensive files, an effective filing system, ample secretarial help, and technical support for research. In Columbus, one of the most challenging parts of the new job was just running the office.



Lansing Williams at his desk in Thorne Hall, OARDC, Wooster, 1971

Lansing Williams was very appropriately named the associate chair. We realized that there was much work to be done in building the teaching program and bringing unity to the two parts of the department in Columbus and Wooster. We readily convinced Wayne Ellett that we needed him, and fortunately

he agreed to join the department. With great support from Dean and Director Kottman, we were able to hire several new faculty in Columbus, including Mike Garraway (fungal physiology) and Phil Larsen (turf diseases) in 1968, and Chuck Powell (ornamental diseases) and Mack Riedel (nematology) in 1970. In Wooster, we hired Jim Farley in 1969, and then in 1974, brought in four new faculty, Rodney Caldwell (cereal diseases), Dave Coplin (originally greenhouse vegetable diseases, later bacteriology), Randy Rowe (vegetable diseases), and Bob Spotts (fruit diseases). By 1975, the department had grown to 14 faculty in Wooster and 9 in Columbus. We were on our way!

During my time in administration, I spent a lot of time in Wooster, usually one day per week. Lansing and I discussed all aspects of departmental operations, and in many respects, Lansing served more as a co-chairperson than as the associate chairperson. Prior to 1967, faculty appointments had been 100%-either Resident Instruction (OSU), Agricultural Experiment Station (OARDC), or Cooperative Extension (OCES). Lansing and I saw the importance of tying these areas together through faculty appointments. Mike Garraway was appointed 75% OSU/25% OARDC, and both Phil Larsen and Mack Riedel were appointed 50% OSU/50% OARDC. Chuck Powell was appointed at 75% OCES/25%OARDC. In 1974, with an opportunity to change appointments in Wooster, both Randy Rowe and Bob Spotts were appointed at 75% OARDC/25% OCES.

Whenever we sought new faculty, Dean Kottman played a crucial role in making each decision. Prospective candidates gave seminars and were interviewed by the faculty, but when I took the candidate to meet with Dean Kottman in his office, it was often a “make or break” experience. The Dean would not force the Department to accept a candidate we didn’t want, but the candidate had to have the Dean’s full approval. Kottman was very conservative and did not approve of men having long hair or beards. Even so, we found that the professional expertise and stature of the candidate sometimes overcame this factor. Regardless of the decisions made, Dean Kottman was always forthright and fair, and it was a pleasure working with him.

When Lansing and I initiated the annual Faculty Program Reviews, we set up teams with a faculty member and graduate student in Columbus and one each located in Wooster. I believe this further helped to unite the department. This process of annual faculty peer review is still in place today and has played a great role in the development of the high-quality faculty we have had over the years.

In 1971, Dean Kottman asked me to chair a committee to develop a Plant Protection Curriculum for the college, which was approved in 1972. In 1976, the undergraduate Plant Protection Program was approved, with majors in Plant Pathology, Agronomy, Horticulture, and Entomology. In 1979, the university encouraged colleges to establish endowed Professorships or Faculty Chairs, which at that time, required an endowment of at least \$200,000. Leo Bendixen, in the Agronomy Department, proposed a Professorship in Weed Science. When his proposal was discussed at a chairperson’s meeting, I indicated that it would be much stronger if it involved all aspects of plant protection, control of insects and diseases as well as weeds. Roy Kottman immediately saw the strength of this proposal. He moved ahead vigorously, setting up a committee chaired by one of the leaders from The Andersons (a major agribusiness company headquartered in Northwest Ohio). Dean Kottman personally contacted the ag-chemical companies and all of the Ohio grower groups and businesses involved. All of us were active in this activity, but Dean Kottman was the catalyst that made it a great success.

The Professorship in Plant Protection was established in 1980 with an endowment of about \$340,000, which eventually grew to over \$1 million. Phil Larsen was the first to hold the title “Professor of Plant Protection” as leader of the college Plant Protection Program (1981–84). I thought the Professorship should rotate among the three departments—Plant Pathology, Entomology, and Agronomy (weed science). However, though the other departments participated, they showed little interest in giving leadership. Probably because of this, the Professorship was placed in our department

on a permanent basis. The Plant Protection Program was an interdisciplinary undergraduate curriculum that addressed integrated plant pest management. It included a diverse curriculum on a broad array of topics that spanned several departments in the College of Agriculture. It included an

internship program that provided students relevant work opportunities in production agriculture and agribusiness and, frequently, subsequent career placement after graduation. An advisory committee composed of representatives from agribusiness provided support for fund raising and technical advice. Funds from the Plant Protection Endowment were also used to support special activities such as field trips and for scholarships (\$500–\$1,500) to support work experiences with College of Agriculture faculty.

When Phil Larsen left the department in 1984 to become chairperson of the Plant Pathology department at the University of Minnesota, I was named to the Plant Protection Professorship in 1985. In 1986, 24 students were enrolled in the Plant Protection major. A Plant Protection Seminar was set up with 14–16 students enrolled in the seminar the first two years. However, by 1988 there were only six students enrolled, so the seminar was discontinued.

It is especially gratifying for me to have played a significant role in the development of a new Department of Plant Pathology, which is recognized internationally today. Our current faculty have interacted in research and teaching with professionals in many countries, and since 1982, five of our faculty have been elected President of the American Phytopathological Society. To those of us in the profession, this is particularly significant.



Philip Larsen, first leader of Plant Protection program, with student, Columbus

Plant Pathology Department

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Columbus, Ohio
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