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Indiana Academy *of* Science

Founded December 29, 1885

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P. D. EDWARDS, EDITOR

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Spring Meeting
MUSCATATUCK STATE PARK
May 22 and 23, 1942

Fifty-Eighth Annual Meeting
NOTRE DAME UNIVERSITY
October 29, 30, and 31, 1942

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Reprints of certain parts of recent volumes of the Proceedings are available for distribution as follows: copies of the constitution and by-laws (Vol. 44), and complete membership list (Vol. 50), may be secured by members elected subsequent to the publication of those volumes; copies of the codified list of duties of officers (Vol. 48) may be secured by officers, divisional chairmen, and chairmen of committees; and copies of the necrology can be supplied to relatives and friends of the deceased members. Inquiries concerning these reprints should be addressed to the Secretary of the Academy, Dr. Winona H. Welch, DePauw University, Greencastle, Indiana.

Reprints of technical papers in recent volumes can often be secured from the authors. They cannot be supplied by the State Library nor by the officers of the Academy.

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OFFICERS AND COMMITTEES FOR 1942

OFFICERS

President, M. G. MELLON, Purdue University.

Vice-President, THEODOR JUST, University of Notre Dame.

Secretary, WINONA H. WELCH, DePauw University.

Treasurer, W. P. MORGAN, Indiana Central College.

Editor, P. D. EDWARDS, Ball State Teachers College.

Press Secretary, C. M. PALMER, Butler University.

Trustees of Academy Foundation: (term 4 years) J. S. WRIGHT, Eli Lilly and Company (term expires 1944), chairman; F. B. WADE, Shortridge High School (term expires 1943).

Committee for Bonding of Trustees: H. L. BRUNER, Butler University, Indianapolis, chairman; W. A. COGSHALL, Indiana University, Bloomington.

Research Grant Committee: A. L. FOLEY, Indiana University (term expires 1941), chairman; E. G. MAHIN, University of Notre Dame (term expires 1942); JOHN S. WRIGHT, Indianapolis (term expires 1943); M. S. MARKLE, Earlham College (term expires 1944); H. E. ENDERS, Purdue University (term expires 1945); M. G. MELLON, Purdue University (ex officio); WINONA H. WELCH, DePauw University (ex officio).

DIVISIONAL CHAIRMEN

Anthropology, C. F. VOEGELIN, Indiana University.

Bacteriology, L. S. MCCLUNG, Indiana University.

Botany, R. C. FRIESNER, Butler University.

Chemistry, K. N. CAMPBELL, University of Notre Dame.

Geology and Geography, G. T. WICKWIRE, Hanover College.

Mathematics, W. E. EDINGTON, DePauw University.

Physics, O. H. SMITH, DePauw University.

Psychology, F. D. BROOKS, DePauw University.

Zoology, T. M. SONNEBORN, Indiana University.

EXECUTIVE COMMITTEE

(Past Presidents, Officers, Divisional Chairmen, and
Chairmen of Standing Committees)

J. C. Arthur,* C. A. Behrens, W. M. Blanchard, F. D. Brooks, H. L. Bruner, S. Burrage, K. N. Campbell, W. A. Cogshall, Stanley Coulter, E. R. Cumings, J. J. Davis, Chas. C. Deam, W. E. Edington, P. D. Edwards, H. E. Enders, A. L. Foley, R. C. Friesner, W. G. Gingery, R. E. Girtan, Robert Hessler, Theodor Just, Eli Lilly, M. W. Lyon, Jr.,*

* Deceased since 1941 meeting of the Academy.

E. G. Mahin, E. S. Martin, L. S. McClung, M. G. Mellon, W. P. Morgan, C. M. Palmer, F. Payne, N. E. Pearson, R. R. Ramsey, O. H. Smith, T. M. Sonneborn, C. F. Voegelin, F. B. Wade, F. N. Wallace, Paul Weatherwax, Winona H. Welch, G. T. Wickwire, J. S. Wright, T. G. Yuncker.

BUDGET COMMITTEE

(President, Secretary, Treasurer, Editor, and Chairmen of Committee on Relation of Academy to State, Program Committee, and Library Committee)

P. D. Edwards, W. G. Gingery, Theodor Just, M. G. Mellon, W. P. Morgan, F. N. Wallace, Winona H. Welch.

STANDING COMMITTEES

(Appointed by the President, Chairman of Each Committee named First)

Auditing: E. S. Martin, K. S. Means.

Biological Survey: N. E. Pearson, W. P. Allyn, H. O. Deay, R. Kriebel, M. W. Lyon, Jr., C. M. Palmer, Dorothy Parker, Winona H. Welch.

Invitations: C. L. Porter, C. A. Malott, J. L. Riebsomer, F. B. Wade.

Junior Academy of Science: H. E. Enders, W. P. Allyn, F. J. Breeze, O. B. Christy, M. S. Markle, M. M. Williams, F. B. Wade, T. G. Yuncker.

Library: W. G. Gingery, Nellie M. Coats, R. C. Friesner.

Membership: R. E. Girton, F. J. Allen, F. V. Graham, Ned Guthrie, G. F. Hennion, Edward Kintner, Naomi Mullendore, J. E. Potzger, R. E. Zirkle.

Nominations: E. G. Mahin, C. A. Behrens, Paul Weatherwax.

Program: Theodor Just, M. W. Lyon, Jr., E. G. Mahin, Scott McCoy.

Publication of Proceedings: P. D. Edwards, R. C. Corley, Paul Weatherwax.

Relation of Academy to State: F. N. Wallace, Stanley Coulter, E. Y. Guernsey, Eli Lilly, H. J. Reed, J. S. Wright.

Representative on Council of A.A.A.S.: H. E. Enders.

Resolutions: P. J. Elving, W. Mullison.

MINUTES OF THE SPRING MEETING

MUSCATATUCK STATE PARK, MAY 22, 1942

The meeting was called to order by President Mellon, in the dining room of Muscatatuck Inn, at 9:30 P. M.

Officers and committees reported as follows:

President. Dr. Mellon announced that J. E. Potzger is serving on the Membership Committee in the place of H. H. Nester; and that the committee making the study of the duties of the Research Grant Committee desires more time before making a report. J. J. Davis, Chairman, E. G. Mahin, and Wm. E. Edington compose the committee.

Editor. Dr. Edwards stated that war conditions were retarding the anticipated early publication of the Proceedings.

Fifty-Year Index. A progress report was made by G. H. Smith. Approximately 90% of the manuscript has been delivered to the typist who has completed about 50% of that amount.

Library. Dr. Friesner reported for Miss Nellie Coats. Many new and liberal exchanges have been opened in countries of South America. Approximately \$200.00 worth of binding is now in process.

Emeritus Membership. The following were elected to Emeritus Membership: William M. Blanchard, Benjamin H. Grave, Louis J. Rettger, and David A. Rothrock.

Membership. The following were elected to membership in the Academy: William A. Bonner, C. O. Keller, and John D. Mizelle.

Fall Meeting. Because of war conditions it was voted to give power to the Executive Council to decide whether or not the meeting should be held, and if so, whether or not the place should be changed from Notre Dame to a central location such as Indianapolis.

Resolutions. The following resolutions, read by C. L. Porter, were adopted: The Indiana Academy of Science assembled at Muscatatuck State Park, May 22-23, in its Spring Meeting, expresses its appreciation for the hospitality offered by the management of Muscatatuck State Park; for the activities of the program committee under the chairmanship of Theodor Just in arranging field trips and other interesting features of the program; to Ray C. Friesner, Charles C. Deam, Ralph M. Kriebel, C. A. Malott, and C. M. Kirkpatrick for their leadership and kindly council in the various hikes associated with this meeting of the Academy; and for the interest and efficiency demonstrated by the officers of the Academy.

Submitted,
C. L. PORTER, *Chairman.*

Dr. T. G. Yunker, chairman of Taxonomists' Group, announced that the 1942 foray had been cancelled because of war conditions.

The Academy sent a message to Dean M. L. Fisher, Purdue University, wishing him a speedy recovery from illness.

Adjournment, 10:30 P. M.

Respectfully submitted,
WINONA H. WELCH, *Secretary*.

PROGRAM OF THE WINTER MEETING

UNIVERSITY OF NOTRE DAME

October 29-31, 1942

THURSDAY, OCTOBER 29

7:30 P. M.

Meeting of the Executive Committee

FRIDAY, OCTOBER 30

9:30 A. M. General Session

Address of Welcome. Reverend Hugh O'Donnell, C.S.C., President of the University of Notre Dame.

Response. President M. G. Mellon.

Necrology. Will E. Edington, DePauw University.

"David Dale Owen, Man and Scientist."* Walter B. Hendrickson, MacMurray College, Jacksonville, Illinois.

"Contribution of an Indiana Plant to the War Effort." Lt.-Col. C. Alfred Campbell, Vice-President, Marmon-Herrington Company, Indianapolis.

12:30 P. M. Demonstration of geometrical models

1:00 P. M. Sectional Meetings

6:00 P. M. Annual Dinner

Business session.

President's Address. "Science, Scientists, and Society." President M. G. Mellon, Purdue University.

SATURDAY, OCTOBER 31

9:00 A. M.

Taxonomists Meeting

Junior Academy of Science Meeting and Exhibits

* The material of this address is being published in Chapter IX of Volume 27 of the Indiana Historical Collections.

MINUTES OF THE EXECUTIVE COMMITTEE

SOUTH BEND, OCTOBER 29, 1942

The Executive Committee was called to order by President Mellon at 7:30 p.m. in the Coral Room of Hotel LaSalle. Minutes of Spring Meeting at Muscatatuck State Park were read and approved. Officers and committee representatives reported as follows:

Academy Trustee. Report of John S. Wright, Frank B. Wade, and W. P. Morgan, Trustees of the Foundation Fund, Indiana Academy of Science for the Year 1941-1942.

Balance from the previous year.....	\$533.36
Total receipts	687.12
Total	\$1,220.48
Expenditures.....	none
Balance (in Indiana National Bank Savings Account).....	\$1,220.48

Assets in the Fund as of October 17, 1942

Five \$1,000 U.S. Savings Bonds, Series D, at cost.....	\$3,750.00
One \$1,000 U.S. Savings Bond, Series G, at cost.....	1,000.00
Federal Farm Loan and Farm Mortgage Bonds at par.....	2,500.00
One \$500 4% U.S. Treasury Bond of '44-'54 at par.....	500.00
Four \$100 4% U.S. Treasury Bonds of '44-'54 at par.....	400.00
One \$100 U.S. Treasury Bond, 4¼% at par.....	100.00
One \$100 U.S. Treasury Bond, 3¼% at par.....	100.00
One \$100 U.S. Treasury Bond, 3½% at par.....	100.00
Two \$100 Muncie Masonic Temple Assn. First Mort. Bonds at par....	200.00
Six shares Standard Oil Indiana common stock at par.....	150.00

Total at par or cost..... \$8,800.00

Report accepted.

Auditing Committee. In the absence of E. S. Martin his signature on the notarized report of the Academy Foundation was accepted as his official report.

Treasurer's Report. Dr. Morgan presented a tentative financial report for the period from January 1 to October 24, 1942. His final report, approved by the Auditing Committee, at the end of the year follows:

Receipts

Balance on hand January 1, 1942.....	\$426.87
Dues and initiation fees	744.06
A.A.A.S. refund for research grants.....	137.50
Author's reprints Vol. No. 50.....	33.23
Author's reprints Vol. No. 51.....	200.94
Dr. Parker returned research grant.....	46.00

\$1,588.60

Disbursements

1—Program committee	\$122.25	
2—Editor	200.00	
3—Expenses of Secretary.....	28.14	
4—Expenses of Treasurer.....	65.00	
5—Mailing Proceedings	32.96	
6—Stationery	44.82	
7—Delaware Engraving Co.....	136.49	
8—Junior Academy Bulletins.....	20.00	
9—Bond and Safety Box.....	31.00	
10—Research grant to Dr. Parker.....	45.83	
11—Bookwalter Co. reprints.....	71.87	
12—Balance due for printing Proceedings to C. E. Pauley.....	6.92	
13—Books purchased for library.....	4.00	
14—Research grant to Dr. Mullison.....	50.00	
		\$859.28
Balance on hand.....		729.32
		\$1,588.60

(Signed) W. P. MORGAN, *Treasurer.*(Signed) ERSIE S. MARTIN, *Auditor.*

Bonding Committee. In the absence of Dr. Bruner and Dr. Cogshall, the Secretary read the report which follows:

Enclosed herewith you will find notice of premium due November 18, 1942, on Fidelity Bond No. 1113950, issued by the Hartford Accident and Indemnity Company, in behalf of the Academy of Science. The premium covers the cost of bonds for the following officers of the Academy:

Treasurer bond	\$2,000 cost \$5.00
One Trustee bond.....	\$5,000 cost 10.00
Second Trustee bond.....	\$5,000 cost 10.00
Total cost	\$25.00

The report was accepted and the cost of bonding ordered paid.

Editor and Publication of Proceedings. Dr. Edwards submitted the following report:

Number of copies of Volume 51 of the Proceedings.....	1,600
Total number of reprints.....	9,100
Number of pages.....	316
Total cost of engraving, printing, and binding.....	\$1,485.70
Editorial expense	\$200.00

Report was adopted with thanks.

Research Grant. Dr. Foley proposed the following rule: The Research Grant Committee can not consider any application which is not received on or before ten days prior to the meeting of the Executive Committee. Carried.

Dr. Mahin made the following report for the committee on the Study of Duties of Research Grant Committee: The action taken by the Executive Committee at meeting held Nov. 9, 1939, namely, duties 3, 4, and 5 be postponed indefinitely, should be reaffirmed. Adopted.

Biological Survey. The collections and studies on Indiana Bryophytes are being continued by Dr. Winona H. Welch and Dr. Dorothy Parker.

The Committee on Indiana Plant Distribution Records has listed 1200 new county records and 19 varieties and forms previously unreported from the state. A special report is published each year in the Proceedings with intent to keep Deam's Flora up to date. A check list of the Formicidae (Hymenoptera) by R. L. Morris is ready for publication. Mr. Morris is now preparing a paper on the ants which will include descriptions and notes on the distribution and habits of various species. A manuscript on the Noctuidae (Lepidoptera) of Steuben County has been nearly completed by George Ryan of Angola. Work on the Odonata of Indiana is being continued by Dr. B. E. Montgomery of Purdue, aided by Carl Bartholomai. Dr. H. O. Deay of Purdue is continuing his studies on the Hemiptera and Homoptera of the state. Carl Blickenstaff and Frank Skinner are working on the Thysanoptera and Siphonaptera respectively. Report accepted.

Fifty-Year Index. Dr. George H. Smith, the indexer, reported that the 50-year cumulative index for the Proceedings of the Indiana Academy of Science is now in its final stages of completion. The subject index is temporarily assembled into eleven separate sections: Archeology, Bacteriology, Botany, Chemistry, Entomology, Geology, Mathematics, Ornithology, Physics, Psychology, and Zoology. The systematic index includes all genera mentioned in the Proceedings. The third section of the index will be a brief synoptic review of the floristic, faunistic, stratigraphic and geographic data of each of the ninety counties of the state mentioned in the Proceedings. Report accepted.

Library Committee. Miss Nellie M. Coats, Librarian, Indiana Academy of Science Library, prepared the following report for 1941-1942:

In the report for 1940-41 it was noted that letters suggesting the exchange of publications had recently been addressed to 58 scientific and learned institutions and societies in Latin America. As a result of this correspondence 22 new serial titles have been added to the list currently received representing the following countries: Argentina, Brazil, Chile, Costa Rica, Cuba, Haiti, Mexico, Peru, Salvador, Uruguay and Venezuela.

While many foreign societies no longer find it possible to forward publications yet within the last 3 months items have been received from such surrounded or involved regions as Australia, England, Hawaii, Ireland, Portugal, Scotland, South Africa, Switzerland, and Sweden.

It has been suggested by the Smithsonian international exchange service, however, that copies of the I.A.S. Proceedings intended for countries other than Great Britain, South Africa or the countries of the western hemisphere be held until the close of the war, as its exchange shipments to these other countries have been suspended.

During the year the Amos Butler library was purchased for Indiana University. A letter was addressed to Robert Miller, Director of libraries there, calling his attention to the fact that many items in this collection fitted nicely into gaps in the Academy files and Dr. Miller has agreed to keep the Academy in mind whenever the collection is worked upon. For this reason it was thought inadvisable to purchase separate needed items from other sources just now.

One hundred eighty-five volumes were bound this year. Funds will be needed for 200 to 250 volumes next year.

Report was adopted.

Press Secretary. Dr. C. M. Palmer, Press Secretary, submitted the following report:

Through the cooperation of the Publicity Office of Butler University, press releases on the spring meeting and the present fall meeting of the Academy were sent to almost two hundred Indiana newspapers and radio stations. Additional releases were mailed by the press secretary to about fifty college and high school papers in the state. News releases concerning the fall meetings have been sent out, also, by the Publicity Office of the University of Notre Dame.

A special reporter for the Louisville (Ky.) *Times* was present at the spring meeting at Muscatatuck State Park. Several good photographs of scientists in action during their field trips, together with an accompanying article which was more than one-half column long, appeared in the next Saturday and Monday issues of the *Times*.

At the request of the Press Secretary, photographs of most of the officers of the Academy for the present year were received and will be filed at the State Library in Indianapolis with those previously obtained by the former press secretary, W. E. Edington.

Report accepted.

Membership. A progress report was read and accepted and the election postponed until the evening meeting, Oct. 30.

Junior Academy of Science. Dr. Enders reported 38 active Junior clubs in the state, and several have a number of divisions, ranging from two to six. A new club in the Technical High School, Indianapolis, is being nominated for membership.

"The Illinois Academy of Science has loaned to the Indiana Academy of Science two traveling kits; one to serve for the organization of new clubs, and the second, an exhibit of materials upon the subject of Plastics, which may serve as material for presentation of club programs. Dr. Enders purchased a kit from Ross Allen, Ocala, Florida, for circulation among the clubs for program material. It contains preserved venomous snakes, skulls and fangs mounted, together with the anti-venom, and an exhibition of the manner in which it may be used to counteract the bite from venomous snakes."

It was voted to allot \$20.00 for the publication, Science Aids Service, and the Treasurer was authorized to pay this amount to the publisher, Louis A. Astell.

Relation of Academy to State. Report of F. N. Wallace was read and accepted. A request has been presented to the State Budget Committee for \$1500.00.

Relation of Academy to A.A.A.S. Dr. Enders stressed the necessity of Academy members being members of A.A.A.S., also, in order that increased research funds could be made available for Indiana Academy members. Report accepted.

Invitations. President Mellon appointed C. L. Porter, Chairman, C. A. Malott, J. L. Riebsomer, and F. B. Wade.

Resolutions. President Mellon appointed P. J. Elving, Chairman, and W. Mullison.

Program. Chairman Just presented reasons for some of the sections of the Academy not meeting this year.

New Business. Dr. Behrens presented the wish of the Indiana Branch of the Society of American Bacteriologists to affiliate with the Bacteriology Section of the Academy. Dr. Yunker moved that a committee be appointed to study this request of affiliation and be instructed to report at the Spring Meeting of the Academy. Carried.

Dr. Bruner and Dr. Cogshall were elected to continue as the members of the Committee for Bonding Trustees.

Dr. Mahin was elected to succeed himself on Research Grant Committee, his new term expiring in 1947.

Dr. Mahin moved that papers in the hands of chairmen at proper time, from sections not meeting, be considered as eligible for publication. Carried.

Adjournment, 10:45 p.m.

MINUTES OF THE GENERAL SESSION

UNIVERSITY OF NOTRE DAME, October 30, 1942

Reverend Hugh O'Donnell, C.S.C., President of the University of Notre Dame welcomed the Indiana Academy of Science to the campus. President Mellon responded in behalf of the Academy.

The necrology prepared by Dr. Edington was read.

Minutes of the Executive Committee meeting of October 29, 1942, were read by the secretary and approved by the Academy.

Dr. Foley reported that W. R. Mullison, Purdue University, had been granted \$100 from A.A.A.S. through the Academy for his research problem, The determination of the gross effects of supplying nitrogen in the form of urea to plants deficient in certain of the necessary elements as contrasted with those appearing when these deficient plants are supplied with nitrates.

Two addresses followed: "David Dale Owen, man and scientist", by Walter B. Hendrickson, MacMurray College, and "Contribution of an Indiana plant to the war effort", by Lt.-Col. C. Alfred Campbell, Indianapolis.

Following the dinner in the Bronzewood room, Hotel LaSalle, Dr. R. E. Girton presented forty-two applications for membership, including one Junior Academy Membership, making a total of forty-eight applications for the year. The secretary was instructed to cast an unanimous ballot for the forty-eight applicants.

Dr. Mahin read the nominations of the committee as follows: President, Theodor Just, University of Notre Dame; Vice-President, C. L. Porter, Purdue University; Secretary, Winona H. Welch, DePauw University; Treasurer, W. P. Morgan, Indiana Central College; Editor, P. D. Edwards, Ball State Teachers College; and Press Secretary, C. M. Palmer, Butler University. The nominees were elected.

The Divisional Chairmen elected in the sectional meetings for 1943 were announced as follows: Anthropology, G. K. Neumann, Indiana University; Bacteriology, L. S. McClung, Indiana University; Botany, A. T. Guard, Purdue University; Chemistry, E. Hughes, Eli Lilly & Company; Geology and Geography, W. T. Buckley, Indiana University; Mathematics, W. E. Edington, DePauw University; Physics, O. H. Smith, DePauw University; Psychology, W. A. Kerr, R.C.A., Indianapolis; and Zoology, R. M. Cable, Purdue University.

Dr. C. L. Porter announced that the Committee on Invitations had selected Indianapolis for the 1943 Fall Meeting of the Academy.

The Resolutions Committee expressed, on behalf of the Academy, its sincere appreciation for the hospitality offered by the University of Notre Dame and its members, and for the careful preparation made by

the Program Committee under the leadership of Professor Just. The report was accepted.

Dr. M. G. Mellon, retiring president, delivered a very interesting address on the subject, "Science, scientists, and society".

The 58th annual meeting of the Indiana Academy of Science, with a general attendance of 113 and a dinner attendance of 68, was adjourned.

WINONA H. WELCH, *Secretary*.