

Chapter 2

Getting Under Way, 1925-1930

January 1925 found the embryonic American Society of Plant Physiologists with 104 somewhat uncertain members, probably about the same number of dollars in the treasury, and a good deal of ill-will from some quarters. The Society was scientifically recognized, as evidenced by AAAS membership, but had no legal corporate identity. It had determined leadership in President C. A. Shull, a man willing to back his convictions out of his own pocket (\$600 a year was a lot of money—a year's groceries for the average family). It also had several interlocking problems to solve:

1. The membership had to be increased. Shull's gift guaranteed a few years of life, but, as with plants, life could be sustained only if there were growth—growth for resources, growth for the infusion of vigor into the science, and growth just to demonstrate that the Society was providing the long-sought professional identity. And in some minds, growth to show Crocker that ASPP would be the national organization for plant physiology.

2. The constitution and bylaws had to be rewritten to accommodate the full divorcement from the Physiological Section. It was especially important that membership be opened to plant physiologists who had no particular interest in the Botanical Society.

3. A journal had to be started, and soon. The fundamental appeal of the Society lay with its ability to provide forums for discussion and publication of research—that is, annual meetings and a journal. No journal, no growth, no Society.

4. Dues had to be established that would support the journal and overhead costs. Harvey had frequently been told that his one dollar dues would not support *Physiological Researches*, or any other journal, but he desperately needed to recruit members and he set the initial dues as low as possible by temporizing on the journal, pointing out that eventually five or six dollars would be needed. The time had come for membership dues to include those dollars.

5. Less urgent, but still to be attended to, was the matter of incorporation as a non-profit organization to provide a legal basis for holding property, receiving gifts and bequests, and freeing members from financial responsibility in lawsuits.

6. A little fence-mending was in order. Some gentle words and cooperative action were needed to mollify those plant physiologists who had been genuinely

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offended by the attempt to convert the Section into the Society. It would be much easier to expand the membership and influence of the Society in an atmosphere of good will.

The Start

Forty years after the founding of the Society, Wright A. Gardner, age 86, responded to inquiries about the early days and their problems with the following letter (1):

I am out of touch with the Society of Plant Physiologists. I never heard of a charter member group. Three men kept it from going on the rocks, as follows: Dr. Robert [sic] B. Harvey, Plant Physiologist at the University of Minnesota, Dr. Charles A. Shull of the University of Chicago and Dr. Wright A. Gardner of Auburn University. The former two members of the Board left the final decision on me (W.A.G.) as secretary to decide whether to continue the journal and the society. Dr. Shull had some money and copy set-up, and really led the way to save the journal, *Plant Physiology*. I had never been a quitter, so I said let us pull it through.

I hope the young group is doing well.

Obviously, there must have been a period of discouragement in early 1925 when the uphill struggle ahead had a questionable outcome. Shull's reminiscence in 1954 (2) supports this and indicates an extended period of anxiety:

The long struggle that followed concerned primarily the survival of the Society. For the problem of survival did fall on my shoulders; and during a period of about 12 years it was the ever-present and dominant shadow that followed wherever I went. Though I was in no way involved in the Society's origin, I think that perhaps I did have something to do with the survival and early growth of this organization. Many of the things that were done in the early years were designed to keep up or increase the morale while time went by—time necessary for support to accrue.

It takes action to break a discouragement deadlock. Gardner's first action was to send out a two page letter (3) in February 1925 addressed "To those interested in *Plant Physiology in America*" that he clearly designed for reconciliation. The letter pointed out that ASPP was born of a deep conviction that progress in plant physiology required better organization. But differences of opinion arose on the best way to accomplish results, and personal feelings tended to becloud and obscure the vital issues in some minds. "We regret the lack of wisdom which led to enthusiastic supporters of a new organization to push the matter more rapidly than conservative opinion could approve." However, this was all past history, the new society was a reality, and it was affiliated with AAAS. Now the officers had to deal with the present and the future.

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Gardner assured the reader that plant physiologists had always been loyal to general botanical interests and had no desire to injure any other organization or group. "It is to the advance of botanical and biological science through progress of plant physiology that the society is dedicated [and] it desires to cooperate with all the other societies where common interests are involved."

Next, Gardner moved directly to the seat of conflict by saying that most all of those in the new movement desired the Botanical Society to remain the center of general botanical interests in America. Plant physiologists now in the Botanical Society were encouraged to retain their membership and to invite young physiologists to join also. In addition, it was recognized that plant physiologists are found in many other groups (horticulturists, agronomists, soil scientists, foresters, biochemists, biophysicists, climatologists are mentioned), and "it is sincerely hoped that those with physiological interests may be organized into a working unit, not through the weakening of older affiliations, but by general cooperation in the development of a common field." Improved means of publishing and other programs that needed to be developed would require the cooperation of all plant physiologists, and the new Society would like to see adverse personal feelings or prejudices that may have been aroused laid aside, "in the hope that good fellowship and kindly spirited, mutual respect might be restored among us. Life is too short, and the tasks of science too large and important to allow any smaller attitude to prevail."

Gardner closed by inviting all who worked with problems of plant physiology to take part in the Society. He pointed out that he was now the secretary-treasurer and asked that correspondence be directed to him. All who were in sympathy with the new Society should make themselves known as soon as possible. There are typed signatures of Gardner, Hibbard, and Shull, in that order, but the letter came from Auburn and Gardner was obviously the author, perhaps coached by Shull.

Details are lacking of how the recruitment drive was organized. Hibbard chaired a membership recruitment committee, which included Gardner, but no record exists on how they proceeded. A May 1925 letter of Harvey's (4) suggests that he had been asked to solicit memberships among his colleagues, stressing the planned journal:

The American Society of Plant Physiologists is establishing a journal with the purpose of providing a much needed outlet for publications in the field of Plant Physiology. It is intended to publish a journal about the same size and kind as *Phytopathology*. The Editorial Board consists of D. T. MacDougal, B. E. Livingston, and R. P. Hibbard.

This society is an active and efficient organization recognized and supported by the A.A.A.S. and by Plant Physiologists. In addition to the Christmas meeting at Kansas City, it will hold a meeting probably this summer at East Lansing, Michigan, at the time of the meetings of the Agronomists and

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Plant Pathologists there.

I am soliciting support for this journal project within this state and will be pleased to have you take a subscription to the journal and membership in the society. If you can do so, will you kindly return to me the enclosed card and send to the Secretary-Treasurer of the Society, Dr. W. A. Gardner, Alabama Experiment Station, Auburn Ala., a check for your subscription before July first.

The card apparently called for \$5 to cover membership for the period July 1, 1925, to June 30, 1926, and a subscription to the projected journal. There are indications that several other committed members were active in recruitment.

In the spring of 1925, Gardner must have mailed out a request for dues, a ballot for officers and for amendments to the constitution and by-laws, and an announcement of a summer meeting with the American Society of Agronomy at Michigan Agricultural College, East Lansing, July 9-10, 1925. Only the proposed amendments have been found (see later). On June 22, Gardner sent around a follow-up letter (5) reminding members to send in their ballots and annual dues of \$5 if they had not done so. He reported that the amendments had carried by a large majority and would be presented at the summer meeting (they never made the minutes). He called for titles of papers: "You are earnestly requested to take a good paper to the summer meeting..." (This odd emphasis on "good papers" shows up now and again—very likely the officers were anxious to build a quality reputation and were fearful that the young society might be seen as a depository for marginal work.)

The summer meeting at East Lansing was held as planned. The minutes (6) (recorded by A. L. Bakke of Iowa State; Gardner could not attend) report 155 members, a gain of 51 new members from the December 1924 meeting. Not bad, but not good enough to support a journal without subsidy. Even worse, 64 of these members were in arrears at the time of the meeting, and 14 members paid only \$1, the dues assessed the previous year. (These figures come from Gardner's account [7] of members who had paid, who had not, and who had paid too little.) There was discussion of adding members from agricultural societies through some type of affiliation.

R. P. Hibbard, the newly elected president, called on Shull to report as retiring president (6). Shull called attention to the fact that the society had a year's existence and that the \$20,000 endowment fund was drawing interest toward financing the new journal. Shull also reported for D. T. MacDougal, the absent chairman of the journal committee. "It was first planned that Dr. Sam Trelease would be editor of the journal but with his removal to Columbia University, the plan had to be changed. As editor-in-chief, Dr. MacDougal suggested Dr. Francis M. Lloyd." (There is nothing to indicate why Trelease could not edit from Columbia, or why Lloyd never became editor.) An editorial board had been appointed (Livingston, Lipman, Shull, Spoehr, Harris, and Lloyd), and it was definitely planned to issue the first copy of the journal in January 1926. Dr. Murneek had already prepared a paper on growth for the first issue. Dr. Livingston favored an

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editorial board independent of the journal, but insisted that members of the board should be Society members, and quality rather than quantity was desired. "In regard to the name of the new journal Dr. Shull reported that 'Journal of Plant Physiology' (suggested by Dr. C. B. Lipman) seemed more logical than retainment of the name *Physiological Researches*. This was also the general opinion of the members present."

Shull next presented a tentative income budget for the Journal.

| | |
|--------------------------|---------------|
| 200 members at \$5.00 | \$1000.00 |
| 100 libraries at \$10.00 | 1000.00 |
| Advertisement | 400.00 |
| Endowment, first year | <u>300.00</u> |
| | \$2700.00 |

Nonmembers should be charged \$7, and "scientific subscribers—not botanical" \$8. (Individual subscribers of this kind seem to have been astute enough join the society and save \$2 or \$3, for they do not appear.) There is no record of any discussion on how to obtain advertisers or the additional members and subscribers needed.

The minutes (6) continue, "Dr. Shull called attention to the endowment fund and to various methods of helping out financially. He reported at this meeting that he expected to leave a part of his estate to the organization. The matter of life insurance in behalf of the society was also brought forth." It was then moved and carried that Shull "be a committee of one to encourage endowment for the society." (Shull took this assignment seriously—endowment became one of his major concerns [2].)

Shull finished his report by pointing out that a program committee should be appointed immediately to arrange the epoch-making December meeting planned for Kansas City. But this appointment was left to the new president, Hibbard.

The minutes indicate additional activities. Dr. W. E. Totttingham reported for the Committee on Standardization of Procedure in Chemical Analysis, requesting cooperation in standardizing plant analyses (which they got over the next few years in the form of solicited papers on analyses for soluble carbohydrates, polysaccharides, nitrogenous compounds, and the like, published in *Plant Physiology*). Dr. Bakke reported for the Committee on Research Policy: planning programs would be much easier if information on research projects, applied as well as basic, could be centralized. An exchange of students between laboratories was discussed, as was finding jobs for graduates. Shull proposed a national chairman who would supervise the planning and standardizing of research by regional chairmen.

It is evident that the Society wanted to do something more than simply publish research and talk about it at meetings—it was searching for a way to encourage sound research in plant physiology, and believed this could best be done by planning and standardizing. (Nothing came of this notion. As we now know, peer-reviewed research funding is the effective way to encourage sound research.)

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Over all, it appears that Shull dominated the meeting and that the major concern was getting the journal started. The principal difficulty here seems to have been lack of an editor-in-chief to take charge and get on with the job. It was now July and the matter was still in the hands of MacDougal's committee! Indeed, MacDougal had not yet paid dues and joined the Society. (Correspondence to be dealt with later indicates that he had been angered by some remark or action of Shull's.) But Shull had been appointed to the editorial board and was thinking and planning for the journal. He showed the level of support required and the number of members and subscribers to be found. Shull seems to have had a simple approach to problem solving—size up what is required, then drive for it.

One of the most deplorable gaps in the archives of the Society occurs here. There is no record of when it finally dawned on the journal committee that Shull, with his determination and commitment, was the logical person to run the journal. Or did it ever dawn on them? MacDougal seems not to have been an aggressive chairman and by this time had become disaffected with the Society. It is more likely that one of the activists, such as Harvey or Livingston, had thrust the obvious on them. Or perhaps Shull assumed the office by default. All we know is that by December 1925 the journal committee of July had disappeared and had been replaced by a publications committee chaired by Shull. The activities of this committee were reported to the membership on December 12, 1925, by Gardner (8) and to the business meeting of the Society on December 30 by Shull (9). Gardner's announcement reads as follows:

It is my privilege to give you a bit of good news, which I wish might be given personally...

Dr. Charles A. Shull...has consented to serve as editor of the American Journal of Plant Physiology. He informs me that the first number will be published during January, 1926, on excellent paper (the same quality as that now used for "Phytopathology"), and have the same general appearance as "Ecology". It will contain four or five articles covering about seventy-five pages.

This journal is to be to Plant Physiology what "Phytopathology" and "Ecology" are to their respective sciences.

You may be interested to know that several articles have been submitted and one has been accepted for publication. However, if well written articles on physiological subjects are submitted promptly they will be considered for the first issue. Indeed, the editorial board is desirous of having additional articles from which to choose. You will readily recognize the desirability of publishing the very best in the early issues of our journal. On the other hand you will acknowledge certain advantages and a distinct honor in having papers in the first numbers.

I trust you will take advantage of the opportunity to cooperate to the fullest extent and in every way possible to make the journal a success. To realize this it will be necessary for each of us to give the editor our hearty cooperation in several ways. This may be done most effectively by:

1. Sending the editor our best completed manuscripts...
2. Finishing important researches for publication in the journal.

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3. Calling the attention of Plant Physiologists to the advantage of publishing their papers in a special journal of high quality.
4. Entering actively into a campaign to secure the subscriptions of every important library and every plant physiologist to the American Journal of Plant Physiology.

The title of the journal had been changed since the East Lansing meeting by the addition of "American." Perhaps this modification was simply an effort to parallel the "mother" society's *American Journal of Botany*. Note the emphasis given to the journals *Phytopathology* and *Ecology*. These were (and are) the successful journals of disciplinary groups that had organized outside the Botanical Society, and by implication an equally successful journal was being developed for plant physiology. Finally, we again see the plea for submission of quality papers ("well written articles," "best completed manuscripts"); Shull had accepted one of several papers and wanted additional acceptable contributions.

Shull's report for the publication committee (9) had more detail. He started with an account of bids from printers, justifying the use of Science Press Printing Co. at about \$600 per issue even though Lancaster Press bid about \$450 per issue. Science Press offered the best service, and Mr. Urban, the manager, was "willing to give us a journal of the size of *Ecology*, on paper like *Phytopathology*..." Lancaster Press had been "less business-like in their handling of our requests for information..." Next Shull announced that "as many if not all of you know, I have accepted the position of managing editor, or editor-in-chief, of the Journal" and that he would be pleased to have the Society decide which title it was to be. He suggested that, to establish definite long-term policies, the editorial board (now reduced to C. B. Lipman and F. E. Lloyd plus Shull) should be a permanent board not subject to changes by frequent elections and that it may need to be enlarged by addition of members with ties to agronomy and horticulture.

Shull went on to say, "As to the name of the Journal, I asked Mr. Urban to set up as a trial title page—PLANT PHYSIOLOGY." He said a short, common sense name was better for citations. "Phytophysiology" had been suggested, but it was not in common use, and in citations would be confused with *Phytopathology*. The committee asked members to be patient while the details of publication were worked out. The first issue of the Journal was to appear in the first quarter and be dated January 1926. By the end of the year everything would be working smoothly.

At this point, Shull asked for the Society's authorization on the following matters: selection of a publisher (printer), name for the journal, subscription and advertising rates, completion of the Editorial Committee (Board), and "suggestions regarding features in the January number." In short, he essentially asked for approval of what he had done. Shull then closed with his characteristic concerns for financial stability. Journal publishing was very expensive, and "we should reduce the tables to a minimum, and eliminate plates as far as consistent with putting our work across." He called for an economical use of funds for purposes other than

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publishing. "Since we are likely to face deficits the first year or so, every cent spent for other purposes increases the deficit... The Treasurer will have to be ready 4 times a year to pay... the printing bill, each time hundreds of dollars. We must not forget this periodic event in our enthusiasm for other activities."

The program (10) and the minutes (11) of the Kansas City meeting add little on journal affairs, but they do tell us something about the progress of the Society. The cover of the program lists the officers (Hibbard, president, Livingston, vice-president, Gardner, secretary-treasurer) and the chairmen of six committees: publications (which we have heard from), standardization of methods, research and policies, membership, program, and text and degree requirements, plus the unconventional office of "councillor" filled by—you guessed it—Shull. This office is not found again, and there is no indication of its duties, although the title seems appropriate to Shull. One suspects that Gardner, who made up the program, simply decided that Shull's continued leadership after his retirement as president warranted an office and gave him one. The correspondence file suggests the two men were rather close despite the formal salutations—"Dear Dr. Shull," "My dear Gardner"—which were typical of the period. (The difference in salutation may reflect Shull's prominence.) They were about the same age, and after long years of part-time work both had obtained their Ph.D.s at the University of Chicago in 1915-1916.

A business meeting was scheduled for 9:00 AM each of the three days and was attended by 25 to 31 people. Much of the time was taken up with committee reports and votes to admit new members—election to membership was required by the constitution and bylaws (12) (a motion was carried that applicants be recorded as members only after both election and payment of dues [11]). Shull's report for the publications committee was "enthusiastically discussed by several members of the society," following which he was formally elected editor-in-chief, the journal was officially named *Plant Physiology*, and he was empowered to arrange for publication. In short, Shull's position and activities were retroactively approved. However, his editing would be scrutinized: "Dr. F. E. Lloyd declared for a first-class journal by stating that he would withdraw from the editorial board when the first poor paper was accepted" (11). There was discussion of amendments to the constitution that would enable the society to conform to U.S. postal regulations on second class mailing. The constitution and bylaws committee reported, but what they reported is not recorded.

Each day of the meeting there was a session of seven or eight contributed papers. One session of papers on more general topics was jointly sponsored with the Physiological Section of the Botanical Society (10), indicating that a degree of reconciliation was setting in, at least among the program committees. Of the total of 29 papers, 14 fell in the broad category of mineral nutrition, three dealt with pathological problems, two with water relations, and two with hardiness.

It was at this meeting that "Dr. C. A. Shull very generously offered to establish annually a life membership as a memorial to Charles R. Barnes... The offer

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was accepted by a rising vote" (11). In his 1954 memoir (2) Shull gave a more complete account. After discussing his concept of "endowed endowment" (a fund held in trust to create specific endowments), Shull continued:

This idea became coupled in some way with the need for definite honors to be conferred upon those who over the years had given conspicuous service to plant physiology. Gradually the idea of the Charles Reid Barnes Life Membership was evolved, and by the time of the 1925 meeting at Kansas City, Mrs. Shull and I had it clearly enough in mind that it could be presented in definite and clear form for Society acceptance or rejection. Nothing was said about *financing for growth* or *endowed endowment*, but a simple offer of support of the Charles Reid Barnes memberships for a few years until the background support of the awards could be marshalled. The Society approved the idea unanimously, and each year for five years Mrs. Shull and I sent \$100 to the treasurer in the fall of the year for these awards. The morale factor in such awards was very high. In 1930 the break came for which we had been waiting. The secretary-treasurer came to the meetings with \$1400 of unused money. The executive committee, including the secretary-treasurer, was finally persuaded to utilize that \$1400 to start a Charles Reid Barnes Life Membership Endowment. In the course of the next four years, this endowment was increased to its present adequate support, thanks to the efforts of Dr. Livingston, who was elected president in 1934...So came into being a small endowment, whose earnings, after supporting life memberships for a period of years, finally becomes a general endowment, thus providing the endowed endowment feature of our finance pattern. On an average...the general endowment will grow at the rate of \$100 per year...

Shull was a frugal man (his handwritten letters cover every inch of the paper, usually on both sides—no margins!) who managed his own affairs well and was ever concerned that the Society should be financially sound. He saw that awards were needed, for a society that recognizes and rewards merit builds morale and encourages effort. A stable income for these awards requires an endowment—invested trust funds, the principal of which cannot be touched, but which yields sufficient interest for the awards. In the correspondence files of secretary-treasurers, letters from Shull repeatedly dealt with financial stability through endowment. He wanted a general endowment to generate income that could be assigned to augment the endowments of specific awards—"endowed endowment." The need for soliciting gifts, always distasteful, would be eliminated. As his own account (2) indicates, he succeeded to a considerable degree in getting the Society to attain this goal by furnishing seed money.

After the first issue of the journal appeared, Gardner circulated letters to potential members (13) and libraries (14). The recruitment letter says the first issue "fulfills our highest expectations...The articles are high grade, the editorial work critically done, and the printing attractive." Even without the endowment that assures its future, "its quality and and dignity as a scientific journal would command sufficient subscriptions from libraries to warrant its continued publication." The

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Kansas City meeting was a success. "Do you not wish to claim your membership...? Send me your check and I will see that you get the journal, the ballots, etc."

The letter to libraries (14) is boldly entitled, "A NEW RESEARCH JOURNAL. Essential to every library whose readers wish to follow the science of PLANT PHYSIOLOGY from any viewpoint."

PLANT PHYSIOLOGY is its name. It began publication with the January issue of 1926, which appeared in March. It is a quarterly. The price is \$8.00 per year for a single subscription...The supply of the first issue is limited and library subscriptions should be sent in now to insure all issues of volume 1. Subscriptions should be sent to Doctor Scott V. Eaton, Department of Botany, University of Chicago...

The new journal is in charge of an Editorial Board named by the American Society of Plant Physiologists. Members of this Board are:

Charles A. Shull, Editor-in-Chief, University of Chicago.

Charles B Lipman, University of California.

Burton E. Livingston, Johns Hopkins University.

Francis E. Lloyd, McGill University.

The journal aims to aid in the advancement of all of the plant sciences where a physiological attack must be employed...It is for all who are interested in plant physiology, either as a fundamental science or as an aid in applied scientific work of any kind.

The attention of those libraries that were subscribers to *Physiological Researches* is called to the fact that that series of papers was discontinued some time ago. Those libraries are specially asked to subscribe now to PLANT PHYSIOLOGY, which is taking up the work begun by the earlier series.

Gardner omitted one member of the editorial board, Dr. Carleton R. Ball, with the U.S. Department of Agriculture, Office of Cereal Investigations, Washington, DC. Ball provided the tie to agriculture mentioned by Shull (9).

This is the last we hear of *Physiological Researches*. Eaton, a junior colleague of Shull's at Chicago, was elected secretary-treasurer effective July 1, 1926, and, hence, was designated to receive future subscriptions. The "limited supply" of the first issue (15) was forecast on a printing of 500, which did, in fact, limit complete sets of the journal as membership and subscriptions grew. Shull's

Table 1
Officers of the American Society of Plant Physiologists, 1924-1930

| Year | President | Vice-President | Secretary-Treasurer |
|---------|---------------|------------------|----------------------------|
| 1924-25 | C. A. Shull | R. P. Hibbard | R. B. Harvey/W. A. Gardner |
| 1925-26 | R. P. Hibbard | B. E. Livingston | W. A. Gardner |
| 1926-27 | F. E. Lloyd | W. A. Gardner | S. V. Eaton |
| 1927-28 | C. A. Shull | W. E. Tottingham | S. V. Eaton |
| 1928-29 | E. J. Kraus | S. V. Eaton | H. R. Kraybill |

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projected figure (6) of \$10 for library subscriptions had been reduced to \$8. There was no advertising, nor evidence of effort to obtain it. But the journal was underway.

Officers

Since there will be continuous discussion of the activities of the various officers, Table 1 lists them here as a ready reference. (The current ASPP membership directory also lists the officers.)

Money and Membership

The interlocking problems of money and membership were the most critical for the new Society. How were they solved?

The first fiscal record we have is Gardner's balance sheet (15, 16) at the end of his 18 months as secretary-treasurer, June 30, 1926. He had E. F. Wright of Auburn audit the books. Total receipts were \$1,658.95, total expenditures were \$710.71, of which \$504.32 was paid to Science Press Printing Co., Lancaster, PA, for printing and mailing volume 1, number 1 of *Plant Physiology*, and \$206.39 went for office expenses—postage, stationery, printing, telegrams (no telephone bill!), stenographic help, and others. The balance on hand was \$946.74 (\$948.24, less \$1.50 for the audit), with \$508.11 owing on volume 1, number 2. Six months later at the Philadelphia meeting, December 29, 1926, Eaton reported (16) payments of \$508.11 and \$378.20 for volume 1, numbers 2 and 3 of *Plant Physiology*, and \$100 for the Barnes award, with \$760.91 on hand "to pay remaining expenses of 1926," the main item of which would be the printing bill for volume 1, number 4. The favorable balance was due to Shull's gift of \$750. Could solvency be maintained without gifts?

The Society's finances in the formative years can be best summarized by the change in total resources (bank balances plus investments) over the first five years, as reported at the annual December meetings (Table 2). Because they are major contributors to the budget, figures are also given for members, subscriptions and journal pages.

Starting in 1926 there was an abrupt rise in membership—the appearance of the journal convinced many plant physiologists that ASPP was a functioning society. As Shull remembered (2) it:

The effect of that first number was little short of phenomenal. Money poured in from new members, from library subscriptions, and from foreign countries in a steady flood. By July of 1926 when we made the last \$150 payment to the secretary-treasurer, we knew that no more such payments would be required, especially in the immediate future. We were released from further payments for support of PLANT PHYSIOLOGY.

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Table 2

Growth of the American Society of Plant Physiologists, 1924-1930

| Year | Annual Meeting | Members | Subscriptions | Journal Pages | Resources \$ |
|------|------------------|---------|---------------|------------------|---------------------|
| 1924 | Washington, DC | 104 | — | — | ? |
| 1925 | Kansas City, MO | 135 | — | — | 627.00 ^a |
| 1926 | Philadelphia, PA | 217 | 86 | 426 | 1516.91 |
| 1927 | Nashville, TN | 252 | 132 | 521 | 2697.00 |
| 1928 | New York, NY | 287 | 192 | 533 | 3367.95 |
| 1929 | Des Moines, IA | 353 | 241 | 559 | 5603.26 |
| 1930 | Cleveland, OH | 424 | 264 | 636 | 7182.99 |

^aEstimated

How Shull could forecast in June 1926 that he was released from further payments is not clear, but in fact he was. For the following fiscal year ending June 30, 1927, Eaton recorded (17) dues and library subscriptions totaling \$2865.19, and a printing bill of \$2061.37.

Much of the early increase in members was from the agricultural disciplines. Speaking of this to the 1926 business meeting (18), Eaton said, "one notices the large number who classify themselves as pathologists, horticulturists, agronomists, or foresters." Eaton forecast that others (*i.e.*, botanists) would gradually come in: "Those who have been working on membership have been impressed with the large number who seemed to be waiting for a chance to join the society."

Although the publication of the journal made membership attractive, there are several indications that personal recruitment was still an important factor. Interesting sidelights show up. H. S. Wolfe wrote to Eaton (19) that Dr. H. E. Knowlton, a horticulturist, "who had turned a deaf ear a year ago...came in to say that he desired to join the society." Knowlton wanted the journal to start then (January 1928), but he would pay dues for the 1928-1929 fiscal year, for which the journal started January 1929. So if Knowlton wanted the 1928 journal, he would need a retroactive membership starting July 1927—right? Wolfe ended, "It is very awkward that the journal is a year behind the fiscal year, but there is nothing we can do about it..." (There was, of course, but it took some years to discover that the membership and fiscal years did not have to coincide, or that the fiscal year did not have to start on July 1.) William Seifrizz wrote to Eaton (20) that he had agreed to Shull's suggestion to become a member, but discovered that his department head at the University of Pennsylvania, Dr. R. H. True, "was not in full sympathy with the splitting off of separate groups from the main botanical body...Consequently, while I am still quite happy to be one of you and to do all that I can to help the Soc., yet I should rather not play a conspicuous part...I know you will understand my position and will therefore excuse me from the duties of local representative." He must have

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been persuaded, however, for a month later Seifriz wrote to Shull (21) as the local representative for the upcoming Philadelphia meeting. "First let me say that I have won True partly over. He now says if the Society makes good he will join...he waits to see which side is going to win before he decides where to place his allegiance!"

Another problem lay with individual members furnishing their copies of *Plant Physiology* to libraries, thus depriving the Society of \$8 subscriptions that made the difference between profit and loss. One botanist, Aven Nelson of the University of Wyoming, wrote Eaton (22) that, "I purposely called your attention to the fact that I shared with the University the expense of our copy of the Journal," because otherwise it could not be afforded. Nelson said that he did not know if this arrangement could be continued. Since Nelson was listed as a member in April 1928, the Society must have acquiesced.

Of the 86 library subscriptions in 1926, seven were from Canada and 18 from foreign countries (18) (Canada was regarded as American, not really foreign). There were seven members from Canada and six from foreign countries. By 1930, out of 264 subscriptions 12 were Canadian and 116 foreign, led by Japan with 28, Germany with 14, and UK with 12 (23); there were 19 Canadian and 45 foreign members, with seven each from UK and USSR (7), and four from Japan. *Plant Physiology* was rapidly established abroad.

For a Society that was anticipated to have financial problems, the increase in total resources in these start-up years is surprising. Indeed, in a small way the Society was a money-maker. The drive for financial strength came from Shull, as did the initial capital. The records kept by the various secretary-treasurers are not adequate to determine exactly how much Shull gave the Society in this period, but in a personal letter (24) written after his retirement to his former student Walter F. Loehwing, University of Iowa, Shull gives an account: \$750 from his gift of the interest on \$20,000, \$500 for the first 5 years of Barnes Life Memberships, and \$100 toward the Stephen Hales Award Endowment. The initial \$750 gift was all that was ever needed to start the journal, and Shull commented that it "proved to have been even unnecessary, if we had only had enough faith!"

Others also made gifts. H. A. Kraybill, secretary-treasurer 1928-1930, records in his June 30, 1929, fiscal year account (25), "Gift to defray costs of October [1928] issue of journal—\$50." Shull had told Kraybill (26), "The Oct. no. will have a bad bill for changes due to the translation of a paper by Ray Bouillenne. We will not accept any more foreign papers that have to be translated before they can be used. They are too much trouble, and too costly." In a following letter (27) he added, "Thus far the costs have not, I believe, exceeded our income for 3 quarters, but our final no. carries a 50p paper from Livingston's Lab., and will be the largest and most expensive no. of the year." In still another letter (28), a gift from Livingston, sent "merely to help out," is transmitted, and Shull suggests that it be applied to "defray publication costs...since one of Livingston's lab papers with an excessive no. of cuts will appear in the Oct. issue." Perhaps the \$50 gift was

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Livingston's way of compensating.

Kraybill's financial statement for the December 1929 meeting in Des Moines (29) illustrates how the money was being handled (his accounts are reasonably clear).

| Statement of Accounts | |
|--|----------------|
| Balance in Bank Dec. 21, 1929 | \$2900.01 |
| Reserve Fund | 1000.00 |
| Balance in Savings Bank Dec. 21, 1929 | 303.25 |
| 1929-30 Dues Paid (Not applicable to 1929 expenses) | 1020.00 |
| 1930 Library Subscriptions Paid " " " | 488.00 |
| Total not applicable to 1929 expenses | <u>1508.00</u> |
| Amount left for remaining 1929 expenses | 1392.01 |
| Report of Dec. 1928 left for remaining 1928 expenses | 1183.42 |

| Resources of Society Dec. 21, 1929 | |
|------------------------------------|---------------|
| Balance in Bank | 2900.01 |
| Reserve Fund | 1000.00 |
| Barnes Life Membership Bonds | 500.00 |
| Stephen Hales Bonds | 900.00 |
| Savings Account | <u>303.25</u> |
| Total | 5603.26 |
| Total Dec. 24, 1928 | 3367.95 |

The Reserve Fund had just been established by the executive committee (30) for deposit of "surpluses left after meeting the expenses of the activities of the Society," to be kept on short-term investment, and "to be used only when the Society decides to use it or part of it for specific purposes."

The bond investments resulted from Shull's drive for individual endowments to support awards (2). The bonds were issued on Chicago real estate (25), primarily by George Foreman and Company, who will come to our attention later.

The peculiar entries for dues and subscriptions paid but "not applicable to 1929 expenses" arose from setting up a July 1 to June 30 fiscal year (as the federal government), but operating on a calendar year basis in publishing the journal. As already indicated, new members were baffled when they found that dues paid by the June 30 deadline did not entitle them to the journal until the following January. Those who served as secretary-treasurer felt obliged to reserve dues and subscriptions collected for the fiscal year to pay for journal expenses of the following calendar year, at least on their books.

The Stephen Hales Award, like the Charles Reid Barnes Award, was initiated by Shull. The account of this in the history of ASPP that he wrote in 1941 (31) follows:

In 1927, Dr. Shull was elected president for a second term, which the constitution did not forbid at the time; an omission which was immediately rectified. As the year 1927 was the 250th anniversary of the birth of Stephen

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Hales, and the 200th anniversary of the publication of Hales' important book, *Vegetable Staticks*, President Shull planned to celebrate the anniversary at Nashville. A campaign was undertaken to raise funds to establish a memorial to Hales. It took the form of an endowment to support the award of a prize, named in honor of Stephen Hales. This program met with immediate and generous response. Before the meeting time arrived, over \$1000 had been contributed with 80 participating in the gifts. The announcement of the prize establishment was made at Nashville, and a new constitution and by-laws were ordered drawn up to include the administration of the Charles Reid Barnes awards and the Stephen Hales awards.

It had been the intention to make the first award of the Hales prize at New York in 1928, but the machinery was new, and final decision was postponed until the Des Moines meeting in 1929. At that meeting the award was made to Dr. D. R. Hoagland, of the University of California, for his excellent work in the field of plant nutrition. A second award was made at the Cleveland meeting a year later, to Dr. W. W. Garner for his work in photoperiodism and at two year intervals since, to Drs. Vickery, C. A. Shull, Thimann, Shive, and White for contributions in their respective fields.

No record of the original contributors to the Hales fund has been found, nor of the exact amount given. Of the \$1000 collected, it appears that \$100 was set aside to pay for the first award, and \$900 was used to purchase one \$500 and four \$100 Foreman real estate bonds, all at 6 1/2 percent, which would yield enough for a \$100 award every other year. Two accounts were kept: the Hales Endowment Fund (the bonds) that could not be drawn on except for the interest, and the Hales Available Fund that received the interest and paid the awards. For the first award in 1929, the Available Fund contained \$185.50 (25).

Why did Shull set himself apart in listing the Hales awards by using his initials? Most likely because his brother, George H. Shull of hybrid corn fame, a professor at Princeton University, was also a member of the Society. Note that Shull took more on himself than simply planning a celebration in Nashville—he personally decided that a Hales endowment was needed and according to his 1954 memoir (2) obtained permission to seek it, after which he got the money by “personal solicitation.” Permission from whom? No record exists, but presumably he told the executive committee his plans, and they did not oppose him.

As reported earlier (2), in 1930 the Barnes Endowment was established with \$1400 of unobligated savings, which freed Shull of his annual \$100 donation for the award. This was only a start, of course, as the interest on \$1400 would not provide a \$100 life membership each year. In a 1945 letter to Loehwing (24), Shull wrote, “In 1931, Appleman and I each gave \$30 to supplement this interest return. Since that time no one has needed to contribute to the Barnes awards, because the funds were increased until it was self supporting.” By 1930 five life memberships at \$100 each had been purchased, and the money invested in bonds that yielded interest adequate for the \$5 annual dues.

All in all, at the beginning of the Depression, which for the Society was

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winter 1930-1931 (it took about a year after the stock market crash for the Depression to be generally felt), the Society was solvent and gaining capital. It must be emphasized that this took great frugality—office and editorial expenses were truly minimal. (Gardner to Eaton [32] on turning over the office of secretary-treasurer: "The executive committee got on 'my collar' about expenses a time or two which gives me an opening to suggest that your correspondents furnish stamps for replies to your communications. Some of our members have been kind enough to furnish the stamps for the return replies to their communications.") Only later did Shull have a paid assistant or secretary; most of his surviving correspondence is in longhand. But such economies were not uncommon in academe of the Roaring Twenties—the roaring went on elsewhere.

The Journal

As already indicated, *Plant Physiology* was successful (Table 2). It attracted members and subscriptions, and it grew in size—volume 1 had 30 contributed papers, volume 5 had 44. Sales of *Plant Physiology* not only paid its way, they also built a reserve and an endowment.

But what sort of journal had the Society, in the person of Shull, created? Starting with externals, it was printed well on good paper in a single column, 12 by 19 cm. There were a surprising number of photographs printed, considering the cost. There were always a few errors that survived proof reading (six errata in volume 1, 17 in volume 5—many were inconsequential typos). Make-up and editing were competent and conservative. Many years later (33), Shull described some of his practices and attitudes toward editing in a letter to Walter Loehwing, a former student of Shull's who succeeded him as editor.

I think you may also find it a satisfactory arrangement ultimately to place the shortest papers at the end of the number. I never determined the arrangement until I had the galleys all in; then the order was determined, and the galleys sent back numbered with an important shorter paper first, increasing in a few steps up to the longest paper, then falling off again in order of size to the end...

I hope you will not find the work too burdensome, although I realize that it has to make a part of your contribution to plant physiology, just as my work was part of my own contribution. I think our science is farther ahead than if I had not done the editorial work and had published a couple more papers each year. Dr. Kraus [department head] would probably have been better satisfied, but I had to follow my own ideas of what was ultimately the greatest good, even for the University of Chicago.

Contributed papers made up the bulk of the issues, of course, but following the papers Shull always inserted a few pages he called "Notes," in which he published reports on important meetings, visits to foreign laboratories, and the like.

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Starting with volume 3 (1928) he began publishing short biographies of pioneer workers in plant physiology (Timiriazeff, von Sachs, Pfeffer, van Helmont, de Vries, Ingen-Hausz, de Saussure, and Hofmeister in volumes 3-5). This continued into the 1930s. Shull was always striving for a strong sense of professional identity and pride among plant physiologists, and he must have intended these biographies to interest them in their professional roots.

In addition, however, Shull may have solicited the biographies from Harvey, Andrews, and others, to have manuscripts on hand to fill out issues. One of his "Notes" in volume 2 says (34), "The publication of *Plant Physiology* is delayed each quarter because manuscripts are not received in sufficient number to catch up with the publication date... In order to catch up with the calendar we need a sufficient number of papers to make one additional number of 100 to 150 pages. Some of the delay can be avoided if authors will always be prompt in correcting and returning galley proofs." In volume 4 he reported (35), "During the last year the manuscripts have been used up very closely each quarter, and with the October number we present all of the material which was available on September 15, 1929." He went on to say that larger volume could be published, but only if the manuscripts were forthcoming and were of high enough quality.

Apparently, high quality continued to be a concern, but nothing has been found which indicates how it was determined. Submitted papers were reviewed, presumably by the editorial board unless a specialist was needed. Shull's annual reports may have included numbers of papers submitted and accepted, but if so the data were not considered worthy of including in the minutes.

The "Notes" served the function of a newsletter. Shull invited members (36) "to submit brief notes concerning events of general interest"; however, nearly all of the reporting and reviewing appears to be Shull's. Generous space was given to meeting announcements and reports and to brief reviews of books made by Shull from volumes submitted by publishers. Shull to Loehwing (37): "When they [publishers] want reviews enough to submit a copy, at least an announcement of what the book contains, its price, and the address of the publisher were given. Sometimes they were too voluminous for critical evaluation...but a book notice is the least we can give for a copy sent." The reviews occasionally supplied bits of professorial philosophy. Commenting on the English translation of Kostychev's *Plant Respiration* he wrote (38), "The book will undoubtedly get wider use among American students in the form of a translation; but it is not to our credit... Books ought to be just as available to us when printed in French or German as when printed in English. Translations ought not to be necessary..." In the same issue (38), he commented on the difficulties of breeding iris and of the need for fundamental studies on heating damage to tulip bulbs.

The "Notes" also included comments on Society affairs, such as election results, committee reports, financial status, meeting plans, awards, section news (local sections of the Society had been formed at Purdue and the University of

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Minnesota in 1926), etc. Shull seems to have used the "Notes" as another vehicle for developing a feeling of community among plant physiologists. His concern for the Society went beyond normal editorial duties.

But these items are only the accessories of a scientific society's publications—the identity and worth of a journal are determined by the contributed papers it publishes. What was Shull planning for, and did he get it?

In his foreword to the first number of *Plant Physiology* (39), Shull invited papers from the breadth of the science:

Research in plant physiology must proceed in two general directions. It must continue to spread out into the practical fields of human service, such as agriculture ...; at the same time it must constantly delve more deeply into the problems of developmental metabolism under the leadership of physiologists well trained in the methods of biophysics and biochemistry.

Exploratory research...is of the utmost importance for the practical fields, for it yields us a broader knowledge of the methods of control of plant behavior and plant production...Such exploratory research must be followed by an investigation of the fundamental causes of observed behavior...these two lines of investigation, practical and fundamental, must always go hand in hand.

This journal, therefore, exists for the general advancement of this great field of investigation...It hopes that it may serve as an instrument for the integration and unification of all plant physiologists into a powerful working unit, without interfering with the organized activity of other groups...

To this end it invites the support of plant physiologists of every denomination...It has no other purpose...than to be of service, and to promote cooperation in the common tasks of advancing plant physiology as a pure and applied botanical science.

In his 1954 address (2), Shull reemphasized the need for study of the responses of the plant to environmental factors as important to controlled plant production, and he laid great stress on basic studies to unravel the internal chemistry and physics of the plant. Shull was thus consistent in his editorial bias for publication of two lines of research. Indeed, the journal has continued to serve these two lines.

In volume 1, Shull included under "Brief Papers" short dissertations on scientific publication (40) and citation of literature (41). He called for papers (40) with "brief and pointed approach to the problem, succinct statements of the methods used, clear cut presentation of data, and critical discussion of the problem as a whole," and he pleaded for sparing but effective use of expensive graphs, plates, and tables. He reminded contributors that graphs are commonly reduced in size in printing, and that for legibility they should be prepared with this in mind. Legends for graphs and plates should be on separate sheets, he ruled. Citations were to be arranged alphabetically and given by number in the text. And, he cautioned, literature citation must be used with discretion (41)—at the present rate of scientific growth, "we shall soon reach the place where the literature citations will occupy

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more space than our contributions warrant...It is necessary, of course, to *know* the literature as completely as possible...But when we come to report our results we can conserve space by limiting ourselves strictly to the citation of only such papers as cannot be omitted...without loss in value...It is frequently possible to reduce the number of citations by reference to other recent papers where most of the earlier papers have been summarized."

In short, Shull sounded like a modern editor; editorial problems have not changed much in 60 years.

And what kind of journal did the Society produce? Here we must recognize that Shull was only the editor—he could reject poor papers and perhaps salvage some by getting better presentation, but he could publish only what was submitted. What was published came, with few exceptions, from the members of the Society and reflects the interests of the active research workers in the United States and Canada. Membership was not required for publication and was open to foreign plant physiologists, but, initially, few papers from abroad were published.

Classification of papers is difficult and imperfectly done at best, but that given in Table 3 gives a reasonable picture of the professional interests of the membership.

Of course, 60 years ago these categories represented a different level of experimentation, but the physiological problems were much the same. There was a good deal more concern with techniques and analyses than is evident in current issues of the journal. For example, F. M. Schertz's paper, "The pure pigments, carotin and xanthophyll, and the Tswett adsorption method" (Vol. 4, pp 337-348), reports work with the original chromatographic technique. Nowadays, there are many chromatographic techniques and applications, all highly perfected and instrumented and used routinely. A new application to a plant physiological problem would probably only appear in the materials and methods section of the paper. A truly new technique would be more likely to appear in *Analytical*

Table 3
Classification of Papers Published in *Plant Physiology*, 1926-1930

| Category | Number |
|---|--------|
| Techniques, methods, analyses | 45 |
| Mineral nutrition | 43 |
| Environmental responses, stress | 28 |
| Biochemistry, respiration, photosynthesis | 27 |
| Growth and development | 25 |
| Pathology | 6 |
| Fruit ripening, storage | 5 |
| Biophysics | 4 |
| Seeds | 3 |
| Weed control | 2 |

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Biochemistry than Plant Physiology.

The high proportion of papers in the area of mineral nutrition reflects the flush of fundamental and applied research that had been initiated by important findings on the inorganic ion requirements for plant growth, and the selective acquisition and transport of these ions. Modern research shows similar bursts of activity which follow the opening of rewarding fields of investigation, only today the fields are different.

What we really see in these early issues of *Plant Physiology* is an expression of the science that motivated the organization of the Society. Scientists joined the Society to have a specific place to publish their research. The papers deal with the underlying mechanisms of plant life and ways to investigate them; and although the members had diverse botanical or agricultural ties, they had a unifying interest in the life processes of plants.

Constitution and Bylaws

"Bylaws" is now one word, but it must not have been in the late 1920s because the plant physiologists uniformly hyphenated it. The original bylaws soon proved inexact or inadequate, for they and the constitution were continuously up for change. And they were changed—so far as can be determined no proposed amendment failed of passage. One of the first acts of the newly functioning Society was to amend the original constitution and bylaws, which had been written to accommodate taking over the Physiological Section of BSA.

As reported in chapter 1, in early 1925 Gardner sent around with the nomination ballot a set of amendments for the constitution and bylaws (42). Article III was amended to eliminate the membership requirements of a baccalaureate degree and residency in North America, but it left the requirement for demonstrated "knowledge of and an interest in the physiology of plants." Members were to pay dues which would entitle them to all publications of the Society; a person could become a life member for \$100, a patron for \$200; the Society could elect corresponding members from foreign countries.

Article VI eliminated the Plant Physiological Board, a holdover from the Physiological Section, and identified the president and vice-president, serving for one year, and the secretary-treasurer serving for two years, as Society officers. These officers were not eligible to succeed themselves. Two standing committees were identified: an executive committee composed of the officers plus the vice-president of each local section and one member appointed by the president, and a program committee of three members appointed by the president.

The bylaws were completely rewritten in 11 sections. Section 1 dealt with securing nominations for officers and electing from a mail ballot that listed the four highest nominees. Section 2 gave the duties of the officers—the president presides, the vice-president backstops, the secretary-treasurer "shall transact the business of

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the society." Section 3 said, "The Executive Committee shall have power to do anything not reserved to the society as a whole." Section 4 directed the program committee to arrange all programs. Section 5 directed the secretary-treasurer to pay all expenses through vouchers to be audited at the end of the fiscal year. Section 6 read, "The annual dues of the society shall be \$5.00 per year." Section 7: "Only the income of the fees of life members and patrons shall be used for general upkeep, and the fees shall be used as a general fund." Section 8 required that an application for membership be endorsed by a member and approved by the executive committee. Section 9 provided for election of members at meetings of the society, or by the executive committee during the interim. Section 10: "All proposals to revise the Constitution shall be reviewed by the Executive Committee." Section 11 declared July 1 to be the beginning of the fiscal year, with dues payable on or before this date and terms of office to begin on this date.

The author of this revision is not known. In his letter of June 22, 1925, Gardner said (5), "Every amendment to the constitution and by-laws carried by a large majority. A detailed report will be made at the summer meeting." However, there is nothing in the minutes of the summer or winter meeting that even recognizes the existence of these amendments. Gardner's files do contain a typed copy of the amended "CONSTITUTION OF THE AMERICAN SOCIETY OF PLANT PHYSIOLOGISTS" (43) with the handwritten notation, "As amended May 1925," suggesting formal adoption.

The minutes (11) of the business meeting for December 30, 1925, report that Dr. C. H. Bailey commented on postal regulations for scientific publications, presumably concerning the reduced postal rates given to not-for-profit organizations. The president was directed to appoint a committee "to make such amendments to the constitution as may enable the society to conform to the U. S. Postal regulations." This change must have been made, for in March 1926 Gardner sent around, with the request for nominations, ballots which asked for approval of the formation of a local section at Purdue University and for amending the constitution and bylaws (44). He presented the amendments as follows:

To comply with U. S. Postal regulations the constitution and by-laws must state that our society is a scientific society not organized for financial gain, and must specify that a certain sum, or a portion of dues has been set aside to maintain the journal. These changes were approved by the executive committee, as well as by those assembled in the business meeting in Kansas City.

Article II of the Constitution should be made to read as follows, by adding the words in parenthesis:

"The object of this (scientific) organization shall be (not financial gain but rather) to advance the science of plant physiology; to promote the welfare and good fellowship of its members; and to facilitate the publications and discussion of the research problems of plant physiologists.

Section 6 of the By-Laws should be modified by adding the second sentence, which is in parenthesis:

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"The annual dues of the society shall be five dollars per year. (Of this sum four dollars shall be placed at the disposal of the editorial committee for expenses of publishing the journal of the society, "Plant Physiology".)

Except for the parenthetical addition, Section 6 reads exactly as given by Gardner as an amendment (42), and, therefore, the 1925 revision must have been adopted. (It is possible that the revision was published in Bulletin No. 2, a copy of which has not been found.) If it was adopted, the election of Shull in 1927 for a second term as president would appear to have been in violation of Article VI, Section 1, which says, "The [officers] shall not be eligible to succeed themselves." However, a literal interpretation of this passage would only forbid reelection while in office. As we shall see, the complete revision of June 1929 eliminated the ambiguity.

We have no record of what happened to the 1926 amendments, but, surely, they passed. Gardner's files have a typed copy of the constitution and bylaws (45) with the amendments and the handwritten statement, "As amended to June 26, 1926." The Post Office was assured that with \$4 to publish the journal and \$1 for overhead the dues were unlikely to yield a profit. The Post Office seemed not to know nor to care about the profit made on subscriptions. (Because the profit remained with the Society for promotion of societal affairs, such as endowments for awards, rather than distributed to the membership, there was no violation of the not-for-profit status.)

These amendments did not abate the agitation for revision. Scott Eaton, secretary-treasurer 1926-1928, prepared a list (46) of "suggestions for change in the constitution that have come to this office."

1. Time of beginning the fiscal year. It has been suggested that it might be better to make the beginning of the fiscal year the same as the calendar year. Most societies do this, and it would have the advantage of enabling our officers to begin at once on the Christmas program. Members wait until the first of the year, as a rule, or at least after October 1 to pay their dues.

2. To make it hard to amend the constitution, by requiring a unanimous vote of the Executive Committee.

3. The question of whether \$.50 should be allowed the secretary-treasurer from each library subscription for the expenses of his office. It is doubtful whether \$.50 per member will be sufficient to carry the work as it should be.

4. The question of associate membership in the Sections of the Society, as to whether the associate members should pay dues to the Society, and as to their exact relationship to the Society.

5. Question of the officers of the Society succeeding themselves in the offices.

Penciled on the margins next to numbers 3 and 5 is "OK," and at the top, "Stephen Hales?" Perhaps Eaton had consulted with his colleague Shull.

Nothing came of the sensible proposal to change the beginning of the fiscal

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year to January 1, probably because Shull opposed it. (In a 1945 letter to Loehwing [47] after retirement Shull remarked, "To my mind our fiscal year has been a considerable benefit to us, in giving the Ex. Comm. each December opportunity to consider the effects of our election, and to take any needed action to keep us on an even keel." He wanted his editorial board appointments to begin January 1, but seemed to feel there was better control of fiscal and executive affairs with July 1 appointments. As usual, when Shull felt strongly about something, he got it.) Similarly, nothing was done about associate membership in local sections.

In January 1927, members were again asked to vote on amendments (48). There was a slight rewording of Article II. Then, Article III restored the limitation on membership to residents of North America and possessions of the United States but gave non-voting membership to foreigners (because "foreign members cannot have as active or intelligent an interest in the affairs of the society as home members, and to insure that the affairs of the society should always be controlled by home members. At present foreign members have the same rights as home members"). Article VI made it possible for the secretary-treasurer to succeed himself in office, and it put the chairman of local sections, rather than the vice-president, on the executive committee. Section 2 of the bylaws put the secretary-treasurer's business transactions under the direction of the Society or executive committee. Section 6 increased the allocation of dues for publishing to \$4.50. Eaton's tally (48) shows almost unanimous approval of all amendments except for Article III, which received about 20 percent negative votes—not all members were chauvinists! As Livingston protested to Eaton (49), "let's be international, as science is."

By this time it was clear that continuous piecemeal amending of the constitution was not producing a workable document. In the summer of 1927, a committee consisting of Shull, Kraus, and Overton was formed to completely rewrite the constitution and bylaws in accord with the needs and practices of the Society. In December 1927, Eaton obtained the approval of the executive committee for the committee's revision (50). The next mention of the revision is in the July 6, 1928, letter Eaton wrote H. R. Kraybill (51), who was succeeding him as secretary-treasurer. This is a very informative letter on the duties of the office, some of which are found in the paragraph below:

One thing that you will have to do before the New York meeting is to send out the revised constitution. You will find a copy of this in one of the parcel post packages with the votes of the members of the Executive Committee. I have not been able to find Dr. Hibbard's vote, but I think he made no special change in it. The constitution can not be sent out until the machinery for the award of the Stephen Hales' Prize has been worked out by the committee which was appointed by Dr. Shull. This committee is G. J. Peirce, Chairman, B. E. Livingston, F. E. Lloyd, E. J. Kraus, and J. B. Overton. The Program for the New York meeting is in charge of the Program Committee, of which D. R. Hoagland, of California, is chairman. There are a number of things which I have had to do

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in arranging for the program, although the actual program is gotten up by the Program Committee. You will probably have to choose the hotel headquarters, arrange for the meeting place for the sessions, for a room for the banquet and possibly the local representative if you decide you need one. Also, I always send out [an] information blank giving members any information as to hotel headquarters and the places where the sessions are to be held. You will find sheets which will give the various things sent out during the year.

Shull also wrote Kraybill (52), primarily about a summer meeting at Purdue, but with comments on the New York meeting and the constitution:

It seems to me also that our proposed new constitution ought to be acted upon before so very long. As I recall, the Society voted at Nashville to have it sent out before the next meeting. There is one item which the constitution committee was requested to do which has not been done, and that is to make some kind of provision for permanent care of the historical records of the Society. I do not know just what ought to be done about a matter of this kind. If the historical records could be placed on file in such a place as the Smithsonian Institution, or in the offices of the American Association for the Advancement of Science, or some other similar permanent depository, it would be better than merely having the secretary keep them. It becomes unwieldy and hard to send around from place to place as the secretaries change, so that some place of permanent location of the historical documents ought to be worked out.

No constitutional action on historical records was taken, and nothing was worked out. Shull's colleagues must have thought it odd that only four years after the founding of the Society he should be concerned about keeping historical records. But it was only another manifestation of the fact that the Society and *Plant Physiology* had become the dominant concerns of Shull's professional life.

As indicated by Eaton (51), balloting on the revised constitution was held up for the report of Peirce's Stephen Hales Prize committee. In a replying to a inquiry from Kraybill, Kraus (president of the Society, 1928-1929) wrote (53), "I am writing to Professor Peirce at California, to get the specific report of the Committee on this matter...The report as I have it, runs about six pages in length, all this...indicated to be included in the bylaws, and I assume that this will have to be, in as much as those who have been most intimately concerned in getting this matter together believe that this long statement should be made." The person most intimately concerned was the award's creator, Shull.

Peirce's reply (54) to Kraus's inquiry was, "If you will regard the 'final form?' in your possession...as the report of the Committee... we shall be glad...If there is to be a new statement of the Constitution, please do number and place the stuff as it should be in the new form."

In the end, the "stuff" was incorporated as the final article in the revised bylaws (55), taking up almost as much space as the rest of the entire document. Indeed, with the exception of the step-by-step illustration on how to manage the

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Hales fund, this unnecessarily detailed bylaw persisted to 1987. It was a lasting memorial to Charles A. Shull and his phenomenal ability to manage his Society.

Shull wanted Kraybill to send out the ballot on the revision before the New York meeting, but Kraybill wrote (56):

I have had several letters from people suggesting changes in the constitution as mailed out...I am wondering whether it would be better to wait to send out the ballots until the constitution had been discussed by the members at the meeting and then if it were adopted with any changes, a statement of these changes could be sent to all the members and a request for their vote on the matter. If you think however that a ballot should go out before hand please let me know promptly and I will try to send it out. It seems to me however that those people at the meeting will probably be better informed to vote on the matter after the discussion ...

Note that Kraybill is asking approval from a man who is no longer an officer of the Society. But obviously he remains the "Councillor."

Shull agreed (57), adding, "The society in annual meeting assembled can approve any action it pleases, and order a vote to be taken, and the mail ballot finally concludes the business. I personally think it best to go through this once more, until the Constitution is legally adopted, and then we can at least transact some business with finality at future annual meetings."

The new constitution (55) was approved the spring of 1929 and published along with the directory of members as Bulletin No. 5. It was a great improvement over the amended original version, and in its basic form has governed Society affairs to this day—continuously and extensively amended, of course! A synopsis is given below (keep in mind that Shull was on the revision committee).

Constitution (1929)

Article I names the organization.

Article II defines its purpose as the promotion of plant physiology "without the object of financial gain."

Article III opens voting membership "to plant physiologists of all nations." However, corresponding members (foreign plant physiologists awarded honorary memberships) are not to vote or receive the journal unless they pay dues. Dues of \$5 (\$5.25 to foreign members) are payable the last quarter of the calendar year.

Article IV authorizes local or state sections upon approved petition of 10 members. Such sections have full autonomy "provided that none of the local regulations violate the provisions of this constitution." The sections must maintain 10 members.

Article V requires an annual meeting, preferably with AAAS.

Article VI designates the officers and their terms. The president and vice-president serve for one year, and they "shall not be eligible to hold the same office

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a second time." The secretary-treasurer serves for two years, is eligible for reelection, and must be bonded.

Article VII says there shall be a Stephen Hales Prize Fund "to be administered as indicated in Section 9 of the By-Laws." Shull's obsession with this fund led him to make it a constitutional provision with detailed instructions on how it was to be managed.

Article VIII gives detailed instructions on securing nominations for office and conducting elections.

Article IX names three standing committees: executive, consisting of the three Society officers, the most recent past president, and the presiding officer of each section; program, consisting of three members appointed by the president plus the secretary-treasurer *ex officio*; finance, consisting of three members appointed by the president.

Article X calls for an audit of the secretary-treasurer's accounts at the end of the fiscal year. A supplementary report on the treasury shall be given at the annual meeting.

Article XI says that proposed amendments to the constitution must receive unanimous approval of the executive committee to appear on the ballot. This requirement gives the officers far greater control than they had under the mandate to "review" proposals. Two-thirds majority of those members voting is required for adoption of amendments.

Bylaws (1929)

Article I describes the usual duties of the officers.

Article II gives the duties of the standing committees: executive, consider and act on all matters not reserved to the Society as a whole; program, arrange all programs; finance, advise the secretary-treasurer on investments and seek ways of increasing productive funds.

Article III calls for the secretary-treasurer to pay expenses through vouchers kept for audit.

Article IV gives \$4.50 of the \$5 annual dues to the editorial board for publishing the journal, and the entire income from subscriptions is available to them. Shull thus tied up nearly all the annual income for *Plant Physiology*. Eaton lost his proposal (46) for \$0.50 from subscriptions to cover office expenses, and the business affairs were left with very little money.

Article V says the Society can use only the income from life and patron memberships, not the principal, which must be transferred to a permanent endowment upon the death of a life or patron member. This was part of Shull's plan for building "endowed endowment."

Article VI says applications for membership must be endorsed by a member and approved by a majority of the executive committee or a meeting of the Society.

Article VII defines a quorum as those attending an annual business meeting

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and, if not less than 25 members, any actions taken are final.

Article VIII defines the fiscal year as July 1 to June 30. "The dues shall entitle the member to membership for the fiscal year, and to all numbers of the official journal in the succeeding calendar year." Shull wins again.

Article IX goes on for two and one-half pages describing in fine detail the management of the Stephen Hales Prize funds and the making of the award, and must be read to be believed. The award is protected not only by constitutional establishment, but the last paragraph of this bylaw reads, "These rules may be altered only by a unanimous vote of the executive committee of the society and only after due notice of all changes shall have been published to the membership a full calendar year in advance of the changes."

So much for the formation of a working constitution. And it did work despite some unusual and not always popular provisions (*i.e.*, had alternatives been up for vote, it is likely the fiscal year would have started January 1). It conformed to the managerial philosophy of the man who was running the journal and the Society, which is probably why it was not changed essentially in his active lifetime.

Meetings

Table 4 lists the location of the annual "Christmas" meetings with AAAS, the principal meeting of the year. Initially, summer meetings were held with the corn-belt agronomists at Michigan Agricultural College (1925), the University of Minnesota (1926), and Purdue University (1928) but these were largely regional, and in the 1930s were superseded by summer meetings with AAAS (see later).

There are no records of attendance at the annual meetings. The programs of the meetings show wide variability in the number of contributed papers and in the extent of cooperation with other plant physiologists. Table 4 summarizes data from the printed programs.

The variability in the programs seems to stem largely from the relative activities of the program committees, but it has not been possible to analyze this. The early meetings were largely a gathering of the Society's protagonists, who felt

Table 4
Contributed Papers and Symposiums at Annual Meetings, 1925-1930

| Year | Place | Contributed papers | | Symposiums | | Joint w/BSA |
|------|------------------|--------------------|--------|------------|--------|----------------|
| | | Sessions | Papers | Sessions | Papers | |
| 1925 | Kansas City, MO | 4 | 29 | 0 | 0 | 1 |
| 1926 | Philadelphia, PA | 6 | 45 | 1 | 3 | 1 |
| 1927 | Nashville, TN | 2 | 23 | 2 | 8 | 0 |
| 1928 | New York, NY | 2 | 25 | 3 | 13 | 2 |
| 1929 | Des Moines, IA | 4 | 43 | 1 | 5 | 0 |
| 1930 | Cleveland, OH | 5 | 48 | 1 | 4 | 1 |

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rewarded by their success in holding a meeting and hearing reports of growth. However, by the time of the Des Moines and Cleveland meetings the membership had become larger and broader, the Society was secure, and there was more interest in the content and conduct of the sessions.

The column giving the number of joint sessions or symposiums with the Physiological Section of the Botanical Society has special significance derived from the continuance of two organizations for plant physiology. (The Society also had occasional joint programs with the pathologists, horticulturists, and ecologists, but these were collaborative, rather than competitive, organizations.) As shown previously in Table 2, the continued existence of the Section did not prevent the growth and functioning of the Society, and by 1930 the Society through its journal was becoming the "main organization" for plant physiology. Although the Society's growth was probably retarded somewhat by the holdouts in the Section, each year saw some BSA members join ASPP. But there remained one point of contact and conflict. At the annual meetings with AAAS, two very independent organizations appeared, each with a program for plant physiologists. The potential for conflict was exacerbated by the cold-shoulder animosity still carried by some leaders of the groups.

Many plant physiologists with botanical connections joined both BSA and ASPP, and they were naturally concerned that the sessions of the two groups at the meetings should not conflict. C. O. Appleman, professor of plant physiology and dean of the graduate school, University of Maryland, and a member of the Physiological Board of the Section, expressed these concerns and made suggestions in a letter (58) of March 9, 1927, to F. E. Lloyd, then president of the Society:

I think we all realize the absurdity of competitive physiological programs at the same meeting. In order to avoid this...the Society might make overtures to become a member of the Federation which includes the Physiological Society, Biochemical Society, and the Society for Experimental Biology, and could then hold some of its meetings with this Federation. This would give plant physiologists opportunity to make contacts...and would [bring] plant and animal physiologists closer together on some of the fundamental problems of common interest...The Society might find it to its advantage to meet occasionally with the Agronomy and Soils people...I think the plant physiologists have as much in common with the Agronomists as they have with the Horticulturists. Through the Section meetings of the Botanical Society, plant physiologists would make their contacts with Botany and Horticulture...

I am not at all sure that the above plan would be the best solution...but I am sure that both members of the Society and the Section will see objections...If some scheme could be worked out that would avoid competitive programs at the same meeting, I am sure that a large number of the Section members would join the Society and support the Journal...I can assure you that the officers of the Section are most anxious to meet the Society half way on any proposition that will iron out the problem of our Physiological Programs.

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The Federation was FASEB, Federation of American Societies for Experimental Biology. Nothing came of the suggestion to join the Federation, although Lloyd endorsed it and passed it on to the executive committee (59), nor of the suggestion to meet with the American Society of Agronomy.

In a related letter (60), Appleman replied to Eaton's objection that holding joint programs simply perpetuated the division by saying, "I think, for the present, we should confront the situation as it exists and not cherish a prophetic hope that one or the other of the organizations is temporary." He continued, "The Physiological Board of the Section is not entirely favorable to all joint meetings at Nashville on account of certain difficulties that would arise." He suggested that Eaton and Brooks (secretary for the Section) arrange their programs for the same room, but on alternate days. "The physiologists would simply come to the same room for all physiological programs but certain ones would be under the auspices of the Society and the others under the auspices of the Section."

Brooks appears to have suggested Appleman's scheme to A. L. Bakke, chairman of the ASPP program committee, because the ASPP Nashville program (61) states, "The program of the Physiology Section of the Botanical Society will be held in the same room and will alternate with our program." Also, Bakke wrote to Eaton (62), "Dr. Brooks tells me that on Thursday [morning] there is to be a round table in charge of Dr. Hoagland. Now he is a member of our committee. How should this be handled? Talk the matter over with Shull and let me get your reaction as soon as possible."

Shull must have said to ignore it, because there is nothing at all listed in the ASPP Nashville program (61) for Thursday morning. In fact, the cooperative use of a single room for plant physiology sessions did not extend to notifying Society members of the alternating Section sessions. Yet in a letter written to Kraybill (63) the following year, Shull says every meeting at Nashville was a "joint meeting." "We all enjoyed it, and hoped that there would never be another meeting of two groups at the same time. It was believed that Hoagland and Brooks could arrange a similarly completely harmonized meeting for New York. If that has proved impossible, I do not know where the trouble has arisen."

Shull's letter (63) was in response to Kraybill's description of a letter he had from O. F. Curtis (64) of Cornell University, one of the die-hard members of the Section. Curtis had written, "I wish the two groups of plant physiologists could get together again as a single group, then we would not have this two ring circus with its conflicts and misunderstandings...one group would be much more logical and effective in every way...It seems to me it would only add to the confusion if all physiologists joined both groups."

Shull's reaction to this (63) was to wonder if Curtis had any concrete suggestions. "The only one he ever made to me, was to abandon Society organization and go back into the Section...I sympathize very keenly with men like Curtis...But if all they can think of is to scrap the organization and go back to the old

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arrangement, we should with the utmost kindness tell them that such a road is not possible."

In short, neither side wanted the two ring circus at the annual meetings, but neither side was willing to merge into the other. The only way a merger could take place would be for one side to weaken to the point of surrender.

Shull attributed the sparring for place and recognition at the national meetings to efforts of the officers of the Section to assume leadership in plant physiology. The extent to which he resented this is revealed in a September 16, 1928, letter to Kraus (65), who was negotiating with BSA for the upcoming New York meeting.

Replying to your note of Sept 13, in regard to the proposal of Brooks, I feel like saying what was said in Trojan times—"Beware of the Greeks bearing gifts."

When the American Society of Plant Physiologists was started, the Botanical Society...passed a resolution that the "Section should be maintained as the main organization for plant physiology in America"... Although the word "main" was moved to be stricken out, seconded and carried, the Bot. Soc. officers illegally kept that word in their statement.

Since that time the only life the section has had has been an attempt to maintain a larger number in the Section than in the Society...In order to do this the Bot. Soc. granted the Section privilege to admit members to the Section who were not members...on payment of 50 cents sectional dues... From the list of societies [whose members were contacted for Sectional membership] the American Society was purposely excluded...

Now that the Section has seen the futility of such tactics, they would like to insure the maintenance of the "largest membership..." by having as many as possible of our members to join them... No one in that group of die-hards has yet joined the Society, and when they do, I will begin to believe in their sincerity.

Anyway, now they come offering a "gift". They have asked the Bot Soc. to admit us on the same terms as other societies to their section. They should have brought the offering on a silver plate. Then it might look attractive! Ha! Ha!...They are willing to combine programs so that they can get our programs without joining us—but they want us to join them for the precious "largest membership's" sake.

Now, Kraus, perhaps I have exaggerated this thing, but I do so to bring out clearly a situation which has been a very real factor in retarding the development of the Society. Because it has retarded it, I do not feel like being anything more than polite, thanking them for including the Society in their list of the privileged, but telling them that the Society does not send out the literature of other organizations with its own...

Or, you might reciprocate. If they will send out an invitation to all of their members to join the Society, we might send out a similarly worded invitation to our members to join the Section. I would like to see a sane sensible merging of the two groups into a single unified body with just one objective, the creation of a very powerful group interested in the development of Plant Physiology...Anything that can be done looking toward that end is worth while. Anything that tends to keep two relatively equal groups more or less jealous of

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each other is not worth while.

I am sure that you will find a wise path to the solution of this little puzzle...

Kraus was not able to solve the little puzzle. He penned a note to Kraybill (66) (secretary-treasurer), "Here are Shull's comments on the enclosed [Brooks's] letter. Apparently better not try to put the thing over. Oh gosh, when will this thing finally die out?" Unfortunately, dying out was to take some years yet, but, as indicated in Kraus's letter, most plant physiologists were getting weary of the feuding. The program committees of Society and Section appear to have tried each year to avoid program conflicts and arrange joint sessions. One gets the impression that the troops minimized the battle to where it was mostly a matter of the generals flying their standards.

Awards

As already indicated, the basic motivation behind the formation of the Society was the desire to give plant physiology identity and recognition as a distinct branch of plant science. The Society with its journal and meetings provided the framework for achieving this end, but completion required the wholehearted conviction of the plant physiologists that they indeed formed a special and worthy group of scientists. A strong *esprit de corps* was needed and Shull took every opportunity to build it, including the introduction of the Barnes and Hales awards, which he saw as strong morale builders. He put his own money into these awards and hovered over their finances.

The initial awards are shown in Table 5.

The awards were made on the recommendation of committees appointed by the president. The Barnes Life Membership committees appear to have functioned each year without significant difficulty, despite the lack of formal authorization and instructions in the constitution and bylaws. Instead, the successive committees formulated guidelines for themselves similar to the following from 1931(67):

AWARD OF BARNES LIFE MEMBERSHIP (1931)

Rules for Guidance of Committee

1. Eligibility. Any member of the Society of Plant Physiology in good standing, irrespective of nationality, shall be eligible for this award.

2. Age of Candidate. In so far as possible the committee should make the award to members who are seniors in the field of plant physiology. In order to aid the committee the Secretary of the Society should keep an up-to-date membership list showing dates of birth of members.

3. Contributions to Science of Plant Physiology. The committee should carefully consider the quality of the direct contributions that a candidate has made to the Science of Plant Physiology before making the award. In order to aid the committee, at their request, the Secretary of the Society should furnish them with a list of scientific contributions which the candidates under consideration have made to plant physiology.

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Table 5

Charles Reid Barnes and Stephen Hales Awards, 1926-1930

| Year | Barnes | Hales |
|------|------------------|----------------|
| 1926 | B. E. Livingston | |
| 1927 | F. E. Lloyd | |
| 1928 | H. E. Spoehr | |
| 1929 | C. A. Shull | D. R. Hoagland |
| | G. J. Peirce | |
| 1930 | R. H. True | W. W. Garner |

No secretary seems to have taken on the extra burden of providing the vital statistics or scientific contributions of the candidates, and the committees must have rustled these up for themselves. One member of the committee (E. M. Harvey) using the above guidelines commented (68), "While age should not be of great consideration in itself, I feel that it should be whenever backed by a reasonably scientific productive life. This not only from the economic side as mentioned by Dr. Shull, but also [to allow time] to aid in the judgement of younger men..." The comment about Shull suggests that he corresponded with the committee(s), at least about tying up \$100 life endowment for a long period if a young plant physiologist were selected.

Livingston, the first Barnes Life Member, was a student of Barnes at Chicago and was his laboratory assistant. As he wrote to Eaton (69), "I believe the first real laboratory course given in Barnes's laboratory was given in the summer of 1899, when he gave me the keys to the physiology rooms and said, 'go to it', or words to that effect." He went on to say, "it is even a greater honor to be a sort of living memorial to Professor Barnes." In another letter (70) he suggested that Eaton "play up" the award with a letter to *Science*; "I should tell about the plan, dwell a bit on the work of Barnes, and give a brief story of the first election." Some years later, however, in a letter to Loehwing, Livingston seemed to question the appropriateness of a memorial to Barnes (71):

If MacDougal wasn't doing physiology before Barnes thought of specializing in that field, the two occurrences must have happened about the same time. Barnes was still really a bryologist when he came to Chicago. I saw him peering through a microscope at mosses, but I never saw him touch a physiological experiment excepting to show a student how to do something—and I don't think he appeared in our physiology laboratory ten times from July 1899, to 1904, when I began to be away a good deal. I don't think Barnes ever published an experimental research in physiology; he encouraged students, lectured, edited, wrote a text book or two and wrote that presidential address on respiration. On the other hand, MacDougal has a long list of experimental researches in our field, as you know.

Please keep all this under your hat for the present. I don't want MacDougal to be irritated and he and I have always been very good friends; indeed, he helped me much more than Barnes ever did. [Livingston spent 1906

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to 1908 with MacDougal at the Desert Laboratory in Tucson (71).]

Shull must not have consulted with Livingston before selecting Barnes to be memorialized; perhaps Shull wanted to memorialize the University of Chicago and his old professor as well as a pioneer of plant physiology. In fairness, however, Shull probably believed what he wrote as chairman of the first Barnes committee (72)—"[Barnes was] the man who had perhaps greater spiritual and inspirational influence upon students of plant physiology than any other American worker in that science. A large number of those now engaged in physiological botany trace their spiritual lineage directly to Doctor Barnes or indirectly to him through those who came within his personal influence." He concludes the eulogy with, "This award is the first link in the chain of a living memorial to Doctor Barnes, whose memory is revered by all who knew him and should be perpetuated as long as plant physiology remains in the service of mankind." However, Shull did not mention research contributions—the Barnes Award is named for a teacher rather than a researcher.

Shull himself was given the 1929 Barnes award, along with another given to George J. Peirce of Stanford University. The committee's announcement (73) gives no explanation for making two awards. Shull paid for only one life membership (24), Peirce's, but he had by this time purchased a life membership for himself, so his award was for the honor only. As the committee put it (73), "The American Society of Plant Physiologists perhaps owes more to Dr. Shull than to any other one individual member." The diplomatic "perhaps" could have been omitted.

As already reported, the Hales prize was set up by Shull for approval at the 1927 Nashville meeting with sufficient endowment to provide an award in alternate years. He planned for the first award to be given the following year (31), "but the machinery was new, and final decision was postponed until the Des Moines meeting in 1929." Shull's correspondence with Kraybill (74) (secretary-treasurer) indicates the failure of the Hales committee to act in time was but one of several disappointments: "...it will probably be a long time till we have a meeting as hard to make a good showing in, as at the New York meeting. The Des Moines meeting should be a 'corker' for we are right at home here in the middle west, and all the old war horses will be present." He added, "In writing members of the Hales Committee be sure not to make any personal criticisms. They feel badly enough about it."

The following year (1929) the Hales committee very appropriately gave D. R. Hoagland the award for his contributions and leadership in the field of plant nutrition. Sufficient interest had accrued for another well-deserved award to be made the following year to W. W. Garner for his development of the concept of photoperiodism. (These terse citations are carried today in the current directory.) Since then the Hales prize has been given alternate years.

In summary, the start-up years of ASPP were years of rapidly growing strength. Membership, journal subscriptions, and resources increased steadily. The success of the Society identified plant physiology as a cohesive scientific discipline.

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Much of the success was due to the devoted and determined leadership of Charles A. Shull, who greatly influenced the course of the Society's development.

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65. Shull, C. A. (Sept. 16, 1928). Letter to E. J. Kraus on cooperation with

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the Physiological Section of BSA.

66. Kraus, E. J. (Sept. 19, 1928). Letter to H. R. Kraybill transmitting Shull's letter (ref. 65).

67. Gilbert, B. E. (Dec. 21, 1931). Letter to R. H. Carr transmitting guidelines for making Barnes Life Membership Awards.

68. Harvey, E. M. (Dec. 16, 1931). Letter to R. H. Carr on policies for making Barnes Life Membership Awards.

69. Livingston, B. E. (Jan. 7, 1927). Letter to S. V. Eaton expressing gratitude for award of Barnes Life Membership.

70. Livingston, B. E. (Jan. 6, 1927). Letter to S. V. Eaton suggesting a notice in *Science* about the Barnes Award.

71. Livingston, B. E. (Sept. 12, 1936). Letter to W. E. Loehwing on recruiting D. T. MacDougal into ASPP, with comments on C. R. Barnes.

72. Shull, C. A. (1926). Announcement, as committee chairman, of the first Charles Reid Barnes Life Membership Award.

73. Thomas, W. (Dec. 19, 1929). Letter to S. V. Eaton transmitting the announcement of the two 1929 Barnes Life Membership Awards.

74. Shull, C. A. (Jan. 12, 1929). Letter to H. R. Kraybill with comments on the 1928 annual meeting of ASPP in New York City.