

PROCEEDINGS

of the

Indiana Academy *of* Science

Founded December 29, 1885

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P. D. EDWARDS, EDITOR

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Spring Meeting
SPRING MILL STATE PARK
May 3 and 4, 1940

Fifty-Sixth Annual Meeting
BALL STATE TEACHERS COLLEGE
November 14, 15 and 16, 1940

MAY, 1941
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OFFICERS AND ELECTED COMMITTEES FOR 1940

OFFICERS

- President*, FRANK WALLACE, Dept. of Conservation, Indianapolis.
Vice-President, S. S. VISHER, Indiana University, Bloomington.
Secretary, W. P. ALLYN, Indiana State Teachers College, Terre Haute.
Treasurer, W. P. MORGAN, Indiana Central College, Indianapolis.
Editor, PAUL WEATHERWAX, Indiana University, Bloomington.
Press Secretary, WILL E. EDINGTON, DePauw University, Greencastle.
Trustees Academy Foundation, JOHN S. WRIGHT, Eli Lilly and Company (term expires 1940); F. B. WADE, Shortridge High School (term expires 1943)
Committee for Bonding Trustees, H. L. BRUNER, Butler University. Indianapolis; W. A. COGSHALL, Indiana University, Bloomington.
Research Grant Committee, A. L. FOLEY, Chairman, Indiana University (term expires 1941); H. W. ENDERS, Purdue University (term expires 1940); E. G. MAHIN, University of Notre Dame (term expires 1942); M. S. MARKLE, Earlham College (term expires 1944); JOHN S. WRIGHT, Indianapolis (term expires 1943); FRANK N. WALLACE, Indianapolis (ex officio); W. P. ALLYN, Indiana State Teachers College (ex officio).

DIVISIONAL CHAIRMEN

- Anthropology*, PAUL WEER, 1808 N. Delaware Street, Indianapolis.
Bacteriology, DONA GRAAM, Terre Haute.
Botany, RALPH KRIEBEL, Soil Conservation, Bedford.
Chemistry, KARL MEANS, Butler University.
Geology and Geography, WILLIAM D. THORNBURY, Indiana University.
Mathematics, CORA HENNEL, Indiana University.
Physics, J. F. MACKELL, Indiana State Teachers College.
Psychology, R. A. ACHER, Indiana State Teachers College.
Zoology, W. A. HIESTAND, Purdue University.

EXECUTIVE COMMITTEE

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

- R. A. Acher, W. P. Allyn, F. M. Andrews, J. C. Arthur, C. A. Behrens, W. M. Blanchard, W. S. Blatchley, H. L. Bruner, S. Burrage, O. B. Christy, W. A. Cogshall, Stanley Coulter, E. R. Cumings, J. J. Davis, C. C. Deam, W. E. Edington, H. E. Enders, A. L. Foley, R. C. Friesner, Dona Graam, W. G. Gingery, Cora Hennel, R. Hessler, W. A. Hiestand, Ralph Kriebel, Eli Lilly, M. W. Lyon, Jr., J. F. Mackell, E. G. Mahin, M. S. Markle, E. S. Martin, Karl Means, W. J. Moenkhaus, W. P. Morgan, D. M. Mottier, J. P. Naylor, H. A. Noyes, C. M. Palmer, F. Payne, R. R. Ramsey, L. A. Test, William D. Thornbury, S. S. Visher, F. B. Wade, F. N. Wallace, Paul Weatherwax, Paul Weer, J. S. Wright, T. G. Yuncker.

STANDING COMMITTEES

(Appointed by the President, Chairman of Each
Committee Named First)

Auditing: E. S. Martin, William Johnson.

Biological Survey: C. M. Palmer, S. R. Esten, M. W. Lyon, Jr., B. E. Montgomery, Dorothy Parker, B. H. Smith, Winona H. Welch.

Library: Walter G. Gingery, Ray C. Friesner, Nellie M. Coats.

Membership: L. A. Test, A. R. Bechtel, Floyd E. Beghtel, O. B. Christy, C. A. Deppe, F. R. Elliott, A. R. Eikenberry, R. E. Girton, D. L. Harmon, W. A. Jamieson, David Johnson, G. D. Klopp, F. A. Loew, M. S. Markle, R. E. Martin, H. G. Nester, Theodore Just, J. L. Rieb-
somer, W. D. Thornbury, S. W. Witmer.

Program: O. B. Christy, P. D. Edwards, Ralph Kriebel, C. R. Gutermuth, D. E. Miller, and Divisional Chairmen.

Publication of Proceedings: Paul Weatherwax, E. S. Conklin, J. J. Davis, C. A. Behrens, F. B. Wade, M. E. Hufford.

Relation of Academy to State: J. S. Wright, Stanley Coulter, E. Y. Guernsey, Harry J. Reed, D. A. Rothrock, F. N. Wallace.

Representative on A.A.A.S. Council: Howard E. Enders.

Nominations: John S. Wright, C. L. Porter, C. A. Malott.

Junior Academy of Science: H. E. Enders, F. E. Beghtel, F. J. Breeze, O. B. Christy, C. F. Cox, F. B. Wade, P. D. Wilkinson, M. M. Williams.

MINUTES OF THE EXECUTIVE COUNCIL

SPRING MILL STATE PARK, MAY 3, 1940

The Executive Council was called to order by the President, Frank N. Wallace, in the Lounge Room of the Spring Mill Inn at 4:45 P.M.

Officers and committees reported as follows:

Academy Trustee. F. B. Wade reported that the Trustees had authorized a research grant of \$25.00 to Dr. Visser, a grant made by the Research Grant Committee of the Academy at the fall meeting. Three grants were made: \$100.00 to Dr. Headlee at Purdue, \$50.00 to Dr. Mackell, Indiana State Teachers College, and \$25.00 to Dr. Visser, Indiana University. The first two were covered by a \$150.00 refund from the A.A.A.S. and the last of \$25.00 to Dr. Visser to be provided from the Academy Foundation Fund.

It was indicated that a complete statement of the Foundation's assets would appear in the Proceedings.

Treasurer. The Treasurer stated that expenditures of the Academy were rapidly overtaking receipts. A discussion that followed emphasized two points: first, that membership should be increased, and second, that the expenditures of the Academy should be budgeted.

It was moved and seconded that a committee be appointed annually to set up a budget for the Academy—the budget to be approved by the Executive Council and then to be adhered to during that fiscal year.

Biological Survey. The chairman gave no report but indicated that a definite plan for future action was in the making.

Editor. Dr. Weatherwax stated that one-half the galley proof was back from the printer and that the Proceedings should be completed by June 1, in time to make payment out of this year's appropriations. All costs of printing were calculated at \$1500, thus making possible a transfer of \$250 for binding at the State Library.

Library Committee. It was pointed out that the binding of all materials, property of the library, is now carried on by Miss Nellie Coats. Dr. Friesner informed the committee that much of the material published in the first fifty volumes of the Proceedings is lost, as it now stands, without an index for these volumes. It was estimated that the total cost of such an index would approximate \$850.

A motion was carried that a committee be appointed to investigate the preparation of the fifty-volume index and that the committee be given power to act if funds could be ascertained aside from the Academy funds. The President appointed the following committee: Ray C. Friesner, Chairman, Paul Weatherwax, W. P. Morgan, and Nellie Coats.

Membership Committee. Thirty-two applications for membership were submitted and unanimously elected.

Dr. Weatherwax moved that all new members be mailed the Proceedings published during the year in which the members were elected. The motion was carried.

It was also moved and carried that one hundred extra volumes of the Proceedings be published to cover this need.

Research Grant Committee. The Secretary reported that the three grants awarded by the Research Grant Committee had been paid to the grantees. The \$100 to Dr. Headlee of Purdue and \$50 to Dr. Mackell of Indiana State Teachers College were paid from the \$150 refund from the A.A.A.S., and the \$25 to Dr. Visher had been paid from the Academy Foundation Funds.

After a brief discussion, it was moved that the Division of Archaeology be hereafter known as the Division of Anthropology. The motion was carried.

A discussion followed concerning college students participating in groups at the Academy meetings on a basis somewhat comparable to the Junior Academies. It was suggested that effort be made toward this end as a test case at the Fall meeting at Muncie this year.

The President appointed Dr. Edington and Dr. Friesner on the Resolution Committee and the meeting adjourned.

An interesting program was presented following the Academy dinner. E. Y. Guernsey discussed the history and development of the Spring Mill State Park and Ralph Kriebel outlined the work of federal and state agencies in that area. Clyde A. Malott and Ray C. Friesner gave instructional talks on the geology and botany of that region. Bird hikes, field trips, and trips through the park were scheduled for the following morning.

PROGRAM OF THE WINTER MEETING

BALL STATE TEACHERS COLLEGE

November 14-16, 1941

THURSDAY, NOVEMBER 14

7:30 p. m.

Meeting of the Executive Committee.

FRIDAY, NOVEMBER 15

9:00 a. m. General Session

Selections by the Ball State Teachers College Orchestra. Professor Claude E. Palmer, Conductor.

Address of Welcome. President L. A. Pittenger, Ball State Teachers College.

Response. President Frank N. Wallace.

Business Session.

Necrology. Will E. Edington, DePauw University.

"Archaeology at the Angel Mounds Site." Glenn A. Black, Newburgh, Indiana.

"Life and Customs among the Samoans." T. G. Yuncker, DePauw University.

1:00 p. m. Sectional Meetings

6:00 p. m. Annual Dinner

Selections by Men's Glee Club. Ball State Teachers College.

Business Session.

President's Address. "Fighting the Japanese Beetle in Indiana," Frank N. Wallace, State Entomologist.

SATURDAY, NOVEMBER 16

10:00 a. m. and 2:00 p. m.

Junior Academy of Science, Program, Business Meeting, and Exhibits.

MINUTES OF THE EXECUTIVE COMMITTEE MEETING

BALL STATE TEACHERS COLLEGE, NOVEMBER 14, 1940

The Executive Committee of the Indiana Academy of Science met in the West Lounge of the Arts Building at Ball State Teachers College, Muncie, November 14, 1940. The meeting was called to order by President Wallace at 8 p. m. and the minutes of the council meeting at Spring Mill State Park, May 3, 1940 were read and approved. Officers and committees reported as follows:

Academy Trustee. Mr. John S. Wright submitted the following report of the Foundation funds of the Academy for 1939-40, which was accepted.

Receipts

| | |
|--|----------|
| Balance from previous year | \$466.20 |
| Total receipts | 232.50 |
| Plus cash balance from sale of UST4s | 266.91 |
| Total | \$965.61 |

Expenditures

| | |
|--|----------|
| S. S. Visher as per order of Research Committee | \$25.00 |
| Balance in Indiana National Bank Savings Account | 940.61 |
| Total | \$965.61 |

Assets of the Fund as of November 1, 1940

| | |
|--|------------|
| United States Treasury Bonds par | \$1,200.00 |
| United States Savings Bonds—face \$5,000.00, 1950—cost 1-20-40 | 3,750.00 |
| Consolidated Federal Farm Loan Bonds par | 1,500.00 |
| Consolidated Federal Farm Mortgage Bonds par | 1,000.00 |
| Muncie Masonic Temple Assn. First Mortgage Bond | 200.00 |
| Standard Oil Company of Indiana, 6 shares at \$25.00 | 150.00 |
| Balance in Indiana National Bank Savings Account | 940.61 |
| Total Assets | \$8,740.61 |

Auditing Committee. The chairman stated that a complete audit of the Academy books would not be made until the year's transactions of the Academy had all been entered, and that a complete audit would then be made and included in the published Proceedings.

Biological Survey. A rather comprehensive survey of the activities of the committee was submitted. A note of appreciation was expressed to members of the Academy, the State Department of Conservation, and to Mr. Deam for the publication of the Flora of Indiana. Special mention was made of the fine tribute paid to the high calibre of this work by Dean Stanley Coulter in the foreword to the book.

Some five hundred additional state and county records of flowering plants and ferns had been added to the list. Further studies are in progress on the mosses, liverworts, lichens, myxomycetes, and algae. Also additional records are being made on the dragon flies and Coleoptera.

It was stated that until the Academy may see fit to appropriate funds for the publication of the bibliography of Indiana biota, the work of the committee must be confined to arousing interest in further research on the fauna and flora of the state.

The committee recommended that a sum of fifty dollars be set aside annually by the Academy for biological survey work under the direction of the committee.

Insomuch as a fifty dollar annual grant was requested and since the funds of the Academy were henceforth to be budgeted, the President referred the report to the Research Grant Committee for consideration.

Bonding Committee. The committee reported as follows: In accordance with the action of the Executive Committee, the bonds of the two trustees of the Academy have been increased, making the total amounts and costs as indicated:

| | |
|--------------------------|---------------------|
| Treasurer | \$2,000 cost \$5.00 |
| Trustee | 5,000 cost 10.00 |
| Trustee | 5,000 cost 10.00 |
| Total cost annually..... | \$25.00 |

Investigation was made on decreasing rates per thousand on increased denominations of bonds, but it was found that the Hartford Company charges a uniform rate per thousand up to thirty thousand dollars.

The report was accepted and cost of bonding ordered paid.

Editor. The Editor submitted the following report:

The delivery of Volume 49 of the Proceedings was delayed until late in August because of the failure of the printer to meet the time requirements of the specifications. All work of editing and proof reading was done with sufficient promptness to make possible the completion of the work by June 1.

The following statistics apply to the volume:

| | |
|---|------------|
| Number of copies bound in cloth | 1,000 |
| Number of copies in paper covers..... | 600 |
| Number of pages published..... | 283 |
| Total cost of manufacture..... | \$1,198.66 |
| Cost of reprints ordered for Academy or furnished gratis..... | 33.31 |
| Cost of editing for assistant, postage, supplies..... | 169.65 |
| Total cost of publication | \$1,401.62 |

In view of the condition of the treasury, the cost of publication was held as low as possible, and the only part of the cost of manufacture charged to the Academy was the bill of \$168.00 for engraving. The returns from authors for reprints will cancel this amount. The cost of printing as estimated at the end of the fiscal year proved to be \$57.70 more than the actual cost, and this amount of our appropriation necessarily reverted to the state. The cost per printed page for this volume was considerably less than last year. A part of this difference is due to the variable nature of the composition of material of the kind published, but a part of it came from the new plan of awarding contracts for state printing.

The report of the Editor was accepted.

Library Committee. In the absence of the chairman, Dr. Friesner indicated that the library was receiving only about 58% of the exchanges

received in the past because of the lack of exchange for foreign publications. The problem of financing the binding of materials at the library was referred to the budget committee.

Membership Committee. It was stated that a total of thirty-six applications for membership had been submitted and prospects of more were in the offing. It was emphasized that every Academy member might well consider himself a member of the committee and feel responsible for interesting all good prospects in the aims and objectives of the Academy.

Press Secretary. The Secretary reported as follows:

The Virginia Academy of Science is conducting a questionnaire as to what state academies are doing and should do to make their services to the state more effective. The Press Secretary received such a questionnaire and offered the following suggestions: A state academy should stress the importance of the scientific attitude toward scientific matters coming before the Legislature. It should endeavor to secure funds to insure the carrying on of certain research projects not specifically provided for otherwise by universities, colleges, or the state. These projects may be individual research or general research that has been neglected in the state, such as wild life, etc. The Academy should attempt through membership in the Academy the cooperation of all scientific men of the state, including medical men, engineers, industrialists, etc. Thus the Academy will be in a better position to influence legislation that will protect the resources of the state. The Academy through its membership should insure greater sympathy and understanding, and a closer cooperation between the state supported institutions and similar private institutions carrying on scientific work. The Academy should insist on the scientific approach to many of the social problems confronting the state. Also all data should be treated in a scientific manner by trained workers, and the Academy should insist that scientific findings be acted on without regard for political expediency or exploitation.

The usual reports of the Press Secretary to Science and the newspapers for the past winter and spring meetings have been made. Publicity of the Terre Haute meeting was secured through the fine cooperation of the Publicity Director of the Indiana State Teachers College.

The report was accepted.

Relations of the Academy to the State. John S. Wright stated that the usual request for \$1500.00 from the State as an aid in financing the publication of the Proceedings had been made, and that it was anticipated that this amount would be granted.

Research Grant Committee. Dr. Foley regretted that only one application for a research grant had been submitted to the committee and this request came from the State of Ohio. It was recommended that the request be deferred for further consideration and investigation.

A brief report was made on the progress of the work of grantees of the previous year. A grant of \$25.00 to Dr. S. S. Visher had been used for student help in preparing maps on drouth studies in Indiana. A grant of \$50.00 to J. F. Mackell for studies of the floating needle and a grant of \$100.00 to W. H. Headlee for studies on human intestinal parasites in urban and rural communities, were not all spent by the grantees. The grantees requested that the remainder of the funds be spent in furthering these studies.

It was also stated that a previous grant of \$150.00 to H. T. Briscoe had been expended for a standard condenser and accessory equipment

for the study of dielectric constants of certain organic compounds and that Dr. Briscoe respectfully requested that he be permitted to continue the use of this apparatus in further studies.

The requests by the grantees to utilize the unused portions of the grants and equipment for further research in the respective fields were approved by the committee.

Treasurer. The Treasurer gave a tentative financial report for the Academy as of January 1, to October 31, 1939.

His final report, approved by the Auditing Committee at the end of the fiscal year, 1940, was as follows:

Receipts

| | |
|---|------------|
| Balance on hand January 1, 1940 | \$202.96 |
| Dues and initiation fees | 809.00 |
| A.A.A.S. refund for research grants | 150.00 |
| Foundation Fund for research grant | 25.00 |
| Gift designated for payment of editorial work on fifty-year index of Proceedings | 250.00 |
| Sale of Proceedings | 12.25 |
| Author's reprints Vol. No. 48 | 36.86 |
| Author's reprints Vol. No. 49 | 84.08 |
| | <hr/> |
| | \$1,570.15 |

Disbursements

| | |
|--|------------|
| 1—Program Committee | \$135.26 |
| 2—Editor (all items of expense) | 172.65 |
| 3—Expenses of Secretary | 53.35 |
| 4—Expenses of Treasurer | 55.00 |
| 5—Mailing Proceedings | 19.74 |
| 6—Stationery | 44.37 |
| 7—Indianapolis Engraving Co. | 168.17 |
| 8—Junior Academy Bulletins | 20.00 |
| 9—Surety Bond and Safety Deposit Box | 30.50 |
| 10—Research Grant to W. H. Headlee | 100.00 |
| 11—Research Grant to J. F. Mackell | 50.00 |
| 12—Research Grant to S. S. Visher | 25.00 |
| 13—G. H. Smith preparation of index | 250.00 |
| 14—Academy Foundation Fund | 250.00 |
| 15—Returned checks from members | 2.00 |
| | <hr/> |
| | \$1,376.04 |
| Bank balance | 194.11 |
| | <hr/> |
| | \$1,570.15 |

(Signed) W. P. MORGAN, *Treasurer*,

(Signed) E. S. MARTIN }
(Signed) WM. JOHNSON } *Auditing Committee.*

Junior Academy of Science. Dr. Enders expressed deep regret in the loss by death of the young president, Jack Wilkie, of the Indiana Junior Academy of Science.

It was stated that three new Junior Academy clubs had been admitted during the year and two other applications were now in the hands of the committee. Some adjustments have been made in the status of the Junior Academies during the year; yet thirty-five clubs have been

actively engaged under the direction of the sponsors. It was added that the cooperative relationship with the Illinois Academy of Science and other States in the publication of "Science Aids Service" has contributed much to the interest in the Junior Academy. It was recommended that Academy authorize the usual \$20.00 to Mr. Astell, editor, to further this cooperative activity.

The report was accepted and the request that \$20.00 to Mr. Astell be given to assist in the publication of "Science Aids Service" was approved.

Relation of Academy to A.A.A.S. It was explained that heretofore the Indiana Academy had received a \$150.00 research refund from the A.A.A.S. and, it was believed, that more funds could be made available. It was suggested that an effort be made to interest the membership of the Academy in membership in the A.A.A.S., thus broadening the basis for a research refund from that organization. It was moved and carried that a notice, explaining the advantages of the A.A.A.S., accompany the regular announcements sent to the Academy membership.

Committee for the Preparation of the First Fifty Volume Index of Academy Proceedings. The Executive Committee was informed that the index should be ready for typing by the end of the year and probably available for distribution by the time for mailing the 1941 Proceedings. It was estimated that the index would contain about 350 pages and cost some \$1300 for 1500 copies. A discussion followed concerning methods for financing the publication. It was decided that subscriptions from libraries and from the Academy membership would possibly be adequate.

Committee on Nominations. The committee submitted the following recommendations as Fellows of the Academy: Karl Means of Butler University and R. E. Cleland of Indiana University. Recommendations approved.

New Business. The President appointed the Invitations Committee: O. B. Christy, J. J. Davis, and B. H. Smith. The Resolutions Committee was also named: C. M. Palmer, C. A. Malott, and Ray C. Friesner.

Following a discussion on the eligibility for publication of papers in the Proceedings of the Academy, it was moved by Dr. Weatherwax and approved by the Executive Committee that the matter of eligibility for publication in the Proceedings be referred to the Committee on Publication of the Proceedings for study and report.

The subject of the preparation of a classified file of the Academy membership according to the fields of scientific interest was placed before the committee. It was moved that the editor be authorized to secure the necessary information and publish such a list for the Academy membership. Carried.

There was no other business, and the meeting adjourned.

MINUTES OF THE GENERAL SESSION

Friday, November 15, 1940

President L. A. Pittenger of Ball State Teachers College extended a welcome to the Indiana Academy of Science. President Wallace responded in behalf of the Academy. The College Orchestra under the direction of Professor Palmer, entertained with a brief recital.

A brief business session followed. The minutes of the Executive Committee meeting of Thursday evening were read by the Secretary and approved by the Academy.

Will E. Edington presented the necrology for the Academy and spoke briefly of the life work of some eighteen members of the Academy who died during the year.

Glenn A. Black gave an illustrated lecture on "Archaeology at the Angel Mounds Site" and Dr. Yuncker followed with a discussion of the "Life and Customs among the Samoans."

Following the annual banquet, the Membership Committee presented the names of thirty-six applicants for membership in the Academy.

The Nominating Committee submitted the following nominations for officers of the Academy for 1941: *President*, Paul Weatherwax, Indiana University; *Vice-President*, Edward F. Degering, Purdue University; *Secretary*, Winona H. Welch, DePauw University; *Treasurer*, W. P. Morgan, Indiana Central College; *Editor*, P. D. Edwards, Ball State Teachers College; and *Press Secretary*, W. E. Edington, DePauw University. The following were nominated for election as Fellows of the Academy: Karl Means, Butler University, and R. E. Cleland, Indiana University.

The Secretary was instructed to cast a unanimous vote of the Academy for the election of these nominees.

The Divisional Chairman elected in the sectional meetings for 1941 were announced as follows: *Anthropology*, T. B. Noble, Indianapolis; *Bacteriology*, C. G. Culbertson, Indiana University Medical Center; *Botany*, R. E. Cleland, Indiana University; *Chemistry*, J. L. Riebsomer, DePauw University; *Geology and Geography*, Robert Karpinski, Indiana State Teachers College; *Mathematics*, W. E. Edington; DePauw University; *Physics*, R. E. Martin, Hanover College; *Psychology*, Harry N. Fitch, Ball State Teachers College; and *Zoology*, W. E. Martin, DePauw University.

The Academy accepted the invitation of members of DePauw University to hold the annual Fall meeting of the Academy in 1941 at Greencastle, Indiana.

The Resolutions Committee, in behalf of the Academy, expressed sincere appreciation to Ball State Teachers College, its President, Dr. Pittenger, the members of the Science Faculty, and to all others who contributed so generously to the success of the Academy meeting at Muncie.

Following the business meeting, the retiring President, Frank N. Wallace gave a very interesting address on the subject, "Fighting the Japanese Beetle in Indiana."

The 56th annual meeting of the Indiana Academy of Science was then adjourned.

W. P. ALLYN, *Secretary.*



INDIANA JUNIOR ACADEMY OF SCIENCE

Officers for 1940:

President: Jack Wilkie, Elmhurst High School, Fort Wayne
(Deceased)

Vice President: Doris Smitha, Geo. Washington High School,
Indianapolis

Secretary: Robert Karler, Mishawaka High School

Members of the Council: Anna Inskeep, (1936-1941); Lola Lemon,
(1937-1942); J. H. Otto, (1938-1943); P. L. Whitaker, (1939-44) to
succeed A. B. Krom, resigned; Roy McKee, (1940-45)

PROGRAM OF THE TENTH ANNUAL MEETING

November 16, 1940

10:00 a. m., Girls' Gymnasium, Burriss School

Doris Smitha, Vice-President, presiding

"A New Technique in Gem Cutting," Walter C. Geisler, Shortridge
High School.

Papers by Club Members:

1. "The Center of Population—What is it?" Donna Claphan, Geography
Council, North Side High School, Fort Wayne, Sponsor, F. J. Breeze.
2. "Construction and Operation of Repulsion Coil," John Southern, Otter
Creek Junior Academy of Science, North Terre Haute High School,
Sponsor, Prevo L. Whitaker.
3. "The Junior Izaak Walton League," Central Junior Academy, South
Bend, Sponsor, A. T. Smith.
4. "Synthetic Flavors," Joseph Eldredge, Central Junior Academy, Chem-
istry Club, Central High of South Bend, Sponsor, O. C. Osborn.
5. "Building and Flying Gas Model Planes," George Patterson and Leonard
Marlow, Physics Club, Arsenal Technical, Indianapolis, Sponsor, E. S.
Martin.

1:00 p. m., Auditorium, Burriss School

"Astronomy," Dr. L. S. Shively, Ball State Teachers College.

Business session.

Papers by Club Members:

1. "Activities of Our Club," Bill Ingram, Biology Club, Lew Wallace, Gary,
Sponsor, Lola Lemon.
2. "Thirty-five Millimeter Slides," Emil Szmíd, Central Junior Academy,
Photography Club, South Bend.
3. "Chemical Properties of Precious Stones," Max M. Marsh, Chemistry
Club, Shortridge High School, Indianapolis, Sponsor, Lois E. Martin.

4. "Microscopic Slide," Jean Ross, Edison Academy of Science, Edison School, Hammond, Sponsor, Max McCowen.
5. "Chemiculture at Home and School," Frances I. Scott, Nature Study Club, Arsenal Technical High School, Indianapolis, Sponsor, Charlotte L. Grant.
6. "School Plants in Kodachrome," Edison Academy of Science, Edison School, Hammond.

Report on progress of the Indiana Junior Academy. Dean Howard E. Enders, Purdue University.

MINUTES

The annual meeting of the Indiana Junior Academy of Science was held in the Girls' Gymnasium of the Burriss High School of Ball State Teachers College, Muncie, on November 16.

The members of the Junior Academy stood for a moment in a mark of respect to Jack Wilkie, of the Elmhurst High School, Fort Wayne, who was the President elected one year ago to preside at this meeting; he died in March, 1940. The Vice President, Doris Smitha, of the George Washington High School, Indianapolis, presided.

Dr. H. E. Enders stated the value of the Honorary Membership in the American Association for the Advancement of Science, given to the "Best Girl" and the "Best Boy" of each state. Frances I. Scott of the Nature Study Club, Arsenal Technical High School, Indianapolis and Robert Gericke of the Lew Wallace High School, Gary, were selected by the Council and nominated for these Honorary Memberships.



ROBERT GERICKE
Biology Club
Lew Wallace H. S., Gary



FRANCIS I. SCOTT
Nature Study Club
Technical H. S., Indianapolis

Walter C. Geisler, a lapidary, and member of the Chemistry staff of the Shortridge High School, Indianapolis, presented an interesting demonstration, "A New Technique in Gem Cutting". The five papers by members of Junior Academy Clubs, listed in the program were given. They were well presented and very interesting.

After the noon intermission, Dr. L. S. Shively of Ball State Teachers College, Muncie, gave the principal address on "Astronomy", demonstrated with motion pictures and slides.

Following this portion of the meeting, Council members were chosen. Mr. Prevo L. Whitaker, of the Otter Creek Jr. Academy Club, North Terre Haute, was chosen to succeed Mr. A. B. Krom, resigned, to serve for the unexpired period, 1939-1944. Mr. Roy McKee, Science Club, Gas City, was chosen to serve for the five ensuing years, to succeed F. J. Breeze of the North Side High School, Fort Wayne, whose term expired. The election of officers for the coming year was held. The officers chosen were: *President*, Pat Anderson, Edison High School, Hammond; *Vice President*, Mary Elizabeth Hybarger, Lew Wallace High School, Gary; *Secretary*, Mary Lou Sweet, High School, Marion.

Following the business session the program continued with the presentation of the six papers by club members, as listed in the program. All were well prepared and aroused considerable interest.

Three hundred and fifty Junior Academy members, sponsors and friends attended the meeting.

The meeting adjourned at 3:25 p. m.

DORIS SMITHA, *Vice-President*,
ROBERT KARLER, *Secretary*.

EXHIBITS

The exhibits were installed Saturday morning. Keen interest was manifested by members of the visiting clubs as well as those who demonstrated their own exhibits. The following exhibits were prepared:

1. Geography Council, North Side High School, Fort Wayne, F. J. Breeze, Sponsor: Weather maps; collection of fossils.

2. Phy-Chem Club, Elmhurst High School, Fort Wayne, Ruth Wimmer, Sponsor: Soil-less plant growth rosebush; water softening by Zeolite; falling bodies.

3. Nature Study Club, North Side High School, Fort Wayne, Howard H. Michaud and Miss Vesta Thompson, Sponsors: Fossil, rock collection, collection of leaves; club year-books.

4. Nature Study Club, Central High School, Fort Wayne, Iva Spangler, Sponsor: Insulated oven—used for sterilizing, embedding and drying slides and bacteria cultures.

5. Biology Club, Lew Wallace High School, Gary, Lola Lemon, Sponsor: Stamp collection; lizard exhibit case; insect collections; herbaria.

6. Science Club, High School, Gas City, Roy McKee, Sponsor: Terrarium; tree section vs. history on ring records; insects; leaf silhouettes; seeds; fossils; sponges, molluscs; mineral collection; live opossum.

7. Edison Academy of Science, Edison Junior High School, Hammond, Ind., Max McCowen, Sponsor: Leaf collection; terrarium; blue prints of leaves; lantern slides, in black, white and colors.

8. Physics Club, Arsenal Technical High School, Indianapolis, E. S. Martin, Sponsor: Two gas model airplanes.

9. Nature Study Club, Arsenal Technical High School, Indianapolis, Charlotte L. Grant, Sponsor: Plants in chemical solutions; studies in autumn coloration of leaves; insect collections; painting to show "interdependence of plants and animals"; paintings of birds with habitats; fruit collection; bark collection; photographs of nature objects and field trips; map of United States showing state flowers.

10. Chemistry Club, Shortridge High School, Indianapolis, Lois E. Martin, Sponsor: Semi-precious stones; show polish composition; colloidal carbon.

11. Science Club, George Washington High School, Indianapolis, J. H. Otto, Sponsor; Miniature oil field; leaf pigments; voice recording; charts-energy changes; weather charts; physics formulas; food and vitamin charts; crystals from supersaturated solutions.

12. Science Club, High School, Mishawaka, Darl F. Wood, Sponsor: Furs, seeds, medicines; book of state laws; sextant; 3 dimensional graphs of gas laws.

13. Junior Academy of Science, Central High School, South Bend, O. C. Osborne, Sponsor: Apparatus to show how synthetic flavors are made.

14. Camera Club, Junior High School, Sullivan, Ruth Hinkle, Sponsor: Book pictorial history of the year; 30 enlargements of own making.

15. Sciemus Club, High School, Valparaiso, C. O. Pauley, Sponsor: Electric eye; telegraph set; stone and chalk fossils; plaque on photography.

16. Science Club, High School, Wabash, R. D. Black, Sponsor: Exhibit of skulls, fossils and preserved specimens.

17. Science Club, Blaine Jr. High School, Muncie, J. D. Young, Sponsor: Mastodon bones (neck vertebrae, ribs and upper jaw—3 teeth 10" x 6" each).

18. Science Club, High School, Marion, Mrs. Pauline Mayhugh, Sponsor: Demonstrations of chemistry of photograph film; collection of common minerals; chemistry of cosmetics; methylene blue reduction method of milk analysis; lantern slides by students; insect collection; leaf collection; preserved specimens.

19. Biology Club, Crispus Attucks High School, Indianapolis, Mrs. Kuykendall, Sponsor: Photographs; chart showing woods used in national defense; bacteria slides; charts showing Dr. Carver's products made from peanuts and sweet potatoes; photograph of Dr. Carver.

20. Otter Creek Junior Academy of Science, North Terre Haute, Prevo L. Whitaker, Sponsor: Micro-projector and slides; insect collection; Metamorphosis of the silk worm; leaf collection.

INDIANA JUNIOR ACADEMY CLUBS

| | | | |
|-------------------------|---|------|--|
| Anderson | Science | 1936 | M. J. Brosier |
| *Bloomington | General Science, Junior H. S. | 1931 | M. M. Williams |
| | University School Science Club | 1938 | W. B. Miner |
| Cambridge City | Tri Science | 1934 | J. L. Bozarth |
| *Crawfordsville | Audubon Society, Junior H. S. | 1931 | Emmet Stout |
| East Chicago | Edison Club, Roosevelt H. S. | 1935 | Harry Apostle |
| Fort Wayne | *Geography Council (North Side H. S.) | 1932 | F. J. Breeze |
| | Nature Club (North Side H. S.) | 1936 | H. H. Michaud |
| | Phi-Chem Club | 1937 | Vesta Thompson |
| | Phy-Chem Club, Elmhurst H. S. | 1935 | H. A. Thomas |
| | | | Ruth Wimmer |
| Gary | Biology Club, Lew Wallace H. S. | 1935 | Lola Lemon |
| Gas City | Science | 1936 | Roy McKee |
| Greencastle | Science | 1936 | F. N. Jones |
| Guilford | Science | 1936 | L. B. Willis |
| Hammond | Edison Academy of Science. | | Max McCowen |
| Indianapolis | *Crispus Attucks H. S. (Biology, Chemistry, Zoology, Radio) | 1931 | C. E. Ransom, Mrs. Kuykendall, A. C. Cox, G. W. Wade, and L. C. Parker |
| | *Technical Schools—Nature Study | 1932 | Charlotte Grant |
| | *Shortridge—Chemistry Club. | 1931 | Lois Martin |
| | George Washington H. S., Science Club | 1937 | J. H. Otto |
| Lafayette | Jefferson High School—Biology | 1939 | Kenneth Dobelbower |
| Lawrenceburg | Phi-Bi-Chem | 1939 | H. P. Harrison |
| Lowell | Science | 1935 | C. N. Seeright |
| Madison | Science | 1938 | Evans Cottman |
| Marion | Science | 1936 | Pauline Mayhugh |
| Mishawaka | Science | 1936 | Darl F. Wood |
| Montmorenci | Junior Academy of Science. | 1933 | I. W. Vance |
| Mooresville | Science | 1936 | Fitzhugh Lee |
| Muncie | Science, Blaine Junior H. S. | 1934 | J. D. Young |
| New Albany | Junior Academy (Junior H. S.) | 1935 | Gladys Knott |
| North Madison | *Hilltop Nature Study Club. | 1931 | V. Shoemaker |
| North Terre Haute | Otter Creek Junior Academy Science | 1939 | Prevo L. Whitaker |
| Paoli | Science | 1935 | O. R. Whitlock |
| South Bend | Science, Central High School. | 1939 | O. C. Osborn |
| Terre Haute | Junior Science Club (Laboratory School) | 1939 | Geraldine Shontz |
| | State High Discovery Club, Senior H. S., Laboratory School | 1939 | V. C. O'Leary |
| Tipton | Natural Science Club. | | W. D. Hiatt |
| *Valparaiso | Sciemus | 1931 | C. O. Pauley |
| Wabash | Science | 1936 | R. D. Black |
| West Lafayette | Biology Senior High School. | 1933 | Anna Inskeep |

* Charter clubs.

NEW CLUBS IN 1940 AND DIVISIONS OF OLD CLUBS

| | | |
|--------------|---|-------------------|
| Elkhart | Biology Club | N. E. Adams |
| Sullivan | Camera Club | Ruth Hinkle |
| Fort Wayne | Nature Club, Central H. S. | Iva Spangler |
| South Bend | Divisions of Central High School in addition to Science Club | |
| | Junior Izaak Walton Club | Arthur L. Smith |
| | Natural Science Club | C. C. Miller |
| | Photography Club | W. W. Lauterback |
| | Radio Club | Claude Bush |
| | Camera Club I | Elmer Barnbrook |
| | Camera Club II | Rose M. Gillespie |
| Fort Wayne | Elmhurst H. S. Physics Club | M. Logan |
| Indianapolis | Technical H. S. Physics Club | Ersie Martin |