

PROCEEDINGS

*of the*

Indiana Academy  
*of Science*

*Founded December 29, 1885*

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VOLUME 53

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R. C. CORLEY, Editor

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Fifty-Ninth Annual Meeting  
BUTLER UNIVERSITY  
October 28, 29, and 30, 1943

Copies of the Proceedings may be purchased through the State Library, Indianapolis, Indiana, at \$3.00 per volume. All items sent in exchange for the Proceedings and all communications to officers of the Academy, when their names and addresses are not known, should also be sent to the State Library.

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 1943

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### OFFICERS

- 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.  
*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 1946); E. G. MAHIN, University of Notre Dame (term expires 1947); JOHN S. WRIGHT, Indianapolis (term expires 1943); M. S. MARKLE, Earlham College (term expires 1944); H. E. ENDERS, Purdue University (term expires 1945); THEODOR JUST, University of Notre Dame (ex officio); WINONA H. WELCH, DePauw University (ex officio).

### DIVISIONAL CHAIRMEN

- Anthropology*, GEORG K. NEUMANN, Indiana University.  
*Bacteriology*, L. S. MCCLUNG, Indiana University.  
*Botany*, A. T. GUARD, Purdue University.  
*Chemistry*, EDWARD HUGHES, Eli Lilly and 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., Camden, New Jersey.  
*Zoology*, R. M. CABLE, Purdue University.

### EXECUTIVE COMMITTEE

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

- C. A. Behrens, H. L. Bruner, W. T. Buckley, S. Burrage, R. M. Cable, W. A. Cogshall, 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. Girton, A. T. Guard, Robert Hessler, Edward Hughes, Theodor Just, W. A. Kerr, Eli Lilly, E. G. Mahin, E. S. Martin,

L. S. McClung, M. G. Mellon, W. P. Morgan, G. K. Neumann, C. M. Palmer, F. Payne, N. E. Pearson, C. L. Porter, R. R. Ramsey, O. H. Smith, F. B. Wade, F. N. Wallace, Paul Weatherwax, Winona H. Welch, 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, R. C. Friesner, W. G. Gingery, Theodor Just, 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, J. D. Mizelle, C. M. Palmer, Dorothy Parker, W. E. Ricker, Winona H. Welch.

*Invitations*: T. G. Yuncker, G. F. Hennion, J. E. Potzger.

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

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

*Membership*: R. E. Girton, G. F. Hennion, R. M. Kriebel, W. E. Martin, J. E. Potzger, Paul Weatherwax.

*Nominations*: Paul Weatherwax, E. G. Mahin, M. G. Mellon.

*Program*: R. C. Friesner, R. M. Kriebel, F. A. Loew, Karl Means, N. E. Pearson, J. E. Potzger.

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

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

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

*Resolutions*: B. E. Montgomery, F. A. Loew, C. A. Malott.

# PROGRAM OF THE WINTER MEETING

BUTLER UNIVERSITY

October 28-30, 1943

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THURSDAY, OCTOBER 28

7:30 P. M.

Meeting of the Executive Committee

FRIDAY, OCTOBER 29

9:30 A. M. General Session

Address of Welcome. President M. O. Ross, Butler University.

Response. President Theodor Just.

Necrology. Will E. Edington, DePauw University.

"Indiana Wild Life as Friends of Man." W. P. Allyn, Indiana State Teachers College, Terre Haute.

Exhibit: "Parasitic Diseases," W. H. Headlee, Indiana University School of Medicine, Indianapolis.

11:45 A. M. and 2:30 P. M. Sectional Meetings

6:00 P. M. Annual Dinner

Business Session.

President's Address. "The Rates of Evolutionary Progress," President Theodor Just, University of Notre Dame.

SATURDAY, OCTOBER 30

9:00 A. M.

Taxonomists Meeting

Entomologists Meeting

# MINUTES OF THE EXECUTIVE COMMITTEE

INDIANAPOLIS, October 28, 1943

The Executive Committee was called to order by President Just at 8:00 p. m. in Parlor E of the Lincoln Hotel. The reports of officers and committee representatives were presented and accepted 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 1942-1943.

Balance from the previous year .....	\$1,220.48
Total receipts .....	257.14
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Total .....	\$1,477.62
Expenditures (for \$1,000 Series G, U. S. Treasury Bond) .....	1,000.00
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Balance in Indiana National Bank savings account .....	\$477.62

## Assets in the Fund as of October 28, 1943

Five \$1,000 U. S. Savings Bonds, Series D—at cost .....	\$3,750.00
Three \$1,000 U. S. Savings Bonds, Series G—at cost .....	3,000.00
Federal Farm Loan and Farm Mortgage Bonds—at par .....	2,500.00
One \$100 U. S. Treasury Bond, 4¼%—at par .....	100.00
One \$100 U. S. Treasury Bond, 3½%—at par .....	100.00
Two \$100 Muncie Masonic Temple Assn. Bond—at par .....	200.00
Six shares Standard Oil Indiana common stock—at par .....	150.00
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Total at par or cost .....	\$9,800.00

After the reading of the report of the Academy Trustees by F. B. Wade, the following resolution was read by John S. Wright.

*Whereas* the Research Foundation Fund of the Indiana Academy of Science has grown from a few hundred dollars to approximately ten thousand dollars in a few years; and

*Whereas* it is specified in the terms of the organization of the Research Foundation Fund that the principal shall be held in trust and invested in accordance with the laws of the State of Indiana governing the reserves of Life Insurance Companies:

*BE IT RESOLVED* that the Trustees be granted authority to contract with a long-established Trust Company to act as custodian and as co-trustee of the Foundation Fund of the Indiana Academy of Science.

**Auditing Committee.** E. S. Martin stated that the accounts of the Academy Trustees and the Treasurer are in perfect condition.

**Treasurer.** W. P. Morgan presented a tentative financial report for the period from January 1 to October 1, 1943. His final report, approved by the Auditing Committee at the end of the year, follows:



**Receipts**

Balance on hand January 1, 1943.....	\$729.32
Dues and initiation fees.....	843.00
A.A.A.S. refund for research grants.....	142.00
Designated gift.....	300.00
Publications sold by librarian.....	15.18
Authors' reprints Vol. No. 51.....	22.82
	<hr/>
	\$2,052.32

**Disbursements**

1—Program Committee.....	\$ 90.52
2—Editor.....	200.00
3—Expenses of Secretary.....	58.04
4—Expenses of Treasurer.....	91.80
5—Mailing Proceedings.....	35.36
6—Stationery.....	30.64
7—Refund expenses of officers.....	3.95
8—Junior Academy Bulletins.....	20.00
9—Safety Box and Surety Bonds.....	31.00
10—Research Grants: Dr. Mullison.....	25.00*
11—Cost of reprints.....	unpaid
12—Balance on Proceedings.....	unpaid
13—Books purchased for Library.....	50.55
14—Returned checks from members.....	2.00
	<hr/>
	\$ 638.86
Balance on hand.....	1,413.46
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	\$2,052.32

\* Check drawn for \$75.00 in payment of research grant to Dr. A. L. Foley had not cleared when back statement was prepared.

(Signed) W. P. MORGAN, *Treasurer*,  
 (Signed) ERSIE S. MARTIN } *Auditors*.  
 (Signed) KARL S. MEANS }

**Bonding Committee.** H. L. Bruner reported that the cost of bonding, twenty-five dollars, had been paid to the Hartford Accident and Indemnity Company, Indianapolis, Indiana.

**Editor and Publication of Proceedings.** P. D. Edwards reported that page proof was completed in time for delivery of the *Proceedings* in June but the printing had been delayed because of paper shortage. Delivery is expected in November.

Number of pages in volume 52.....	258
Number of copies cloth bound.....	1,000
Number of copies paper bound.....	600
Number of reprints.....	11,400
Cost of engraving, printing, and binding.....	\$1,500.00
Postage and editorial expense.....	\$200.00

**Research Grant.** One application had been received by the committee, that of Dr. Arthur L. Foley. A grant of \$150.00 from the A.A.A.S. research fund to the Academy was made to Dr. Foley for the purchase of necessary apparatus for his experiments in surface tension. Upon the

completion of the study the materials purchased with the grant are to become the property of the Indiana Academy of Science.

**Biological Survey.** N. E. Pearson had no report. Committee's work had been greatly decreased because of restriction on travel due to war.

**Fifty-Year Index.** A progress report was made by R. C. Friesner and G. H. Smith. J. S. Wright commented concerning the value of the Index to libraries and scientists.

**Library Committee.** W. G. Gingery presented the report of Nellie M. Coats, Academy Librarian.

Shipments of Indiana Academy of Science Proceedings for societies and institutions in Great Britain, India, New Zealand, New South Wales, Portugal, Queensland, South Africa, South Australia, Tasmania, Victoria, Western Australia, and all countries in the western hemisphere have been forwarded through the Smithsonian International Exchange Service since January, 1943. Copies of *Proceedings* intended for societies and institutions not included in this geographic range are being held in Indianapolis for shipment later. Publications have been received from the following locations outside the continental U. S. A.: Argentina, Australia, Brazil, Canada, Chile, China, Cuba, Ecuador, England, Haiti, Hawaii, Ireland, Mexico, Paraguay, Peru, Russia, Scotland, South Africa, Switzerland, Uruguay, and Venezuela.

During the year 41 new serial titles have been added, and 182 volumes have been bound at a cost of \$215.30. The budget committee also supplied an additional fund of \$60.00 with which to purchase fugitive items missing from the serial files.

The files of the *Proceedings* available for exchange were increased by a gift of 25 volumes from Wabash College and 161 volumes from Indiana University. It will be greatly appreciated if a member having any duplicate copies will return them to this exchange file at the State Library.

The use of the Academy Library has increased since the listing of its titles in the Union list of serials in Indiana Libraries and in the H. W. Wilson Company Union list for the U. S. A.

**Press Secretary.** C. M. Palmer reported that news releases for the 1942 meeting were sent out with the co-operation of the Publicity Office of the University of Notre Dame and for the 1943 meeting with the aid of the Publicity Office of Butler University. Science Service and Science publish articles on the meetings of the Indiana Academy. The abstracts sent in by authors of papers to be presented in the Sectional Meetings were of considerable aid in the preparation of the news releases.

**Membership.** R. E. Girton presented a tentative report as election of members occurs at dinner meeting.

**Junior Academy of Science.** H. E. Enders announced that the Indiana Junior Academy of Science consists of forty-three clubs, some of which

have as many as six sections in a single high school, and that, because of travel restrictions, the clubs have voted to cancel their formal meeting for this year.

However, the Science Clubs of Indianapolis have arranged to hold a sectional meeting and to provide a program and exhibits at Butler University, Saturday morning, October 30. The high schools participating are Manual Training, Shortridge, Arsenal Technical, Crispus Attucks, Washington, Broadripple, and Thomas Carr Howe.

**Relation of Academy to State.** F. N. Wallace reported that the Legislature granted the Academy \$1500.00 for the publication of the *Proceedings* and for binding the reports in the Academy Library.

**Relation of Academy to A.A.A.S.** No meeting of A.A.A.S. was held in 1942.

**Nominations.** Dr. Weatherwax presented the name of Dr. Ray F. Dawson, Princeton University, for election as Fellow.

**Invitations.** Pres. Just appointed Chairman, T. G. Yuncker, G. F. Hennion, J. E. Potzger.

**Resolutions.** Pres. Just appointed Chairman, B. E. Montgomery, F. A. Loew, C. A. Malott.

**Old Business.** The committee report concerning the affiliation of the Indiana Branch of the Society of American Bacteriologists with the Bacteriology Section of the Indiana Academy of Science was accepted favorably. Committee: Chairman, C. G. Culbertson, L. S. McClung, H. M. Powell, T. G. Yuncker.

**New Business.** John S. Wright was elected to succeed himself on research Grant Committee, his new term expiring in 1948.

F. B. Wade was elected to succeed himself as Academy Foundation Trustee, his new term expiring in 1947.

H. L. Bruner, Chairman, and W. A. Cogshall were elected to continue as members of the Committee for Bonding Trustees.

A decision was made that in instances of Academy Sections having no programs, the Sectional Chairman is to continue as Chairman of that section the following year.

A recommendation was made that a chairman of a committee be appointed for the consideration of plans for a History of Science in Indiana, including the biographies of Indiana scientists. Said committee is to consist of a chairman, and a member from each of the sections of the Academy. The most feasible plan is to be presented at the next meeting of the Academy.

A committee is to be appointed to make recommendations for the procedure whereby any scientific organization of Indiana may affiliate with the Indiana Academy of Science. These recommendations are to be presented for consideration of the Academy at its next meeting.

John S. Wright read the following resolution to be sent by night letter to the Izaak Walton League of America.

"Lew Hofmann, President  
The Izaak Walton League of America  
Terre Haute House  
Terre Haute, Indiana

The Indiana Academy of Science now in session at Butler University, Indianapolis, notes with satisfaction that you are considering conservation of our natural resources. Please accept our greetings and best wishes for a profitable discussion of problems in which we are mutually interested.

Indiana Academy of Science  
President Just

Prof. C. O. Lee was elected to solicit papers, concerning the history of the different fields of science, which are to be presented at the 1944 Academy meeting in a section on the History of Science.

The Secretary was instructed to send greetings and wishes for speedy recovery from the Academy to S. S. Visher, E. R. Smith, and Chas. M. Ek.

Adjournment, 10:00 p. m.

## MINUTES OF THE GENERAL SESSION

BUTLER UNIVERSITY, October 29, 1943

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President M. O. Ross, Butler University, delivered the Address of Welcome. President Just responded in behalf of the Academy.

W. E. Edington presented the Necrology.

Minutes of the Executive Committee meeting of Oct. 28, 1943, were read by the secretary and approved by the Academy.

W. P. Allyn gave a very interesting discussion concerning, "Indiana wild life as friends of man," illustrated by kodachrome slides.

Following the annual dinner in the Lincoln Room of the Lincoln Hotel, R. E. Girton presented forty-two applications for membership. The secretary was instructed to cast an unanimous ballot for the forty-two applicants.

Paul Weatherwax read the nominations of the committee as follows: *President*, C. A. Malott, Indiana University; *Vice-President*, R. B. Abbott, Purdue University; *Secretary*, Winona H. Welch, DePauw University; *Treasurer*, W. P. Morgan, Indiana Central College; *Editor*, R. C. Corley, Purdue University; and *Press Secretary*, C. M. Palmer, Butler University.

The Divisional Chairmen elected in the sectional meetings for 1944 were announced as follows: *Anthropology*, George K. Neumann, Indiana University; *Bacteriology*, Lyle A. Weed, Indiana University Medical Center, C. M. Palmer, Butler University, Vice-Chairman; *Botany*, Benjamin H. Smith, Indiana State Teachers College; *Chemistry*, F. B. Wade, Shortridge High School, Indianapolis; *Geology & Geography*, A. H. Meyer, Valparaiso University; *Mathematics*, Paul M. Pepper, University of Notre Dame; *Physics*, Mason E. Hufford, Indiana University; *Psychology*, H. H. Remmers, Purdue University; and *Zoology*, W. H. Headlee, Indiana University School of Medicine.

T. G. Yuncker announced that the Committee on Invitations had accepted the invitation of Butler University for the 1944 Fall Meeting of the Academy.

B. E. Montgomery expressed on behalf of the Academy its sincere appreciation and thanks to the Program Committee under the leadership of Ray C. Friesner, to Pres. M. O. Ross of Butler University as well as the administration and staff, and to the manager of the Lincoln Hotel for their contributions in numerous ways to the success of the 1943 meeting of the Academy. Theodor Just, retiring president, delivered a scholarly address on "The rates of evolutionary processes."

The Academy recognized John S. Wright and Arthur L. Foley for their attendance of the meetings for fifty years and for their active interest in the affairs of the Academy throughout the entire period. John S. Wright became a member of the Indiana Academy of Science in 1893 and a Fellow in 1894, and Arthur L. Foley a member in 1894 and a Fellow in 1897.

The 59th annual\* meeting of the Indiana Academy of Science, with a general attendance of 171 and a dinner attendance of 86, was adjourned.

WINONA H. WELCH, Secretary

#### TAXONOMISTS MEETING

Chairman: SCOTT MCCOY, Dir., Holliday Park

The Plant Taxonomists held their meeting on Saturday morning at The John H. Holliday Park Botanical Garden. John E. Seybert, Botanist, Eli Lilly Company, was elected chairman for 1944.

#### ENTOMOLOGISTS MEETING

Chairman: B. E. MONTGOMERY, Purdue University

The Entomologists held their meeting in Jordan Hall, Butler University. Ralph Morris, Assistant State Entomologist, was elected chairman for 1944.

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\* No spring meeting was held during 1943.

## NEW MEMBERS

- Amstutz, Mr. Noah S., Chicago Road, Valparaiso, Ind.  
Anderson, Mr. Hanson H., Dept. of Math. Arsenal Tech., Indianapolis, Ind.  
Beal, Mrs. Juna L., Dept. of Math., Butler Univ., Indianapolis, Ind.  
Bedient, Dr. Harold A., Dept. of Chemistry, Evansville College, Evansville, Ind.  
Blackford, Sister John Joseph, 3600 Cold Springs Road, Indianapolis 44, Ind.  
Bloom, Mr. William W., Biology Dept., Valparaiso U., Valparaiso, Ind.  
Brodie, Mr. Donald C., Pharmacy Bldg., Purdue U., Lafayette, Ind.  
Bushong, Miss Mary Ellen, Dept. of Chemistry, W. Lafayette High School, W. Lafayette, Ind.  
Cross, Dr. Aural T., Dept. of Biology, U. Notre Dame, Notre Dame, Ind.  
Dannin, Dr. Albert Gurney, 505 Guaranty Bldg., Indianapolis, Ind.  
Demeter, Miss Margaret, 2707 E. Thirty-first, Lorain, Ohio  
Everly, Mr. Ray Thomas, Purdue Agri. Exper. Sta., W. Lafayette, Ind.  
Griffin, Mr. Paul M., 2004 W. Jackson, Muncie, Ind.  
Haynes, Dr. Edith, Dept. of Bacteriology, Indiana U. Medical Center, Indianapolis, Ind.  
Kuehrmann, Mr. Otto W., 3332 N. Pennsylvania, Indianapolis 5, Ind.  
Lee, Mr. Mordie B., 2445 E. 40th St., Indianapolis, Ind.  
Lefler, Mr. Ralph W., 306 Russell, W. Lafayette, Ind.  
Lingeman, Mr. Roger S., 224 N. Talley Ave., Muncie, Ind.  
Luria, Dr. S. E., Bacteriology Dept., Ind. U., Bloomington, Ind.  
Marks, Mr. Charles, 4115 Graceland Ave., Indianapolis, Ind.  
Moulton, Mr. Benjamin, Butler U., Dept. of Geography, Indianapolis, Ind.  
Newsum, Mr. Noble, R. R. 16, Box 390, Indianapolis, Ind.  
Plunkett, Dr. Donald J., 926 N. Notre Dame Ave., South Bend, Ind.  
Prentice, Prof. Burr N., 20 Waldron St., W. Lafayette, Ind.  
Rogers, Miss Helen Margaret, 311 Waldron St., W. Lafayette, Ind.  
Schlosberg, Mr. Morris, P. O. Box 606, W. Lafayette, Ind.  
Scott, Miss Dorothy Lillian, Botany in Biology Dept., Purdue U., W. Lafayette, Ind.  
Shadinger, Dr. G. H., Dept. of Chemistry, Butler U., Indianapolis, Ind.  
Udine, Mr. E. J., Purdue Agri. Exp. Station, W. Lafayette, Ind.  
Vance, Mr. Arlo M., Box 606, W. Lafayette, Ind.  
Vance, Dr. Charles B., Dept. of Physics, Evansville College, Evansville, Ind.  
Vogel Jr., Dr. Howard H., Dept. of Zoology, Wabash College, Crawfordsville, Ind.  
Wallace, Dr. Atwell Milton, Dept. of Biology, Anderson College, Anderson, Ind.  
Ward, Dr. Helen L., School of Medicine, I. U., Indianapolis, Ind.  
Whelan, Mr. Kenneth, 122 E. Michigan, Indianapolis, Ind.  
Wilson, Miss Mona Jane, Dept. of Chemistry, Shortridge High School, Indianapolis, Ind.

Wright, Mr. Howard F., 2152 N. Meridian, No. 302, Indianapolis, Ind.

Wright, Dr. Jonathan W., Forestry Dept., Purdue Univ., W. Lafayette, Ind.

Wuest, Rev. Albert A., Dept. of Chemistry, St. Joseph's College, Collegeville, Ind.

Zangerl, Dr. Rainer, Dept. of Biology, U. Notre Dame, Notre Dame, Ind.

Zanolar, Rev. Alfred J., Math. Dept., St. Joseph's College, Collegeville, Ind.

Zuck, Dr. Robert K., Dept. of Biology, Evansville College, Evansville, Ind.



## PAST OFFICERS OF THE INDIANA ACADEMY OF SCIENCE

YEAR	PRESIDENT	VICE-PRESIDENT	SECRETARY
1886 <sup>1</sup>	*David S. Jordan		*Amos W. Butler
1887	*John M. Coulter		*Amos W. Butler
1888	*J. P. D. John		*Amos W. Butler
1889	*J. C. Branner		*Amos W. Butler
1890	*T. C. Mendenhall		*Amos W. Butler
1891	*O. P. Hay		*Amos W. Butler
1892	*J. L. Campbell	*J. C. Arthur *W. A. Noyes	*Amos W. Butler
1893	*J. C. Arthur	*W. A. Noyes	*Amos W. Butler
1894	*W. A. Noyes	*Amos W. Butler	*C. A. Waldo
1895	*Amos W. Butler	*Stanley Coulter	John S. Wright
1896	*Stanley Coulter	*Thomas Gray	John S. Wright
1897	*Thomas Gray	*C. A. Waldo	John S. Wright
1898	*C. A. Waldo	*C. H. Eigenmann	John S. Wright
1899	*C. H. Eigenmann	*D. W. Dennis	John S. Wright
1900	*D. W. Dennis	*M. B. Thomas	John S. Wright
1901	*M. B. Thomas	*P. S. Baker	John S. Wright
1902	*Harvey W. Wiley	*W. S. Blatchley	John S. Wright
1903	*W. S. Blatchley	*C. L. Mees	John S. Wright
1904	*C. L. Mees	*Glenn Culbertson	John S. Wright
1905	John S. Wright	*Robert Hessler	L. B. McMullen
1906	*Robert Hessler	*D. M. Mottier	L. B. McMullen
1907	*D. M. Mottier	*Glenn Culbertson	L. B. McMullen
1908	*Glenn Culbertson	A. L. Foley	*J. H. Ransom
1909	A. L. Foley	*P. N. Evans	*J. H. Ransom
1910	*P. N. Evans	*C. R. Dryer	G. W. Benton
1911	*C. R. Dryer	*D. W. Dennis	*A. J. Bigney
1912	*J. P. Naylor	*D. Bodine	*A. J. Bigney
1913	*D. Bodine	Severance Burrage	*A. J. Bigney
1914	Severance Burrage	A. L. Foley	*A. J. Bigney
1915	W. A. Cogshall	*W. A. McBeth	*A. J. Bigney
1916	*A. J. Bigney	*Amos W. Butler	H. E. Enders
1917	W. J. Moenkhaus	*E. Morrison	H. E. Enders
1918	E. B. Williamson	*C. Stoltz	H. E. Enders
1919	E. B. Williamson	*C. Stoltz	H. E. Enders
1920	H. L. Bruner	*W. A. McBeth	H. E. Enders
1921	H. E. Enders	*F. M. Andrews	Walter N. Hess

<sup>1</sup>The first meeting of the Academy was held December 29, 1885. Dr. John P. D. John acted as temporary chairman. David Starr Jordan was chosen as the first president.

\* Deceased.

YEAR	PRESIDENT	VICE-PRESIDENT	SECRETARY
1922	*F. M. Andrews	C. A. Behrens	Walter N. Hess
1923	C. A. Behrens	F. Payne	Walter N. Hess
1924	C. C. Deam	*C. M. Smith	Flora Anderson
1925	E. R. Cumings	*C. Stoltz	Flora Anderson
1926	*W. M. Blanchard	*L. J. Rettger	R. C. Friesner
1927	F. B. Wade	*F. J. Breeze	R. C. Friesner
1928	E. G. Mahin	Walter N. Hess	R. C. Friesner
1929	*L. J. Rettger	*J. A. Nieuwland	R. C. Friesner
1930	Rolla R. Ramsey	M. S. Markle	R. C. Friesner
1931	J. J. Davis	T. G. Yuncker	R. C. Friesner
1932	F. Payne	Richard Lieber	R. C. Friesner
1933	*Marcus W. Lyon, Jr.	M. S. Markle	R. C. Friesner
1934	*J. A. Nieuwland	*M. L. Fisher	R. C. Friesner
1935	*Will Scott	W. E. Edington	R. C. Friesner
1936	R. C. Friesner	Edward Kintner	*L. A. Test
1937	W. E. Edington	C. A. Malott	*L. A. Test
1938	Eli Lilly	T. G. Yuncker	W. P. Allyn
1939	T. G. Yuncker	*L. A. Test	W. P. Allyn
1940	Frank Wallace	S. S. Visher	W. P. Allyn
1941	Paul Weatherwax	E. F. Degering	Winona H. Welch
1942	M. G. Mellon	Theodor Just	Winona H. Welch
1943	Theodor Just	C. L. Porter	Winona H. Welch
1944	C. A. Malott	R. B. Abbott	Winona H. Welch

YEAR	TREASURER	EDITOR <sup>2</sup>	PRESS SECRETARY
1886	*O. P. Jenkins		
1887	*O. P. Jenkins		
1888	*O. P. Jenkins		
1889	*O. P. Jenkins		
1890	*O. P. Jenkins		
1891	*O. P. Jenkins	*O. P. Hay	
		*C. A. Waldo	
		*J. M. Coulter	
1892	*C. A. Waldo	*O. P. Hay	
		*C. A. Waldo	
		*J. M. Coulter	
1893	*C. A. Waldo	*O. P. Hay	
		*C. A. Waldo	
		*J. M. Coulter	
1894	*W. P. Shannon	*W. A. Noyes	
		*C. A. Waldo	
		W. W. Norman	

<sup>2</sup> The editor is listed with the officers of the year although he edits the *Proceedings* of the preceding year.

\* Deceased.

YEAR	TREASURER	EDITOR <sup>2</sup>	PRESS SECRETARY
1895	*W. P. Shannon	*Stanley Coulter *J. C. Arthur *R. E. Call *A. W. Duff	
1896	*W. P. Shannon	*C. A. Waldo	
1897	*W. P. Shannon	*C. A. Waldo	
1898	*J. T. Scovell	*C. A. Waldo	G. W. Benton
1899	*J. T. Scovell	G. W. Benton	G. W. Benton
1900	*J. T. Scovell	G. W. Benton	G. W. Benton
1901	*J. T. Scovell	G. W. Benton	G. W. Benton
1902	*J. T. Scovell	*D. Bodine	G. W. Benton
1903	*W. A. McBeth	*D. Bodine	G. A. Abbott
1904	*W. A. McBeth	W. J. Karlake	G. A. Abbott
1905	*W. A. McBeth	*D. Bodine	G. A. Abbott
1906	*W. A. McBeth	E. G. Martin	C. R. Clark
1907	*W. A. McBeth	A. L. Foley	G. A. Abbott
1908	*W. A. McBeth	L. B. McMullen	G. A. Abbott
1909	*W. A. McBeth	H. L. Bruner	G. A. Abbott
1910	W. J. Moenkhaus	H. L. Bruner	J. W. Woodhams
1911	W. J. Moenkhaus	*L. J. Rettger	Milo H. Stuart
1912	W. J. Moenkhaus	*L. J. Rettger	Milo H. Stuart
1913	W. J. Moenkhaus	C. C. Deam	F. B. Wade
1914	W. A. Cogshall	H. E. Barnard	F. B. Wade
1915	*W. M. Blanchard	H. E. Barnard	F. B. Wade
1916	*W. M. Blanchard	H. E. Barnard	F. B. Wade
1917	*W. M. Blanchard	L. F. Bennett	F. B. Wade
1918	*W. M. Blanchard	L. F. Bennett	F. B. Wade
1919	*W. M. Blanchard	L. F. Bennett	F. B. Wade
1920	*W. M. Blanchard	F. Payne	F. B. Wade
1921	*W. M. Blanchard	*F. J. Breeze	F. B. Wade
1922	*W. M. Blanchard	F. Payne	F. B. Wade
1923	*W. M. Blanchard	J. J. Davis	H. F. Dietz
1924	*W. M. Blanchard	J. J. Davis	H. F. Dietz
1925	*W. M. Blanchard	J. J. Davis	H. F. Dietz
1926	*C. M. Smith	J. J. Davis	H. F. Dietz
1927	*M. W. Lyon, Jr.	J. J. Davis	H. F. Dietz
1928	*M. W. Lyon, Jr.	J. J. Davis	H. F. Dietz
1929	*M. W. Lyon, Jr.	Stanley A. Cain	H. F. Dietz
1930	*M. W. Lyon, Jr.	Stanley A. Cain	W. E. Edington
1931	*M. W. Lyon, Jr.	Stanley A. Cain	W. E. Edington
1932	*M. W. Lyon, Jr.	Stanley A. Cain	W. E. Edington
1933	Paul Weatherwax	Stanley A. Cain	W. E. Edington
1934	Paul Weatherwax	Stanley A. Cain	W. E. Edington
1935	W. P. Morgan	Paul Weatherwax	T. R. Johnston

<sup>2</sup> The editor is listed with the officers of the year although he edits the *Proceedings* of the preceding year.

\* Deceased.

YEAR	TREASURER	EDITOR <sup>2</sup>	PRESS SECRETARY
1936	W. P. Morgan	Paul Weatherwax	T. R. Johnston
1937	W. P. Morgan	Paul Weatherwax	*M. W. Lyon, Jr.
1938	W. P. Morgan	Paul Weatherwax	W. E. Edington
1939	W. P. Morgan	Paul Weatherwax	W. E. Edington
1940	W. P. Morgan	Paul Weatherwax	W. E. Edington
1941	W. P. Morgan	P. D. Edwards	W. E. Edington
1942	W. P. Morgan	P. D. Edwards	C. M. Palmer
1943	W. P. Morgan	P. D. Edwards	C. M. Palmer
1944	W. P. Morgan	R. C. Corley	C. M. Palmer



## INDIANA JUNIOR ACADEMY OF SCIENCE

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### OFFICERS FOR 1942

*President:* James Sarasién, Phi-Chem Club, Elmhurst High School, Fort Wayne

*Vice-President:* Jack Moseley, Greencastle High School.

*Secretary:* Selma Heaton, Mishawaka High School.

### PROGRAM OF THE TWELFTH ANNUAL MEETING

UNIVERSITY OF NOTRE DAME, October 31, 1942

10:00 A. M., Room 216 Chemistry Hall

James Sarasién, President, presiding

"Reaping rewards," Jean Ross, Hammond.

"Science and the war effort," Margaret Clark, Bloomington.

"Anesthesia—history and methods of production," James Smith and Marvin Tomer, South Bend.

"Of an eclipse machine," Jimmy Clay, Bloomington.

"Tooth and its construction," John Tzouandkis, Bloomington.

"The results of a student analysis of crude petroleum," Joan Hendrix, Indianapolis.

"The actions of wasps," Katie Charat, Lew Wallace High School, Gary.

Business session—Election of Officers.

1:00 P. M., Auditorium, Cushing Hall of Engineering

"The autobiography of vanished forests in our lake sediments," Dr. John E. Potzger, Department of Botany, Butler University, Indianapolis.

"Indiana state parks." Illustrated talks by members of the Junior Walton League, South Bend.

"Elementary endocrinology in the Junior Academy of Science," Eileen Brock, Elkhart.

"Medicinal substances found in a chemist's laboratory," Robert Ludlow of Indianapolis.

"Report of progress," Dean Enders, State Sponsor.

## EXHIBITS

Mishawaka High School		
Wind Tunnel		Don German
Ultra Violet Light (Demonstration)		Bruce Caldwell
Synthetic and Natural Rubber		Chemistry Section
Working Model of Geyser		Physical Geography Section
Library of Autographs of Present Day Scientists		Biology Section
Elkhart		
Elementary Endocrinology in the Junior Academy of Science		Eileen Brock
South Bend (Central H. S.) Photography Club		
Enlarged micrographs	8	
Aerial Views	3	
		Robert Gibson
Photograph of Moon	1	Richard Matternowski
General Views	3	
Bloomington		
Demonstration of an Eclipse Machine		Jimmy Clay
Demonstration of a Tooth and its Construction		John Tzouandkis
Indianapolis (Technical H. S.) Chemistry Club		
The Results of a Student's Analysis of Petroleum		Joan Hendrix
The Products Obtained from the Manu- facture of Commercial Gas		Wilbur Oakley
Medicinals Found in a Chemistry Lab.		Robert Ludlow
How to Silver a Mirror		Marion Maple

## MINUTES

The twelfth annual meeting of the Indiana Junior Academy of Science was held Saturday, October 31, 1942 in Room 216, Chemistry Hall, Notre Dame University, South Bend, Indiana.

Dr. Howard E. Enders, Dean of the School of Science of Purdue University and State Sponsor of the Junior Academy of Science gave a word of greeting and introduced the President, James Sarasien of the Phi-Chem Club, Elmhurst High School, Fort Wayne; Jack Mosely, Vice President, Greencastle; and Selma Heaton, Secretary, of the Mishawaka High School.

The president opened the meeting by calling for the minutes of the previous meeting. They were read and approved. The roll call was taken. Eighteen of the 45 clubs of the Indiana Junior Academy of Science were represented at the meeting.

Jean Ross of Hammond, selected last year as the "Best Girl", brought out in her speech, "Reaping Awards" that success can be attained only through putting one's heart into one's work. She described her trip to

Dallas, Texas, during the 1941 Christmas holidays, to attend the 110th annual convention of the American Association for the Advancement of Science. In July, Miss Ross had the further honor of being chosen one of the forty winners in the national competitive Science Talent Search. She told of her trip to Washington, D. C., and the winning of a scholarship. In closing, she urged the members not to give up hope if they were delayed or discouraged but to strive for the best and to expect the best.

The president then introduced James Smith and Marvin Tomer, South Bend, because their demonstration was ready. A demonstration was given on the history of anesthesia and the methods of its production.

The three speakers from Bloomington were unable to come because of transportation difficulties.

Miss Joan Hendrix gave the results of the analysis of crude petroleum that she and Burden Southern, Indianapolis, had done. The crude oil was from Oklahoma. The crude oil was heated and vapors condensed. Gasoline was obtained at the boiling point of 100° C, and 170° a mixture of high test gasoline came over. From 170° to 250° kerosene was obtained. At 250° to 310° the distillate was fuel oil. Light lubricating oil was produced next at 320° to 360°. Heavy lubricating oil came after the temperature 360°, but since the thermometer was calibrated only to 360°, the temperature was not recorded. Asphalt and petroleum coke was the residue left in the still.

An interesting talk upon "The Actions of Wasps" was given by Miss Katie Charat, Lew Wallace High School, Gary, Indiana.

Dean Enders made a few announcements.

The following new officers were elected for next year:

President—Mary Ann Stout, High School, Elkhart

Vice President—Lloyd Nevel, High School, Mishawaka

Secretary—James Smith, Central High School, South Bend

The new Council member elected for 1942 to 1947 was H. H. Michaud of the North Side High School, Fort Wayne, to succeed Lola Lemon, Gary, whose term expires with the close of the present meeting.

The members were invited to the University Cafeteria for lunch. The meeting adjourned for luncheon.

The afternoon session was held in the auditorium of Cushing Hall of Engineering.

Dr. Howard E. Enders introduced Professor John E. Potzger, Department of Botany, Butler University, Indianapolis. He gave a very interesting illustrated discussion upon the subject of "The Autobiography of Vanished Forests in Our Lake Sediments" with the use of boring and sampling equipment that was employed to make the findings.

Five members of the Junior Walton League, South Bend, Indiana, gave illustrated talks, with slides in color of Indiana State Parks. Ralph Craver was the general chairman of the discussion. The speakers and their subjects were "Pokagon State Park" by Helen Meers; "Spring Mill" by Franklin McKay; "Brown County State Park" by Elaine

Newyard; "Jasper State Park" by Lewis Omundsen; "Indiana Dunes" by Betty Sovinski.

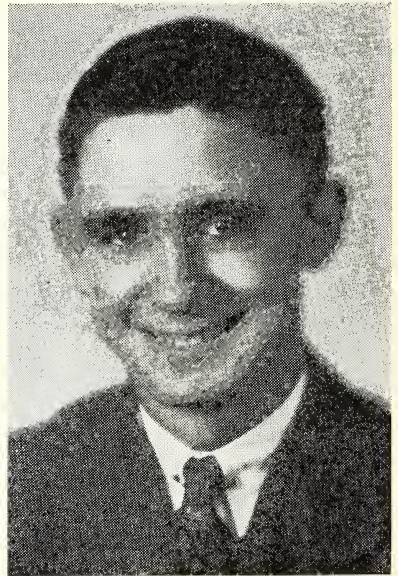
Miss Eileen Brock discussed five of the endocrine glands that she had dissected out of animal bodies: the pituitary, thyroid, thymus, islands of Langerhans in the pancreas, and adrenals. She told a few of the diseases produced by their absence, and indicated locations of these glands on an illustrative model that she displayed. She explained that the most valuable service she has learned from her work is to think for herself.

"Medicinal Substances Found in a Chemist's Laboratory" was discussed by Robert Ludlow.

The Chemistry Club of Technical High School has been added to the Indiana Junior Academy of Science. The number of active member clubs is thirty-eight.



EILEEN BROCK



HAZEN KEYSER

The Council chose Eileen Brock of Elkhart and Hazen Keyser of Fort Wayne as the "Best Girl" and "Best Boy", respectively to recommend for Honorary Membership in the American Association for the Advancement of Science.

The meeting adjourned 2:30 P. M.

SELMA HEATON, *Secretary*