

submitted by a graduate student. Winners of the undergraduate award are:

- 1967 Donald C. Ferguson, Cornell University
- 1968 George R. McKinnis, Purdue University

Winners of the graduate student award are:

- 1967 John A. Wott, Cornell University
- 1968 Wayne O. Doede, Purdue University
- 1969 Chong Il Lee, University of Rhode Island

“IDIOT’S STICK”: A symbol of office of the president of the Plant Propagators’ Society was presented to L. C. Chadwick, the second president, by Jack Siebenthaler. It is a huge mallet suitably inscribed on the handle in red paint “IDIOT’S STICK”. This “idiot’s stick” was passed to each succeeding president of the Plant Propagators’ Society and is now the badge of office of the president of the Eastern Region.

The members of The International Plant Propagators’ Society have every reason to be proud of their Society — its philosophy, objectives, standards and accomplishments during the past 20 years. But pride of the past must be accompanied by the dedication of each member to make the future excel the past.

### THE NATIONAL ASSOCIATION OF PROPAGATING NURSERYMEN<sup>1</sup>

ALFRED J. FORDHAM  
*The Arnold Arboretum  
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Much of the great technological advance made in plant propagation during recent years can be credited directly to the organization known as The International Plant Propagators’ Society. This unique body has successfully brought together those concerned with the scientific investigation of propagation and those involved in the more practical aspects of commercial plant production. Most people, however, are unaware that its origin is traceable to the existence of a previous and somewhat similar group.

This organization, first known as the National Association of Propagating Nurserymen, was formed in 1919 and survived until 1931, when, due to internal problems and the severe economic depression of that period, it foundered. The group met in conjunction with the annual convention of the American Association of Nurserymen and hence moved about the country to different major cities each year. Meetings consisted of one night sessions which were supposed to convene at 8 o’clock but rarely did.

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At the 7th Annual Meeting held at Louisville, Kentucky, on June 23, 1926 it was agreed "that a report of this meeting and future meetings be printed and distributed to the members and that the report contain a list of the membership of the association." The first issue consisting of fourteen pages covered that meeting. Five subsequent publications followed annually until the organization failed in 1931. Were it not for these issues it is quite probable that all knowledge pertaining to the society and its activities would be lost forever.

It is of interest to note that those wishing to bind this material were confronted with a problem for the six issues appeared in three widely differing sizes. At the 1958 meeting of the International Plant Propagators' Society, Mr. Roy Nordine of the Morton Arboretum made an appeal for the location and gift of these volumes. His purpose was to obtain copies for the archives of the present society and thus provide information which would throw light on the history of the early organization. Dr. Richard P. White of the American Association of Nurserymen donated a complete set of six copies and Mr. Nordine presented them to the International Plant Propagators' Society at the 9th annual meeting held in Philadelphia, Pennsylvania, on December 9, 1959. These I now have on loan from that society and from them have extracted the information which forms the basis of this history.

Mr. Nordine also made a fruitless attempt to locate the last secretary-treasurer. His intentions were two-fold, first to obtain the secretarial records for the archives of the more recent organization, and secondly, to learn what became of the final cash balance comprising \$584.97! If per chance these records still exist, and a reader has knowledge of their whereabouts they would provide the information necessary to complete this history.

A perusal of these proceedings reveals much of horticultural interest, for example, the discussions involve the approach to propagational problems by scientific investigators when this activity was in its infancy, and the old controversy of apprenticeship versus academic education in the production of capable horticultural personnel. The shaky foundation on which the association rested is apparent from comments that appeared every now and then.

An interesting sidelight on the association is provided by the comments of President Thomas A. McBeth of Springfield, Ohio, when at the 7th Annual Meeting (1926), he pointed out that a motion had been passed the previous year to appoint a committee to revise the by-laws of this association. As far as he knew nothing had been done, or that a committee had even been appointed but he recommended that some action should be taken. He also suggested that "the constitution be rewritten as it was very poor, and that the constitution for some reason or other had been lost, I guess"

**Table 1—Meetings Held, Together with Officers who Presided:**

Date	Location	Presiding Officers
June 23, 1926	Louisville, Kentucky	Thomas A. McBeth Springfield, Ohio
June 21, 1927	Cleveland, Ohio	W. B. Cole Painesville, Ohio
June 20, 1928	Denver, Colorado	Henry Klehm Arlington Heights, Illinois
July 16, 1929	Boston, Massachusetts	Henry Klehm Arlington Heights, Illinois
July 15, 1930	Minneapolis, Minnesota	E. H. Costich Westbury, New York (in lieu of President John M. Nordine, Lake City, Minnesota, who was absent)
July 22, 1931	Detroit, Michigan	John Siebenthaler Dayton, Ohio
1932	No meeting held — E. H. Costich would have presided, having been elected president at the 12th Annual Meeting in 1931.	

This recommendation led to action and the Executive Committee met in Chicago during the winter to draft a constitution which was put before the members and accepted during the 8th Annual Meeting in 1927. At this time, and without explanation in the records at least, the name was changed from the National Association of Propagating Nurserymen to the American Plant Propagators Association. The constitution reads as follows:

#### **Constitution and By-Laws**

##### **The American Plant Propagators Association**

(1.) This organization shall be known as the American Plant Propagators Association.

(2.) The purpose of this organization shall be the upbuilding of the science and art of the propagation of nursery stock and plant material for distribution throughout the United States, and for the establishing of standards of quality and grades. Further: — to assist in developing a Nursery business for the benefit and protection of all

those engaged in the business.

(3.) All nurserymen or nursery firms of good standing who are engaged in the propagation of nursery stock for lining out in nursery rows, shall be eligible for membership.

### **By-Laws**

(1.) The officers shall consist of President, Vice President and Secretary- Treasurer, who shall be elected at the Annual Meeting by majority vote of those members present.

(2.) An Executive Committee shall consist of seven members. The President to be a member of the Committee, and two members elected each year to serve three years.

(3.) The Executive Committee shall pass on all applications for membership, shall approve all bills before payment, provide program for the annual meeting, and perform such other duties as the name signifies, or that the President may call upon them for. All action of the Committee shall be governed by majority vote.

(4.) The Secretary-Treasurer shall receive all moneys, giving his receipt therefore, and pay all bills ordered by the Executive Committee. He shall keep a record of all proceedings and publish a report after each annual meeting.

(5.) The yearly membership dues shall be \$5.00.

The university and research people whose papers appear in the proceedings must have been honorary members or guest speakers, for according to article 3 of the constitution they would not qualify for membership. Article 3 was also designed to exclude florists and others involved in the propagation of plants not considered nursery stock. Article 2 limited membership to those propagating nursery stock for distribution throughout the United States. One wonders if this stipulation could lead to expulsion of a member doing foreign business!

### **Statistical Information**

Throughout these publications statistical information is sketchy. Although it was voted that the proceedings contain a membership list, only once did it appear. (Proceedings of the 7th Annual Meeting). Apparently membership was held by organizations or nursery firms rather than by individuals, at least at first, and the published list showed sixty such members. (Table 2.) However twenty-four new members were accepted in 1926, which represented a membership boost of 40 per cent. The report presented at the 10th Annual Meeting in 1929 gives an idea of the Association's size for that year. It mentions five honorary members, seventy-seven members paid in full, and twenty-one up to three years behind in dues.

**Table 2 — List of Members, 7th Annual Meeting, 1926.**

J W Adams Nursery Co , Springfield, Mass	Jackson and Perkins Co , Newark, N Y
Ashford Park Nurseries, Atlanta, Georgia	J Jenkins and Son, Winona, Ohio
Augustine and Company, Normal, Illinois	Jones Norfolk Nurseries, Norfolk, Virginia
Mark Aukeman, Springfield, Ohio	Klehm's Nurseries, Arlington Heights, Ill
J V Bailey, St Paul, Minn	Littleford Nurseries Co , Downers Grove, Ill
Baker Bros Inc , Fort Worth, Texas	Lovett's Nurseries, Little Silver, N J
Berryhill Nursery Co , Springfield, Ohio	Malmo and Company, Seattle, Washington
Bunting's Nurseries, Selbyville, Del	T A McBeth, Springfield, Ohio
J S Burton, Casstown, Ohio	Thomas B Meehan Co , Dresher, Penna
M L Carr's Sons, Yellow Springs, Ohio	Mt Arbor Nurseries, Shenandoah, Iowa
Charlevoix County Nurseries, Charlevoix, Mich	Naperville Nurseries, Naperville, Illinois
Chase Nursery Company, Chase, Alabama	Netts-McBeth Nursery, Springfield, Ohio
Cole Nursery Company, Painesville, Ohio	Northeastern Forestry Assoc , Cheshire, Conn
Conard-Pyle Company, West Grove, Penna.	North Star Nurseries, Pardeeville, Wis
J F Donaldson, Sparta, Kentucky	Northwest Nursery Co , Valley City, N D
Wilbur Dubois and Son, Madisonville, Ohio	Onarga Nursery Company, Onarga, Illinois
F and F Nurseries, Springfield, N J	L Dwight Page, Staunton, Illinois
Forest Nurseries Co , McMinnville, Tenn	Princeton Nurseries, Princeton, New Jersey
Fraser Nursery Co , Birmingham, Ala	Prudential Nursery Co , Kalamazoo, Mich
Greening Nursery Co , Monroe, Mich	Rosebank Nursery Co , Huntsville, Ala
Griffings Interstate Nurseries, Jacksonville, Fla	W N Scarff and Sons, New Carlisle, Ohio
Hess Nurseries, Paterson, New Jersey	Henry Schnitzspahn, Bound Brook, N J
I Hicks and Son, Westbury, Long Island, N Y.	Shady Lane Nurseries, Columbus, Ohio
D Hill Nursery, Inc , Dundee, Illinois	Sherman Nursery Co , Charles City, Iowa
Hogansville Nurseries, Hogansville, Georgia	J Siebenthaler Nurseries, Dayton, Ohio
Howard-Hickory Company, Hickory, N C	Templin-Bradley Co , Cleveland, Ohio
Howell Nurseries, Knoxville, Tenn	Texas Nursery Company, Sherman, Texas
T S Hubbard and Company, Fredonia, N Y	Troy Nurseries, Troy, Kansas
I E Ilgenfritz Sons Co , Monroe, Mich	The Villa Nurseries, Portland, Oregon
Imlay Company, Zanesville, Ohio	Thomas Windon, Whitesbog, N J

At the 1928 meeting George Verhalen, Secretary, read the report of Treasurer E. M. Jenkins, who had resigned. It is the only fully detailed report that appears in the six issues:

**Report of Secretary — Treasurer, June 15, 1928**

Balance on hand last report, June, 1927	\$ 466.77	
Dues received	355.00	
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	\$ 821.77	
Interest received on Savings Account:		
July 1, 1927	\$9.29	
January 1, 1928	9.52	18.81
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<b>TOTAL RECEIPTS</b>		<b>\$ 840.58</b>

**EXPENDITURES**

1927

Aug. 10,	H. B. Tukey, Railroad fare and so forth	\$ 30.00
Aug. 10,	Harris and Company, Printing	15.20
Aug. 10,	E. M. Jenkins, Books	2.25
Aug. 10,	C. W. Zimmerman, Expense Account	\$ 69.44
Aug. 10,	J. Jenkins & Son, Postage	\$ 4.82
Sept. 1,	Benton & Brown Reporting Service	
	Report of 1927 meeting	\$ 34.32
Sept. 22,	Harris and Company, Printing	\$ 5.10

*continued*

1928

June 1,	Educational Supply Company, Printing Reports	\$ 95.00	
June 1,	J. Jenkins & Son, Postage	\$ 6.19	
TOTAL EXPENDITURES			\$ 262.32
Balance on hand June 15, 1928			\$ 578.26

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The precarious conditions of the society is apparent from comments that appear from time to time. President McBeth in his opening remarks at the 7th Annual Meeting spoke as follows:

“I believe this organization has a place under the sun. It may be the means of doing a considerable amount of good providing it is properly conducted and enthusiastically supported — put the emphasis on enthusiastically. Some of us thought last year it was in such a condition that it was about time to call an undertaker. I am happy to report it is past that state of coma and that it has taken on new life — it has come to stay.

“If we go out into the field and see a plant in good growing conditions we have hope that that plant will amount to something. We all understand that part of it. It seems to me that is somewhat the condition of this society at this time. It is growing and if you will help to cultivate it, it may become an institution of a great deal of benefit to the trade.

“As I see it, one of the obstacles to be surmounted is the time of our meeting. We have to tack this on to the apron strings of someone else and it is not convenient. We have had a good deal of trouble to get arrangements made here tonight. It is now conflicting with several meetings, keeping some of our members away. We are rather small as yet to call an independent meeting.”

Secretary-Treasurer H. Lloyd Haupt at the 10th Annual Meeting made the following comments:

“It is just a year since I relieved George Verhalen of the books, at Denver, and I thought then I was going to do a lot of things which I am sorry to say I have not accomplished. However, we have kept the old ship afloat and have a little more money in the bank than then, and I think we can do a lot more in the future.”

Throughout the reports, mention is made of efforts to collect back dues and of ideas to increase membership. At the 12th and final

meeting Secretary Haupt reports as follows on a final, futile attempt:

“Our program last year at Minneapolis was most complete and the enthusiasm ran high. Your secretary therefore planned and printed up a very good issue of the Proceedings anticipating that the membership would back him up.

“Hoping to add a number to the list of members, he sent copies of the Proceedings to the various trade papers for review. Everyone of them gave us a good write-up, but of the inquiries resulting therefrom, only one new member was signed up.”

Attendance records did not appear in any of the Proceedings. However, the membership present at the 12th and final meeting must have been small for when President John Siebenthaller made a proposal Mr. Jones moved that it be postponed until there was a better attendance. At the meeting's end, Mr. Jones' motion to adjourn terminated the session and also the society which never convened again.

**RALPH SHUGERT:** Thank you very much, Bill. On behalf of the entire Society and guests in this room we appreciate this very comprehensive report. It's apparent it took many hours to compile and it is an excellent history of our Society.

Ladies and gentlemen, we are now going to begin the first of four symposia for this meeting: there will be two today and two Friday. Each will be followed by a critique; today's critique will be handled by Dr. Hess and Dr. Leiser. This first symposium carries the title of the “Role of Environment in Plant Propagation.” The moderator is the immediate Past-president of the American Association of Nurserymen and currently is serving on the Eastern Region Executive Committee. He is an author, has received numerous titles, awards, etc. It is with considerable amount of honor that I present to you Bill Flemer.

**BILL FLEMER:** Today, we are going to approach some traditional considerations in plant propagation from a more integrated point of view, that is considering the whole environment and its effect on propagation. Usually presentations consider the role of a single aspect of the environment such as water or light upon the rooting of plants or germination of seeds. However, this approach neglects the rather complex and subtle interaction of all phases of the environment on plant propagation. In this respect, you might consider the growth of a plant or the rooting of a cutting as a quadratic equation with four variables — water, light, temperature and mineral nutrition all interacting together on the same basis with each affecting the others. I

recall a simlie which Charley Hess presented to us several years ago in which he likened the growth of a plant or the rooting of a cutting to a column which could be filled with liquid; the column having four series of holes on its sides. One series representing temperature, another water, a third light intensity, and the fourth mineral nutrition. In order to achieve the maximum amount of growth or degree of rooting of cuttings in a bed you must begin at the bottom of each series and plug the holes so that the liquid will rise in the cylinder. This has been a useful concept to me in evaluating the success or failure of our propagation efforts at Princeton.

The kinds of things that can be accomplished are wonderful if you have a perfect environment. I remember Jim Wells telling of a nursery on the West Coast of Scotland where conditions were so ideal that rhododendron cuttings were stuck and rooted directly in raised, open beds much as we would root hardwood cuttings of privet. I also remember going to Normandy in the spring of 1944 and a nurseryman there was top-grafting apple trees on high stems with nothing more than a little mud and a twist of straw around the scion and having complete success. As these examples indicate, when the environment is perfect from the plants point of view the results you can get are simply astounding. For this first symposium we are going to have a group of experts with us who are going to discuss four aspects of the environment and their interrelationships in plant propagation. The first speaker is Dr. Ted Kozlowski from the University of Wisconsin who is going to discuss some of the interrelations of water.

## **ROLE OF ENVIRONMENT IN PLANT PROPAGATION:**

### **WATER RELATIONS<sup>1</sup>**

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### **INTRODUCTION**

All plantsmen know that plants need water for growth. Water is essential for plants as the major constituent of physiologically active tissues. It is a reagent in photosynthesis and in hydrolytic processes as well as a solvent in which salts, sugars, and other solutes move from cell to cell. Water is also essential for maintenance of plant turgidity.

If we ask what the plant does with all the water it extracts from the

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<sup>1</sup>Publication approved by Director of Research, College of Agricultural and Life Sciences, University of Wisconsin.