

PROCEEDINGS

of the

Indiana Academy *of* Science

Founded December 29, 1885

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Volume 66
1956

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RICHARD A. LAUBENGAYER, Editor
Wabash College
Crawfordsville, Indiana

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Spring Meeting
May 11-12
BRADFORD WOODS

Fall Meeting
October 11-13, 1956
INDIANA UNIVERSITY

Published at Indianapolis, Indiana
1957

1. The permanent address of the Academy is the Indiana State Library.
2. **Instructions for Authors** appear at end of this volume, p. —.
3. **Exchanges.** Items sent in exchange for the Proceedings and correspondence concerning exchange arrangements should be addressed:
Indiana Academy of Science, Library
c/o State Library, Indianapolis 4, Indiana
4. **Proceedings** may be purchased through the State Library at \$3.00 per volume.
5. **Reprints of technical papers** can often be secured from the authors. They cannot be supplied by the State Library nor by the officers of the Academy.
6. The Constitution and by-laws reprinted from v. 62 and the Membership list reprinted from v. 61, are available to members upon application to the Secretary. Necrologies reprinted from the various volumes can be supplied relatives and friends of deceased members by the Secretary.
7. Officers whose names and addresses are not known to correspondents may be addressed care the State Library. The address of the editor of the present volume is Biology Department, Wabash College, Crawfordsville, Ind.

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OFFICERS AND COMMITTEES FOR 1956

OFFICERS

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Secretary.....	W. A. DAILY, Eli Lilly and Company
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Editor.....	R. A. LAUBENGAYER, Wabash College
Press Secretary.....	J. A. CLARK, Department of Conservation, Indianapolis

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Bacteriology.....	E. D. WEINBERG, Indiana University
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Entomology.....	D. L. SCHUDER, Purdue University
Geology and Geography.....	B. H. SCHOCKEL, Aurora, Indiana
History of Science.....	W. J. TINKLE, Anderson College
Mathematics.....	HARRY E. CRULL, Butler University
Physics.....	A. MITCHELL, Indiana University
Plant Taxonomy.....	C. A. MARKLE, Earlham College
Psychology.....	J. P. EGAN, Indiana University
Zoology.....	E. G. PRAY, Hanover College

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(Past Presidents, Current Officers, Divisional Chairmen,
Chairmen of Standing Committees)

R. R. Armacost, O. B. Christy, J. A. Clark, R. E. Cleland, N. M. Coats, D. J. Cook, H. E. Crull, E. R. Cumings, F. K. Daily, W. A. Daily, J. J. Davis, E. F. Degering, W. E. Edington, P. D. Edwards, J. P. Egan, H. E. Enders, R. E. Girton, A. T. Guard, C. W. Hagen, C. B. Heiser, T. K. Just, R. A. Laubengayer, R. W. Lefler, Eli Lilly, A. A. Lindsey, J. F. Mackell, C. A. Markle, M. S. Markle, M. G. Mellon, A. H. Meyer, H. H. Michaud, A. Mitchell, J. D. Mizelle, W. P. Morgan, G. K. Neumann, F. Payne, C. L. Porter, H. M. Powell, E. G. Pray, B. H. Schockel, D. Schuder, W. J. Tinkle, S. S. Visher, F. N. Wallace, P. Weatherwax, E. D. Weinberg, W. H. Welch, F. J. Welcher, H. R. Youse, T. G. Yuncker.

BUDGET COMMITTEE

(President, Secretary, Treasurer, Editor, and Chairmen of Committees
on Junior Academy, Library, Program and Relation
of Academy to State)

R. E. Girton, W. A. Daily, F. J. Welcher, R. A. Laubengayer, H. H. Michaud, N. M. Coats, C. B. Heiser and F. N. Wallace.

COMMITTEES ELECTED BY THE ACADEMY

Trustees of the Academy Foundation (term 4 years): Chairman, R. N. Harger, Indiana University School of Medicine, Indianapolis (term expires 1956); Ward J. Rice (term expires 1960).

Bonding of Trustees (elected annually): Chairman, Scott McCoy, Technical High School, Indianapolis; W. P. Morgan.

Research Grants (term 5 years): Chairman, T. G. Yuncker, DePauw University (term expires 1959); W. H. Johnson (1957), M. G. Mellon (1960), Paul Weatherwax (1956), J. F. Mackell (1958); R. E. Girton and W. A. Daily (*ex officio*).

STANDING COMMITTEES

(Appointed by the President)

Auditing: Chairman, W. P. Morgan, Indiana Central College; S. E. Elliott.

Biological Survey: Chairman, Winona H. Welch, DePauw University; F. K. Daily, D. G. Frey, C. J. Goodnight, C. A. Markle, H. H. Michaud, S. A. Minton, F. N. Young.

Fellows: Chairman, A. T. Guard, Botany, Purdue University; H. M. Powell, Bacteriology; C. F. Voeglin, Anthropology; M. G. Mellon, Chemistry; H. O. Deay, Entomology; T. F. Barton, Geology and Geography; S. S. Visher, History of Science; P. D. Edwards, Mathematics; J. F. Mackell, Physics; F. K. Daily, Plant Taxonomy; H. H. Remmers, Psychology; W. R. Breneman, Zoology.

Index: Chairman, R. A. Laubengayer, Wabash College; N. M. Coats, F. N. Wallace.

Indiana Talent Search: Chairman, R. W. Lefler, Purdue University; L. H. Baldinger, P. D. Edwards, T. W. Torrey, W. H. Welch; H. H. Michaud and R. E. Girton (*ex officio*).

Invitations: Chairman, R. E. Cleland, Indiana University; W. H. Johnson, B. H. Smith.

Junior Academy: Chairman, H. H. Michaud, Purdue University; N. E. Adams, R. Cooper, J. Cope, S. D. Gerking, P. E. Klinge, Lola Lemon, R. McDougal, R. E. Martin, R. E. Niswander, M. Stork; R. W. Lefler and R. E. Girton (*ex officio*).

Library: Chairman, N. M. Coats, State Library; Eli Lilly, M. G. Mellon.

Membership: Chairman, H. R. Youse, DePauw University; J. O. Cottingham, H. E. Crull, A. L. Delisle, Lois Farquharson, M. Garner, W. H. Headlee, Z. Hurlbut, R. L. Kent, W. G. Kessel, E. Kintner, R. G. Larson, R. E. Martin, L. S. McClung, D. E. Miller, J. Pelton, E. C. Williams.

Necrologist: W. E. Edington, DePauw University.

- Nominating:** Chairman, A. H. Meyer, C. L. Porter, P. D. Edwards.
- Program:** Chairman, C. B. Heiser, Indiana University; C. E. Kaslow, J. D. Mizelle, J. Pelton, T. G. Perry, E. D. Weinberg, F. N. Young.
- Publication of Proceedings:** Chairman, R. A. Laubengayer, Wabash College; A. A. Lindsey, P. Weatherwax.
- Publicity:** Chairman, J. A. Clark, Department of Conservation; D. C. Peaslee, R. C. Starr; H. Hazelrigg and D. H. Radler (*ex officio*).
- Relation of Academy to State:** Chairman, F. N. Wallace, Department of Conservation; J. A. Clark, Eli Lilly, H. J. Reed.
- Representative on Council of the A.A.A.S.:** R. W. Lefler, Purdue University.
- Representative on the Indiana Committee for Pine Hills of the Nature Conservancy:** A. A. Lindsey, Purdue University.
- Resolutions:** Chairman, F. K. Daily, Butler University; O. B. Christy, H. M. Powell.
- Science Education:** Chairman, R. R. Armacost, Purdue University; Catherine W. Dale, W. H. Johnson, P. E. Klinge, R. W. Lefler.
- Science Youth Financing:** Chairman, R. W. Lefler; R. R. Armacost, C. W. Dale, R. McCord, H. H. Michaud, F. J. Welcher, R. Morgan (advisory); (*ex officio*) R. E. Girton, R. W. Schulz.

MINUTES OF THE SPRING MEETING

BRADFORD WOODS
Martinsville, Indiana
May 11-12, 1956

President R. E. Girton called the Executive Committee Meeting to order at 4:45 P. M. in the Bradford Manor. Twenty-five members, including seven past presidents, were present.

The officers and committees reported as follows:

Treasurer: F. Welcher stated that his full report would appear in the current issue of the proceedings.

Editor: R. A. Laubengayer reported that all the galley proofs were in the hands of the printer and page proofs expected soon.

Library: Nellie M. Coats gave the following report: "Something of the value of the Academy Library's part in the education of young scientists may be judged from the number of items sent on interlibrary loan to universities for the use of graduate students. There is, too, a continuation of frequent use by those now engaged in research in industry and in such agencies of government as the Naval Ordnance Plant, Indianapolis.

"To further usefulness of the collection, titles and holdings are to be recorded in the 1950-1955 cumulation of New Serial Titles, a union list showing what serials are in what libraries. This checking is now in process. In addition Mrs. Burton is compiling a list of titles currently received together with holdings which it is hoped will be available for distribution to members at the fall meeting."

Press Secretary: J. Clark remarked that publicity for the meeting had been released by newspapers and by radio.

Program Chairman: Charles B. Heiser stated that plans were complete for the spring meeting and well under way for the fall meeting at Indiana University.

Membership Committee: A tentative list of 17 applicants for membership was given by H. R. Youse.

Science Talent Search: Winona Welch thought the latest Science Talent Search meeting held in Indianapolis was a very impressive affair with many fine young high school students in attendance. Dr. R. Lefler was praised highly by the committee members present for his excellent guidance in this work.

Science Education Committee: W. H. Johnson discussed the work accomplished during the first meeting of this committee.

The recommendations given are as follows:

1. Increased emphasis on teaching problems in existing sections of the Academy.

2. The two major state universities should assume leadership in increasing the offerings of the science department of the colleges and universities in the state for in-service teachers.

3. The committee recommends that the administration of research grants provided by the A.A.A.S. and designated for high-school research be administered by the Indiana Science Talent Search Committee until the Executive Committee of the Academy works out a permanent method of administering these funds.

The following letter from Mrs. Esther Potzger was received by the secretary of the Academy: "Sincere thanks for your remembrance at this time. I know my husband deeply appreciated the many friends, the association over many years and the fine support given his research by the Academy."

New Business:

1. It was recommended that Mr. Charles Ek of Spencer, Indiana, be made an Emeritus Member and receive the Proceedings of the Indiana Academy of Science.

2. Following a report by Frank Welcher, the president, R. E. Girton, recommended that a special committee be appointed to study the financial situation of the Academy.

3. In the absence of R. E. Cleland, an invitation to hold the 1957 fall meeting of the Academy on the DePauw University campus was given by Charles Heiser, Jr.

4. W. H. Johnson offered the following suggestions:

a. The Academy fall meeting program should perhaps include symposia concerning high school teaching methods.

b. A special committee to be appointed by the president for the purpose of soliciting and distributing funds on behalf of the Indiana Science Talent Search.

All reports were accepted.

The meeting was adjourned at 6:15 P. M.

Dinner Meeting: Following the dinner in the dining lodge, the business meeting was called to order by President Girton at 7:30 P. M.

Following words of welcome to the spring foray group, the officers and their wives were introduced to the assemblage. Out-of-country visitors were Ing. Agr. Dr. Jorge Soria V from Quito, Ecuador, and Dr. Helmut Müller of Hanover, Germany.

The president announced that the Soils Society was being reactivated and would meet with the Academy in the fall.

Twenty-three applicants for membership were duly elected.

Mr. R. Tully, director of Bradford Woods, gave a very interesting history of the area and the Bradford family who donated the land to the James Whitcomb Riley Hospital for Children. The grounds are being developed by Indiana University and the James Whitcomb Riley Memorial Association as an educational and recreational center for the children of Indiana.

Mrs. Fay K. Daily, chairman of the Resolutions Committee, read the following report, "The Resolutions Committee, speaking on behalf of the Indiana Academy of Science, wishes to thank the management of Bradford Woods and the Program Committee for their many fine arrangements, the participants in the program and leaders of hikes for their earnest preparation necessary to make this meeting a success, Also, we wish to thank the officers for their efficient service."

Dr. David G. Frey, Indiana University, then presented an excellent illustrated lecture entitled "The Cultivation of Fish for Food in Indonesia."

Announcements of the field trips for Saturday morning were given by H. H. Michaud, William C. Martin, Jr., John Pelton, and John B. Patton.

Seventy-seven members signed the Academy roll.

All scheduled hikes were made on May 12 in fine weather.

W. A. DAILY,
Secretary

MINUTES OF THE EXECUTIVE COMMITTEE

INDIANA UNIVERSITY, OCTOBER 11, 1956

The Executive Committee of the 72nd session was called to order by President Girton in Jordan Hall at 7:30 P. M.

The minutes of the Spring Meeting, held at Bradford Woods near Martinsville, Indiana, were read and approved.

The reports of officers and committee representatives were presented and accepted as follows:

Treasurer. Dr. Frank Welcher gave the following tentative financial report for the period January 1, 1956, to December 31, 1956. This and the 1955 report have not been audited.

Receipts

1. Balance on hand, January 1, 1956.....	\$1,385.66
2. Dues and initiation fees	1,897.00
3. Publications sold	32.50
4. A.A.A.S. refunds for research grants	300.00
5. Author's reprints Vol. 62	8.27
6. Author's reprints Vol. 63	17.72
7. Author's reprints Vol. 64	351.75
8. Author's reprints Vol. 65	467.07
9. For printing results of Biological Survey Questionnaire	25.50
10. Designated gift	150.00
11. Talent Search	1,990.00

\$6,621.47

Disbursements

1. Editor Vol. 65	\$ 191.21
2. Expenses of President	6.34
3. Expenses of Secretary	197.56
4. Expenses of Treasurer	178.40
5. Stationery	108.75
6. Talent Search	1,990.00
7. Program Committee	318.85
8. Research grants	237.50
9. Secretary of State	1.00
10. Refund on reprints	3.13
11. Mailing Proceedings Vol. 65	131.76
12. Returned check	4.00
13. Expenses of five officers as directed by action of 1947 Executive Committee	100.00
14. Author's reprints Vol. 65	80.33
15. Binding, Academy of Science Library	692.65
16. Surety Bond	62.50
17. Academy Conference	11.00
18. Publication of Proceedings, Vol. 64	493.68
19. Science Education Committee	10.00

\$4,814.66

Balance on hand, December 31, 1956

1,806.81

\$6,621.47

Editor and Publication of Proceedings. Dr. Richard A. Laubengayer reported 1200 bound and 600 unbound copies of the 1956 Proceedings

were prepared. Reprints have been sent out to authors or are in the mail.

Trustees of the Academy Foundation. The secretary presented the report for October 1, 1955 to September 30, 1956:

Oct. 1, 1955. Beginning balance	\$ 801.74
Oct. 1, 1955 to Sept. 30, 1956. Total receipts	380.86
Oct. 1, 1955 to Sept. 30, 1956. Bank fees	19.04
Sept. 30, 1956. Ending cash balance	1,155.08
Bonds and shares of stock. Total carrying value	\$13,412.00

Press Secretary. James Clark reported that notices of our meeting were sent to scientific magazines, newspapers and radio stations. Abstracts of special topics were sent to reporters and columnists who proposed to use the material.

The committee has functioned more satisfactorily than would have been possible for the Press Secretary alone.

We have had two feature articles in newspapers during the year concerning the Academy.

A television program has been arranged by Hugh Hazelrigg which will feature the Academy.

Research Grants. Dr. T. G. Yuncker gave the following report:

The A.A.A.S. has recently decided to utilize the money formerly placed at the disposal of this committee to the promotion of research at the high school level. It is the understanding of the committee that there will continue to be some money available for our grants during the period of transition in policy. It is also possible that the Academy may be able to support adult research to some extent.

During the past year the following grants have been made:

One hundred dollars to Mrs. Carrolle A. Markle of Earlham College to be used in connection with her work on the Wayne County flora.

One hundred dollars to William B. Eberly of Manchester College to aid him in his research on the crustacea of Indiana.

The committee will entertain requests for small grants up to the limit of money available for this purpose.

Nominations. Dr. A. H. Meyer reported the following nominations: Mr. Ward J. Rice to serve as chairman of the Academy Foundation Committee and Mr. John Seybert to be the second member. Dr. W. P. Morgan to serve as chairman of the Bonding of Trustees Committee and Mr. Scott McCoy to be the second member. Dr. Paul Weatherwax to serve another term on the Research Grants Committee.

Fellows. Dr. A. T. Guard and his committee nominated the following Academy members to be elected to the rank of Fellow:

Mr. James A. Clark, State Entomologist's office, Indianapolis, Ind.

Dr. Richard A. Laubengayer, Wabash College, Crawfordsville, Ind.

Dr. Carrolle Anderson Markle, Earlham College, Richmond, Ind.

Dr. John D. Mizelle, University of Notre Dame, Notre Dame, Ind.

Dr. Thomas B. Noble, Physician, Indianapolis, Ind.

Biological Survey. Dr. Winona Welch presented a report of progress and of completion. Dr. Clarence J. Goodnight has continued studies on the arachnids of the state, particularly the Opilionids, which is a continuation of a larger project. One of his students, Mr. Parthasarathy has concluded a study of the chromosomes of some Opilionids of Indiana, a part of the larger arachnid project. Dr. Frank N. Young has continued work on the Indiana Coleoptera. One of his students, J. R. Zimmerman, is studying the water beetle genus, *Laccophilus*, especially as to habits and as to the distribution of the species in the state. Dr. Sherman A. Minton, Jr., has tried unsuccessfully to have published his manuscript of a book on the *Herpetology of Indiana*. He is now preparing an annotated key for the naturalists to use as a guide to the reptile and amphibian fauna of the state. Dr. Minton and Dr. Philip W. Smith of the Illinois Natural History Survey have completed a distributional study of reptiles and amphibians in Illinois and Indiana. The manuscript has been submitted for publication. A book appeared this past year, contributing to the knowledge of Indiana algae and their distribution, the *Revision of the Coccoïd Myxophyceae* by Francis Drouet and William A. Daily. Fay K. and W. A. Daily have continued their studies of Indiana algae. Mr. Daily has in press a paper on a dinoflagellate not reported from Indiana previously. *Mosses of Indiana*, an illustrated manual, by Winona H. Welch, is now in press.

Library. Miss Nellie M. Coats gave the following report:

Clear evidence of the growth of the Academy's library is contained in lists of serials received compiled at intervals. A 1935 list recorded 226 titles, a 1949 list was made up of 496 titles, a list processed by Lois Burton of the State Library Staff for distribution at this 1956 session totals 828 titles. That many of these serials are not too widely held in American libraries is indicated by requests for loans from such widely separated agencies as the Quartermaster Research and Development Center at Natick, Massachusetts; the University of Arizona; the University of Minnesota; Marshall College, Huntington, West Virginia; and the Canadian Department of Agriculture at Ottawa. Of course, items are in frequent demand from Indiana research workers and graduate students.

The library provided labor and envelopes for mailing 946 copies of V. 65 for 1955 to 915 individual members and to 31 junior academies. Publication date is recorded as September 25, 1956. The volume will be mailed shortly to Indiana libraries and to other agencies.

Some particularly nice items were received in exchange including Munro. *Marine and freshwater fishes of Ceylon*; Prescott. *Collections of a century*, a centennial publication from the National Museum of Victoria and a volume on the mammals of Victoria. Dr. T. G. Yuncker presented a copy of his and Dr. Trelease's two volume work on Piperaceae of Northern South America along with a group of reprints on this subject. Dr. Yuncker also contributed several out-of-print issues of the I.A.S. Proceedings.

One hundred-ninety-three volumes in the Academy's library have been prepared for binding at an estimated cost of \$692.95.

By courtesy of the Indiana State Library your librarian represented the Academy's Library at the National Special Libraries Association meeting in Pittsburgh in June.

Relation of the Academy to State. Mr. Frank N. Wallace reported that the Legislature would be asked to appropriate \$4,000.00 for the publication of next year's Proceedings.

Invitations. Dr. Ralph Cleland received an invitation to hold the 1957 meeting on the campus of DePauw University.

Membership. Dr. H. R. Youse presented a preliminary total of 33 nominees for membership in the Academy.

Program. Dr. Charles B. Heiser, Jr., reported that all arrangements had been completed for the meeting.

Junior Academy. Dr. H. H. Michaud reported that the twenty-third annual meeting of the Indiana Junior Academy of Science was held Saturday, October 15, 1955, at the University of Notre Dame. Three hundred and eighty high school students, teachers and guests registered at the meeting. This was the largest attendance of any Junior Academy meeting ever held with the exception of the combined conference with the Purdue Sci-Math Assembly held the previous year at Purdue.

The program included talks on careers in science by faculty members of the Notre Dame staff, visits to instructional and research laboratories and the usual exhibits and papers by members of high school science clubs. The opportunity to visit with the staff and to see the progress of scientific research at the University is stimulating to high school students and teachers.

Three new science clubs have been enrolled in the Junior Academy since the last report. They include the Science Club, Lincoln High School, Highland; the Phi-Chem Club, Our Lady of Providence High School, Clarksville; and the Junior Academy of Science Club, South Side High School, Fort Wayne. There are forty-seven clubs listed on the present roll of the Junior Academy.

The twenty-fourth annual meeting of the Junior Academy will convene this Saturday, October 13. The entire program of exhibits, papers and career conferences will be held at Jordan Hall. We are especially grateful for the splendid cooperation of Dr. Charles B. Heiser, Chairman of the Program Committee, and the members of the University staff for the special arrangements for student conferences in science and conducted visits to scientific laboratories.

Fourteen papers by Junior Academy members will be read during the afternoon session.

The Junior Academy of Science deserves a fair share of credit for promoting interest in science projects that lead toward greater participation in the regional and national science fairs, and the state and national science talent searches. Many of the students who have entered one to several of these activities during their secondary school years have become top ranking students at the college level. Many have already reached the professional status in their scientific careers.

As State Sponsor, I would like to extend a special invitation to everyone to attend the program of the Junior Academy tomorrow.

Representative on Council of A.A.A.S. Dr. Ralph Lefler attended the meetings of the council and Academy conference. The 1957 annual meeting is to be held in Indianapolis. An experimental program for encouraging the development of high school science libraries is in effect. Indiana high schools are participating. The science teacher improvement program of the A.A.A.S. has a grant of \$300,000 to support their 5-point program with principal emphasis on the sciences. Detailed information is to be found in issues of *Science*.

Indiana Science Talent Search. One hundred thirty-four (134) high school seniors completed entry requirements for the 1955-56 Science Talent Search. This is a gain of 28 students over the previous year.

One hundred nineteen (119) of these students will attend 37 colleges, 90 in 17 Indiana colleges and 23 in 20 out-of-state schools.

The search in Indiana has encouraged colleges and universities to make scholarship aid available to participants who must have financial aid to attend college. Scholarship aid to these students amounts to more than 30 times the cost of the search, or our cost of operation amounts to only 3.1% of the total scholarship aid which these students will receive.

The culminating program for participants, The Junior Scientists' Assembly, was held on March 24, 1956, in Indianapolis. In addition to the exhibit of projects by the Indiana Winner-Honorable Mention Group and the usual program at the Honor's Luncheon, our Winner-Honorable Mention students and their sponsoring teachers were the guests of the Research Division of the Eli Lilly Company during the day, Friday, March 23, and of the Allison Division of General Motors for Friday evening.

State wide news coverage was provided by the *Indianapolis News* and the *Indianapolis Times*.

We are grateful for the financial support provided by the Allison Division of General Motors, the Eli Lilly Company and the Indianapolis Industrial Exposition, an activity of the Indianapolis Chamber of Commerce.

We expect to hold the Junior Scientists' Assembly for this school year on March 23, 1957.

A unanimous vote of appreciation was given Dr. Winona H. Welch for her service on this committee, as she finds it necessary to withdraw because of other added duties.

Dr. Lefler also reported on the eight Science Fairs held in Indiana during the spring of 1956. Two finalists from the Senior division were chosen in each of the eight Regional Fair areas. These finalists, accompanied by their sponsoring teachers, the director of the Regional Fair, and a newspaper representative from the region made the trip to Oklahoma City for the National Science Fair in May on planes which were chartered by the Indiana Medical Association at a cost of about \$3500.

It is expected that more than 1000 Indiana students will participate in Indiana regional science fairs during this school year.

Financing of the Academy Science Youth Program. Professor Lefler outlined possible ways and means of raising funds for this work.

Science Education Committee. Dr. R. Armacost recommended that the name of this committee be changed to "Science Teaching Improvement Committee" and an annual program initiated.

Financial Status of Academy. Dr. P. D. Edwards read the proposal of his committee that the annual dues for members of the Indiana Academy of Science be increased from \$2.00 per year to \$4.00 per year. A student member classification to be established for undergraduate students at \$2.00 per year to become effective in 1957.

New Business.

Upon recommendation of Dr. Frank Welcher, treasurer, dues will not be collected, except those of new members, during this meeting.

The meeting adjourned at 10:45 P. M.

W. A. DAILY, Secretary

MINUTES OF THE GENERAL SESSION

INDIANA UNIVERSITY, OCTOBER 12, 1956

Dr. John W. Ashton, Vice-President of Indiana University, welcomed the Indiana Academy of Science to the Bloomington campus. A response was given by Dr. Raymond E. Girton, President of the Indiana Academy of Science.

The minutes of the Executive Committee were read and approved.

Dr. O. B. Christy presented a short biographical sketch of members who had died during the year. They were: William M. Tucker, Bert R. Mull, Sayers J. Miller, Albert R. Bechtel, Alfred C. Kinsey and William Lowe Bryan.

Dr. Charles Deiss, Chairman of the Department of Geology, Indiana University, presented an illustrated lecture entitled, "Geology of Indiana's Mineral Resources."

The meeting adjourned at 10:45 A. M.

Sectional meetings then began with a recess for lunch, after which meetings were resumed.

The annual dinner was held in Rooms A, B, C, and D, Union Building.

Vice-President John Mizelle introduced the guests and officers at the speakers' table. It was noted that Dr. T. G. Yuncker and Dr. Ralph E. Cleland had received Golden Jubilee Merit Citations from the American Botanical Society during its 50th anniversary banquet at the University of Connecticut, August 29, 1956.

Mrs. Fay K. Daily presented the following resolutions:

Whereas:

The Indiana Academy of Science was invited to hold its 72nd annual meeting at Indiana University where careful preparation and hospitality have made our visit both comfortable and rewarding, and

Whereas:

We have been privileged to visit the new Jordan Hall, a beautiful and commodious structure which will be of great value in continuance of the high quality of work done by the scientific staff and students of Indiana University, be it

Resolved:

That President Herman B Wells be thanked for his welcome to Indiana University campus; that Dr. C. B. Heiser, Jr., and his committee receive our heartfelt appreciation for the various appointments; that our officers and many other committees, general program speakers, as well as sectional chairmen be commended for their efforts to make this a very successful meeting.

It was recommended that a copy of these resolutions be sent Pres. Wells and Dr. Heiser.

Dr. H. R. Youse presented a tentative list of 50 applicants for membership. These were duly elected.

The Nominations Committee report was given by the chairman, A. H. Meyer. Divisional Chairmen for 1957 will be: Anthropology, Dr. William R. Adams, Bloomington, Indiana; Bacteriology, Dr. Edward W. Shrigley, Indiana University; Botany, Dr. Alton A. Lindsey, Purdue University; Chemistry, Dr. Robert B. Fischer, Indiana University; Entomology, Mr. Howard O. Deay, Purdue University; Geology and Geography, Dr. T. G. Perry, Indiana University; History of Science, Prof. Daniel Den Uyl, Purdue University; Mathematics, to be appointed; Physics, Prof. Malcolm Correll, DePauw University; Plant Taxonomy, Dr. John E. Pelton, Butler University; Psychology, Dr. Kenneth M. Michels, Purdue University; Zoology, Dr. Eliot Williams, Wabash College.

The following members were recommended to serve as 1957 officers: President, Dr. Willis H. Johnson, Wabash College; Vice-President, Mr. W. A. Daily, Eli Lilly and Company; Secretary, Dr. Harry E. Crull, Butler University; Treasurer, Dr. Frank Welcher, Indiana University, Adult Education Center, Indianapolis; Editor, Dr. Richard A. Laubengayer, Wabash College; Press Secretary, Mr. James Clark, Conservation Department, Indianapolis.

President Girton gave his presidential address entitled, "The Capture and Use of Sunlight."

The 72nd annual fall meeting of the Indiana Academy of Science with a general attendance of 431 and a dinner attendance of 102 was adjourned.

W. A. DAILY,
Secretary

INDEX

NEW MEMBERS FOR 1956

Barber, Dr. Stanley A., Agronomy Department, Purdue University, West Lafayette, Ind.	G
Barton, Dr. Jay II, St. Joseph's College, Collegeville, Ind.	
Bechert, Charles H., Indiana Department of Conservation, 311 W. Washington St., Indianapolis, Ind.	G, H of S
Bell, Prof. Marvin R., Indiana State Teachers College, Terre Haute, Ind.	G, Bo
Bessy, Dr. William, Butler University, Indianapolis, Ind.	Ph
Biebel, Mr. Paul Joseph, Botany Department, Indiana University, Bloomington, Ind.	Bo
Borrini, Dr. Tiziano, Corso Cavour 2, Novara, Italy	Bio
Boyer, Mr. Marion Clifford, 1330 W. Michigan St., Indianapolis, Ind.	G
Brammer, Beatrice Hicks, 85 W. Sixth St., Peru, Ind.	Bac
Bray, Ralph, Physics Department, Purdue University, West Lafayette, Ind.	Ph
Bretscher, Dr. Manuel Martin, Department of Physics, Valparaiso University, Valparaiso, Ind.	Ph
Brett, Dr. William John, Indiana State Teachers College, Terre Haute, Ind.	Zo
Brumbaugh, Mr. Joe H., Department of Botany, Wabash College, Crawfordsville, Ind.	PT
Creek, Mr. Robert Omer, Zoology Department, Indiana University, Bloomington, Ind.	Zo
Deters, Mr. John F., Valparaiso University, Valparaiso, Ind.	Ch
Diehl, Mr. Frederick P., 3803 Gettysburg Road, Camp Hill, Pa.	Ent
Duncan, Mr. W. G. III, 219 Lincoln St., West Lafayette, Ind.	
Dunkin, Mr. Joseph S., 235 E. Main, Flora, Ind.	Bo
Edington, Mr. John Ward, R. R. 1, Straughn, Ind.	Bac
Fan, Prof. Hsu Yun, Physics Department, Purdue University, West Lafayette, Ind.	Ph
Ferm, Dr. Vergil Harkness, Anatomy Department, Indiana Uni- versity, Bloomington, Ind.	An, Zo
Fraser, Prof. Dean, Bacteriology Department, Indiana University, Bloomington, Ind.	Bac
Gaddis, Dr. S. W., Indiana State Teachers College, Terre Haute, Ind.	Ch
Gerritsen, A. N., Physics Department, Purdue University, West Lafayette, Ind.	Ph, H of S
Gillman, Prof. Leonard, Purdue University, West Lafayette, Ind.	
Grollig, Rev. Francis X., S. J., West Baden College, West Baden Springs, Ind.	Ant

Hall, Dr. Marion T., Botany Department, Butler University, Indianapolis, Ind.	PT
Hanson, Dr. Robert J., Biology Department, Valparaiso University, Valparaiso, Ind.	Bac
Hook, Dr. John C., Indiana State Teachers College, Terre Haute, Ind.	G
Humbles, Mr. Jack E., R. R. No. 1, Fortville, Ind.	Zo, Bo
Johnson, John Irwin, Jr., Psychology Department, Purdue Univer- sity, West Lafayette, Ind.	Psy
Johnson, Dr. Orland E., Physics Department, Purdue University West Lafayette, Ind.	Ph
Johnston, Mr. Richard Barnett, 7450 Holliday Drive East, Indian- apolis, Ind.	Ant
Keesom, P. H., Purdue University, West Lafayette, Ind.	Ph
King, Richard Wayne, Physics Department, Purdue University, West Lafayette, Ind.	Ph
Klages, Dr. Murray, Agronomy Department, Montana State Col- lege, Bozeman, Mont.	
Knoebel, Dr. Kenneth, Physiology Department, Indiana Univer- sity, Bloomington, Ind.	Zo
Kolitschew, Dr. Konstantin, Indiana Central College, Indianapolis, Ind.	M, Ph
Kosolsombat, Mr. Samak, 2 Bangchan, Nimburi, Bangkok, Thailand	Ch
Kowitz, William T., Geography-Geology Department, Valparaiso University, Valparaiso, Ind.	Ge
Krueger, Mr. Thos. P., Anatomy Department, Indiana University, Bloomington, Ind.	Zo
Lal, Mr. Amrit, Geography Department, Indiana University, Bloomington, Ind.	G
Leth, Miss Arlene, 600 Valley Road, Itasca, Ill.	Ch
Long, Mr. Michael, Anatomy Department, Indiana University, Bloomington, Ind.	Zo
Lowry, Dr. Murrill M., Butler University, Indianapolis, Ind.	
McCoy, C. Edward, Purdue University, West Lafayette, Ind.	Ent
Michael, Edward V., R. D. No. 1, Imperial, Pa.	Ant
Malin, Bernard, Eli Lilly & Co., Dept. M-782B, Indianapolis, Ind.	Bac
Manning, Prof. Armin William, Valparaiso University, Valparaiso, Ind.	Ph
Martin, William C., Jr., Botany Department, Indiana University, Bloomington, Ind.	Bo
Meyer, L. R., 311 W. Washington St., Indianapolis, Ind.	Bo., Ent, G
Michels, Dr. Kenneth, Purdue University, West Lafayette, Ind.	Psy
Milne, C. G., 1913 N. Meridian St., Apt. 3, Indianapolis, Ind.	Bo
Moore, Harry B., Reliable Exterminators Inc., Lafayette, Ind.	Ent
Murphy, Ira Arthur, Chemistry Department, Indiana University, Bloomington, Ind.	Ch
Murphy, Richard Bullock, Department of Chemistry, University of Washington, Seattle, Wash.	Ch

Nelson, Werner L., American Potash Institute, Life Building, West Lafayette, Ind.	G
Osborn, Stephen Wynn, Chemistry Department, Indiana University, Bloomington, Ind.	Ch
Owen, Dr. Oliver, Anderson College, Anderson, Ind.	Zo
Paschall, Homer, Ball State Teachers College, Muncie, Ind.	Bi
Pearlman, Norman, Physics Department, Purdue University, West Lafayette, Ind.	Ph
Pettay, Louanna, Anthropology Department, Indiana University, Bloomington, Ind.	Ant
Phillips, Marjorie Louise, Botany Department, Indiana University, Bloomington, Ind.	Bo
Phillippe, Dr. Maurice M., Agronomy Department, Clemson Agricultural College, Clemson, S. C.	
Polzin, Wm. J., Eli Lilly & Co., 702 S. Alabama St., Indianapolis, Ind.	Bac, Bo
Proffitt, Max Arthur, Indiana State Teachers College, Terre Haute, Ind.	Zo
Ramsey, Viola, R. R. 9, Bloomington, Ind.	Ch
Rees, James Richard, Anderson College, Anderson, Ind.	Bo
Schatzlein, Frank, Zoology Department, Indiana University, Bloomington, Ind.	Zo
Schramm, J. R., Botany Department, Indiana University, Bloomington, Ind.	Bo
Schwark, Mrs. Sylvai D., Apt. 3, 179 Cambridge Blvd., Buffalo, N. Y.	Ch
Shay, J. R., Botany Department, Purdue University, West Lafayette, Ind.	Bo
Sheets, Albert, Jr., Center Grove High School, R. R. 3, Greenwood, Ind.	Zo
Siverly, Dr. R. E., Ball State Teachers College, Muncie, Ind.	Ant
Smith, John M., Indiana Geological Survey, Indiana University, Bloomington, Ind.	G
Smith, Robert E., Zoology Department, Indiana University, Bloomington, Ind.	Zo
Stanley, Robert W., Physics Department, Purdue University, West Lafayette, Ind.	Ph
Stevenson, Dr. Forrest F., Ball State Teachers College, Muncie, Ind.	Bo
Swisher, Carl L., 412 N. Dill, Muncie, Ind.	G
Talvanheimo, Dr. Gerhardt, Houdry Process Corporation, Marcus Hook, Pa.	
Thornburg, Noel G., 219 N. Couluert St., Muncie, Ind.	Bo
Turbes, Calvin C., Department of Anatomy, Indiana University, Bloomington, Ind.	Ch
White, Harold K., Box 273, Hanover, Ind.	Ch
White, Joe Lloyd, Agronomy Department, Purdue University, West Lafayette, Ind.	G

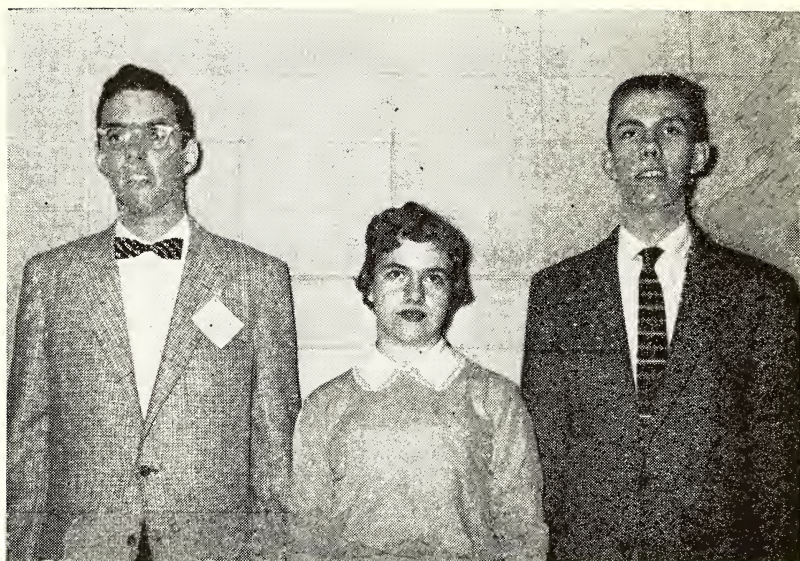
NEW MEMBERS

19d

Worrell, Francis T., Physics Department, DePauw University, Greencastle, Ind.	Ph
Yarian, Dean Robert, Department of Chemistry, University of Washington, Seattle, Wash.	Ch
Zakrzewska, Miss Barbara, Geography Department, Indiana University, Bloomington, Ind.	G
Zeller, Frank J., Zoology Department, Indiana University, Bloom- ington, Ind.	Zo
Zimmerman, Harold A., 2218 Linden St., Muncie, Ind.	Zo

INDIANA JUNIOR ACADEMY OF SCIENCE

Junior Academy of Science, South Side High School, 3500 S. Calhoun, Fort Wayne, Ind.	All branches
Providence Phy-Chem Club, Our Lady of Providence High School, State Highway No. 62, Clarksville, Ind.	Ch



Officers of the Junior Academy of Science for 1956: (l. to r.) President, Roger Cuffey, University High School, Bloomington; Secretary, Paula Erpelding, Central Catholic High School, Fort Wayne; Vice-President, Brett Nordgren, Central Junior-Senior High School, South Bend.

INDIANA JUNIOR ACADEMY OF SCIENCE

OFFICERS FOR 1956

President: ROGER CUFFEY, Science Club, University High School, Bloomington.

Vice President: BRETT NORDGREN, Science Club, Central Junior-Senior High School, South Bend.

Secretary: PAULA ERPELDING, Albertus Magnus Science Club, Central Catholic High School, Fort Wayne.

Members of the Council: Charles E. Karst, Mishawaka (1952-1956); Edith Wallace, Gary (1953-1957); Jerry Motley, Indianapolis (1954-1958); Jack Munsee, Bloomington (1955-1959); Ernest Litweiler, South Bend (1956-1960).

PROGRAM OF THE TWENTY-FOURTH ANNUAL MEETING

OCTOBER 13, 1956

Room 124, Jordan Hall, Indiana University, Bloomington, Indiana.

8:30-9:30 a.m. Registration and Placement of Exhibits, Room 129, 031, Jordan Hall.

9:30-10:30 a.m. General assembly on careers in mathematics and science by faculty representatives of Indiana University, Jordan Hall.

10:30-11:00 a.m. Visits to campus instructional and research laboratories.

11:15 a.m.-12.30 p.m. Luncheon, Union cafeteria.

1:00-2:00 p.m. Business meeting and election of officers. Room 124, Jordan Hall.

2:00-4:00 p.m. The Assembly Program. Room 124, Jordan Hall.

Papers: Roger Cuffey, presiding.

1. *Embedding Insects in Plastic* (illustrated). Don Lee, Junior Academy of Science, South Side High School, Fort Wayne.
2. *Adapting a Television Set to Short-Wave Reception*. Joseph Conrey, Phy-Chem Club, Our Lady of Providence High School, Clarksville.
3. *My Mineral Collection*. William Forgey, Biology Club, Lew Wallace High School, Gary.
4. *An Automatic Wilson Cloud Chamber*. Brett Nordgren, Central Junior Academy of Science, Central Junior-Senior High School, South Bend.
5. *A Diet Study of the Long-Eared and Saw-Whet Owls* (illustrated). Betty Jane Gough, New Castle High School, New Castle.
6. *Extraction of 17-Keto Steroids from Urine*. King Hunter, Science Club, Howe High School, Indianapolis.
7. *Effects of Toothpaste on Mouth Bacteria*. Hugh Osborne, Science Club, Howe High School, Indianapolis.
8. *Antibiotic Assays with Actinomyces*. Ronnie Heath, Science Club, Howe High School, Indianapolis.
9. *Regeneration of the Planaria* (illustrated). Illah Mae Reeves, Adams Walton Club, Adams High School, South Bend.
10. *TV D-xing*. Milton D. Cox, Nature Study Club, Arsenal Technical High School, Indianapolis.
11. *Carcinogenically Induced Cancer in Mice*. Julia Freeman, Science Club, Howe High School, Indianapolis.
12. *Study of the Paramecia*. Jim Lucas, Science Club, Howe High School, Indianapolis.
13. *Mars*. Roger Cuffey, Junior Academy of Science, University High School, Bloomington.
14. *Remote Control Wiring*. Suzanne Hess and Faris Kenney, Phy-Chem Club, Our Lady of Providence High School, Clarksville.

MINUTES

The twenty-fourth annual meeting of the Indiana Junior Academy of Science was held Saturday, October 13, 1956 in the auditorium of Jordan Hall, Indiana University, Bloomington, Indiana.

A total of fourteen science projects and exhibits by high school students were displayed in room 129 of Jordan Hall beginning at 8:30 a. m. The outstanding exhibits included a vacuum bailer, a television set adapted to short-wave reception, a mineral collection, a demonstration study of paramecia, an insect collection embedded in plastic, an automatic Wilson cloud chamber, a model showing remote control wiring, a flat cathode-ray tube, and a demonstration of TV D-xing.

A general assembly was held in the auditorium from 9:30-10:40 a. m., after which conferences in science and mathematics were conducted by members of the faculty of Indiana University. Faculty representatives of the University met with students according to their interests in anthropology, astronomy, bacteriology, botany, chemistry, geology, mathematics, physics, psychology, and zoology. The members of the Junior Academy appreciated the efforts of the University staff in offering such a wide range of scientific areas for discussion.

Following at 10:30, guided tours to the instructional and research laboratories of Indiana University were conducted by faculty members.

The annual business meeting was called to order at 1:00 p. m. in the auditorium of Jordan Hall with president, Roger Cuffey presiding.

The president introduced the other officers, vice-president, Brett Nordgren, Junior Izaak Walton Science Club, Central High School, South Bend, and secretary, Paula Erpelding, Albertus Magnus Science Club, Central Catholic High School, Fort Wayne.

The minutes of the 1955 meeting were reviewed by the secretary.

Professor R. W. Lefler, Purdue University, chairman of the Indiana Science Talent Search committee explained the procedure for entering the Science Talent Search. In reviewing the history of the Science Talent Search, he stated that 119 of the students from Indiana who entered the contest last year are now in college. 62 of these were awarded scholarships.

He also called attention to the fact that nine regional science fairs are scheduled for 1957 at the following colleges: Valparaiso University; Goshen College; Purdue University Center, Fort Wayne; Purdue University; DePauw University; Indiana University Medical Center, Indianapolis; Earlham College; Indiana University; Evansville College.

Professor Lefler explained that two finalists were chosen from the senior division of each regional fair, who will be awarded an all expense paid trip to the National Science Fair to be held in San Francisco in May of 1957.

Professor Lefler closed his talk with the following encouraging words: "Good luck! Hard work always pays great dividends in the end."

The next item of the business meeting was the election of officers. A list of nominees was submitted by the council and additional nominations were accepted from the floor. The following officers were elected to carry on the activities of the Junior Academy during 1957: president,

Betty Jane Gough, Science Club, New Castle High School, New Castle; vice-president, Wilfred Day, Phy-Chem Club, Our Lady of Providence High School, Clarksville; secretary, Margaret Reynolds, Science Club, Washington High School, Indianapolis.

The Junior Academy Council reported the selection of Mrs. Elizabeth H. Crider, science teacher, Washington High School, Indianapolis, as the new council member to replace Mr. Charles E. Karst, Mishawaka, whose term expired. Each council member serves a term of five years.

Donald Lee, South Side High School, Fort Wayne, opened the program of papers with an illustration of the step by step process of embedding insects in plastics.

Joseph Conrey, Phy-Chem Club, Our Lady of Providence High School, Clarksville, whose paper was titled, "Adapting a Television Set to Short Wave Reception," showed how he converted his own TV set into a short wave receiver.

A large mineral collection, consisting of rocks from all over the world was exhibited by William Forgey, Biology Club, Lew Wallace High School, Gary. His most outstanding specimens included gold ore, silver ore, white gold and a very interesting stalagmite.

Brett Nordgren, Junior Izaak Walton Club, Central High School, South Bend, with the assistance of Dick Dunbar, demonstrated his Automatic Wilson Cloud Chamber. He explained that since he couldn't obtain one for use in his project, he built his own.

With the use of kodachrome slides, Betty Jane Gough illustrated a diet study of Long-eared and Saw-whet owls.

Extraction of 17-Keto Steroids from Urine was the topic presented by King Hunter, Science Club, Howe High School, Indianapolis. He reviewed the step by step process in the preparation of Keto steroids.

A very interesting and amusing account of the effects of toothpaste on mouth bacteria was submitted by Hugh Osborne, Science Club, Howe High School, Indianapolis.

Also representing Howe High School was Ronnie Heath, whose paper was entitled, "Antibiotic Assays with Actinomyces."

Illah Mae Reeve, Adams Walton Club, Howe High School, Indianapolis, illustrated results calculated from her experiments on the regeneration of the planaria. As a result she concluded that the anterior end regenerated more quickly and produced healthier planaria.

A chart consisting of a map surrounded by photographs, expressing phenomenal TV reception, was used by Milton Cox, Nature Study Club, Arsenal Technical High, Indianapolis, in presenting his paper, TV D-xing.

Julia Freeman, Science Club, Howe High School, Indianapolis, showed the results of carcinogenically induced cancer in mice. Her monthly calculated observations showed the rapid growth of cancer.

Study of the paramecia was the next subject submitted by Jim Lucas, Howe High School, Indianapolis.

The next talk given by Roger Cuffey, University High School, Bloomington, whose project dealt with Mars, was highlighted by a slide which showed the trends of the dust paths of Mars.

The concluding topic was Remote Control Wiring, which was studied and explained by Suzanne Hess and Faris Kenney, Phy-Chem Club, Our Lady of Providence High School, Clarksville. They sketched and compared on the board the Westinghouse model and the Remcon model.

Miss Jerry Motley announced that the "Best Boy" award for 1957 would go to Brett Nordgren, Izaak Walton Club, Central High School, South Bend, and that the "Best Girl" award for 1957 to Betty Jane Gough, Science Club, New Castle High School, New Castle.

The winners of these awards are chosen by the Junior Academy Council on the basis of information submitted by science club sponsors and a personal interview with the student. The recipients of the award are given a year's membership in the American Association for the Advancement of Science and will receive its monthly publication, "The Scientific Monthly."

Those receiving honorable mention awards were Illah Mae Reeve, Adams High School, South Bend, Roger Cuffey, University High School, Bloomington, and King Hunter, Howe High School, Indianapolis.

Forty-seven high school science clubs are affiliated with the Junior Academy of Science. This year we gained two new members: Phy-Chem Club, Our Lady of Providence High School, Clarksville; Junior Academy, South Side High School, Fort Wayne.

The Junior Academy will meet at DePauw University in the Fall of 1957. The president urged all club members and sponsors to participate by preparing papers and exhibits.

After expressing his appreciation to Indiana University, to all who participated and to those who attended, the president, Roger Cuffey, adjourned the meeting.

PAULA ERPELDING,
Secretary

INDIANA JUNIOR ACADEMY OF SCIENCE CLUBS

FALL 1956

<i>Town</i>	<i>School and Club</i>	<i>Sponsor</i>
1. Attica	H. S., Sci-Math (1949)	J. Claude Daugherty
2. Bedford	H. S., Science (1951)	Elmer Wright
3. Bloomington	H. S., National Scientific Honor Society (1931)	Harold A. Stewart
4. Bloomington	University H. S., Jr. Academy (1938)	Jack Munsee
5. Chesterton	H. S., Science (1954)	Robert McCord
6. Clarksville	Our Lady of Providence H. S., Phy-Chem (1956)	Sister Mary Blanche
7. Clayton	H. S., Jr. Academy (1951)	Howard C. Lewis
8. Crawfordsville	H. S., Up-N-Atom (1950)	David Wells
9. Edinburg	H. S., The Alchemists (1954)	S. C. Harrell
10. Elkhart	H. S., Jr. Academy (1940)	Mrs. Evelyn Wagoner Miller

<i>Town</i>	<i>School and Club</i>	<i>Sponsor</i>
11. Fort Wayne	Central H. S., Biology (1940)	Iva Spangler
12. Fort Wayne	Central Catholic H. S., Albertus Magnus Science Club (1952)	Sr. Mary Agnita S. P.
13. Fort Wayne	Elmhurst H. S., Phy-Chem (1935)	Ruth Wimmer
14. Fort Wayne	North Side H. S., Nature (1936)	Vesta Thompson
15. Fort Wayne	Jr. Academy of Science, South Side H. S. (1956)	Don Weaver Robert Weber
16. Gary	Calumet Twp., H. S., Science (1952)	
17. Gary	Edison H. S., Beaker Breakers (1949)	Mrs. Martha B. Connor
18. Gary	Lew Wallace H. S., Biology (1935)	Lola Lemon
19. Gary	Lew Wallace H. S., Klub Kem (1941)	Mrs. Helen McKenzie
20. Gary	Tolleston H. S., Biology (1952)	Edith Wallace
21. Gary	Tolleston H. S., Future Scientists of America (1949)	Arthur Kline
22. Gary	Wirt H. S., Biology (1945)	Mrs. Frances Huddleston
23. Gas City	Mississinewa Joint H. S., Science (1936)	Roy McKee
24. Griffith	H. S., Science (1953)	George M. Bunce
25. Hamlet	H. S., Science (1954)	Lawrence Cushman
26. Hammond	Morton Jr. H. S., Science (1949)	Nancy Lou Ritter
27. Highland	Science (1956)	
28. Hobart	H. S., Science (1952)	Lola Stewart
29. Indianapolis	Shortridge H. S., Naturalist's Club (1947)	Max Forsyth
30. Indianapolis	Shortridge H. S., Science (1931)	Mrs. Henrietta A. Parker
31. Indianapolis	Technical H. S., Nature (1932)	Mrs. Joan Persell C. F. Cox
32. Indianapolis	Howe H. S., Science (1949)	Jerry Motley
33. Indianapolis	Washington H. S., Science (1931)	Mrs. Elizabeth H. Crider
34. Lebanon	H. S., Jr. Explorers of Science (1953)	Helen E. Reed
35. Marion	Martin Boots Jr. H. S., Biology (1953)	John Clevenger
36. Mishawaka	H. S., Science (1936)	Darl F. Wood

<i>Town</i>	<i>School and Club</i>	<i>Sponsor</i>
37. New Albany	H. S., Science (1935)	L. S. Rose
38. New Castle	H. S., Science (1947)	Mrs. Mary Gough Robert Rinehart
39. New Haven	H. S., Phi-Chi (1954)	Keith Hunnings
40. Richmond	H. S., Science (1950)	Kathryn Coulter
41. Rossville	H. S., Science (1954)	John M. Kramer
42. Sandborn	H. S., Up and Atom (1954)	Paul D. Carter
43. South Bend	Central H. S., Jr. Izaak Walton (1939)	A. L. Smith V. C. Cripe
44. South Bend	John Adams H. S., Adams Walton (1953)	Ernest Litweiler
45. Sullivan	H. S., Camera (1939)	Ruth Hinkle
46. Terre Haute	State H. S., Senior Science (1939)	Russell McDougal
47. Valparaiso	H. S., Science (1931)	Gerald Doeden