

BEVERLY T. GALLOWAY: Visionary Administrator

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ABSTRACT

With a career that began at the University of Missouri in the early 1880s and culminated at the USDA in the 1930s, Beverly Galloway devoted his life to practical botany and agriculture. He became a driving force in the movement for “New Botany” during a period that stressed an experimental approach as well as new disciplines such as plant pathology. As administrator and scientist, he was arguably the single, most influential figure involved in the early growth and development of plant pathology and the plant sciences generally in the USDA. From assistant mycologist in the Section of Mycology to Chief of the Bureau of Plant Industry to Assistant Secretary of the USDA, Galloway displayed exceptional administrative acumen. His administrative and scientific skills were instrumental in laying the foundations for the science of plant pathology during its formative period in the United States.

Little about Galloway’s early life foreshadowed the guiding role that he would play in American plant pathology in the late nineteenth and early twentieth centuries. The youngest of four children and only son of Robert McCauley and Jane McCray Galloway, Beverly Thomas Galloway was born October 16, 1863, in Millersburg, Missouri. His father, of Scotch-Irish ancestry, was a native of Kentucky and worked as a farmer and miller; his mother’s family came from Maryland. At the close of the American Civil War, Robert Galloway moved his family to Columbia, where Beverly completed the standard minor school curriculum. At age 14, he had shown an interest in pharmacology and became a clerk in the Columbia drugstore of James Hurt. In that store, he performed the usual apprentice-type chores such as washing bottles and operating the

prescription counter. He also found time to study the various facets of the pharmacy profession and, in 1878, passed the state examination to become a registered pharmacist.

For the next two years Galloway worked as a pharmacist, but it appears that his heart was elsewhere. The direction of his career changed significantly in 1880 when he took a position on the horticultural grounds of the University of Missouri at Columbia. Clearly, he found plant life fascinating because he chose to enter the University of Missouri's Agricultural College in 1882, where he focused on botany and horticulture (14, 41, 44). There, Galloway had the good fortune to come under the mentorship of professor of botany, Samuel Mills Tracy (19). Although primarily a classical taxonomist, Tracy, with an eye to the future, included economic botany in his work (35) and apparently stimulated his student along this line. Galloway's life-long devotion to practical botany and agriculture was apparent early in his college days. It was later written that "while attending college he spent all of his spare time, including vacations and almost every holiday in practical work in the horticultural department, especially in green house work" (14). With a particular interest in floriculture, he graduated with a Bachelor of Agricultural Science degree in 1884.

Every indication suggests that, by the time of his graduation, Galloway had chosen to pursue a career involving crop plants. He must have recognized that he was on the threshold of expanding professional opportunities in American botany during the last decades of the nineteenth century. By the 1880s, the so-called "New Botany" had entered the college curriculum through the efforts of such teachers as William G. Farlow at Harvard, Charles E. Bessey at Iowa State and later the University of Nebraska, and Thomas J. Burrill at the University of Illinois. Farlow's European training and Bessey's adaptation of Sach's *Lehrbuch der Botanik (Botany for High Schools and Colleges, 1880)* were especially vital to transplanting fresh ideas from abroad to an American milieu. Botanical instruction, increasingly laboratory oriented, stressed new trends in botany such as morphology, physiology, and pathology in addition to the traditional areas of description and classification. Attention to the living plant also held promise for agriculture in the form of crop improvement and protection. By the mid-1880s, these developments translated into the establishment or significant expansion of almost a dozen American botanical laboratories at agricultural colleges, state experiment stations, and the United States Department of Agriculture (USDA) (8, 34). Galloway desired to be a part of this new and expanding botany.

After graduation, he continued to work as a horticultural assistant for the University and was asked to supervise the Horticulture Department's exhibit at the New Orleans Exposition. After an eight-month stay in Louisiana, he returned to Columbia in 1885 where he was placed in charge of the University's

greenhouses and gardens. Upon his return, Galloway also decided to further his education. He began to take graduate classes in botany, working again with Tracy, in addition to special courses in chemistry, biology, and foreign languages (14, 41).

Soon, Galloway's interest in plant diseases emerged. Tracy most likely influenced this decision and enhanced Galloway's awareness of new opportunities in plant pathology. Partially funded by the state agricultural and horticultural societies, perhaps the first research support of its kind in Missouri (7, 14), Galloway presented papers at meetings and wrote a number of articles on local and regional plant disease problems. Together with William Trelease, of the Shaw Botanical School in St. Louis, he participated in a Standing Committee on Injurious Fungi for the Missouri Horticultural Society. His first paper, *Puccinia graminis-Rust of wheat, oats, etc.*, published in the agricultural periodical *Colman's Rural World*, in June 1885, raised questions about the biological relationship between barberry and stem rust (10).

For the next two years, Galloway investigated other fungal diseases including potato late blight, apple scab, persimmon leaf-blight, celery blight, and begonia leaf blight. While not especially original, although often based on his microscopic observations, these papers nevertheless provided useful information on the basic biology of fungi, introducing the subject matter to state agricultural interests and making them aware of a new science dedicated to understanding plant diseases. As Galloway wrote, "Doubtless every horticulturist has had some experience with the minute plants known as fungi, and we dare say few have [been] so fortunate as not to have been troubled, at some period of their existence, with one or more of the many species of rust, or mildew, that cause such a vast amount of damage to cultivated plants" (16). His paper *Parasitic Fungi of Missouri*, published in the *Annual Report of the State Board of Agriculture* in 1887, was the first systematic and economic mycological work conducted in the state (17). Galloway and Tracy collected nearly 300 species of plant-pathogenic fungi, of which 14 had not been described. Job Bicknell Ellis of Newfield, New Jersey, a noted systematic mycologist, aided in the identification of species and would become an important correspondent for future mycological information.

It was the practical side of plant pathology, however, that seemed to hold the most interest for Galloway during this early, formative period. He told Missouri horticulturists that "a knowledge of the life history of these parasites is of the utmost importance, as it will enable us to attack them at their weakest point" (16). In his lectures and published papers, both in society literature and in local newspapers, he stressed useful instructions for disease control. He recommended current trial remedies such as kerosene emulsion for apple scab (12) and sulfur for celery blight (11). His research also allowed him to verify the

practicality of traditional cultural practices such as the removal and destruction of infected leaves for controlling begonia leaf blight (15).

Galloway apparently realized that plant pathologists were on the verge of a major breakthrough in the chemical control of plant diseases. By 1886, he had become a proponent of testing a copper sulfate mixture that had been introduced into the United States from France the year before and vigorously promoted by Frank Lamson-Scribner at the USDA (13). Galloway was particularly impressed by the recent attention that applied plant pathology had received at the USDA. Reviewing the progress of the work there under Scribner in 1886 for Missouri agriculturists, he lamented, "For years our crops have been devastated by these minute and insidious foes, and no attempts worthy of mention have been made to combat them." Now, however, Galloway was pleased to inform them that "a plan of operations designed to give the work its fullest practical value is being developed" (18).

Galloway's interest in plant diseases gained him access to the network of scientists and professionals shaping the new discipline. From the University of Missouri, he corresponded with the leaders in American plant disease research such as Farlow at Harvard and Burrill of Illinois (14). Commissioner of Agriculture Norman Colman, a fellow Missourian and editor of *Colman's Rural World*, also had learned of Galloway's talents. This connection held major implications for the future of USDA science and plant pathology in the United States. In 1886, Colman offered Galloway a position as assistant systematic botanist at the USDA; Galloway declined the offer (14). His immediate career focus lay elsewhere. However, when the USDA expanded the Section of Vegetable Pathology in 1887, Colman considered Galloway the best choice for a new assistant to Frank Lamson-Scribner. Galloway accepted this offer from Colman.

When Beverly Galloway arrived in Washington, D.C., he shared quarters with others in the one room that the Section of Vegetable Pathology occupied on the third floor of the old Administration Building. The staff that Galloway joined included Scribner as Section chief, two other assistant mycologists—Erwin Frink Smith and Effie Southworth, three or four clerks, and a typist (14). The Section was then only a shadow of the organization that, through Galloway's nurturing and guidance, would become the Division of Vegetable Pathology in 1891 and later the Division of Vegetable Physiology and Pathology in 1894.

Galloway's tenure as an assistant mycologist began with a continuation and intensification of the work initiated by Scribner on grape diseases, but lasted only one year. When Scribner was called to the Directorship of the Tennessee Agricultural Experiment Station in 1888, Galloway was the logical choice for Section chief—the first of many portentous administrative moves. As the new chief, Galloway understood that the Section's value lay in practical service to

its main constituency, the growers. Nevertheless, even though he continued to emphasize applied plant disease research, he also strongly supported the basic scientific research that would lead to significant breakthroughs in the years to come.

From the start, Galloway's qualities as a leader and his political acumen were evident. As chief, he took advantage of the ground that Scribner had prepared and began to parlay his own vision into a dynamic and well-respected system of federal plant pathology. He initially continued the grape disease research begun under Scribner and, in addition to confirming the work of Scribner on the method of spread of the black rot fungus from leaf to berry (25), he demonstrated that Bordeaux mixture could protect up to 99% of the grape crop from black rot (26). He also shepherded an expansion of USDA vistas of plant disease research to include the understanding and chemical control of diseases caused by a range of fungi on an increased number of crops.

Galloway demonstrated his political skill by making the Section more responsive, and therefore more necessary, to "farmers and gardeners all over the Union." He sought input from growers as to which disease problems needed study (23). He also sought reciprocity from the agriculturists to aid in the growth of the Section, requesting them to "write to your Congressman urging him to. . . use his influence in securing the appropriation for the investigation of plant diseases" (20). The proof of Galloway's success was that the Section received significantly more mail—an increase from 500 letters in 1887 to 3000 in 1890—and increased appropriations (27). When Galloway had taken over as chief of the Section of Vegetable Pathology in 1888, the agricultural budget for the fiscal year included just \$5000 for work on plant diseases in both the field and the laboratory. In 1890, Congress allotted \$15,000 for disease investigations and the appropriations bill broadened the mission of the section from an emphasis centered on "diseases. . . due to parasitic fungi" (39, Act of March 3, 1887, 24 Stat. 495) to the investigation of "diseases injurious to fruits, fruit-trees, grain, cotton and other useful plants. . ." (39, Act of July 14, 1890, 26 Stat. 283, 285–86).

Galloway had inherited Scribner's successful system of using growers as special agents to do field experiments at key locations around the country. Although Galloway understood the necessity of using these agents, he considered the system to be only temporary. He was not entirely satisfied that growers could consistently carry out the requisite careful, scientific experiments. One element of his plans to fulfill what he viewed as a growing need for scientists, instead of special-agent growers, in performing field research was the establishment of a USDA experiment station. Thus, while utilizing the opportunities provided by the grower-agent systems for moving the science of plant disease control forward, Galloway also worked within the federal system to

promote the establishment of the new federal experiment station. Agricultural Commissioner Norman J. Colman supported Galloway's plans and wrote in 1888 that such a federal experiment station "would be of untold value" and that USDA "could confidently expect that the practical results would be threefold what they are at present" (4). Nevertheless, on this issue Galloway suffered one of the rare administrative defeats of his career, and his desires for a station were left unfulfilled.

Not one to let such a setback derail his overall efforts, Galloway continued his drive to expand plant disease studies by encouraging more experimentation by grower-agents and by improving the Section's facilities. Whereas in 1888 grower-agents reported to Galloway from only five states, by the next year that number had doubled. Investigations of the Section also diversified from a nearly sole emphasis on fungicidal treatment of downy mildew and black rot of grapes to other grape diseases as well as diseases of apples, pears, quince, peaches, melons, strawberries, blackberries, tomatoes, and potatoes (4, 22, 23). Galloway also acquired a small greenhouse for experiments and devoted a great deal of attention to expanding the USDA fungal herbarium from the 1887 level of 3000 specimens to over 14,000 specimens in just a few years (21, 23). To keep up with the continued number of specimens, he brought Franklin Sumner Earle and Flora W. Patterson into the Department to assist with the herbarium work (14).

Galloway recognized that the true potential of Bordeaux mixture as well as other fungicides would only be realized if chemical sprayers were available for growers to purchase and use. In 1888, he took the lead in making chemical sprayers, particularly the knapsack version with improved pumps and nozzles, more accessible to growers (33). Manufacturers in the United States had initially shown an indifference to producing spray equipment (38). To counter the lackluster response by industry, Galloway personally oversaw the design and construction of a knapsack sprayer by two private companies. As an incentive for the companies, he also saw that these sprayers were promoted in government bulletins. The result was that the US sprayer industry continued to develop through the 1890s with increased specialization of equipment (33).

Galloway believed that one key to the successful expansion of plant disease work was publicizing the work of the Section. He was prolific in his use of publications to promote the applied plant pathology of the USDA. In addition to the annual Commissioner's report, he issued many bulletins and circulars on specific disease problems and their treatments. His bulletins were not merely unpalatable presentations of pages and pages of results from field trials. Rather they often contained graphic photographs of orchards or fields ravaged by diseases labeled, for example, "Pear Leaf Blight–Untreated" next to pictures of orchards with healthy trees and labeled "Pear Leaf Blight–Treated" (24). Also

included in his bulletins were definitive statements on the profits accruing to growers if they followed the Section's suggested treatments (24, 27) and on the amount of crops saved from diseases by chemical spraying (37). Galloway maintained careful and detailed records on numbers of bulletins issued and how quickly they were requested and distributed (23). All of this information provided powerful ammunition when he went before the Commissioner of Agriculture or Congress to justify the utility of the Section's work and make staffing and budget requests.

Galloway's contributions to scientific publishing also included launching the first true serial dedicated to phytopathology in the United States. In March 1889, the Section of Vegetable Pathology assumed responsibility for the publication of the *Journal of Mycology*, and that *Journal's* mission shifted almost exclusively from systematic mycology to economic plant pathology. Although he saw this *Journal* as another venue to publicize the applied work of the Section, Galloway also valued the *Journal* as visible proof of the fundamental research being done by USDA scientists. It was distributed to "botanists of all countries" and advertised to the scientific community that Galloway and his assistants were interested in the critical, basic questions about plant diseases (23). Through solicited contributions from other experts, such as Scribner at the Tennessee Experiment Station and Byron D. Halsted of the New Jersey Experiment Station at Rutgers, Galloway also demonstrated his commitment to coordinating the Section's activities with the pathological work being undertaken at the nation's agricultural experiment stations.

Galloway had a keen ability to discern the unique abilities of each of his assistants and to find new assistants who would contribute to and expand the Section's mission. When he became Section chief, he had the able services of Erwin F. Smith and Effie Southworth as assistants. He added David G. Fairchild and Merton B. Waite in 1888, Newton B. Pierce in 1889, Walter T. Swingle in 1891, Herbert J. Webber in 1892, and Albert F. Woods in 1893 when Fairchild departed on his way to becoming a world-renowned agricultural explorer.

Through his assistants, Galloway positioned the Section to respond to grower needs when major disease problems occurred in various areas across the country, especially in regions where the state agricultural experiment stations were not yet mature enough to solve pressing problems of the day. While Southworth and Fairchild continued the mycological efforts of the Section, Galloway extended Smith's assignment to seek solutions to the problem of peach yellows in the East and upper Midwest. He sent Pierce to see what could be learned and done about a disease of grapes that was having severe consequences in California. He sent Swingle and Webber to Florida to respond to several major diseases of citrus that threatened to ruin that industry. Fairchild eventually went to the state of New York for three growing seasons to investigate the leaf blights on

pear, apple, cherry, quince, and plum. Through the efforts of these assistants, Galloway continued to demonstrate the ability of the USDA in the 1890s to reach out both demographically and scientifically to explore new aspects of plant pathology and to respond to regional agricultural problems. These efforts produced positive, quantifiable results for farmers.

Galloway continued to survey new opportunities for expanding the work of the Section and to make it more useful to growers. Interest in plant physiology rose sharply after 1885, due in large part to the advance of botanical sciences in the United States and the publication of important treatises from American scientists such as G. L. Goodale. As interest in this new branch of botany developed, Galloway and his assistants embraced plant physiology as an attractive new opportunity—perhaps in response to the perception that too much attention was being given to the pathogen with not enough to the host. Thus, after the elevation of the Section to Division status in 1891, Galloway began almost immediately to explore the idea of incorporating plant physiology into the Division (28). He sought the views of his assistants and found Swingle and Webber particularly amenable to the idea. Their backgrounds in plant breeding undoubtedly influenced their opinions; however, both assistants appear to have been motivated also by a desire for the Division to take action before this potential scientific plum went elsewhere. By the end of 1893 Galloway had recruited Albert F. Woods, a student of Charles E. Bessey's at the University of Nebraska, to take up the plant physiology effort. Woods' coming to the Division represented the evolution of plant pathology research along the special lines that Galloway envisioned. Galloway referred to this as "a proper division of labor" whereby "each member of the force is enabled to concentrate his efforts on a comparatively few subjects, and he is thereby in position to become [an] authority on them" (29).

Galloway's Division was renamed the Division of Vegetable Physiology and Pathology in 1894. To support the new emphasis in physiology and the continuing work in pathology, he succeeded in obtaining new quarters for the Division including laboratory and greenhouse space that was "better lighted, better heated, and better adapted in every way for the work than those formerly used" (31). Addressing the Division's name change directly and illustrating the relation of plant physiology to pathology, Galloway told American agricultural interests "that to make the [Division's] work of the greatest practical value it must be based upon a knowledge of the way plants behave in health. . ." (30).

Plant physiology would, in fact, serve as a guiding factor in the foundation for investigating disease resistance and the selective breeding of resistant cultivars that would become a central focus of USDA plant pathology in the early twentieth century. "Recognizing the great importance of the cereal crops produced in this country and the immense losses resulting. . .from the attacks of

certain diseases, particularly rust and smuts" (29), Galloway recruited a new assistant, Mark A. Carleton from the Kansas State Agricultural College, in 1894 to head the USDA's cereal disease investigations. Galloway discerned that the best hope of managing rusts lay with selective breeding for resistance (28). Because "no experiments to determine the rust resistance of different varieties" had "been made in this country," Galloway decided that a "large scale" program had to be developed (31). Thus, Galloway once again demonstrated his ability to recognize and pursue the fruitful path in research for the benefit of American farmers. He was one of the first pathologists in the nation to see the future of plant breeding for disease resistance—a future that would be reflected in widely acclaimed successes in USDA efforts in the coming decades.

To anyone following events in plant pathology at the USDA in the late nineteenth century, Galloway, or "B.T." as his friends called him, must have appeared like a sailor in the rigging with his eyes constantly on the horizon. Early in the 1890s, he had begun to ponder the idea of a centralized and coordinated system of USDA plant research similar to and in an equal status institutionally with the Bureau of Animal Industry (42,43). Clearly, Galloway saw himself playing an integral role in the fulfillment of this vision, and he desired USDA plant pathology to act as a catalyst for the reorganization. He waited for the right opportunity to act and continued to position himself and his Division in the "driver's seat" of federal plant research.

The right time for reorganization came just as the twentieth century dawned. Several factors contributed to a new climate of receptivity to change at the USDA. On the one hand, there was the growing record of successes in plant pathology and physiology. By the late 1890s, a number of America's most destructive crop diseases had been controlled successfully through the use of chemical compounds, and breeding for resistance looked highly encouraging for controlling other menacing diseases. Through fundamental research, particularly in areas such as plant bacteriology, USDA scientists had brought worldwide recognition to the Division of Vegetable Physiology and Pathology barely 15 years old and to the USDA in general. Then, there was a new Secretary of Agriculture installed in 1897, James "Tama Jim" Wilson, who, unlike his predecessor, James Sterling Morton, favored expanded scientific activity in the Department (1, 6). But it was Galloway who nurtured the seeds of change. His role in the formation of the Bureau of Plant Industry came at the height of his career and, as much as any single event, demonstrated his impressive leadership abilities and political talents.

The opportunity for Galloway to make his move toward reorganization came with the death, on September 11, 1900, of William Saunders, chief of the USDA Division of Gardens and Grounds. For nearly 40 years, Saunders had virtually ruled Gardens and Grounds, jealously guarding its facilities. When USDA

plant pathologists needed greenhouse and ground space, they were thwarted constantly by Saunders' reluctance to make space available. With Saunders' death, Galloway discerned a way not only to gain the experimental facilities for plant pathology and physiology but also to expand his own sphere of influence within the USDA. On his own recommendation, he was appointed as the new Chief of the Division of Gardens and Grounds while his former deputy, A. F. Woods, was placed in charge of the Division of Vegetable Physiology and Pathology. Thus, skilled individuals with strong interests in plant diseases controlled the operations of two major USDA divisions. Galloway later wrote that his ultimate "plans at the time were not mature, but Doctor Woods and I, being so intimately associated, saw opportunity for the closest kind of relationships" (14).

Galloway may actually have been less than candid in his recollections because, before long, his larger plans did appear. Soon after assuming control of Gardens and Grounds, he began to cultivate support among the different division chiefs for reorganization of plant research. His task was a difficult one. Galloway recognized that the existing decentralized structure resulted in severe competition for funds, duplication of efforts, and an overall discordance in research. He believed that centralization of research and administration was the answer. Convincing his colleagues, however, was another matter. At the time, seven "militantly independent" units were involved in USDA plant work (40).

Galloway found allies for the cause of centralization in Milton Whitney of Soils, whom he had helped hire, his former boss, F. L. Scribner of Agrostology, and G. B. Brackett of Pomology. But he found other division chiefs more difficult to persuade. Frederick V. Coville of Botany would have none of it. Leland O. Howard of Entomology, Harvey W. Wiley of Chemistry, and Gifford Pinchot of Forestry also were cold to the idea. According to John A. Stevenson, Coville "objected violently to such a plan being forced on him by 'squirt-gun pathologists' and others whom he did not consider real botanists, and who clearly had no intention of asking him to head the proposed new organization" (40). Coville's animosity was probably less about personal temperament and more symbolic of an uneasiness about botany's increasing specialization in the late nineteenth century. Within the USDA, but also in colleges and agricultural experiment stations, battle lines were drawn over the role of traditional systematics in botany versus the growing successes in the applied botanical sciences.

Coville's opposition, however, was effectively silenced when Galloway managed to win over Wiley and Pinchot. More important, Secretary of Agriculture Wilson backed Galloway's bureau plan. On October 1, 1900, Wilson issued the order for consolidation into a unified bureau to be considered by

Congress. When Congress convened in December 1900, USDA plant pathologists continued to exert a major influence in the movement for the Bureau—both Galloway and Erwin F. Smith helped draft the new legislation in the Agricultural Committees. Under the Appropriations Act of March 2, 1901, the Bureau of Plant Industry (BPI) was to commence operations on July 1, 1901; the Act was confirmed by Congress on June 3, 1902. In all, five divisions involved with plant research were consolidated in the new Bureau: Vegetable Physiology and Pathology, Gardens and Grounds, Pomology, Agrostology, and Botany. Galloway was appointed as Chief of the new Bureau of Plant Industry by Secretary Wilson. This fulfilled Galloway's goal of unifying plant disease research and confirmed that he was indeed still a rising star within the USDA. During the first year of operations the scope of BPI was enlarged with the addition of Seed and Plant Introduction, Congressional seed distribution, experimental work with tea, and the Arlington Farm (36, 41).

Galloway wrote in his first annual report as Bureau chief, "Our policy is to give the broadest opportunity for each branch of work, to unify the various interests, and to bring about a spirit of harmony and friendly rivalry stimulating to all. The results fully justify the statement that nowhere will be found a more united organization and a more earnest desire on the part of each officer to make his work second to none of its kind in the world" (32). For the next 12 years, under his leadership, the BPI achieved and maintained this world-class distinction in agricultural plant research. Among the various successes during the first decade of the BPI, the improvement of important crop plants through breeding and the introduction of foreign varieties, plant nutrition work, and research on dryland agricultural and horticultural development in the Great Plains States are noted examples. As a result of the boll weevil infestation in cotton-growing areas throughout the South, the BPI initiated field demonstration on improved farming practices under the direction of Seaman A. Knapp's Office of Farm Management. This demonstration work encouraged the movement that would lead eventually to the Cooperative Extension Service (1, 6). It was "the old division of plant pathology and physiology," however, as a former associate, David Fairchild later remarked, that "formed the center" of the "new Bureau" (9). Success stories out of this Division remained the cornerstone of USDA practical service. The management of plant diseases through fungicides and breeding for resistance was placed on a more solid foundation. Self-boiled lime sulfur proved highly effective against peach brown rot and apple scab. William A. Orton showed the value of breeding and selected resistant cultivars to cotton wilt before turning to the development of resistant varieties of cowpeas and watermelons. Other areas of research also looked promising. Bacteriology continued to be a major focus of USDA research, with the classic work being done in E. F. Smith's laboratory on the crown-gall organism. Forest tree

diseases began to receive attention, with the discovery of the incursion of white pine blister rust playing a significant role in the passage of Plant Quarantine Legislation in 1912. Galloway, himself, not only fulfilled his administrative duties but also conducted investigations into the health of nursery crops.

From the position as Chief of a relatively small Section with two assistants and several clerks and an annual appropriation of \$5000 in 1888, Galloway had risen through the administrative ranks to take up the mantle of leadership for 1480 federal employees and an annual budget of \$1,709,000 by the end of the first decade of the twentieth century (14). He thrived in this administrative capacity and remained vigilant for new opportunities that could be beneficial to USDA science. In addition to his other administrative duties, he also chaired a committee to oversee the construction of a new building for the Department of Agriculture (44). When David F. Houston replaced Wilson as Secretary of Agriculture in 1913, he chose Galloway as his Assistant Secretary. No one knew the Department better. The editors of the *Country Gentleman* wrote, "Houston wants by his side a man who knows intimately the functions and machinery of the Department of Agriculture, a man who can share with him some of the big administrative burdens of the office" (7).

Assistant Secretary Galloway shepherded many improvements in administrative procedures and personnel management, and he succeeded in securing increased salaries for researchers and greater appropriations overall for research. He also encouraged closer cooperation between USDA plant scientists and their counterparts at agricultural colleges and experiment stations and was active in the efforts to secure passage of the Smith-Lever Agricultural Extension Act in 1914 (41,44). Since his first days working with grape growers at the USDA, Galloway had shown a particular appreciation for demonstration work. Although he clearly understood the value of fundamental science, he never lost sight of the essential nature of the practical side of science, particularly in the federal service. In 1913, he expressed his views on extension (7):

It is my contention that scientific investigations to be thoroughly practical must bring all discoveries up to the point where they are ready to be widely disseminated. To benefit agriculture largely you must scatter your knowledge broadcast. While extension work is sooner or later doomed to failure if it is to consist mainly of talk, there is just as much danger to the interests of agriculture by maintaining an attitude of scientific seclusion. The ideal plan is for the scientific work and the demonstration work to go hand in hand, each dependent on the other and each helping the other.

One year after his appointment as Assistant Secretary, Galloway left the USDA for the only time in his long and dynamic career when he was called to accept the Deanship of the College of Agriculture at Cornell University. This separation from federal government service proved to be the low point of his professional career. The same success that he had enjoyed at the USDA eluded

him at Cornell. Perhaps this was because he was the administrative successor to the legendary Liberty Hyde Bailey; maybe it was because he arrived at a very difficult time for relations between College faculty, alumni, and University administration; or maybe his Washington style simply failed to work in the role of administrator in the university environment. Whatever the reason, by 1916, suffering from stomach ulcers and a victim of faculty rancor, Galloway had resigned from the position at Cornell and returned to the USDA in Washington, D.C. (2,3). His inability to promote harmonious relations at Cornell and to implement his plan for the College of Agriculture must have been a particularly stinging disappointment for someone so accustomed to administrative triumphs.

For the next 16 years at the USDA, Galloway, as senior plant pathologist, served as an advisor, primarily in the areas of foreign plant introduction and quarantine. Never again would he be as involved in administrative leadership as he had prior to his time at Cornell. His primary legacy remained the creation of the BPI. His old nemesis, Frederick Coville, summed it up best when he wrote, "The Bureau of Plant Industry is the chief finished product of Dr. Galloway's ability as an organizer. . . . The present organization. . . is undoubtedly the most useful bureau in the Department and by far the best example of a bureau conducting a large amount of research work and turning the results over to the public in the form of definite recommendations for changes in existing agricultural practice" (40).

As administrator and plant pathologist, Beverly Galloway had a remarkable career. From assistant mycologist in the Section of Mycology to Chief of the Bureau of Plant Industry to Assistant Secretary of the USDA, Galloway demonstrated an enthusiasm and degree of intelligence rare among science administrators and served as the guiding architect of the science of plant pathology during a formative period when the foundations of the science were being laid.

He received the LL.D. from the University of Missouri in 1902 and an honorary Ph.D. from the University of Maryland in 1923. He served as President of the American Botanical Society, was a charter member of the American Phytopathological Society, and was a fellow of the American Association for the Advancement of Science.

In declining health, Galloway retired from the USDA in 1933. Outside of the time he continued to spend in Washington, he often visited his winter home in Florida with his wife, Agnes Stewart Rankin, whom he had married on September 5, 1888, and their three sons (19, 41, 44). Beverly T. Galloway died on June 13, 1938, having been a visionary leader in the formative development of agricultural science and plant pathology in the United States.

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