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Proceedings
of the
Indiana Academy
of Science

Part I
The Work of
the Academy

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INDIANA ACADEMY OF SCIENCE
SPRING MEETING OF THE EXECUTIVE COMMITTEE

April 10, 1987

MINUTES

President Stanley Burden called the meeting to order at 2:00 p.m. in the Oak Room, Canyon Inn, McCormick's Creek State Park. All members were present, and there were several guests.

Minutes of the Fall 1986 meeting of the Executive Committee were approved.

Duvall Jones, speaking for the Logo Committee, presented the logo suggested by James Gray of Stone Cabin Design. After some discussion of the design, it was moved and voted that the matter be returned to the committee for further study.

Several miscellaneous items were approved for presentation to the Council.

Frank Guthrie, Chair of the Academy Foundation Trustees, reported that the Trustees recommend new policies concerning income derived from the sale of monographs, and establishment of a new administered account to be known as *Administrative Reserves*. After considerable discussion Alfred Schmidt moved the adoption of the policies, to be presented by the Trustees as a motion from the Executive Committee to the Council. (See Council minutes.)

The meeting was adjourned at 3:00 p.m.

Respectfully submitted,
Richard L. Conklin, Secretary

INDIANA ACADEMY OF SCIENCE
SPRING MEETING OF THE COUNCIL

April 10, 1987

MINUTES

President Stanley Burden called the meeting to order at 3:15 p.m. in the Oak Room, Canyon Lodge, McCormick's Creek State Park. About 25 people were present.

Minutes of the Fall 1986 meeting of the Council were distributed and approved.

TREASURER'S REPORT

Treasurer Duvall Jones reported the following:

	Academy Accounts	Administered Accounts	Total
Balance: January 1, 1987	\$14,588.94	\$23,073.05	\$37,661.99
1987 Income	6,834.18	8,239.12	15,073.30
1987 Expenditures	8,614.14	3,155.05	11,769.19
Balance: April 17, 1987	\$12,808.98	\$28,157.12	\$40,966.10

Trust Funds

Anticipated income and expendable funds as of January 1, 1987:

IAS Fund	\$ 2,900.00
John S. Wright Fund	41,000.00
Invested Income Account	131,000.00

Approved expenditures:

Research Grants	\$ 35,600.00
Fiduciary Fees	7,000.00
Publications	76,800.00
	\$119,400.00

Membership:

Paid for 1987	523
On file not paid	619
New and reinstated	60

The report was adopted.

President Stanley Burden presented several items:

The William A. Wilson Education Center is requesting support for a program designed to stimulate creative thinking in school children. The Academy has its own program for school children, which is under-funded, so no funds are available for other programs. Correspondence with Ball State University concerning the name of a proposed Academy of Sciences, Arts, and Humanities has brought assurance that the name will be modified to avoid confusion with the Indiana Academy of Science.

Ten of the twelve regional science fairs have requested funds from the Academy.

REPORTS OF ELECTED COMMITTEES

Academy Foundation Trustees (Frank Guthrie, Chair)

An unaudited summary of transactions and holdings was distributed.

The following proposals were presented for adoption, as a motion from the Executive Committee.

a. Income derived from the sale of monographs or other publications which were produced by funds obtained from the Invested Income Account will be reinvested in that account.

b. The Trustees will, on an annual basis, transfer appropriate funds from the Invested Income Account to a new administered account, under the supervision of the Treasurer, to be known as Administrative Reserves. The actual amount will depend upon both needs and resources and will be reported to the Budget Committee prior to completion of the annual budgeting process. These funds may be expended by the Executive Committee, as required for the general expenses of the Academy which are incurred in relation to research activities.

The Trustees will maintain adequate reserves to insure an orderly cash flow and emergency funds through a balanced investment program intended to assure preservation of capital, good growth potential and reasonable income to support the eligible programs of the Academy.

Alice Bennett moved acceptance of *a* and *b*.

In discussion two points were clarified: Proposal *a* is intended to put money from sale of monographs back into research activities. "Research activities" may be interpreted to include publication of Symposium brochures. The motion carried.

Research Grants (presented by S. Burden for Austin Brooks)

Fifty two proposals have been submitted, requesting \$64,216.00. Decisions are pending on the distribution of the \$20,000.00 available.

Delivery of 15,000 copies of a new brochure is expected in the next month.

REPORTS OF STANDING COMMITTEES

Editorial Board (Donald Winslow)

One hundred and ninety papers were presented at the 1986 Fall meeting. One hundred and eighty nine abstracts and 61 manuscripts were received for review for inclusion in the *Proceedings*, Volume 96.

Emeritus Members Selection Committee (Robert S. Cooper, *in absentia*)

Applicants for Emeritus membership are:

Dr. Paul Gebhard, Nashville, Indiana

Mr. Carl H. Krekeler, Valparaiso, Indiana

Mr. Gerald J. Shea, Terre Haute, Indiana

All applicants were approved.

Dr. Frank Edmondson has requested Emeritus rank but his application has not been acted upon. Council recommends that Emeritus rank be granted retroactive to the Butler meeting if he did indeed apply at that time. If not, his recent letter will be recognized as an application to be acted on at the Fall meeting.

Committee on Fellows (Marvin Carmack)

The Committee has been expanded from 12 to 16 members. Each of the 17 Sections of the Academy now has at least one member on this committee. Committee members have been provided with updated lists of Fellows and with nomination forms. The form will also be included in the *April Newsletter*.

The Committee has been requested to consider options for giving more recognition to outstanding scientists who are residents of the state. After some favorable comments on the idea of naming a Hoosier Scientist of the Year, E. Campaigne moved that the President appoint an *ad hoc* committee to study the matter of special awards and report to the Council at its Fall meeting. The motion carried.

Science Talent Search (Donald Winslow)

Forty two students participated in the 40th Annual Indiana Science Talent Search. Nineteen of them were declared Finalists by the Committee and were invited to participate in the Honors Program the weekend of March 6-7 at the Medical Center Union Building, Indianapolis. The activities of the search were funded by Kappa Kappa Kappa, Inc. (\$2,500) and by Public Service Indiana, Inc. (\$1,000). In addition to these, Ann Koons of East Noble High School, Kendallville, and Brian Worrall of Terre Haute South Vigo High School each was awarded by Kappa Kappa Kappa a \$1,000 scholarship.

Invitations (Marshall Cady)

The 1988 meetings will be held April 29-30 and November 10-12 at St. Mary's College. Chancellor Leon Rand of Indiana University Southeast has invited the Academy there in 1989. The Council moved to accept the invitation and set April 14-15 as the dates for the Spring meeting to be held at Clifty Falls State Park. The Fall meeting at I.U.S. will be November 9-11.

Library (Holly Oster)

Volume 95, (1985) of the Proceedings has been mailed to members of the Academy. Work continues on the mailing of library, exchange, and purchased copies.

Publications (Benjamin Moulton)

Butterflies of Indiana should be available for distribution in September.

The Committee has had a request for financial support of color prints for a book now being published by the Indiana University Press. The Committee's response was that they should not support publication of a volume not reviewed by the Academy or concerning an Indiana topic. Several comments indicated that there might be cases when support for non-Academy publications would be appropriate. Alice Bennett moved that the Publication Committee take into account comments made here and come back in the Fall with a statement of policy on how to deal with publications that do not fit into the standard procedures. The motion carried.

Speaker of the Year (John B. Patton)

Dr. Ruth Howes, of the Department of Physics and Astronomy, Ball State University, is the Speaker of the Year. She has presented her address, "Science and National Security Policy" at the Fall meeting of the Academy, and at several Indiana colleges.

Science and Society (Edwin Squires)

In an effort to increase attendance at its Symposia, the Committee is considering scheduling them from 9:30-4:30 on Saturdays not immediately following Academy meetings. The state museum may become a co-sponsor. Two topics are being considered for next Fall: A salute to Canada, and ground water quality.

Youth Activities (Jan Woerner, Director, Indiana Science Olympiad)

The third annual State Torunament of the Indiana Science Olympiad was held on March 21, 1987, at Center Grove High School, Greenwood. 13 Division B (middle/junior high school) and 16 Division C (senior high school) teams participated. First place winners were the teams from Gavit Middle School, Hammond, and North Central High School, Indianapolis. They are to represent Indiana at the national tournament in Columbus,

Ohio, in May. Jan Woerner will serve as official score keeper for two events in that tournament.

Academy members are needed to help with the organization and operation of the 1988 Science Olympiad.

Plans are underway to have a one-day state symposium in the Fall to introduce about 65 school teachers to Science Olympiad. Funding will be needed for this project, for additional regional events before the state tournament, and to help send the state winners to Delaware for the national tournament. A site may also be needed for the 1988 state tournament.

Corporate Relations (Ernest Campaigne)

This newly constituted committee has two objectives:

An improved plan for recruiting additional corporate members.

Organization of a task force of representatives from corporate members to devise ways of mutual service between such members and the Academy.

Old Business

Executive Secretary Feasibility Committee (Benjamin Moulton)

The Committee met at 1:00 p.m. to consider carefully the need for an Executive Secretary and the functions of the office. There was general agreement that the Academy does not need a paid office manager, but there is a place for a person to provide continuity, increase the profile of the Academy, and find ways the Academy can serve the state. The office is not intended to speak for the Academy, or to become a lobby.

[The meeting was recessed for dinner.]

Benjamin Moulton presented the following motion:

The Executive Secretary Feasibility Committee recommends that the Academy establish a part-time paid position for a person whose primary responsibilities would focus on researching and coordinating Academy activities, identifying significant projects the Academy should be involved in, developing relationships, and coordinating activities with other scientific organizations within and without the state which will enhance science and promote the Academy. His efforts would be coordinated by the desires and objectives of the Academy Council. The Feasibility Study Committee will pursue the details and job description of such a position and bring forward a formal recommendation to the Fall 1987 Council meeting.

During discussion of the motion questions of funding, of the experience of other state Academies, and some aspects of the job description were considered.

The motion carried.

Duvall Jones presented a progress report from the Logo Committee.

The meeting adjourned at 8:00 p.m., and the evening program began.

Dr. Marshall E. Parks of the Science Teaching Center, Indiana State University spoke to the title "Environmental Education: One Perspective."

Respectfully submitted,
Richard L. Conklin, Secretary

INDIANA ACADEMY OF SCIENCE
FALL MEETING OF THE EXECUTIVE COMMITTEE

November 5, 1987

MINUTES

President Stanley Burden called the meeting to order at 1:35 p.m. in the State Room, Tiley Memorial Union, Indiana State University, Terre Haute. All members were present, and there were several guests.

Minutes of the Spring 1987 meeting of the Executive Committee were approved.

Duvall Jones presented the design recommended by the Logo Committee. E.E. Campaigne moved that it be presented to the Council for adoption. The motion carried. Jones will look into details of having a pin made, and the Secretary will speak to a printer about including the logo on Academy stationery.

Burden announced that Manchester College might be interested in acting as host for the 1990 meeting of the Academy. The matter was referred to the Invitations Committee.

There was a discussion of the need for a policy concerning the presentation at Section meetings of papers for which abstracts have not been submitted. The unwritten policy has been that in order to be presented, a paper should be announced in the printed program, which now means an abstract must be included. Enforcement of this policy is in the hands of the Section chairs. The consensus was that no formal action is needed, but the policy should be explained in the *Newsletter*.

Benjamin Moulton, speaking for the *ad hoc* Executive Secretary Feasibility Committee, presented a proposed motion that the Academy appropriate \$15,000 per year for the next three years to support the position of Executive Secretary. Alfred Schmidt moved that the Executive Committee accept the recommendation and present it to the Council. After discussion of possible sources of the money, the motion carried.

The Publications Committee was requesting at the Spring meeting to consider revising procedures so that it would be possible for the Academy to provide support for publications from non-Academy sources. Moulton reported that the Committee has not met, but his sense is that it will want to retain control of Academy-funded publications. No further discussion is appropriate until the Committee has studied the matter.

Burden presented on behalf of the Parliamentarian recommendations that all but routine resolutions be submitted in writing to the Committee on Resolutions for processing before being presented for vote. The recommendations were referred back to the source for clarification.

The meeting was adjourned at 2:50 p.m.

The Executive Committee reconvened at 8:15 p.m. to discuss the next steps in the establishment of the office of Executive Secretary.

It was agreed that dues could not be increased in 1988, but that an administered account could be established by the Budget Committee. Several sources of funds were considered. The Executive Committee will meet again on November 28 or December 12 to consider possible applicants for the position, and description of the duties of the office.

Respectfully submitted,
Richard L. Conklin, Secretary

INDIANA ACADEMY OF SCIENCE
FALL MEETING OF THE COUNCIL

November 5, 1987

MINUTES

The meeting was called to order by President Stanley L. Burden at 3:10 p.m. in the State Room, Tirey Memorial Union, Indiana State University, Terre Haute. Thirty members were present.

Minutes of the Spring Meeting of the Council and the Academy were distributed and approved.

TREASURER'S REPORT

Treasurer Duvall Jones distributed his report of finances from January 1 to November 3, 1987. There are 1,058 members, 115 of whom joined or were reinstated during 1987. One hundred and four members and clubs were dropped for non-payment of 1986 dues; 256 have not yet paid 1987 dues.

Summary of finances:

	<u>Academy Accounts</u>	<u>Administered Accounts</u>	<u>Total</u>
Balance: January 1, 1987	\$14,588.94	\$23,073.05	\$37,661.99
1987 Income	14,739.99	55,635.88	70,375.87
1987 Expenditures	<u>14,855.02</u>	<u>49,897.48</u>	<u>64,752.50</u>
Balance: November 3, 1987	\$14,473.91	\$28,811.45	\$43,285.36

Jones announced that his office now has a computer in place for keeping membership and financial records, and thanked Alice Bennett and Ball State University for years of assistance in these matters.

He moved that funds be transferred from Academy Development Fund, Postage and Shipping, and Office Services to Publications to pay the cost of publishing the Program and Abstracts booklet.

He also moved that the dues structure for 1988 be the same as that for 1987.

Both motions carried and the report was approved.

Reports of ad hoc Committees

Logo Committee

Duvall Jones reported that the Logo Committee recommends that the Academy adopt the design on the front of the 1987 Program and Abstract booklet as its official logo. Colors recommended are gold on an Indiana blue field. He moved that the Council accept the recommendations. After some discussion, the motion carried.

Awards Committee

Marvin Carmack reported that he has been gathering information about ways that outstanding individuals can be recognized by the State of Indiana and by other organizations and institutions. The committee will continue to study the matter, possibly polling members of the Academy for their opinions, and will report its progress at later meetings.

Executive Secretary Feasibility Committee

Benjamin Moulton reviewed the history of the committee and actions of the Academy. He circulated a motion recommending the allocation of funds and the hiring of an Executive Secretary, and a list of proposed duties of such an office. In the ensuing

discussion, several issues were raised: Is the expenditure of funds to increase the influence of the Academy in the state proper, or should Academy funds be devoted to the support of research? Can a suitable person be found on a part-time basis, and if so, can the purposes be accomplished in the time envisioned? Can the position be funded with available monies, can the Executive Secretary be expected to increase revenues sufficiently, or must the dues of members be increased? Who will review and direct the activities of the Secretary; will he be autonomous, or governed by the Executive Committee or Council?

The following motion, that of the Committee as re-worded by Jack Leonard, carried with 20 affirmative votes, 2 negative, and 4 absentions:

The Academy shall allocate the sum of \$15,000 a year of the next three years to support the position of Executive Secretary of the Academy. The Executive Committee will proceed to fill the position and to prepare a description of the duties of the office, and will report to the Council at its Spring meeting.

REPORTS OF ELECTED COMMITTEES

Academy Foundation

The Indiana National Bank reported that as of October 26, 1987, the Foundation Account has a market value of \$49,794. The John S. Wright Fund has a market value of \$1,144,673. The Invested Income Account has a value of \$133,300.

Research Grants

Wilson Lutz, acting chair, reported that in the Spring 52 applicants had requested \$64,650. Twenty projects were funded, in the amount of \$20,775. During the summer 13 high school projects were funded, totaling \$2,100. In the Fall round of grants, 20 applicants requested \$20,770.93, \$9,225 was awarded to 16 projects. Lists of awards granted in Spring and Fall are appended to these minutes.

Lutz noted that for the year the difference between requests and grants was \$55,724. Even admitting that not all requests deserve full funding, he suggested that an increase of grant money to \$35,000 would be appropriate.

Reports of Standing Committees

Only those committees whose reports required action or comment were heard. Other committees submitted written reports which are summarized at the end of these minutes.

Nominations

Alice Bennett presented the names of those to be nominated at the General Meeting. The slate was approved.

Editorial Board

Donald Winslow announced that Volume 96 of the *Proceedings* is promised for January, 1988. The cost of publication will be approximately the same as for the past two years. One hundred and ninety two pages were presented at the Fall, 1987, meeting. In Volume 96, 50 manuscripts and 132 abstracts will be published.

Emeritus

Robert Cooper reviewed the qualifications of four applicants for Emeritus membership and moved that their names be presented to the membership for election. The motion carried.

Fellows

Marvin Carmack reported that the Committee has voted to recommend a record number, sixteen, persons for promotion to the rank of Fellow of the Academy. The list was approved and will be presented to the members at the General Meeting.

Invitations

The President announced that St. Mary's College will be host for the meetings in 1988, Indiana University Southeast for 1989.

Resolutions

William Davies introduced two resolutions, one expressing thanks to the host institution, the other to Ball State University for its years of assistance in record keeping and mailing. Both resolutions were approved for presentation at the General Meeting.

Science and Society

Edwin Squiers commented on the Academy's developing relationship with the Indiana State Museum. The immediate results are symposia on Acid Rain and Ground Water. The first was held in October and was attended by 60 people and covered by Channel 13. The second will be on December 5.

Publications

Benjamin Moulton said that the Committee is considering the issue raised by a request for financial support of the publication of a book written outside the normal Academy controls. He asked for opinions that might guide the Committee's discussion.

Butterflies of Indiana has been released. Copies are available at a reduced rate during this meeting and will go on sale at other outlets soon. William Eberly, editor of *Butterflies*, said he had had a request from a firm in Chicago to use a picture from the book in its advertising. After considerable discussion the following motion, made by Jack Leonard, was approved:

The Academy grants to Ross-Ehlert, Inc., of Chicago, permission to use a specified photograph from *Butterflies of Indiana* for the use specified in their letter to Dr. Eberly, with the stipulation that they acknowledge the source of the photograph and that they be invited to make a donation to the Academy in lieu of usage rights payment.

Other Business

John Bacone voiced his concern about the loss of herbaria from Indiana. He hopes that before biology departments allow these resources to leave the state they will consult the Indiana State Museum.

The meeting was adjourned at 5:50 p.m.

Summaries of Written Reports

Biology Survey (James Aldrich and John Bacone)

The Committee's emphasis is on the rarest elements of Indiana's biota, including encouraging research on community types and natural areas. Among the species being emphasized are bryophytes and several invertebrates.

The Committee was one of the sponsors of the Indiana Natural Areas Conference at New Harmony, which featured a number of presentations about the natural history of southwest Indiana.

Corporate Relations (E. Campaigne)

Members of the Committee met with representatives of the five member corporations and a group of Academy officers on Friday, September 25, at the Eli Lilly Corporate Center in Indianapolis. Academy officers described the background of the Academy, followed by a discussion of the place of the Academy in the scientific organization of the state and reasons corporations should support Academy programs. It was agreed that each of the corporations would appoint a representative to the Corporate Relations Committee and this enlarged committee would explore areas of cooperation.

Library (Holly Oster)

Distribution of Volume 95 of the *Proceedings* was completed in July, 1987. A total of 788 volumes were mailed to Academy members, with 65 sent to Indiana academic and public libraries. Paperbound copies were sent to 426 domestic and foreign exchange agencies.

During fiscal 1987, 268 volumes were added to the library's collection bringing the total to 11,475. Three hundred and seven inter-library loan requests were processed. Since January the State Library has participated in a telefacsimile network that allows even more rapid response to inter-library loan requests.

In July, 1987 "advice of allotment" for \$8,900 was received from the State Budget Agency, to be applied to the cost of printing Volume 96 of the *Proceedings*.

Natural Resources Commission Representative (Damian Schmelz)

In June a new amphitheater at Lincoln state Park was dedicated. The August meeting studied recurring issues in the areas of deer herd management and water resources rights.

Youth Activities (Virginia Rhodes and John Huffman)

The fall meeting of the Junior Academy, directed by Mark Whitman, will be held concurrently with the Senior Academy's annual meeting on November 6. Seventy-eight schools are expected to be present. IBM is underwriting some of the expenses with a grant of \$1,800. Purdue University Schools of Science and Mathematics have donated \$1,200 to be used for teacher recognition.

The 41st Indiana Science Talent Search will be held March 4-5, 1988, at the Indiana University Medical Center in Indianapolis under the directorship of Donald Winslow.

Jan Woerner is Director of the Indiana Science Olympiad, to be held on March 12, 1988, at North Central High School in Indianapolis for middle and high school students.

The third annual Hoosier Science and Engineering Fair will be held April 14-16, 1988, at the Children's Museum in Indianapolis. Entrants are winners of the twelve science fairs around the state to which the Academy contributed \$3,000.

A grant of \$1,400 from the AAAS helped support high school science research projects. Proposals were evaluated by the Research Grants Committee of the Academy.

Respectfully submitted,
Richard L. Conklin, Secretary

INDIANA ACADEMY OF SCIENCE
Spring, 1987, Grant Applications Funded

RESEARCH GRANTS COMMITTEE			
No.	Principal Investigator/ Institution	Title	Award
1	Simon Beeching Biology IU-Bloomington	The Role of Visual Cues in the Reproductive Behavior of the Cichlid Fish	\$ 400.00
2	Robert DiSilvestro Foods & Nutrition Purdue	Influence of Thyroid Hormone on Cu-Zn Superoxide Dismutase Levels...	1,800.00
3	Larry Ganion Physiology and Health Ball State University	Construction of a cDNA Library for Further Study of Annulate Lamellae	1,000.00
4	Charles Hammond Biology St. Meinrad	Characterization of Specialized Plastids in the Glandular Secretory System...	1,800.00
5	David Hirt (Gary Lane) Geology IU-Bloomington	Spiriferid Brachiopod Biostratigraphy and Depositional History of the Ramp Creek Formation...	275.00
6	Daryl Karns Biology Hanover	Analysis of a Hybrid Zone between Northern and Southern Leopard Frogs in SW Indiana	1,000.00
7	Kathleen Kolberg Biol. Sci. Notre Dame	A Fine-Structural Study of the Developmental Toxicity of Nicotine in <i>Halocordyl disticha</i>	400.00
8	Olga (John Dumna) Biol. Sci. Notre Dame	Behavioral and Physiological Adaptations to Cold in a Freeze-tolerant Artic Insect...	800.00
9	Kay McCrary Biology IU-Bloomington	Field Guide to Indiana Wildflowers	1,100.00
10	Eric Menges Holcomb Butler	Vegetation, Environment and Fire in a Post Oak Flatwoods Barrens...	650.00
11	Eric Menges Holcomb Butler	Population Biology of <i>Silence regia</i> in Indiana	1,800.00
12	Scott Mills Animal Science Purdue	Influence of Beta-adrenergic Agonists on Lysine Requirement...	1,000.00
13	Catherine Mondloch (Wm. Rowland) IU-Bloomington	A Description and Experimental Analysis of Parental Feeding in Pigeons	400.00
14	Dorothy Morre Foods & Nutrition Purdue	The Effect of Vitamin A on Golgi Apparatus Functions	1,750.00

15	John Munford Biology Wabash	Hormonal Regulation of Sodium Transport in Rat Skeletal Muscle	1,800.00
16	Robert Olsen Chemistry Wabash	Nucleophilic Substitution/Fragmentation Reactions of Trimethylene Sulfites	1,000.00
17	George Parker Forest Ecol Purdue	Long-Term Research in Forest Ecosystems	1,600.00
18	Robert Pinger Pub. Health Ent. Ball State University	Comparative Bionomics of Containe Breeding Mosquitoes of East Central Indiana	850.00
19	Mark Schurr Anthropology IU-Bloomington	The Use of Nitrogen and Fluoride Analyses to Develop a Chronology . . .	350.00
20	Carolyn Vann Biology Ball State University	Regulated Gene Expression in Cyanobacteria	1,000.00
		TOTAL	\$20,775.00

INDIANA ACADEMY OF SCIENCE
Summer, 1987, High School Student Research Appliation Funded

No.	Name/School/Sponsor	Title	Award
1	C. David (D. Handy) Harrison W. Lafayette	A Study of the Effects of Stress on Student Performance...	\$ 170.00
2	Lori DePew (V. Rhodes) E. Noble Kendallville	Determination of the Effects of Second-hand Smoke...	125.00
3	Jamie Gillette (P. Zeck) Northwestern Kokomo	The Absorption of Selenium by Crambe and Soybean Plants	100.00
4	Dave Kantowitz (D. Handy) Harrison W. Lafayette	Design and Construction of a Computer-Assisted...Crystalizer	200.00
5	Sarah Ley (H. Sollenberger) Cnt. Noble Kendallville	The Effects of Dietary Fish Oil on Aortic and Pulmonary Atherosclerosis	250.00
6	Arnold Ma (S. McConnell) Northside Muncie	An Investigation of the Toxic Effect of Tobacco Smoke on Cell Growth...	200.00
7	Amy Maxson (V. Rhodes) E. Noble Kendallville	The Effect of Low-Level Parental X-irradiation on Development of Rats	100.00
8	Kevin Nickels (D. Handy) Harrison W. Lafayette	The Modification and Interfacing of a D.C. Servo-driven Robotic Arm...	200.00
9	Seth Payton (W.T. Anderson) Paoli Paoli	Pseudomonas putida as an Ice Nucleating Device in Commercial Snowmaking	180.00
10	Ida Primus (N. Longenecker) Adams South Bend	The Possible Effects of Chronic Audiogenic Stress on Ethanol Preference...	100.00
11	Lisa Primus (N. Longenecker) Adams South Bend	Possible Effect of Aspirin on Atherosclerotic Factors...	100.00

12	Elena Shaw (D. Handy) Harrison W. Lafayette	An Investigation of the Gene, LCK, and Its Involvement in Human Leukemia	175.00
13	Briana Swain (D. Handy) Harrison W. Lafayette	Development of a Cancer Cell- Specific Immunotoxin	200.00
		TOTAL	<hr/> \$2,100.00

**INDIANA ACADEMY OF SCIENCE
Fall, 1987, Grant Applications Funded**

No.	Principal Investigator/ Institution	Title	Award
1	In-Ho Choi George Bakken Life Sci. In. St.	The Effect of Temperature on Bird Muscle Contractility in vivo during Development	\$ 400.00
2	Elizabeth David Robert DiSilvestro Food & Nutrition Purdue	The Relationship of Macrophage Superoxide Dismutase Levels to Superoxide Production	875.00
3	Patrick Herendeen Biology Indiana University	Fossil Leguminosae from the Eocene of Kentucky and Tennessee	405.00
4	Jane Koska Biology Indiana University	Ecological Aspects of Reproductive Isolation between Toads. . .	260.00
5	Hossaine Laghaie William Farquhar Radiation Onco I.U. School of Medicine	The Effect of In Vivo Whole Body Hyperthermia on White Blood Cells	495.00
6	Michael Lee Alice Bennett Biology Ball State	Effects of Dietary Fatty Acids on Murine Mammary Epithelial Cells. . .	1,000.00
7	David Lipke Douglas Duff Biology I.U.-South Bend	Localization of Angiotensin II Binding Sites in Select Tissues of the Rainbow Trout	360.00
8	Julie Olsen Chemistry Wabash College	Degradation of Long Chain Fatty Acids in Germinating Elm, Rape and Corn	520.00
9	Thomas Platt Biology Notre Dame	Identification of the Molluscan Intermediate Hosts of the Meningeal Worm. . .	425.00
10	Charles Schauf Biology IUPUI	Patch-Clamp Studies of VICIA FABA Guard Cell: Protoplast	800.00
11	Doreen Short W. Yea Chooi-Odle Biology Indiana University	Structure and Regulation of Drosophila Ribosomal Protein Gene L12	1,160
12	Ann Lou St. Amand Stephen Carpenter Biological Science Notre Dame	Species-specific growth and loss within metalimnetic algal populations	465.00
13	Joseph Thompson Chemistry Ball State	Zinc Speciation in Biological Materials	525.00

14	David Thorne Douglas Anderson Forest & Natural Resources Purdue	Nitrogen Dynamics and Nutritional Ecology of the Plains Pocket Gopher	550.00
15	Scott Watkins Stefan Surzycki Biology I.U.-Bloomington	Characterization and Sequencing of cDNA Clones for the Largest Subunit of Human RNA Polymerase	515.00
16	Harold Zimmack James Plye Biology Ball State	Can Insect Pathologists Control Destructive Insects?	380.00
		TOTAL	<hr/> \$9,225.00

INDIANA ACADEMY OF SCIENCE
GENERAL MEETING

November 6, 1987

MINUTES

The meeting was called to order by President Stanley Burden in Tilson Music Hall, Indiana State University, Terre Haute.

Dr. Richard G. Landini, President of Indiana State University, welcomed the Academy to the campus.

Dr. John E. Oliver, Associate Dean of Arts and Sciences, ISU, in welcoming remarks spoke of the importance of the sciences at Indiana State, and the long relation between the Academy and the University.

Fay Kenoyer Daily, Necrologist, reviewed the lives of nine members whose deaths became known in 1987:

Gerald L. Alexander
Harold Delos Caylor
M.H. George DeKay
Herman Andrew Dettwiler
Robert H.L. Howe
Vivian Annabelle Johnson
Ralph Louis Edwin Seifert
Iva Miriam Spangler
William Arnold Willer

A minute of silence was observed in their memory.

Secretary Richard Conklin reviewed actions taken and reports given at the meeting of the Council of the Academy.

Treasurer Duvall Jones reported that the Academy's finances are sound. He also announced that the Academy now owns a MacIntosh computer upon which records are being kept and from which membership lists and mailing labels can be obtained. He thanked the Ball State University Computing Services for their years of providing computer support, and Alice S. Bennett for acting as the Academy's contact at Ball State.

Marvin Carmack, Chair of the Committee on Fellows, presented names of the following nominees:

Mohammad Behforouz, Professor of Chemistry, Ball State University
Charlotte Boener, Professor of Science Education, Indiana State University
William J. Brett, Professor and Chairman, Department of Life Sciences,
I.U.S.

Larry Ganon, Professor, Physiology and Health Science, Ball State
University

James D. Haddock, Associate Professor of Biology, I.U.P.U.-Ft. Wayne
Eric R. Johnson, Associate Professor of Chemistry, Ball State University
R. Douglas Lyng, Associate Professor of Biological Sciences, I.U.P.U.I.-
Ft. Wayne

Clyde Raymond Metz, Professor of Chemistry, College of Charleston, S.C.
Theresa A. Nagy, Associate Professor and Chairperson, Dept. of Physics,
I.U.S.

David R. Ober, Professor of Physics and Astronomy, Ball State
University

Robert E. Pace, Professor of Anthropology, I.S.U.

Marshall E. Parks, Professor of Science Education, I.S.U.
 Ronald L. Richards, Curator of Natural History, Indiana State Museum
 John Richard Schrock, Assistant Professor of Science Education, Emporia
 State University, Kansas
 Stanley S. Shimer, Professor of Science Education, I.S.U.
 Carl E. Warnes, Professor and Chairman, Department of Biology, Ball
 State University

All sixteen were elected Fellows of the Academy.

The Secretary read the report of the Committee on Emeritus members, presenting the following applicants:

William H. Bessey, Indianapolis
 Frank K. Edmondson, Bloomington
 Robert E. Wise, Fort Wayne
 Bernard S. Wostmann, Notre Dame

All were elected Emeritus members.

Alice Bennett, Chair of the Nominating Committee, presented the following slate:

President-Elect	Charlotte M. Boener
Treasurer	Duvall A. Jones
Editor of Proceedings	Donald R. Winslow
Director of Public Relations	Alfred R. Schmidt
Member, Academy Foundation	Frank Guthrie
Member, Research Grants	Joan Esterline Lafuze

She moved election of the nominees. The motion carried unanimously.

William Davies, Chair of the Committee on Resolutions, submitted the following resolutions, which had been approved by the Council:

- WHEREAS: The members of the Indiana Academy of Science are deeply grateful to the Indiana State University for the invitation to hold the 103rd annual meeting on the Indiana State University campus; and
- WHEREAS: The administration, faculty, staff and students alike have cooperated admirably in providing their facilities and support for this 103rd annual meeting of the Indiana Academy of Science; be it
- RESOLVED: That the Academy members here assembled express their sincere appreciation to Dr. Richard G. Landini, President of Indiana State University, for all the courtesies that have been extended to the Academy during this meeting. We are especially grateful to Dr. Charlotte M. Boener, chairperson of the Local Planning Committee, to the members of the committee, and to other facilitators for the arrangements of the entire program and the comfort and conveniences provided the Academy members and guests. We also express our sincere thanks to all Academy members who organized and participated in all aspects of this 103rd annual meeting.
- WHEREAS: The University Computing Services of Ball State University since 1975 have provided computer support for maintaining

the Indiana Academy of Science membership rolls and have supplied address labels and dues statements for the Academy, and

WHEREAS:

Barbara Stacey, Senior Job Control Language Specialist for the aforesaid University Computing Services, has served in liaison with the Academy for many years and has been helpful, understanding, and patient in managing this large work volume at somewhat unpredictable times, thereby greatly assisting the Secretary in the performance of his duties; be it

RESOLVED:

That the Indiana Academy of Science express to Ball State University and to its University Computing Services, particularly to Barbara Stacey, our sincere thanks and appreciation for many years of assistance and support rendered to the Academy and its Secretary.

Announcements:

Jan Woerner, Director of the Indiana Science Olympiad, needs volunteers to help operate and judge the 1988 Olympiad, March 12.

Today is National Chemistry Day.

The Science and Society Committee is sponsoring a Symposium on Indiana's Ground Water, at the Indiana State Museum on Saturday, December 5.

The business meeting was adjourned at 2:00 p.m.

Speaker of the Year Samuel A. Rhine, Director of the Genetic Education Center, spoke on the topic, "The New Genetics: Application and Implications for Our Future."

Respectfully submitted,
Richard L. Conklin, Secretary

INDIANA ACADEMY OF SCIENCE
MEETING OF THE EXECUTIVE COMMITTEE

December 12, 1987

Minutes

Present: Stanley Burden, Wilton Melhorn, Duvall Jones, Richard Conklin, Donald Winslow, Ernest Campaigne, Charlotte Boener.

Stanley Burden called the meeting to order at 1:00 p.m. in the Auditorium of the Indiana State Library.

William Craig of First Departmental Services, Rensselaer, described ways his firm could perform some of the functions anticipated in the Executive Secretary.

The Publications Committee was charged at the Spring meeting to consider possible cooperation with university presses. Because of the need for action before the Spring meeting, the President asked for discussion here. The following motion was approved:

The Indiana Academy of Science, through its Publications Committee, will consider any request from a university press regarding publication of any appropriate scientific work provided that the request is specific and that the Publications Committee has opportunity to review the work prior to its publication. Recommendations resulting from such considerations will be submitted to the Executive Committee for further action.

Campaigne moved that the Executive Committee accept the offer of John Gallman of Indiana University Press to list Academy publications in the catalog of IU Press, to be sold on a non-exclusive consignment basis. The motion carried.

The Committee accepted the following wording for the job description of the Executive Liaison Officer, for presentation to the Council at the Spring meeting.

Title of Proposed Position

Executive Liaison Officer

Duties

Preamble – Although a variety of aims and goals might be defined by a committee, ultimately the success of the office must depend largely on the interests and capabilities of the appointee working in harmony with the Academy Executive Committee. The final success of the appointment can be measured in:

- a. An increase of IAS membership.
 - b. A more positive public image.
 - c. An increase in monetary contributions which improve and expand Academy programs.
1. Promote the aims, interests and goals of the Academy as it is part of the science fellowship of the state in regional and local affairs.
 2. Identify worthy activities of state and regional organizations and facilitate participation of the IAS where appropriate.
 3. Aid in writing proposals and making contacts seeking funds to support Academy activities and interests.
 4. Identify and facilitate the role of the Academy in support of museums, education, youth activities, conservation and public TV.
 5. Provide continuity and efficiency in the execution of Academy business from year to year.

- a. Be responsible for publishing and mailing *Program and Abstracts* for fall meeting in conjunction with Program Chairman.
- b. Assist the incoming President in the selection of committee chairs.
- c. Develop, update and administer a "Manual of Operations" for Academy officers and section chairs.

After approval of the job description, the position will be announced and candidates sought.

The meeting was adjourned at 4:05 p.m.

Respectfully submitted,
Richard L. Conklin, Secretary

INDIANA ACADEMY OF SCIENCE
BUDGET COMMITTEE

December 12, 1987

Minutes

The meeting was called to order by President-Elect Wilton Melhorn at 9:10 a.m., Saturday, December 12, 1987, in the Auditorium of the Indiana State Library.

Members present and their areas of interest were Stanley Burden (President), Wilton Melhorn (President-Elect), Duvall Jones (Treasurer), Richard Conklin (Secretary), Donald Winslow (Editor), Charlotte Boener (1988 President-Elect), Richard Jensen (1988 Program Co-chair), E. Campaigne and Max Marsh (Academy Foundation), Virginia Rhodes and John Huffman (Youth Activities), Edwin Squiers (Science and Society), Wilson Lutz (Research Grants), Benjamin Moulton (Publications), Holly Oster (Library).

Minutes of the 1986 meeting of the Budget Committee were approved.

Duvall Jones distributed copies of a statement of financial policies of the Academy, a list of deadlines, and a new form for requesting payments from Academy accounts. He also made available copies of a proposal from Balfour, Inc., for producing pins using the new Academy logo.

Richard Conklin circulated for comment two suggested stationery designs using the new logo.

Treasurer Duvall Jones presented the proposed budget for 1988. The final budget is appended to these minutes. Discussion leading to changes in line items is summarized below.

In keeping with an action of the Council of its Spring meeting, \$4,000 from sale of publications were deposited in Foundation accounts. By a vote of two-thirds of its members (Marsh, Campaigne) the Foundation Committee directed that those funds be transferred directly to the Academy and listed as 1988 Income.

The allocation for expenses of the AAAS Representative was increased from \$350 to \$500 because of the increased cost of travel and accommodations.

Because the Biological Survey had funds remaining from 1987 which would cover its major anticipated expenses, its allocation was reduced to \$100 for support of a Natural Areas Conference. The Committee will be asked to report on the reason for its support of this conference to justify allocations in 1989 and beyond.

In 1987 there were to be six issues of the *Newsletter*. The appearance of only three seriously inconvenienced the Program and Publications efforts. Because part of the problem was delays in printing by the Rose-Hulman print shop, the allocation to the *Newsletter* was increased to \$1,800 so that four issues could be printed commercially. The necessity of obtaining a Bulk Mailing Permit for the Academy was discussed at some length and will be studied by appropriate officers.

Because an action of the Academy in the Spring Meeting requires profits from sales of publications to be included in the Foundation accounts, a new line item of \$400 is opened for Publications Committee incidental expenses.

Virginia Rhodes described the successes of various aspects of the Youth Activities work of the Academy to justify continued support of the Science Olympiad, Youth Activities, and Junior Academy budgets.

Jones explained that the Academy Development item includes such things as expenses of the Corporate Relations Committee, the Directory, logo, Treasurer's supplies, etc.

The item for Programs and Abstracts is primarily for mailing the booklets.

Edwin Squiers reported that the Science and Society symposia are being very well

received. The Committee is now attempting to make available in printed or audio form the proceedings of the symposia. Squiers also hopes to acquire a display board so that the Academy can be represented in exhibits sponsored by other science organizations in the state.

From Academy Accounts the discussion moved to the Trust Fund Accounts.

Upon indication that it would be acceptable to the Trustees of the Foundation, Moulton moved that the line item for Executive Secretary in the Academy Accounts be raised to \$15,000. The motion carried.

To implement this item, \$11,000 must be transferred from the Invested Income Account. In keeping with Constitution requirements, this transfer has been approved by majorities of the Foundation, Budget, Executive, and Research Grants Committee, and of the Council.

In order to match an increased grant from the AAAS, the appropriation for research grants for high school students was increased to \$1,400, available in the Academy Fund.

Conklin moved that the amount for research grants for senior Academy members be increased to \$35,000. After some discussion of the hope that the increase would improve quality and quantity of research projects funded, the motion carried.

Jones moved that the registration fees for the Fall meeting be continued at \$5 for members, \$7 for non-members. The motion carried.

Moulton moved that the budget for 1988 be approved as modified. The motion carried.

The meeting adjourned at 12:40 p.m.

Respectfully submitted.
Richard L. Conklin, Secretary

INDIANA ACADEMY OF SCIENCE
Financial Report
1 January — 31 December 1987

I. ACADEMY ACCOUNTS

	<u>Receipts</u>	<u>Budgeted</u>	<u>Expenses</u>	<u>Budgeted</u>
Income				
Dues	\$15,786.00	\$15,000.00		
Contributions	\$282.00	\$250.00		
Interest	\$2,771.68	\$2,500.00		
Transfer from Invested Income	\$2,987.63			
Reserve Funds		\$10,570.00		
Management Expenses				
Academy Development			\$883.33	\$2,200.00
CPA Fees			\$550.00	\$550.00
Equipment (computer)			\$2,695.00	\$3,000.00
Fees and Insurance			\$162.60	\$250.00
Membership Services	(\$296.00)		\$200.00	\$500.00
Office Services			\$801.56	\$900.00
Office Supplies			\$598.45	\$700.00
Postage and Shipping			\$932.82	\$1,700.00
Telephone			\$82.90	\$100.00
Travel			\$316.85	\$400.00
Subtotal			\$7,223.51	\$10,300.00
Program Services				
AAAS Representative			\$250.00	\$250.00
Biological Survey			\$1,700.00	\$1,700.00
Editorial Board Awards			\$0.00	\$300.00
Meeting Program and Abstracts	(\$1,670.00)			\$1,670.00
Newsletter			\$900.00	\$900.00
Public Relations			\$500.00	\$500.00
Science and Society Comm.	\$821.00		\$2,040.58	\$1,600.00
Science Education Advis. Comm.			\$0.00	\$200.00
Science Olympiad			\$265.88	\$300.00
Speaker of the Year			\$700.00	\$700.00
Youth Activities Comm.			\$2,678.55	\$3,000.00
Subtotal			\$9,035.01	\$11,120.00
Transferable to Admin. Accts.				
Junior Academy	(\$2,000.00)	(\$2,000.00)		
Library Binding	(\$1,100.00)	(\$1,100.00)		
Publications: Mailing	(\$1,300.00)	(\$1,300.00)		
Reprints		(\$2,500.00)		
Totals	\$16,282.31	\$21,420.00	\$16,258.52	\$21,420.00

II. ADMINISTERED ACCOUNTS

	<u>1 January</u> <u>Balance</u>	<u>1987 Transfers</u> <u>and Income*</u>	<u>1987 Transfers</u> <u>& Expenditures</u>	<u>31 December</u> <u>Balance</u>
Foundation Acct: Publications	\$5,994.78	\$4,222.34 (I)	\$735.66	\$8,781.46
Transfer to Mtg & Prog Acct		(\$700.00) (T2)		
Foundation Acct: Research Fellows	\$149.25	\$0.00	\$0.00	\$149.25
Foundation Acct: Senior Res. Grants	\$0.00	\$29,900.00 (T2)	\$30,075.00	\$658.56
Funds returned			(\$833.56)	
Junior Academy of Science	\$4.00	\$2,000.00 (T1)	\$2,984.55	\$819.45
Grant from IBM Corporation		\$1,800.00 (I)		
Lilly Library Fund	\$7,051.66	\$0.00	\$44.02	\$7,007.64
Library Binding	\$3,826.30	\$1,100.00 (T1)	\$1,556.80	\$3,369.50

Meetings and Programs	\$1,677.22	\$3,780.51 (I)	\$6,207.39	\$1,620.34
Transfer from Prog & Abstr		\$1,670.00 (T1)		
Transfer from Found. Acct: Publ.		\$700.00 (T2)		
Publications: Mailing	\$555.05	\$1,300.00 (T1)	\$972.48	\$882.57
Publications: Printing	\$1,952.89	\$10,254.70 (T2)	\$10,254.70	\$1,952.89
Grant from State of Indiana		\$8,900.00 (I)		
Direct transfer to printer		(\$8,900.00)		
Reprints: Volume 95	\$187.36	\$3,008.43 (I)	\$2,899.70	\$677.69
Volume 96		\$381.60 (I)		
Research Grants: High School	\$300.00	\$700.00 (T2)	\$2,100.00	\$300.00
Grant from AAAS		\$1,400.00 (I)		
Science Talent Search	\$1,374.54	\$82.50 (I)	\$2,502.51	\$2,454.53
Grant from Kappa Kappa Kappa		\$2,500.00 (I)		
Grant from Public Service Indiana		\$1,000.00 (I)		
Totals	\$23,073.05	\$65,100.08	\$59,499.25	\$28,673.88

*I: Income from external sources

T1: Transfer from Academy Accounts

T2: Transfer from Academy Trust funds

III. SUMMARY

	<u>Academy Accounts</u>	<u>Administered Accounts</u>	<u>Total</u>
Balance: 1 January 1987	\$14,588.94	\$23,073.05	\$37,661.99
1987 Income	\$16,282.31	\$65,100.08	\$81,382.39
1987 Expenditures	\$16,258.52	\$59,499.25	\$75,757.77
Balance: 31 December 1987	\$14,612.73	\$28,673.88	\$43,286.61

IV. BANK BALANCES (as of 31 December 1987)

Bank One, Rensselaer, IN: Super NOW Checking Acct #21-0497-4	\$5,740.21
Hi-Fi Account #70-032504	\$11,704.71
CD #11985	\$3,313.60
Bank One, Lafayette, IN: CD #66594185	\$5,000.00
Indiana Federal Savings and Loan, Rensselaer, IN: CD #10-0140111	\$3,612.76
Lafayette National Bank, Remington, IN: CD #2408862	\$2,580.48
CD #302641	\$2,630.82
State Bank of Rensselaer, IN: CD #100212712	\$8,704.03
Total	\$43,286.61

V. SUMMARY OF TRUST FUNDS

	<u>Research Account (430-00-0)</u>	<u>J. S. Wright Fund (430-01-9)</u>	<u>Invested Income (430-02-8)</u>
Assets (1 January 1987)			
Cash	\$188.19	(\$4,264.19)	\$8,365.29
Tax Value of Investments	\$42,123.69	\$437,935.94	\$125,711.11
Tax Value of Account	\$42,311.88	\$433,671.75	\$134,076.40
Income and Transfers			
Dividends	\$581.30	\$26,579.30	
Interest	\$2,362.11	\$23,152.44	\$9,116.41
Income from Sales	\$7,905.16	\$122,632.93	(\$313.19)
Transfer from Wright Fund			\$41,440.24
Miscellaneous Receipts	\$219.46		
Expenditures and Transfers			
Fiduciary Fees	(\$10.82)	(\$6,520.25)	(\$37.10)
Transfer to Invested Income		(\$41,440.24)	

Distributions to Programs	(\$300.00)		(\$43,542.33)
Transfer to Research Account		(\$219.46)	
Balance - 31 December 1987	\$53,069.09	\$557,856.47	\$140,740.43
Assets - 31 December 1987			
Cash	\$14.14	(\$4,755.96)	\$4,980.88
Tax Value of Investments			
Short Term Investments	\$7,400.00	\$20,200.00	\$61,000.00
Bonds	\$25,742.19	\$352,335.45	\$74,759.55
Stocks	\$19,912.76	\$190,076.98	
Tax Value of Accounts - 31 Dec.	\$53,069.09	\$557,856.47	\$140,740.43
Market Value of Principal - 31 Dec.	\$50,650.14	\$1,263,168.16	\$138,699.63

VI. NOTES

Membership. There were 1259 memberships in good standing as of 31 January 1988, including:

- 5 corporate members
- 4 honorary members
- 4 life members
- 106 emeritus members
- 46 sustaining members
- 715 members
- 145 associate members
- 133 student members
- 101 clubs

10 members deceased in 1987 are not included in the totals above.

191 memberships on file from 1986 were not paid in 1987.

174 new and reinstated members joined the Academy in 1987.

104 members and clubs were dropped for nonpayment of 1986 dues.

Dues Structure for 1987:

- \$5 for clubs and student memberships
- 10 for associate members
- 15 for members
- 25 for sustaining members
- 300 for life memberships
- 150-500 for corporate memberships
- 50-100 for institutional memberships

Reprints: All authors of papers in Volume 95 of the *Proceedings* have paid for the reprints which they ordered. Cost of the reprints to the Academy was \$2,899.70. Authors paid the Academy \$3,111.50 for reprints.

Publications: Sales of reprints, monographs and *Proceedings* in 1987 netted \$6,912.37. More than 1,000 copies of the *Butterflies of Indiana* were sold during the last three months of the year.

Research Grants: Funds totalling \$31,341.44 have been awarded to members and students.

Grants Received: The State of Indiana contributed \$8,900 toward publication of the Academy *Proceedings*.

The Science Talent Search received \$2,500 from Kappa Kappa Kappa Sorority and \$1,000 from Public Services Indiana. The IBM Corporation supported activities of the Indiana Junior Academy of Science with \$1,800. The American Association for the Advancement of Science granted \$1,400 for high school students to use in their research.

The John S. Wright Fund, the Academy's main trust account, supports major portions of the Academy's research grant programs and research-related publications such as the *Proceedings* and monographs.

Administration: Purchase of computer equipment enabled the Academy to centralize its membership services and to computerize its accounting system during 1987

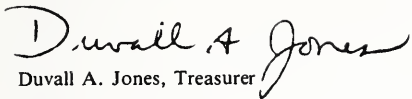
VII. 1988 BUDGET OF THE INDIANA ACADEMY OF SCIENCE

1. Academy Accounts - Income

Dues	\$15,500.00
Contributions	\$300.00

Interest		\$2,300.00
Transfer from Administered Accounts		\$4,000.00
Transfer from Investment Interest		\$11,000.00
Reserve Funds		\$6,100.00
Totals		\$39,200.00
2. Academy Accounts - Expenses		
Management Expenses		
Academy Development		\$1,650.00
CPA Fees		\$550.00
Executive Secretary		\$15,000.00
Fees and Insurance		\$500.00
Membership Services		\$200.00
Office Services		\$1,100.00
Office Supplies		\$650.00
Postage and Shipping		\$1,150.00
Telephone		\$50.00
Travel		\$350.00
Subtotal		\$21,200.00
Program Services		
AAAS Representative		\$500.00
Biological Survey		\$100.00
Editorial Board Awards		\$300.00
Newsletter		\$1,800.00
Publications Committee		\$400.00
Public Relations		\$500.00
Science and Society Comm.		\$1,600.00
Science Education Advisory Committee		\$200.00
Science Olympiad		\$400.00
Speaker of the Year		\$700.00
Youth Activities Committee		\$3,000.00
Subtotal		\$9,500.00
Transferable to Administered Accounts		
Junior Academy		\$2,000.00
Library Binding		\$1,600.00
Meetings: Program & Abstracts		\$2,000.00
Publications: Mailing		\$700.00
Reprints		\$2,200.00
Totals		\$39,200.00
3. Trust Funds		
Anticipated Income & Expendable Funds (30 September 1987)		
IAS Fund	(00430-00-0)	\$3,000.00
John S. Wright Fund	(00430-01-9)	52,000.00
Investment Income Account	(00430-02-8)	132,000.00
Approved Expenditures		
Fiduciary Fees (est.)		\$7,000.00
Research Grants for Senior Academy Members		35,000.00
Research Fellowship for High School Teachers		5,000.00
Research Grants for High School Students		1,400.00
Expenses of Research Grants Committee		200.00
Executive Secretary (in part)		11,000.00
Publications		
Program and Abstract Booklet (1988)		1,500.00
Proceedings (Volume 96)		10,500.00
Climate of Indiana		15,000.00
Butterflies of Indiana		35,000.00
Endangered Species		7,000.00
Flora of Indiana		8,000.00
Total		\$136,600.00

Respectfully submitted,


Duvall A. Jones, Treasurer

We, the undersigned, have audited the Treasurer's records of the Indiana Academy of Science for the year 1987 and have found them to be accurate and in order.



David D. Chesak

25 January 1988



John Ricketts

24 January 1988

1987 REPORT

YOUTH ACTIVITIES COMMITTEE

INDIANA ACADEMY OF SCIENCE

This committee continues to encourage and promote the development of science knowledge and skills in Indiana's secondary school students through the activities of the Indiana Junior Academy of Science, the Indiana Science Talent Search, the Indiana Science Olympiad, and the state and regional science fairs. Some of the activities also include middle school and elementary students as well.

Mark Whitman was serving his first year as new Director of the Indiana Junior Academy of Science and a major reorganization was undertaken. Because the American Junior Academy of Science/American Association for the Advancement of Science meeting was to be held in Chicago, three student paper presenters were named to attend the national meeting instead of the usual one. They were Ann Koons of Kendallville's East Noble High School, Alvina Ma of Muncie Northside High School and Michael Sacopolus of Terre Haute North Vigo High School. Ed Wuerch of Richmond High School had been named the outstanding delegate at the fall 1986 meeting and also attended AJAS, February 13-17, 1987. Michael Sacopolus was named the Outstanding Junior Scientist of 1986.

The 41st Indiana Science Talent Search was held March 6-7, 1987 in Indianapolis. Director Don Winslow and the Science Talent Search Committee selected eleven students as winners in the competition. Kappa Kappa Kappa, Inc. (Tri Kappa) continued support of the Indiana Science Talent Search in the amount of \$2,500. Tri Kappa scholarship winners were Ann Koons, a senior at East Noble High School in Kendallville, and Brian Worrall, a senior at Terre Haute South Vigo High School.

New Director Jan Woerner of Indiana University-Purdue University Northwest organized and ran the Science Olympiad, held on March 31, 1987 at Center Grove High School, Greenwood, Indiana, with teams from eighteen schools participating in Division C (grades 9-12): this division was won by Indianapolis North Central High School. After a full day of various competitions, Hammond Gavit's Middle School was declared the winner in Division B (grades 6-8); 22 schools competed in the latter. Both schools competed in the national meet later in the spring.

Twelve Regional Science Fairs were held between February and April around the state and 24 students were named to be finalists in the 38th International Science and Engineering Fair in San Juan, Puerto Rico in May. The Academy provided financial support to the fairs in the amount of \$2,750.

The second Hoosier Science and Engineering Fair was held at the Children's Museum in Indianapolis, April 23-25, 1987 with 72 students participating; six students represented each—two ISEF delegates, two from grades 9-12 who competed to represent the ISEF at the International Fair and two students from grades 7 or 8. Complete funding was obtained from this important event by Director Karl Kaufman under the auspices of the Science Education Foundation of Indiana. The two students who attended the ISEF as Hoosier Fair representatives were Deborah Houser, a senior from East Noble High School, Kendallville, and a senior from Bloomington High School North, Michael Terry.

A grant of \$1,400 was received as a result of a proposal submitted to the American Association for the Advancement of Science for the support of high school science research projects. The Research Committee of the Senior Academy evaluated proposals from high school students and granted awards in September.

The 55th annual meeting of the Indiana Junior Academy of Science was held Friday, November 6, on the campus of Indiana State University in Terre Haute. Approximately 350 students and their teachers from 78 schools in Indiana participated.

The opening address entitled “The Future Implications of Genetic Engineering” was made by Dr. John Corrigan of Indiana State University. Special tours were made of the ISU campus and Rose Hulman’s Center for Applied Optics. A Problem Solving Exam was taken by student delegates while teachers attended a seminar on promoting science research in their schools. Delegates met by regions to discuss: “What are the future implications of genetic engineering, and what must science do to meet its future responsibilities?” Twelve students were candidates for the Outstanding Junior Scientist for 1987, an honor bestowed upon Dragica Balac of Donald E. Gavit High School in Hammond. Her teacher-sponsor was Michael Kobe. Alan Acker of Terre Haute North High School was honored for achieving the highest score on the problem solving exam as were the five top scoring high school teams—Homestead High School of Fort Wayne, Terre Haute North Vigo High School, Fort Wayne Concordia High School, Brebeuf Prep School and Lawrenceburg High School. Twelve students presented papers at the annual meeting:


Dragica Balac Gavit High School Sponsor: Mr. Michael Kobe	“A Study of the Callus Growth and Differentiation of <i>Daucus carota</i> , Phase IV: The effects of Electrostatics”
Lori DePew East Noble High School Sponsor: Dr. Virginia Rhodes	“A study of Second-hand Smoke Effects on Murine Metabolism”
Scott Fergusson Central Noble High School Sponsor: Mr. Dan Replogle	“Prosthetic Apparatus”
Rejesh James Homestead High School Sponsor: Mr. Thomas Waning	“The Effect of Radiation on Carrot Clones in the Callus Stage”
Jayma Kern Bedford-North Lawrence High School Sponsor: Mr. Karl Scherschel	“Investigation of Stress Related Situations and Their Psychological and Physiological Responses”
Arnold Ma Muncie Northside High School Sponsor: Ms. Susan McConnell	“A Study of the Relative Toxicity of Second Smoke on Cells Using <i>in vitro</i> Cell Culture Techniques”
Robyn Marshal Paoli High School Sponsor: Mr. Tom Anderson	“Investigation of Electrochemical Interactions of Various Metallic Alloys Exposed To An Oral Environment”
Chad Alan Mead Canterbury High School Sponsor: Mr. Don Franklin	“O.C.B.P.C.—Oxygen Creating and Bleeding Pack for Consumption”
Kim Noble Center Grove High School Sponsor: Ms. Carolyn Hayes	“Fetal Alcohol Syndrom: Phase III-Prenatal Effects of Ethanol on Chromosomes”
Ann Nofziger Paoli High School Sponsor: Mr. Tom Anderson	“A Study of Prodigiosin Synthesis in <i>Serratia marcescens</i> : Phase III, Using Heat and Specialized Nucleases to Locate the Pigment Cone”
Yvonne Spartz Hamilton Heights High School Sponsor: Mr. Larry Massom	“Investigating the Evolution of Insect Wings”

Michael Syring
Muncie Northside High School
Sponsor: Ms. Susan McConnell

“The Conveyance of Bateria Through Ice
Cubes Into Certain Kinds of Beverages”

DePew, James, Ma, Noble and Nofziger were named as finalists and returned to Indianapolis on December 12, 1987 to again present their work to judges at the University of Indianapolis. As a result, Ann Nofziger from Paoli High School was named the 1987 Outstanding Paper Presenter for IJAS. The runner-up was Rajesh James of Fort Wayne's Homestead High School. Both will attend the NJAS/AAAS Meeting in Boston along with Mark Vockell of Hammond Gavit High School who was named the Outstanding IJAS Delegate.

Respectfully submitted,



Virginia Rhodes

Co-chair

Youth Activities Committee

**Report from Donald R. Winslow, Director,
Indiana Science Talent Search, to:**

Youth Activities Committee
Indiana Academy of Science Council

Spring Meeting, McCormick's Creek,
Spencer, Indiana, April 10, 1987

Forty two students participated in the 40th Annual Indiana Science Talent Search. Nineteen of these students were declared *Finalists* by the Committee and were invited to participate in the Honors Program the weekend of March 6-7, 1987 at the Medical Center Union Building, Indiana University-Purdue University at Indianapolis.

The activities of this year's Talent Search were funded by Kappa Kappa Kappa, Inc. at the \$2,500.00 level and by Public Service Indiana, Inc. at the \$1,000.00 level. In addition to these amounts of monies, Ann Koons of East Noble High School, Kendallville, and Brian Worrall of Terre Haute South Vigo High School each was awarded by Kappa Kappa Kappa \$1,000 scholarships which must be used at an Indiana four-year college of higher education. Elizabeth Chilcott, State Philanthropy Chair, represented Kappa Kappa Kappa, Inc.; and Mike Goss, Educational Services, represented Public Service Indiana, Inc.

On Saturday morning at the *Science Teacher Symposium*, Mark Whitman, Director of the Indiana Junior Academy of Science, shared his views on "Motivating the Talented High School Student." Following his presentation, Duvall Jones, Treasurer of the Academy, presented "New Options and/or New Directions in Biology" to help stimulate thinking about new areas in the life sciences that possibly could be explored by future high school students.

The keynote speaker for the awards luncheon was John D. Hague, President of the Indiana Corporation for Science and Technology. Dr. Hague's address was titled "In Preparation for a Different Tomorrow"—a very suitable topic for our future leaders.

As the Science Talent Search enters its fifth decade, it is appropriate, I think, to refer to a statement made by Ralph Lefler in 1949 at the Executive Committee meeting of the Academy held in Crawfordsville:

"The necessity for the early identification and for the continued development of our talented in all fields has long been recognized. . . The rigorous selection procedures which requires an essay on an original project is a maturing and desirable experience for any serious minded high school senior. All Indiana Winners are recommended to the admissions officers and scholarship committees of our Indiana colleges and universities. It is sincerely hoped that no really talented student will have to terminate his program of education because of inability to bear the financial obligation. . . Personal interviews with students provides opportunity for appropriate encouragement in the field best suited for their continued study."*

These are still part of the objectives of the Indiana Science Talent Search. A list of the Talent Search *Winners* for 1987 is attached.

**Proceedings* of the Indiana Academy of Science, Vol. 59, 1950, pp. x-xi.

40th INDIANA SCIENCE TALENT SEARCH WINNERS

March 6-7, 1987

Beem, Matthew

An Evaluation of the Relative Effectiveness
of Different Types of Passive Air
Filters: Implications for Respiratory Health

John Adams High School, South Bend

Sponsoring Teacher: Nevin Longenecker

Clark, Brian

A Study of the Effects of (+)-Catechin
and A (+)-Catechin- Copper Complex
on Metastasis

Harrison High School, West Lafayette

Sponsoring Teacher: Mark Whitman

Cooper, Pamela

Microbiological Implications Concerning the Use
of Activated Carbon as point-of-use Water
Filtration Device Phase I and Phase II

Muncie Northside High School, Muncie

Sponsoring Teacher: Susan McConnell

Duehmig, Mark

Production of a Radio Telescope

East Noble High School, Kendallville

Sponsoring Teacher: Virginia Rhodes

Kantowitz, David

Design and Construction of a Computer-
assisted Non-steady State Crystalizer

Wm. Henry Harrison H.S., West Lafayette

Sponsoring Teacher: Mark Whitman

Kobe, Jeffrey

The Analysis of Water-soluble Internal
Combustion Emissions and their Effect on
Bateria of the Human Respiratory System

Munster High School, Munster

Sponsoring Teacher: Donald Ullman

Koons, Ann

A Study of the Chemotherapeutic Treatment
of Lung Carcinoma *in vitro*

East Noble High School, Kendallville

Sponsoring Teacher: Virginia Rhodes

Nofziger, Anne

Identification of the Biochemical Pathway
of Prodigiosin Synthesis Using Color
Mutants of *Serratia marcescens*
Utilizing Syntrophic Techniques

Paoli Junior-Senior High, Paoli

Sponsoring Teacher: William Tom Anderson, Jr.

Scheel, Frederick
The Possible Prolonged Enhancement of
Physiological Processes with
Vitamin-mineral Supplementation
Following the Cessation of
Strenuous Exercise

John Adams High School, South Bend
Sponsoring Teacher: Nevin Longenecker

Stante, Julie Lynn
Possible Effects of Imposed Stress Due
to Sleeplessness on the Immune
Response of Laboratory Mice
John Adams High School, South Bend
Sponsoring Teacher: Nevin Longenecker

Worrall, Brian
Sensory Applications of Microcomputers:
Digital Speech Recognition and
Vocal Control
South Vigo High School, Terre Haute
Sponsoring Teacher: Melanie Huber

Brian Worrall and Ann Koons were awarded \$1,000.00 scholarship by Kappa Kappa Kappa, Inc. These two students must attend Indiana 4-year institutions of higher education in order to validate their awards.

Necrology
Fay Kenoyer Daily, Butler University

GERALD L. ALEXANDER

Winchester, Indiana
December 5, 1906

Fort Myers, Florida
November 25, 1986

Professor Gerald L. Alexander was an assistant professor emeritus of chemistry at Ball State University, who died November 25, 1986, at his home in Fort Myers.

Professor Alexander was born at Winchester, Indiana, December 5, 1906, and was educated through high school there. His advanced studies were taken at Ball State Teacher's College where he received a B.S. degree in 1930 and at Indiana University where an M.S. degree was obtained in 1940.

Gerald Alexander's teaching career began in 1930 after graduating from Ball State Teacher's College. He taught Chemistry at Dunkirk High School and coached basketball, baseball and tennis until 1937 when he moved to the Muncie School. From 1937 to 1943, he taught science at Wilson Junior High School in Muncie.

In 1943, Prof. Alexander became a United States of America Naval Officer in charge of the Seventh Fleet Training Center in the Philippines. After World War II, his assignment in 1946 was the Muncie Trade School, now Area Career Center, to teach radio. In 1947 he joined the Ball State Chemistry Department where he taught for 27 years until his retirement in 1973. He was widely known in science education.

In 1973, he reported that he had been playing tennis for 56 years and intended to play and encourage others to play after retirement. In 1981, he was named to the Delaware County, Indiana, Hall of Fame for his work in tennis as player and coach.

Professor Alexander joined the Indiana Academy of Science in 1974, the next year after retirement from Ball State University. He listed as interests Zoology, Ecology and Entomology. In the *American Men of Science*, the chemistry of rare elements is listed as his chief interest. He was also a member of the American Association for the Advancement of Science, American Chemical Society, the National Teacher's Association, Central Association of Science and Mathematics Teachers and Muncie Technical Society.

Gerald Alexander was considered honest, kind and loving by those who knew him well. He believed he should "do unto others as you would have others do unto you".

HAROLD D(ELOS) CAYLOR

Nottingham, Indiana
August 19, 1894

Bluffton, Indiana
June 16, 1986

Dr. Harold Delos Caylor was a surgeon and at 91 years of age when he died. He was chairman emeritus of the Caylor-Nickel Medical Center at Bluffton, Indiana, which he helped found and where he died June 16, 1986. Dr. Caylor was a native of Nottingham, Indiana, a village in the southeastern corner of Wells County, Indiana, the same county in which Bluffton is located. He was born August 19, 1894, the son of Charles E. Caylor, a rural medical doctor. His grandfather was also a physician.

Dr. Harold D. Caylor attended Pennville High School at Pennville, Indiana, and entered pre-medical school in 1912 at Indiana University. On the south side of Chicago at the University of Chicago, he received a B.S. degree in 1916; and at an affiliate on the west side of Chicago, Rush Medical College, he earned an M.D. degree in 1918. During his senior year, he had done post mortems at the Cook County Morgue and then at Saint Luke's Hospital, commuting to Rush by elevated train during a very cold winter. He developed a cough which persisted and found out that he had tuberculosis. After a rest period for regaining his health, he finished the internship which he had started at Presbyterian Hospital at Evanston, Illinois, as a special student in 1921.

Dr. Harold Caylor's father had visited the Mayo Clinic for 2 weeks a year to observe their methods and after such a visit decided to open a clinic-hospital in Pennville in 1907. By 1921, his practice had moved to Bluffton, Indiana. His son, Harold, joined him as a partner and general surgeon from 1922 to 1924. Harold then joined the Mayo Clinic Foundation as an assistant professor of surgical pathology at Rochester, Minnesota, from 1927 to 1929. It was then back to the Bluffton arrangement to work with his father and brother, Truman, as a general surgeon and partner. The construction on the Caylor-Nickel Clinic Hospital was completed in 1940. It was set up as a 45 bed facility in 1939. Dr. A.C. Nickel, also Mayo trained, had joined the father-son group in 1931. Dr. Truman Caylor's son, Dr. Charles "Chad" Caylor serves now in a leadership role at the hospital. Dr. Harold Caylor wrote a book "A Clinic in a Cornfield—a history of the Caylor-Nickel Clinic and Hospital."

Dr. Harold D. Caylor served as Chairman of the Board of the Caylor-Nickel Research Foundation, trustee of the Caylor-Nickel Hospital 1922-1975, and member of the executive committee. He retired in 1979 but continued to visit patients in a supportive role even after he was 90 years of age. A tribute in a Center publication called him "a very good physician, leader, friend". Dr. Caylor joined the Indiana Academy of Science in 1931 listing Zoology, Chemistry and Bacteriology as interests. He served as a Division Chairman and was very active in other societies. He was a Fellow of the American College of Surgeons, honorary member of the Minneapolis Surgical Society, past president of the American Association of Medical Clinics, past president of the Indiana Lung Association and Wells County Tuberculosis Association, member of the American, Indiana and Wells County Medical Societies, the American Thoracic Association (pres. 1951-1952), Indiana Bone and Joint Club, Indianapolis Athletic Club, Pan Pacific Surgical Association, Sigma XI and Phi Chi Epsilon. He was founder and past president of the Group Practice Association (now American Association of Medical Clinics) and was active in the "We care" program to help the needy to obtain medical care at a low cost.

Needless to say, Dr. Caylor's many activities and achievements did not go unnoticed. He received a number of awards including an Outstanding Citizen's Award from the Chamber of Commerce in 1980, the United Way Award for Community Service, and he was made a Sagamore of the Wabash.

M. HENRY GEORGE DEKAY

Randolph, Nebraska
August 14, 1898

Lafayette, Indiana
July 9, 1987

A native of Randolph, Nebraska, Dr. M. Henry George DeKay was born August 14, 1898. He was almost 89 years old when he died July 9, 1987, at Lafayette, Indiana. He was professor emeritus from the School of Pharmacy at Purdue University.

Dr. DeKay went through primary grades and high school in Randolph, Nebraska, and served in the United States of America Army Students Army Training Corps in 1918. He continued with his education at Wayne Teachers College, Wayne, Nebraska, and received a B.A. degree in 1923. In 1928, he received a B.S. degree from the University of Nebraska School of Pharmacy at Lincoln, Nebraska. He spent several summers from 1925 to 1930 at the University of Chicago and finished an M.S. degree in 1930 with a major in chemistry (organic). At Purdue University, he received a Ph. D. degree in 1934. He was a registered pharmacist in Nebraska and Indiana.

Dr. DeKay's teaching career began as coach of athletics in Tilden, Nebraska, 1920. He was then coach and science teacher in Wausa, Nebraska, in 1921; coach, science and manual training teacher in Stuart, Nebraska, in 1922; coach and Principal of Stuart High School in 1923; and Superintendent of Schools in Stuart from 1923 to 1927. He then left for further work at the University of Nebraska.

Dr. DeKay came to Purdue University in Indiana as an Instructor of Pharmacy in 1928 and moved in rank to Professor of Pharmacy in 1942. He retired as professor emeritus in 1967. His exceptional service at Purdue spanned 39 years during which time he won the prestigious Bowl of Hygea Award in 1960, one of the first in the nation, because of his distinguished service in his profession and community. He was active in the civic affairs of Lafayette in addition to his scholarly duties.

Many articles were written by Dr. DeKay for professional journals. His research centered on tablet technology in the field of industrial pharmacy. He studied water soluble tablet lubricants, coating and disintegration of tablets, drying of tablet granulations by means of infrared and high frequency techniques and measurement of tableting pressure. In addition to the articles, he authored chapters in various undergraduate textbooks on the manufacturing of tablets. He also co-authored a book, *Qualitative Analysis for Students of Pharmacy and Medicine* and wrote *The DeKay Family in America* (1974).

In 1967, Mr. Ken Kiser, Purdue News Service, and J.V. Bothel wrote a tribute to Dr. DeKay in the "Indiana Pharmacist" (3: 93-94). Some of his attributes came through vividly in the prose. He was articulate, gregarious, modest and well-liked. We are also grateful for the memorial resolution written by Patrick F. Belcastro. We find that with all of the other activities, Dr. DeKay supervised all of the instruction and production of the pharmacy laboratory. This included liquid and solid medications for students dispensed in Purdue's pharmacy. He was also the X-ray technician and supervised a course for technicians. Biographies were found also in Wabash College's *Indiana Authors and their Books*, *Indiana Lives* by Hawkins and McClaren, *Indiana Scientists* by Visher, *Who's Who in Indiana*, and *American Men of Science*. Dr. DeKay was interested in photography, historical buildings and collecting pharmaceutical antiques. He traveled widely in pursuit of these hobbies.

It was the next year after Dr. DeKay came to Indiana, 1929, that he became a member of the Indiana Academy of Science. His interests were listed as Anthropology, Chemistry, Geology and Geography. A paper, "Objective tests in high school and general chemistry" was read by title in the Chemistry Division in 1937.

Dr. DeKay had many other affiliations with other societies such as: the American Pharmaceutical Association, Indiana Pharmaceutical Association, American Associa-

tion of University Professors, American Association of Colleges of Pharmacy, Rho Chi, Phi Lambda Upsilon, and Sigma Xi. He was National Secretary of Alpha Kappa Lambda (1946-1948) and National President (1948-1952). He served on the National Endowment Fund Board and was a member of the United States of America Pharmacopeia Revision Committee, Sub-committee 9 and 10 and collaborator for the *American Pharmacopeia* Volume I (1945) and Volume II (1947).

Dr. DeKay achieved much in his lifetime!

HERMAN ANDREW DETTWILER

Monroe, Wisconsin
March 1, 1910

Greenfield, Indiana
November 19, 1986

Dr. Herman Andrew Dettwiler was born in Monroe, Wisconsin, March 1, 1910, where he began his early education in kindergarten through second grade. The rest of grade school and high school were spent in Verona, Wisconsin, and college education at the University of Wisconsin where he earned a Bachelor of Science degree in 1935. He majored in bacteriology at Ohio State University receiving an M.S. degree in 1937 and Ph.D. degree in 1939. He was influenced probably in his choice of career by the Agricultural School professor in Bacteriology.

Dr. Dettwiler's professional career began in Cincinnati, Ohio, as Bacteriologist at Christ Hospital Institute of Medical Research, 1939-1940. He became a Bacteriologist at Eli Lilly and Company in 1940. He was associate director of the Biological Production Division from 1946 to 1952 when he was promoted to director. He retired in 1972.

When the first poliomyelitis vaccines were manufactured for public use, Dr. Dettwiler was director of its production at Lilly's. He was also interested in research on other viruses—especially influenza and typhus and in the production of influenza vaccine.

Besides his work at Lilly's, Dr. Dettwiler shouldered other heavy responsibilities, too. He was director of a Greenfield bank and Greenfield country club and was a member of the board of the Greenfield city schools from 1951-1957. He served on the Greenfield Chamber of Commerce, was a member of the Hancock County Bicentennial Committee (1976) and helped establish the American Revolution Bicentennial Memorial Park.

Dr. Dettwiler joined the Indiana Academy of Science in 1940 and was interested in the Bacteriology and Cell Biology Divisions. He served as Chairman of the Bacteriology Division in 1965. Other societies to which he belonged were: Sigma Xi, Alpha Gamma Rho, Alpha Zeta, New York Academy of Science, American Association for the Advancement of Science, American Society of Microbiology and American Society of Immunology. As hobbies, Dr. Dettwiler played golf and was adept at woodworking. He was a warm, friendly, hard-working man and believed that "what is worth doing is worth doing well". He died November 19, 1986, at his home in Greenfield, Indiana.

ROBERT HSI LIN HOWE

Swatow, China
January 2, 1922

Lafayette, Indiana
July 29, 1987

Dr. Robert Hsi Lin Howe was a retired scientist, a professional engineer and consultant diplomat. Born in Swatow, China, January 2, 1922, and reared in that country, he came to the United States of America in 1948 and was naturalized in 1962. "The Lilly News" (Vol. 6, #25, December 8, 1962) carried a fine article about him at that time. He held five college degrees and spoke three languages. The degrees were as follows: B.S. degree in civil engineering from Methodist University, Soochow, China, 1943, and St. John's University, Shanghai, 1945; M.S. degree from Cornell University, 1949; Mechanical Engineering degree, Cornell University, 1950; and a Ph.D. degree from Purdue University in 1955.

Dr. Howe was a research and teaching assistant at Methodist University from 1943 to 1945 and instructor from 1945 to 1947. He became a research fellow at Purdue University, Lafayette, Indiana, in 1950-1952. In 1952, he became an engineer at Eli Lilly and Company and was soon a research scientist. He was in charge of waste treatment at the Tippecanoe Laboratories and consultant at other Lilly facilities. He retired December 31, 1982.

Recognition of his many talents came early in his career. His doctoral thesis on the application of aerial photographic engineering to water locating was basically the material in a movie widely circulated in other countries to help in solving problems of reclaiming land, finding more water and developing hydroelectric plants quickly and economically. His method of using aerial photographs to survey the land combined with his expertise about topography, soils, climate, geology, and vegetation resulted in locating water in a quick and easy way. He contributed many articles to professional journals and wrote *Applied Chemistry for Water Purification and Waste Treatment I and II*, 1970, and also *Handling of Hazardous Chemicals I, II, and III*, 1970 to 1973. Dr. Howe was a patentee, lecturer and science adviser abroad.

Dr. Howe received many awards: the Talbert Abrams Award given by the American Society of Photogrammetry in 1958, the gold award from the National Accountants Association, Industrial Wastes Award given by the Indiana Water Pollution Control Association, the William-Hatfield Award from the Water Pollution Control Federation, the Buswell Porges Award from the Institute of Advanced Sanitation Research, 1972.

Dr. Howe joined the Indiana Academy of Science in 1964 and was a family member. Mrs. Howe is a research chemist interested especially in food technology and biochemistry.

Dr. Howe gave many papers at the Indiana Academy of Science meetings and was a Chairman of the Environmental Quality Division in 1983. He gave as many as six talks at a single meeting a couple of times and he gave several at a single meeting other times. His diversity and the complexity of his work were shown in 1972 when he delivered six papers at six different Divisional meetings: Botany and Plant Taxonomy, Ecology, Physics, Microbiology and Molecular Biology, Engineering, and Soil Science. He addressed other Divisions at other times. His work was usually directed toward solving problems in water purification and sewage disposal often using new methods of dealing with those problems. His work also led to basic research in biological processes such as oxygen production of algae and an interpretation of the mechanism. Environmental problems were also studied such as ozone and hydrogen peroxide injuries to green plants. He was also interested in the disposal and handling of dangerous chemicals.

Dr. Howe was active in other professional societies, too, as: Diplomate, American Academy of Environmental Engineers; Fellow, Royal Society of Health; American Public Health Association; Advanced Sanitation Research International (director of Council of Fellows, U.S. area 1970-1975); National Professional Engineers (chapter vice-president

1959-1960); and the American Chemical Society. Besides the "Lilly News" article, there is a fine biographical sketch in *Who's Who in the Midwest* (1976-1977).

Dr. Robert H.L. Howe died July 29, 1987, in Home Hospital, Lafayette, Indiana, after about a two-month illness.

VIVIAN ANNABELLE JOHNSON

Portland, Oregon
July 1, 1912

Lafayette, Indiana
June 30, 1985

Dr. Vivian A. Johnson was an emeritus professor of the Physics Department at Purdue University. She was born in Portland, Oregon, July 1, 1912, and educated there receiving a B.A. from Reed College in Portland, Oregon, in 1932. She came to Purdue University in Indiana, then, where she was associated with the Physics Department beginning with her graduate work which resulted in an M.S. degree in 1934 and a Ph. D. degree in 1937. She was a graduate assistant from 1932 to 1937, assistant instructor from 1937 to 1938, instructor 1938 to 1944, assistant professor 1944 to 1947, associate professor from 1947 to 1956 and professor from 1956 to 1979 when she retired and became an emeritus professor. She had been assistant head of the Physics Department since 1973. Dr. Johnson spent most of her time teaching undergraduate students who were non-physics majors, so she developed a course designed for the practical application of physics in other fields. She strove to modernize her courses and challenge students with higher standards.

In her research, the chief interest was theoretical analysis of the electrical properties of semiconductors. She presented over 30 papers at the American Physical Society meetings and contributed to the "American Physical Review", journals in Great Britain and the Netherlands. With Professor Lark-Horovitz, she edited *Methods of Experimental Physics*, and wrote chapters for other physics books. She prepared a biography of Dr. Lark-Horovitz for *Men of Physics* (1970). She also authored or co-authored with Dr. Lark-Horovitz some papers given at Indiana Academy of Science meetings. These concerned germanium, tellurium, and the Hall effect at very low temperatures. The semi-conducting properties of germanium were examined by a team of about 20 Purdue physicists, including Dr. Johnson, as part of the war effort. She joined the research team in 1942. We are indebted to the news releases and memorial resolution about Dr. Johnson sent from Purdue by the library archivist, Helen Q. Shroyer. The fine memorial resolution was written by Robert Lee Mieher and John W. MacKay. One item from the Purdue University News Service published in the "Purdue Alumnus" (Volume 61, #4, January, 1974) announced her appointment as associate head of the Physics Department and also mentioned that in 1973 she had received the Standard Oil Foundation Award for outstanding undergraduate science teaching. The memorial resolution also mentions that she received the Helen B. Schleman Gold Medallion Award in 1979 for her scholarship, leadership and service. Several other references were helpful as *Who's Who in Indiana*, *Who's Who in the Midwest*, *Indiana Scientists*, a Lafayette newspaper article, etc.

Dr. Johnson joined the Indiana Academy of Science in 1949 and had become an Emeritus member. As mentioned earlier, she gave several papers at Academy meetings. She was also affiliated with the American Physical Society, American Association of Physics Teachers, American Association for the Advancement of Science, American Association of University Professors of which she was Secretary-treasurer from 1945 to 1948, Sigma Xi (secretary of Purdue Chapter from 1941 to 1943), Sigma Pi Sigma, Alpha Epsilon Delta, Phi Beta Kappa.

Dr. Vivian Annabelle Johnson was 72 years old when she died at Saint Elizabeth Hospital, June 30, 1985, Lafayette, Indiana.

RALPH L(OUIS EDWIN) SEIFERT

Mount Vernon, Indiana
February 4, 1914

Bloomington, Indiana
April 23, 1987

Dr. Ralph L. Seifert was born in Mount Vernon, Indiana, February 4, 1914. His early education was obtained in southern Indiana graduating from Central High School in Evansville where he was a valedictorian. A Bachelor of Arts degree was received from Evansville College in 1934, and A.M. degree from the University of Illinois in 1935 and a Ph.D. degree also from the University of Illinois in 1937.

Dr. Seifert began his teaching career as an instructor in physical chemistry at the University of Illinois from 1937 to 1938. From 1938 to 1940, he taught chemistry at Alma College as an instructor. He was associate professor from 1940 to 1941, professor and head of the Department of Chemistry from 1941 to 1944. He joined a developmental program in chemistry at the University of Chicago Metallurgical Laboratory to support the war effort during World War II from 1944 to 1946. He was then an associate professor at Charleton College from 1946 to 1949 and head of the Chemistry Department from 1948 to 1949. He then joined the chemistry faculty at Indiana University in 1949 as an associate professor. He was made full professor in 1966 and retired as professor emeritus in 1978. He was co-author of the book *Physical Chemistry* (1966) with Dr. Frank T. Gucker. His research was focused primarily on the electrochemical study of molten salts and new techniques. He was on the advisory board of the "Journal of Physical Chemistry."

Dr. Seifert joined the Indiana Academy of Science in 1949 and was an Emeritus member at death. He was associated with the Chemistry Division. He was also a member of Alpha Chi Sigma, American Association for the Advancement of Science, American Chemical Society, Electrochemical Society, Sigma Xi and Phi Zeta. He is listed in *Who's Who in Indiana*, *Indiana Authors and their Books* (1917-1966) and *Indiana Scientists*.

Dr. Ralph L. Seifert died after a full and fruitful career April 23, 1987, at the Meadow Health Center, Bloomington, Indiana. He had been ill for a long time and was incapacitated for the last few years.

IVA MIRIAM SPANGLER

Adams County near Decatur, Indiana
February 14, 1898

Fort Wayne, Indiana
May 18, 1986

Miss Iva Miriam Spangler was an Adams County, Indiana, native and was educated through high school in Decatur. She was born at the end of the 19th century, February 14, 1898, and was 88 years old at death.

Miss Spangler first attended college at Ball State Teacher's College where she received a Bachelor of Science degree in 1927. In 1934, she was the recipient of a Master of Philosophy degree from the University of Wisconsin and in 1943 the Master of Arts degree from the University of Michigan.

Iva began teaching in Decatur and Adams Counties, Indiana, schools from 1915 to 1926. Then she taught in junior high schools in Fort Wayne, Indiana, from 1926 to 1937. In 1937, she went to Central High School in Fort Wayne. She taught there until 1964 when she retired from Fort Wayne Community Schools. During this time, she also served as an Indiana State Park Naturalist at Pokagon and Spring Mill State Parks (1944-1962). Then she was a biological science teacher at Indiana-Purdue University in Fort Wayne from 1964 to 1967.

Iva Spangler was a very accommodating and friendly person and knew plants and animals well. She was an excellent Park Naturalist and undoubtedly was a distinguished teacher. In 1961, she published a book *Flowers of Pokagon* (William A. Didier and Sons, Inc., Fort Wayne, Indiana) with an approach which was novel at that time inasmuch as the pages were color coded to match the flower color of the plant.

Miss Spangler joined the Indiana Academy of Science in 1937 noting interests as Botany and Zoology. She was an Emeritus member at death. It was not long after joining the Academy before she became the first sponsor of the Central High School Fort Wayne Nature Club which became a member of the Junior Indiana Academy of Science in 1940. She served as sponsor until 1963.

After retirement, she took annual trips to Mexico and Arizona besides participating in the Fox Island (Fort Wayne County Park) Bird Counts.

Miss Spangler had lived a long and productive life when she died May 18, 1986, at Fort Wayne.

WILLIAM STEWART

Indianapolis, Indiana
February 7, 1931

South Bend, Indiana
May 22, 1985

Mr. William Stewart was a science teacher and pharmaceutical representative when he died in his home at South Bend, Indiana, on May 22, 1985. He was a native of Indianapolis, Indiana, where he was born February 7, 1931. He was raised and educated there until his graduation from Howe High School. He took his advanced work at Indiana University, Bloomington, where he received a B.S. degree in 1957 and then at South Bend where a Master of Science degree was obtained in 1983.

Mr. Stewart began his career as a salesman for the Geigy Pharmaceutical Company. His teaching career was spent at Grissom Middle School in Mishawaka, Indiana, where he began teaching in 1977. His subjects were Biology and General Science for seventh, eighth and ninth grade students. He set up a School Science Fair each year and had students who won awards in the Regional Science Fairs. He also coached girl's volleyball and track teams which he enjoyed very much.

Mr. Stewart joined the Indiana Adacemy of Science in 1980 as a family member with his wife, Kathy. Their interests were listed as Physics, Botany and Secondary Science Teaching. He became the treasurer of the Northern Indiana Regional Science and Engineering Fair. He was also associated with the National Science Teachers Association and Hoosier Association of Science Teachers, Incorporated. He was a precinct committeeman for the Republican Party.

As hobbies, gardening and travel held Mr. Stewart's interest. He enjoyed people and especially his students. His philosophy has timeless appeal—make the best of each day.

WILLIAM ARNOLD WILLER

Wheeling, West Virginia
December 21, 1898

Sodus, Michigan
October 25, 1985

Mr. William Arnold Willer was born in Wheeling, West Virginia, December 21, 1898, and was a veteran of World War I. He started teaching early in life at 23 years of age in Howard County, Indiana, where he taught Science and English from 1921 to 1926. In 1927, he was teaching in Posey County. From 1927 to 1931, he was at New Albany. He moved to Fort Wayne in 1931 where he taught at North Side and South Side High Schools and Franklin Junior High School. He retired from the Fort Wayne Community Schools in 1965. His activities and subjects taught were a reflection of his continuing education. He received a B.S. degree from Purdue in 1927 where he was interested in Social Studies; so when he went to Fort Wayne, he taught Social Studies primarily. At the University of Louisville where he was enrolled in the Graduate School in 1929 and then again in 1946, his major was history and minor was education. His M.A. degree was conferred in 1946 and his thesis was "Origins of Secondary Education with Special Reference to Fort Wayne, Indiana". He received three certificates for teaching: High School Principal and Superintendent in 1937, registered high school teacher in 1932 (in Biology, Botany, General Science, Junior English, Agriculture, Chemistry, Physics and Physiology).

Mr. Willer joined the Indiana Academy of Science in 1929 designating Botany and Zoology as interests. He was the first sponsor for the Fort Wayne Junior Academy of Science Club, Franklin High School in 1945. He also was involved with the Fort Wayne Academy of Science. A small gift was given to the Indiana Academy of Science from the Fort Wayne Academy of Science by Mr. Willer in 1970 upon disbandment of the Fort Wayne Academy.

Mr. William Arnold Willer died at the home of his son, Paul F. Willer, with whom he was living. He was 86 years old at death on October 25, 1985, in Sodus, Michigan.

INDIANA ACADEMY OF SCIENCE
New Members for 1987

- ABBOTT, JANE M., St. Mary-of-the-Woods College, Terre Haute, IN 47876
 ADETOLA, OTUBU, P.O. Box 691586, Tulsa, OK 74169
 AGBOR-BAIYEE, WILLIAM, Box, 6, Shively Hall, Ball State University, Muncie, IN 47306
 ALSEYNI, DIALLO, 2409 W. Bethel Ave., 25, Muncie, IN 47304
 ARCHER, LEN M., Dept. of Life Sciences, Indiana State University, Terre Haute, IN 47809
 BAKER, LISA K., Box 19, St. Mary-of-the-Woods College, Terre Haute, IN 47876
 BANDY, JR., WILLIAM F., MSC-26, Vincennes University, Vincennes, IN 47591
 BEEM, MATTHEW, 1276 Longfellow Avenue, South Bend, IN 46615
 BEIN, FREDERICK L., IUPUI, 425 Agnes St., CA 213, Indianapolis, IN 46202
 BERGDALL, KRISTIN, Physiology Department, Ball State University, Muncie, IN 47306
 BERTA, SUSAN M., Dept. of Geog. and Geol., Indiana State University, Terre Haute,
 IN 47809
 BLANCO, MARITZA, St. Mary-of-the-Woods College, Terre Haute, IN 47876
 BLOME, STACY L., 436 Anderson St., Greencastle, IN 46135
 BOLTMAN, BRUCE, 3609 Sycamore Drive, Columbus, IN 47203
 BRADY, VALERIE, 321 Gerig Hall, Taylor University, Upland, IN 46989
 BREWSTER, CHRISTINE B., 334 Hollowood Drive, W. Lafayette, IN 47906
 BROOKS, CLARENCE, Dept. of Physics and Astronomy, Ball State University, Muncie,
 IN 47306
 BROWN, DENNIS R., 2906 S. Taft St., Indianapolis, IN 46241
 BROWN, MARCELINE, Psychology Department, Indiana University, Bloomington, IN 47405
 BROWN, MARK A., Department of Geology, Indiana University, Bloomington, IN 47405
 BUECHLER, RAYMOND J., Dept. of Anthropology, Indiana State University, Terre Haute
 IN 47809
 BUTLER, DARRELL L., Dept. of Psych. Sci., Ball State University, Muncie, IN 47306
 CARNAHAN, WALTER H., Physics Department, Indiana State University, Terre Haute,
 IN 47809
 CARPENTER, SCOTT, 4201 Grantline Rd., New Albany, IN 47150
 CLARK, BRIAN, 5307 Lynnwood Drive, W. Lafayette, IN 47096
 COADY, COLLEEN MARIE, St. Mary-of-the-Woods College, Terre Haute, IN 47876
 COLLETTI, ADRIA, SCBME, University of Notre Dame, Notre Dame, IN 46556
 COOKS, R. G., Dept. of Chemistry, Purdue University, W. Lafayette, IN 47907
 COOPER, PAMELA, 3500 N. Janney Avenue, Muncie, IN 47304
 COVERDALE, RUSSELL N., Department of Physics, Purdue University, W. Lafayette, IN
 47907
 CROSMER, JOEL R., Valparaiso University, Valparaiso, IN 46383
 DiDONATO, CHRISTINE JEAN, P.O. Box 947 LM, St. Mary's College, Notre Dame, IN 46556
 DIECKMANN, GREGG, 609 South 1st St., Van Buren, IN 46991
 DiSILVESTRO, ROBERT A., Dept. of Foods and Nutrition, Purdue University, W.
 Lafayette, IN 47907
 DOW, KIMBERLY ANN, Box 89, St. Mary-of-the-Woods College, Terre Haute, IN 47876
 DROSTE, JOHN B., Department of Geology, Indiana University, Bloomington, IN 47405
 DRUFENBROCK, DIANE, St. Mary-of-the-Woods College, Saint Mary of the Woods, IN
 47806
 DUEHMIG, MARK, RR 1, Avilla, IN 46710
 DUNBAR, RICHARD, Div. of Natural Preserves, Rural Route 8, Columbia City, IN 46725
 DURST, GREGORY L., Chemistry Department, Ball State University, Muncie, IN 47306

- DUSANIO, DONALD G., Dept. of Life Sciences, Indiana State University, Terre Haute, IN 47809
- EGAR, MARGARET W., Dept. of Anatomy, IU Med, 635 Barnhill Drive, Indianapolis, IN 46223
- EHRHARDT, BARBARA J., R.R. #1, Box 97, Leesburg, IN 46538
- EHRINGER, BILL D., 1630 Fabrilon Blvd., Jeffersonville, IN 47130
- ELBERT, JULIE, Geography & Area Development, Univ. of Southern Mississippi, Hattiesburg, MS 39406-5051
- ESCH, HAROLD E., Dept. of Biological Science, Univ. of Notre Dame, Notre Dame, IN 46556
- FAVALORO, ANTHONY E., Biology Dept., Ball State Univeristy, Muncie, IN 47306.
- FERLIZ, RANDY J., 265 Alumni Hall, University of Notre Dame, Notre Dame, IN 46556
- FLORES, EDUARDO, Dept. of Physics, Indiana State University, Terre Haute, IN 47809
- FORINASH, KYLE, Natural Science Div., Indiana Univ. Southeast, New Albany, IN 47150
- FOSS, KATHRYN, 8212 Sierra Rd., Muncie, IN 47303
- FRENCH, MARY L., R. R. 2, Box 161, Linton School, Linton, IN 47441
- GALLMAN, JOHN, Indiana Univ. Press., Bloomington, IN 47405
- GARCIA, MICHELLE G., Box 109, St. Mary-of-the-Woods College, Terre Haute, IN 47876
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