

PROCEEDINGS  
OF THE  
Forty-First Annual Meeting  
**Indiana Academy**  
*of Science*

VOLUME 35  
1925

J. J. DAVIS, *Editor*

Held at Indiana State Normal  
Terre Haute, Indiana  
December 3-5, 1925

INDIANAPOLIS:  
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1926




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1921	Howard E. Enders	Walter N. Hess	Harry F. Dietz	F. B. Wade	Wm. M. Blanchard	F. Payne
1922	F. M. Andrews	Walter N. Hess	Harry F. Dietz	F. B. Wade	Wm. M. Blanchard	J. J. Davis
1923	Charles A. Beltrams	Walter N. Hess	Flora C. Anderson	Harry F. Dietz	Wm. M. Blanchard	J. J. Davis
1924	C. C. Deam	Flora Anderson	Flora C. Anderson	Harry F. Dietz	Wm. M. Blanchard	J. J. Davis
1925	E. R. Cummings	Flora Anderson	J. B. Dutcher	Harry F. Dietz	Wm. M. Blanchard	J. J. Davis
1926	W. M. Blanchard	R. C. Friesner	W. P. Morgan	Harry F. Dietz	C. M. Smith	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, 1925.

MADISON, INDIANA.

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The 1925 Spring Meeting of the Indiana Academy of Science was held at Clifty Falls Park, Madison, Indiana, May 14, 15, and 16, 1925, with headquarters at Clifty Inn.

A hundred and twenty-five members and guests enjoyed the meeting in this historical and picturesque part of the State. The members present were: Esther Adams, A. R. Addington, Flora Anderson, F. M. Andrews, C. A. Behrens, W. M. Blanchard, W. S. Blatchley, H. R. Bolen, Chas. Brossman, H. L. Bruner, E. A. Byers, W. A. Cogshall, Ruth Combs, Stanley Coulter, Glenn Culbertson, E. R. Cumings, C. A. Deppe, H. F. Dietz, Elizabeth Dugan, D. H. Dunham, J. B. Dutcher, H. E. Enders, Ralph Esarey, G. W. Finley, Florence Flemion, A. L. Foley, Mr. and Mrs. R. C. Friesner, R. A. Gantz, M. Garner, E. Y. Guernsey, H. I. Hansford, R. N. Harger, Pauline Harker, D. F. Heath, Cora B. Hennel, W. N. Hess, Florence Hooper, Emery Hutchinson, Russell Kinnet, Christian Knecht, W. N. Logan, F. E. Louraine, C. A. Malott, M. S. Markle, G. E. Moore, J. M. Moore, D. M. Mottier, Naomi Mullendore, G. S. Myers, Everett Paschen, F. Payne, C. L. Porter, O. L. Railsback, R. R. Ramsey, Fredda Reed, W. E. Riecken, F. C. Robertson, Emma Schlender, John Schwartz, Will Scott, E. R. Smith, Chas. Stoltz, J. E. Switzer, R. C. Tasker, W. M. Tucker, J. M. Van Hook, Paul Weatherwax, Arthur Wedel, H. W. Wiley, Etta S. Wilson, and J. S. Wright.

## BUSINESS SESSION.

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CLIFTY INN, MAY 14, 1925.

The meeting was called to order by President Cumings at 7:10 Thursday evening in Clifty Inn.

A rather lengthy discussion followed L. J. Rettger's suggestion that there be an earlier date set for the fall meeting of the Academy this year. There did not seem to be any time upon which all could agree, so W. M. Blanchard moved that the fall meeting be held the first week in December. Motion carried.

The Membership Committee presented the following names. On motion the persons named were elected to membership.

Bradt, Wilbur E., Instr. in Chem., Indiana Univ., Bloomington.

Brenton, Emily E., Botany teacher, Worthington.

Briscoe, H. T., Asst. Prof. Chem., Indiana Univ., Bloomington.

Brown, Oliver W., Prof., Chem., Indiana Univ., Bloomington.

Garner, Murvel R., Asst. Prof. Biol., Earlham Col., Richmond.

Green, Darrell B., Physics teacher, Martinsville.

Harker, Pauline L., Stud., Geol., Indiana Univ., Bloomington.

Hennel, Cora B., Assoc. Prof. Math., Indiana Univ., Bloomington.

Myers, George S., Stud. Zool., Indiana Univ., Bloomington.

Martin, Earl R., Prof. Physics, Lehigh Univ., Bethlehem, Pa.

Miller, Virgil H., Asst. Physics, Indiana Univ., Bloomington.

Reed, Fredda D., Botany Dept., Earlham College, Richmond.

Schwartz, A. John, Pharmia Col. Botany, Indianapolis.

Skinner, Olind, Asst. Physics, Indiana Univ., Bloomington.

The secretary read a letter from the A.A.A.S. which announced that the Indiana Academy of Science had become affiliated and asked that the Academy name someone to represent it on the Council.

A. L. Foley moved that the matter be left with the Executive Committee with power to act. Passed.

A letter from Editor Davis was read. He stated that the manuscript for the Proceedings was handed to the printer in December, but owing to the work of the legislative session they could not get it printed as early as was hoped. He asked that if any of the members were not keeping their proceedings on file and did not care for them, the State Library would be glad to have them.

A letter from Earl S. Ferguson, Manager of Convention Bureau, asking if the Academy would be interested in inviting the National Academy of Sciences to meet in Indianapolis was read.

W. N. Logan moved that the matter be left to the Executive Committee with power to act. Passed.

F. M. Andrews read a letter from C. C. Deam who was unable to be present on account of illness.

F. M. Andrews moved that telegrams be sent to C. C. Deam and to E. B. Williamson. Motion carried.

President Cumings appointed F. M. Andrews to send the telegrams. Business meeting adjourned.

THURSDAY, MAY 14.

A short program followed the business session.

Glenn Culbertson described the Geology of Jefferson County, using charts of the formation and a map of the region to illustrate his talk.

Richard Lieber spoke on "Our Misconduct in Nature" in which he brought out the waste of our natural resources.

Mrs. Etta Wilson of Detroit, Michigan, gave an illustrated lecture on "Swans and Other Birds".

FRIDAY, MAY 15.

Friday morning was spent in exploring Clifty Gorge. After dinner, everyone enjoyed a sight-seeing auto trip which included trips to the Southeastern Hospital, the Ohio Valley above Madison, Chain Mill Falls, Butler Falls, and Hanover College.

Nearly all the members and guests remained for the dinner Friday evening.

F. M. Andrews moved that a letter of thanks be sent to each of the following: Management of Clifty Inn, President Millis of Hanover College, The Rotary Club of Madison, Professor Culbertson, Mrs. Wilson, Mr. Lieber and Doctor Wiley. Motion carried.

Stanley Coulter introduced the main speaker of the evening, Dr. Harvey W. Wiley of Washington, D.C., who spoke of his "Life Work".

SATURDAY, MAY 16.

Saturday morning the crowd dispersed, visiting places of interest. Some visited the Southeastern Hospital to see the industrial work done by the patients. Some visited the Lanier Historical Building and other places of interest in Madison.

FLORA ANDERSON,  
Secretary.

## WINTER MEETING.

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### PROGRAM OF THE FORTY-FIRST ANNUAL MEETING OF THE INDIANA ACADEMY OF SCIENCE

HELD AT

### THE INDIANA STATE NORMAL SCHOOL AND THE ROSE POLYTECHNIC INSTITUTE TERRE HAUTE, INDIANA.

December 3, 4 and 5, 1925.

THURSDAY, DECEMBER 3, 1925.

8:00 p. m. Meeting of the Executive Committee.  
Reports of Officers and Committees.

FRIDAY, DECEMBER 4, 1925.

10:00 a. m. General Session.  
General Business Session.  
Introductory—

\*For the Indiana State Normal School.....  
.....Pres. L. N. Hines  
\*For the Rose Polytechnic Institute.....  
.....Pres. F. C. Wagner

Presentation of Papers of General Interest.

In Memoriam—

Charles Davis.....M. L. Fisher  
Percy Norton Evans.....Stanley Coulter  
John Newell Hurty.....John S. Wright  
Edwin Sheldon Johonnott.....C. L. Mees  
Thomas Carwin Mendenhall.....C. L. Mees  
Edward George Proulx.....R. H. Carr  
Philip Spong.....H. L. Bruner  
Strange Visitors: The Starling, Burrowing Owl and  
Harris' Sparrow.....Amos W. Butler  
\*The Centenary of Thomas H. Huxley...Robert Hessler  
\*Further Experiments with Locomotive Whistles...  
.....Arthur L. Foley  
Biological Sciences in Our High Schools.....  
.....Alfred C. Kinsey

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\* Papers starred not published in this Proceedings.

- \*A Universal Language—Its History and Feasibility.....Claude N. Settles  
 \*Science in Indiana, 1885 vs. 1925.....Chas. R. Dryer  
 President's Address—The Earth's Framework.....  
 .....E. R. Cumings

12:00 Noon Academy Luncheon.

2:00 p. m. Sectional Meetings.

#### BOTANY.

- An Unusual *Impatiens biflora* II.....F. M. Andrews  
 Starch Formation.....F. M. Andrews  
 Etiolation.....F. M. Andrews  
 Leaves of *Setaria Glauca*.....F. M. Andrews  
 On the Number of Chloroplasts in the Cells of  
 Sporophyte of *Anthoceros luevis*....Atha A. Pinnick  
 Some Anomalies in the Development of the Seed of  
 Pinus.....Alma Marie Bell  
 Plants New or Rare to Indiana—XIII..Chas. C. Deam  
 Recent Indiana Weeds, 1925.....Albert A. Hansen  
 An Ecological Study of the Flora of Fountain  
 Park and Portions of the Territory, Jasper  
 County, Indiana.....Winona H. Welch  
 \*Enumeration of the Vascular Flora of Jasper  
 County, Indiana.....Winona H. Welch  
 Bacterial Spores for Class Work.....P. A. Tetrault  
 Bacteria in the Roots of *Gleditsia triacanthos* L.  
 .....Gladys M. Friesner  
 Some Xylarias of Indiana.....Stacy Hawkins  
 A New Species of *Graphium*.....J. M. Van Hook  
*Gloeosporium hysteroideum* Dear. & Barth.—A  
 Leaf Disease of *Acer saccharum* Marsh.....  
 .....J. M. Van Hook  
 Indiana Fungi—IX.....J. M. Van Hook  
 Indiana Plant Diseases, 1924.....Max W. Gardner  
 Phases of Science Teaching in Secondary Schools  
 .....Frederick C. N. Hedebol  
 Agglutinin Production, Frequency of Injections  
 Varied, Dosage and Total Amount Injected Con-  
 stant.....Charles A. Behrens  
 On the Non-Appearance of the Negative Phase in  
 Treatment with Heterophile Antigen by Mouth  
 .....H. M. Powell  
 \*Infection Periods of Apple Blotch in 1925.....  
 .....Edwin J. Kohl  
 Observations on Damage to Drills by Copper Car-  
 bonate Treated Wheat.....  
 .....C. T. Gregory and I. D. Mayer

\* Papers starred not published in this Proceedings.

## CHEMISTRY—MATHEMATICS—PHYSICS.

- The Use of Determinants in College Mathematics  
.....Will E. Edington
- \*Some Experiments on Canal Rays..Mason E. Hufferd
- Calcination of Dolomitic Limestones.....  
.....Herman T. Briscoe
- The Electrometric Titration of some Aluminium  
Solutions....F. O. Anderegg and G. W. Daubenspeck
- Notes on the Singing Hydrogen Flame.....  
.....W. M. Blanchard
- Notes on the Combustion of a Candle in Chlorine  
.....W. M. Blanchard
- Determination of the Percentage by Volume of  
Oxygen in the Air.....Ralph W. Hufferd
- \*Variations in the Composition of the Canes, Stems  
and Fruit of the Concord Grape.....H. A. Noyes
- Continuation Course in Chemistry.....John White
- Potentiometric Titrations with Hydrazine Sulfate  
.....M. G. Mellon and V. N. Morris
- Adsorption by Precipitates.....V. N. Morris
- \*Anomalous Action of the Rayleigh Disk.....  
.....Charles H. Skinner
- \*The Effect of Light on the Thermal Conductivity  
of Selenium.....R. Earl Martin
- \*Bibliography of Published Literature on Selenium  
.....R. Earl Martin
- The High Frequency Resistance of Condensers in  
Series.....R. R. Ramsey
- On the Resistance of Radio Circuits....R. R. Ramsey
- \*The Bernoulli Theorem.....Arthur L. Foley
- Recent Progress in Fixation of Nitrogen.....  
.....Alfred T. Child
- \*A Synchrono-Phosphoroscope.....B. A. Howlett
- \*The Abraham and Lemoine Method of Measuring  
Short Time Intervals.....B. A. Howlett
- Improvement of the Disciplinary Training of High  
School Science.....Edwin M. Bruce
- \*The Deltoid.....C. P. Sousley

## GEOGRAPHY—GEOLOGY—ARCHEOLOGY.

- Cloud Types.....W. M. Tucker
- Forms of Condensation of Water Vapor..W. M. Tucker
- \*Geological Conditions Revealed by some deep Wells  
in Indiana and Ohio.....W. N. Logan
- Some Geological Features of Wayne County,  
Indiana.....T. M. Bushnell
- Notes on the Areal Geology of Hancock County,  
Indiana.....W. E. Tharp

\* Papers starred not published in this Proceedings.



- \*Base Level and Its Varieties.....Clyde A. Malott  
 The Glacial Boundary in Indiana....Clyde A. Malott
- \*Geographic Influences in the French and Indian  
 War.....B. H. Shockey  
 Notes on the Pre-glacial Drainage of the Trade-  
 water River, Kentucky.....Gerard Fowke
- \*Geographic Regions of Indiana....Frederick J. Breeze  
 Fauna of the Brassfield Limestone of Jefferson  
 County, Indiana.....J. Archer Culbertson  
 A Special Case of Drainage Adjustment near the  
 Illinoian Drift Margin in Southeastern Owen  
 County, Indiana.....Arch R. Addington  
 Geographical Positions with a Sextant..W. A. Cogshall
- \*Fossil from the Mancos-Dakota-Tununk Formation  
 in the Vicinity of Steamboat, Arizona.....  
 .....Albert B. Reagan  
 Description of Some Fossil Plants from the Stan-  
 ford Paleontological Collection.....  
 .....Albert B. Reagan
- \*A Factorial System for Describing the Colors of  
 Soils.....Joseph Gladden Hutton
- \*Fossils from the Black Mesa (Zilhlejini formation)  
 Area in the Navajo Country, Arizona.....  
 .....Albert B. Reagan
- \*Retardation of Setting of Cement.....Carl E. Dutton

## ZOOLOGY.

- Studies in Behaviorism.....Chas. W. Hargitt  
 Abnormal Growth of the Incisor Teeth of the  
 Woodchuck.....Walter N. Hess
- \*The Nerve Plexus of the Earthworm.....  
 .....Walter N. Hess  
 A Synopsis for the Identification of the Amphibians  
 and Reptiles of Indiana.....George S. Myers
- \*Further Studies on *Craspedacusta ryderi*.....  
 .....F. Payne  
 A Neglected Factor in Prosthesis....Edward N. Canis  
 The Insect Situation in Indiana, 1925.....J. J. Davis
- \*Boys and Girls' Insect Collection Contests.....  
 .....J. J. Davis  
 Opportunities in Entomology.....J. J. Davis
- \*Economic Status of Animal Pests in Indiana in  
 1925.....Galen C. Oederkirk  
 A Specimen and the Extinct Musk-Ox *Symbos*  
*cavifrons* (Leidy) from North Liberty, Indiana  
 .....Marcus Ward Lyon, Jr.
- \*Archeological Notes on the Fort Apache Region,  
 Arizona.....Albert B. Reagan

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\* Papers starred not published in this Proceedings.

- Euthenics and Biography.....Robert Hessler  
 \*Toxicity of Bovine Serum for Laboratory Animals  
     .....Roscoe R. Hyde  
 \*Proof for the Theory of Corpuscular Anaphylaxis  
     .....Roscoe R. Hyde  
 Birds of Madison County, Indiana....Sidney R. Esten  
 Further Notes on Summer Birds of Winona Lake  
     .....Louis Agassiz Test and Sidney R. Esten  
 Typhoid Fever Epidemic at Winona Lake during  
 the Summer of 1925.....Louis Agassiz Test  
 The Biota of a Section of the Upper Tippecanoe  
 River.....Will Scott  
 \*Sedimentation of Red Cells in the Vertebrates....  
     .....R. A. Gantz  
 6:00 p. m. Academy Dinner in Honor of Charter Members.  
     Amos W. Butler, Toastmaster.  
 8:15 p. m. \*Illustrated Lecture: "Some Features of the Indiana Flora",  
     by Dr. H. C. Cowles, University of Chicago.

SATURDAY, DECEMBER 5, 1925.

- 9:00 a. m. Trip to Super-Power Plant at Dresser.  
 9:10 a. m. Trip to Rose Polytechnic Institute and Davis Gardens.

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\* Papers starred not published in this Proceedings.

## MINUTES OF THE EXECUTIVE COMMITTEE.

DECEMBER, 3, 1925.

The Executive Committee was called to order at 8:00 p. m. in Hoosier Nook, Hotel Deming, by President Cumings. The following members were present: Flora Anderson, F. M. Andrews, A. J. Bigney, W. M. Blanchard, A. W. Butler, W. A. Cogshall, Stanley Coulter, Glenn Culbertson, E. R. Cumings, H. E. Enders, J. J. Davis, H. F. Dietz, C. C. Deam, C. L. Mees, D. M. Mottier, W. J. Moenkhaus, J. P. Naylor, Charles Stoltz and J. S. Wright.

The minutes of the Spring Meeting were read and approved.

President Cumings stated that he wrote to Dr. David White regarding the meeting of the National Academy of Science in Indianapolis. After some time Mr. White wrote that the National Academy of Science had arranged to meet at Madison, Wis., where there were several members.

Reports of officers were as follows:

**Report of Treasurer.—**

December 1, 1924, balance in treasury.....	\$709 67
Dues collected December 1, 1924-December 1, 1925.....	669 00
Interest on deposit, Central Trust Co.....	11 38
	<hr/>
Total .....	\$1,390 05
Total expenditures .....	984 75
	<hr/>
Balance, December 1, 1925.....	\$405 30

On motion and second the report was accepted.

**Press Secretary.**—Press Secretary Dietz reported that he has enjoyed the hearty co-operation of the press in Indianapolis, of the press associations that cover the State and of the Editor of *Science*. The Press Secretary pointed out that the members presenting papers on the program could help him very much if they would send him abstracts of the papers they will present, for he is constantly being asked the contents of papers on the program. If a practical application of research can be pointed out, it should be done.

A. W. Butler moved that the report be accepted with thanks to the Press Secretary. Motion carried.

**Editor.**—Editor Davis reported that volume 34 of the Proceedings of the Indiana Academy of Science was distributed July 20, 1925. The complete manuscript was submitted for publication December 24, 1924, and printing was well under way before it was halted by priority publications of the State Legislature. The completed page proofs were in the hands of the printer three months before the distribution of the volume. It is hoped such delay may be avoided next time.

The constitution and by-laws were omitted from the volume, but probably should be included in the next one.

As a rule the authors have followed the Editor's Code which has been of great assistance and very gratifying to the editor.

The cost of the 1923 Proceedings was \$1,282.18 in comparison to \$1,668.64 for the 1924 Proceedings, a difference of \$386.46.

This is accounted for by the following items:

1923	1924
1,000 copies printed	1,300 copies printed
336 pages	428 pages
Paper bound	Cloth bound

The financial report is as follows:

#### STATE FUNDS.

Balance from 1923 Proceedings.....	\$191 01
Annual Appropriation for 1924 Proceedings.....	1,200 00
	<hr/>
Total .....	\$1,391 01
Cost of 1924 Proceedings .....	\$1,668 64
Paid by State Academy Treasurer.....	100 00
Paid from sale of reprints.....	177 63
	<hr/>
	\$1,668 64

#### REPRINT ACCOUNT.\*

Balance from 1924 fund.....	\$134 35
Received from authors for reprints.....	318 45
	<hr/>
Total .....	\$452 80
Paid Burford for extra reprints.....	\$111 18
Paid Burford for extra cost of Proceedings.....	177 63
Paid in postage and express on reprints.....	6 76
	<hr/>
Total expenditures .....	\$295 57      \$295 57
	<hr/>
Balance in Reprint Fund .....	\$157 23

W. A. Cogshall moved that the report be accepted and that a unanimous vote of thanks be extended to the Editorial Committee for the very efficient work. Motion carried.

Standing Committees reported as follows:

**Program.**—Chairman Rettger submitted the printed programs as his report.

**Relation of Academy to the State.**—In the absence of Chairman Wallace, H. F. Dietz read the report which stated that the appropriation from the State to the Academy was passed in the last session of the Legislature. The revolving funds were all abolished and the Academy will have to use its funds yearly from now on because any

\* A charge was made for reprints in order to add to the available publishing fund.

unexpended balance reverts to the State at the end of the fiscal year.  
The report was adopted.

**Advisory Council.**—After some discussion as to the duties of this committee, A. W. Butler moved that the Advisory Council be eliminated from the list of standing committees. Passed.

**Research Committee.**—Chairman Foley was unable to attend the meeting, but sent a report which stated that there had been no formal meeting of the committee called this past year, but there had been informal discussions with various members of the committee. It has been awaiting the results of the letters sent out last year. The chairman has received requests for research aid from eleven different manufacturers. Six of these were answered by the chairman, two were referred to other members of the Research Committee and three are still “hanging fire”.

Two citizens of Indiana have assured the chairman that they expect to make provision in their wills for a bequest for research work. While neither of the two is extremely wealthy, it shows that some of the citizens of Indiana are beginning to realize their opportunities in furthering scientific research.

**Archeological Survey.**—Chairman Logan reported that in June 1925 the committee met in Indianapolis with representatives of the Indiana Historical Bureau to discuss ways of securing funds for making investigations of some of the archaic deposits of Indiana. Funds were solicited from individuals and from the general public, but, although some funds were promised, the amount was not large enough to carry out the contemplated plans.

In Harrison County a number of flint quarries, camp sites, shelters, mounds and burial places were located, and if permission can be secured from owners of the land, an attempt will be made to explore some of these deposits.

Lack of funds for defraying expenses hinders the explorations. Some form of legislation to prevent the destruction of these relics by collectors should be brought about.

Glenn Culbertson moved the adoption of the report. Passed.

**Academy Foundation.**—Chairman Butler gave the following report:

ENDOWMENT FUND FOR RESEARCH.

1924.

December 1.	Balance on hand.....	\$26 92
	Receipts:	
	Interest Bld. & Sav. Stock.....	24 00
	Interest L. L. Bonds.....	4 25
	Interest U. S. Treas. Note.....	13 50
		<hr/>
		\$68 67

INVESTMENTS.

Railroadmen's Building and Savings Assn.....	\$700 00
United States Treasury Notes—now due.....	200 00

United States 4th Liberty Loan Bond.....	50 00
	<hr/>
Balance on hand .....	\$950 00
	<hr/>
Total in fund .....	\$1,018 67

D. M. Mottier moved that the report be accepted. Carried.

**State Library.**—Chairman Dietz reported that exchanges were being bound as fast as sets could be completed and funds could be secured. The exchanges—bound and unbound—are catalogued and filed together and are accessible at all times. The crowded condition of the State Library is acute and hampers the usefulness of it.

The report was accepted.

Stanley Coulter moved that the Committee on State Library be requested to bring the list of the scientific and technical serials in the State Library up to date. Motion carried.

It was urged that all who were not interested in keeping complete files of the Proceedings, return the 1923 Proceedings to the State Library to take care of the shortage in that volume.

**Auditing Committee.**—Chairman Naylor reported that the Treasurer's books and the Editor's account had been audited and found correct. Report was accepted.

**Biological Survey.**—Chairman Dietz stated that the committee had been active during the year, but that there was little to add to the report of last year. Considerable discussion followed the report, and it was brought out that a great deal of the work done in colleges and universities properly came under the head of survey work.

J. J. Davis moved that the Biological Survey Committee determine, through questionnaires to members of the Academy, the survey work being done in the State, and to present a complete report at the next meeting. Motion carried.

**Membership Committee.**—Chairman Andrews read the list of 83 names proposed for membership. On motion the following named persons were elected to active membership:

Abel, Edward LaRue, Assoc. Prof. Education, I. S. N. S., Terre Haute.

Acher, Rudolph A., Teacher, I. S. N. S., Terre Haute.

Albertson, Rev. George, Asst. Prof. Biology, Notre Dame.

Allison, Robert V., Soil Science, 1350 B St., Washington, D. C.

Allyn, William Preston, Asst. Prof. Agri., Mt. Vernon.

Amatis, Sister, Teacher, St. Mary-of-the-Woods.

Andrews, Cecil, Stud. Butler Col., 328 Grant St., Greenfield.

Bailey, Clara Maurie, Asst. Botany, Ill. Univ., Urbana, Ill.

Belcher, Carl James, Teacher, Pilot Knob.

Beghtel, Floyd E., Prof. Botany, Ind. Central Col., Indianapolis.

Black, Roy D., Teacher, 510 Jefferson St., Madison.

Calles, Charles D., Greentown.

- Carmella, Sister, Teacher, Botany, St. Mary-of-the-Woods.  
Carter, De Vere, Stud. Ind. Univ., 314 N. Wash. St., Bloomington.  
Carter, Fred H., Bacteriologist, 631 S. 8th St., Terre Haute.  
Cartwright, William B., Entomologist, Box 95, West Lafayette.  
Child, Alfred T., Prof. Chem., Rose Poly. Inst., Terre Haute.  
Church, Josiah M., Chem., 1028 N. 8th St., Terre Haute.  
Church, Wilbur O., Chemistry, 1028 N. 8th St., Terre Haute.  
Clearwater, J. F., Zoology, Crawfordsville.  
Coleman, Christopher B., 334 N. State St., Indianapolis.  
Conover, James F., Stud., I. S. N. S., 2220 N. 7th St., Terre Haute.  
Davis, Luther D., Asst. Hort., Purdue Univ., Lafayette.  
Donaghy, Fred, Biology, I. S. N. S., Terre Haute.  
Eigenmann, Mrs. C. H., 630 Atwater Ave., Bloomington.  
Ewers, James E., Teacher, 1220 N. 9th St., Terre Haute.  
Gardner, Raymond E., Stud., 2234 Washington Ave., Terre Haute.  
Geisler, Florence E., Teacher, 2267 N. Dearborn, Indianapolis.  
Geller, John W., Stud., 432 N. 6th St., Terre Haute.  
Grosjean, Thomas H., Chem., 1312 Center St., Terre Haute.  
Harmon, Daniel L., Physics, St. Mary-of-the-Woods.  
Hazel, Herbert C., Teacher, 1000 S. Lincoln St., Bloomington.  
Higgins, Frank R., Prof. Math., I. S. N. S., 1719 N. 9th St., Terre Haute.  
Hutchins, Roland E., Prof. Civil Eng., Rose Poly. Inst., Terre Haute.  
Hyatt, George F., Teacher, 624 N. Ireland, Greensburg.  
Irons, Vernal, Stud., I. S. N. S., Jasonville.  
Knipmeyer, Clarence Carl, Prof. Elec. Eng., Rose Poly. Inst., Terre Haute.  
Lockenvitz, Arthur E., Student, 314 E. Baker, Bloomington, Ill.  
MacGillivray, John Henry, Horticulture, Purdue Univ., Lafayette.  
Mackell, James F., Prof. Physics, I. S. N. S., Terre Haute.  
Mathias, Harry R., Teacher, 1421 Castle Ave., Indianapolis.  
Meyer, Houston, Teacher, 111 Linwood, Indianapolis.  
Morris, Inez, Teacher, 320 N. 7th St., Terre Haute.  
Morris, Vlon N., DuPont Fellow, Univ. Minn., 323 Lutz Ave., W. Lafayette.  
Morton, William T., Stud., 2906 Schaal Ave., Terre Haute.  
Mullen, Lowell, Asst., Butler College, Sheridan.  
Oderkirk, Galen C., Biologist, U. S. D. A., 339 State St., W. Lafayette.  
Palmer, Chas. Mervin, Asst. Prof. Botany, Butler Col., Indianapolis.  
Peddle, John B., Prof. Mach. Design, Rose Poly. Inst., Terre Haute.  
Perkins, Wendell LeRoy, Assoc. Prof. Geol., I. S. N. S., Terre Haute.  
Pinnick, Atha A., Teacher, E. 10th St., Bloomington.  
Post, Mrs. Ida M., 920 N. Center St., Terre Haute.  
Price, Otho J., Teacher, 605 Grant, Terre Haute.  
Quick, Carl J., Zoology, Ind. Univ., Bloomington.  
Rauth, Adolph W., Inst. Physics, Rose Poly. Inst., Terre Haute.  
Roberts, Otis S., Acting State Chemist, 328 S. Grant, W. Lafayette.  
Robinson, Harold H., Stud., DePauw Univ., Box 129, Culver.

- Russell, Wilbur Smith, Stud., 2015 S. 8th St., Terre Haute.  
 Schnarr, Glenn, Teacher, 319 Brown, Winchester.  
 Settles, Claude N., Asst. Prof. Eng. and Econ., Rose Poly. Inst.,  
 Terre Haute.  
 Shock, N. W., Stud., 600 N. 7th St., Lafayette.  
 Skelton, Maurice Z., Stud., I. S. N. S., 333 E. Georgia, Brazil.  
 Skinner, C. H., Assoc. Prof. Physics, Ohio Wes. Univ., Delaware, O.  
 Smith, Benjamin H., Assoc. Prof. Botany, I. S. N. S., Terre Haute.  
 Smith, Orrin Harold, Prof. Physics, DePauw Univ., Greencastle.  
 Smock, Wauneta P., Stud., I. S. N. S., 2441 S. 8th St., Terre Haute.  
 Soursley, Clarence P., Prof. Math., Rose Poly. Inst., Terre Haute.  
 Spurgeon, Chas. Haddon, Physician, I. S. N. S., Terre Haute.  
 Stark, Mrs. Connie R., Stud., I. S. N. S., 724 N. 8th St., Terre Haute.  
 Steele, Frederick A., Instr. Chem., Notre Dame.  
 Stock, Louis, Prof. Drawing, Rose Poly. Inst., Terre Haute.  
 Strong, Leon Henri, Asst. Prof. Anat., Ind. Univ., Bloomington.  
 Strong, Martha T., Asst. Zool., Ind. Univ., Bloomington.  
 Tharp, William E., Bur. Soils, U. S. D. A., Washington, D. C.  
 Trueblood, Lesta, Teacher, R. R. C, Terre Haute.  
 Wagner, Frank Casper, Pres., Rose Poly. Inst., Terre Haute.  
 Weber, Russell G., Instr., Zool., Butler Col., Indianapolis.  
 White, John, Prof. Chem., I. S. N. S., Terre Haute.  
 Winkler, Bowlin Watt, Asst. Chem., Ind. Univ., Bloomington.  
 Wischmeyer, Carl, Prof. Mech. Eng., Rose Poly. Inst., Terre Haute.  
 Woodrow, Walter H., Teacher, Terre Haute.  
 Wright, Herman P., Stud., 506 N. Indiana, Bloomington.  
 Zinszer, Harvey Alfred, Instr. Physics, Lehigh Univ., 637 Fifth Ave.,  
 Bethlehem, Pa.

**Old Business.**—A letter from the A. A. A. S. announcing the affiliation of the Indiana Academy with the Association and asking that a representative be named to represent the Academy on the Council of the Association was read. Howard E. Enders was elected as the Academy representative on the Council for the year.

**New Business.**—Chairman Andrews read the following names for Fellows in the Academy:

- Ray C. Friesner, Butler College.
- A. A. Hansen, Purdue University.
- E. B. Mains, Purdue University.
- C. A. Malott, Indiana University.
- P. A. Tetrault, Purdue University.

It was moved that the above named persons be recommended to the Academy for election as Fellows. Motion carried.

A letter from Mr. and Mrs. Friesner asking that their individual membership in the Academy be combined into one joint membership was read.

W. M. Blanchard moved that the request be granted. Passed.

W. M. Blanchard moved that two hundred dollars (\$200.00) be transferred from the Academy treasury to the Research Fund. Motion carried.



A. W. Butler moved that the Secretary revise the list of non-resident members and report at the next meeting. Carried.

D. M. Mottier suggested that every member of the Academy appoint himself a committee of one to see that every candidate for the State Legislature be informed on the purpose and function of the Indiana Academy of Science.

It was moved that the matter of Academy publicity be referred to the Committee on Relation of Academy to the State. Carried.

F. J. Breeze invited the Academy to meet at the Indiana State Normal School, Muncie, for its next annual meeting.

W. M. Tucker, speaking for Sigma Xi of Indiana University invited the Academy to meet at Bloomington for the next annual meeting.

H. F. Dietz extended the invitation of the Chamber of Commerce of Indianapolis to hold the next meeting of the Academy in Indianapolis.

W. M. Blanchard moved that since we never had met at Muncie, we recommend to the Academy that the invitation from Muncie be accepted. Passed.

Moved that night letters from the Executive Committee be sent to E. B. Williamson and A. L. Foley, who were unable to attend the meeting because of illness. Motion carried and Mr. Dietz was appointed to take care of the matter.

Letters from past presidents C. A. Waldo, J. M. Coulter, W. A. Noyes and H. W. Wiley were read.

Meeting adjourned at 10:25 p. m.

## MINUTES OF THE GENERAL SESSION.

DECEMBER 4, 1925.

The General Session was called to order at 10:00 a. m. by President Cumings.

The minutes of the Executive Committee were read.

Stanley Coulter moved that the minutes of the Executive Committee be approved and that the recommendations be concurred in. Motion carried.

The Nominating Committee, consisting of H. E. Enders, Chairman; A. J. Bigney, and W. A. Cogshall, was asked to report at the dinner in the evening.

The brief business session was followed by the papers on the general program. The memorials and the President's Address were given at the morning session. The other general papers were presented at 2:00 p. m., after which the various sections met for the reading of papers.

There was a brief business session at the dinner. The Nominating Committee proposed the following names:

President, William M. Blanchard, Greencastle.

Vice-President, L. J. Rettger, Terre Haute.

Secretary, Ray C. Friesner, Indianapolis.

Assistant Secretary, W. P. Morgan, Indianapolis.

Press Secretary, Harry F. Dietz, Indianapolis.

Treasurer, C. M. Smith, West Lafayette.

Editor of Proceedings, J. J. Davis.

On motion and second the Secretary cast the ballot for the above named officers.

Stanley Coulter moved a rising vote of thanks to the retiring Secretary. Carried.

L. J. Rettger read the following resolution, which was approved:

Resolved, That the Academy deems it very desirable that Butler's "Birds of Indiana" be republished at an early date, and

Resolved further, That the Academy views with great satisfaction the favorable disposition of the Indiana Conservation Commission to publish the same, when possible.

L. N. Hines, President Indiana State Normal School, and F. C. Wagner, President Rose Polytechnic Institute, speaking for their respective schools, extended a welcome to the Academy.

President Cumings then introduced Amos W. Butler, Toastmaster. The dinner was in honor of the charter members of the Academy, and a very interesting program was enjoyed by all. The keynote of the toasts and of the letters read from absent members was that of fellowship and comradeship among the members.

The evening program was as outlined—an illustrated lecture: "Some Features of the Indiana Flora," by Dr. H. C. Cowles, Professor of Botany, University of Chicago.

FLORA ANDERSON,  
Secretary.