CHAPTER 2

OUR RELATIONSHIPS TO OTHER SCIENTIFIC SOCIETIES AND ORGANIZATIONS IN THE PAST 75 YEARS

ROBERT AYCOCK and DEBORAH R. FRAVEL

The founders of the American Phytopathological Society (APS) envisioned an organization that would be an invaluable aid in promoting the development of plant pathology in America and thus serve a rapidly expanding agriculture. Moreover, it was hoped that its influence would have international significance. Fears of invasion by dangerous exotic pathogens that do not respect national boundaries were entirely justified.

The APS was an offspring of the parent Botanical Society of America in 1908, and some doubted the advisability of breaking away at that time. However, pressing questions regarding the outbreak of destructive epidemics and the spread of plant diseases, whether from farm to farm or over wide areas, were subjects of great concern to plant pathologists. The society provided a vehicle for voicing these concerns and for organizing resources and efforts to deal with them. These tasks were quite difficult, however, owing to the diversity of backgrounds and interests of the early members of the group. Even at that time plant pathology was, to some extent at least, multidisciplinary with respect to both agricultural and biological subject matter. It was only natural that certain groups wished to protect the integrity of their own territories and resisted attempts to disturb the status quo. Mindful of the benefits of interdisciplinary cooperation, however, the first Council meeting, held in Washington, DC, on 26 March 1909, considered, among other things, the questions of affiliation with other societies.

Owing to the extraordinary efforts of the leaders of the APS during the first decade, plant pathology emerged as a strong, independent discipline with its own body of knowledge and principles, its own journal, and its own centers of excellence in research, graduate training, and extension. As the stature of the profession grew, the scope of its involvement in allied sciences expanded and the character of the science became even more multidisciplinary. The need for highly specialized resource persons in the physical, biological, and agricultural sciences and related technologies increased. However, the phenomenon of disease and the dynamics of disease in plant populations were focal points that maintained bonds of unity and loyalty. Plant pathologists in a general sense continued to

enjoy close ties with other scientists based upon their mutual or overlapping interests and professional respect.

PLANT PATHOLOGY AND BIOLOGY

Although the spirit of give and take generally prevailed and relatively few instances of selfish isolationism impeded progress, leaders of the new Society were well aware of the divisive potential of situations where interests either overlap or come into conflict. L. R. Jones, writing in the first article published in PHYTOPATHOLOGY (2), argued the case for a separate society for plant pathologists, while emphasizing at the same time the relationships of plant pathology to all of biology. He commented that the work of the phytopathologist is mainly with fungus and bacterial parasites, yet the bacteriologists and mycologists might justifiably view as unscientific attempts to subdivide their fields by separating the organisms parasitic upon higher plants into a distinct group. Dr. Jones also called attention to the fact that the embarrassments of the phytopathologist would not stop there. Agronomists and horticulturists each have their own fields and these must be invaded if the work of the pathologist is to be pursued.

> Moreover, these overlappings were not to be considered temporary. The advances of scientific knowledge would not more clearly segregate these related branches of knowledge along natural lines of change. Indeed the *reverse* would be true. Segregation into a separate society or profession was justified *only* on the basis that *greater efficiency in service* would be secured. If plant pathologists are permitted to segregate problems from their more natural associations, on the grounds of epidemiology, fundamental relationships are not in reality affected—and such separation *increases* the responsibility of those who make the move (italics ours).

Jones concluded that advances in plant pathology would be in proportion to the clear recognition that the principal problems to be pursued are biological, rather than economic. Variety and complexity would increase with the progress of the science, and the plant pathologist would have to realize the complex interrelationships of scientific phenomena;

> in his work he is to act *not as an individual*, but as one of a large company, coordinating what he is doing with what *has* been done, cooperating in the present with associates and colleagues, and patiently and painstakingly preparing for future work to be done by those who are to follow (italics ours).

The interrelationships of plant pathology with other services were reemphasized many times. E. M. Freeman, in a paper read before the Society in 1935 at its summer meeting at St. Paul (1), called attention to the fact that a century of scientific achievement had not altered plant pathology's relationship to its sister sciences, although the enormous expansion and increasing complexity of plant science had steadily constricted the scope of operation of the individual. An Anton de Bary—"superman" in many fields—

> is no longer humanly possible, and it needs no divine power of prophecy to predict that he will never again appear. . .the superman must be surrounded by intelligent, generous, genuine, and spontaneous cooperation.

Freeman, in his argument for broad understanding and appreciation of the sister sciences, called attention to the trap that many plant pathologists fall into when they succumb to the alluring, but unjustified analogies that are drawn between the practices of medicine and plant disease control. The bewildering diversity of plant species from mushrooms to great trees, the multiplicity of pathogens that affect one plant, and the inextricable connections of control practices to methods of culture, soil conditions, climate, etc., are in sharp contrast to the body of knowledge on the practice of medicine, which concerns *one* host species, in which evaluations of treatment are generally aided by intelligent response and communication.

Dr. Freeman also addressed the problem of cooperation in institutions between and among departments with their attendant problems of territorial rights and responsibilities. "No administrational scheme can possibly eliminate the overlapping of sciences and departments," he noted. "It is the chief business of the administration to see that these overlapping borders are well oiled to prevent excessive friction." While recognizing the need for cooperation, he maintained that plant pathology needs to be recognized as a "professional guild" not subordinated to single crop plants. Such a subordination demotes professional scientists to skilled labor functions that delimit the scope, activity, and service of plant pathologists and discourages their cooperation with other scientists.

INTERNATIONAL INTERESTS

In addition to cooperation with other biological specialties and their organizations, there was early interest in international cooperation. At the fourth annual meeting in Cleveland,[1] an important resolution adopted by the Society read in part:

> Resolved, that the American Phytopathological Society, recognizing the fact that plant diseases do not recognize national limits or geographical boundaries. . . respectfully recommends that administrators of research institutions recognize the importance of establishing closer international relations and take such steps as may be practicable to secure this end, including not only more frequent visits of American investigators to foreign countries. . .but also securing. . .the engagement of the best foreign experts in plant pathology (in this country).

In reviewing the first decade of the APS at the annual meeting in December, 1918, C. L. Shear (upon whose personal suggestion a committee of plant pathologists from the U.S. Department of Agriculture [USDA] met to undertake the organization of an APS in 1908) envisioned in the years ahead a great international plant pathological society that would provide closer union of interests and organizations (5). (Previous plans for participation in an International Conference on Phytopathology proposed for Rome in 1914 were considered by a committee of L. R. Jones, W. A. Orton, and C. L. Shear, but no record of APS's participation is recorded, and whether or not the conference was ever held is open to question.)

[1] Annual Reports of the APS, from which much of the information in this article was taken, are to be found in PHYTOPATHOLOGY, vols. 1–60 for 1911–1970; PHYTOPATHOLOGY NEWS, vols. 4–7 for 1970–1973 and 13–14 for 1979–1980; PROCEEDINGS OF THE AMERICAN PHYTOPATHOLOGICAL SOCIETY, vols. 1–4 for 1974–1979; and PLANT DISEASE, vol. 65 for 1981.

In the afterglow of the Armistice of November, 1918, Dr. Shear called upon American plant pathologists to accept the "great responsibility and improve the wonderful opportunity now offered for world service in advancing science and promoting the brotherhood of mankind." He was emotionally moved by the conclusion of the world's greatest catastrophe and looked to the new foundations upon which the structure of science, ethics, and politics were to be built. Without a spirit of brotherly love and service, future structures would be but another Tower of Babel whose downfall would be greater than that of the present.

RELATIONSHIPS WITH AMERICAN SCIENTIFIC SOCIETIES

Affiliation and cooperation with other societies was always a matter of concern. In fact, the original organizing group broke away from their botanical colleagues with some difficulty. The vote to form a separate society was far from unanimous (32 to 12). Neither was the departure of plant pathologists from their botanical colleagues taken lightly by the botanists. The Botanical Society of America requested in 1912 that the newly formed APS consider the matter of closer affiliation, and a committee consisting of the president and secretary-treasurer was appointed to consider the matter (*Phytopathology*, Vol. 2, p. 44). A report of an APS Committee on Affiliation in Relation to Other Societies in 1915, while appreciating the courteous offer of the Botanical Society, recommended that a closer affiliation not be pursued because of financial problems and other unspecified reasons (*Phytopathology*, Vol. 5, p. 128). A brief but excellent summary of our associations with other organizations is given by McCallan in a book (4) published upon the occasion of our 50th anniversary. He calls attention particularly to the long-standing contacts with the Botanical Society of America, the Mycological Society of America, and the Potato Society of America.

APS met for many years routinely with the American Association for the Advancement of Science (AAAS). Indeed, the Society was organized when that group met in Baltimore from 28 December 1908 to 2 January 1909. The last meeting with AAAS took place in New York in 1949. As indicated by McCallan, meetings during the years of World War II had demonstrated the advantages of meetings held at times other than Christmas and jointly with other organizations at times convenient to them.

The APS became affiliated with the American Institute of Biological Sciences (AIBS) in 1949. It was thought that this affiliation would help our society to speak with a stronger voice and provide an opportunity for participation with more scientists whose interests were much closer to ours than was possible with the huge and diverse AAAS. Relationships with AIBS have varied. It is not surprising that the marriage of basic and applied or agriculturally oriented interests has not always been a happy one. This has been particularly true since major concerns over world hunger and food production often seem opposed to the maintenance of an unpolluted environment. Nonetheless, real efforts have been made by AIBS in recent years to include and consider the interests of all biologists. Significant changes in the governance of the society allowing more appropriate representation from the constituent societies has been one positive step in enhancing the quality of these professional relationships. APS has continued to meet with AIBS on an intermittent basis since 1952.

The Society has always been interested in working with other organizations on

specific problems and in more effectively providing for communication among members with common interests. In the early years these projects included such things as the development of Pan American literature lists (published in a number of volumes of PHYTOPATHOLOGY), culture collections, lists of research projects, and sponsorship of *Biological Abstracts*, originally through membership in the Union of American Biological Societies. Often, special committees were named to handle these projects.

The number of societies, committees, councils, commissions, etc., with which our society has cooperated directly through meetings, correspondence, and reports is too great to present in detail here. Some with whom we have had relationships over a period of years include, in addition to those already mentioned, the American Grassland Council, the American Standards Institute, the American Type Culture Collection, the Biological Stain Commission, the Food and Container Institute, the International Shade Tree Conference, the National Research Council, the Tropical Research Foundation, and the Union of American Biological Societies. In more recent times, our Society played a key role in organizing the International Society for Plant Pathology and cohosted its second meeting with the Society of Nematologists at the University of Minnesota in September 1973.

SOME SPECIAL EFFORTS BETWEEN THE WARS

The Advisory Board of the APS was a direct successor of the War Emergency Board of World War I, which had been formed at the Pittsburgh meetings in late December of 1917. The War Board had been appointed to promote cooperation in war work, particularly in the production of foodstuffs. It worked closely with similar committees appointed by the Botanical Society of America and Section G of AAAS.

Apparently the cooperation stimulated after only one year's experience with the War Emergency Board was a new experience for American plant pathologists. "The scientific workers' training and experience tend to develop their individuality and to render it difficult for them to work in groups after the manner of businessmen," was the way G. R. Lyman (3) evaluated the situation at that time. "While few plant pathologists oppose cooperation in principle," he continued, "many are fearful of some of its effects when put into general practice." He even quoted Mr. Elihu Root, a noted statesman of the period, who had recently charged that scientists had organized everything except themselves.

Some of the specific functions of the new Advisory Board were to: 1) represent plant pathologists before the National Research Council; 2) confer with workers in related fields, i.e., entomology, genetics, horticulture, and agronomy, in order to promote joint efforts on common problems; and, 3) promote international relationships. The Board, whose first chairman was G. R. Lyman, was very effective for several years in presenting the case for plant pathology, both at home and abroad. Not surprisingly, one of the principal problems was the securing of funds to support the various cooperative projects planned. A big push was made for the establishment of a Phytopathological Institute, a project that never succeeded, and activities were discontinued after the establishment of the Boyce Thompson Institute. Other early activities included cooperative tests with fungicides and their methods of application and the planning and arrangement of summer tours. As McCallan pointed out (4), eventually many of the duties of the

Advisory Board were assumed by the APS Council and the numerous proliferating committees associated with the growth and maturing of the Society.

Plant pathologists, like most everyone else, learned to appreciate the benefits of cooperation. "The value of cooperation between different branches of plant science was brought out in joint sessions. . ." is a phrase which recurs word for word in several annual reports. Usually such organizations as the Potato Association of America, the American Association of Entomologists, AAAS (Section G), affiliated botanical societies, the American Society for Horticultural Science, the American Society of Plant Physiologists, and others are mentioned.

These joint sessions and the cooperative efforts of our Society through its members and committees often provided the impetus to advance our knowledge in special areas of interest. One regional example is the work of the Tobacco Disease Council and the Plant Nematode Council. The Tobacco Disease Council was organized and became affiliated with the Tobacco Workers Conference in Greensboro, NC, in November 1935. The purpose of the organization was to promote cooperation in energetic scientific investigation leading to effective tobacco disease control. The Plant Nematode Council was organized originally as the Root Knot Nematode Committee in February 1937 by federal and state workers at Nashville, TN. This group promoted research on plant nematode problems and assisted each other in research. These two groups called attention to the very serious nematode problems in the South (they met jointly in 1941 at Tifton, GA) and played a key role in the gradual development of comprehensive nematode disease research programs in the Southeast.

A significant step in coming to grips with practical problems that required cooperation was participation in the formation of a Crop Protection Institute in June 1921 at Rochester, NY. This institute was an outgrowth of the work of the Advisory Committee and reflected the "spontaneous desire on the part of plant pathologists, economic entomologists, and certain businessmen to secure united attack on certain common problems (*Phytopathology,* Vol. 11, p. 198). The purpose of the Institute was: 1) to promote the general welfare through efficient control of injurious insects and plant diseases, 2) to promote control of insects and plants injurious to humans, animals, and animal products, 3) to support and direct research upon other problems of similar nature, 4) to further cooperation among entomologists, scientific workers, plant pathologists, manufacturers of insecticides, fungicides, and similar materials, and the manufacturers of appliances, and 5) to assist in the dissemination of scientifically correct information regarding the control of injurious insects and plant diseases. Thirty-two individuals were present in the organizing group and represented 1) the National Research Council, 2) the American Association of Economic Entomologists, 3) the APS, and 4) manufacturers of fungicides and insecticides. Administration was placed in the hands of a Board of Trustees of 13 members, representing the above groups and the Association of Official Agricultural Chemists.

The institute received proposals for research and functioned as a review board and intermediary between the scientist and the company that provided funds. Reports of the work of the Institute were provided to the Society more or less on an annual basis, and a summary of 12 years of work was published in volume 24 of PHYTOPATHOLOGY. Some of the research of interest to plant pathologists that was funded included studies on crown gall, copper fungicides, flotation sulfur, and organic chemical byproducts. The Institute appeared to be very active for

about 20 years, up until World War II, after which industrial concerns developed other means for screening and evaluating the multitude of new chemicals that were being developed.

CURRENT EFFORTS

The most significant step in recent times toward improving cooperation and communication among crop protection disciplines was taken on 8 August 1975 in the Shamrock Hotel, Houston, TX on the occasion of the APS meeting. In a parlor overlooking the Astrodome, Kenneth T. Knight, President of the Entomological Society of America (ESA) presented a draft of the Articles of Confederation for a proposed Intersociety Consortium for Plant Protection to representatives of the Weed Science Society of America (WSSA), the Society of Nematologists (SON), the Entomological Society of America, and the APS. Those in attendance in addition to Dr. Knight were the presidents of APS (James Tammen), SON (Walter Thames), and WSSA (C. L. Foy), the president-elect of APS (Robert Aycock), and other Society representatives: David Schlegel (APS), Ray F. Smith (ESA), and James Horsfall (APS).

The draft presented by Dr. Knight was revised and adopted and referred back to the constituent societies for ratification. Dr. Tammen acted as the chairman of the Provisional Executive Council. The Articles of Confederation were duly ratified by all societies. At a meeting of the Executive Council on 5 April 1976, goals for the Consortium were more precisely defined and several committees were established: Survey and Detection, Pest Management, Crop Loss Assessment, and Education. The Council has since consulted and cooperated on matters of mutual interest with representatives of the Animal and Plant Health Inspection Service, the Cooperative Research Service, and the Science and Education Administration of the USDA; the Environmental Protection Agency; and other governmental, educational, and research agencies. Each committee was authorized to make direct contact with relevant federal agencies, keeping the Executive Council informed of their activities. The representatives of the societies were to keep their constituents informed through their organizational newsletters, meetings, etc.

After 6 years, the Consortium has been useful in a number of ways. It has provided a very effective and continuing link of communication among the crop protection disciplines that was never available before. In addition to the usual reports, correspondence, etc., the Consortium maintains a list of scientists who have expertise in many subject areas of concern. These are available for the development of symposia, conferences, workshops, etc., that are of mutual interest.

The Consortium has also provided a much higher degree of visibility for the crop protection disciplines in Washington. In a relatively short time, members of the Executive Council and the various committees have established relationships with members of Congress and their aides and with members of the executive branch of government as well.

The Consortium, through its conversations and discussions in Washington, has on occasion been able to function as a liaison or intermediary between and among U.S. governmental agencies whose missions and interpretations of responsibilities sometimes appear to be in conflict. Substantial assistance has been rendered in assisting the USDA-Science and Education Administration to

prioritize research and extension needs in the field of crop protection. Two additional committees, Biological Control, and Pesticides, have been established to enhance the Consortium's activities along this line.

Specific documents have been developed for governmental organizations and agencies. A document on integrated pest management was developed under Consortium auspices for the Experiment Station Committee on Policy by a study committee chaired by J. L. Apple. Corn, peach, and nectarine pest management production guides have been prepared for the Environmental Protection Agency by George Bird.

CONCLUSION

From the early days of our profession, we have been confronted on the one hand with the need to specialize and on the other the need to maintain our essential unity with biology. Our only justification for specialization and segregation, according to L. R. Jones (2) was for greater efficiency in service.

These concerns have been reaffirmed and spoken of to me by latter day saints of our "professional guild" as well. To quote J. C. Walker (7),

> Already we see cults developing who refer to themselves as plant virologists, plant disease physiologists. . .plant nematologists and I presume just around the corner, plant disease molecular biologists. This is all to the good because to make basic progress we must not only specialize but reach out to gain the advantage of mingling in other fields. . .I am not so much concerned that plant pathology will disappear like the exploding atom. There will always be plant disease problems and crop losses from disease. What I am concerned about is that these specialty groups will lose plant pathology. There is real danger of being cut off in space without landing gear. We are already showing signs of building a Tower of Babel within our science, wherein plant pathologists

will not understand each other or their techniques and philosophies.

E. C. Stakman (6) considered the relative importance of curiosity and sense of service in the motivation of such pioneers as Fontana, Targioni, Prevost, and Kühn. "They were exceptionally curious," he noted, "but they were exceptionally curious about the phenomena that impinged directly on the interests of the people generally."

American plant pathologists have shown their commitment both to service and to the pursuit of basic knowledge. In general we have recognized the need to relate to other disciplines and to other organizations. We have reached out to "mingle in allied fields." To quote Walker (7) once again, "we were started on a fabulous journey by de Bary in 1863—there are many stimulating challenges still awaiting us.

ACKNOWLEDGMENTS

We are grateful to C. J. Nusbaum, William Neal Reynolds Emeritus Professor of Plant Pathology at North Carolina State University, for many helpful suggestions and to G. W. Bird, Professor and Coordinator of Pest Management Programs at Michigan State University, who supplied much useful information on recent activities of the Intersociety Consortium for Crop Protection.

LITERATURE CITED

1. Freeman, E. M. 1936. Phytopathology—And its future. Phytopathology 26:76-82.
2. Jones, L. R. 1911. The relations of plant pathology to the other branches of botanical

science. Phytopathology 1:39-44.
3. Lyman, G. R. 1919. The Advisory Board of American Plant Pathologists. Phytopathology 9:202-206.
4. McCallan, S. E. A. 1959. The American Phytopathological Society—The first fifty years. Pages 24–31 in: Plant Pathology Problems and Progress 1908–1958. C. S. Holton, G. W. Fisher, R. W. Fulton, Helen Hart, and S. E. A. McCallan, eds. Univ. Wisc. Press, Madison. 588 pp.
5. Shear, C. L. 1919. First decade of the American Phytopathological Society. Phytopathology 9:163-170.
6. Stakman, E. C. 1964. Opportunity and obligation in plant pathology. Annu. Rev. Phytopathol. 2:1-12.
7. Walker, J. C. 1963. The future of plant pathology. Annu. Rev. Phytopathol. 1:1-4.