

PROCEEDINGS

*of the*

# Indiana Academy of Science

*Founded December 29, 1885*

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Volume 78

1968

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WILLIAM R. EBERLY, Editor  
Manchester College  
North Manchester, Indiana

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Spring Meeting

April 26-27

The Honeywell Center, Wabash

Fall Meeting

October 18-19

Ball State University, Muncie

Published at Indianapolis, Indiana

1969

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**Pesticides Documentation Bulletin**

**Psychological Abstracts**

**Review of Applied Entomology**

**The Torrey Bulletin**

**Zoological Record**

# TABLE OF CONTENTS

## Part 1

### THE WORK OF THE ACADEMY

	Page
Officers and Committees for 1968.....	9
Minutes of the Spring Meeting.....	12
Minutes of the Fall Meeting (Executive Committee).....	15
Minutes of the Fall Meeting (General Session).....	18
Annual Financial Statement.....	20
Annual Report, Junior Academy of Science.....	22
Biological Survey Committee Report.....	29
Necrology.....	32
New Members for 1968.....	43

## Part 2

### ADDRESSES AND CONTRIBUTED PAPERS

Presidential Address.....	49
"Urban Geology—A Need and A Challenge", WILLIAM J. WAYNE	
"Science, Communication, and the Critical Mass".....	65
ROBERT E. GORDON	

#### Anthropology

R. L. MICHAEL—Stratigraphy of the White Site*.....	71
R. E. PACE, S. COFFIN, and J. RICHARDSON—A Preliminary Report on the Welsh-Dunlap Site, Vigo County, Indiana*.....	71
B. J. MORRIS—The Initial Excavation of the Van Nuys Site*.....	71
T. CURREN—Mound Four New Castle Site*.....	71
M. SALOVESH—Culture Change in a Maya Community*.....	71
R. L. BLAKELY, R. J. MARMOUZE, and D. D. WYNNE—The Incidence of the Perforation of the Coronoid-olecran Septum in the Middle Mississippian Population of Dickson Mounds, Fulton County, Illi- nois.....	73
P. L. WALKER—The Linear Growth of Long Bones in Late Woodland Indian Children.....	83
R. W. ALEXANDER, JR. and G. K. NEUMANN—On the Origin of the Tutelo—An Eastern Siouan Tribe.....	88
L. M. ROBBINS and G. K. NEUMANN—The Origin of the Shawnee Indians.....	93
B. R. HUELSMAN—Urban Anthropology and the Southern Moun- taineer.....	97
M. S. WEISS—A Systems Approach to the Study of Complex Society.....	104

#### Bacteriology

B. H. PETERSON, Z. BRAHMI, J. S. INGRAHAM, and A. S. LEVINE—De- velopment of a Modified Antibody Plaque Technique for the De- tection of Single Cells Making Anti-viral Antibody*.....	109
K. CARLSON and R. BOCHRATH—Amber Streptomycin-resistant Mu- tants of <i>Escherichia coli</i> *.....	109
B. PERI and M. WAGNER—Immune Response to <i>Streptococcus faecalis</i> in the Rat*.....	110

\*Abstract or Note only

A. C. RAITANO and A. S. LEVINE—Enzymatic Effect of Cobra Venom on Rauscher Leukemia Virus (RLV)*	110
W. F. CAMPBELL and A. S. LEVINE—Suppression of Rauscher virus-induced Murine Leukemia by L-Asparaginase*	110
P. C. MORGAN and R. F. RAMALEY—Physiological Studies of the Incorporation of 5-Bromouracil During Growth and Sporulation in <i>Bacillus subtilis</i> -168*	111
D. R. BRANNON, M. GORMAN, B. B. MOLLOY, W. M. STARK, and J. MABE—Biosynthesis of Thiadiketopiperazine Antibiotics*	111
R. H. WILLIAMS, J. C. CLINE, R. E. HOLMES, and M. J. SWEENEY—Mycophenolic Acid: Studies on Biological Activities*	112
P. A. LEMKE—Genetic Evidence for Resistance of <i>Cephalosporium</i> to Specific Compounds*	112
J. H. NUNER and R. J. DOWNEY—Effect of Oxygen on the Synthesis of Nitrate Reductase in <i>Bacillus stearothermophilus</i> *	113
S. H. KENDALL and S. A. MINTON—The Serum Profiles of Certain Reptile Sera and preliminary Observations on Antibody Formation in Snakes*	113

### Botany

D. L. DILCHER and C. A. ZECK—A Study of the Factors Controlling Variation of Cuticular Characters*	115
G. E. DOLPH and D. L. DILCHER—An Eocene Discovery of <i>Dendropanax</i> *	115
R. E. GIRTON—Effects of Selenium on the Respiration of Excised Root-tip Segments of Maize*	116
A. T. GUARD—Some Disappearing Plant Species*	117
A. J. ULLSTRUP—Weather and Corn Diseases in Indiana in 1968*	117
J. E. RAHE and J. KUC—Induced Resistance of <i>Phaseolus vulgaris</i> to Bean Anthracnose*	118
L. and A. BESLEY—Lobelias of Franklin Co. and Indiana*	118
K. K. CURTIS and D. E. SMITH—Daily Variation in Chlorophyll Content of Corn Seedlings*	118
R. W. JUDD and J. J. NISBET—Pennsylvanian Coal Ball Flora of Indiana	120
C. M. PALMER—Algal Records for Three Indiana Sewage Stabilization Ponds	139
D. J. MORRE', B. RAU, R. VIEIRA, T. STANCEU, and T. DION—Environmental Regulation of Experimental Leaflet Abcission	146

### Cell Biology

E. J. HINSMAN and K. MOE—The Fine Structure of the Ventral Horn Neuron in the Calf Spinal Cord*	161
I. WATANABE, S. DONAHUE, and W. ZEMAN—An Intranuclear Structure in Neurons of Human Cerebral Cortex*	161
W. YUNGHANS and D. J. MORRE'—Chemical Composition of Membrane Fractions Isolated from Rat Liver in Relation to Membrane Differentiation During Secretion*	161
K. M. MAK and R. A. JERSILD—An Electron Microscopic Study of Zinc Iodide-Osmium Staining of the Golgi Apparatus of Rat Intestinal Epithelial Cells*	161
J. B. WHITTEN, JR.—The Ultrastructural Features of Intraoral Lichen Planus, Simplex*	162
D. J. NIEDERPRUEM and R. A. JERSILD—Direct Studies of Nuclear Movements in <i>Schizopyllum commune</i> *	163
J. F. SCHMEDTJE—Plasma Cell Antibody Against Bovine Serum Albumin in the Rabbit Appendix as Revealed by the Fluorescent Antibody Technique*	163

\*Abstract or Note only

W. E. STOVALL and G. L. ROSENE—Tumor Cell Mitotic Activity in Mice Treated with Antigenic Materials*	164
S. F. SMALLEY—Microimmunoelectrophoresis of Human Blood in Regard to the Study of the Gc System*	164
G. BARSKI, J. W. BUTLER, and R. J. THOMAS—Quantitative Measures of In Vitro Cell Mobility by Use of a Pattern Recognition Computer*	165
D. J. MORRE' and H. H. MOLLENHAUER—Studies on the Mechanisms of Gluteraldehyde Stabilization of Cytomembranes.	167
A. E. MIDDLETON, K. CHEETAM, D. GERBER, and D. J. MORRE'—Adenosine Mono-, Di- and Trinucleotidase Activities of Rat Liver Cytomembranes	183
J. D. HALL, J. W. STILES, Y. AWASTHI, and F. L. CRANE—Membranifibrils on Cristae and Grana Membranes.	189

### Chemistry

R. M. LAWRENCE—X-Ray Diffraction Study of Aqueous Thallium (III) Chloride*	199
F. J. HOLLER and R. D. JOYNER—Studies of a Cyanamide Complex of Iron (II)*	199
R. L. STOVER and R. D. JOYNER—Phthalocyaninogermanium (II) and Other Phthalocyaninogermanium Compounds*	199
L. A. MCGREW and S. C. ROBLING—A Kinetic Study of the Reaction of Phenyl Isocyanate with Water*	199
B. N. STORHOFF and J. R. DOYLE—Organonitrile Complexes of Rhenium (I) and Manganese (I)*	200
R. F. COPELAND—Use of Computers in Undergraduate Physical Chemistry*	200
A. G. COOK and T. A. HECHT—Synthesis and Properties of [2.2.2] Bicyclooctyl Enamines*	200
A. G. COOK and D. J. SCHULTZ—Reduction of Selected Enamines with Lithium Aluminum Hydride*	200

### Ecology

R. M. DINKEL and F. ROTHWELL—Temperature and Moisture Relationships of Green County, Indiana Strip Mine Areas*	201
A. G. CRASKE, JR.—Ecological Site Preference and Taxonomic Differences within Two <i>Acer saccharum</i> - <i>Acer nigrum</i> Complexes found in Parke County, Indiana*	201
J. L. GERWIG and W. B. CRANKSHAW—Effects of Thermal Discharge on the Phytoplankton and Macroinvertebrates of the Wabash River*	201
F. MORGAN—Effects of Effluent on the Fish Population of Mill Creek, Rochester, Indiana*	202
P. T. MCKELVEY and C. E. SMITH, JR.—A Study of Selected Physicochemical Properties of Two Indiana Main-Stream Reservoirs*	202
R. O. PETTY—Pattern of Mesic Forest Succession at the Western Border*	203
J. R. GAMMON—The Effect of Inorganic Sediment on Macroinvertebrate and Fish Populations of a Central Indiana Stream*	203
W. B. CRANKSHAW—The Effect of Ground Cover on the Soil Moisture Regime in a Mixed Mesophytic Woods	204
M. T. JACKSON and P. R. ALLEN—Detailed Studies of Old-Growth Forests in Versailles State Park, Indiana	210
P. M. ARNETT—A Study of Collembolan Populations Associated with Four Seral Stages Leading to the Beech-Maple Climax	231
W. B. CRANKSHAW, J. A. SMITH and R. D. KIRKPATRICK—Woodcock Singing Ground Descriptions for Two Indiana Sites	241

\*Abstract or Note only

- M. T. JACKSON—Hemmer Woods: An Outstanding Old-Growth Low-land Forest Remnant in Gibson County, Indiana..... 245

### Entomology

- D. L. SCHUDER—A Japanese Weevil Discovered in Indiana\* ..... 255  
 J. W. HART—A Checklist of the Mosquitoes of Indiana with a Record of the Occurrence of *Aedes infirmatus* D & K..... 257  
 F. N. YOUNG—Crosses of *Tropisternus* from Central America with Other Color Forms of the *Tropisternus collaris* Complex (Coleoptera: HYDROPHILIDAE)..... 260  
 T. A. PARKER—An Annotated List of the Spiders of Indiana..... 266

### Geology and Geography

- J. H. CLEVELAND and C. F. TIEFEL—Gypsum Resources of the Midwestern United States\*..... 315  
 A. F. SCHNEIDER—A Significant Exposure of Pleistocene Drift in South-Central Indiana\*..... 315  
 R. L. POWELL—Unconsolidated Deposits on the Mitchell Plain of Indiana\* ..... 316  
 L. A. LEWIS—Analysis of Surficial Landform Properties: The Regionalization of Indiana into Units of Morphometric Similarity.. 317  
 R. F. BONEHAM—Earth Science Teaching in the Secondary Schools of Indiana ..... 329  
 R. W. ORR—Stratigraphy and Correlation of Middle Devonian Strata in the Logansport Sag, North-central Indiana..... 333  
 T. F. BARTON—Planning for and Utilization of the Web Pattern of Physical Urban Development in Cities..... 342  
 R. R. FRENCH—Transportation of Mineral Aggregates in Indiana ... 348  
 R. M. DINKEL and L. GUERNSEY—An Economic Appraisal of Reclamation Practices on a Strip Coal Mine Site in Greene County, Indiana ..... 355  
 L. I. DILLON—Popcorn Production in Indiana ..... 363

### History of Science

- D. HOWARD and T. R. MERTENS—Academic Origins of Members of the Genetics Society of America..... 370  
 N. G. SPRAGUE—Original Science Apparatus Preserved in Science Museums and Universities in Free Europe..... 378  
 R. H. COOPER—A Half Century of Science at Ball State University.. 381

### Physics

- R. CALLIS and E. CRAIG—Preliminary Results of a Muon Energy Study\* ..... 387  
 J. F. HOULIHAN—Determination of Absolute D\* for Photovoltaic, Infra-red Detectors\*..... 387  
 R. D. BURGESS and M. HULTS—Possible Methods for Observing Shadow Bands at the Next Solar Eclipse in North America\*... 387  
 D. E. KOLTENBAH—Nuclear Electric Quadrupole Resonance Analysis of Chemical Bonds in Cl<sup>35</sup>-Containing, Straight-Chain Hydrocarbons\* ..... 388  
 G. P. THOMAS—Low Energy Elastic Scattering of K-Mesons off Protons\* ..... 388  
 T. V. BLANC, A. G. DANEMAR, and D. E. KOLTENBAH—The Design and Construction of a System for Direct Measurement of Atomic Lifetimes ..... 389

\*Abstract or Note only

## Plant Taxonomy

W. H. WELCH—Hookeriaceae Species and Distribution in South America .....	396
F. K. DAILY—Some Late Glacial Charophytes Compared to Modern Species .....	406
J. HUMBLE—Indiana Plant Distribution Records, XX, 1966-68.....	413
G. C. MARKS—The Flowering of <i>Lemna minor</i> and the Establishment of <i>Centaurium pulchellum</i> in Northwestern Indiana .....	414

## Soil Science

L. E. HUGHES and H. W. REUSZER—Fluctuations of Bacteriological Numbers in Farm Ponds*.....	417
J. M. SMITH—Earth Mound in Eastern Indiana*.....	417
H. KOHNKE and S. A. BARBER—Tillage Techniques on Indiana Prairie Soil .....	418
M. E. HEATH—Fitting Plants to Fragipan Soils in Southern Indiana .....	429
R. K. STIVERS—Fertilizer Experiments with Corn on Several Soils in Indiana, 1963-1965.....	435

## Zoology

D. C. KRAMER—Temperature Preferences in the Eastern Garter Snake ( <i>Thamnophis sirtalis sirtalis</i> )*.....	445
W. J. BRETT—Relationship between Emergence Rhythm and Metabolic Rhythm in <i>Drosophila melanogaster</i> *.....	445
J. M. BURNS—The Effects of Chicken Luteinizing Hormone on the Pullet Ovary*.....	445
A. W. GRUENHOLZ and H. TAMAR—Tracheal Mucous Velocities in the Rabbit, Dog, and Rat*.....	446
R. E. GEYER, JR. and W. B. HOPP—Studies on the Growth Rate of the Juvenile Piolt Black Snake ( <i>Elaphe obsoleta</i> )*.....	446
J. O. WHITAKER, JR., W. A. MILLER and W. L. BOYKO—Rabies in Indiana Bats .....	447
M. W. WAGNER and W. C. GUNTHER—Preference for Toxic and Non-toxic Artificial Sweeteners in Rodents.....	457
R. H. COOPER—Melanoma in <i>Heloderma suspectum</i> Cope.....	466
G. P. POLLOCK—A Comparative Study of Some Effects of Aminoglutethimide Phosphate on Serum Potassium and Sodium.....	468
B. L. PICKARD and A. E. REYNOLDS—Aspects of Water Loss Physiology in Certain Plethodontid Salamanders.....	472
H. W. WENDT—Rapid Approximations for some Chi Square and Derived Correlational Statistics Used in the Social and Biological Sciences .....	482
F. DON FULK and J. O. WHITAKER, JR.—The Food of <i>Rana catesbeiana</i> in Three Habitats in Owen County, Indiana.....	491
R. E. MUMFORD—The Hoary Bat in Indiana.....	497
Instructions for Contributors .....	502
Index .....	505

\*Abstract or Note only





PART 1

THE WORK  
OF THE  
ACADEMY

1968

WILLIAM J. WAYNE, *President*



## OFFICERS AND COMMITTEES FOR 1968

### OFFICERS

---

President.....	William J. Wayne, Indiana University
President Elect.....	Howard R. Youse, DePauw University
Secretary.....	James R. Gammon, DePauw University
Treasurer.....	Frank A. Guthrie, Rose Polytechnic Inst.
Editor.....	William R. Eberly, Manchester College
Director of Public Relations.....	James A. Clark, Indiana Department of Natural Resources

### DIVISIONAL CHAIRMEN

Anthropology.....	Ben K. Schwartz, Ball State University
Bacteriology.....	Hayward Campbell, Jr., Eli Lilly & Co.
Botany.....	Thomas Mertens, Ball State University
Cell Biology.....	Ralph Jersild, I. U. Med. Center
Chemistry.....	LeRoy A. McGrew, Ball State University
Ecology.....	Wm. B. Crankshaw, Ball State University
Entomology.....	Leland Chandler, Purdue University
Geology & Geography.....	Lowell Dillon, Ball State University
History of Science.....	Robert Cooper, Ball State University
Physics.....	Edwin C. Craig, Ball State University
Plant Taxonomy.....	Carrolle A. Markle, Earlham College
Soil Science.....	Marion Baumgardner, Purdue University
Zoology.....	John O. Whitaker, Indiana State University

### EXECUTIVE COMMITTEE

(Past Presidents\*, Current Officers, Divisional Chairmen,  
Committee Chairmen)

*Baldinger, L. H.	*Edwards, P. D.	*Meyer, A. H.
Behrens, O. K.	Gammon, J. R.	*Michaud, H. H.
Campbell, H. Jr.	*Girton, R. E.	*Morgan, W. P.
Chandler, L.	*Guard, A. T.	Moulton, B.
*Christy, O. B.	Guthrie, F. A.	Petty, R. O.
Clark, J. A.	*Haenisch, E. L.	*Porter, C. L.
*Cleland, R. E.	Heniser, V.	*Powell, H. M.
Coats, N.	Jersild, R.	Schwartz, B.
Cook, D. J.	*Johnson, W. H.	Stockton, Sister M.R.
Cooper, R.	Kaufman, K. L.	*Wallace, F. N.
Crankshaw, W. B.	*Lilly, Eli	Wayne, W. J.
Craig, E. C.	*Lindsey, A. A.	*Weatherwax, P.
Daily, F. K.	List, J. C.	Webster, J. D.
*Daily, W. A.	McGrew, L. A.	*Welch, W. H.
*Day, H. G.	*Markle, C. A.	*Welcher, F. J.
Dillon, L.	Markle, M. S.	Whitaker, J. O.
Eberly, W. R.	*Mellon, M. G.	Winslow, D.
*Edington, W. E.	Mertens, T.	Youse, H. R.

## BUDGET COMMITTEE

President, W. J. Wayne; President-elect, H. R. Youse; Secretary, J. R. Gammon; Treasurer, F. A. Guthrie; Editor, W. R. Eberly; Director of Public Relations, J. A. Clark; Retiring President, A. A. Lindsey; Director of Junior Academy, D. R. Winslow; Library Committee, Nellie Coats; Program Committee, J. C. List and L. A. McGrew; Relation of Academy to State, W. A. Daily.

## COMMITTEES ELECTED BY THE ACADEMY

**Academy Foundation:** W. P. Morgan, 1969, chairman; W. A. Daily, 1970.  
**Bonding:** D. J. Cook, 1968, chairman; R. M. Brooker, 1968.  
**Research Grants:** O. K. Behrens, 1969, chairman; H. H. Michaud, 1968; J. B. Patton, 1972; W. Stephenson, 1971; W. H. Welch, 1970.

## COMMITTEES APPOINTED BY THE PRESIDENT

(President an ex officio member of all committees)

**Academy Representative on the Council of A.A.A.S.:** W. H. Johnson.

**Auditing Committee:** J. C. List, chairman; R. H. Cooper.

**Youth Activities Committee:** V. Heniser, chairman; Sr. Mary Alexandra; R. Brooker; J. Colglazier; J. Davis; E. Haenisch; K. Kaufman; W. Kessel; G. Kirkman; R. Lefler; R. Settle; D. Winslow.

**Indiana Science Talent Search:** V. Heniser, director; L. H. Baldinger; R. L. Henry; A. Kahn; A. R. Schmidt; H. L. Zimmack.

**Indiana Science Fairs State Coordinator:** K. L. Kaufman.

**Library Committee:** Nellie Coats, chairman; Lois Burton; J. W. Klotz; Eli Lilly; B. Malin.

**Program Committee:** J. C. List and L. A. McGrew, chairmen; R. H. Cooper; E. C. Craig; C. Parish; H. Paschall; D. F. Richmond; H. H. Roepke; B. K. Swartz, Jr.

**Publications Committee:** W. R. Eberly, chairman; J. A. Clark; D. G. Frey; W. N. Melhorn; J. Pelton; W. J. Wayne.

**Relation of Academy to State:** W. A. Daily, chairman; J. A. Clark; C. F. Dineen; W. R. Eberly.

**Membership Committee:** Sr. M. Rose Stockton, chairman; G. R. Bakker; O. Behrens; J. F. Hayden; G. H. Bick; M. Burne; K. H. Carlson; N. Coats; R. H. Coleman; G. B. Cummins; J. P. Danehy; F. K. Edmundson; H. Feldman; Olive Forbes; F. Frieders; J. R. Gammon; W. C. Gunther; F. A. Guthrie; R. E. Hale; W. E. Hoffman; W. B. Hopp; W. R. Hurt; E. R. Johnston; R. L. Kent; H. Kohnke; H. P. Leighly; Marie Mayo; J. McFarland; D. E. Miller; G. R. Miller; M. A. Moussa; M. Murphy; E. Nussbaum; P. A. Orpurt; J. B. Patton; R. Petty; S. N. Postlethwait; L. M. Reynolds; A. F. Schneider; M. C. Shanks; J. Siegrist; H. K. White; H. G. Wilhelm; L. Willig; F. J. Zeller; W. A. Zygmunt.

**Fellows Committee:** H. E. Driver; W. H. Welch; D. E. Miller; B. E. Montgomery; F. K. Daily; K. H. Carlson; R. L. Conklin; C. B. Heiser; E. J. Asker.

**Resolutions Committee:** L. H. Baldinger, chairman; J. E. Newman; J. M. Smith.

**Invitations Committee:** H. R. Youse, chairman; R. H. Cooper; W. B. Hopp; W. K. Stephenson; J. D. Webster.

**Necrologist:** F. K. Daily.

**Parliamentarian:** P. Weatherwax.

#### SPECIAL COMMITTEES APPOINTED BY THE PRESIDENT

**Biological Survey Committee:** J. D. Webster, chairman; L. Chandler; C. B. Heiser; G. C. Marks; R. Mumford; W. H. Welch; F. Young.

**Academy Conference Representative (President-elect):** H. R. Youse.

**Emeritus Members Committee:** R. E. Cleland, chairman; E. L. Haenisch; M. S. Markle; H. H. Michaud; W. H. Welch.

**Preservation of Scientific Areas Committee:** R. O. Petty, chairman; R. C. Gutschick; C. H. Krekeler; B. Moulton; D. Schmelz; W. J. Wayne; W. H. Welch; R. C. Weber.

**Science and Society Committee:** W. Johnson, chairman; O. K. Behrens; M. Burton; J. Christian; R. Cleland; H. Day; W. R. Eberly; P. Klinge; H. Kohnke; A. A. Lindsey; R. Miles; R. Rogers; W. Stephenson; H. Wells.

# SPRING MEETING

THE HONEYWELL CENTER, Wabash, Indiana

## MINUTES OF THE EXECUTIVE COMMITTEE MEETING

April 26, 1968

The meeting was called to order at 4:30 p.m. by Dr. William J. Wayne, President of The Academy, in the library of the Honeywell Center.

The minutes of the Executive Committee and the General Session of the Fall Meeting of The Academy held October 20, 1967 at Indiana University were read.

Treasurer, Dr. Frank A. Guthrie reported Academy funds as follows:

Balance January 1, 1967 .....	\$21,685.67
Income for 1967 .....	32,365.22
Expenditures for 1967 .....	37,435.45
Balance, December 31, 1967 .....	17,568.47

The question of instituting an "Affiliate" status for groups such as the Indiana Chapter of the Society of American Microscopists was discussed. It was generally agreed that there should be no official "Affiliate" status, but that if most of the members of a group were also Academy members then any meeting of the group could be considered an official function of the Academy.

A motion was unanimously carried to accept Cell Biology as a full-fledged Division of The Academy.

**Auditing Committee:** Dr. Robert Cooper reported the books of the Treasurer to be in good shape.

**Youth Activities Committee:** Dr. W. J. Wayne reported that the Science Search dinner was well attended.

**Publications Committee:** Dr. W. R. Eberly reported that the coming Volume of the Proceedings will contain several innovations including a complete list of Academy members which will improve its quality. One manuscript is now ready for consideration and another in preparation for the Special Publications Series. The Academy has agreed to support this program, but has not provided means of funding the project. After discussion by Frank A. Guthrie, William A. Daily and Paul Weatherwax, it was suggested that the publication of the monographs might be funded initially by the John S. Wright Fund subject to approval by the Research Grants Committee, and that money from the sales of the first monograph could be placed into a regular publications fund so that it could become self-sustaining eventually. Dr. Cleland suggested that W. R. Eberly and a member of the Library Committee meet with the Re-

search Grants Committee to discuss the matter. Dr. Wayne agreed to coordinate such a meeting.

**Membership Committee:** Requests have been made to Indiana Chapters of meteorology and cell biology for member lists in order that Sr. M. Rose may send those persons not already members of The Academy applications for membership.

**Scientific Areas Committee:** The following resolution was adopted unanimously:

Whereas the fate of scientific and natural areas in Indiana is a concern of the Indiana Academy of Science, and;

Whereas this body of men and women believes it is obliged to comment on policies of land use which, in its opinion, run contrary to the best interests, both scientific and civic, of the people of the state, and;

Whereas a proposed reservoir on Big Walnut Creek in Putnam County, Indiana, is now planned which would permanently alter and partially destroy a natural valley landscape on this stream, and;

Whereas this landscape harbors an outstanding system of plants and animals, including surpassing specimens of species which are relicts of an early post-glacial flora, species unusual in their occurrence, and;

Whereas this landscape is deemed of greater value in its present natural condition, and of greater long range benefit to the people of the state as a nature preserve than as a reservoir as now envisioned, and;

Whereas several feasible alternative sites are reported to exist by the Corp of Engineers, and;

Whereas recent evidence has been submitted by the Indianapolis Water Company that future water supply for that metropolitan area is assured without said reservoir due to the newly proposed Mud Creek Reservoir, thus negating one of the major justifications for constructing the disputed reservoir, therefore

BE IT RESOLVED by the Indiana Academy of Science by action of its Executive Committee this 26th day of April, 1968, to stand opposed to the currently planned reservoir on Big Walnut Creek in Putnam County, Indiana, as it is now proposed and to continue to oppose plans for any structure which would result in the inundation of any part of the natural valley landscape north of U. S. Highway 36.

**Science and Society Committee:** Dr. Willis H. Johnson reported that the speaker's Bureau Brochure was published at a cost of \$1000 provided by Eli Lilly. The Progress in Government reported a willingness on the part of Academy members to act in governmental matters involving science.

An invitation from The American Institute of Biological Science to The Academy to become an Affiliate member was declined unanimously.

Dr. W. Wayne suggested that the fall meeting might include a symposium in teaching of high school science and if sufficient interest subsequently developed that a division could be added. Dr. J. List indicated that Indiana Biologists, a group of teachers mainly secondary, could act as a focal organization. Dr. Day reported that a group of high school teachers of chemistry was being organized.

A motion was passed unanimously to change By-Laws, Article I. Dues as follows:

Sec. 1. Initiation fees, reinstatement fees and dues for the various classes or types of memberships shall be determined annually by the Executive Committee.

Sec. 2. Initiation fees are payable only once; reinstatement fees are payable each time a lapsed membership is reactivated. Annual dues are based upon the calendar year.

Sec. 3. A student discount in the amount of 50% of the normal annual dues will be awarded to undergraduate and/or graduate students certified to be eligible for this discount by an Academy member on the faculty of the student's college or university. The student discount is limited to a maximum of five years.

Sec. 4. Advance payment of annual dues, beyond the current year, may be made at the existent rate for a period not to exceed three years, or in the case of students only through the calendar year in which studies should normally be completed, whichever occurs first.

Sec. 5. Annual dues billings shall be made by the Treasurer prior to the spring meeting. Delinquent members shall be rebilled prior to the fall meeting. Members delinquent on December 20th shall be sent a third dues billing before December 31st, and if still delinquent on January 31st shall be dropped from the membership rolls. A former member, dropped for lack of dues payment, may be reinstated by payment of both the reinstatement fee and dues for the year in which he wishes to resume membership.

Sec. 6. Each member is entitled to one copy of the Proceedings of the Academy, and any other publications of the Academy distributed to the membership of the Academy, that are published in the year for which dues have been paid.

Sec. 7 Former members who were dropped for non-payment of dues may obtain one copy of the Proceedings, or other publications, published in a year in which they were inactive by either of two methods, provided copies are still available:

- a. They may pay the reinstatement fee and dues for the year or years of interest.
- b. They may purchase one or more copies at the established non-member price.

The meeting was adjourned at 7:00 p.m.

Approved: October 18, 1968

JAMES R. GAMMON, Secretary



## FALL MEETING

### MINUTES OF THE EXECUTIVE COMMITTEE MEETING

BALL STATE UNIVERSITY, October 18, 1968

The meeting was called to order at 7:30 p.m. by Dr. William J. Wayne, President of the Academy, in Room 103 of the Physical Science and Mathematics Building.

The minutes of the Executive Committee and the General Session of the Spring Meeting of the Academy held April 26-27, 1968, at the Honeywell Center, Wabash, Indiana, were approved.

Treasurer—Dr. Frank A. Guthrie reported the Academy funds as follows:

January 1, 1968 balance.....	\$17,568.47
Income to October 15, 1968.....	12,317.43
Expended to October 15, 1968.....	8,456.84
Balance, October 15, 1968.....	21,429.06

Editor—Dr. William R. Eberly reported that the Proceedings will be printed starting next week and that it will contain a number of innovations including a two-part format: Part 1: The Work of the Academy, and Part 2: Addresses and Contributed Papers. An entire member list will also be included.

Research Grants Committee—Dr. O. K. Behrens reported that in conjunction with Dr. Eberly and Miss Nelle Coats, the Committee has worked out the details of supporting the Special Publications Series. It was felt that publications constituted an integral part of research. Therefore, \$2,000.00 per annum will be set aside for the next few years to help the new program along.

Six research grants totaling \$2,219.00 have been approved.

Trustees of the Academy Foundation—William A. Daily reported Academy Foundation Funds as follows:

October 1, 1967, balance.....	\$ 625.00
Receipts through September 30, 1968.....	727.00
Disbursements through Sept. 30, 1968.....	300.00
Balance, September 30, 1968.....	1,052.20

In the John S. Wright Fund:

Balance, October 10, 1967.....	\$ 2,491.10
Receipts to September 30, 1968.....	10,715.33
Disbursements to Sept. 30, 1968.....	11,740.10
Balance as of September 30, 1968.....	1,466.33

Youth Activities Committee—Dr. V. Heniser discussed the methods of selection and financial support of the Talent Search Program and the general activities of the Committee. Mr. Winslow noted that 51 clubs are now active in the Junior Academy.

The Library Committee—Miss Nelle Coats reported that the provisions of the Lilly Endowment, Inc. grant were being completed and that only 372 volumes of *Natural Features of Indiana* remain.

Relation of the Academy for the State—William A. Daily stated that increased support from the State was requested amounting to \$5,500.00.

Membership Committee—Sr. Mary Rose reported that efforts to involve more high school science teachers in the Academy continue.

Fellows Committee—Dr. Winona Welch recommended and a motion was approved to accept the following members as Fellows of the Academy:

Dr. James R. Gammon  
 Dr. Helmut Kohnke  
 Dr. Thomas R. Mertens  
 Dr. Jerry J. Nisbet

Emeritus Committee—Dr. Winona Welch recommended and a motion was approved to accept the following members as emeritus members of the Academy.

Dr. Ira L. Baldwin  
 Mrs. Gladys M. Friesner  
 Dr. Blanch McAvoy  
 Dr. John C. Roehm

Invitations Committee—Dr. Howard Youse announced the following colleges as hosts for future Academy meetings:

1969—Hanover College  
 1970—Indiana State University  
 1971—Earlham College  
 1972—St. Mary's College

Biological Survey Committee—Dr. Dan Webster noted that papers on geographic distribution of flora and fauna are diminishing while ecological studies are increasing.

Preservation of Natural Areas Committee—Dr. Robert Petty reported that 248 natural areas listed by counties is now available upon request on computer print-out.

Committee on Science and Society—Dr. Willis H. Johnson reported on the current activities of the three subcommittees.

The Speaker's Bureau Subcommittee chaired by Dr. John Christian is to be congratulated for their work on the brochure containing the names of available speakers and topics which has now been distributed to nearly 4,000 service clubs, women's clubs and high schools in the state. There is good evidence that it is already being used. A poll will be conducted next spring to ascertain the extent of usage and to determine the frequency with which the speakers have been called upon.

Dr. Day and the Subcommittee on Science and Government have discussed ways in which the Academy might offer its services to the State with Lieutenant Governor Rock and leaders of the House and Senate. A list of over 20 subjects of interest to the State was prepared

and the scientists of the state were contacted about serving as consultants on one or more of these subjects. More than 160 scientists responded favorably. All legislators and legislative committees will be informed of this service and a representative of the committee will explain the program to the Governor and the Lieutenant Governor. Each member of the Academy can help further this program by contacting his senator and representative and explaining the available service.

The Subcommittee on Finance reported that efforts to obtain funds for establishing an office with a part-time Executive Director and a secretary have thus far produced nothing. A new program of the NSF, however, has indicated an interest and a proposal will be submitted soon. It was suggested that support might be enlisted from businesses, industries and other organizations through a form of institutional membership. Until outside funds are obtained, a continued budget of \$416.42 was requested to continue work on a limited scale.

A motion was approved directing the Science and Society in conjunction with Dr. Weatherwax to prepare an amendment to the Constitution to include an "Institutional" membership to be voted upon at the spring meeting.

Special financing was required for the publication of special addresses to be distributed by the Science and Society Committee. A motion was approved to divert \$400.00 toward their publication.

After thorough discussion, a motion was approved to move the time of the Fall Meeting of the Academy from Saturday to Friday. A resolution was passed that the Junior Academy of Science need not change their day of meeting unless they wished to do so.

Dr. Wayne suggested that a short newsletter be mailed to the Academy membership shortly after the Spring Meeting to keep members informed about Academy business. He also expressed the hope that the Science Teaching Symposium could be continued.

The meeting was adjourned at 9:50 p.m.

Approved October 20, 1968.

JAMES R. GAMMON, Secretary

## MINUTES OF THE GENERAL SESSION

Ball State University, October 19, 1968

The annual Fall Meeting of the Indiana Academy of Science was held in the Auditorium of the Teachers College Building on Saturday, October 19, 1968, at 11:00 a.m. Dr. William J. Wayne, President, called the meeting to order. Academy members were officially welcomed by Dr. Robert L. Carmin, Dean, College of Sciences and Humanities, Ball State University.

The minutes of the Executive Committee meeting held Friday, October 18, 1968, were read by the secretary and approved as read.

Fay Kenoyer Daily read a biographical sketch of each member who had died since the 1967 Fall meeting. These are printed under Necrology.

Dr. Robert H. Cooper then introduced Dr. Robert E. Gordon, Associate Dean of the College of Science, University of Notre Dame, who presented a timely address entitled "Science, Communication and the Critical Mass."

A luncheon for Junior and Senior Academy members was held in Cardinal Hall, Pittenger Student Center, at 12:30 p.m.

The annual dinner meeting of the Academy was held in Cardinal Hall, Pettenger Student Center at 6:00 p.m., Dr. Howard R. Youse, President-Elect, presiding.

Professor James E. Newman of the Resolutions Committee submitted the following resolution: "That the Academy members here assembled express their appreciation to Ball State University for all the courtesies which have been extended to the membership of the Academy during this meeting. We are indebted especially to Dr. James C. List and Dr. LeRoy A. McGrew, Co-chairmen of the Program Committee for their efforts in arranging facilities for this annual meeting. Further, the Academy is appreciative of the warm welcome extended by Dr. Robert L. Carmin, Dean, College of Sciences and Humanities at Ball State University and to Dr. Robert E. Gordon, Associate Dean, College of Science, University of Notre Dame, for his address to the general session." The resolution was approved.

The Secretary presented 65 applications for membership to the Academy. A motion was approved accepting these applicants as members.

Dr. Alton A. Lindsey, Chairman of the Nominating Committee, presented the names of the divisional chairmen for 1969: Anthropology, Robert Pace, Indiana State University; Bacteriology, D. S. Wegener, Indiana University Medical School; Botany, Robert Kent, Indiana Central; Cell Biology, Edward J. Hinsman, Purdue University; Chemistry, John W. McFarland, DePauw University; Ecology, Thomas Mc-

Comish, Ball State University; Entomology, Jack Munsee, Indiana State University; Geology and Geography, Wilton Melhorn, Purdue University; History of Science, B. Elwood Montgomery, Purdue University; Physics, Richard C. Conklin, Hanover College; Plant Taxonomy, Jack Humbles, Indiana University; Soil Science, James E. Newman, Purdue University; Zoology, James C. List, Ball State University.

The following slate of officers and elected committees were presented for election by Dr. Lindsey: President, Howard R. Youse, DePauw University; President-elect, Frank A. Guthrie, Rose Polytechnic Institute; Treasurer, Damian Schmelz, St. Meinrad College; Director of Public Relations, Paul E. Klinge, Indiana University; Editor, William R. Eberly, Manchester College; (Secretary, James R. Gammon, DePauw University, continues in office for the final year of the three-year term of office); Bonding Committee, Robert M. Brooker, Indiana Central College and Howard H. Michaud, Purdue University (both 1969); Research Grants Committee, James E. Newman, Purdue University (1973). A motion to accept the officers and committee members was approved unanimously.

Dr. William J. Wayne presented a stimulating, illustrated speech which concluded the proceedings.

The meeting was adjourned at 9:00 p.m.

JAMES R. GAMMON, Secretary

Approved April 25, 1969

# FINANCIAL REPORT OF THE INDIANA ACADEMY OF SCIENCE

January 1-December 31, 1968

## I. ACADEMY ACCOUNTS

### A. 1968 Income:

Item or Description	Income
Dues and Initiation Fees	\$ 4,003.00
Reprint Sales to Authors (Balance of Volume 76)	450.40
Publications Fund Income	
Sale of "Proceedings" <span style="float: right;">\$ 153.00</span>	
Sale of "Natural Features of Indiana" <span style="float: right;">420.00</span>	
John S. Wright Fund (Partial, Vol. 77) <span style="float: right;">3,500.00</span>	4,073.00
<b>TOTAL 1968 INCOME:</b>	<b>\$ 8,526.40</b>
Plus interest credited to savings accounts	+ 886.50
<b>TOTAL 1968 INCOME &amp; CREDITS:</b>	<b>\$ 9,412.90</b>
Less 1968 Expenditures, below	—7,618.66
<b>NET GAIN FOR 1968:</b>	<b>\$ 1,794.24</b>
Plus Balance, January 1, 1968	+ 6,925.22
<b>BALANCE, December 31, 1968:</b>	<b>\$ 8,719.46</b>

### B. 1968 Expenditures:

Item or Description	Expenditure Budgeted
Secretary	\$ 285.83
Clerical <span style="float: right;">\$ 201.83</span>	\$ 250.00
Postage, etc. <span style="float: right;">84.00</span>	
Treasurer	235.00
Clerical <span style="float: right;">130.00</span>	225.00
Postage, etc. <span style="float: right;">105.00</span>	
Office Supplies & Expenses	243.91
Travel Allowance & A.A.A.S. Conf. Dues	172.16
President's Contingency Fund	-----
Membership Committee	12.00
Reprints (President's Address, Necrology)	-----*
Junior Academy of Science	55.22
Proceedings Publication Costs	4,339.86
Editorial, Vol. 77 <span style="float: right;">400.00</span>	400.00
Printing, Vol. 77 <span style="float: right;">3,939.86</span>	500.00**
Mailing, Vol. 77 <span style="float: right;">-----*</span>	100.00
Program Committee	700.23
Chairman's & Local <span style="float: right;">155.73</span>	650.00
Printing & Mailing <span style="float: right;">544.50</span>	
Science & Society Committee	600.00
Library Binding	
From 1967 Budget	974.45
From 1968 Budget	-----*
Reprint Costs, Vol. 77 (Authors)	-----*
Mailing, "Proceedings" & "Natural Features"	-----*
<b>TOTAL 1968 EXPENDITURES:</b>	<b>\$ 7,618.66</b>

\* Billings not yet received.

\*\* Plus Publications Income Fund Receipts, above.  
Self supporting item, not budgeted.

## II. ADMINISTERED ACCOUNTS

<i>Item or Description</i>	Jan. 1, Balance	1968 Receipts	1968 Expenditures	Dec. 31, Balance
Publications Fund	724.00	4,073.00	4,339.86	457.14
Operational Funds	6,201.22	5,339.90	3,278.80	8,262.32
ACADEMY ACCOUNTS:	6,925.22	9,412.90	7,618.66	8,719.46
Acad. Research Fund	678.58	790.00	1,160.91	307.67
Science Fair Fund	1,938.76	6,375.00	797.77	7,515.99
Science Talent Search	2,319.95	1,000.00	1,324.15	1,995.80
J.S. Wright Library Fund	134.28	-----	-----	134.28
Lilly Library Fund III	5,565.68	-----	1,190.74	4,374.94
Science & Society Committee	-----	1,650.00	1,183.58	466.42
Miscellaneous	6.00	16.03	-----	22.03
STATE ACCOUNTS:	10,643.25	9,831.03	5,657.15	14,817.13
TOTAL IN ALL ACCOUNTS	17,568.47	19,243.93	13,275.81	23,536.59

Bank Balances: Terre Haute First National Bank, Terre Haute, Ind. 3,882.73  
 Equitable Savings & Loan Assn., Los Angeles, Calif. 5,069.26  
 First Western Savings & Loan, Las Vegas, Nev. 14,584.60

## TOTAL ASSETS IN BANKS AND SAVINGS

ACCOUNTS: \$23,536.59

Frank A. Guthrie, Treasurer  
 December 31, 1968

January 24, 1969

We the undersigned have audited the Treasurer's records for the Indiana Academy of Science for the year 1968 and have found them to be accurate and in order.

William G. Kessel,  
 J. Lee Guernsey

# INDIANA JUNIOR ACADEMY OF SCIENCE

## OFFICERS

President: Dennis Waltke, Division of University Schools, Bloomington

Vice-President: James Peterson, Brebeuf Preparatory School, Indianapolis

Secretary: Rachel Koontz, New Haven Senior High, New Haven

## JUNIOR ACADEMY COUNCIL

Dr. Howard Michaud, Honorary Chairman, Purdue University

Mr. Keith Hunnings, New Haven Senior High (1965-1969)

Mr. F. Ray Saxman, Cascade High School, Clayton (1966-1970)

Mr. Charles Souers, Div. of University Schools, Bloomington (1966-1970)

Miss Helen Reed, Manual High School, Indianapolis (1967-1971)

Mr. David Blase, Arlington High School, Indianapolis (1968-1972)

## YOUTH ACTIVITIES COMMITTEE

Prof. Virgil Heniser, Chairman, Indiana University, Morrison Hall 103

Prof. Donald R. Winslow, Director, Indiana Junior Academy of Science,  
Div. of University Schools, Bloomington, Indiana 47401

## PROGRAM

Thirty-Sixth Annual Meeting

Saturday October 19, 1968

8:00 A.M.

Junior Academy Council Meeting.

8:30-12:00 A.M.

Registration and Election of Officers.

8:30-10:30 A.M.

Junior Academy Council Interviews for "Best Boy" and "Best Girl" Awards.

9:00-10:50 A.M.

Tours of Laboratories and Research Facilities or attend the Senior Divisional Meetings or Public School Science Teaching Symposium.

11:00 A.M.

General Session.

Address: "Science, Communication, and the Critical Mass." Dr. Robert E. Gordon, Associate Dean, College of Science, University of Notre Dame.



12:30 P.M.

Luncheon, for Junior and Senior Academies.

2:00 P.M.

General Business and Presentation of Papers. Dennis Waltke, President presiding.

3:45 P.M.

Announcements, presentation of awards.

6:00 P.M.

Annual Banquet. Address by retiring President of Senior Academy, Dr. William J. Wayne.

#### PROGRAM OF PAPERS

1. Microbial Genetics: The Isolation, Characterization and Genetic Mapping of an Unknown Bacterium.  
Sam Combs, Lewis Cass Junior-Senior High School, Walton.
2. The Characterization of East German Fossil Chlorophyll.  
Sharon Smith, Cascade High School, Clayton.
3. The Extraction of Phytochrome from Green Plants.  
Jeanne Hagelskamp, Ladywood School, Indianapolis.
4. A Study of the Subcellular Organization of the Leucine Specific Enzymes in *Salmonella typhimurium* CV-19.  
Marcia Stroud, Howe High School, Indianapolis.
5. Effects of Cortisone Acetate on Hemopoiesis, the Hemopoietic Organs, and Growth Rate of Young Rats.  
Timothy J. O'Leary, Brebeuf Preparatory School, Indianapolis.
6. Experiments on Pavlovian Inhibition: Inhibition VI.  
Alan Chepregi, Morton Senior High School, Hammond.
7. The Effects of Drugs on Animal Behavior in Relation to Brain Serotonin and Norepinephrine.  
Vann Seawell, University Senior High School, Bloomington.
8. In Vitro Maintenance of Rabbit Hearts on Modified Hank's Solution.  
Robert Finley McDavid III, Schulte High School, Terre Haute.
9. Why Do Spiders Spin Different Web Patterns?  
Mark Watness, J. F. Kennedy Memorial High School, Indianapolis.
10. An Observation of Effects of the Hormonal Regulators Kinetin and Benzyladenine on Plant Growth.  
Tammey Naab, Huntington County Community High School, Huntington.
11. The Antiballistic Jet-Why?  
Robert Humphreys, New Haven Senior High School, New Haven.
12. Problems in the Construction of Lasers and Masers.  
Gary Stephen, Portland High School, Portland.
13. Are the Chromosomal Puffs of the *Chironomus tentans* Influenced by Environmental Factors?

- Martha Ziegelbauer, J. F. Kennedy Memorial High School, Indianapolis.
14. Quenching of Orbital Angular Momentum by Ligand Fields.  
V. Stephen Overstreet, Brebeuf Preparatory School, Indianapolis.
  15. Can the Silicone Rubber Membrane be Utilized to Separate Oxygen from Water?  
Gary Trowbridge, New Haven High School, New Haven.
  16. The Development Genetics of the Basidiomycetes and the Formation of Fruiting Bodies in Mycelium.  
Brent Kern, Howe High School, Indianapolis.
  17. A Study of Base Negative Two.  
Lucinda Lee Glentzer, Portland High School, Portland.
  18. The Role of Different Areas of the Cerebral Auditory Sensory System in Auditory Response.  
Dennis Waltke, University Senior High School, Bloomington.

#### Hosts

Members of the Portland Junior-Senior High School and Muncie Central High school were hosts for this meeting. Mr. Ralph Settle, Mr. Robert Freemyer, and Mr. William Beuoy were the sponsors.

## MINUTES OF THE THIRTY-SIXTH ANNUAL MEETING OF THE INDIANA JUNIOR ACADEMY OF SCIENCE

The thirty-sixth annual meeting of the Indiana Junior Academy of Science was held on Saturday, October 19, 1968 at Ball State Campus, Muncie, Indiana.

One hundred and fifty-five students and nineteen sponsors representing seventeen high schools were registered.

President, Dennis Waltke, called the meeting to order at 2:00 p.m. in the University Auditorium. Previous to this session, members of the Junior Academy had enjoyed tours and lectures in various parts of the campus.

After a joint luncheon for members of both the Junior and Senior Academies in Cardinal Hall at Pittinger Student Center, the business meeting was conducted. Dennis Waltke, president, introduced the other officers: James Peterson, Vice-President and Rachel Koontz, Secretary. Dennis gave a brief welcome. The minutes of the 1967 meeting were read and approved. Eighteen papers were presented as listed in the program.

Following the presentation of the papers, the President of the American Society for Microbiology, Indiana Branch, Dr. Stone, announced the names of the winners of the Society's awards for the best papers in microbiology. Marcia Stroud of Howe High School received

a certificate and a check for \$25.00 for her paper entitled, "The Sub-cellular Organization of the Leucine Specific Enzymes in Salmonella typhimurium CV-19". Honorable mention included Sam Combs and Brent Kern.

Dennis introduced Mr. Keith Hunnings who introduced the new officers and the winners of the best boy and best girl awards. Officers for 1969 are as follows:

Dennis Waltke, President

Timothy O'Leary, Vice-President

Rachel Koontz, Secretary

The best boy award went to Dennis Waltke, and Marcia Stroud and Rachel Koontz tied for the best girl award. Each received a certificate of recognition, a year's honorary membership in the American Association for the Advancement of Science and a year's subscription to Science magazine.

Next year's meeting of the Senior Academy was set for Saturday, October 25, 1969, at Hanover College. However, because of its extreme southern location, a later announcement will confirm the time and meeting place for the Junior Academy.

Miss Helen Reed announced that she would be distributing summaries of last year's papers directly following the meeting. The academy extended its thanks for her services.

Dennis Waltke adjourned the thirty-sixth annual meeting of the Indiana Academy of Science at 4:25 p.m.

Respectfully submitted by

RACHEL KOONTZ, Secretary

DENNIS WALTKE, President

# INDIANA JUNIOR ACADEMY OF SCIENCE

1967-1968

<i>Town</i>	<i>Club and School</i>	<i>Sponsor</i>
Acton	Sigma Mu Chapter of FSA, Franklin Central H. S.	Margaret Richwine
Bedford	Bedford Science Problems Research Group, Bedford H. S.	Paul Hardwick
Bloomington	National Scientific Honor Society, Bloomington H. S.	Orville Long
Bloomington	E. Wayne Gross Academy, University H. S.	Billie Stucky
Bloomington	MSE Academy, University Junior High	Charles Souers
Clarksville	Clarksville H. S. Science Club, Clarksville Junior, Senior H. S.	Gerald K. Sprinkle
Clarksville	Phy-Chem, Our Lady of Providence H. S.	Sr. Jean Marian
Columbus	Science Club, Columbus Senior H. S.	L. N. Carmichael
Crawfordsville	Up-N-Atom, Crawfordsville H. S.	David Wells
Evansville	Reitz Memorial Chapter of FSA, Reitz Memorial H. S.	Charles Hames
Fort Wayne	Albertus Magnus Science Club, Central Catholic H. S.	Sr. Winifred
Fort Wayne	Phy-Chem Club, Elmhurst H. S.	Ruth Wimmer
French Lick	Springs Valley Science Club, Springs Valley H. S.	D. L. Clark
Gary	Andrean Biology Club, Andrean H. S.	Sr. Marie Antoine, SS.C.M.
		Sr. Marie Carmel, SS.C.M.
Gary	Mu Alpha Theta, Andrean H. S.	Sr. M. Nadine, SS.C.M.
Gary	Biology Club, Lew Wallace H. S.	Lola Lemon
Griffith	Griffith Junior High Science Club, Griffith Junior H. S.	Fred Meeker

Griffith	Griffith Senior High Science Club, Griffith Senior H. S.	Geraldine R. Sherfey
Hammond	Chemistry Club, Oliver P. Morton H. S.	Mary J. Pettersen
Hartford City	Hartford City H. S. Science Club Hartford City H. S.	
Highland	Science Club, Highland H. S.	Jon Hendrix
Hobart	Hobart Senior High Science Club, Hobart Senior H. S.	Stanley J. Senderak
Huntington	Aristotelian, Huntington Catholic H. S.	Sr. M. Petrona
Huntington	Science, Huntington H. S.	Robert Diffenbaugh
Indianapolis	Arlington Science Club, Arlington H. S.	Robert McClary
Indianapolis	Nature Club, Arsenal Technical H. S.	Michael Simmons
Indianapolis	Brebeuf Science Club, Brebeuf Preparatory School	Donald G. Maines Harold J. Sommer
Indianapolis	Science Club, Howe H. S.	Jerry Motley
Indianapolis	Kennedy Research Center KRC, Kennedy Memorial H. S.	Sr. Mary Alexandra, C.S.J.
Indianapolis	Mendelian Science Club, Ladywood H. S.	Sr. Helen Jean
Indianapolis	North Central H. S. Science Club, North Central H. S.	Robert Prettyman
Indianapolis	Science Club of Westlane, West- lane Junior H. S.	John Van Sickle
Indianapolis	Science Club, George Washington H. S.	William Baldwin
Jamestown	Science Club of Granville Wells, Granville Wells School	Cecil O. Bennington
LaPorte	Bi-Phi-Chem Club, La Porte H. S.	Frances Mr. Gourley Byron Bernard
Lebanon	Junior Explorers of Science, Leb- anon Junior H. S.	Tom Ewing
Logansport	Lewis Cass H. S. Science Club	Raymond T. Kozer
Madison	Madison Science Club, Madison Consolidated High	David Dunkerton

Muncie	Muncie Central Science Club, Muncie Central H. S.	William Beuoy
New Albany	Science Club, New Albany Senior H. S.	Roger Moody
New Haven	New Haven Science Club, New Haven H. S.	Keith Hunnings E. H. Sanders
Portland	Science Club, Portland-Wayne Township Junior H. S.	Mary Zehner
Portland	Portland Senior H. S. Science and Mathematics Club, Portland Senior H. S.	Ralph Settle Robert Freemyer
South Bend	Junior Izaak Walton League, John Adams H. S.	Ernest Litweiler
South Bend	JETS Junior Engineering Technical Society, Central H. S.	
South Bend	Second Year Biology Class, Clay H. S.	John V. Davis
South Bend	IONS Club, J. W. Riley H. S.	John Marker
South Bend	LaSalle High School	.....
Terre Haute	Pius X Science Teens, Schulte H. S.	Sr. Marie Barbara, S.P.
Tipton	Tipton H. S. Science Club, Tipton H. S.	Richard Garst Fredrick Calhoun
Trafalgar	Indian Creek School	.....
Vincennes	Sigma Tau Science Club, St. Rose Academy	Sr. Anna Margaret Sr. Aloyse

## Biological Survey Committee, J. Dan Webster Chairman

### Publications of 1967-1968

#### Dealing with the Flora and Fauna of Indiana

- Algae: Palmer, C. M. 1969. Algal records for three Indiana sewage stabilization ponds. In press, Ind. Acad. Sci. Proc. for 1968.
- Bryophyta: Welch, Winona H. 1969. Hookeriaceae Species and Distribution in North and Central America and West Indies. Proc. Ind. Acad. Sci. 77:351-356.
- Vascular Plants: Beesly, L. and Beesly, Adelle. 1969. Lobelias of Franklin County and Indiana. In press, Ind. Acad. Sci. Proc. for 1968.  
Craske, A. G. Jr. 1969. Ecological site preferences with-in two *Acer saccharum* - *A. nigrum* complexes found in Parke County, Indiana. In press, Ind. Acad. Sci. Proc. for 1968.  
Guard, A. T. 1969. Some disappearing plant species. In press, Ind. Acad. Sci. Proc. for 1968.  
Humbles, J. 1969. Indiana plant distribution records, XX, 1966-68. In press, Ind. Acad. Sci. Proc. for 1968.  
Jackson, M. T. and Allen, P. R. 1969. Detailed studies of old growth beech-maple upland forests in Versailles State Park. In press, Ind. Acad. Sci. Proc. for 1968.  
Marks, G. C. 1969. The flowering of *Lemna minor* and the establishment of *Centourium pulchellum* in north-west Indiana. In press, Ind. Acad. Sci. Proc. for 1968.  
Petty, R. O. 1969. Pattern of mesic forest succession at the western border. In press, Ind. Acad. Sci. Proc. for 1968.
- Platyhelminthes: Khalil, G. M., and Cable, R. M. 1969. Germinal development in *Philophthalmus megalurus* (Cort, 1914) (Trematoda: Digenea). In press, Zeit. f. Parasitenkunde 31.  
Isseroff, H. and Cable, R. M. 1968. Fine structure of photoreceptors in larval trematodes. A comparative study. Zeitschrift f. Zellforschung 86:511-534.
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