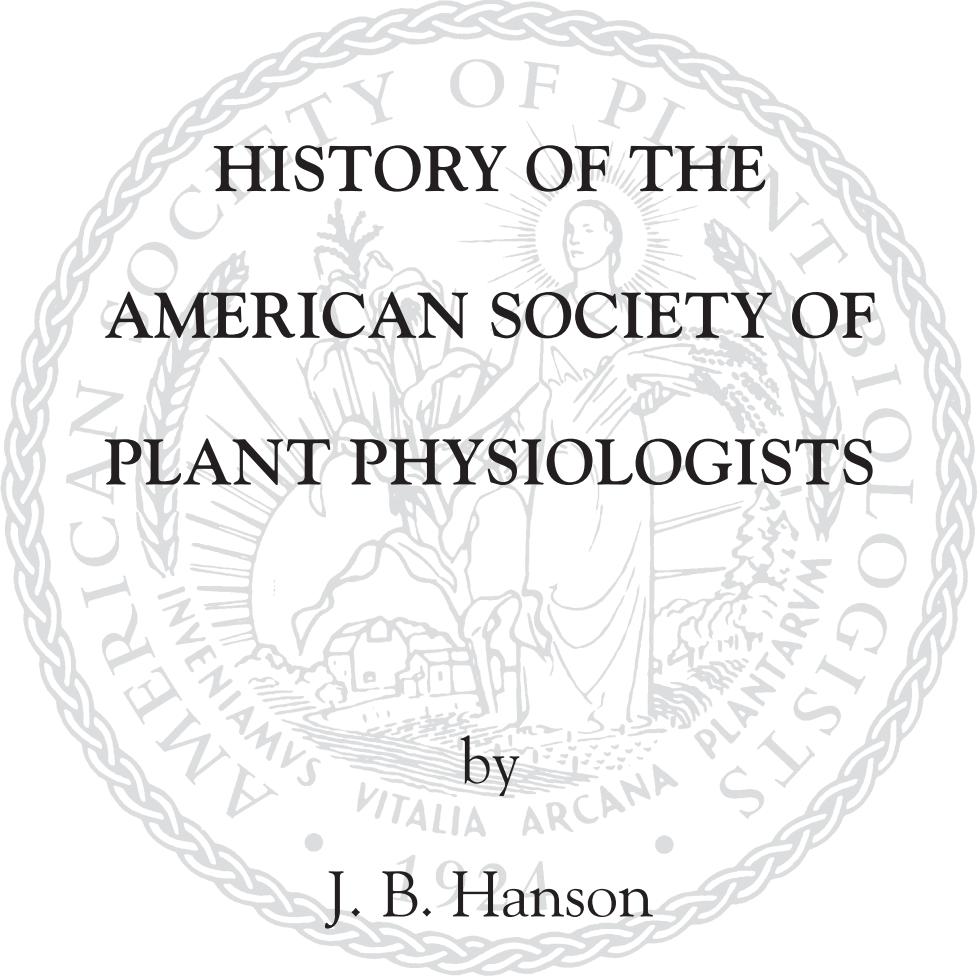


HISTORY OF THE
AMERICAN SOCIETY OF
PLANT PHYSIOLOGISTS

by

J. B. Hanson

American Society of Plant Physiologists



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American Society of Plant Physiologists, Rockville, Maryland

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Preface

Although I had served the American Society of Plant Physiologists as a member of the executive and other committees, as president, as a trustee, and as an interim director, and should have known a good deal about its affairs, I found on starting this history that I knew little about events governing the development of the Society. This was true not only of events prior to World War II, but also of many that occurred afterwards. And I had two misconceptions. First, I thought it would be impossible to write the history of the Society without including the history of the Science. This was dead wrong. Only in few cases did developments in plant physiology seem to impinge on the progress or functioning of the Society (*e.g.*, advances in the science have had sweeping effects on the content of the journal, but little to do with the problems of publishing it, other than decisions on editorial appointments). Second, I thought that I would need to interview the more senior members of the Society to gather working material on pre-war events. At the suggestion of the trustees, who commissioned me to write this history, I initially spent a good deal of time taping interviews. However, it turned out that significant documentation was available, and a letter or report from 1928, for example, proved to have an immediacy and authority not equaled by any memory of that year. One exception to this—the letters and documents sometimes raised important questions, and I have been helped a great deal by calls to people who could provide answers. The point is, in the interviews I seldom knew what questions to ask—they appeared later as the subject opened up—and in the end I made little or no use of the taped interviews. (These tapes are held in the ASPP archives, as are the documents cited herein.)

The Society should be very grateful to J. Fisher Stanfield and his wife for gathering, organizing, and packing into five cartons the older records of the Society, and to Jerry W. McClure for discovering these thirty years later and rescuing them from the trash bin. An invaluable source of information on R. B. Harvey's drive to found the Society came from the J. B. Overton archives of the University of Wisconsin: Folke Skoog and Eldon Newcomb led me to these documents. Robert Muir found W. F. Loehwing's papers in cardboard boxes (also about to be dumped). Paul Kramer's papers at Duke University were a valuable resource for the war and post-war years. Folke Skoog, Aubrey Naylor, Martin Gibbs, Albert Frenkel, Walter Bonner, Allan Brown, Donald Davis, John Boyer, Israel Zelitch, Joe and Patricia

Cherry, and Paul Voth have furnished useful documents. So many people have been helpful in clearing up questions that I hesitate to mention names for fear of omitting and offending, but those to whom I turned many times should be identified: Patricia Cherry, Martin Gibbs, William and Winifred Klein, Paul Kramer, Robert Muir, Aubrey Naylor, Ray Noggle, Jerry Schiff. Mary Clutter furnished valuable data on research funding. My wife, Becky, assisted greatly in collecting and sorting documents, gaining as much interest in the history as I did. Donald Briskin tutored me in the more intricate uses of the computer (as a retired person I had to be my own secretary and graphic artist). The headquarters staff were always kind and helpful as we rummaged through the attic and files, and Mel Josephs provided constant encouragement. Finally, I am greatly indebted to Jody Carlson and Mel Josephs for their careful editorial work, and for their patient explanations of why their corrections and emendations were necessary. They made a book out of a manuscript.

One last thing. History writing turns out to be tracing sequential events, and the events are dominated by people. I have tried very hard to be fair and sympathetic in discussing what people have done, but also to tell it straight—like it was, to the best of my ability to discern how it was. This opens the possibility of offending without meaning to do so. Also, not every name is mentioned that could be mentioned, for the reason that events governed the course of the writing, and in turn the individuals involved. Not all events were known—the information accumulated has gaps in it—and in some instances minor activities had to be eliminated as the narrative was getting long and tiresome. In any of these cases if I have erred or offended, please forgive.

J. B. Hanson
Urbana, Illinois
May 1, 1989

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Chapter 1 Origin of the Society, 1923-1924

In his 1954 address to the American Society of Plant Physiologists (1), Dr. Charles A. Shull, who was undoubtedly the dominant figure in establishing the Society, said:

The germ of the Society had been lying like a dormant seed in the matrix of American botany through the upper teen-ages of the twentieth century. Like Ohga's Manchurian Lotus seeds lying in the ancient peat beds, it needed some exacerbation to change the conditions from dormancy to active germination. When germination actually started, I do not know. It began presumably in the frustration of plant physiologists at their own impotence. I had become aware of this feeling, for I was asked many, many times by thoughtful and worried colleagues, why plant physiologists never had a dinner at the annual conclave of botanists. I was too honest to suppress my real convictions, and always answered: 'Societies have dinners, sections of societies do not!' The thoughtful, long faces which greeted this terse summary of the situation revealed that there were depths of thought, and brooding, in the hearts of plant physiologists. Moreover, there was the constant, more or less pompous parading of plant pathologists, and after 1915, of ecologists, with their annual dinners, president's addresses, and active support of their own objectives which struck deeply at the heart of the problem. It was not that the plant physiologists wanted to parade pompously in competition with anybody...perish the thought! But all of us felt that our field lay at the heart of botany; and we wanted to give our support, especially our financial support, to our field.

Shull continued with his germinating seed analogy, saying that there were roots of an organization forming, and there were rumors that an epicotyl would emerge at the Chicago meeting in 1920. But nothing happened, presumably because of "quarantine regulations which kept the supposed leader of the plant physiologists at home, where some childhood diseases had erupted." The "supposed leader" was undoubtedly Shull himself, who at the time was professor of plant physiology and

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head of the Botany Department at the University of Kentucky. In a short history he published in 1941 (2), Shull identified the meeting as that of the American Association for the Advancement of Science (AAAS). Specifically, the meeting was that of the Botanical Society of America, which was a member of AAAS and held its annual meeting with the AAAS "Christmas [vacation]" meetings, usually the last four days of December. Shull (2) commented that the proposal to form a separate society of plant physiologists was rejected in 1920, mainly by the votes of non-physiologists.

The idea of a separate society smoldered until the December 1923 meeting in Cincinnati of the Botanical Society, "at which time concrete steps were taken toward a permanent organization" (2). (And by which time Shull had moved to the more prestigious position of professor of plant physiology at the University of Chicago.) Also, the solicitation of support within the Botanical Society was confined to dues-paying members of the Physiological Section—no more involvement of non-physiologists. In his 1954 address, Shull commented that in the autumn of 1923 "definite growth of an epicotyl began." He did not mention that the growth was at the expense of the Physiological Section or, at least, was so conceived to be by some members of the Section and other botanists.

Classical botany knew no boundaries—all areas of plant science were included—but with the growth of the science there was the inevitable advent of specialization. Within the profession, botanists became better known as plant taxonomists, plant anatomists, plant geneticists, plant ecologists, plant physiologists, and so forth. These are the traditional biological disciplines applied to plants. The common interests and collegiality in the plant disciplines had led to the creation of disciplinary sections within the Botanical Society. So far as possible, scientific sessions at the annual meetings were organized under these sections, and efforts were made to achieve disciplinary balance on boards and committees. As Shull indicated, however, some disciplines, notably pathology and ecology, had found reason to form separate societies. Why? Because these new societies would better serve their disciplines. At least this was the belief, and time has supported it.

A question of allegiance is inherent here, one that has evoked strong emotional responses in the past and, to some extent, continues to do so. Should the study of biology be centered on the organism or on the discipline? Traditionally, botanists study plants as integrated organisms (which they are), growing, reproducing, evolving, and adapting to specific environments. Botanists recognize the need for detailed studies of structure and function and reproduction, but some resist strongly the separation of these studies as isolated disciplines. If the parts are taken away, what is left of the whole?

On the other hand, comprehensive studies of the plant as a whole are very often limited by lack of detailed knowledge of the parts. And as one seeks this knowledge, broader interests in aspects of structure and function arise. It is often necessary to look for working support in fields outside classical botany. It is not

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unusual for plant physiologists to draw more heavily on the work of biochemists, biophysicists, microbiologists, animal physiologists, and cytologists than on that of other botanists. On the practical side, many plant physiologists have strong ties to the agricultural plant sciences—agronomy, forestry, horticulture, and plant pathology. The net effect is that these expanding ties and interests give the discipline an identity and life of its own in the broad field of science. Botanists, yes, frequently; but sometimes, also, agronomists, horticulturists, and biochemists, brought together by a common interest in the vital, or living, processes of plants. And as Shull implied in his remark about only societies having annual dinners, professional identity is established by creating a professional society. The day comes when the scientist decides he is not really a botanist, but rather a plant physiologist.

These, then, were the forces impelling the germination that Shull described and also the source of the sometimes bitter antagonism that Shull did not describe, but which was troublesome for some years.

Shull is often credited with the founding of ASPP, but he insisted that "it was not my privilege to have anything to do with the actual founding of the Society, even if I did serve as its first president" (1). He pointed out that during the autumn of 1923 he was on leave with AAAS organizing its first exhibition of scientific equipment for the winter meeting. He claimed to have been too busy to take much interest in what was rumored to be taking place in plant physiology circles, although he admitted to speculating with Dr. Burton E. Livingston, professor of plant physiology at Johns Hopkins University and permanent secretary of AAAS, on what might be in prospect (1).

Who, then, was the leader in getting action on formation of the Society? In his 1941 report (2), Shull credits R. B. Harvey, associate professor of plant physiology at the University of Minnesota. Harvey was in a favorable position to get action as he was secretary-treasurer of the Physiological Section of the Botanical Society (commonly called the "Section"), which served as the professional organization for plant physiology in America. According to Shull, Harvey surveyed the plant physiologists and, on finding a considerable majority favorably disposed, prepared a constitution and bylaws which were approved by the group and published as Bulletin No. 1 in May 1924. Officers were elected and took office July 1, 1924.

In his terse 1941 summary, Shull neglected completely the nature and magnitude of Harvey's determined effort and the conflict which arose from it. Although Harvey had advice and moral support from Shull, Livingston, and others, the available evidence is that he took the initiative in getting the Society formed. It appears that Harvey was tired of endless talk and decided to use his office to organize a plant physiology society. He had vehement opposition, but he left it impotent by carrying on as if it didn't exist.

An anonymous note (3) in the ASPP archives says:

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Balloting for adoption of constitution Dec. 14, 1923 (date of counting out ballots) to March 25, 1924. Results of election reported by committee (R. B. Harvey, Jessie P. Rose and L. O. Regeimbal) on March 25, 1924, which should be considered the date of adoption of constitution. Constitution first published in Bul. 1, May 10, 1924.

It is not clear what is meant by "counting out ballots." Harvey had drafted a constitution and bylaws and had distributed them with a ballot prior to the Cincinnati meeting (December 27, 1923 to January 2, 1924) at which the formation of the American Society of Plant Physiologists was first announced. The ballots for this initial vote were counted on December 14, 1923. In a 1924 letter to the Section (4), Harvey indicated that the organizing activities had covered the period from April 30 to December 15, 1923. The following undated letter (5) by Harvey for general distribution to the Section seems to be from this period. Note the emphasis given to taking over *Physiological Researches*. One of the main attractions of the proposed society was that it could publish a journal devoted to plant physiology. And here was an established journal in need of a sponsoring society.

Physiological Researches, the only American journal devoted exclusively to the publication of plant physiological research is in need of better support from the plant physiologists. Dr. B. E. Livingston is willing to have *Physiological Researches* made the official publication of the plant physiologists provided a sufficient number of subscriptions can be obtained to put the continuation of the magazine on a good basis. At present there are 87 subscribers in the United States, still the magazine has not had a deficit until the present year, and now only a small deficit is to be borne by the owners. No doubt the subscription can be increased if the magazine should be made our official publication and opened up to contributions from the whole group of plant physiologists at as low a rate as consistent with the number of subscribers.

If this journal should be taken over by the plant physiologists it would not mean the establishment of a new publication to which there might be some objection. But it would yield a much needed means of publishing for the plant physiologists, and would lend support to one of our best research publications.

Will you kindly indicate on the enclosed blank whether or not you favor this undertaking?

Also the secretary has been asked to determine how the membership of the Plant Physiological Section of the Botanical Society of America stands in regard to the reorganization as the American Society of Plant Physiologists proposed in the enclosed copy of the Constitution and By Laws for this society, the new organization to assume the functions of the present Plant Physiological Section.

The membership address list of the plant physiologists for this year has been included in an international address list which will be mailed to you through the kindness of the Thompson Institute.

Before taking up Harvey's results from this recruitment something should be said about *Physiological Researches*. This early effort to establish it as the ASPP

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journal came to nothing, even though a majority of those voting approved adopting it (6).

Physiological Researches was founded in 1913, edited, managed, and published (under the name of the journal) by Burton E. Livingston, of the Laboratory of Plant Physiology, Johns Hopkins University. Printing was done in Baltimore by Waverly Press. Daniel T. MacDougal of the Carnegie Institution of Washington and Herbert M. Richards of Columbia University were co-editors. Preceding the editorial and subscription instructions, the following description was given (7):

Physiological Researches is a series of scientific papers embracing contributions toward the advancement of a fundamental physiological knowledge of plants and animals. Practical ownership is vested in the contributors. Each volume, to be completed in no specific time, is to contain not less than 300 pages, the latter numbered serially throughout, with plates and text figures. Each research is to be issued separately, numbered in the current volume as well as in the entire series, and publication follows as soon after acceptance of the manuscript as the process of manufacture will allow.

Publication of each research is preliminarily announced by an author's abstract, which is also reprinted in connection with the full page. Every contribution bears the date of receipt of the manuscript from the author, and the month and year of publication of the preliminary abstract, and of its own appearance.

Livingston seems to have adhered to this code, which thus becomes an object lesson in what does not succeed for a journal of plant physiology. The attempt to incorporate allied animal physiology did not work—all 19 published researches in the two volumes are with plants if the two dealing with fungi are included, as was common then. *Physiological Researches* probably became identified with plant physiology because the editor was one of the prominent plant physiologists of his day, as was his co-editor MacDougal. However, the title was inappropriate for what it had become and, judging by the subsequent success of *Plant Physiology*, titles are not trivial. Last, stating that practical ownership is vested in the contributors, even though true, does not substitute for a real proprietorship vested in a society. Successful communication between scientists most often is supported by collegial bodies. Livingston's personal effort to publish a journal resulted in only 19 papers published in 10 years. In May 1923 the journal suspended publication.

Unfortunately, details of what went on at the Cincinnati meeting of the Physiological Section are lacking. Minutes have not been found, possibly because the secretary, Harvey, was home sick (8). There is no record of action on sponsoring *Physiological Researches*. It is clear, however, that someone acting for Harvey reported on the formation of the American Society of Plant Physiologists and proposed that the new society should take over the functions of the Physiological Section. Subsequent documents suggest a somewhat dumbfounded response, then a stirring of resistance, followed by an approved motion to continue the meeting as

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the Physiological Section (9), and, last, another approved motion—typical of academe—for appointment of a committee to investigate the matter (8).

In a letter dated September 24, 1924 (10), sent to all members of the Botanical Society with physiological interests, William J. Robbins, University of Missouri, chairman of the Physiological Section, wrote:

As you are aware, the announcement of the formation of the American Society of Plant Physiologists was made at the Cincinnati meetings of the A.A.A.S. and the proposal advanced that the new society should take over the functions of the Physiological Section of the Botanical Society of America. Discussion in the section meeting at which the proposal was made showed little sentiment in favor of such a change, but by unanimous vote a motion was passed that a committee be appointed to look into the matter and to report at the next meeting of the section.

The committee consisted of William Crocker, chairman, J. B. Overton, and R. B. Harvey. This was an obvious effort to provide representation on both sides of the proposal. Crocker, director of the Boyce Thompson Institute for Plant Research, newly elected president of the Botanical Society, and chairman in 1923 of the Plant Physiological Board of the Physiological Section, was strongly opposed to creation of a separate society. Overton, professor of plant physiology at the University of Wisconsin, seems to have been more objective (by 1928 he was a member of ASPP) but initially he sided with Crocker. Harvey, who had had Crocker as a thesis advisor at the University of Chicago, was the major protagonist for the proposed society. (There is no record of Shull's involvement at this stage, although he attended the Cincinnati meeting—Crocker mentions talking to him [11]—and it would be out of character for Shull not to have spoken up for the society, at least in Harvey's absence. If the vote for a investigating committee was unanimous, however, Shull must have supported it.)

The investigating committee's activities began almost immediately. On January 5, 1924, Crocker (9) wrote to Harvey to say that he found the plant physiologists at the Cincinnati meeting quite up in the air regarding the new society—the matter had not been before them long enough to call for a rational decision, and not all plant physiologists had been able to express an opinion. He pointed out that the plant pathologists had formed a separate society because they needed an outlet for publication, and because “at that time The Botanical Society was a very exclusive body.” Reorganization had eliminated the exclusiveness, and Crocker suggested that the Botanical Society might agree to doubling the size of the *American Journal of Botany* to meet the publication needs of the physiologists.

Crocker believed there could be justification for forming a new society if a circular letter reaching all plant physiologists, “including all that have ever been members of the Division,” proved that a majority were in favor. Crocker's office was getting out a full set of addresses of plant physiologists, and he offered to

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distribute them. He added that, "before finally organizing an independent society we should sit in with the Advisory Board of the Botanical Society and try to come to a definite understanding with them so as to have their sympathy and support also so as to make sure that we did not injure the mother organization. It is possible that such a conference would remove the obstacles that a new Plant Physiology Society is designed to overcome." The letter closed with cordial good wishes for a happy New Year.

Although the letter seems to have left open the possibility of forming a plant physiological society, it implied that properly informed plant physiologists would not vote for such a society, and must not if it would injure the mother organization.

Harvey's position following the Cincinnati meeting was given in his letter of January 12, 1924 to Overton (8), most of which appears below:

Dr. W. J. Robbins has informed me that you have been appointed a member of a committee "to look into the formation" of the American Society of Plant Physiologists. Dr. Wm. Crocker is chairman and I am the third member.

Dr. Appleman notified me that the motion for the committee was made by you. I do not know what information you wish, consequently I am supplying general information on the procedure which was legal in every regard. I shall be glad to provide any further information that is proper.

The proposal for obtaining a ballot of the members on this organization was made by a member in good standing, as was also the proposal for taking over Physiological Researches as our official publication. In fact, the latter was one of the owners of Physiological Researches and a Johns Hopkins graduate.

The Constitution as sent out to the members was first submitted to the members of the Plant Physiological Board for suggestions, and these suggestions were included before the copies were mimeographed for the membership. The ballot was mailed to all of the members of the section who have shown interest in its progress by paying membership dues at any time since 1921. At the end of one month after mailing I gave to the Plant Physiological Board by mail the results of the returns of the ballot at that time. With the ballots there came back several amendments which seemed of such import that we ought to have a vote on them before the Christmas meeting. These changes were sent out for ballot as amendments, together with ballot for officers, since the terms of the officers expired at this meeting.

The ballots that were returned up to Dec. 27th gave a majority in favor of adopting the Constitution and By Laws with all amendments and electing Dr. Crocker president, myself as secretary-treasurer and Dr. Duggar member of the Physiological Board of Control of Botanical Abstracts. The total number of votes cast was 31; the total number of the members replying was 35. Some did not reply at all. The paid up membership of the section was 62. This is not a bad percentage of ballots returned...

The ballot was inspected and checked as correct by a committee consisting of myself, Jessie P. Rose and L. O. Regeimbal, who are members in good standing. The committee certified that the Constitution and By Laws and all amendments were adopted and the officers elected. This I telegraphed to Dr. Shull as soon as I was able to do so.

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I expected to bring all of the data to Cincinnati, but got a bad cold on Tuesday...I came down the next day with what proved to be the influenza, and did not get out of the house until the next Thursday, Dec. 27th...when it would have been too late to attend the most important session.

It was entirely proper to meet as the Physiological Session at Cincinnati, and I sent out the program under that caption. However, the majority of the members over their signatures voted for the American Society of Plant Physiologists to take over the functions of the Physiological Section of the Botanical Society of America. As secretary, then, I could do no other than notify members that the society was so adopted. Without soliciting dues, twenty-two persons have sent in dues to the society to date, indicating an enthusiastic reception...I take it that a ballot of this kind is confidential, therefore do not consider publication of names desirable.

I have heard that a number of prominent physiologists expressed themselves as unfavorable to the project at Cincinnati; no doubt these men are influenced somewhat by their position in the Botanical Society. Still, for every one of these men...I can show you a man of equal importance in favor of it, and besides, many younger men. Some persons have written to me in vehement terms against the attempt of a few in the "charmed circle" who although in the minority, wish to block the organization. I am bound to count one vote the equal of another, in spite of the voter's wealth and influence...

To dispute this further is to challenge my veracity and good intentions, as well as that of the members who have inspected the ballot... This proposition has been up for three years, and everyone has had time to be fully informed. Besides a perfectly definite constitution was prepared and criticized by the Board before it was sent out.

What more do you wish done?

I had printed membership cards to be sent out at the beginning of the year. The real test of the organization is going to come when the number subscribing to it is determined, but what shall I do with the twenty-two who have already sent in checks, or how can I overthrow the wishes of a majority to please the minority?

Do you consider it wise to canvass also for membership to a Physiological Section when the Constitution specifically states that the society is to take over the functions of the section?

The only fair way is to give the majority the right to subscribe if they wish.

Overton sent Crocker a copy of this letter. Although no copy has been found, something very similar must have been written to Crocker.

Harvey's basic position is reasonably clear—by "legal" procedures he had submitted to the active electorate a ballot for formation of the American Society of Plant Physiologists, defined by a constitution and bylaws, and he had secured the majority approval required to establish the Society. The small number of returned ballots did not alter the essential fact that the Society now existed. There was no point in canvassing for those preferring membership in the Section since the Constitution stated that the Society assumed the functions of the Section. (This last point was retained in the bylaws of the final draft of the constitution [12]: "Section VIII. This society shall assume the functions of the Physiological Section of the

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Botanical Society of America and until July 1, 1925, membership in this society shall be limited to persons holding membership in the Botanical Society.") The real test now was how many more Section members would sign Society membership cards. The card (13) asked for name, address, "subjects on which you are doing research," and \$1 dues.

It is curious that some of Harvey's supporters in this venture did not advise him that his drive to transform the Section into the Society was unnecessary and provocative. Unnecessary because a proposal for the Society could have been widely distributed to plant physiologists without regard to their other affiliations. Provocative because Section VIII of the bylaws (quoted above) convinced the botanists that they were being raided by the plant physiologists, a predictable source of resentment and opposition. (Overton to Crocker, June 26, 1924 [14], "the unfortunate thing about this whole affair is that an attempt was made to convert the section of the Botanical Society into a plant physiological society.") Harvey probably felt that getting enough members to support a journal required adopting an existing professional group. In addition, both Shull (1) and Harvey (8) indicated that formation of a society from the section had been discussed for three years, and perhaps this conversion was the expected procedure for starting the society.

Note that Harvey telegraphed the results of the ballot to Shull as soon as he was able—the "supposed leader of the plant physiologists" (1) seems to have been leader in fact, even without office.

It is also interesting that Crocker was elected president, an office he never assumed (he was president of the Botanical Society in 1924). It is not clear how this election is to be interpreted since in Harvey's view the Section had now become the Society. Harvey continued to act as secretary-treasurer in this unified capacity much to the chagrin of Crocker who complained to Overton about the Section office being in Harvey's hands (15) and remarked that Robbins was trying to induce Harvey to resign. This complaint came after Harvey had sent out the new ballot for Society officers, and Crocker added, "You know I was elected president of the society according to Harvey. Evidently Harvey decided they needed a president more to his liking for this ballot was called for before my resignation went in. Perhaps Robbins could call for a ballot on a new secretary-treasurer for the section as Harvey did for the society."

These and other bitter remarks arose because Harvey ignored Crocker and proceeded over the next few months with his membership drive and with getting a revised constitution and bylaws approved and a slate of officers elected. As early as February 2, 1924, Crocker wrote to Harvey in a exasperated tone (11), denying Harvey's contention that formation of the Society had due consideration by all members of the Section. "I have not yet talked to a single man who did not feel that the formation of a new society was sprung upon him without due chance for consideration. Even Shull, who is heart and soul in favor of the formation of the Society, acknowledged this point to me at Cincinnati." The letter shows that

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Crocker was offended by Harvey's reference to a "charmed circle"; Crocker observed that he, too, had received vehement letters but that his had condemned the hurried formation of the Society without the chance to consider things fully; he was amused by Harvey's talk of a majority that totaled only 18 or 20 votes; he wondered why the Advisory Board had not been consulted on the constitution and bylaws; he questioned the wisdom of proceeding with the collection of dues when the appointment of an investigating committee "implied that things would stand as they were until this committee had fully investigated the affair up to date." Crocker then specified what the committee should proceed to do.

First, that all of your correspondence concerning the formation of the new society should be turned over to them for consideration. You assert that I was elected president of the new Society. On that basis I ought to have as free access to the correspondence...as you. The committee was also approved of by a unanimous vote. This means that the plant physiologists are back of them and still in the face of this you refuse to turn over this correspondence. I (and I am sure the same is true of Doctor Overton) am not alarmed by vehement statements...I am not so much interested in one opinion or another as I am in what the majority of the workers in plant physiology are thinking.

Second, that we should proceed to canvass not only members of the section, but all working in plant physiology in the United States, soliciting a full expression of their opinion on every phase of this matter. I believe that we should present to them at the same time the financial and other difficulties in carrying out the formation of the Society and in adopting the publication of *Physiological Researches*. Their troubles do not end with a vote, but after they adopt the *Physiological Researches* they have got to support them financially. Twenty or thirty members at a dollar each will not go far in supporting *Physiological Researches*...

Now I wish that you would give consideration to the points that I have brought out in this letter and answer these points. Up to date, I have not succeeded in getting a single direct answer from you on any suggestions that I have made.

Harvey's immediate reaction to this was to send out a letter and ballot on February 13 to "all persons interested in physiology" (6) asking for approval of the constitution and bylaws, and whether the recipient was willing to subscribe to *Physiological Researches*. This time the alternative of remaining with the Physiological Section was offered, as follows:

I am in favor of adopting the Constitution of the American Society of Plant Physiologists and enclose dues herewith (\$1.00 to July 1, 1925).

I am in favor of rejecting this Constitution and remaining a member of the Physiological Section of the Botanical Society of America and enclose dues herewith (\$.50 for 1924).

The letter states, "The Constitution was codified from the standing rules of the Physiological Section, combined with suggestions which were made by mem-

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bers of the section from time to time." It adds that up to February 13, 1924, two-thirds of the persons enrolled in the old section specified that they wished to become members of ASPP and had paid dues. Most of these were willing to subscribe to *Physiological Researches* at about \$6 per volume of 400 pages if it could be made the official publication. The journal now had 160 subscribers and at least 250 more were needed.

On February 16 Harvey replied to Crocker (16), sending along excerpts of correspondence concerning formation of the Society. He also reported on his latest polling effort:

Some of this correspondence came in with personal messages, and some with messages not dealing with the Society. I have typed those parts which are relevant to the formation of the Society. Kindly read again my letters which contain information in this regard. I can find correspondence dating back to last April and some of that intervening has been lost. So far as I know there is no provision requiring the secretary to keep correspondence and no funds for such files have ever been available.

I have also a considerable volume of correspondence from Dr. Livingston regarding plans for taking over *Physiological Researches* but as I understand the function of the Committee, this material is not pertinent, and I have not the time to copy it.

I have maintained that only members of the Physiological Section of the Botanical Society had a right to vote in determining the policy of the section. Others should be consulted only after the section had expressed a choice by ballot.

According to your requests I have sent out to all persons in the U.S. interested in Plant Physiology copies of the Constitution with as much data on the expense of operating *Physiological Researches* as can be given at present, and have asked for a vote on the propositions. We may know how many persons outside of the society or section will favor the organization and I wished to have information at the same time on how many persons will subscribe to *Physiological Researches*. As far as I can see this should cover all the ground you mention.

I hope you will remember that I have a great deal to do and no stenographic help...I am giving all the lectures and laboratory courses which were given at Chicago by yourself, Dr. Knight, Miss Eckerson and assistants, each year and am allowed only half time in which to do it, with \$1200 for assistance. The other half of my time includes running about a dozen research men and directing six assistants in the Experiment Station, as well as carrying on my own projects and papers. The load was thrown on me unexpectedly by sickness...and has not changed for three years. No one seems to care about helping out the situation although several know about it. We will have to get a good strong fighting Physiological Society before concerted effort will be able to iron such things out. The trouble doesn't stop at individuals; societies are to blame for subjugating related fields with annihilation of rights.

This last paragraph provides a clue to Harvey's personal motivation in his drive for a plant physiological society. Harvey had been appointed head of the Section of Plant Physiology and Agricultural Botany in the Division of Plant

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Pathology and Botany upon the illness of his predecessor but without replacement for his vacated position. He was badly overworked, a situation that he believed would not have occurred if physiologists had the recognition given by a good, strong, fighting society. He believed that other societies (botany, plant pathology?) were to blame for subjugating related fields (perhaps plant physiology?). In short, much of Harvey's determination may have derived from his dealings with botanists and pathologists in St. Paul.

The letter continues with four pages of abstracts from letters. These from Shull show the strong advisory role that he carried from the beginning of Harvey's drive:

April 30, 1923

I have looked over the proposed constitution, and as you know approve the spirit of it. At the same time the membership requirements will be put under fire, and the weight of all other sections of the Botanical Society ranged against it, unless we qualify the membership clause, say as follows: "and who are members in good standing of the Botanical Society of America"...It ought not be necessary to attach this clause, but the proposal will encounter bitter opposition without it, I fear. Perhaps after a year or so that clause could be repealed after the Society is going well...I certainly hope some such thing can be consummated at the Cincinnati meeting.

May 22, 1923

In regard to the by-law you suggested limiting membership for two years to the Botanical Society. I think that should meet all valid objections. The Phytopathology organization has not hurt the botanical society, but has helped it. Physiological organization would have the same effect, especially if we do not try to run a magazine. [This last may have initiated Harvey's inquiries of Livingston on taking over Physiological Researches.]

Oct. 10, 1923

Your note appended to a proposed notice to be sent out, also preliminary constitution for our new society was received yesterday. I think it is quite appropriate to send out the notice, and I am sending in my ballot already on the proposition. I showed it to Livingston, and he thinks it is all right, but he also thinks that there may be some opposition to the new organization, or that some of the old timers will want to talk their talk out on it.

There are two points I am suggesting for discussion at Cincinnati. I think a more euphonious wording could be adopted as a name for the Society. It is a mouthful to say "Plant Physiological Society", and I like American Society of Plant Physiologists a little better. The other point is in regard to nominations. On account of the fact that the vote is so scattering, it will frequently happen that a small group can virtually control an election. That is not desirable no matter who the group may be, and I believe the fairest election is obtained when there is a preliminary nomination ballot, followed by an election ballot, the latter carrying the four highest names...I would not favor the scheme of the Botanical Society of having one set of names proposed by the society at large and another by "The

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Organization". That simply means that the "Organization" wants a chance to name men that the society would not name, so that they will not be neglected in the running.

I note that you have annual dues at \$.50 per year. If we have a journal don't you think the dues should pay for the journal? I fear that an official journal without the necessity on the part of the members to support it, will not work out in practice. I believe that we will have to adopt a standard price of \$5.00 or something like that...

Dec. 3, 1923

I ran into a pretty rabid anti- in Washington the other day, one of Schramm's men who fights because of an alleged danger to Botanical Abstracts. If there is a good strong nucleus favorable should we go ahead and organize in spite of the opposition? They would all get on the band wagon in a hurry, once it was done.

I think there is great need for a strong aggressive group, who will stand up for the same kind of program nationally for the physiologists that the pathologists have. As long as we fail to organize and take charge of our practical affairs effectively, they will continue to be appropriated by ecologists on the one hand and pathologists on the other. The pathologists are encroaching on the physiological field all the time, calling what they do pathology, even when there is no pathological technique in it...I would like to see the physiologist get the credit and the opportunity that is due him because of the practical utility of his work.

Many of the letters dealt with adopting *Physiological Researches*, most approving, but without enthusiasm. One letter from Crocker concerned the address list that Crocker was having typed.

Crocker was not satisfied with Harvey's attempt to meet his requests. He wrote to Overton as follows (17):

I am enclosing herewith material I have just received from Doctor Harvey. We have got him at least part way off of his high horse, but he is still showing his bull disposition to push right ahead without suggestions from the outside. I think he is the most impossible man to work with that I have ever met. Sooner or later the plant physiologists of the United States have got to knock him into a cocked hat and take into their own hands the conduct of their efforts rather than permit him to usurp them all.

In his reply Overton (18) agreed that "the plant physiologists have got to take matters in their own hands and conduct their affairs on their own responsibility without any help or advice or hindrance from Harvey."

On March 8, Crocker (19) wrote Overton that he felt the plant physiologists had been very inadequately informed by Harvey's biased communications, and he enclosed a draft copy of a letter which he proposed they circulate to correct this matter. Overton (20) approved but suggested that the statement in the draft that said they had received very little information "partly because the secretary-treasurer has

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not retained the correspondence and partly because he has not been willing to turn over what he has retained to the committee" be modified. "I feel that the information he did turn over is very meager, but if that is all he has, he may object to that sentence." Circulation of the letter was postponed.

On March 18, Harvey (21) wrote as follows to Overton (and Crocker):

The thirty days allowed for the return of ballots has now expired and the vote shows a majority in favor of adopting the constitution of the American Society of Plant Physiologists...There are 63 persons who have paid \$1 dues, signed membership cards, and specified for the society. Nineteen have paid dues of 50¢ and...voted for the section. Eleven have paid dues of \$1...but have not specified in favor of either organization...Nearly all the society members and a number of those in favor of the section have subscribed to *Physiological Researches* if it is taken over...by the society. This with the present subscription list of 160 would give us about 235 subscriptions. At \$6 per year that should give us \$1400

Dr. Trelease has suggested that we should cut down the size of the magazine...and print ten issues a year. What do you think of this? Evidently we will have to get together on both publication and society and I believe most everyone is willing to stand by the majority. A number of those voting against the society have pleaded for the unity of the physiologists as a whole however the vote should turn out. I believe they are good sports and will agree to the decision of the majority since it is rather a large majority. Will you kindly take up this proposition with the workers at the University of Wisconsin and try to get as many subscribers as possible?

[Harvey added a handwritten postscript.]

Doesn't this give all the data necessary for the decision of the committee now? If not, on what points do you wish further information?

Harvey's letter is that of a winner, gracious and confident that the opponents must now come around and be helpful. Unfortunately, they did not. Overton (22) called Crocker's attention to the postscript and remarked that Harvey thought the matter was settled and the committee had no further function, and he asked Crocker's reaction. For himself, he wondered where Harvey got the 67 persons and how these were figured to represent the plant physiologists of the U.S. Crocker (23) replied that he had written Harvey for a roll of Society and Section memberships. "I shall write to about thirty of the so-called members of the society and see whether they joined under a misunderstanding." He expressed concern that every plant physiologist not be in a position where he must support *Physiological Researches*.

On March 27, Harvey (24) responded to Crocker (with a copy to Overton) with a ballot committee report and the names of the individuals voting in each category.

March 25, 1924

REPORT OF COMMITTEE

The undersigned committee of the American Society of Plant Physiolo-

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gists has examined the signatures of the ballots cast on the question of the organization of the American Society of Plant Physiologists and certify the majority of this organization and the vote cast as follows:

In favor of the society.....64 or 67%
 Against the society 23 or 24%
 Not specified but \$1.00 dues paid 8 or 9%
 Total vote cast and dues paid95

Signed: R. B. Harvey
 Jessie P. Rose
 L. O. Regeimbal

Note that Harvey was now making formal reports in the name of the American Society of Plant Physiologists. In his covering letter (24) Harvey said this should settle the case since the majority was large and the vote rather complete, and he added, "We must have a statement from the committee of the section to clear up the situation very soon. We have only a few weeks left for making arrangements with *Physiological Researches* ..."

Overton (25) inspected the roster and wrote Crocker it was apparent that the younger members favored the society and *Physiological Researches*, "and that the old 'war horses' or 'aristocrats,' as Harvey calls us, including you and me...are in the minority."

Crocker (26) wrote Overton that the committee should say nothing until the Washington meeting and that he would have no part in taking over *Physiological Researches*. By April 3, he decided to send a tough letter to Harvey and to circulate his previously planned letter to all plant physiologists, and he sent drafts of these to Overton for approval (27). In reply, Overton (28) seemed troubled by these documents and said that he had discussed them with Kraus, Tottingham, and others. He apologized for somewhat mutilating the letter to Harvey, but he feared it might be used to say that "we are high-handed or autocratic"; he also suggested removing one section of the circular letter. On April 12, he wrote again (29) saying, "let Harvey go to the devil—let us get the replies to the circular letter, then consider making a report. While this is being done let us do nothing or say nothing to give Harvey ammunition for a come-back about our autocratic methods."

Thus, Crocker and Overton became a rump investigating committee, ignoring Harvey, who after all had been ignoring them. Harvey seemed to sense that if his tiny society was to survive it must not lose its momentum to stalling committee tactics. If the committee would not put out a report on the ballot, he could. And he did (30), venting some of his exasperation over their claims of noncooperation. Observe that he now spoke of the investigating committee as if he were excluded (30):

The committee provided in the constitution of the American Society of Plant Physiologists certified to the investigating committee of the Plant Physiological Section of the Botanical Society of America on March 25th that the ballots

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returned to that date with subscriptions to either section or society were 67% in favor of the society. The paid up membership of the (society) was 64, a greater number than the section ever had... Twenty-three persons favored the section, and eight persons paid dues sufficient for the society, but did not express a preference...

This second ballot was demanded by the investigating committee and it resulted in a majority for the society of about the same percentage as the vote taken before the Cincinnati meeting. Signatures of all persons were inspected by the committee and a typed list of these included with certification of the ballot. Still two members of the investigating committee say "they have been able to receive very little information on the subject to be investigated." They make no mention of this vote in their recent undated circular letter. They have been supplied with ample information on all of the procedure regarding the formation of the society...

As soon as notified of the existence of this committee details of the procedure were volunteered to them. Subsequent letters gave all possible details and were accompanied by typed copies from thirteen letters from members of the plant physiological board and others pertaining to the action of forming the society...

The secretary has kept most of the correspondence of the society and everything necessary to a decision has been for two months in the hands of the committee...

There can be only one unity, that of the majority; the ballot has now been taken twice, and both times a majority was cast for the society...

Will you kindly obtain as many members for this organization of physiologists as are qualified? We are attempting to support a long established and necessary journal, *Physiological Researches*, and do not attempt to establish a new journal...

Neither Crocker nor Overton was sent copies of this letter, but they obtained them through associates. At this point Crocker sought support of other eminent plant physiologists. In a letter to Overton (31), Crocker said that John W. Shive, listed by Harvey (24) as a dues paying member of the new society, "is now very much against it because of the devious way that Mr. Harvey is using in trying to put it across." Shive recommended sending out to plant physiologists an analysis of Harvey's letter, a recommendation that no further action be taken until the matter could be discussed at a national meeting, and a list of all plant physiologists opposed to the Society. Crocker added that he would go over Harvey's letter and correspondence with five or six physiologists listed as favoring the Society who would be attending a meeting in Washington. Crocker later reported (32) that these men agreed that it was in order to ask for a delay until the Washington meetings but that the comments on Harvey's letter should wait until the occasion called for it. "All of these men feel it would be a wrong move to start this new Society."

Overton reported (33) that Tottingham, another signer for the Society, "was not now in favor of it under the conditions which we state," and "thinks with us that the best thing to do is to send out a letter recommending that the matter be delayed

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until the Washington meeting when it can be thoroughly discussed."

In late May 1924, Crocker and Overton (34) mailed out their "Recommendation of the Investigating Committee to American Plant Physiologists regarding action on the so-called American Society of Plant Physiology and on '*Physiological Researches*,'" along with "A Partial List of Plant Physiologists that Favor Remaining as a Section of the Botanical Society of America and are against taking over *Physiological Researches*." Both the recommendation and list were stated to be based on responses to the previous circular letter (unfortunately missing). They concluded that starting a new society and taking over a scientific journal needed a more thorough consideration and discussion than could be obtained by correspondence alone and that efforts to do so by a small group had led to a good deal of misunderstanding and confusion. The pair recommended that matters be left standing until they could be discussed at the Washington meeting.

Sixteen names on Crocker's list of 107 Section supporters are also on Harvey's list (24) of 64 dues-paying Society members. If those with vacillating allegiance are eliminated, Crocker came up with twice as many supporters as Harvey.

Harvey was not dismayed. Although the details are missing, he proceeded on the basis of the approved constitution to get a slate of officers elected to run the Society starting July 1, 1924, the beginning of the fiscal year, and announced the result in *Science* (35). C. A. Shull was elected president, R. P. Hibbard, Michigan Agricultural College, vice-president, and R. B. Harvey, secretary-treasurer (2). Looking back 30 years, Shull (1) made a puzzling comment about his election: "In the spring of 1924, if my memory is correct, two elections were held. It has always kept me from anything but a modest appraisal of my own importance to know that I was not the first choice of plant physiologists as first president of the Society."

There were two elections, but not both in the spring of 1924. The first was that which elected Crocker president in November-December 1923 and was effectively a vote of the Physiological Section. The second election of officers was conducted by the Society after the March 25 ballot had approved the revised Constitution (3). Hence, so far as can be determined, Shull's memory in this instance was faulty (and his modesty misplaced).

He gave his personal reaction to the election as follows (1):

I had not sought the office, and at the time did not even know what had been transpiring. It was a sudden situation that confronted me, and the longer I pondered it the more certain I became that I had either to accept the responsibility if I were to remain a member of the new society, or I must resign my membership and state the reasons that led me to run out on my group. During this difficult period there was much conflicting advice, and threadbare argument... There was also the constant fear that there might not be enough interest to support a journal, even if we attempted to start one. It was probably a favorable circumstance that I was inexperienced, too young to recognize

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impossibility...After several weeks of this soul-searching I came to the firm conclusion that the plant physiologists of my own age [46] or younger, would never be satisfied until we had either succeeded, or had gone through a financial wringer for our ideals.

So the die was cast. The long struggle that followed concerned primarily the survival of the Society.

While Shull debated his new responsibility, Harvey pursued his. He wrote a rebuttal (36) to the claims of Crocker and Overton, which pointed out that 56 persons on their list (34) "are not now members of either the Physiological Section of the Botanical Society of America or the American Society of Plant Physiologists," and of these 38 had never been members. Harvey counted 21 on the list who had paid dues to ASPP and five additional who had written they would accept the decision of the majority. He summed up with "an actual opposition of 25 persons against 83 members of the society in good standing." Then he attacked with accusations of stalling to prevent an election in the society and to continue the suspension of *Physiological Researches* and to force everyone who wanted a voice in the matter to go to Washington at an expense of \$100 to \$200. At a time when physiological journals needed support and there were no suitable texts in English, further suppression of the plant physiologists would be a detriment to the advancement of the science, whatever the officers of the Botanical Society (Crocker was president) may have considered to be their duty.

It was an effective letter. W. E. Tottingham, an influential professor of agricultural chemistry at Wisconsin, who, after talking to Overton, had been wavering (33), sent a note to Harvey (37): "Your circular letter is very much to the point. One glance at the non-members drawn up in the Crocker-Overton list convinced me where my support should go."

The election of officers specifically for the Society marked a clear change in the perception of what had been accomplished. The previous election, in which Crocker was named president, was confounded with the affairs of the Physiological Section. Harvey's second ballot (6), with its choice between dues for Section or Society, was the first step in resolving the two groups of physiologists; Crocker's opposition served to sharpen the boundaries. Despite the ties to the Botanical Society created by the ASPP constitution, the American Society of Plant Physiologists had been realized as a fully independent organization, and nothing said or done in the Physiological Section of the Botanical Society could negate or alter the Society's activities. Ignore them! Of course, Harvey had previously succeeded in getting the Society underway by ignoring Crocker's demands, but he operated within the Section as its secretary-treasurer, and his initial objective had been to transform the Section into the Society. Harvey was partially successful in that a majority of the active, dues-paying members joined the Society, but partially unsuccessful in that a vehemently protesting remnant of the Section remained. The new attitude appears to have been, "What difference does that make, so long as we

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fully activate this society and make it serve the science?"

Essentially the same attitude of independence had developed on the other side. As Overton wrote to Crocker (14), "Those men who prefer to have a plant physiological society and who insist that such a society is in existence can act as they please. The burden of a program of organization of becoming affiliated with the American Association is up to them, and I believe that if we go ahead and arrange our sectional program on our own hook, as we have in the past, if Harvey will not do so, we shall be in a very much stronger position than if we further combat the idea of the formation of this new society." Firm evidence is lacking, but it appears that the Section meetings were not arranged by Harvey.

Shull, as president, took over the lead for the Society at this point, probably much to the relief of the overworked Harvey. If the Society was to function as such it was necessary to arrange for the first annual meeting and to set up the program. The first step was successful affiliation with AAAS (2) (it must have helped that Livingston was permanent secretary!), which permitted attendance at the December 1924 meetings in Washington, DC.

On September 25, Shull sent a letter (38) to Society members urging attendance and asking that they send titles of papers to the secretary promptly. In the letter he said, "The officers have no other desire than to see all physiologists united in an aggressive, progressive program, and to give ourselves to the problems of consolidating and advancing the legitimate interests of plant physiologists, at the same time supporting with unquestionable loyalty the proper interests of all other groups of botanists." He suggested that the constitution might need some changes, and he asked for written proposals that would safeguard its functioning, increase its effectiveness, and provide for growth and development. A committee, chaired by S. F. Trelease, had been appointed to formulate a program for the promotion of research and the activities and welfare of plant physiologists. Shull took note of the opposition, "The officers realize that some of our best physiologists have not been in entire sympathy with this movement for a strong, aggressive, independent Society, with a vigorous program of public service in fundamental research." But he sent out an appeal for working together for the common good (equating the Society with all this scientific virtue must have embittered Crocker even more). He closed with a paragraph asking for "help in generating enthusiasm for the cause, in securing new memberships, and in preserving the rights of physiologists to an organization that expresses our ideals of service, our aspirations for progress, and our determination to have an equal opportunity along with other groups of Botanists for the advancement of our own field of science." Same message as Harvey's, but with eloquence.

The long-awaited Washington meetings were held December 29, 1924 to January 3, 1925. The first business meeting of the Society (39) was called to order at 9:30 AM on December 29 by President Shull. The first business was to accept the resignation of Harvey as secretary-treasurer and to appoint W. A. Gardner to the

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office *pro tem*. Nominations for membership were approved, contingent on revision of that part of the constitution requiring membership in the Botanical Society. Membership was reported to be 104. Shull reported an endowment of \$20,000 for three years at 3 percent interest, the proceeds to be used for any activity of the Society. All important measures were to be voted on by mail by the entire membership. Committees for policy, research, personnel, and codification of methods were discussed. The meeting was adjourned for a joint meeting with the Plant Physiology Section. Afterwards, presentation of papers resumed, with attendance ranging from 20 to 35.

The business meeting resumed at 9:45 AM, December 31. Election of a secretary-treasurer was authorized. The secretary was authorized to send out the findings of the journal committee and to determine if the members wanted to vote on their findings. A committee to campaign for new members was approved. The president was authorized to proceed as he saw fit in securing codification of methods of analysis of plant tissues. The meeting adjourned to 9:30 AM January 1 to consider constitutional amendments, a research committee report, and supplies for the secretary. (No record of this meeting has been found.) Presentation of papers resumed at 10:20 AM, with 30 to 40 attending.

Why did Harvey resign? After serving so doggedly under attack, he gave up the post of secretary-treasurer for the Society just when he had won his battle and could have entered upon relatively quiet service. Although he later served a term as president of ASPP (1936-37), Harvey never again stood out in Society affairs as he did initially. There are no documents that reveal anything except those telling of his work load (16). But his work load is the most likely reason—he needed to catch up on neglected duties at Minnesota. Harvey was a dedicated and highly productive scientist with broad interests, probably the foremost of his generation in applying plant physiology to agricultural problems (40). He was conversant first-hand with research abroad in Britain, Germany, and the USSR. He was also a scholar who had an extensive collection of historical materials relating to plant physiology and who wrote or translated (from the Russian) plant physiology textbooks. In Harvey's view, scholarly work took precedence over organizational.

A less likely possibility for Harvey's withdrawal is that he became disaffected with the way Society affairs were being developed and dropped out in consequence. There is no evidence for this, although it would not have been out of character.

Gardner, his successor, and another University of Chicago graduate student of Crocker's, was professor of plant physiology at the Alabama Polytechnic Institute, Auburn. This almost forgotten man was a valuable officer in the early days of the Society.

The minutes (39) say nothing about adopting *Physiological Researches*, general approval of which had been obtained by Harvey, but with reservations as to how it could be financed. The establishment of a journal committee implies that

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the means of publication had not been resolved. Shull must have decided by this time that a journal could not be established without an assured source of income, and in his reminiscence he said (1):

We were contemplating the publication of a new journal when there was not one cent of money, nor any financial credit to support such a publication. To meet this situation, without mentioning names, we pledged three percent income on a \$20,000 investment, or \$600 per year for at least three years, to bolster the treasury. Payments on this pledge began in July, 1925, six months before the publication of *Plant Physiology* was authorized by the Society. The payments were made quarterly, \$150 per quarter for five consecutive quarters, from July 1925 to July 1926, inclusive. I should not have to say that without Mrs. Shull's consent and earnest wish, this could not have been done [it appears to have been Mrs. Shull's \$20,000].

The pledge is that mentioned in the minutes (39), and although it was made "for any activity of the society," it is evident that Shull meant it for publication of a journal. Adoption of *Physiological Researches* was a dead issue for reasons unknown; perhaps the burden of reviving a loser seemed too great. Since Shull must have appointed the journal committee before the meeting (the minutes refer to sending out the committee's findings, not to its appointment), it appears likely that he had decided on a new journal for a new society, one named for the society, and that during his tenure as president he would start it out of his own pocket. How could he have known that the journal committee's report would support these decisions? He couldn't, of course, but other documents covering more than a decade show that almost all important decisions in the Society were referred to Shull for approval. He had tremendous personal influence in his generation.

Meanwhile, what went on in the meeting of the Physiological Section? It should be remembered that the Society members were constitutionally required to be members of the Botanical Society, and that they had dutifully adjourned their meeting to attend the Section meeting.

At the meeting Crocker delivered a majority report signed by himself and Overton (41). The minutes of the meeting (42) report that Harvey was present and "dissented from the report, but declined to make a separate minority report." The report continues, "the committee reported that a large majority of the plant physiologists of America favor retaining the Section as the national organization for plant physiology and that there was never more than a small minority of plant physiologists in favor of dissolving the Section in favor of an independent society. The report was adopted by a vote of those members of the Botanical Society present who consider themselves to be plant physiologists and was adopted on December 31 by the Botanical Society of America." The minutes were unsigned, but S. C. Brooks, Hygienic Laboratory, Washington, DC, is listed as secretary-treasurer—obviously they were not written by Harvey.

The report (41) itself ran to four single-spaced typewritten pages. It began

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by stating that the matter to be investigated was the apparent attempt to abolish the Physiological Section of the Botanical Society of America in favor of a plant physiological society. The committee assumed that it could only investigate the affairs of the Section and that it had no right or desire to investigate the affairs of an independent plant physiology society. Next, the committee recited the motions leading to its appointment, and then explained the reason for a majority report. Crocker, as committee chairman, advised Harvey, the secretary of the Section, "of the propriety of ceasing all his efforts to abolish the Section in favor of a society, until the Investigating Committee could canvass the whole matter and report back to the Section." He also requested the Secretary of the Section to turn over all correspondence on the movement to the committee for examination. But Harvey kept on soliciting memberships in the new Society and refused to turn over the correspondence.

From this point on, Crocker and Overton (the latter, as we have seen, in a more passive and acquiescent role) acted without Harvey. They sent out a circular letter using Harvey's list of plant physiologists, but unlike Harvey, who only pointed out the advantages of the Society, they pointed out the advantages of the Section. Answers to this first circular letter showed 117 in favor of the Section, 13 in favor of the new society, and 1 ready to go with the majority. They noted that many respondents complained that they had been misled by advocates of the Society and had joined the Society against their better judgment due to misrepresentation. The report concluded this section by stating that "such misrepresentation, as the means of dissolving the Section, is unjustifiable and to be condemned."

The report next took up the prevailing belief that the movement to abolish the Section in favor of the Society was initiated by a majority of the Plant Physiology Board of the Botanical Society, the governing body of the Physiological Section. Attempted verification of this point revealed that four members "had not heard either of the movement to abolish the Section in favor of a society or of the one to take over *Physiological Researches* until they received ballots on both propositions," which they now opposed. It was concluded that "both movements were initiated and approved by a minority of the Plant Physiological Board as then constituted." Names are not given, but Harvey and Shull were the obvious minority. The majority would have been Crocker (chairman in 1923), E. T. Bartholomew, L. I. Knight, and G. B. Rigg.

Last, it was reported that a circulated proposal to let matters rest until the Washington meeting where they could be settled in open discussion was approved by 103 to 3. The authors closed with the following summary:

1. That the movement to dissolve the section in favor of an independent society was initiated and carried on by an enthusiastic minority of the Plant Physiological Board;
2. that it was carried on under the false representation that most

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American plant physiologists favored the movement;

3. that this false representation led many to acquiesce to the movement who reversed their position as soon as they learned the facts of the situation;

4. that it was very indelicate for an officer of the Section to retain and use that office in a movement to dissolve the Section;

5. that there was never more than a small minority of plant physiologists in favor of dissolving the Section in favor of an independent society; and

6. that a large majority of the plant physiologists of America favor retaining the Section of the Botanical Society of America as the main national organization for plant physiology.

Throughout the report one senses an undercurrent of outrage at the perfidy of Harvey and Shull. Put more bluntly, it appears that Crocker despised them, never forgave them, never joined ASPP. For some years after, the Boyce Thompson Institute was a stronghold of opposition to the Society, but the practical effects of the opposition were minor. Once underway the American Society of Plant Physiologists grew steadily (fourfold in five years) and hardly felt this opposition, except as an annoyance at annual meetings. As Shull (16) had predicted, they all got on the bandwagon once it had started (well, almost all).

The Physiological Section did not foresee the bandwagon in 1924-25. Crocker's report assured them that the majority of the physiologists preferred to stay with the Botanical Society; they must have thought the new Society would fold shortly. Their own meeting was reported a success (42)—33 papers in the program and attendance "limited only by the capacity of the room assigned." Forty-one dues-paying members were present. The Section recognized, however, that there were inadequacies in serving plant physiology which had to be met. The minutes (42) show proposals referred to committees for action that would open the Section to members of "closely related societies" (e.g., plant physiologists in agricultural societies); provide one or two sessions on subjects of fundamental importance; publish full abstracts of papers "so that authors may receive full credit for all work done"; and investigate the feasibility of publishing a series of monographs. In addition, the constitution of the Botanical Society was amended to permit any member to register in any section in which he was interested (43). That is, a BSA member did not have to be a plant physiologist to belong to the Physiological Section. None of these actions had much positive effect, however. And, although the Physiological Section still exists, it has not been retained "as the national organization for plant physiology" (42).

Because Harvey did not present a minority report at the Washington meeting, the nature of his "dissent" is unknown. However, the rebuttal and counter arguments he used may be deduced from the correspondence we have already examined. By his determined drive Harvey succeeded in establishing the Society, but he failed to have it take over the Section or *Physiological Researches*. There is no indication of how Harvey felt about the failure—as Shull (38) did, he may have

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regarded the important thing to be the existence of the Society, with its future development and activities in the hands of its members.

References

1. Shull, C. A. (1955). [1954] Address to the American Society of Plant Physiologists. *Plant Physiology* 30: 1-4.
2. Shull, C. A. (1941). A Brief History of the American Society of Plant Physiologists. Bulletin No. 13, American Society of Plant Physiologists, pp 3-5.
3. Anonymous. (not dated). A.S.P.P. "Birth Certificate."
4. Harvey, R. B. (April 8, 1924). Letter to Physiological Section, BSA, which describes balloting procedures and results in forming ASPP and information given to the investigating committee of the Botanical Society. Pleads for unity and aid in getting additional members.
5. Harvey, R. B. (late fall 1923 ?). Letter to Physiological Section, BSA, asking for vote on reorganization as the American Society of Plant Physiologists, and adoption of *Physiological Researches*.
6. Harvey, R. B. (Feb. 13, 1924). Letter to Physiological Section, BSA, requesting support for *Physiological Researches* and choice of membership in the Physiological Section of the Botanical Society or the American Society of Plant Physiologists. Copy of ASPP Constitution and By-Laws, ASPP membership card and ballot enclosed.
7. Livingston, B. E. (1923). Untitled instructions, *Physiological Researches* 2: No.19, inner cover page.
8. Harvey, R. B. (Jan. 12, 1924). Letter to Overton explaining events leading to formation of the American Society of Plant Physiologists as announced at Cincinnati meetings of the Physiological Section, BSA, Dec. 1923.
9. Crocker, W. (Jan. 5, 1924). Letter to Harvey giving his reaction to the announcement of the formation of ASPP and assignment to the Investigating Committee.
10. Robbins, W. J. (Sept. 24, 1924). Letter to members of the Physiological Section, BSA, calling a meeting for 10 AM, Dec. 29, to hear report of the committee to investigate the formation of the ASPP.
11. Crocker, W. (Feb. 2, 1924). Letter to Harvey requesting correspondence on formation of ASPP, etc.
12. Constitution (May 1924). American Society of Plant Physiologists, Bulletin No.1.
13. Harvey, R. B. (not dated, circa 1923-24). Card for applying for membership in the American Society of Plant Physiologists, with blanks for name, address, and principal research subjects, annual dues \$1.00 payable to R. B. Harvey, Sec'y-Treas., University Farm, St. Paul, Minn.
14. Overton, J. B. (June 26, 1924). Letter to Crocker suggesting that they

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ignore the activities of the ASPP, etc.

15. Crocker, W. (June 14, 1924). Letter to Overton about Harvey's activities.

16. Harvey, R. B. (Feb. 16, 1924). Letter to Crocker sending abstracts of correspondence leading up to formation of ASPP.

17. Crocker, W. (Feb. 23, 1924). Letter to Overton about Harvey's intransigence.

18. Overton J. B. (March 6, 1924). Letter to Crocker agreeing that Harvey is impossible to work with, but has no additional suggestions.

19. Crocker, W. (March 8, 1924). Letter to Overton suggesting circulation of a letter to correct Harvey's biased communications.

20. Overton, J. B. (March 13, 1924). Letter to Crocker suggesting changes in draft of circulating letter.

21. Harvey, R. B. (March 18, 1924). Letter to Overton reporting ballot results on formation of ASPP and adoption of *Physiological Researches*.

22. Overton, J. B. (March 22, 1924). Letter to Crocker commenting on Harvey's report (ref. 21).

23. Crocker, W. (March 24, 1924). Letter to Overton regarding plan to determine if members joined ASPP under a misunderstanding.

24. Harvey, R. B. (March 27, 1924). Letter to Crocker regarding ballot that shows 67% in favor of ASPP; lists names on how members voted.

25. Overton, J. B. (April 1, 1924). Letter to Crocker with comments on ballot (ref. 24).

26. Crocker, W. (March 31, 1924). Letter to Overton with comments on ballot (ref. 24).

27. Crocker, W. (April 3, 1924). Letter to Overton transmitting drafts of a letter to Harvey and a statement for the membership.

28. Overton, J. B. (April 9, 1924). Letter to Crocker criticizing the draft letters (ref. 27).

29. Overton, J. B. (April 12, 1924). Letter to Crocker with further comments on Harvey's ballots and activities; ignore him.

30. Harvey, R. B. (April 8, 1924). Letter to membership describing procedures and results of ballot.

31. Crocker, W. (April 24, 1924). Letter to Overton about talk with Shive; proposal to talk with other prominent plant physiologists.

32. Crocker, W. (May 5, 1924). Letter to Overton on recommendations of other prominent plant physiologists (ref. 31).

33. Overton, J. B. (May 8, 1924). Letter to Crocker agreeing to a general letter recommending no action until December meeting.

34. Crocker, W. and J. B. Overton. (May 1924). Letter to plant physiologists recommending no further action until annual meeting. Gives list of plant physiologists opposed to forming a society.

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35. American Society of Plant Physiologists. (Aug. 8, 1924). Note announcing election of officers. *Science* 60: 130.

36. Harvey, R. B. (June 1, 1924). Letter to members of ASPP rebutting Crocker and Overton letter (ref 34).

37. Tottingham, W. E. (June 7, 1924). Note to R. B. Harvey accompanying a ballot supporting ASPP.

38. Shull, C. A. (Sept. 25, 1924). Letter to members as President of ASPP. Discusses program for the Washington, DC meeting; pleads for help in building society.

39. American Society of Plant Physiologists. (Dec. 29, 1924). Minutes of First Business Meeting, Washington, DC.

40. Anonymous. (1946). In Memoriam, Rodney Beecher Harvey. May 26, 1890-Nov. 4, 1945. *Plant Physiology* 21: vii-x.

41. Crocker, W. and J. B. Overton. (Dec. 29, 1924). Investigating Committee Report to the Physiological Section of the Botanical Society of America.

42. Botanical Society of America. (Dec. 29 and 31, 1924). Minutes of meetings of the Physiological Section.

43. Lewis, I. F. (Jan. 12, 1925). Letter to members of BSA reporting decision to continue the Physiological Section and to open membership in sections to all members of the society.