

PROCEEDINGS

of the

Indiana Academy
of Science

Founded December 29, 1885

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VOLUME 55

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R. C. CORLEY, Editor

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Sixty-First Annual Meeting

BUTLER UNIVERSITY

October 18, 19 and 20, 1945

Copies of the Proceedings may be purchased through the State Library, Indianapolis, Indiana, at \$3.00 per volume. All items sent in exchange for the Proceedings and all communications to officers of the Academy, when their names and addresses are not known, should also be sent to the State Library.

Reprints of certain parts of recent volumes of the Proceedings are available for distribution as follows: copies of the constitution and by-laws (Vol. 44), and complete membership list (Vol. 50), may be secured by members elected subsequent to the publication of those volumes; copies of the codified list of duties of officers (Vol. 48) may be secured by officers, divisional chairmen, and chairmen of committees; and copies of the necrology can be supplied to relatives and friends of the deceased members. Inquiries concerning these reprints should be addressed to the Secretary of the Academy, Dr. Winona H. Welch, DePauw University, Greencastle, Indiana.

Reprints of technical papers in recent volumes can often be secured from the authors. They cannot be supplied by the State Library nor by the officers of the Academy.

Application blanks for membership are available from members of the Membership Committee or from the Secretary.

Excerpts from the Constitution of the Indiana Academy of Science

Article I.

Sec. 2. The objects of this Academy shall be scientific research and the diffusion of knowledge concerning the various departments of science. The Academy shall promote intercourse between men engaged in scientific work, especially in Indiana, assist by investigation and discussion in developing and making known the educational, material and other resources and riches of the state, prepare for publication such reports of investigation and discussion as may further the aims and objects of the Academy as set forth in these articles.

Article II.

Sec. 2. Any person interested in any department of scientific work shall be eligible to membership. They shall pay an admission fee of one dollar and one dollar dues and thereafter an annual fee of one dollar.

Sec. 4. The Indiana Academy of Science shall actively promote the organization and operation of local science clubs in connection with secondary schools of the state. Such of these clubs as elect to become members shall constitute the Indiana Junior Academy of Science.

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OFFICERS AND COMMITTEES FOR 1945

OFFICERS

- President*, M. S. MARKLE, Earlham College.
Vice-President, J. F. MACKELL, Indiana State Teachers College.
Secretary, WINONA H. WELCH, DePauw University.
Treasurer, W. P. MORGAN, Indiana Central College.
Editor, R. C. CORLEY, Purdue University.
Press Secretary, C. M. PALMER, Butler University.
Trustees of Academy Foundation: J. S. WRIGHT, Eli Lilly & Company (term expires 1948), chairman; F. B. Wade, Shortridge High School (term expires 1947).
Committee for Bonding of Trustees: R. C. FRIESNER, Butler University chairman; Scott McCoy, Indianapolis.
Research Grant Committee: T. G. YUNCKER, DePauw University (term expires 1949) chairman; H. E. ENDERS, Purdue University, (term expires 1945); A. L. FOLEY, Indiana University, (deceased 2-13-1945), (term expires 1946); E. G. MAHIN, University of Notre Dame, (term expires 1947); J. S. WRIGHT, Indianapolis, (term expires 1948); M. S. MARKLE, Earlham College, (ex officio); Winona H. Welch, DePauw University, (ex officio).

DIVISIONAL CHAIRMEN

- Anthropology*, J. C. HOUSEHOLDER, Indianapolis.
Bacteriology, C. M. PALMER, Butler University.
Botany, R. E. GIRTON, Purdue University.
Chemistry, C. W. HOLL, Manchester College.
Geology and Geography, E. R. SMITH, DePauw University.
History of Science, JOHN S. WRIGHT, Indianapolis.
Mathematics, JUNA L. BEAL, Butler University.
Physics, R. E. MARTIN, Hanover College.
Psychology, W. N. KELLOGG, Indiana University.
Zoology, W. R. BRENNEMAN, Indiana University.

EXECUTIVE COMMITTEE

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

- Juna L. Beal, C. A. Behrens, W. R. Breneman, S. Burrage, O. B. Christy, W. A. Cogshall, R. C. Corley, E. R. Cumings, J. J. Davis, C. C. Deam, W. E. Edington, H. E. Enders, R. C. Friesner, W. G. Gingery, R. E. Girton, C. W. Holl, J. C. Householder, Theodor Just, W. N. Kellogg,

Eli Lilly, J. F. Mackell, E. G. Mahin, C. A. Malott, M. S. Markle, E. S. Martin, R. E. Martin, M. G. Mellon, W. P. Morgan, C. M. Palmer, F. Payne, J. E. Potzger, R. R. Ramsey, W. E. Ricker, E. R. Smith, J. E. Switzer, F. B. Wade, F. N. Wallace, Paul Weatherwax, Winona H. Welch, J. S. Wright, T. G. Yuncker, H. L. Bruner (deceased 3-17-1945).

BUDGET COMMITTEE

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

M. S. Markle, R. C. Corley, W. G. Gingery, W. P. Morgan, J. E. Potzger, F. N. Wallace, Winona H. Welch.

STANDING COMMITTEES

(Appointed by the President, Chairman of each committee named first)

Auditing: E. S. Martin, K. S. Means.

Biological Survey: W. E. Ricker, R. M. Kriebel, W. P. Allyn, H. O. Deay, H. H. Michaud, B. E. Montgomery, C. M. Palmer, Dorothy Parker, Winona H. Welch.

Invitations: C. M. Palmer, A. R. Bechtel, Edward Kintner, Fred Loew, S. S. Visher.

Junior Academy of Science: H. E. Enders, W. P. Allyn, O. B. Christy, F. R. Elliott, M. S. Markle, C. L. Porter, F. B. Wade, M. M. Williams, T. G. Yuncker.

Library: W. G. Gingery, Nellie M. Coats, R. C. Friesner.

Membership: J. E. Switzer, G. F. Hennion, W. E. Martin, J. E. Potzger.

Nominations: H. E. Enders, F. Payne, T. G. Yuncker.

Program: J. E. Potzger, Juna L. Beal, May Iske, Charles C. Josey.

Publication of Proceedings: R. C. Corley, P. D. Edwards, Paul Weatherwax.

Relation of Academy to State: F. N. Wallace, E. Y. Guernsey, Eli Lilly, H. J. Reed, J. S. Wright.

Representative on Council of A.A.A.S.: H. E. Enders.

Resolutions: O. B. Christy, Theodor Just, Naomi Mullendore.

SPECIAL COMMITTEE

Fifty Year Index: Ray C. Friesner, Nellie M. Coats, W. P. Morgan, F. N. Wallace, Paul Weatherwax.

PROGRAM OF THE WINTER MEETING

BUTLER UNIVERSITY

October 18-20, 1945

THURSDAY, OCTOBER 18

7:30 P. M.

Meeting of the Executive Committee

FRIDAY, OCTOBER 19

9:30 A. M. General Session

Address of Welcome. Dr. C. R. Maxam, Registrar, Butler University.

Response. President Millard S. Markle.

Necrology W. E. Edington, DePauw University.

Indiana Scientists Sketched in American Men of Science. H. E. Zabel
and Stephen S. Visher, Chicago, Illinois, and Indiana University.

Sand. Ernest Rice Smith, DePauw University.

EXHIBIT—

1. Miss Nellie Coats, New materials in the Academy Library

11:45 A. M. and 2:30 P. M. Sectional Meetings

6:30 P. M. Annual Dinner

Business Session.

President's Address. "Biology and the Postwar World." President
Millard S. Markle, Earlham College.

SATURDAY, OCTOBER 20

9:00 A. M.

Taxonomists Meeting

Entomologists Meeting

Junior Academy of Science

MINUTES OF THE EXECUTIVE COMMITTEE

INDIANAPOLIS, October 18, 1945

The Executive Committee was called to order by President Markle at 7:50 p.m., in Lincoln Room, Hotel Lincoln. Approximately forty members were in attendance. The reports of officers and committee representatives were presented and accepted as follows:

Academy Trustee. Report of John S. Wright, Frank B. Wade, and W. P. Morgan, Trustees of the Foundation Fund, Indiana Academy of Science, for the year 1944-1945.

Balance from the previous year.....	\$ 73.76
Total receipts	171.55
Bonds called	100.00
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Total	\$ 345.31
Expenditures—Union Trust Co. Fee 5% on \$253.68.....	12.69
Cash balance at Union Trust Company.....	\$ 332.62

Assets in the Fund as of October 28, 1945

Five \$1,000 U. S. Savings Bonds Series "D", Cost.....	\$ 3,750.00
\$6,400 U. S. Treasury Series "G" Bonds, Cost.....	6,400.00
Six shares Standard Oil of Indiana Common Stock, par.....	150.00
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Total at par or cost.....	\$10,300.00

Auditing Committee. E. S. Martin stated that the accounts of the Academy Trustees and the Treasurer have been carefully checked and found in good order.

Treasurer. W. P. Morgan presented a tentative financial report for the period from January 1 to October 1, 1945. His final report, approved by the Auditing Committee at the end of the year follows:

Receipts

Balance on hand January 1, 1945.....	\$1,814.54
Dues and initiation fees.....	832.00
Research grant refunded by administrator of Dr. Foley's estate.....	75.00
Author's reprints, Vol. No. 51.....	20.56
Author's reprints, Vol. No. 52.....	8.25
Author's reprints, Vol. No. 53.....	144.75
Gift memorial to Dr. H. L. Bruner.....	25.00
Designated gift.....	500.00
Publications sold by Librarian.....	6.00
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\$3,476.10

Disbursements

1—Program Committee.....	\$ 124.27	
2—Editor.....	200.00	
3—Expenses of Secretary.....	45.96	
4—Expenses of Treasurer.....	71.00	
5—Mailing Proceedings.....	34.88	
6—Stationery.....	42.41	
7—*Preparation of fifty-year index.....	70.00	
8—Surety Bond.....	25.00	
9—*Preparation "Indiana Men of Science".....	3.50	
10—*Foundation Fund.....	25.00	
11—Research grant, J. A. Potzger.....	25.00	
12—Research grant, Kenneth Wagner.....	50.00	
13—Postage refund, R. E. Girton.....	2.70	
14—Returned checks.....	9.00	
15—Cost of reprints, Vol. No. 54.....	403.90	
		\$1,132.62
†Balance on hand.....		2,343.48
		<hr/>
		\$3,476.10

* Paid from funds provided by designated gifts.

† Balance includes \$996.25 in gifts designated for the completion of work on the fifty-year index and the preparation for publication of the "Indiana Men of Science."

(Signed) W. P. Morgan, *Treasurer*.
 (Signed) ERSIE S. MARTIN } *Auditors*.
 (Signed) KARL S. MEANS }

Bonding Committee. R. C. Friesner reported that the Academy carries with the Hartford Accident and Indemnity Co. bonds in the amount of \$2000.00 for the Treasurer and \$5000.00 each for the Trustees. These are renewable annually at a total cost of \$25.00. Expiration date is November 18. The Executive Committee authorized the continuance of the bonds.

Editor and Publication of Proceedings. R. C. Corley reported an order of 1600 copies of the Proceedings and 7650 reprints.

Research Grant Committee. T. G. Yuncker announced that seven grants are in use at the present time.

Biological Survey. W. E. Ricker reported that the members of the committee were continuing their work.

Fifty-Year Index. R. C. Friesner reported the completion of the indexing. Proof reading would be started within a few days.

Library Committee. W. G. Gingery presented a report prepared by Nellie M. Coats, Academy Librarian. Ten years ago the work of the Academy Library was placed under the jurisdiction of the Catalog Division of the Indiana State Library. In 1935 there were 1030 bound volumes in the Academy Library. In 1945 the total number of bound volumes is 3801, with 217 now in the process of binding. There are 243 titles on the active list of serials. The library received as a gift from

Claude Lomax 13 volumes of ornithological periodicals. In plans presented to the Indiana Economic Council and to the State Building commission, the need for additional space for housing the library was pointed out and a request made for shelving space and for future office space for an Academy headquarters and for committee meetings in the State Library and Historical Building. The Executive Committee accepted this recommendation and authorized the Secretary to send a resolution to that effect to the Secretary of the State Building Commission.

Press Secretary. C. M. Palmer, in co-operation with the Publicity Office of Butler University, sent Academy news release to more than 250 newspapers in Indiana. The photographic file of Academy presidents and other officers is maintained as complete as possible.

Membership. J. E. Switzer presented a tentative report of 60 applications, as the final report and the election of members occur at the dinner meeting.

Junior Academy of Science. H. E. Enders announced the total of 52 Junior Clubs. Biology Club, William Wirt School, Gary, and Junior Academy Club, Franklin High School, Fort Wayne, were presented for affiliation with the Academy.

Relation of Academy to State. F. N. Wallace reported that the Budget Committee recommended an annual appropriation of \$1500.00, and the Legislature passed the appropriation.

Relation of Academy to A.A.A.S. No meeting of A.A.A.S. has been held since the last meeting of the Academy.

Nominations. H. E. Enders presented the following names for election as Fellows at the business meeting on Friday: Arthur F. Bentley, William D. Gray, Henry B. Hass, Alfred H. Meyer, and Andrey A. Potter. To the Research Grant Committee, Paul Weatherwax was nominated to complete the term of A. L. Foley, (term expiring in 1946) and H. H. Remmers to replace H. E. Enders, (term expiring in 1945). (It was Dr. Enders' personal request not be continued on the committee.) R. C. Friesner, Chairman, and Scott McCoy were nominated to succeed themselves on the committee of Bonding of Trustees.

Old Business. W. E. Edington made a progress report for the Committee on History of Science in Indiana. T. G. Yuncker, reporting for the committee appointed to canvass the possibility, of securing the affiliation of scientific organizations in Indiana with the Academy of Science, stated that no organization is interested in such affiliation at this time, and added that inasmuch as the method by which an organization may unite with the Academy has been established the members of this committee propose that said committee be discharged and that any officer or member of the Academy be free to suggest such an affiliation when deemed proper.

New Business. J. S. Wright read a letter from Mrs. H. L. Bruner in which Mrs. Bruner had sent a check for the Academy Foundation

Fund in memory of her husband and his interest in the Academy. The gift was accepted and the Secretary instructed to send a letter of thanks and appreciation to Mrs. Bruner.

J. S. Wright read the following resolution to the committee:

A RESOLUTION petitioning Congress to enact laws to effectuate the plans for a memorial to Benjamin Harrison, and to provide the necessary funds therefor.

WHEREAS, the Benjamin Harrison Memorial Commission has transmitted its report in compliance with the provisions of Section 3, Public Law No. 352, Seventy-sixth Congress, approved August 9, 1939, said report having been submitted March 21, 1941, published as House Document 154, Seventy-seventh Congress, first session and referred to the committee on the library for a suitable memorial to Benjamin Harrison;

WHEREAS, the plans as recommended will advance the conservation program in Indiana by at least one generation by accelerating the forest restoration program; and

WHEREAS, the plans are in keeping with sound postwar work; and

WHEREAS, the plan combines wise use of government money with a long range program of investment by creating a memorial of usefulness and beauty; and

WHEREAS, the proposed Harrison Memorial requires the approval of the Congress of the United States to effectuate the plan; Therefore

SECTION 1. BE IT RESOLVED BY THE INDIANA ACADEMY OF SCIENCE, an organization of nearly one thousand members representing the various scientific interests of the state, at its SIXTY-FIRST ANNUAL MEETING hereby petitions the Congress of the United States to enact into law H.R. 4006, which was introduced into the Seventy-ninth Congress, so as to effectuate the plans for a memorial to Benjamin Harrison, and to provide the needed funds for accomplishing the plans as heretofore recommended by the Benjamin Harrison Memorial Commission in its report made to the Seventy-seventh Congress, first session.

SECTION 2. That a certified copy of this resolution be sent by the secretary of the Indiana Academy of Science to the clerk of the house of representatives and to the secretary of the senate of the Seventy-ninth Congress, and to each United States senator and representative from Indiana.

The resolution was adopted and the Secretary instructed to send certified copies of same to the authorities listed in the Resolution.

It was voted to resume the holding of Spring meetings in 1946. Because of World War II no Spring meetings were held in 1943, 1944, and 1945.

The chairman of the Fifty-year Index is to be included on the Academy Budget Committee until the Index is published.

A motion was made by H. E. Enders to strike the following sentence from the By-Laws, Art. 2, Sec. 3: "Of members so nominated a number not exceeding five in any one year may, on recommendation of the Executive Committee, be elected as fellows." The motion was seconded and the recommendation carried, the item to be presented to the General Business Session Friday morning.

A motion was made by T. G. Yuncker that the President of the Academy follow the principle of continuing one member of the Nominating Committee of the previous year, for the sake of continuity of ideas presented in the committee. Motion was seconded and adopted.

Meeting adjourned at 10:10 p. m.

MINUTES OF THE GENERAL SESSION

BUTLER UNIVERSITY, October 19, 1945

Dr. C. R. Maxam, Registrar, Butler University, delivered the Address of Welcome. President Markle responded in behalf of the Academy.

W. E. Edington presented the Necrology.

Minutes of the Executive Committee meeting of October 18, 1945, were read by the Secretary and approved by the Academy. H. E. Enders explained to the General Session the reason for the proposed change in the By-Laws. F. B. Wade moved that the By-Laws be changed as recommended by the Executive Committee. J. F. Mackell seconded the motion. It was voted that the sentence be stricken from the By-Laws.

Following the annual dinner in the Travertine Room, Hotel Lincoln, J. E. Switzer presented ninety-six applications for membership. The Secretary was instructed to cast an unanimous ballot for the ninety-six applicants.

H. E. Enders read the nominations of the committee as follows: *President*, E. F. Degering, Purdue University; *Vice-President*, N. E. Pearson, Butler University; *Secretary*, Winona H. Welch, DePauw University; *Treasurer*, W. P. Morgan, Indiana Central College; *Editor*, R. C. Corley, Purdue University; and *Press Secretary*, C. M. Palmer, Butler University.

The Divisional Chairmen elected in the sectional meetings for 1946 were announced as follows: *Anthropology*, Wm. B. Adams, Bloomington; *Bacteriology*, F. A. Miller, Eli Lilly & Co., Greenfield; *Botany*, J. E. Potzger, Butler University; *Chemistry*, E. F. Degering, Purdue University; *Geology and Geography*, G. D. Koch, Indiana State Teachers College, Terre Haute; *History of Science*, W. E. Edington, DePauw University; *Mathematics*, H. E. Wolfe, Indiana University; *Physics*, K. W. Meissner, Purdue University; *Psychology*, C. C. Josey, Butler University; and *Zoology*, H. H. Vogle, Jr., Wabash College.

C. M. Palmer announced that the Committee on Invitations had accepted the invitation of Indiana State Teachers College, Terre Haute, for the 1946 Fall Meeting of the Academy.

O. B. Christy expressed on behalf of the Academy its sincere appreciation and thanks to the faculty of Butler University, the management of the Hotel Lincoln, to the program committee, the committee on Junior Academy of Science, and to the officers of the Indiana Branch of the Society of American Bacteriologists and the Indiana Section of the Mathematical Association of America for their willingness to join in the Academy program.

Vice-President Mackell introduced President Markle who delivered a splendid address on "Biology and the Postwar World."

The 61st annual meeting of the Indiana Academy of Science, with a general attendance of 281 and a dinner attendance of 124, was adjourned.

WINONA H. WELCH, *Secretary.*

TAXONOMISTS MEETING

J. E. POTZGER, Butler University, Chairman

The Plant Taxonomists held their meeting on Saturday morning at Butler University. A. T. Guard, Purdue University, was elected chairman for 1946, and Naomi Mullendore, Franklin College, Secretary.

ENTOMOLOGISTS MEETING

RALPH MORRIS, Assistant State Entomologist, Chairman

Glen E. Lehker, Purdue University, was elected chairman for 1946.

ADDITIONAL NEW MEMBERS, 1944

Bolander, Mr. Lester M., 1226 N. Temple Ave., Indianapolis 1	C
Coon, Mr. Jesse B., 624 E. 8th, Bloomington	Ph
Edmondson, Dr. Frank K., 716 S. Woodlawn, Bloomington	As
Feinberg, Mr. Mortimer, Science Hall, Psych. Dept., Indiana U., Bloomington	Ps
Garst, Miss Virginia L., De Soto	Bo
Hamilton, Mr. Dan K., 531 Federal Bldg., Louisville 2, Ky.	G
Hart, Mr. Donald M., Dept. of Chemistry, Indiana University, Bloomington	C
Hire, Dr. Charles, Dept. of Physics, Indiana University, Bloomington	Ph
Hornaday, Mr. Raymond, 578 M. D. Woodruff Place, Indianapolis 1	Ph
Klaer, Jr., Mr. Fred H., 3835 N. New Jersey St., Indianapolis 5	G
Wynd, Dr. F. L., University of Illinois, Urbana, Illinois	Bo
Zicroff, Sister Gertrude Marie, O.S.F., 3600 Cold Springs Rd., Marian College, Indianapolis 44	M

NEW MEMBERS, 1945

Adams, Dr. S. Clifford, Box 194, Hanover	G
Akers, Mr. Eugene, 621 Highwood Ave., Greencastle	Bo, C
Bailey, Mr. James C., 246 N. Smart St., Greenwood	General
Barton, Mrs. Mary F., 6048 Carrollton Ave., Indianapolis	Nature
Bechert, Mr. Charles H., 1207 N. Wallace St., Indianapolis	Hydrology
Bergdall, Miss Irene F., 2306 College Ave., Huntington	M
Bogarosh, Mr. Peter L., 318 Warren St., Phillipsburg, New Jersey	Bo
Bohnenblust, Prof. Henri Frederic, 714 East 9th St., Bloomington	M
Buehler, Mr. John A., Chemistry Dept., Indiana U., Bloomington	C
Burkett, Prof. Howard B., 325 Highfall Ave., Greencastle	C
Carnahan, Prof. Walter H., 708 Vine St., West Lafayette	M
Christian, Dr. John Edward, 825 N. Main St., West Lafayette	C
Christman, Mr. John F., 525 South 6th St., Terre Haute	C
Churchill, Mr. Paul K., 2928 Washinton Blvd., Indianapolis 5	Ph
Clark, Mr. James A., 700 Montgomery Ave., Jeffersonville	E
Cole, Dr. Versa V., 1040 W. Michigan St., Indianapolis	Pharm.
Conklin, Dr. Raymond L., 1906 E. Jackson Blvd., Elkhart	Ba, C, Ps
Cook, Dr. Donald J., 415 E. Walnut, Greencastle	C
Cougill, Mr. Kenneth R., 811 Berkley Road, Indianapolis	Conservation
Cox, Mr. Alvalon Conway, 2948 Indianapolis Ave., Indianapolis	Ph
Deese, Mr. James, 1357 E. Tenth St., Bloomington	Psy
Deiss, Prof. Charles F., 819 East 8th St., Bloomington	G
Delks, Miss Patricia, 31 N. Bolton Ave., Indianapolis 1	A
DeMoss, Prof. Lowell H., Central Normal College, Danville	B
Elbinger, Mrs. Rebecca L., 2521 Elmhurst, Detroit, Michigan	C
Everts, Miss Marilyn, 326 W. Crawford St., Elkhart	C-B
Goebel, Mr. Harold John, 701 W. Packard Ave., Fort Wayne	B

Golbach, Mr. Richard, 4703 Guilford Ave., Indianapolis 5	Everything
Grandy, Mrs. Gladys E., 717 E. 52nd St., Indianapolis	Gen Sci
Gries, Dr. George A., 901 W. Stadium Ave., West Lafayette	Bo
Hadley, Prof. Alden H., 203 W. High St., Mooresville	B
Hanske, Mr. Carl F., 901 N. Bolton Ave., Indianapolis	B-C
Harrison, Mrs. Anne Butler, 48 S. Downey Ave., Indianapolis 1	Orn
Heppel, Miss Ruth E., 626 S. Norman Ave., Evansville 14	Bo
Higinbotham, Dr. Noe, 311 North Williams St., South Bend 5	Bo
Hinchman, Mr. Max, 303 W. Fourth St., Greenfield	B
Hine, Dr. Maynard K., 327 Buckingham Drive, Indianapolis	Dentist
Huddleston, Mrs. Frances, 557 Jackson St., Gary	B
Hurlbut, Miss Zylpha D., 121 N. Tillotson Ave., Muncie	B
Hyde, Miss Julia, 666 E. Jefferson St., Franklin	B-C
James, Prof. Charles M., 136 DeHart St., W. Lafayette	Z
Jeffers, Miss Vivian D., 337 Elm Street, Lawrenceburg	B
Kelly, Miss Mary Frances, 5932 Oak Avenue, Indianapolis	A
Ketchum, Mrs. Helen M., 217 Park Ave., Elkhart	Bac
Knapp, Mr. Virgil R., Zionsville	E
Krumholz, Dr. Louis A., 730 E. Hunter Ave., Bloomington	Z
Larson, Dr. Raymond G., 255 S. College Ave., Valparaiso	C
Liaptcheff, Mr. K. K., Dept. of Zoology, Indiana U., Bloomington	Z
Lillard, Prof. Richard G., Route 3, Bloomington	Geog
Livingston, Mr. William Arnold, 427 S. Henderson St., Bloomington	Psy
Lorz, Dr. Albert P., R.R. 10, Lafayette	Genetics
Malm, Dr. Marguerite, Union Bldg., Indiana State Teachers College, Terre Haute	Psy
Martindale, Miss Evelyn C., Box 33 Manchester College, North Man- chester	C-B
McClain, Mr. John A., 601 N. East, Greenfield	B
McCreery, Mr. Gene S., 402½ S. Talley Ave., Muncie	C-B
McDougal, Mr. Russell, 2515 Deming St., Terre Haute	C, B, Ph
McKinney, Mr. Gordon R., 925 Eugene St., Indianapolis 8	Z
Meibohm, Mr. A. W., 455 South Greenwich, Valparaiso	C
Meissner, Dr. K. W., 216 South Chauncey Ave., West Lafayette	Ph
Morris, Dr. D. W., 2730 Wilson Drive, Terre Haute	Speech
Olsen, Miss Florence M., 705 5th St., Devils Lake, North Dakota	Ph
Passel, Mr. Charles F., Dept. of Geology, Indiana U., Bloomington	G
Peak, Mr. Philip, 610 North Faculty, Bloomington	M
Phillips, Mr. William F., 826 Collett Ave., Terre Haute	C
Prange, Mr. Henry C., 5721 Haverford Ave., Indianapolis	Bo, G
Pruett, Mr. John Robert, 301 N. Jefferson St., Bloomington	Ph
Rowe, Dr. Edward J., 5819 E. Washington St., No. 8, Indianapolis 1	C
Sanders, Miss Dorothy W., Sandborn	B
Schmidt, Dr. Bernardine C., Special Education Clinics IST College, Terre Haute	Psy
Schwarz, Mr. W. M., 412 Ballantine, Bloomington	Ph
Scott, Mr. Donald C., 203 S. Washington, Bloomington	Z
Sheehan, Rev. Robert J., Dept. of Biology, Univ. of Notre Dame, Notre Dame	Z

Skinner, Dr. B. F., 824 Sheridan Rd., Bloomington	Psy
Sprinkle, Mr. Howard B., R.R. 3, Muncie	C
Staab, Rev. C. J., St. Joseph's College, Collegeville	Ph
Stone, Mr. G. Raymond, 214 E. 6th St., Bloomington	Psy
Stuart, Mr. Elmer H., R.R. 6, Box 636, Indianapolis 44	C
Sturm, Dr. R. G., 1200 North Grant, West Lafayette	Eng
Suttle, Dr. John F., 508 E. 4th St., Bloomington	C
Thomas, Prof. Tracy Y., North Fee Lane, R.R. 2, Bloomington	M
Toabe, Miss Ruth, 522 East Third St., Bloomington	Bact
VerHoef, Miss Shirley, 152 S. Home Ave., Franklin	B
Volk, Dr. N. J., 865 N. Salisbury, West Lafayette	Agri
Whitesel, Miss Grace, Butler University, Indianapolis	Home Econ
Wiggam, Dr. Albert E., Box 200, Vernon	B
Williams, Miss Jane, 4231, Carrollton, Indianapolis 5	General
Williams, Prof. Kenneth P., 523 E. Third St., Bloomington	M
Williams, Miss Mary I., 316 Berkley Road, Indianapolis 8	Eng
Wilson, Mr. Francis H., 1513 Alabama St., Lafayette	Anthro
Wirsching, Mr. Robt. F., 727 Nottingham St., Indianapolis	Engin
Wood, Miss Allyn Louise, 2502 North Alabama St., Indianapolis 5	B
Woofter, Dr. J. A., Taylor University, Upland	Psy
Wyse, Prof. Olive G., 1810 South Main St., Goshen	Home Ec

JUNIOR ACADEMIES

Biology Club of William A. Wirt School, Grand Blvd. at Birch St., Gary	B
Franklin Junior Academy of Science, Archer and St. Mary's Ave., Fort Wayne	



INDIANA JUNIOR ACADEMY OF SCIENCE

OFFICERS FOR 1942-1945*

- President:* Mary Ann Stout
Elkhart, Indiana
- Vice President:* Lloyd Nevel
Mishawaka
- Secretary:* James Smith
Central High School, South Bend

OFFICERS PRO TEM FOR 1945

- President:* Richard Rhems
Central High School, South Bend
- Vice President:* Richard Gumpfer
Elkhart, Indiana
- Secretary:* Joyce Raih
Central High School, South Bend

Members of the Council: (Elected by Club Sponsors)
J. H. Otto (1943-1946); Prevo Whitaker (1944-1947);
Roy McKee (1945-1948); Darl Wood (1946-1949);
Ruth Wimmer (1945-1950)

* No meetings were held during the war period.

PROGRAM OF THE THIRTEENTH ANNUAL MEETING

BUTLER UNIVERSITY, OCTOBER 20, 1945

9:00 A.M., Jordan Hall

Exhibits, in the Zoology Laboratory, 9:00 to 10:00 A.M.

Papers, 10:00 A.M. to 12 M.

1. "Shades of the Future"—Phyllis Gouker, Senior High School, Elkhart
2. "Collecting and Mounting Insects"—Bill Kwolek, Lew Wallace High School, Gary
3. "Insects"—Edward Mockford and Dale Rice, Shortridge High School, Indianapolis
4. "Moths and Butterflies"—Dorothy Webb, Shortridge High School, Indianapolis
5. "The Model Airplane"—James McNair, Crispus Attucks High School, Indianapolis
6. "Chemiluminescence"—John Martin, Shortridge High School, Indianapolis

Business Session, and Continued Scientific Program, 1:00 to 3:30 P.M.

1. Colored Motion Pictures—Dr. Howard H. Vogel, Wabash College
 - Birds of Indiana
 - Hatching of Bobwhite Quail Eggs
 - Natural History of Indiana—Emphasis placed on social behavior of local birds and mammals
2. "A Review of Atomic Transformation produced by Nuclear Bombardment"—Lloyd Hill, Technical High School
3. "Economic Importance of Some Common Birds"—Louis Wuellner, (Lantern), Technical High School, Indianapolis
4. "Back Tracing the Wisconsin Glacier"—Francis Weber, Shortridge High School
5. "Smaller Rodents of Indiana"—Steve Wainwright, Shortridge High School
6. Talk, M. M. Williams, Club Sponsor, Bloomington High School
Report on the Progress of the Indiana Junior Academy of Science,
by Dean Howard E. Enders, State Sponsor

MINUTES

The thirteenth annual meeting of the Indiana Junior Academy of Science was held Saturday, October 20, 1945, in Room 131, Jordan Hall, Butler University, Indianapolis.

Dr. Howard E. Enders, State Sponsor of the Indiana Junior Academy and Dean of the School of Science, Purdue University, greeted the members of the Junior Academy and introduced the *pro tem* officers selected by the Council:

President, Richard Rehms, Central High School, South Bend, Indiana

Vice President, Richard Gumpfer, Elkhart, Indiana

Secretary, Joyce Raih, Central High School, South Bend, Indiana

The president *pro tem* opened the meeting by calling for the minutes of the previous meeting. They were read and approved (none being held during the period of the war), with the suggestion by Dean Enders that the minutes of the two annual meetings of the Indianapolis section of clubs be embodied in the present minutes.

The first number on the program was given by Phyllis Gouker, Senior High School, Elkhart, Indiana, on "Shades of the Future." She gave a very interesting talk on the trees of the city of Elkhart, with excellent plans for the future, additions through the help of her science club. She illustrated her talk by means of charts to cover the main points in relation to the care of the trees that have been set out.

The president then introduced Bill Kwolek of Lew Wallace High School, Gary, who gave a very interesting talk on "Collecting and Mounting Insects." Dean Enders commended Bill and pointed out the good services the clubs of the Indiana Junior Academy of Science have rendered to its members and in this respect cited the outstanding progress made by another particular student. He urged all of us to follow through with our interests in science.

The president then called on Edward Mockford and Dale Rice, both of Shortridge High School. Edward began his talk by explaining the meaning of the word "insect" and told how insects are classified and given their names. He also explained the instruments used in collecting different kinds of insects. Dale Rice then took over and explained the classification of the orders of insects by means of a chart he drew on the blackboard.

"Moths and Butterflies" was the next topic, discussed by Dorothy Webb, of Shortridge High School. She explained how and why she became interested in moths and butterflies, and explained many interesting features by pointing them out on the species which she had mounted.

The fifth speaker of the morning was James McNair of Crispus Attucks High School who represented the CPA of Indianapolis. His talk was on the "Model Airplane." He showed us a very interesting model which he had made, and explained the parts, and principles of the model airplane.

The president introduced John Martin of Shortridge High School, who gave us a series of experiments on Chemiluminescence, in a completely darkened hall to which the group adjourned for this purpose. A series of very striking experiments lighted the dark hall through a range of colors and intensities.

The meeting adjourned for luncheon.

The afternoon session was held at 1:00 P.M., Jordan Hall. Miss Ruth Wimmer, Sponsor of the Phi Chem Club, Elmhurst High School, Fort Wayne, was elected to the Council by the councilors to succeed Mr. H. H. Michaud, former sponsor of the Nature Club, North Side High School, Fort Wayne. Election of officers for the next year was then held. Dean Enders read the list of nominees and the club members balloted for and elected the following officers for the year 1946:

President: Charles Giffen, Phi Chem Club, Elmhurst High School, Fort Wayne

Vice President: Robert Reinhold, Central High School, South Bend

Secretary: Robert Lovett, Science Club, Mishawaka

The next part of the program was a series of motion pictures, in color, shown by Dr. Howard H. Vogel, Jr., Professor of Zoology at Wabash College, on birds and other animals in Indiana. Emphasis was placed on social behavior of local birds and mammals.

The president then introduced Lloyd Hill, who gave us a review of the atomic transformation by nuclear bombardment. He confined most



Bill Kwolek



Phyllis Gouker

of his talk to the neutrons of the atoms. He also explained the true meaning of radio activities of the elements.

The Council announced its choice of Phyllis Gouker of Elkhart, and Bill Kwolek of Gary, as the "Best Girl" and "Best Boy," respectively, to recommend for Honorary Membership in the American Association for the Advancement of Science.

The president then introduced Louis Wuellner, of Technical High School, who talked on "The Economic Importance of Some Common Birds." He showed pictures, by lantern, and pointed out their main characteristics of the different birds shown.

Francis Huber, Shortridge High School, talked on "Back Tracing the Wisconsin Glacier." He flashed the map of the middle western states and traced the route of the glacier.

The president introduced Steve Wainwright of Shortridge High School, who talked on "Smaller Rodents of Indiana." He told of the characteristics of the white-footed mouse, field mouse, buff-breasted mouse, leming mouse, pine mouse and the jumping mouse.

The sponsor, Mr. M. M. Williams, of the Bloomington High School, told how the members of his club developed a record of high achievement and advised us to plan our projects with our sponsor.

Dean Enders told us of the origin of the Indiana Junior Academy of Science and of the many benefits we can gain by being members. He told us that fifty-four clubs belong to the Junior Academy. Suggestions were made to keep in touch with other clubs, by means of some kind of Round Robin letter of communication between the several clubs.

The meeting was adjourned at 3:30 P.M.

JOYCE RAIH, *Secretary Pro Tem*,
Central High School, South Bend.

MEMBER CLUBS

INDIANA JUNIOR ACADEMY OF SCIENCE

<i>Town</i>	<i>Name and School</i>	<i>Date</i> <i>Organized</i>	<i>Sponsor</i>
Anderson	Science	1936	M. J. Brozier
Bedford	Phi Pi Chi	1941	W. D. Prather
Bloomington	*General Science, Jr. H. S.	1931	M. M. Williams
	University School-Science	1938	W. B. Miner
Cambridge City	Tri Science	1934	J. L. Bozarth
Crawfordsville	*Audubon Society, Jr. H. S.	1931	Emmet Stout
East Chicago	Edison Club, Roosevelt H. S. (Inactive)	1935	Harry Apostle
Elkhart	Junior Academy		N. E. Adams, Evelyn Wagoner
Fort Wayne	*Geography Council, North Side H.S.	1932	
	Nature Club, North Side H. S.	1936	Vesta Thompson
	Jr. Academy Club, Franklin H. S.	1945	Wm. A. Willer
	Phi Chem Club, North Side H. S.	1937	H. A. Thomas
	Phy Chem Club, Elmhurst H. S.	1935	Ruth Wimmer, Ralph Young Iva Spangler
Gary	Nature Club, Central H. S.		
	Biology Club, Lew Wallace H. S.	1935	Lola Lemon
	Klub Kem Club, Lew Wallace H. S.		Mrs. Helen Mackenzie
	Biology Club, Wm. A. Wirt School	1945	Mrs. Frances Huddleston
	T Square Club, Tolleston H. S.	1944	Olive Leskow
Gas City	Science Club	1936	Roy McKee
Greencastle	Science Club	1936	F. N. Jones
Guilford	Science Club	1936	L. B. Willis
Hammond	Edison Acad. of Science, Edison School	1938	
Indianapolis	*Crispus Attucks H. S.—Biology, Chemistry, Zoology and Radio	1931	Mrs. Kuykendall, A. C. Cox, G. W. Wade, L. C. Parker
	George Washington H. S. Science Club	1937	J. H. Otto
	*Technical School—Nature Study Club	1932	C. F. Cox
	*Technical School—Physics Club		Chas. Brosey
	Technical School—Chemistry Club	1942	Mr. Bolander
	*Shortridge H. S.—Chem. Club	1931	Wm. Johnson, Messrs. Wade, Block,
Lafayette	Biology Club, Jefferson H. S.	1939	Miss Wilson
Lawrenceburg	Phi-Bi-Chem	1939	H. P. Harrison
Lowell	Science Club	1935	C. N. Seeright
Madison	Science Club	1938	Evans Cottman
Marion	Science Club	1936	Pauline Mayhug, L. L. Strickland

<i>Town</i>	<i>Name and School</i>	<i>Date</i>	
		<i>Organized</i>	<i>Sponsor</i>
Mishawaka	Science Club.....	1936	Darl F. Wood
Montmorenci	Jr. Academy of Science.....	1933	
Mooresville	Science Club.....	1936	Fitzhugh Lee
Muncie	Science Club, Jr. H. S. (Blaine).....	1934	J. D. Young
New Albany	Jr. Academy of Science, Jr. H.S.....	1935	Gladys Knott
North Madison	*Hilltop Nature Study Club.....	1931	V. Shoemaker
N. Terre Haute	Otter Creek Jr. Acad. of Sci.....	1939	Prevo Whitaker
Paoli	Science Club.....	1935	
South Bend	Central H. S.....	1939	
	Central Junior Academy.....		V. C. Cripe
	(a) Junior Izaak Walton Club.....		A. L. Smith
	(b) Chemistry Club.....		F. S. Sanford
	(c) Junior Audubon Club.....		Arthur L. Smith
Sullivan	Camera Club.....		Ruth Hinkle
Terre Haute	Jr. Science Club (Laboratory School)...	1939	G. Shontz
	State Discovery Club, Sr. H. S.....	1939	W. Woodrow
	Laboratory School.....		V. C. O'Leary
Tipton	Nature Club.....	1935	W. D. Hiatt
Valparaiso	*Sciemus Club.....	1931	C. O. Pauley
Wabash	Science Club.....	1936	R. D. Black
W. Lafayette	Biology Club.....	1933	Anna Inskeep

* Charter Clubs.