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Indiana Academy of Science

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

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Spring Meeting
April 28-29

McCormick's Creek State Park
Fall Meeting
October 20-21

INDIANA UNIVERSITY
Published at Indianapolis, Indiana
1968

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The Torrey Bulletin

Zoological Record

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PART 1

THE WORK
OF THE
ACADEMY

1967

ALTON A. LINDSEY, *President*



Medal Awarded to the Academy

The state government presented one of the Indiana Sesquicentennial medallions to the Indiana Academy of Science in recognition of its contributions to the sesquicentennial through a special spring symposium and publication of the resulting book *Natural Features of Indiana*.

One side (top) reproduces the state seal of Indiana; the other suggests 150 years of progress from the log cabin society of 1816 to a modern industrial and agricultural state. Leaves and flowers of the state tree *Liriodendron tulipifera* are seen along the margins. The designer and sculptor was Mr. Warner Williams. The silver medallion was struck by the Metallic Art Company of New York City, the firm that produced the Indiana Centennial Medallion in 1916.

This award comes not only as an honor to the Academy but also as a recognition of the outstanding work of Dr. Alton A. Lindsey who, as President-elect during this year, was instrumental in developing not only the spring symposium but also the fall symposium on the History of Indiana Science published in Volume 76 of the *Proceedings*. Dr. Lindsey was named chairman of a special Sesquicentennial Committee by President Carrolle A. Markle. Other members of the committee were Lois Burton, Ralph E. Cleland, Nellie M. Coats, Clarence F. Dineen, William R. Eberly, Ned Guthrie, Edward L. Haenisch, Warren E. Hoffman, Willis H. Johnson, Carrolle A. Markle, and William J. Wayne.

Ed.

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Cell Biology Ralph Jersild, Indiana Medical Center
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Bonding: Cook, D. J., chairman; Brooker, R. M.

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(President an ex officio member of all committees)

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Parliamentarian: Weatherwax, P.

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SPRING MEETING

McCORMICK'S CREEK STATE PARK, Spencer, Indiana

MINUTES OF THE EXECUTIVE COMMITTEE MEETING

April 28, 1967

The meeting was called to order by the president, Dr. Alton A. Lindsey, at 4:30 p.m. in Canyon Inn, McCormick's Creek State Park, Spencer, Indiana.

A motion on emeritus status was read by Dr. Lindsey and approved as follows:

"Persons who have been active members of the Academy without interruption for 25 years or more, and who have reached the age of 65 or have retired from professional activities, are eligible for election to Emeritus Membership.

There shall be a Standing Committee whose duty it shall be to study the membership yearly in order to determine who has become eligible for emeritus status. This committee shall ascertain the wishes of all eligible members. The Committee shall recommend to the Executive Committee, for election to Emeritus Membership, all eligible persons who are desirous of this change of status. Members who have become eligible for emeritus membership are privileged to bring this fact to the attention of the Standing Committee. Emeritus members are not required to pay dues and have all the privileges of active membership except the right to hold office."

The treasurer, Dr. Frank A. Guthrie, submitted the financial report for the period January 1, 1967 through April 22, 1967. A summary is as follows:

Academy Accounts

Balance as of January 1, 1967.....	\$4266.55
Receipts through April 22, 1967.....	4359.35
Expenditures through April 22, 1967.....	828.64
Balance as of April 22, 1967.....	\$7797.26

Administered Accounts

Balance as of January 1, 1967.....	\$17,419.12
Receipts through April 22, 1967.....	17,802.32
Expenditures through April 22, 1967.....	17,375.41
Balance as of April 22, 1967.....	\$17,846.03

Library Committee: Miss Nellie Coats reported that a new edition of serial titles and holdings of the library has been printed and will be distributed to all academy members and exchange libraries.

Membership Committee: Sister M. Rose Stockton reported that 4,000 applications were sent to chairmen of all science departments in the colleges and universities of Indiana and to other scientific centers. She

recommended that a similar distribution be made next year to state high schools.

Invitations Committee: Dr. Howard R. Youse recommended that invitations from Hanover College to host the 1969 meetings and Earlham College to host the 1971 meetings of the Academy be accepted. The schedule of future meetings will then be: Ball State University (1968), Hanover (1969), Indiana State University (1970), Earlham College (1971).

Preservation of Scientific Areas Committee: Chairman R. O. Petty reported that Academy members, high schools, colleges and universities have been surveyed about natural areas and their educational use. The survey indicates that natural areas do play an important educational role in secondary undergraduate and graduate schools. Academy members have submitted 209 possible sites that may be considered for preservation.

Publications Committee:

1. A motion was approved to change "instructions for Contributors" as follows:

"Indiana Academy of Science members in good standing are eligible to submit papers for publication in the Proceedings. When a paper is signed by more than one author, at least one must be a member of the Academy. Preferably, eligibility should be established before submitting the papers, as such papers are given priority. In any case, all authors must be certified by the treasurer for payment of dues and old reprint bills at the time of the deadline (see below). Invited papers may be considered for publication regardless of the membership status of the author.

All papers submitted for publication in full will be reviewed by qualified reviewers, selected by the Publication Committee. Papers read by title only may also be considered for publication. Among papers of primarily regional interest, e.g., in certain aspects of botany, zoology, geology, geography and anthropology, those dealing with Indiana material will be accorded preference. The selection of papers for the Proceedings is the responsibility of the Publication Committee."

(Abstracts)

"Two copies of an abstract should be submitted to the Divisional Chairman at the time the title of a paper is submitted for the Fall Program. All abstracts will be published in the Proceedings. The original copy of the abstract should be marked "for the editor." The carbon copy of the abstract should be marked "for the divisional chairman" and may include information about time, projection facilities needed, etc. The abstract should be prepared according to the form used in the Proceedings (see any current copy of the Proceedings). The abstract should be complete and clear in itself and not over 5% of the length of the paper. It should normally not exceed 200 words in length.

Abstracts are not reprinted except for those which are included at the head of a paper published in full."

2. The committee recommendation to publish special monographs was also approved. The recommendation is as follows:

"The Publication Committee, acting on the directive of the executive committee at the meeting on October 21, 1966, submits the following recommendation:

'Because of the difficulties often encountered seeking a publisher for specialized monographic length manuscripts often of local or regional interest, it is here proposed that the INDIANA ACADEMY OF SCIENCE undertake to publish such manuscripts prepared by any of its members in a special series of publications known as the Indiana Academy of Science MONOGRAPHS. The selection, editing and publishing of these monographs shall be under the supervision and direction of the Publication Committee of the Academy. It is proposed that these special publications shall be issued in paper cover and shall be distributed to members at reduced prices upon request and to all exchange institutions and shall be available for sale to others. All manuscripts submitted to the Publication Committee shall be sent to qualified reviewers wherever such persons may be found. The final acceptance of a manuscript for this series shall be the responsibility of the Publication Committee.'

An *ad hoc* Planning Committee considered the question as to whether the Academy should become actively concerned with the dissemination of scientific information to the general public, and with attempts to service the needs of the State, insofar as these involve matters requiring scientific competence. The Committee recommends the following:

1. The Academy should establish, by Presidential appointment, a standing committee of 9-12 persons, serving staggered three-year terms, to be designated the Committee on Science and Public Affairs, or some other suitable title. This Committee should be set up without delay. It should include representatives of industry who are members of the Academy.

2. While the Committee may be able to initiate only a limited program at first, it should develop plans for the establishment, as soon as possible, of a permanent office to be staffed by a Director with supporting personnel. This office will serve the needs not only of this Committee but also of the Academy as a whole. The possibility should be explored of the State furnishing space for this office.

3. The President of the Academy should address a letter to the Governor of the State outlining the nature and activity, present and proposed, of the Academy, indicating that its State Charter, and the continued support from the State, place upon it the obligation to serve the State in every way possible. This letter might point to important facts regarding the history of the Academy, mentioning a few of the prominent persons who have served as President or otherwise. It could

emphasize the importance of science to industry and to many of the activities and decisions of the State government."

"It might present the facts regarding the membership of the Academy, its distribution among industrial and educational institutions, public and private. It should stress the fact that service is rendered by the Academy only for the public good and not for the private profit of individual firms or persons; that such service is rendered by its members without fee, on an out-of-pocket expense basis. The letter might then raise the question as to whether the Governor would welcome the establishment of a Governor's Science Advisory Council to be appointed by him with the assistance of the Academy. The letter might suggest the possibility of a conference in which the President of the Academy and the Chairman of the Committee of Science and Public Affairs might discuss with the Governor the possible role of the Academy in advising the various offices and agencies of the State Government.

4. The Committee on Science and Public Affairs should also undertake:

(a) to develop means and methods for disseminating scientific information and offering scientific advice to the citizens of the state, through establishment of a Speaker's Bureau; the use of news media, radio and TV, and the publication of informative brochures; and also by setting up a consultative program by which municipalities or other government units, as well as bodies of private citizens concerned with problems relating to the public welfare, could receive competent advice. Such problems might have to do with water and air quality control, the proper use of pesticides, park acquisition, the preservation of natural areas, the establishment of cultural facilities such as arboreta, zoos, museums, etc.

(b) to mobilize the membership of the Academy in support of these efforts.

There are a number of foundations in Indiana that might become interested in supporting such a development. Certain aspects might be eligible for State and Federal support. Assurance of such a program might make it possible to obtain widespread support of industry via industrial memberships or grants. It might also result in more academic people in the State becoming members of the Academy. It would be a responsibility of this committee to assist in obtaining the funding for the program envisaged.

It is suggested that the President of the Academy consult with those in charge of the programs of the Indiana Historical Society, the Indiana Commission of the Arts and the proposed commission for the preservation of historical sites in order to gain their support and to establish proper liaison."

A move to accept the report and implement the suggestions was passed unanimously, the *ad hoc* committee to form the nucleus of a permanent committee. That *ad hoc* committee consisted of Harry G. Day, William Eberly, Willis Johnson, Helmut Kohnke, Ralph E. Cleland (Chairman), H. B. Wells (Honorary Chairman), and Paul Klinge (Consultant).

Applications of 23 new individual members and five new clubs were presented and approved at a brief noon meeting on April 29, 1967.

Approved October 20, 1967

JAMES R. GAMMON, Secretary

FALL MEETING

INDIANA UNIVERSITY, Bloomington, Indiana

MINUTES OF THE EXECUTIVE COMMITTEE MEETING

October 20, 1967

The meeting was called to order at 7:30 p.m. by Dr. Alton A. Lindsey, president of the Academy, in Room 105 of the Chemistry Building.

The minutes of the Executive Committee and the General Session of the Spring Meeting of the Academy held April 28-29, 1967, at McCormick's Creek State Park were approved.

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

January 1, 1967 balance.....	\$21,685.67
Income to October 19, 1967.....	21,453.77
Expended to October 19, 1967.....	29,545.67
Balance, October 19, 1967.....	19,593.77

The Editor—Dr. William R. Eberly reported that at least one manuscript is in preparation for possible consideration as a special Monograph.

Trustees of The Academy Foundation—William A. Daily reported in the Academy Fund, balance as of October 1, 1966—\$1,192.38; disbursements as of November 23, 1966—\$300.00; disbursement as of December 7, 1966 (transferred to the Academy General Fund)—\$964.58; receipts as of October 1, 1967—\$708.80; ending balance as of October 1, 1967—\$636.60. In the John S. Wright Fund, balance as of October 1, 1966—\$502.27; receipts as of September 28, 1967—\$8,728.70; disbursements as of September 28, 1967 (including \$6,000.00 transferred to principal)—\$6,739.87; ending balance as of September 28, 1967—\$2,491.00

Relation of the Academy to the State—William A. Daily stated that the requested increase of \$1,500.00 per annum for the next biennium was not approved and that \$4,000.00 per annum was provided.

The Library Committee—Miss Nelle Coats reported that work continues on the acquisitions purchased through the third Lilly Endowment grant and that 525 copies of *Natural Features of Indiana* remain.

Research Grants Committee—Dr. O. K. Behrens reported the approval of two grants totalling \$500.00 thus far this year.

Youth Activities Committee—Dr. V. Heniser stated that a general meeting probably will be held during this school year to evaluate the present program. Mr. Winslow noted that eight new clubs have applied for membership this year. Dr. Kaufman reported that an active campaign to increase the Indiana Science Education Fund, Inc. is now in progress. Dr. Kessel reported that the Visiting Scientist Program will

be discontinued because the National Science Foundation has decided to no longer fund the various state programs. During the eight years of the program, 125 Academy members made 1,683 visits. Efforts are being made to obtain other funds so that this program can be continued.

Membership Committee—Sister Mary Rose suggested that undergraduate college students be encouraged to join the Academy.

Invitations Committee—Dr. Howard Youse stated that no additional invitations for the Academy meeting have been received since the Spring meeting. The schedule of future fall meetings is as follows: 1968—Ball State University; 1969—Hanover College; 1970—Indiana State University; 1971—Earlham College; 1972—open.

Fellows Committee—Dr. B. Moulton recommended the following for Fellows of the Academy:

David G. Frey	Allan F. Schneider
Sherman A. Minton	William J. Wayne
Robert D. Petty	J. Dan Webster
John A. Ricketts	Charles E. Wier
John F. Schafer	

A motion was approved to accept these members as Fellows of the Academy.

Special Emeritus Committee—Dr. Winona Welch reported that 12 members had petitioned for emeritus status. They are:

Miss Edna Banta	Prof. Edward Kintner
Dr. Williard Berry	Prof. Aubrey H. Smith
Mr. Lester Bockstahler	Dr. O. H. Smith
Dr. William C. Clark	Dr. Ina Spangler
Dr. H. George DeKay	Mr. Matt F. Taggart
Dr. Nina Gray	Miss Ruth Wimmer

A motion was approved to accept these members as emeritus members of the Academy.

Special Committee on Science and Society—Dr. Willis H. Johnson, chairman, reported that although several more appointments are needed to complete the committee, four proposals had been discussed since the Spring meeting:

1. the establishment of a subcommittee on Science and Government,
2. appointment of a subcommittee on a Speaker's Bureau,
3. creation of a subcommittee on Finance,
4. preparation of a brochure outlining the goals to be achieved as a result of the new program.

The subcommittee on Science and Government will approach the leaders of the Senate and House to explain the Academy's plan of action, to ascertain the problems now being considered by legislative committees that are science related, and to ascertain the probable extent of interest on the part of legislators in the Academy's plan to make scientific information available to them. It was emphasized that the sole function of the Academy or its committees would be to render service

to the state and local governments and simultaneously keep informed regarding legislative and executive proposals.

The Speaker's Bureau subcommittee will first canvass the membership to obtain cooperation, then broadcast a list of available speakers to service clubs and other organizations throughout the state.

The subcommittee on Finance will explore possible sources of funding this new program and also the establishment of a central office with an Executive Director.

A motion was approved to provide \$100.00 for current expenses.

Special Scientific Areas Committee—Dr. R. Petty reported that 238 areas have been suggested and that a priority list will be the next stage of discussion.

A motion was approved directing the President to appoint a committee to study By-laws Article I. Dues for clarification and possible changes.

Motions were approved to amend Article V, Section 1 of the Constitution (Committees) as follows:

(15) **Preservation of Natural Areas.** The Committee on the Preservation of Natural Areas shall consist of nine members appointed for three-year rotating terms from the fields of Botany, Geology-Geography, and Zoology, and with as wide a geographic distribution in the State as practicable. This committee shall serve as a channel through which suggestions made by members as to the conservation and preservation of natural areas may be referred to the Executive Committee in the form of recommendations.

(16) **Science and Society.** The Committee on Science and Society shall study the role of the Academy in the dissemination of scientific information to the general public and in serving the needs of the State in matters requiring scientific competence.

(17) **Emeritus Members.** The Committee on Emeritus Members shall take steps to implement Article II, Section 4, by recommending members eligible for this status.

The meeting was adjourned at 10:00 p.m.

Approved October 21, 1967

JAMES R. GAMMON, Secretary

MINUTES OF THE GENERAL SESSION

Indiana University, October 21, 1967

The annual Fall Meeting of the Indiana Academy of Science was held in Wittenberger Auditorium of Indiana University Memorial Union, Bloomington, Indiana on Saturday, October 21, 1967 at 11:00 a.m. Dr. Alton A. Lindsey, President, called the meeting to order. Academy members were welcomed in an address by Dr. Doris Merrit, Associate Dean for Advanced Studies and Research, Indiana University.

The minutes of the Executive Committee of Friday, October 20, 1967 were read by the secretary and approved as read.

Fay Kenoyer Daily read a biographical sketch of each member who had died since the 1966 Fall meeting. These are printed under Necrology.

Dr. Ralph E. Cleland presented an excellent address entitled "Science: Boon or Bane?"

A luncheon for Junior and Senior Academy members was held in Alumni Hall at 12:30 p.m. Dr. Willis Johnson and Chancellor Herman B Wells reported on the progress and aspirations of the Committee on Science in Society.

The annual dinner meeting of the Academy was held in the Frangipani Room of the Memorial Union at 6:30 p.m. Dr. William J. Wayne, President-elect, presided.

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

Dr. Lawrence H. Baldinger, chairman of the Resolutions Committee, submitted the following resolutions:

"(1) That the Academy members here assembled express their appreciation to Indiana University for all the courtesies which have been extended to the membership during this meeting. We are indebted especially to Mr. Norris Wentworth, Director of Conferences; to Dr. Doris Merrit, Associate Dean for Advance Studies and Research, for her cordial welcome to the Academy members; to Dr. Harry Day, Chairman of the Program Committee, and his committee members for their efficient handling of all meeting arrangements; and to Dr. Ralph Cleland for his inspiring address at the general meeting.

(2) That the Indiana Academy of Science recognize with special appreciation the efforts of Howard Michaud of Purdue University and William Kessel of Indiana State University in directing the operations of the Visiting Scientists' Program during the past eight years. The Academy expresses thanks also to the individual members who have cooperated with the directors of the program by making 1683 visits to the high schools during the tenure of the operation.

Because of the great benefits which have accrued to the younger members of our Indiana communities through the Visiting Scientists' Program, the committee expresses the sincere hope that necessary funds can be obtained with which to continue this worth activity; failing this, that a volunteer program be instigated by the Academy."

The resolutions were approved.

Dr. Carrolle A. Markle, Chairman of the Nominating Committee, presented the names of the divisional chairmen for 1968: Anthropology, B. K. Schwartz, Ball State University; Bacteriology, H. Campbell, Jr., Eli Lilly and Company; Botany, T. R. Mertens, Ball State University; Cell Biology, R. Jersild, Jr., Indiana University Medical Center; Chemistry, L. A. McGrew, Ball State University; Ecology, W. B. Crankshaw, Ball State University; Entomology, L. Chandler, Purdue University; Geology and Geography, L. I. Dillon, Ball State University; History of Science, R. H. Cooper, Ball State University; Physics, E. C. Craig, Ball State University; Plant Taxonomy, C. A. Markle, Earlham College; Soil Science, M. F. Baumgardner, Purdue University; Zoology, J. O. Whitaker, Indiana State University.

The following slate of Officers and Elected Committees were presented for election by Dr. Carrolle A. Markle: President, William J. Wayne, Indiana State Geological Survey; President-elect, Howard R. Youse, DePauw University; (Secretary, James R. Gammon, DePauw University; Treasurer, Frank A. Guthrie, Rose Polytechnic Institute; Editor, William R. Eberly, Manchester College; and Director of Public Relations, James A. Clark, Department of Natural Resources, all continue since their terms of office are for three years and have not expired); Academy Foundation Trustee, William A. Daily, Eli Lilly Company (1969); Bonding Committee, Donald J. Cook, DePauw University and Robert M. Brooker, Indiana Central College (both 1968); Research Grants Committee, John B. Patton, Indiana University (1972). A motion to accept the officers and committee members was approved unanimously.

Dr. Alton A. Lindsey explained "Indiana's New System of Scientific Areas and Nature Preserves" and illustrated his address with colored slides of some unusual areas by a triple slide panorama technique.

The meeting was adjourned at 9:00 p.m. JAMES R. GAMMON, Sec.

FINANCIAL REPORT OF THE INDIANA ACADEMY OF SCIENCE

January 1—December 31, 1967

I. ACADEMY ACCOUNTS

A. 1967 Income:

Item or Description		Income
Initiation Fees (primarily for 1967)	162.00	
Arrears Dues	590.00	
1967 Dues	3,633.00	
Advance Dues	179.00	\$ 4,564.00
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Sale of Reprints to Authors		
Balance, Vol. 75 (1966)	339.50	
Partial, Vol. 76 (1967)	1,796.05	2,135.55
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Sales of <i>Proceedings</i>		492.50
Sales of <i>Natural Features of Indiana</i>		1,921.33
Miscellaneous		
NSF—Visiting Scientists (indirect)	69.14	
Others	6.50	75.54
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TOTAL 1967 INCOME:		\$ 9,188.92
Plus Interest Credited to Savings Accounts:		+953.03
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TOTAL 1967 INCOME & CREDITS:		\$10,141.95
Less 1967 Expenditures		—7,483.28
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NET GAIN FOR 1967:		2,658.67
Plus Balance, Jan. 1, 1967		+4,266.55
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Balance, Dec. 31, 1967:		6,925.22

B. 1967 Expenditures:

Item or Description		Expend- iture	Budg- eted
Secretary			
Clerical	\$ 216.00		
Postage, etc.	12.79	\$ 228.79	\$ 250.00
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Treasurer			
Clerical	\$ 130.00		
Postage, etc.	86.60	216.60	225.00
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Office Supplies & Expenses			
Stationary (1967 & 68)	\$ 133.25		
Miscellaneous	26.22	159.47	175.00
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Travel Allowance & A.A.A.S. Conference			
Dues		167.00	165.00
President's Contingency Fund		30.62	125.00
Membership Committee		30.10	75.00
Reprints (President's Address, Necrol- ogy, etc.)		111.00	150.00
Junior Academy of Science		44.56	150.00
Proceedings Publication Costs			
Editorial, Vol. 76	\$ 400.00		
Printing, Vol. 76	2,932.76		
Mailing, Vol. 76	58.72	3,391.48	475.00
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Reprint Costs, Vol. 76		2,041.30	

INDIANA ACADEMY OF SCIENCE

Program Committee			
Chairman	39.38		
Printing	310.52		
Mailing	150.00	499.90	500.00
Science and Society Committee		196.63	350.00
Mailing Expenses (Natural Features of Indiana)		86.38	
Library, Journal Binding (bill pending)			1,000.00
Miscellaneous (incl. NSF-VSP deficit)		279.45	
TOTAL 1967 EXPENDITURES & BUDGET:		\$7,483.28	\$3,640.00

II. ADMINISTERED ACCOUNTS

Item or Description

	Jan 1, Balance	1967 Receipts	1967 Expendi- tures	Dec 31, Balance
Publications Fund	1,821.81	1,921.33	3,019.14	724.00
Operational Funds including interest	2,444.74	8,220.62	4,464.14	6,201.22
ACADEMY ACCOUNTS:	4,266.55	10,141.95	7,483.28	6,925.22
Academy Research Funds	1,498.58	790.00	1,610.00	678.58
Science Fair	6,107.24	14,000.00	18,163.48	1,938.76
Science Talent Search	1,076.36	2,500.00	1,256.41	2,319.95
J.S. Wright Fund	134.28	—	—	134.28
Lilly Endowment I	.27	—	.27	—
Lilly Endowment II	22.58	—	22.58	—
Lilly Endowment III	8,274.59	—	2,708.91	5,565.68
Miscellaneous	56.00	—	50.00	6.00
STATE ACCOUNTS:	17,169.90	17,290.00	23,816.65	10,643.25
N.S.F. Grant GW-1110	249.22	5,886.30	6,410.52	
TOTAL IN ALL ACCOUNTS:	21,685.67	32,365.22	37,435.45	17,568.47
Bank Balances: Terre Haute First National Bank, Terre Haute, Ind.				2,301.11
Lytton Savings & Loan, Los Angeles, Calif.				4,821.97
First Western Savings & Loan, Las Vegas, Nev.				10,445.39
TOTAL ASSETS IN BANKS AND SAVINGS:				17,568.47

Dr. Frank A. Guthrie, Treasurer
December 31, 1967

April 26, 1968

We the undersigned have audited the treasurer's records, for the Indiana Academy of Science, for the year 1967 and find them to be accurate and in order.

James C. List, Robert H. Cooper

INDIANA JUNIOR ACADEMY OF SCIENCE

Thirty-Fifth Annual Meeting

OFFICERS

President: Steve Jost, Muncie Central High School, Muncie
Vice-President: John Peterson, Brebeuf Preparatory School, Indianapolis
Secretary: Valerie Savage, Division of University Schools, Bloomington

JUNIOR ACADEMY COUNCIL

Dr. Howard Michaud, Chairman, Purdue University, Lafayette
Mr. Keith Hunnings, New Haven Senior High School, New Haven
(1965-1969)
Mr. F. Ray Saxman, Cascade High School, Clayton (1966-1970)
Mr. Charles Souers, Division of University Schools, Bloomington
(1966-1970)
Miss Helen Reed, Manual High School, Indianapolis (1967-1971)

YOUTH ACTIVITIES COMMITTEE

Prof. Virgil Heniser, Chairman, Indiana University, Bloomington
Prof. Donald R. Winslow, Director, Junior Academy, Division of
University Schools, Bloomington

PROGRAM

Saturday, October 21, 1967

8:00 A.M.-8:30 A.M.

Junior Academy Council Meeting, Room 300-C, Indiana Memorial Union.

8:00 A.M.-11:30 A.M.

Registration and Election of Officers, Indiana Memorial Union. Club representatives may file their ballots with the Junior Academy Council representative stationed in the lobby. Whittenberger Auditorium.

9:00 A.M.-11:00 A.M.

Junior Academy Council Interviews for "Best Boy" and "Best Girl" Awards. Students nominated for an interview should register in Room 300-C, Indiana Memorial Union.

9:00 A.M.-11:00 A.M.

Tours of laboratories and research facilities. Whittenberger Lobby.

11:00 A.M.

General Session, Jordan Hall, Room 124. Address: "Science and Law," Kent B. Joscelyn, Professor in the Indiana University Department of Police Administration.

12:30 P.M.

Luncheon—for Junior and Senior Academies.

2:00 P.M.

General Business and Presentation of Papers. Place: Chemistry, Room 122. John Peterson, presiding. "Welcome to the University," Prof. Virgil Heniser, Co-ordinator for School Science, Indiana University.

3:45 P.M.

Announcements, presentation of awards, adjournment.

PROGRAM OF PAPERS

1. The Effects of Colchicine on *Serratia marcescens*.
Jim Siverly, Muncie Central High School, Muncie.
2. A Limnological Study of a Farm Pond.
Betty Sue Settle, Portland Senior High School, Portland.
3. The Oligodynamic Action of Heavy Metals.
Rachel Elaine Koontz, New Haven High School, New Haven.
4. Experimental Methods in a Study of Ice Crystal Aggregation.
James J. Peterson, Brebeuf Preparatory School, Indianapolis.
5. Radioactive Induced Lactose Fermenting Mutations in *Escherichia coli*.
Sam Combs, Cass High School, Logansport.
6. The Development of *Bacillus megatherium*, var. X, as a Bacterial Inhibitor.
Mike Ball, Adams High School, South Bend.
7. The Isolation of Two Native Forms of Bovine Plasminogen.
April Baker, Muncie Central High School, Muncie.
8. The Zeeman Effect as a Basis for Spectrochemical Analysis.
Michael Harnish, New Haven High School, New Haven.
9. The Effects of Fluoride and Detergent on Plants.
Betty Dugger, E. Wayne Gross Academy, University School, Bloomington.
10. Identification of Fern Species by the Comparison of the Rate of Germination and the Number of Protonema Cells.
Donna Belvly, J. F. Kennedy Memorial High School, Indianapolis.
11. Thin Layer Chromatography.
Mark Snyder, MSE Academy, University School, Bloomington.
12. Ionic Propulsion.
Douglas Stephen, Portland Senior High School, Portland.
13. Worms in a Spin.
Cindy Souers, MSE Academy, University School, Bloomington.
14. Determination of Genetic Damage on *Cucumis melo* Caused by X-irradiation.
Patricia Gaither, J. F. Kennedy Memorial High School, Indianapolis.

15. How Acids and Bases Affect Tooth Decay.
Karn Otteson, E. Wayne Gross Academy, University School, Bloomington.
16. A Gas Chromatography Apparatus for Use in Physico-Chemical Studies.
John W. Peterson, Brebeuf Preparatory School, Indianapolis.

Hosts

Members of the E. Wayne Gross Honors Academy and The MSE Science Academy of the Division of University Schools were hosts for this meeting. Mr. Charles Souers, Mr. Elliott Koyanagi, Mr. Billie Stucky and Mr. George Luginbill are sponsors.

MINUTES OF THE THIRTY-FIFTH ANNUAL MEETING OF THE INDIANA JUNIOR ACADEMY OF SCIENCE

The thirty-fifth annual meeting of the Indiana Junior Academy of Science was held on Saturday, October 21, 1967, on the campus of Indiana University, Bloomington, Indiana. Two hundred thirty-nine students and twenty-nine sponsors representing twenty-one high schools had registered by the time Vice-President John Peterson opened the first general session of the meeting. He introduced Prof. Kent B. Joscelyn, of the I. U. Department of Police Administration, who gave a talk entitled "Science and Law." Previous to this session, members of the Junior Academy had enjoyed tours and lectures in various science departments on campus.

After a joint luncheon for members of both the Junior and Senior Academies in Alumni Hall, John Peterson conducted a short business meeting during which the minutes of the thirty-fourth annual meeting were read by Acting Secretary Betty Dugger. After approval of the minutes, John next introduced Prof. Virgil Heniser, Co-ordinator for School Science, who, on behalf of the University, welcomed the group to the campus.

Following the presentation of the sixteen papers listed in the program, Mr. Darrell Peterson of the University of Notre Dame, representing the Indiana Branch of the American Society for Microbiology, announced the names of the winners of the Society awards for the best papers in microbiology. Sam Combs of Cass High School, Logansport, received a certificate and a check for \$25.00 for his paper entitled "Radioactive Induced Lactose Fermenting Mutations in *Escherichia coli*." Mike Ball of South Bend Adams High School was given a certificate for his paper "The Development of *Bacillus megatherium*, var. *X*, as a Bacterial Inhibitor."

Mr. Charles Souers next announced the winners of the "Best Girl" and "Best Boy" awards. Betty Sue Settle of Portland Senior High School, whose paper was entitled "A Limnological Study of a Farm Pond," and April Baker of Muncie Central High School, whose paper

was entitled "The Isolation of Two Native Forms of Bovine Plasminogen" tied for the "Best Girl" award. Dennis Waltke of University School received the "Best Boy" award. Each of these students receive a year's honorary membership in the American Association for the Advancement of Science and a year's subscription to SCIENCE.

The following announcements were then made by Mr. Winslow, Director of the Junior Academy. Next year's meeting will be held on the Ball State campus during the weekend of October 18 and 19. Mr. David Blase of Arlington High School in Indianapolis will become the new member of the Junior Academy Council.

The newest clubs to become affiliated with the Junior Academy are those of the Indian Creek School of Trafalgar and the LaSalle High School of South Bend.

The newly elected officers for 1968 are as follows:

Dennis Waltke	University School	President
James Peterson	Brebeuf	Vice-President
Rachael Koontz	New Haven	Secretary

Mr. Winslow then announced the death of Mrs. Elizabeth Crider of Washington High School of Indianapolis. She had been a long-time club sponsor and former member of the Junior Academy Council. The group stood for a moment of silence in tribute to the former teacher.

John Peterson adjourned the thirty-fifth annual meeting of the Indiana Junior Academy of Science at 4:35 P. M.

Respectfully submitted,
BETTY DUGGER and KARN OTTESON
Acting Secretaries

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
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, Spring Valley H. S.	D. L. Clark
Gary	Andrean Biology Club, Andrean H. S.	Sr. Marie Antoine, SS.C.M. Sr. Maria 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. Mains Harold J. Sommer
Indianapolis	Science Club, Howe H. S.	Jerry Motley
Indianapolis	Kennedy Research Center KRC, Kennedy Memorial H. S.	Sr. Mary Alexander, 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, George Washington H. S.	William Baldwin
Indianapolis	Science Club of Westlane, Westlane Junior H. S.	John Van Sickle
Jamestown	Science Club of Granville Wells, Granville Wells School	Cecil O. Bennington
LaPorte	Bi-Phi-Chem Club, La Porte H. S.	Frances M. 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 Mrs. Jane Kahle
Madison	Madison Science Club, Madison Consolidated High	David Dunkerton
Muncie	Muncie Central Science Club, Muncie Central H. S.	Bill Norris 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
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
Vincennes	Sikma Tau Science Club, St. Rose Academy	Sr. Anna Margaret Sr. Aloyse

Biological Survey Committee, J. Dan Webster, Chairman

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**Work in Progress, but not yet Published
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- Bryophyta: Lantz, L. A. Fort Wayne. Liverworts of Indiana.
- Vascular Plants: Craske, A. G., Jr. and Jackson, M. T. Indiana State. Taxonomic and ecologic differences in two taxa of hard maples in Indiana.
Cravello, T. J. Notre Dame. Flora of St. Joseph County.
Cravello, T. J. Notre Dame. Studies on Cruciferae of Indiana.
Markle, Carolee A. Earlham. Taxonomic and ecologic study of Sedgwick's Rock Preserve in Wayne County, Indiana.
Marks, G. C. Valparaiso. Teratological androecia in *Saponaria officinalis*.
Petty, R. O. Wabash. Hemlock seedling survival under hardwood litter and on denuded sites; plantation study.
Whigham, D. Wabash. Floodplain phytosociology of Sugar Creek in Turkey Run State Park.
- Parasitic Invertebrates: Whitaker, J. O., Jr. Indiana State. Parasites of Mammals of Vigo County, Indiana.
- Platyhelminthes: Cable, R. M. and students. Purdue. Studies on larval trematodes of Little Pine Creek and their life cycles.
- Arthropoda: Ward, G. L. Earlham. Relationship of spiders and three genera of mud-dauber wasps.
- Pisces: Whitaker, J. O., Jr. and Wallace, D. C. Indiana State. Fishes of Vigo County, Indiana.
- Amphibia: Frey, J. T. and Jackson, M. T. Indiana State. Migration, home range, and territorial patterns in several species of frogs.
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- Reptilia: Williams, E. Wabash. Continuation of study of *Terrapene carolina* populations in Allee Woods.
- Aves: Cope, J. B. Earlham. Birds of the Whitewater Valley.
- Mammalia: Whitaker, J. O., Jr. and Miller, W. A. Indiana State and Indiana State Board of Health. Rabies in Indiana bats.
Cope, J. B. Earlham. Bats of the Whitewater Valley.
- Animal Ecology: Gammon, J. R. DePauw. Fish and invertebrate populations of the Wabash River as affected by heated effluents.
Gammon, J. R. DePauw. The effect of sedimentation on aquatic ecosystems.

COMMITTEE ON RESEARCH GRANTS

Announcement of New Research Grant Policy

Modest requests, not to exceed a few hundred dollars, are more likely to receive approval. Oral presentation of the results of investigations to the Academy are encouraged.

STATEMENT OF POLICY

1. The following are eligible to apply for research grants:
 - a. Any member of the Academy in good standing for the preceding year.
 - b. Any graduate or undergraduate university or college student member sponsored by an instructor who is himself eligible to receive a grant.
 - c. Any high school student who is a member of the Junior Academy and is sponsored by an instructor eligible to receive a grant.(In the case of *b* or *c* above, the grant is made to the sponsor for use by the student.)
2. Preference will be given to applications from members who have limited access to other research funds.
3. Only in exceptional cases will grants be made for the purchase of capital equipment.
4. Grants will not be approved in support of meeting attendance or publication costs.
5. The applicant should ordinarily have made sufficient progress on his project to indicate that he has a problem falling within the range of his abilities and resources and promising tangible results within a reasonable time.

METHOD OF APPLICATION

Six copies of the application should be submitted to the Chairman of the Research Grants Committee. The Committee has three deadlines for receipt of applications: January 1, February 20, and August 20. Respective dates for decisions on these applications are approximately March 1, April 20, and October 20.

The application may be informal in nature, but it should include the information called for below:

1. The applicant's name, complete address, and other pertinent data including his academic position or other significant connections.
2. An outline description of the project for which aid is requested. This statement should be brief and to the point, but it should include the following:
 - a. A statement of the problem and a summary of progress already made.

- b. A list, in bibliographic form, of the applicant's publications on this or related studies (reprints not necessary).
- c. Specific scope of the problem, indicating whether it is an isolated unit or a part of a more comprehensive study, when this part will probably be completed, and whether it is expected to result in publication.
3. A statement of the amount requested and over what period. The allocation of funds for various purposes (student aid, expendable supplies, etc.) should be specified. Funds available from other sources and applications for other support should be detailed.
4. If you are a student member falling in category *1a* or *1b* in the "Statement of Policy," give the name and indicate the position of your sponsor and have him include a letter indicating his approval of the request.
5. Give any other information which you regard as pertinent to your application.
6. A request for renewal of a grant may be abbreviated by reference to the original application. A statement of progress should be included, and efforts to find other sources of support should be indicated.