

PROCEEDINGS
OF THE
Forty-Fourth Annual Meeting
Indiana Academy
of Science

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1928

J. J. DAVIS, Editor
S. A. CAIN, Assistant Editor

Held at Indiana University
Bloomington, Indiana
December 6-8, 1928

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1929

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OFFICERS AND COMMITTEES FOR 1928.

President, EDWARD G. MAHIN, University of Notre Dame, Notre Dame.

Vice-President, WALTER N. HESS, DePauw University, Greencastle.

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BRUNER, H. L.	FRIESNER, R. C.	NOYES, W. A.
BURRAGE, S.	HAY, O. P.	WADE, F. B.
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1886	Davis S. Jordan	Amos W. Butler		O. P. Jenkins	
1887	*John M. Coulter	Amos W. Butler		O. P. Jenkins	
1888	*J. P. D. John	Amos W. Butler		O. P. Jenkins	
1889	*John C. Branner	Amos W. Butler		O. P. Jenkins	
1890	*T. C. Mendall	Amos W. Butler		O. P. Jenkins	
1891	*O. P. Hay	Amos W. Butler		C. A. Waldo	
1892	*J. L. Campbell	Amos W. Butler		C. A. Waldo	
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1894	W. A. Noyes	John S. Wright		W. P. Shannon	C. A. Waldo
1895	A. W. Butler	John S. Wright		W. P. Shannon	C. A. Waldo
1896	Stanley Coulter	John S. Wright		W. P. Shannon	C. A. Waldo
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1898	*C. A. Waldo	John S. Wright	Geo. W. Benton	J. T. Scovell	G. W. Benton
1899	*C. H. Eigenmann	John S. Wright	Geo. W. Benton	J. T. Scovell	G. W. Benton
1900	*D. W. Dennis	John S. Wright	Geo. W. Benton	J. T. Scovell	D. Bodine
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1913	*Donaldson Bodine	A. J. Bigney	F. B. Wade	W. A. Cogshall	H. E. Barnard
1914	Severance Burrage	A. J. Bigney	F. B. Wade	W. M. Blanchard	L. F. Bennett
1915	A. A. Cogshall	A. J. Bigney	F. B. Wade	W. M. Blanchard	L. F. Bennett
1916	A. J. Bigney	H. E. Enders	F. B. Wade	W. M. Blanchard	E. Payne
1917	W. J. Moenkhaus	H. E. Enders	F. B. Wade	W. M. Blanchard	F. J. Breeze
1918	E. B. Williamson	H. E. Enders	F. B. Wade	W. M. Blanchard	F. J. Breeze
1919	E. B. Williamson	H. E. Enders	F. B. Wade	W. M. Blanchard	F. J. Breeze
1920	H. L. Bruner	H. E. Enders	F. B. Wade	W. M. Blanchard	F. J. Breeze
1921	*Howard E. Enders	Walter N. Hess	F. B. Wade	W. M. Blanchard	F. J. Breeze
1922	F. M. Andrews	Walter N. Hess	F. B. Wade	W. M. Blanchard	F. J. Breeze
1923	Charles A. Behrens	Walter N. Hess	F. F. Dietz	W. M. Blanchard	J. J. Davis
1924	C. C. Deam	Flora Anderson	H. F. Dietz	W. M. Blanchard	J. J. Davis
1925	E. R. Cummings	Flora Anderson	H. F. Dietz	W. M. Blanchard	J. J. Davis
1926	W. M. Blanchard	R. C. Friesner	H. F. Dietz	W. M. Blanchard	J. J. Davis
1927	Frank B. Wade	R. C. Friesner	H. F. Dietz	M. W. Lyon, Jr	J. J. Davis
1928	E. G. Mahin	R. C. Friesner	H. F. Dietz	M. W. Lyon, Jr	J. J. Davis
1929	Louis J. Rettger	R. C. Friesner	H. F. Dietz	M. W. Lyon, Jr	J. J. Davis

*Deceased. †Officers continued—Annual meeting not held because of influenza epidemic. ‡Listed in year of Proceedings edited.

MINUTES OF THE SPRING MEETING.

LOGANSPORT, INDIANA.

The Indiana Academy of Science met for its regular spring meeting at Logansport, May 17-19, 1928. The meeting was called to order by President Mahin in the American Legion Home at 7:50 p. m., May 17. A motion was passed directing the Committee on Relation of Academy to State to attempt to secure legislation which would make it mandatory that the Governor appoint the nominee of the Academy to the Conservation Commission. President Mahin announced the appointment of J. J. Davis to represent the Academy at the International Congress of Entomologists to be held at Ithaca, New York in August. Upon motion W. N. Hess was also given credentials to represent the Academy at the same meeting. A request of the Ecological Society of America regarding certain National Park matters was referred for recommendation to a committee composed of Charles C. Deam, M. W. Lyon, and F. M. Andrews.

Upon motion the Secretary was directed to send a letter to Colonel Richard Lieber expressing the sympathy of the Academy in the death of his son. Similar letters were directed sent to the families of members who had died since the last meeting. Motion was passed that the Academy express its desire and strong feeling that the State of Indiana should have a public fire-proof museum to house valuable historical and archeological relics which are annually being lost to other states because of our own apathy in the matter. Motion was referred to the Committee on Relation of Academy to State with request to do all in their power to secure proper legislation to care for this matter.

Dr. Weatherwax gave some general directions regarding trips for the following day. Members were then privileged to hear discussions of the geology and history of the Logansport area by Prof. Cumings and Dr. Shrock of Indiana University and Mr. Wilson of Logansport. Meeting adjourned.

Minutes of the Friday Evening Meeting. The committee appointed to consider the request of the Ecological Society regarding legislation relating to certain National Parks recommended that the Academy accede to the desire of the Society. Motion was carried and the Secretary instructed to communicate with the proper persons.

The Committee on Resolutions recommended the following resolution which was unanimously adopted by rising vote:

The Indiana Academy of Science now in its 43rd year and which has been assembled for its Spring Meeting in Logansport desires to express its appreciation of the many courtesies shown all of us during our stay in this city and to express our thanks for the many favors we have received. We desire further to thank the citizens, Professor Cumings, Dr. Shrock, and Mr. Wilson for their instructive talks, and all who have in so many ways made our visit here so pleasant in every way.

F. M. ANDREWS, Chairman.

Upon recommendation of the Membership Committee the following applicants were accepted into membership in the Academy:

Andrews, John Scott, 217 S. Grant St., Lafayette.
Aufderheide, Hellen, 4012 Broadway, Indianapolis.
Boyd, Mary E., 351 North Walnut, Columbia City.
Brooks, Dr. Earl, 139½ N. 9th St., Noblesville.
Coburn, Harry Humbert, 3349 Park Ave., Indianapolis.
Condon, W. Chalmer, R. R. 2, Logansport.
Cox, Alvalon Conway, 1022 N. West, Indianapolis.
Daubenmire, Rexford F., 2325 N. LaSalle St., Indianapolis.
Dawson, Sallie, 807 N. 9th St., Terre Haute.
DeVol, Charles E., 3711 S. Washington, Marion.
Harcourt, Opal, R. R. 3, Rushville.
Haslem, John Robert, 1435 S. 6th, Terre Haute.
Huston, Ernest C., 612 Eagle St., Terre Haute.
Jacobs, Thomas Bingham, 2537 N. 12th St., Terre Haute.
Johnson, William Ainslee, 1121 Maple St., Terre Haute.
Krause, Heinrich, 2938 Normal Ave., Chicago.
Lehman, Rachel Marguerite, R. R. 2, Brazil.
Lloyd, Mrs. W. H., 210 Garfield Ave., Valparaiso.
Lockwood, Lewis Byford, Fort Branch.
Lowe, Grace D., 224 Gilbert Ave., Terre Haute.
Marsh, Homer Floyd, 1303 S. 11½ St., Terre Haute.
McAtee, Waldo Lee, 200 Cedar St., Cherrydale, Va.
McFerran, Harry, 136 W. Linden, Logansport.
Moore, Arthur Everett, 1216½ North, Logansport.
Powers, Roscoe, Route 6, Indianapolis.
Scofield, Robert, Crisman.
Sears, Miss Cecil, 437 N. 5th St., Terre Haute.
Stockdale, Paris B., 219 W. Lane Ave., Columbus, Ohio.
Studebaker, Leo, 1108 Michigan Ave., Logansport.
Stump, Lois Rosamond, R. R. 3, Bloomington.
Wefler, Charles William, 721 National Ave., West Terre Haute.
Wolff, Elizabeth L., 1460 S. 8th St., Terre Haute.
Zimmerman, Harold Alexander, 1213 South Elm St., Muncie.

RAY C. FRIESNER, Secretary.

WINTER MEETING.

PROGRAM OF THE FORTY-FOURTH ANNUAL MEETING OF THE INDIANA ACADEMY OF SCIENCE

HELD AT

INDIANA UNIVERSITY
BLOOMINGTON, INDIANA

December 6-8, 1928.

THURSDAY, DECEMBER 6, 1928.

- 9:30 a. m. Meeting of Entomologists of Indiana, Biology Building.
7:30 p. m. Annual Meeting of Executive Committee, Science Hall.
Reports of Officers and Committees.

FRIDAY, DECEMBER 7, 1928.

- 8:00 - 9:00 a. m. Registration, Auditorium of Student Building.
9:00 - 10:30 a. m. General Session, Auditorium of Student Building
Business Session.
Address of Welcome, Dr. John W. Cravens, Indiana
University.

IN MEMORIAM—

Edgar K. Chapman, by R. R. Ramsey
Joseph N. Donahue, by J. A. Nieuwland
Richard A. Gantz, by Fred J. Breeze
W. F. N. Goss, by Stanley Coulter
Louis F. Heimlich, by C. L. Porter
Frank Senour, by E. R. Cumings
Joseph Swain, by John A. Miller
Emerson B. Wright, by C. F. Cox
Frank C. Wagner, by John White

- 10:30 - 12:00 Noon Sectional Meetings.
1:30 - 5:30 p. m. Sectional Meetings continued.

BOTANY.

STANLEY COULTER, Chairman.

A contribution to the phytoecology of Southern Indiana with special reference to certain Ericaceae in a limestone area of Bloomington Quadrangle. Winona H. Welch, Indiana University.

**Psaronius* in Indiana and Ohio. J. Hobart Hoskins, University of Cincinnati.

* Not published in this Proceedings.

*A taxonomic monograph of the genus *Cuscuta*. T. G. Yuncker, DePauw University.

Bark formation. F. M. Andrews, Indiana University.

Variations in *Erigeron annuus*. F. M. Andrews, Indiana University.

A natural proof that the root tip alone is sensitive to the gravitational stimulus—II. F. M. Andrews, Indiana University.

Studies in pollen—IV. F. M. Andrews, Indiana University.

Observations concerning diseases of iris and tulips. E. B. Mains, Purdue University.

*Hollyhock rust. E. B. Mains, Purdue University.

Preservation of *Monotropa* and similar plants without discoloration. J. A. Nieuwland and A. Slavin, University of Notre Dame.

Peridia of *Crucibulum vulgare*. Lewis B. Lockwood, Indiana University.

¹Algae of Marion County, Indiana, 1928. C. Mervin Palmer, Butler University.

Algae of Indiana—A classified check list of those published between 1875 and 1928. C. Mervin Palmer, Butler University.

*Some ecological factors in secondary succession: Upland hardwood. Ray C. Friesner and Stanley A. Cain, Butler University.

Tufa deposits at Clifty Falls State Park. Rexford F. Daubenmire, Butler University.

Indiana Fungi—XI. J. M. VanHook, Indiana University.

Some new species of fungi. J. M. VanHook, Indiana University.

*Culture methods used in endotrophic mycorrhiza investigations. K. D. Doak, Purdue University.

*A comparison of mycorrhizal structures in roots of the genera *Gaylussacia*, *Vaccinium* and *Chamaedaphne*. K. D. Doak, Purdue University.

. Concerning the reaction of certain fungi to various wave-lengths of light. C. L. Porter and H. W. Bockstahler, Purdue University.

The pericycle in the root of *Equisetum*. Marion A. Johnson, State Normal.

*The cutting of woody stems in paraffin. Edwin J. Kohl, Purdue University.

*Cleistogamy in a species of *Poa*. Paul Weatherwax, Indiana University.

Sodium chlorate as a herbicide. Albert A. Hansen, Purdue University.

*Key to the weeds of Indiana. Albert A. Hansen, Purdue University.

*Enumeration of the vascular flora of a limestone area of the Bloomington Quadrangle, Monroe County, Indiana. Winona H. Welch, Indiana University, and Gladys Price, Shorter College, Rome, Georgia.

Indiana plant diseases, 1927. Max W. Gardner, Purdue University.

Studies of tomato quality—IV. Variability in quality and food value of tomatoes. John A. McGillivray, Purdue University.

The ecology of Turkey Run State Park, Part I. The flood plain. Caroline H. Swanson, Crane Tech. H. S., Chicago.

¹Included with the next paper.

* Not published in this Proceedings.

CHEMISTRY AND BACTERIOLOGY.

W. M. BLANCHARD, Chairman.

Mileage obtained from some commercial gasolines. Edwin M. Bruce, State Normal.

Preparation of "active" magnesium carbonate from magnesite. Frank C. Mathers and W. V. Eagleson, Indiana University.

Comparison of rust protection of iron by zinc, by cadmium, and by zinc-copper alloys and the electrodeposition of such alloys. Frank C. Mathers and R. L. Hardy, Indiana University.

Esterification in the presence of anhydrous salts. Francis M. Whitacre and Herman T. Briscoe, Indiana University.

*Factors determining electrolytic dissociation. Herschel Hunt and Herman T. Briscoe, Indiana University.

*Properties of silicon fluoride and boron fluoride in alcoholic solutions. J. A. Nieuwland and R. R. Vogt, University of Notre Dame.

The formula of ethylidene glycerol. J. A. Nieuwland and W. L. Foohey, University of Notre Dame.

*Agglutinin production: The role which dosage, total amount injected, and frequency of inoculation play. C. A. Behrens, Purdue University.

*The action of alcohols on chromium trioxide. Louis Agassiz Test and Robert C. Gibbons, Purdue University.

*Some chemical and physical properties of hard and soft wheat. R. H. Carr, Purdue University.

The oxidation of benzyl alcohol by the three isomeric nitrochlorbenzenes. R. E. Lyons and G. H. Stempel, Jr., Indiana University.

*The reaction of nitrobenzene with secondary alcohols. R. E. Lyons and M. E. Pleasant, Indiana University.

*The Oxonium theory of acids. W. M. Blanchard, DePauw University.

Cuprous chloride as a catalyst for acetylene. J. A. Nieuwland and W. L. Foohey, University of Notre Dame.

*Preparation of ethylene chloride and vinyl chloride. J. A. Nieuwland, University of Notre Dame.

GEOLOGY AND GEOGRAPHY.

E. R. CUMINGS, Chairman.

*The relation of forests, rainfall and floods. Gerard Fowke, St. Louis, Mo.

*The Pueblo of Atlipac in the Valley of Mexico. W. Leroy Perkins, State Normal.

*The causes of earthquakes and glaciation. Tunis J. Quick, Columbus, Indiana.

Three cavern pictures. Clyde A. Malott, Indiana University.

*Scabland features of the Wabash sluiceway near Logansport, Indiana. Clyde A. Malott and Robert R. Shrock, Indiana University.

* Not published in this Proceedings.

The history of the "Hoodoos" near Mammoth Hot Spring, Wyoming. Allen D. Hole, Earlham College.

*Some new Cenozoic Pectens. Helen I. Tucker, Southern College, Lakeland, Florida.

*Maps of the Indiana Oolitic district. W. N. Logan and Ralph E. Esarey, Indiana University.

Some features of the upper surface of the Trenton Limestone in Indiana. W. N. Logan, Indiana University.

Contrasts among Indiana counties in their yield of prominent persons. S. S. Visher, Indiana University.

Fibrous marcasite in crystalline calcite near Logansport, Indiana. Ernest Rice Smith and Russell A. Schroeder, DePauw University.

Stratigraphic units of the Harrodsburg limestone. Paris B. Stockdale, Ohio State University.

*Reef or Bioherm? E. R. Cumings, Indiana University.

*Fauna of the Kokomo limestone. E. R. Cumings, Indiana University.

A striking case of differential erosion. Fred J. Breeze, Ball Teachers' College.

*A glacial copper nugget found in St. Joseph County. E. G. Mahin, University of Notre Dame.

Geological information from the Monroe and Lawrence County soil maps. T. M. Bushnell, Purdue University.

Special topographic features and the physiographic background of the Bloomington, Indiana, Quadrangle. Arch R. Addington, State Teachers' College, Fresno, Cal.

*The description of soil colors by a factorial color system. J. Gladden Hutton, South Dakota State College, Brookings, S. D.

PHYSICS AND MATHEMATICS.

W. E. EDINGTON, Chairman.

Lightning, natural and artificial. Harvey A. Zinszer, Hanover College.

The thermionic voltmeter as applied to high frequency measurements. J. B. Hershman, State Normal.

*The efficiency of signalling horns. A. L. Foley, Indiana University.

*Erroneous ideas concerning megaphones and trumpet-shaped horns. A. L. Foley, Indiana University.

*Anomalies of sound reflectors. A. L. Foley, Indiana University.

The effect of variations of the force function upon orbits of least action. Oliver E. Glenn, Lansdowne, Pa.

*A study of re-radiated magnetism. R. B. Abbott, Purdue University.

A helical brass spring with constant pitch angle. R. B. Abbott, Purdue University.

*The Literary Digest's Presidential Poll as random sampling. Will E. Edington, Purdue University.

* Not published in this Proceedings.

Polarization of radio waves. R. R. Ramsey and J. J. Brady, Indiana University.

*A new factor in condenser resistance. R. R. Ramsey and B. D. Morris, Indiana University.

*Preliminary report of some experiments on positive-ion ionization. M. E. Hufford, Indiana University.

*A method for making single crystals of zinc. James E. Brock, Purdue University.

*A simplified mercury still. J. B. Dutcher, Indiana University.

*Some observations on thermal insulators. J. B. Dutcher, Indiana University.

Photography of sound waves. D. L. Eaton, Indiana Central College.

A convenient method of showing anomalous dispersion. A. W. Dicus, Indiana University.

ZOOLOGY.

WILL SCOTT, Chairman.

Some internal parasites of poultry. Otho J. Price, Honey Creek High School, Terre Haute.

Insects of Indiana for 1928. J. J. Davis, Purdue University.

*Cytoplasmic studies of the developing eggs of the Toad-bug, *Gelastocoris oculatus* (A report of work in progress). F. Payne, Indiana University.

The water mites of Lake Wawasee. Ruth Marshall, Rockford College, Rockford, Ill.

*The bottom fauna of Lake Wawasee. Will Scott, Ralph Hile and Herman Spieth, Indiana University.

The Chuck-Will's-Widow in Indiana. Amos W. Butler, Indianapolis.

Comparative results of bird banding in a large city and a small town. Frederick Cleveland Test, Northwestern University, and Louis Agassiz Test, Purdue University.

Additional notes on summer birds of Turkey Run State Park. Frederick H. Test, West Lafayette.

A preliminary report on *Lernaea*, a parasitic copepod on gold fishes. Howard E. Enders and S. A. Rifenburgh, Purdue University.

*Nesting Habits of the purple martin. K. D. Doak, Purdue University.

*The reproductive cycle in the mammals. G. W. D. Hamlett, Indiana University.

*The spermatogenesis of the Pseudoscorpion (A statement of work in progress). Henry G. Nester, Indiana University.

Records of Indiana Dragonflies—III. 1927-1928. B. Elwood Montgomery, Iowa State College, Ames, Iowa.

* Not published in this Proceedings.

DEMONSTRATIONS.

Exhibit of manuscript on the gall wasp genus *Cynips*.

Exhibit of galls and gall wasps (*Cynipidae*). A. C. Kinsey, Indiana University.

Demonstration showing the reticulocyte picture in the rabbit after severe hemorrhage.

Demonstration showing the destruction of red blood corpuscles in lymph nodes. J. A. Badertscher, Indiana University.

Distribution of a few species of Gastropods in the Tippecanoe River System. Herman P. Wright, Indiana University.

MINUTES OF THE EXECUTIVE COMMITTEE.

The Executive Committee was called to order at 7:50 p. m. Dec. 6, 1928, in Science Hall. The following members were present: F. M. Andrews, C. A. Behrens, W. M. Blanchard, A. W. Butler, W. A. Cogshall, Stanley Coulter, E. R. Cumings, J. J. Davis, C. C. Deam, H. F. Dietz, H. E. Enders, A. L. Foley, R. C. Friesner, M. W. Lyon, E. G. Mahin, E. B. Williamson, J. S. Wright.

Reports of officers followed:

Academy Foundation.—Chairman Butler presented the following report:

December 1, 1927, balance on hand.....	\$ 9.40
Total receipts, interest and additions by Academy.....	493.94
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Total	\$ 503.34
Investments made during the year.....	400.00
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Balance on hand December 1, 1928.....	\$ 103.34

ASSETS.

U. S. 4th L. L. Bond.....	\$ 50.00
Muncie Masonic Temple, Preferred.....	200.00
Railroadmen's Bldg. and Sav. Assoc., 17 shares.....	1,700.00
Balance as shown above.....	103.34
	<hr/>
Total Assets	\$2,053.34

Archeological Survey.—Chairman Logan reported that 169 specimens were classified and added to the collection, thus bringing the total specimens for the past nine years to 4,524. Over 400 pages of typewritten abstracts were also prepared.

Auditing Committee.—Chairman Edington reported that the books of both the Treasurer and the Editor had been audited and found to be correct.

Biological Survey.—Chairman Dietz reported that a questionnaire had been mailed to all members of the Academy and a more detailed report would be made from the results of these.

Editor.—Editor Davis reported as follows:

Volume 37 of the Proceedings of the Indiana Academy of Science was distributed August 13, 1928. The cost of the Proceedings for the past five years has been as follows:

	1923	1924	1925	1926	1927
Cost.....	\$1,282.18	\$1,668.64	\$1,404.80	\$1,402.91	\$2,130.20
No. of copies....	1,000	1,300	1,300	1,300	1,500
No. of pages....	336	428	393	364	516
No. of cuts.....	74	107	61	69	155
Kind of binding	Paper	Cloth	Cloth	Cloth	Cloth

The financial report, not including clerical help and other editorial expenses, as follows:

RECEPTS.

Balance from 1927 (See Proceedings for 1927, p. 19).....	\$ 11.74
Received from 1926 Proceedings reprints.....	37.40
Received from 1927 Proceedings reprints.....	354.55
Interest33
Total receipts.....	\$ 404.02

DISBURSEMENTS.

Wm. B. Burford for extra reprints.....	\$ 84.80
Express, postage, etc. not charged elsewhere.....	9.36
Total expenses.....	\$ 94.16
Balance in Purdue State Bank	309.86
	\$ 404.02

LIABILITIES.

Cost of 1927 Proceedings.....	\$2,130.20
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ASSETS.

Amount due from State.....	\$1,500.00
Balance in Reprint Fund.....	309.86
Paid by Academy Treasurer.....	200.00
Amount due from authors for reprints.....	12.00
	\$2,021.86
Deficit	\$ 108.34

In spite of care used in selecting papers for the last Proceedings, the cost exceeded our income. This was due to the increased number of papers submitted and printed and to the increased number of copies printed which was essential and was authorized by the Academy. We did not publish the facsimile reproduction of the signatures of the original constitution as authorized by the Academy. There seemed to be little value of such a reproduction compared to the value of scientific papers available for the Proceedings and the Editor feels that if the

Academy authorizes printing these signatures that a special fund be set aside for this purpose.

Because of the deficit in the Editor's funds, very careful selection will be necessary to take care of this item and avoid a deficit in 1929.

Membership.—Chairman Enders reported 86 applications at this time. Reading of names was deferred until a later meeting.

Press Secretary.—Chairman Dietz thanked the newspapers of the State and the Department of Journalism of Indiana University for the excellent publicity service which they have given the Academy. He called attention to the fact that authors are not co-operating with him by way of including abstracts of their papers.

Program Committee.—Chairman Weatherwax presented the program of meetings and papers for Friday and Saturday.

Relation of Academy to State.—Chairman Wallace reported that the committee is preparing to request the State Legislature to make appropriation for a museum building.

Research Committee.—Chairman Foley called attention of members of the Academy to the fact that they could help the Research Committee if each member of the Academy would supply the Committee with names of people in his community or other communities in which he may be acquainted, who might be interested in establishing research scholarships and fellowships. He pointed out that such fellowships can be established for comparatively small sums and that such memorials do not appeal to the rich only. An enduring and at the same time useful memorial can be provided for the cost of a small slab of marble. Worthy students can be aided and science advanced for sums easily within the reach of many people who would gladly provide such sums if they but realized the far-reaching benefits which their generosity would bring to their fellowmen.

State Library Committee.—Chairman Dietz called attention to the impaired facilities of the State Library resulting from the overcrowded condition. He pointed out that now is the time to follow up the resolution adopted by the Academy last year favoring a new library building.

Treasurer.—Treasurer Lyon made the following report:

INDIANA ACADEMY OF SCIENCE.

Report of Treasurer for Year 1928.

RECEIPTS DURING CALENDAR YEAR.

Balance on hand January 1, 1928.....	\$505 84
Collected from members, dues and initiation fees.....	1,004 00
Donation, part expenses of Winter Meeting for 1927.....	10 00
American Association for Advancement of Science.....	104 00
	<hr/>
	\$1,623 84

DISBURSEMENTS DURING CALENDAR YEAR.

Academy Foundation.....	\$304 00
President's Office.....	6 10
Clerical expenses.....	\$2 10
Postage	4 00
Secretary's Office.....	192 50
Clerical expenses.....	\$5 02
Stationery and Printing (1).....	57 40
Postage (2)	121 50
Miscellaneous	8 58
Treasurer's Office	76 76
Clerical expenses	\$24 28
Stationary and Printing	26 20
Postage	26 28
Editor's Office	200 00
Printing Proceedings in part	\$200 00
Program Committee	175 46
Printing	\$88 71
Postage	69 00
Miscellaneous	17 75
Committee on Biological Survey	14 09
Printing	\$14 09
	<hr/>
	\$968 91
Balance on hand December 31, 1928	\$654 93
	<hr/>
	\$1,623 84

Treasurer Lyon recommended that \$200 be set aside from the general fund of the Academy to be added to the Research Endowment Fund, in addition to the \$104 received from the American Association for the Advancement of Science.

New Business.—Dean Coulter moved that the time of the winter meetings be changed to the Friday and Saturday following Thanksgiving. Motion was tabled.

It was moved, seconded, and carried that a committee of one be appointed by the President to confer with similar committees of the Indiana Historical Society, and the Indiana Horticultural Society to set dates of the winter meetings in order to avoid conflicts—this committee to report at the spring meetings.

Dr. Lyon moved that the Academy extend, in cooperation with the Indianapolis Chamber of Commerce, an invitation to the American Association for the Advancement of Science to hold their meetings at Indianapolis at their open date. Motion carried.

Moved, seconded, and carried that non-resident charter members receive copies of the Proceedings gratis upon application.

Upon motion duly seconded and carried the Treasurer was requested to pay \$108.34 to the Editor's account.

¹ Includes letter heads and envelopes for all offices and standing committees.

² Includes \$100.00 for Proceedings mailed by State Librarian.

It was moved, seconded, and carried that the Representative of the Academy on the Council of the American Association for the Advancement of Science should be added to the list of committees to be appointed by the President.

Meeting adjourned.

MINUTES OF GENERAL SESSION

DECEMBER 7, 1928.

Minutes of Executive Committee were read and approved.

Dr. Markle conveyed to the Academy the invitation of Earlham College to hold the next winter meeting at that institution. The invitation was accepted with thanks.

Chairman Foley of the Committee on Nominations reported the following members for Fellows and Honorary Fellows:

For Fellows:

Charles P. Emerson, Indiana Univ. School of Medicine, Indianapolis.

Melvin G. Mellon, Purdue University, Lafayette.

Stanley A. Cain, Butler University, Indianapolis.

Harvey A. Zinszer, Hanover College, Hanover.

Charles L. Porter, Purdue University, Lafayette.

For Honorary Fellows:

David Starr Jordan, Stanford University, Stanford, California.

John Merle Coulter, 306 Broadway, Yonkers, New York.

Stanley Coulter, Ambassador Apartment Hotel, Indianapolis.

This report was unanimously adopted by the Academy.

Dr. John W. Cravens gave the address of welcome to the Academy after which the regular program of papers followed.

At a brief business session following the Annual Academy Dinner the following business was transacted:

The Nominating Committee made the following recommendations for officers for 1929:

President, L. J. Rettger, Indiana State Normal School, Terre Haute.

Vice-President, J. A. Nieuwland, Univ. of Notre Dame, Notre Dame.

Secretary, Ray C. Friesner, Butler University, Indianapolis.

Treasurer, M. W. Lyon, Jr., The Clinic, South Bend.

Editor, J. J. Davis, Purdue University, Lafayette.

Press Secretary, H. F. Dietz, State Ent. Office, Indianapolis.

The report was adopted and the above candidates were declared elected.

The Membership Committee reported 114 applications for membership in the Academy. These names were read and voted into membership. Their names will be found upon the membership roll for the year—in this volume of the Proceedings.

The Academy voted its thanks to Indiana University for its hospitality during these meetings.

RAY C. FRIESNER, Secretary.