

PROCEEDINGS

OF THE

Forty-sixth Annual Meeting

Indiana Academy
of Science

FOUNDED DECEMBER 29, 1885

VOLUME 40

STANLEY A. CAIN, Editor

Held at Franklin College
Franklin, Indiana
December 5-6, 1930

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TABLE OF CONTENTS

	Page
Officers and Committees for 1930.....	5
Past Officers of the Academy.....	7
Minutes of the Spring Meeting.....	8
Winter Meeting—	
Program (with information as to publication of papers).....	10
Minutes of the Executive Committee.....	15
Minutes of the General Session.....	19
Memorials—	
Grace Barkley.....	21
Emiel DeWulf.....	22
Alma Marie Bell Haas.....	23
Oliver P. Hay.....	24
David Allen Owen.....	30
Brother Alphonsus (Paul Sweet).....	31
President's Address.....	33
Papers of the General Session—	
Scholarship, Intelligence and Personality: Will E. Edington.....	45
Science in Secondary Schools: Florence A. Gates.....	51
References to Scientific Literature: M. G. Mellon.....	57
The Fifth International Botanical Congress: T. G. Yuncker.....	61
Fourteen Papers on Botany—	
Liverworts of Spring Mill State Park: F. M. Andrews.....	67
Attack of Fungi on the Wooden Lids of Water Culture Jars:	
F. M. Andrews.....	68
A Study of Pollen, VI: F. M. Andrews.....	69
Notes on <i>Uncinula circinata</i> Cooke and Peck: R. C. Busted.....	73
Additions to the Vascular Flora of Parke County, Indiana: Rexford F.	
Daubenmire.....	75
Plants New or Rare to Indiana, XVI: Chas. C. Deam.....	77
An Apparatus for Use in Freezing Studies on Fruits, Bulbs, and Tubers:	
Raymond E. Girton.....	81
Ecological Relationships of the Most Common Mosses in a Certain	
Vicinity Near Bloomington, Indiana: Gail C. Glenn and Winona	
H. Welch.....	87
The Altered Rate of Growth of Freesia Corms: W. P. Morgan and	
L. J. Michael.....	103
Algae of Indiana: Additions to the 1875-1928 Check List: C. Mervin	
Palmer.....	107
The Algae Schizomeris and Lemanca in Indiana: C. Mervin Palmer.....	111
The Stanley Coulter Herbarium at Purdue University: C. L. Porter and	
J. N. Porter.....	115
Additions to the Vascular Flora of Jasper County, Indiana, I: Winona	
H. Welch.....	119
The Phytoplankton of a Solution Pond with Special Reference to the	
Periodicity of Certain Algae: Helen L. White.....	123

Ten Papers on Chemistry and Bacteriology—

Organic Compounds of Selenium, III: W. E. Bradt	141
Chemistry in Farm Overalls: R. H. Carr	165
The Use of Metallic Electrodes as Indicators: S. J. French and John M. Hamilton	171
The Relation of pH to the Absorption of Dyes by Bacteria: S. J. French and Wm. H. Wright	175
A New Gas Circulation Absorption Stirrer: J. A. Nieuwland and R. R. Vogt	179
The Serum Neutralization of Hemotoxins: H. M. Powell	181
The Production of Hydrogen Sulphide by Heating Paraffine and Other Hydrocarbon Mixtures with Sulphur: E. D. Scudder and R. E. Lyons	185
Chemistry Projects and Exhibitions: J. Lyman Sheean	189
Mental Performance and the Acid Base Balance of the Blood in Normal Individuals: N. W. Shock	193
The Reaction of Boron Fluoride with Alcohols and glycols: T. H. Vaughn, H. Bowlus and J. A. Nieuwland	203

Ten Papers on Geology and Geography—

Micro-organisms from the Waldron Shale of Clifty Creek, Indiana: Willard Berry	207
Areal Geology of Putnam County, Indiana, as Indicated by the Soil Survey: T. M. Bushnell	209
Notes on Outcrops of Silurian Near Sunman, Ripley County, Indiana: J. W. Huddle	213
Geologic Structure in the Indian and Trinity Springs Locality, Martin County, Indiana: Clyde A. Malott	217
Model of the Two Medicine Valley, Glacier National Park, Montana: E. S. Martin and V. D. Martin	233
Parent Materials of Pike County, Indiana Soils: John T. Miller	235
Two Subterranean Cut-offs in Central Crawford County, Indiana: W. D. Thornbury	237
Some New Tertiary Peeteus: H. I. Tucker	243
Contrasts Between the Twelve Richest and Poorest Indiana Counties: Stephen S. Visher	247
A Probable Fault Near Bretzville, Dubois County, Indiana: George Whitlatch	251

Eight Papers on Physics, Astronomy and Mathematics—

The effect of Humidity on the Reverberation Period of a Room: Halson V. Eagleson	259
A Theoretical Lower Limit to the Mass of a Stable Asteroid: Oliver E. Glenn	265
An Audio-Frequency Laboratory Oscillator: J. B. Hershman	267
The Load of a Power Tube: R. R. Ramsey	271
A Momentum Analysis of Proton and Electron Masses: E. A. Smith and J. A. Vogelmann	277
Cosmolar Rays: E. A. Smith and J. A. Vogelmann	281
Cosmolar Rays: E. A. Smith and J. A. Vogelmann	287
Notes on Photo-Electric Phenomena: H. A. Zinszer	291

Fifteen Papers on Zoology

A List of the Birds Seen in Marion County, Indiana: F. M. Baumgartner	295
Insects of Indiana for 1930: J. J. Davis	307
Four Rare Species of Birds in Indiana in 1930: Sidney R. Esten	321
Birds of Greene and Noble Counties: Sidney R. Esten	323
Some Observations on the Seasonal History of the European Corn Borer, <i>Pyrausta Nubilalis</i> HBN., in Indiana: G. A. Ficht	335
The Amphibia of Montgomery County, Indiana: B. H. Grave	339
Waste in Scientific Research: Robert Hessler	341
The Relation of Oxygen Tension to Oxygen Consumption in the Insects and the Crayfish: Win. A. Hiestand	345
Records of Indiana Dragonflies, V. 1930: B. Elwood Montgomery	347
Preliminary List of the Butterflies of Indiana: Robert W. Montgomery	351
Records of Indiana Coleoptera, I. Cicindelidae: B. E. Montgomery and R. W. Montgomery	357
Herpetological Report of Morgan County, Indiana: Jean Piatt	361
Local Movements of Birds: Louis Agassiz Test and Frederick H. Test	369
Birds of Tippecanoe County, Indiana: Louis Agassiz Test and Frederick H. Test	371
A New <i>Ilynessa</i> : H. I. Tucker	375
List of Members	377
Index	398

OFFICERS AND COMMITTEES FOR 1930

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1892	*J. L. Campbell	Amos W. Butler		C. A. Waldo	
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1897	*Thomas Gray	John S. Wright		J. T. Scovell	G. W. Benton
1898	*C. A. Waldo	John S. Wright	Geo. W. Benton	J. T. Scovell	G. W. Benton
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1912	L. P. Naylor	A. J. Bigney	Milo H. Stuart	W. J. Moenkhaus	C. C. Deam
1913	*Donaldson Bodine	A. J. Bigney	F. B. Wade	W. A. Cogshall	H. E. Barnard
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1917	W. B. Moenkhaus	H. E. Enders	F. B. Wade	W. M. M. Blanchard	L. F. Bennett
1918	E. B. Williamson	H. E. Enders	F. B. Wade	W. M. M. Blanchard	L. F. Bennett
†1919	H. B. Williamson	H. E. Enders	F. B. Wade	W. M. M. Blanchard	F. Payne
1920	H. L. Bruner	H. E. Enders	F. B. Wade	W. M. M. Blanchard	F. J. Brezee
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1923	Charles A. Behrens	Walter N. Hess	H. F. Dietz	W. M. M. Blanchard	J. J. Davis
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1925	E. R. Cummings	R. C. Friesner	H. F. Dietz	W. M. M. Blanchard	J. J. Davis
1926	W. M. Blanchard	R. C. Friesner	H. F. Dietz	W. M. M. Blanchard	J. J. Davis
1927	Frank B. Wade	R. C. Friesner	H. F. Dietz	M. W. Lyon, Jr.	J. J. Davis
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1929	Louis J. Rettger	R. C. Friesner	H. F. Dietz	M. W. Lyon, Jr.	S. A. Cain
1930	Rolla R. Ramsey	R. C. Friesner	W. E. Edington	M. W. Lyon, Jr.	S. A. Cain
1931	J. J. Davis	R. C. Friesner	W. E. Edington	M. W. Lyon, Jr.	S. A. Cain

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

MINUTES OF THE SPRING MEETING

NASHVILLE, INDIANA

The Indiana Academy of Science met for its regular spring meeting at Nashville, May 22-24, 1930. The meeting was called to order by President Ramsey in Melodeon Hall at 7:30 p. m. The Secretary announced the *ad interim* appointment of three committees as follows: Special Committee on Endowment: W. M. Blanchard, Stanley Coulter, John S. Wright, and M. W. Lyon; Special Committee on Preparation of Science Teachers: L. J. Rettger, R. H. Carr, W. M. Blanchard, A. L. Foley, and R. C. Friesner; A.A.A.S. Committee: Dean Coulter, John S. Wright, Col. Richard Lieber, Frank N. Wallace, Henry T. Davis, and R. C. Friesner.

A report of the progress made toward bringing the American Association for the Advancement of Science to Indianapolis for a winter meeting in the near future was given. Dr. Lyon read and the Academy adopted the following resolution on zoological nomenclature:

WHEREAS, Certain propositions for changes in the International Rules of Zoological Nomenclature have been submitted to the International Commission for consideration; and,

WHEREAS, Certain of these propositions, more especially Nos. 1930 A, 1930 B, 1930 D, 1930 F, and 1930 G, as published in *Entomological News*, volume 40, pages 329 and 330, December 1929 make radical departures from the well established principles of the *International Rules of Zoological Nomenclature*, particularly

The proposition to have the Commission report to the Congress all propositions which obtain a majority instead of a unanimous vote in controversial cases which are then to be decided upon in open meetings of the general session of the triennial congresses, and

The similar proposition for specifying a 5/6th majority, and

The proposition to start the Rules of Nomenclature from the 12th edition of Linnaeus' *Systema Naturae* instead of the 10th edition; and,

WHEREAS, The zoologists of the Indiana Academy of Science are of the opinion that the adoption of any proposition unless unanimously recommended by the Commission to the Congress will result in greater confusion in zoological nomenclature than now exists; and,

WHEREAS, The zoologists of the Indiana Academy of Science are of the opinion that all questions of zoological nomenclature can be more justly determined and amicably settled by a representative and relatively stable International Commission of persons especially interested and trained in zoological nomenclature than by a congress whose personnel changes from meeting to meeting and is determined in large part by the country in which the Congress is held, and which Congress has interests of wider scope than technical nomenclature, therefore be it

RESOLVED, That on the recommendation of its zoologists the Indiana Academy of Science, assembled at the Spring Meeting of the Academy, at Nashville, Indiana, 1930, deplore any attempt or attempts to change the status of the

International Rules of Zoological Nomenclature unless unanimously recommended by the International Commission or to allow the International Zoological Congress to settle questions of nomenclature that have not been submitted to such Congress by the unanimous approval of the International Commission; and be it further

RESOLVED, That these resolutions be spread upon the minutes and a copy sent to the Secretary of the International Commission on Zoological Nomenclature.

Mr. Ben Douglas gave an illustrated lecture on Brown County Culture.

Friday was spent visiting various places of interest including Bear Wallow Hill, Weed Patch Forest Preserve, and the Home of Colonel and Mrs. Richard Lieber. Lunch was served to 137 members and friends at Weed Patch. A chicken dinner was served to 161 members at the Nashville House in the evening. Col. Richard Lieber acted as toastmaster and short speeches were made by: Charles C. Deam, on the botany of Brown County; Dr. Paris Stockdale on the Geology of Brown County; and Mr. Carl Graf on the Artists of Brown County.

The membership Committee read the names of 53 applicants for membership in the Academy. These were all unanimously elected. Father Nieuwland informed the Academy of the death of its esteemed member, Emil DeWulf.

Dr. Lyon moved that the Academy go on record as favoring the sentiment of a letter read by Sidney Esten from the Biological Survey at Washington opposing state wide or local vermin hunts.

It was moved and carried that a special committee be appointed to consider, and report at the next meeting of the Academy, the feasibility of placing markers of native stone on roads of Brown County where they cross the borders of the glacial drift. The President was instructed to appoint the committee with Dr. Logan as chairman.

Chairman Rettger of the Committee on Resolutions gave the following report: Mr. President, Ladies, and Gentlemen:

The very pleasant duty has been assigned to me by the President of the Academy to express on behalf of the Academy our appreciation of the many courtesies which we have received here in Nashville. This meeting has been one of the most successful Spring Meetings in the history of the Academy.

We wish to thank Mr. Douglas for his entertaining talk on the history and scenery of Brown County, delivered on Thursday evening. We are indebted to Mr. D. Calvin for his demonstration of gold panning in one of the auriferous streams of Brown County.

We appreciate the thoughtfulness of the Bright and Brown Garage for giving to the Academy the use of a service car throughout our trip over the hills of Brown County. We are also pleased to acknowledge our appreciation of the splendid arrangements made by the Nashville House for our accommodation while in Brown County and for the dinner on Weed Patch Hill.

We desire, however, in an especial manner to express our gratitude to the Conservation Commission for many courtesies received at their hands in visiting the game reservation in Brown County, and for the gracious hospitality accorded members of the Academy by the Director of the Conservation Commission, Colonel Lieber, and Mrs. Lieber, at a reception in their Brown County cabin.

Mr. President, I move that the Secretary be instructed to place in the minutes of this meeting a brief record of this public acknowledgment.

RAY C. FRIESNER, Secretary.

WINTER MEETING

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

HELD AT

FRANKLIN COLLEGE
FRANKLIN, INDIANA
December 4-6, 1930

THURSDAY, DECEMBER 4, 1930

- 7:00 p. m. Meeting of Executive Committee, Stott Hall.
8:15 p. m. Address on "What is Static Electricity," by Dr. K. Lark-Horowitz,
head of the Physics Department of Purdue University.

FRIDAY, DECEMBER 5, 1930

- 8:00 a. m. Registration, Main Corridor, Stott Hall.
8:30 a. m. Business Session, Auditorium, Stott Hall.
9:00 a. m. General Program, Auditorium, Stott Hall. Address of Welcome,
Dr. P. L. Powell, Dean of Men, of Franklin College.

In Memoriam—

EMIEL F. DEWULF, by Fr. J. A. Nieuwland
GRACE BARKLEY, by T. G. Yuncker
GEORGE F. MANNFIELD†, by Richard Lieber
DAVID A. OWEN, by M. E. Crowell
OLIVER P. HAY, by W. P. Hay
HARVEY W. WILEY†, by H. E. Barnard
BROTHER ALPHONSUS, by Fr. P. E. Hebert
MARIE BELL HAAS, by Flora Anderson Haas
HERMAN P. WRIGHT†, by Will Scott

Scholarship, Intelligence and Personality. Will E. Edington, DePauw University.
Distribution of Membership in the Indiana Academy of Science†. Fred J. Breeze,
Fort Wayne.

Journies to Haunts of European Botanists†. M. S. Markle, Earlham College.
Chemistry Before the Time of Alchemists†. J. Lyman Sheean, Culver Military
Academy.

Report on The International Botanical Congress. J. C. Arthur, Purdue University
and T. G. Yuncker, DePauw University.

References to Scientific Literature (By Title). M. G. Mellon, Purdue University.
Science in Secondary Schools. Florence A. Gates, Toledo, Ohio.

11:00 a. m. Sectional Meetings.

1:45 p. m. Sectional Meetings Resumed.

*Preliminary report at Academy meeting; work in progress, to be published later.

†Not published in this Proceedings.

- 3:30 p. m. Tea to Wives of Academy Members at the home of President and Mrs. Homer P. Rainey.
- 4:30 p. m. Tea to Members of the Academy by the Faculty of Franklin College.
- 6:30 p. m. Academy Dinner.
- 8:00 p. m. Brief Business Session.
- 8:15 p. m. Address of the Retiring President—Physics, Past and Present. R. R. Ramsey, Indiana University.

MEETINGS OF SECTIONS

BOTANY

(Room 101, Science Hall)

F. M. ANDREWS, INDIANA UNIVERSITY, Chairman

1. Plants New or Rare in Indiana, XVI. Chas C. Deam, Bluffton, Indiana.
2. Additions to the Vascular Flora of Jasper County, Indiana. (By Title) Winona H. Welch, DePauw University.
3. Factors Concerned in Hemlock Reproduction. Ray C. Friesner and J. E. Potzger, Butler University. (To be published in Butler Univ. Bot. Studies 1931.)
4. The Ecological Significance of Hemlock in Indiana. Ray C. Friesner and J. E. Potzger, Butler University. (To be published in Butler Univ. Bot. Studies 1931.)
5. Additions to the Vascular Flora of Parke County, Indiana. (By Title) Rexford F. Daubenmire, Butler University.
6. Algae of Indiana—Additions to the 1875-1928 Check List. (By Title.) C. Mervin Palmer, Butler University.
7. The Algae, Schizomeris and Lemanca, in Indiana. C. Mervin Palmer, Butler University.
8. An Apparatus for Use in Freezing Studies of Fruits and Tubers. Raymond E. Girton, Purdue University.
9. Appendages of *Uncinula Circinata*. R. C. Busteed, Indiana University.
10. New and Interesting Plant Records from Northern Indiana. Julius A. Nieuwland and Theodore Just, University of Notre Dame. (Amer. Mid. Nat. **12**:217-223, 1931.)
11. Hydrogen-Ion Concentration of Soils of Indiana Ferns. Joe R. Craw, Hagerstown, Indiana. (To be published in the Butler Univ. Bot. Studies, 1931.)
12. The Phytoplankton of a Solution Pond with Special Reference to the Periodicity of Certain Algae (By Title). Helen L. White, Larwill, Indiana.
13. The Altered Rate of Growth of *Freesia Corms*. W. P. Morgan and Lyle J. Michael, Indiana Central College.
14. A Comparison of Strip and Quadrat Analyses of Woody Plants on a Central Indiana River Bluff. Stanley A. Cain, R. C. Friesner and J. E. Potzger, Butler University. (Butler Univ. Bot. Studies **1**:157-172, 1930.)
15. The Stanley Coulter Herbarium of Purdue University. C. L. Porter and J. N. Porter, Purdue University.

16. Phyllotaxy in Conifers*. Stanley A. Cain, Butler University.
17. The Vegetation in Grand St. Bernard Pass†. Millard S. Markle, Earlham College.
18. Liverworts of Spring Mill Park. F. M. Andrews, Indiana University.
19. Attack of Fungi on Water Culture Lids. F. M. Andrews, Indiana University.
20. Studies on Pollen. F. M. Andrews, Indiana University.
21. Ecological Relationships of the Most Common Mosses in a Certain Vicinity Near Bloomington, Indiana. Gail G. Glenn, Indiana University and Winona H. Welch DePauw University.

CHEMISTRY AND BACTERIOLOGY

(Room 301, Science Hall)

1. Serum Neutralization of Hemotoxins. H. M. Powell, Lilly Research Laboratories, Indianapolis.
2. The Reaction of Boron Fluoride with Alcohols and Glycols. Thos. Vaughn, H. Bowlus and J. A. Nieuwland, Notre Dame University.
3. A New Gas Circulating Absorption Stirrer. J. A. Nieuwland and Richard Vogt, University of Notre Dame.
4. The Production of H₂S from Paraffine and Sulfur. E. D. Scudder and R. E. Lyons, Indiana University.
5. Paracelus—The First Medical Chemist†. J. Lyman Sheean, Culver Military Academy.
6. Chemistry Projects and Exhibitions. J. Lyman Sheean, Culver Military Academy.
7. Chemistry in Farm Overalls. R. H. Carr, Purdue University.
8. The Use of Metallic Electrodes as Indicators. Sidney J. French and J. M. Hamilton, Franklin College.
9. Relation of pH to the Absorption of Dyes by Bacteria. S. J. French, Franklin College and W. H. Wright (Deceased) Wisconsin University.
10. Mental Performance and the Acid-Base Balance of the Blood in Normal Individuals. N. W. Shook, University of Chicago.
11. Variation in the Determination of the Minimum Lethal Dose for Rabies*. W. R. Greenwood, Purdue University.
12. Antibody Response in Allergic Animals*. C. A. Behrens, Purdue University.
13. The Production of Multiple Antibodies. C. A. Behrens and C. E. Heaton, Purdue University. (Abs. in Jour. Baet. **21**:7. 1931.)
14. The Production of Multiple Antibodies in Allergic Animals*. C. A. Behrens and A. W. Tallman, Purdue University.
15. Peculiar Resimilation Properties of Some Antigens*. F. L. Willis, Purdue University.
16. Furunculosis: Resulting from Working with Cutting Oils*. C. A. Behrens, Purdue University.
17. Organic Compounds of Selenium (By Title). W. E. Bradt, State College of Washington.

*Preliminary report at Academy meeting; work in progress, to be published later.

†Not published in this Proceedings.

ZOOLOGY

(Room 201, Science Hall)

1. Insects of Indiana for 1930. J. J. Davis, Purdue University.
2. A Set of Elk Antlers from St. Joseph County. M. W. Lyon, Jr., South Bend. (*Am. Mid. Nat.* **12**:213-216. 1931.)
3. Records of Indiana Coleoptera I. Cincindelidae. B. Elwood Montgomery and Robert W. Montgomery, Purdue University.
4. Preliminary List of the Butterflies of Indiana. Robert W. Montgomery, Purdue University.
5. Records of Indiana Dragon Flies—V. 1930 (By Title). B. Elwood Montgomery, Purdue University.
6. Some Cytoplasmic Structures in the Male Reproductive Cells of Pseudoscopion (*Chelanops corticis*.) Henry George Nester, Butler University. (Abstract in *Anat. Record.* **47**:3-332. 1930.)
7. Observations on the Seasonal Development of the European Corn Borer (*Pyrausta nubilalis*). G. A. Ficht, Purdue University.
8. The Relation of Oxygen Tension to Oxygen Consumption in Insects. Wm. A. Hiestand, Purdue University.
9. Birds of Tippecanoe County I. Louis A. Test and Frederick H. Test, Purdue University.
10. Local Movements of Birds. Louis A. Test and Frederick H. Test, Purdue University.
11. Herpetological Report of Morgan County (Ex. of Turtles). Jean Piatt, Butler University.
12. Birds of Green and Noble County (From Van Gorder Notes). Sidney R. Esten, Department of Conservation.
13. The Vampire Bat, An Overlooked Parasite of Man and Other Warm-blooded Vertebrates†. M. W. Lyon, Jr., South Bend.
14. A List of the Birds Observed in Marion County (By Title). Frederick M. Baumgartner, Butler University.
15. Waste in Scientific Research. Robert Hessler, Indianapolis.
16. Four Rare Species of Birds in Indiana in 1930. Sidney R. Esten, Dept. of Conservation.
17. A New *Ilynessa*. Helen I. Tucker, DePauw University.
18. Some Data on the Lakes of North Eastern Indiana†. Will Scott, Indiana University.
19. The Amphibia of Montgomery County. B. H. Grave, DePauw University.

GEOGRAPHY AND GEOLOGY

(Room 209, Science Hall)

1. Model of Two Medicine Valley, Glacier National Park, Montana. E. S. and V. D. Martin, Indianapolis.
2. Excessive Silicification of Fossils and Its Bearing upon Certain Types of Geodes*. Paris W. Stockdale, Ohio State University.
3. Some New Tertiary Pectens. Helen I. Tucker, Greencastle.
4. Contrasts Between 12 Rich and 12 Poor Indiana Counties. S. S. Visher, Indiana University.

*Preliminary report at Academy meeting; work in progress, to be published later.

†Not published in this Proceedings.

5. Buildings and Land Utilization Map of Terre Haute*. B. H. Schockel, Indiana State Teachers College.
6. Horizon of Glacial Wood Found Near Terre Haute*: B. H. Schockel and J. E. Ewers, Indiana State Teachers College.
7. An Analysis of River Transportation in U. S.* J. E. Switzer, Bloomington.
8. Micro-organisms from the Waldon Shale of Clifty Creek. Willard Berry, Ohio State University.
9. A Probable Fault Near Bretzville, DeBois County. George Whitlatch, Indiana University.
10. Geologic Structure in the Indiana Springs Locality, Martin County, Indiana. Clyde A. Malott, Indiana University.
11. Area Map of Pike County, Indiana (By Title). John T. Miller, Salem, Indiana.
12. Notes on Areal Geology of Putnam County, Indiana. T. M. Bushnell, Purdue University.
13. Studies in the Geography of Railroads†. Fred J. Breeze, Fort Wayne.
14. Two Subterranean Cut-offs in Central Crawford County, Indiana. W. D. Thornbury, Bloomington.
15. Brief Report on The Geographic Significance of the Manufacture of Drain Tile in Indiana†. W. LeRoy Perkins, Indiana State Teachers College.
16. Some Notes on the Ancient Earth-Lodge Peoples of the Unitah Basin, Utah (By Title).† Albert B. Reagan, Ouray, Utah.
17. Outcrops of Silurian near Sunman, Ripley County, Indiana. J. W. Huddle, Indiana University.

PHYSICS, ASTRONOMY AND MATHEMATICS

(Room 109, Science Hall)

1. Some Details of the Milky Way†. A. A. Cogshall, Indiana University.
2. Note on the Photoelectric Phenomena. Harry A. Zinszer, Kansas State Teachers College.
3. Cosmolar Rays I and II. Elmer A. Smith and J. A. Vogelmann, Secaucus, N. J.
4. A Theoretical Lower Limit to the Mass of a Stable Asteroid. Oliver E. Glenn, Lansdowne, Pa.
5. An Audio-frequency Laboratory Oscillator. J. B. Hershman, Indiana State Teachers College.
6. A Momentum Analysis of Proton and Electron Masses. E. A. Smith and J. A. Vogelmann, Secaucus, N. J.
7. Acoustical Absorption in Connected Chambers†. R. E. Martin, Hanover College.
8. Effect of Frequency Upon End Correction for Closed Resonance Tubes. J. F. Mackell, J. Frushour and W. Parker, Indiana State Teachers College.
9. The Load of a Power Tube. R. R. Ramsey, Indiana University.
10. Ionization of Gases by Positive Ions.* Mason E. Hufford, Indiana University.
11. Four Wheel Brakes*. Authur L. Foley, Indiana University.
12. Relation between Transmission and Absorption Coefficients of Sound Absorbing Materials*. Arthur L. Foley, Indiana University.
13. The Effect of Humidity on the Reverberation Period of a Room. Halson V. Eagleson, Morehouse College, Ga.

*Preliminary report at Academy meeting; work in progress, to be published later.

†Not published in this Proceedings.

MINUTES OF THE EXECUTIVE COMMITTEE

The Executive Committee was called to order at 7:10 p. m., December 4, 1930. The following members were present: F. M. Andrews, C. A. Behrens, W. M. Blanchard, H. L. Bruner, W. A. Cogshall, E. R. Cumings, C. C. Deam, H. E. Enders, W. E. Edington, A. L. Foley, R. C. Friesner, M. W. Lyon, E. G. Mahin, M. S. Markle, W. J. Moenkhaus, D. M. Mottier, R. R. Ramsey, J. S. Wright.

Reports of officers followed:

Academy Foundation—Chairman Butler presented the following report:

December 1, 1929, balance on hand	\$ 34.46
Total receipts, interest and other additions	478.39
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Total	\$ 512.85
Investments made during year	428.00
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Balance on hand December 1, 1930	\$ 84.85

ASSETS

U. S. 4th L. L. Bond	\$ 50.00
Muncie Masonic Temple, Preferred	200.00
Railroadmens Bldg. and Sav. Assoc., 23 Shares	2,300.00
Standard Oil Company of Indiana, 6 shares	328.00
Balance as shown above	84.85
	<hr/>
Total Assets	\$2,962.85

Archaeological Survey—Chairman Guernsey gave the following report:

As a basis for a proper study of the various culture-groups believed to be represented in Indiana it is suggested that a map be prepared, upon which may be shown all of the known archaeological sites within the state. From evidence already established it will be possible, through this means, to arrive at tentative conclusions in respect to the probable culture identities of the various areas within the state. A similar map, upon which have been indicated all of the known data respecting the occupation of Indiana by Indians of historic time, has been in preparation for five years, and is now ready for publication. This work has been necessarily involved and laborious; but should be of considerable value in working out the relationship, if it exists, between the ethnology and archaeology of the state. It would be possible, it is thought, to prepare an archaeological map within a month or so, from data already assembled.

During the past year the State of Indiana has acquired the notable group of earthworks, at Anderson, to be preserved as a state park. The restoration of these earthworks, along with their study and identification, will provide an interesting and important problem for the forthcoming year.

The survey of the Whitewater valley area, by Dr. Setzler, has supplied us with much new information with respect to the culture of that region. Mapping of other areas in Indiana, by Dr. Setzler and his successor, Mr. Eggan, will be of very great value in the future study of the territory covered by their operations.

Your chairman has continued his studies of the area comprised in the valley of the east fork of White River, and it is hoped that his findings may be of sufficient interest to warrant their publication. At the same time he has completed the compilation of a survey of the Wyandotte Cave area begun some years ago.

Work carried on during the past year through various agencies has served to place Indiana upon something like a satisfactory footing in respect to archaeologic study, and has been decidedly encouraging. It is expected that, in the future, archaeological research in Indiana will be conducted upon the scientific basis which it deserves.

As yet the lower Wabash region has received little or no attention. This area, as well as that which lies along the course of the Ohio, will prove to be vastly interesting, and it is hoped that a start toward the study of the remains of primitive man in this area will be instituted during the coming year.

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

Biological Survey—Chairman Deam gave the following report:

We compliment the State Conservation Department on its past activities in the preservation of original tracts and urge a continuation of the policy which will preserve for future generations other important ecological habitats still available within the State.

We approve the beginning made in the establishment of a museum illustrating the local natural history and geology at Turkey Run Park by the State Conservation Department. It is believed that the development of similar state park museums, housed in properly equipped and fire-proof structures, is highly desirable and this is therefore recommended.

We reiterate earlier recommendations to the effect that a properly equipped research museum supported by the State of Indiana is highly desirable and should be provided at an early date.

It is recommended to the Botanical Society of America and to the American Forestry Association that they adopt the name "pigeon oak" as the official name of *Quercus muhlenbergii*. The fact that this name has already been used in literature for this species of oak and the further fact that the fruit of this oak was the preferred food of the now extinct passenger pigeon, lends support for the common name herewith suggested.

It is suggested that the Academy authorize the Biological Survey Committee to prepare a bibliography of publications dealing with the taxonomy and distribution of the past and present fauna and flora of Indiana. We note with regret that most of the material representing the fauna and flora of Indiana is in the hands of private individuals or in museums outside of the state.

The Committee has given consideration to a new questionnaire to be sent to all members of the Academy and requests all members to fill out questionnaire promptly when received to enable it to submit a complete report to the next annual meeting.

Editor—Editor Cain reported that Volume 39 of the Proceedings was mailed to members in September. This volume contained 338 pages and 1,500 bound volumes besides authors reprints were published. In the publication of the Winter Program in the Proceedings the policy was adopted of indicating where papers are to be found in case they are not published in the present volume.

The financial report follows:

STATE FUNDS

Annual Appropriation for 1929 Proceedings.....	\$1,500.00
Cost of 1929 Proceedings.....	\$1,686.26
Balance paid from reprint fund.....	186.26
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Total.....	\$1,686.26

REPRINT ACCOUNT

Balance reprint fund from volume 38.....	\$ 149.86
Received from authors for reprints.....	288.30
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Total.....	\$ 438.16
Extra cost of Proceedings.....	186.26
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Balance on hand.....	\$ 251.90
Irvington State Bank, savings account.....	\$ 150.00
Irvington State Bank, checking account.....	101.90
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Total.....	\$ 251.90
Due from authors, reprints volume 39.....	20.20
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Total assets.....	\$ 272.10

Membership Committee—Chairman Enders read the names of 64 applicants for membership in the Academy. These were accepted.

Press Secretary—Secretary Edington discussed the problems of his office and urged members who have papers on the program to cooperate with him by submitting abstracts of their papers which he may use for publicity.

He also recommended that a committee be appointed to cooperate with the Press Secretary and the Editor in securing photographs of past prominent members together with other valuable historical data which may be both for publicity purposes and for use in celebrating the fiftieth anniversary of the Academy four years hence.

Upon motion such a committee was authorized to be appointed by the next President.

Program Committee—Chairman Deppe presented the printed program of papers and meetings for Thursday and Friday.

Relation of Academy to State—Chairman Logan reported that the annual appropriation from the State used for publication of Proceedings has been included in the State Budget for the coming year.

Research Committee—Chairman Foley reported that members of the Academy have not cooperated with his committee as they should and urged that better cooperation be given his committee in the future.

State Library—No Report.

REPORT OF TREASURER, INDIANA ACADEMY OF SCIENCE
FOR THE YEAR, 1930

RECEIPTS:

Balance on hand January 12, 1930	\$	696.68	
Collected from members as dues and initiation fees		930.00	
American Association for Advancement of Science	108.00		\$1,734.68

DISBURSEMENTS:

President			
Postage	\$	2.00	\$ 2.00
Secretary			
Clerical Expenses		13.65	
Stationery and printing (Includes stationery for all officers and committees)		37.95	
Postage (Includes postage for mailing Proceedings)		111.50	
Miscellaneous expenses		17.61	180.71
Treasurer			
Clerical expenses		26.41	
Stationery and printing		44.05	
Postage		28.95	99.41
Program Committee			
Stationery and printing		98.50	
Postage		78.00	
Miscellaneous expenses		7.50	184.00
Membership Committee			
Printing and stationery		20.85	20.85
Academy Foundation			
American Association for Advancement of Science fund		108.00	
Additional funds	500.00	608.00	\$1,094.97
Balance in Bank, January 3, 1931		639.71	\$1 734.68

Respectfully submitted,
M. W. LYON, JR., Treasurer.

Examined and found correct, January 19, 1931.

FRANK W. HORAN,
Member, Auditing Committee.

REPORTS OF SPECIAL COMMITTEES

Endowment Committee—Chairman Blanchard and Secretary Wright reported progress of an educational program looking toward receipt of gifts to the Endowment Fund.

A.A.A.S.—Chairman Friesner reported activity of the committee endeavoring to raise necessary expense funds to bring the A.A.A.S. to Indianapolis. Prospects seem favorable for such a meeting in 1935 or 1936. The personnel of this committee is H. T. Davis, John S. Wright, Richard Lieber, Frank Wallace and R. C. Friesner.

Brown County Marker—Chairman Logan gave the following report: Your committee appointed to locate the position of the glacial boundary in Brown County suggests that a marker be placed on the Mark Brown hill southwest of Needmore near the Enos Miller property; that a marker be placed on the Helmsburg, Nashville public road near a large oak tree on the property of the Steele heirs; and that the location of the third marker be made as soon as the Indianapolis-Nashville road has been determined.

These three locations will serve to mark the position of the glacial boundary on the three important north-south roads in Brown County.

The committee was instructed to continue and report upon the probable cost of suitable markers and a suitable method of defraying the necessary expenses. The personnel of this committee is: W. N. Logan, Chairman, B. W. Douglas, C. A. Malott, E. R. Smith, T. M. Bushnell.

New Business—Dr. Enders reported upon the action of other Academies in fostering Junior Academies of Science amongst high school students.

Action was taken by the Academy authorizing the appointment of a committee to consider the advisability and prepare plans for the formation of Junior Academies of Science in Indiana. The motion stipulated that Dr. Enders is to be chairman.

The following committee was appointed to receive invitations for the next Annual Meeting: Chairman Enders, Wm. Blanchard, A. L. Foley.

Moved, seconded and carried that programs be sent out in envelopes with Secretary's return. This will aid in keeping address file up to date.

President Foerste of the Ohio Academy of Science presented in person an invitation to the Indiana Academy to meet with the Ohio Academy in joint session at Miami University during the first week in April. This invitation was received with thanks and referred to the Program Committee.

It was moved, seconded and unanimously carried that the Academy send a letter of approval and a pledge of faith to Director Lieber and the Conservation Commission approving and pledging faith in the activities and policies of the Commission.

The meeting was then adjourned to hear an address by Dr. K. Lark-Horowitz, head of the Physics Department of Purdue University, on "What is Static Electricity."

MINUTES OF THE GENERAL SESSION

Minutes of Executive Committee were read and approved.

Committee on Nominations recommended the following members for Fellows:

- S. R. Esten, Department of Conservation, Indianapolis.
- H. C. Cowles, University of Chicago.
- W. P. Morgan, Indiana Central College.
- Fred Donaghy, Terre Haute.
- E. J. Kohl, Purdue University.

The committee appointed to receive invitations for the next meetings of the Academy recommended that the Indiana Academy meet with the Ohio Academy at Oxford, Ohio, in April and that we meet at Butler University for the next Winter Meetings. The report was accepted by the Academy.

Dean P. L. Powell gave an 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 Secretary was instructed to send telegrams of sympathy and greetings to Dr. A. W. Butler, Dean R. B. Moore, and Dr. Charles Stolz.

The Resolutions Committee proposed the following resolution which was unanimously accepted: The Indiana Academy of Science assembled at its forty-sixth annual meeting at Franklin College, desires to express its appreciation and thanks to the college authorities and faculty for the fine reception accorded the Academy, for the splendid entertainment arrangements and courteous treatment all of which has made our meeting here one of the most successful the Academy has ever held.

Chairman Behrens of the Committee on Nominations reported the following recommendation for Officers of the Academy for the coming year:

President, J. J. Davis, Purdue University.

Vice-President, T. G. Yuncker, DePauw University.

Secretary, R. C. Friesner, Butler University.

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

Editor, S. A. Cain, Butler University.

Press Secretary, W. E. Edington, DePauw University.

RAY C. FRIESNER, Secretary.