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PAUL WEATHERWAX, EDITOR

Spring Meeting
New Harmony
May 12 and 13, 1939

Fifty-fifth Annual Meeting
Indiana State Teachers College
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Copies of the Proceedings may be purchased through the State Library, Indianapolis, Indiana. 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), complete membership list (Vol. 46), and supplementary membership lists (Vols. 47-49) 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. Wm. P. Allyn, Indiana State Teachers College, Terre Haute, 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.

TABLE OF CONTENTS

	PAGE
Officers and committees for 1939.....	vii
Minutes of the Council Meeting.....	ix
Minutes of the Spring Meeting.....	x
Program of the Winter Meeting.....	xii
Minutes of the Executive Committee.....	xiii
Minutes of the General Session.....	xvii
Junior Academy of Science.....	xviii
Meetings of related groups.....	xxiii
New members	xxiv
Necrology	1
Presidential Address—TRUMAN G. YUNCKER: Parasitism as a way of life	6
Archeology	16
E. Y. GUERNSEY: The problem of the atlatl	17
GLENN A. BLACK: Report on progress at Angel Mounds during 1939	22
PAUL WEER: Ethnological notes on the Ottawa	23
ERMINIE W. VOEGELIN: Culture parallels to the Delaware Walam Olum	28
ELI LILLY: Remarks regarding the pictographs of the Walum Olum	32
C. F. VOEGELIN: The Lenape and Munsee dialects of Delaware, an Algonquian language	34
VERNON KINIETZ: Birch bark records among the Chippewa.....	38
Bacteriology	41
W. A. JAMIESON: Possibilities in biological research ¹	41
GEORGE C. GROSS with ED. F. DEGERING and P. A. TETRAULT: Correla- tion of the oil-water distribution ratios of some substituted acids with their bacteriostatic properties.....	42
H. M. POWELL and W. A. JAMIESON: Sulfo-Merthiolate as a germi- cide	45
A. H. BRUECKNER: Equine encephalomyelitis	54
Botany	62
LAWRENCE J. KING: Dr. John Thomas Plummer, pioneer Indiana botanist ¹	62
CHARLES E. DE VOL: Pteridophytes of the Lower Yangtze Valley ¹ ...	62
RAY C. FRIESNER: A key to the ferns and fern allies of northeastern North America ¹	62
RALPH M. KRIEBEL: The distribution in Indiana of <i>Quercus ellip- soidalis</i> E. J. Hill ¹	62
FRANK A. HAMP: A post-Pleistocene fossil pollen study of two north- ern Indiana bogs ¹	63
RAY C. FRIESNER: Correlation of radii in asymmetrical growth of <i>Quercus velutina</i> ¹	63
DOROTHY PARKER: Formation of the perispore of the megaspore of <i>Isoetes Engelmanni</i> ¹	63

¹Abstract.

	PAGE
WINONA H. WELCH: History of Indiana bryology.....	64
C. L. PORTER: The Centraalbureau voor Schimmelcultures of Baarn, Netherlands	69
J. E. POTZGER and CHAS. M. EK: Notes on Indiana grasses, 1938, 1939	73
C. L. PORTER: The effect of bacterial contaminations upon the sub- sequent growth of fungi in the same medium.....	75
R. W. SAMSON: A study of certain viruses pathogenic to the tomato	77
JOHN B. ROUTIEN: New Agaricaceae of the Chicago region.....	84
FLOYD E. BEGHEL: Some studies of the genus <i>Elymus</i>	86
R. M. TRYON, JR.: Notes on some Indiana plants.....	89
RAY F. DAWSON: A titrimetric method for the determination of nicotine in tobacco tissues.....	91
Chemistry	94
E. W. KANNING and A. W. CAMPBELL: The adsorption of potassium ferrocyanide and ferric sulfate by Prussian blue.....	94
KENNETH N. CAMPBELL and B. K. CAMPBELL: The preparation of amino alcohols	101
O. E. RUMPLE and R. J. HARTMAN: Enzymatic action in the presence of some common antiseptics.....	105
EVANS W. COTTMAN: A photographic determination of the relative intensities of three chemiluminescences	115
W. W. BINKLEY with ED. F. DEGERING: The action of the esters of chlorosulfonic acid on di- <i>n</i> -butylamine.....	117
Geology and geography	118
STEPHEN S. VISHER: The influence of the weather on crop yields in Indiana studied by the climograph technique ¹	118
A. V. LOTT: The true value of the earth's rotation as a defective factor	119
W. D. THORNBURY: Glacial Lakes Quincy and Eminence.....	131
ALLAN R. OSTRANDER: Heavy mineral assemblages from upper Cam- brian formations as exposed at Coon Valley and Victory, Wis- consin	145
T. M. BUSHNELL: An outline of the classification of Indiana soils..	151
WALLACE T. BUCKLEY: The sun spot cycle and temperature departures at Indianapolis, Indiana, 1872-1936.....	159
ROBERT R. SHROCK: Weathering of ferruginous beds in the Pennsyl- vanian of Greene County, Indiana	163
ROBERT R. SHROCK, BERNARD VONNEGUT, and HENRY F. HERPERS: Calcareous incrustation formed on cascades at the Indiana State Soldiers and Sailors Monument, Indianapolis	169
Mathematics	175
C. LANCZOS: A simple interpolation method for unsmooth curves ¹	175
D. R. SHREVE: Cubic hypersurfaces symmetric with respect to hyper- planes of a linear system ¹	175
INEZ MORRIS: New materials and equipment in mathematics ¹	175
RICHARD J. DUFFIN: On the Dirichlet problem of the equation of the vibrating string ¹	176
WILL E. EDINGTON: The integrating factor $R = x^m y^n$ for certain first order differential equations	177

¹Abstract.

Physics	179
R. B. ABBOTT and G. H. PURCELL: Acoustical properties of wood for musical instruments ¹	179
FRANZ N. D. KURIE: The Indiana University cyclotron ¹	179
ARNOLD F. CLARK and FRANZ N. D. KURIE: Focusing and resonance requirements for the Indiana University cyclotron ¹	179
A. C. G. MITCHELL, L. M. LANGER, and P. W. MCDANIEL: The relation between the emission of beta and gamma rays in radioactive substances ¹	180
GEORGE DICKSON and E. J. KONOPINSKI: Estimates of yet unobserved half-lives of artificial radioactivities ¹	180
E. J. KONOPINSKI: Effect of scattering in the source on measurements of beta spectra ¹	180
C. M. PARSHALL and K. LARK-HOROVITZ: X-Ray diffraction in amorphous rubber ¹	181
LILLIAN THELMA COLEMAN and MASON E. HUFFORD: Test of the Schwarzschild equation for varying development temperatures ¹ ..	181
R. B. ABBOTT and D. E. ALLEN: Conductivity of circular openings in Helmholtz resonators	182
A. GUTHRIE and J. O. HANCOCK: The characteristics of a low voltage arc in a magnetic field	185
R. L. DORAN and W. J. HENDERSON: The alpha particle bombardment of magnesium	191
J. F. CARLSON: A simple method for obtaining the solutions of Dirac's equation for a free particle in spherical coordinates....	195
Psychology	196
AMMON SWOPE: The civil aeronautics authority flight training program ¹	196
IRVIN S. WOLF: An experimental study of changing patterns of response during conditioning of dogs ¹	196
HARRY MASON: A study of teachers' and pupils' attitudes ¹	196
JOSEPH TIFFIN: Some recent applications of psychology in industry	197
LYLE TUSSING: The effect of physical performance on the eyes ¹	197
ALMA LONG: A preliminary study of information in the field of home economics education held by students in entering the home economics departments of colleges in Indiana ¹	197
E. LOWELL KELLY: The relationship between marital compatibility and personality traits of husbands and wives as rated by self and spouse ¹	197
M. L. FISHER: The readmitted student ¹	198
Zoology	199
W. A. HIESTAND, HELEN J. RAMSEY, and DORIS M. HALE: The effects of cigarette smoking on metabolic rate, heart rate, oxygen pulse, and breathing rate ¹	199
W. E. MARTIN: The life cycle of <i>Monorcheides cumingiae</i> (Martin) (Monorchidae, Trematoda) ¹	199
HELEN L. WARD: A note on the occurrence of a syrphid larva as an accidental parasite of man ¹	199

¹Abstract.

	PAGE
W. C. RANDALL and W. A. HIESTAND: Panting and temperature regulation in the chicken ¹	200
R. M. CABLE: Egg production in trematodes with special reference to <i>Spelotrema nicolli</i> (Microphallidae) ¹	200
FRANCIS WENNINGER: Notes on <i>Miranda awrantia</i> ¹	201
MURVEL R. GARNER, MARKLAND MORRIS, and GLEN WOOD: Preliminary limnological survey of Dewart Lake, Kosciusko County, Indiana ¹	201
J. J. DAVIS: Insects of Indiana for 1939 ¹	201
B. ELWOOD MONTGOMERY: Records of Indiana dragonflies, 1937-1939 ¹	201
C. P. HICKMAN and R. R. OVERMAN: Recent experimental work on the mammalian adrenal cortex	202
DOROTHY C. MILLER: A table for the normal development of <i>Rana pipiens</i>	209
S. A. RIFENBURGH, MARTHA WALKER, and JOY DILLISTIN JOHNSON: Radiation of <i>Drosophila melanogaster</i> with low-intensity ultra-violet light for one complete generation. III. Effect on crossing-over in the second chromosome of the male	215
WILLIAM HUGH HEADLEE: Intestinal parasitism in a group of university students	227
N. C. WHEELER, W. C. RANDALL, and W. A. HIESTAND: Modified respiratory movements during egg laying in the hen	231
ALBERT E. REYNOLDS: Some gross anatomical relations of the male urogenital system and other internal organs in <i>Eumeces fasciatus</i>	233
G. A. FICHT: Notes on Indiana Noctuidae.....	243
Index	255

MEMBERSHIP LISTS—The complete list of members of the Academy was last published in Vol. 46 (1937) of the Proceedings, and supplementary lists appear in following volumes. For the effect that it may have in stimulating activity, a complete list of Junior Academies is published each year as a part of the report on the Junior Academy.

CONSTITUTION AND BY-LAWS—The constitution and by-laws of the Academy were last published in Vol. 44 (1935). A codified list of duties of officers and chairmen of committees was published in Vol. 48 (1939).

EDITORIAL CODE—A general editorial code was published in Vol. 44 (1935). Additional directions for the preparation of manuscripts have been printed in leaflet form, and copies of this may be secured from the Editor.

Membership lists and copies of the constitution and by-laws may be secured from the Secretary.

¹Abstract.

OFFICERS AND ELECTED COMMITTEES FOR 1939

OFFICERS

- President*, T. G. YUNCKER, DePauw University.
Vice-President, L. A. TEST, Purdue University.
Secretary, WILLIAM P. ALLYN, Indiana State Teachers College.
Treasurer, W. P. MORGAN, Indiana Central College.
Editor, PAUL WEATHERWAX, Indiana University.
Press Secretary, WILL E. EDINGTON, DePauw University.
Trustees Academy Foundation: JOHN S. WRIGHT, Eli Lilly and Company (term expires 1940); F. B. WADE, Shortridge High School (term expires 1939).
Committee for Bonding Trustees: H. L. BRUNER, Butler University; W. A. COGSHALL, Indiana University.
Research Grant Committee: A. L. FOLEY, Chairman, Indiana University (term expires 1941); E. G. MAHIN, University of Notre Dame (term expires 1942); H. E. ENDERS, Purdue University (term expires 1940); RAY C. FRIESNER, Butler University (term expires 1939); JOHN S. WRIGHT, Indianapolis (term expires 1943); T. G. YUNCKER, DePauw University (ex officio); WILLIAM P. ALLYN, Indiana State Teachers College (ex officio).

DIVISIONAL CHAIRMEN

- Archeology*, PAUL WEER, 1808 N. Delaware Street, Indianapolis.
Bacteriology, W. A. JAMIESON, Eli Lilly and Company.
Botany, WINONA WELCH, DePauw University.
Chemistry, HERMAN T. BRISCOE, Indiana University.
Geology and Geography, THOMAS M. BUSHNELL, Purdue University.
Mathematics, P. D. EDWARDS, Ball State Teachers College.
Physics, R. B. ABBOTT, Purdue University.
Psychology, AMMON SWOPE, Purdue University.
Zoology, C. P. HICKMAN, DePauw University.

EXECUTIVE COMMITTEE

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

Abbott, R. B.; Allyn, W. P.; Andrews, F. M.; Arthur, J. C.; Behrens, C. A.; Blanchard, W. M.; Blatchley, W. S.; Briscoe, H. T.; Bruner, H. L.; Burrage, S.; Bushnell, T. M.; Christy, O. B.; Cogshall, W. A.; Coulter, Stanley; Cumings, E. R.; Davis, J. J.; Deam, C. C.; Edington, W. E.; Edwards, P. D.; Enders, H. E.; Foley, A. L.; Friesner, R. C.; Gingery, W. G.; Hessler, R.; Hickman, C. P.; Jamieson, W. A.; Swope, Ammon; Lilly, Eli; Lyon, M. W., Jr.; Mackell, J. F.; Mahin, E. G.; Martin, E. S.; Moenkhaus, W. J.; Montgomery, B. E.; Morgan, W. P.; Mottier, D. M.; Naylor, J. P.; Noyes, H. A.; Payne, F.; Ramsey, R. R.; Rettger, L. J.; Test, L. A.; Wade, F. B.; Wallace, F. N.; Weatherwax, Paul; Weer, Paul; Welch, Winona; Wright, J. S.; Yuncker, T. G.

STANDING COMMITTEES

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

Archeological Survey: Eli Lilly, Glenn A. Black, R. E. Esarey, E. Y. Guernsey, C. F. Voegelin, C. A. Malott.

Auditing: E. S. Martin, William Johnson.

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

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

Membership: O. B. Christy, A. R. Bechtel, Floyd E. Beghtel, C. A. Deppe, F. R. Elliott, A. R. Eikenberry, R. E. Girton, D. L. Harmon, G. D. Klopp, F. A. Loew, M. S. Markle, R. E. Martin, H. G. Nester, Theodore Just, H. M. Powell, W. D. Thornbury, W. LeRoy Perkins, W. J. Tinkle, S. W. Witmer, J. L. Riebsomer.

Program: J. F. Mackell, D. L. Harmon, B. H. Howlett, B. H. Smith, Bessie Noyes, R. W. Karpinski, and Divisional Chairmen.

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

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

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

Nominations: Ray Friesner, C. A. Behrens, M. W. Lyon, Jr.

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

MINUTES OF THE COUNCIL MEETING

GREENCASTLE, INDIANA, MARCH 18, 1939

The meeting of the Executive Council, held in the Administration Building at DePauw University, was called to order by President Yuncker at 2:30, with the following Academy members present: R. B. Abbott, W. P. Allyn, H. T. Briscoe, T. M. Bushnell, O. B. Christy, P. D. Edwards, R. C. Friesner, C. P. Hickman, J. F. Mackell, E. S. Martin, W. P. Morgan, L. A. Test, F. N. Wallace, Paul Weatherwax, Winona Welch, T. G. Yuncker, W. A. Jamieson, Paul Weer, and A. Swope.

Officers and committees reported as follows:

Auditing Committee. Mr. Martin stated that the books of the Treasurer had been audited and found correct in every respect, but the books of the trustees of the Academy Foundation had not been audited.

Treasurer. Mr. Morgan gave a tentative report. It was stated that, inasmuch as the fiscal year for the Academy ends December 31, no complete report was available. He also stated that a complete report for 1938, approved by the Auditing Committee, would appear in Volume 48 of the Proceedings.

Editor. Dr. Weatherwax stated that type was all set for the 1939 Proceedings, about six weeks ahead of the previous year, and the Proceedings would be out by May. Arrangements for payment should be made by June 20. It was also emphasized that, in order to facilitate the work of the Editor, manuscripts must be in within ten days after the fall meeting.

Research Committee. Dr. Foley was absent but indicated by mail that no applications for the Academy Research Fund had been made. It was suggested that some means be provided to familiarize the members of the Academy with amount and purpose of funds available and with the time and methods for making application for the same.

Program Committee. New Harmony, Indiana, May 12 and 13, were recommended as the place and time for the spring meeting of the Academy. This recommendation met with the unanimous approval of the Council.

Biological Survey. Miss Welch reported that additional collections were being made and that Deam's *Flora* was now in press.

Membership. Dr. O. B. Christy stated that the committee had set about to interest good material in membership in the Academy. The question of how much encouragement should be given high school students to become affiliated with the Academy was discussed.

Relation of Academy to State. F. N. Wallace stated that a cut of 10% had reduced the state appropriation to \$1,350 per year for the next two years. The Publication and Library Committees were instructed to apportion this fund for publication of the Proceedings and binding exchanges as in their judgment seemed best.

New Business. Dr. Weatherwax asked if the Academy wished to sponsor a meeting of the Botanical Society of America. It was decided

that a committee of four be appointed to invite the Society to meet in Indiana in 1939. President Yuncker appointed Paul Weatherwax, Ray C. Friesner, Ralph Kriebel, and F. A. Loew.

A Nomination Committee consisting of Ray C. Friesner, chairman, C. A. Behrens, and Marcus W. Lyon, Jr., was appointed by President Yuncker.

The Council adjourned at 4:45.

MINUTES OF THE SPRING MEETING

NEW HARMONY, INDIANA, MAY 12 AND 13, 1939

The Indiana Academy of Science convened for its annual spring meeting in New Harmony. At the regular meeting in the Murphy Auditorium on the evening of May 12, the Academy was very cordially welcomed to New Harmony and asked to partake generously of the hospitality of the city by Miss Mary E. Fauntleroy, one of the surviving pioneers who exemplifies that which New Harmony means to the history of Indiana.

During the program that followed, Miss Eva Long, native of New Harmony, read an interesting paper on "Harmonie and New Harmony." Ross Lockridge, of Bloomington, discussed the "Scientific Background of New Harmony," and S. G. Elder, of the Sun Oil Company, discussed "Recent Contributions to the Geology of Southwestern Indiana and Adjacent Parts of Illinois and Kentucky."

A short business session followed.

Dr. Foley reported that the Research Committee had granted \$150 to H. T. Briscoe, of Indiana University, for research studies on measurements of di-electric coefficients and di-poles of organic compounds.

The membership committee submitted applications from ten prospective members, all of whom were elected.

Dr. Friesner of the Library Committee stated that, contrary to a previous report of a cut of 10% in the appropriation for the Academy, the State Legislature had again granted \$1,500 per year for the next two years.

Dr. Weatherwax stated that the Proceedings would be off the press by the end of May. It was decided to distribute the Proceedings as soon as completed in order to avoid confusion resulting from changes in addresses during the summer.

It was also stated that an invitation, extended to the Botanical Society of America to meet in Indiana this year, had been declined because of other arrangements. It was decided to extend invitation for future date.

President Yuncker read a letter of resignation tendered by Dr. Knight, Purdue, Chairman of the Division of Psychology for 1939. The Academy ruled that the president be given power to fill such vacancies incurred between annual fall meetings. Dr. Ammon Swope of Purdue was appointed to fill this vacancy.

Dr. Test expressed the deepest appreciation of the Academy for the fine hospitality extended by the citizens of New Harmony, and a vote of thanks was extended the Tri Kappa Sorority for its assistance.

A series of tours was conducted Saturday morning. One tour was conducted under the supervision of the citizens to the interesting sites about New Harmony, reminders of the Rappite and Owen communities; another was made to observe oil developments in the vicinity; and a third was taken to Hovey's Lake, recently taken over by the State Department of Conservation.

PROGRAM OF THE WINTER MEETING

INDIANA STATE TEACHERS COLLEGE
NOVEMBER 9-11, 1939

THURSDAY, NOVEMBER 9

- 7:00-9:00 p. m. Registration.
7:30 p. m. Meeting of the Executive Committee.

FRIDAY, NOVEMBER 10

- 8:00 a. m.-12:00. Registration.
9:00 a. m. General Session.
 Address of Welcome—President R. N. Tirey, Indiana State Teachers College.
 Response—Vice-President L. A. Test.
 Selections—College A Capella Choir, Indiana State Teachers College.
 Business Session.
 Necrology—Will E. Edington, DePauw University.
 For Memorials, see pp.
 “The Days of a Naturalist”—W. S. Blatchley, Indianapolis.
 “The Use of Kodachrome Slides in Teaching Limnology”—M. R. Garner, Earlham College.
1:00 p. m. Sectional meetings. See: Archeology, p. 16; bacteriology, p. 41; botany, p. 62; chemistry, p. 94; geology and geography, p. 118; mathematics, p. 175; physics, p. 179; psychology, p. 196; zoology, p. 199.
6:00 p. m. Annual Dinner.
 Business Session.
8:00 p. m. “America the Beautiful”—Forum Fraternity, Indiana State Teachers College.
 Selections—Rose Polytechnic Institute Glee Club.
 President’s Address—“Parasitism as a Way of Life,” T. G. Yuncker, DePauw University (read by Dr. Winona Welch).

SATURDAY, NOVEMBER 11

- 9:00 a.m. Taxonomists’ Meeting. Chairman, Fred A. Loew, Huntington College. See p. xxiii.
9:00 a. m. Entomologists’ Meeting. Chairman, P. T. Ulman. See. p. xxiii.
9:00 a. m. Junior Academy of Science, Business Meeting and Exhibits.
1:00 p. m. Program of Junior Academy. See p. xviii.

MINUTES OF THE EXECUTIVE COMMITTEE MEETING

NOVEMBER 9, 1939

The Executive Committee of the Indiana Academy of Science met in the Student Lounge of the Indiana State Teachers College, November 9. The meeting was called to order at 8:00 p. m. by Vice-President L. A. Test. The minutes of the Council meeting at Greencastle, March 18, and of the spring meeting at New Harmony, March 12 and 13, were read and approved. Officers and committees reported as follows:

Academy Trustee. Mr. John S. Wright gave a detailed report of the Foundation funds of the Academy for 1938-1939 as follows:

Receipts

Balance from previous year.....	\$1,112.58
Total receipts.....	446.96
Total	<u>\$1,559.54</u>

Expenditures

Withdrawal to purchase \$1,000—3¼% Federal Farm Mortgage Corp. bond of '44-'64.....	<u>\$1,093.34</u>
Balance in Indiana National Bank Savings Acct.....	\$ 466.20

Assets in the Fund as of Nov. 1, 1939

United States Treasury Bonds.....	\$4,700.00
Consolidated Federal Farm Loan & Mort. Bonds.....	2,500.00
Muncie Masonic Temple Assn. Preferred Stock.....	200.00
Standard Oil Company of Indiana.....	150.00
Savings Bank Balance.....	<u>466.20</u>
Total Assets at par.....	<u>\$8,016.20</u>

The report was accepted. It was added that the Foundation earnings were now approaching \$250.00 annually and that some of these earnings might well be used for research grants to stimulate and aid research among members of the Academy.

Auditing Committee. A written report, submitted by the Auditing Committee, stated that the books of the Treasurer had been audited and found correct in every respect and in excellent condition. The books of the trustees of the Academy Foundation had not yet been audited.

Biological Survey. No formal report was rendered. Dr. Lyon of that committee expressed regret that no more activity was shown by the Biological Survey Committee. Dr. Welch of the same committee stated that her work with mosses and liverworts was being continued and that a third paper was ready for publication. It was voted that the Biological Survey Committee be asked to assemble reports of all studies completed.

Bonding Committee. The recommendation that the bond of each trustee of the Academy Foundation be increased to \$5,000, because of the increased value of the assets of the Foundation, was approved. It

was also suggested that the chairman of the committee investigate the possibility of securing these bonds at a lower rate than that now in effect.

Editor. The Editor submitted the following report:

Volume 48 of the Proceedings was delivered to the State Library near the end of June. This earlier date of completion was secured through a ruling of the State Board that all work paid for out of the budget of any one fiscal year be completed before the end of that year. The following statistics indicate the cost of publication:

Number of copies printed.....	1600
Number of pages printed.....	283
Cost of engraving, printing and binding.....	\$1,434.22
Cost of reprints furnished gratis.....	53.15
Cost of editorial assistance.....	209.00
Editor's expenses for postage, envelopes, mimeographing, etc.....	30.90

Total cost of publication.....\$1,727.27

The net cost per printed page is considerably higher than in previous years. The difference, which is wholly in the cost of composition, is attributed to the greater condensation of material on the pages and to the unusually large amount of tabular material and other difficult composition.

The policy adopted two years ago, of making the Proceedings a complete account of the activities of the Academy for the year, has been continued, and Volume 48 contains practically all the papers presented, or abstracts of those not published in full, as well as accounts of other activities sponsored by the sections.

The provision for paying for editorial assistance in the past two years has been very satisfactory. It has reduced the Editor's work to a minimum and made possible a better publication. Probably no other expenditure made by the Academy yields any better return.

The last complete list of members was published in Volume 46 (for 1936). It would seem appropriate to publish the list again in Volume 50 (for 1940) and to expand the data about each member to indicate his interests or his institutional connections. If this is done, the information must be compiled during the coming year.

A number of recommendations made by the Editor were discussed. The appropriation of \$200 for editorial assistance was continued, and the apportionment of funds for publishing the Proceedings and binding exchanges was referred to a committee consisting of the Treasurer, the Editor, and the chairmen of the Library Committee and the Committee on Relation of the Academy to the State.

Library Committee. A detailed report of the work of the Committee was read. Letters sent to 52 scientific societies and institutions requesting exchanges resulted in the addition of about 40 new titles, several of which are represented by long files. Complete files of some could be secured if complete files of the Proceedings were available for exchange; but volumes for 1892, 1911, 1913, 1916, 1917, 1920-1929, and 1932 are no longer available. The need for continued attention to the binding of exchange material was pointed out. Taking advantage of the low rates offered by the prison bindery, the Committee has been able to have 439 volumes bound during the year. Some comment was made on the probable effect of the European wars on the publishing activities and exchange facilities of scientific institutions in the countries involved.

Membership Committee. It was reported that ten new members had been elected at the spring meeting and nineteen additional applications had been received. It was suggested that a careful survey be made of the rapid changing personnel of our universities and colleges

for valuable material that was apparently being overlooked, a survey both for the benefit of the Academy and the prospective members.

Press Secretary. Press Secretary Edington reported that reports on the activities of the Academy had been sent to the papers of the state as occasion demanded. Through cooperation with the director of publicity at Purdue University it had been possible to secure some idea of the publicity received through the papers over the state.

Relations of the Academy to the State. In the absence of the chairman, Mr. John S. Wright informed the Academy that the usual appropriation of \$1,500.00 by the State for the Academy was available.

Research Committee. The Committee announced the following awards, contingent upon the availability of the necessary funds: J. F. Mackell, Indiana State Teachers College, \$50.00; W. H. Headlee, Purdue University, \$100.00; and S. S. Visser, Indiana University, \$25.00.

Various questions of method and policy in connection with the awarding of research grants were discussed, and the further administration of the available funds was left in the hands of the Research Committee.

Treasurer. The Treasurer gave a 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, 1939, was as follows:

Receipts	
Balance on hand January 1, 1939.....	\$198.43
Dues and initiation fees.....	882.00
A.A.A.S. Refund for Research.....	150.00
Sale of Proceedings.....	6.25
Author's Reprints Vol. No. 47.....	88.78
Author's Reprints Vol. No. 48.....	132.22
Gift from a member.....	250.00
	\$1,707.69
Disbursements	
1—Program Committee.....	\$180.25
2—Editor (All items of expense).....	211.35
3—Expenses of Secretary.....	55.33
4—Expenses of Treasurer.....	46.00
5—Mailing Proceedings.....	82.83
6—Stationery	39.05
7—Indianapolis Engraving Co.....	121.03
8—Wm. B. Burford Printing Co.....	563.23
9—Junior Academy Bulletins.....	20.00
10—Safety Deposit Box and Bond.....	30.50
11—Research Grant (Dr. Briscoe).....	150.00
12—Postage refund to officers.....	2.91
13—Returned check.....	1.00
14—Bank service charge.....	1.25
	\$1,504.73
Bank Balance.....	202.96
	\$1,707.69

The donor of the \$250 listed as the last item in the receipts gave permission to include this temporarily in the general fund, with the understanding that it later be transferred to the Academy Foundation.

Item No. 1 in expenditures includes a bill for \$41.96 incurred by the committee for 1938 and not submitted for payment until 1939.

Junior Academy of Science. A written report, submitted by the Chairman and read by the Secretary, included the following points:

The Junior Academy has maintained the standard of performance of recent years. There are at present 29 clubs in good standing, with a total membership in excess of 1,000; four new clubs are recommended this year, and others are being formed. A program of merit is arranged for this year, and members of the Academy are urged to attend and to encourage the work of the Junior Academy in all ways.

The American Association for the Advancement of Science has recognized the Junior Academy movement by arranging for honorary membership in the Association for one boy and one girl from each state, these to be selected from the membership of the Junior Academies of Science.

The Executive Committee of the Academy continued the appropriation of \$20.00 per year for the support of the publication of the Science Club Service. It also voted to endorse the selection of honorary members in the A.A.A.S. to be made by the Junior Academy.

Relation of Academy to A.A.A.S. A written report was read by the Secretary in the absence of the Chairman, calling attention to the participation of the Indiana Academy representative in the meeting of the A.A.A.S. at Richmond last winter. Further attention was directed to the interest taken by the A.A.A.S. in the Junior Academies, with special reference to the honorary membership with its awards offered to stimulate Junior Academy activities. The report was accepted.

Committee on Nominations. The following named persons were recommended for election as Fellows of the Academy: P. D. Edwards, Ball State Teachers College; W. A. Jamieson, Eli Lilly and Company; Fred A. Loew, Huntington College; C. P. Hickman, DePauw University; and George Hennion, University of Notre Dame.

New Business. The proposed selection of papers to receive honorable mention was discussed at some length. In view of the difficulty involved in making satisfactory selections in the time permitted, it was voted that action be postponed indefinitely.

On motion of its Chairman, the Committee on Archeological Survey was discontinued since its work is being done adequately by the division of Archeology.

The proposed publication of a union list of serial publications in Indiana libraries was brought to the attention of the Committee and discussed. The merits of the plan were recognized, but the Committee voted not to lend the movement financial support at this time.

The Committee declined to nominate individuals to compete for awards as outlined by the National Manufacturers' Association.

The question of the disposal of the library of the late Dr. Amos W. Butler was brought to the attention of the Committee. The advisability of the Academy's attempting to acquire this library and incorporate it in the collection now housed in the State Library was discussed at some length, but it was decided that the undertaking would not be practicable within the time limits proposed. High tribute was paid Dr. Butler for the part which he played in science in Indiana, and the hope was expressed that the library might in some way be made a living memorial of his work.

The meeting adjourned at 10:15 p. m.

MINUTES OF THE GENERAL SESSION

FRIDAY, NOVEMBER 10, 1939

An address welcoming the Academy to the State Teachers College was given by President R. N. Tirey, followed by a response for the Academy by Vice-President L. A. Test. The College A Capella choir, under the direction of L. M. Tilson, rendered several beautiful selections in a short recital.

In a short business session the minutes of the Executive Committee meeting were read by the Secretary and approved.

Will E. Edington presented the necrology of the Academy and spoke briefly of the members lost by death during the year. Dr. W. S. Blatchley read a paper on "The Days of a Naturalist," in which he recounted his wide variety of experiences as a geologist, botanist, and zoologist.

Following the annual dinner, the Committee on Nominations presented the names of 63 applicants for membership.

The Committee also offered the following nominations for officers of the Academy for 1940: *President*, Frank Wallace, Department of Conservation; *Vice-President*, S. S. Visher, Indiana University; *Secretary*, W. P. Allyn, Indiana State Teachers College; *Treasurer*, W. P. Morgan, Indiana Central College; *Editor*, Paul Weatherwax, Indiana University; *Press Secretary*, W. E. Edington, DePauw University.

The following were nominated for election as Fellows of the Academy: P. D. Edwards, Ball State Teachers College; W. A. Jamieson, Eli Lilly and Company; Fred Loew, Huntington College; C. P. Hickman, DePauw University; George Hennion, University of Notre Dame.

The Secretary was instructed to cast the ballot of the Academy for the unanimous election of all these nominees.

Announcement was made that the following divisional chairmen had been elected in the sectional meetings: *Archeology*, Paul Weer, Indiana Historical Society; *Bacteriology*, Dona Gaylor Graam, Terre Haute; *Botany*, Ralph Kriebel, Soil Conservation Service; *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.

The invitation of the Ball State Teachers College was accepted and Muncie selected as the place of the fall meeting of 1940.

The report of the Resolutions Committee, recommending an expression of gratitude and appreciation for the hospitality of the Indiana State Teachers College and the work of all who helped to make the meeting a success, was approved by the Academy.

The adjournment of the business meeting was followed by the President's address.

(Signed) W. P. ALLYN, *Secretary*.



INDIANA JUNIOR ACADEMY OF SCIENCE

Officers for 1939:

President: ELOISE CROSBY, North Side High School, Fort Wayne.

Vice-President: DONALD FRIER, West Lafayette High School.

Secretary: JAMES BELTZ, Elmhurst High School, Fort Wayne.

Members of Council: F. J. Breeze, (1935-1940); Anna Inskeep, (1936-1941); Lola Lemon, (1937-1942); J. H. Otto, (1938-1943); A. B. Krom, (1939-1944).

PROGRAM OF NINTH ANNUAL MEETING

November 9, 1939

10:00—General Session. Eloise Crosby, North Side High School, Fort Wayne, president (Donald Frier, vice-president, West Lafayette, presiding).

10:30—"Indiana Fauna," Dr. William P. Allyn, Indiana State Teachers College.

"Interesting Facts About Animals," Jack Reeves, Lew Wallace High School, Gary.

11:30—Election of Officers.

1:00—"What Makes a Live Club?" M. M. Williams, Sponsor of Bloomington Science Club.

Short papers by members:

"Snakes," Earl Turner, Bloomington Jr. High School.

"High Frequency Electricity," Jack Porter, Wabash High School.

"Plant Growth in a Nutrient Solution," Frances Scott, Mary Sharp, Paul Shelton, Harold Blair, Arsenal Technical School, Indianapolis.

"Basic Forms of Crystals," Robert March, Shortridge High School, Indianapolis.

Reports on progress of the Indiana Junior Academy of Science in 1939, Dean Howard E. Enders, Purdue University.

MINUTES OF BUSINESS SESSION

The annual meeting of the Indiana Junior Academy of Science was held in the Sycamore Theatre, the Laboratory School Building of the Indiana State Teachers College, Terre Haute, on November 9. The Vice-President, Donald Frier, of the Biology Club of the West Lafayette High School, presided in the absence of the President, Miss Eloise Crosby of Fort Wayne. A paper, "Interesting Facts About Animals," illustrated by slides, was given by Jack Reeves of the Lew Wallace High School of Gary. Mr. William Hopp substituted for Dr. William P. Allyn,

who was unable to appear because of illness, and gave the principal address, "Indiana Fauna," demonstrated with two reels of motion pictures. Armistice Day was observed at 11 o'clock. At that time the members of the Academy stood facing the east for a moment of silence.

Dr. H. E. Enders of Purdue University explained the present conditions upon which one girl and one boy from the Academy would be selected by the members of the Council for Honorary Membership in the American Association for the Advancement of Science. Dr. Enders also explained the advantages of membership in this organization. Ruth Downey of the Science Club of the George Washington High School, Indianapolis, and Robert Bennett of the Science Club of the Mishawaka High School were selected for these Honorary Memberships.



ROBERT BENNETT
Science Club
Mishawaka H. S.,
Mishawaka

RUTH DOWNEY
Science Club
G. Washington H. S.,
Indianapolis

C. O. PAULEY
Senior Councilor
Valparaiso H. S.,
Valparaiso

Following this portion of the program, election of officers for the coming year was held. The officers chosen were, *President*, JACK WILKIE, Elmhurst High School, Fort Wayne; *Vice-President*, DORIS SMITHA, George Washington High School, Indianapolis; *Secretary*, ROBERT KARLER of the Mishawaka High School. Mr. A. B. Krom of Wabash High School was elected member of the Council for the period 1939-1944, to succeed C. O. Pauley, Valparaiso High School, whose term expired.

After the noon intermission, Miss Anna Inskeep of West Lafayette High School presented a recommendation of the Council regarding the future selection of A.A.A.S. Honorary members. The recommendation is as follows: (1) That sponsors send nominations of candidates, plus full credentials, to the Senior Councilor at least two weeks before the annual meeting; (2) That the nominees be present at the annual meeting; (3) That they present an exhibit or a paper or some other evidence of their work at the annual meeting.

The above recommendation was accepted with the reservation that, due to the lack of time to hear all papers, it may not be feasible for all to show evidence of their work.

Mr. M. M. Williams, Sponsor of the General Science Club of the

Bloomington High School, gave an enlightening discussion on "What Makes a Live Club?"

Dr. Enders outlined a program for the member clubs to follow during the year 1939-1940. Ten-minute papers were then presented by members of various clubs.

Six new accessions to membership in the Junior Academy of Science were announced:

1. Otter Creek Jr. Acad. of Science, North Terre Haute, Prevo L. Whitaker, Sponsor.

2. Phi-Bi-Chem Club, Lawrenceburg, H. P. Harrison, Sponsor.

3. Science Club, Central High School, South Bend, O. C. Osborne, Sponsor.

4. Biology Club, Jefferson High School, Lafayette, Kenneth Dobbower, Sponsor.

5. Junior Science Club, Laboratory School, Indiana State Teachers College, Terre Haute, Geraldine Shontz, Sponsor.

6. State High Discovery Club, Senior High School, Terre Haute, Walter Woodrow and Frank Briggs, Sponsors.

It was announced that the next meeting of the Indiana Junior Academy of Science Clubs would be held at Ball State Teachers College, Muncie, in 1940.

One hundred twenty Junior Academy members and sponsors were in attendance.

The meeting adjourned at 4 o'clock.

DONALD FRIER, *Acting President.*

JAMES BELTZ, *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. Otter Creek Junior Academy of Science Club, Terre Haute, Prevo L. Whitaker, Sponsor: Insect collections; brain dissections; crystal (chrome-alum); how to make insect net and Riker mount; tusk of mammoth.

2. Edison Academy of Science, Thos. Edison Jr. H. S., Hammond, Mac McCowen, Sponsor: Blue-printing; insect collections; wild flower herbarium; microscopic slides; leaf herbarium.

3. Phi-Chem Club, Elmhurst H. S., Fort Wayne, Ruth Wimmer, Sponsor: The chemistry of cosmetics; model airplane.

4. Geography Council, North Side High School, Fort Wayne, Fred J. Breeze, Sponsor: Maps showing drainage changes in vicinity of Fort Wayne.

5. Science Club, West Lafayette High School, Anna Inskeep, Sponsor: Silk moths.

6. Biology Club, Lew Wallace High School, Gary, Lola Lemon, Sponsor: Insect collections; leaf collections; slides.

7. Science Club, George Washington High School, Indianapolis, J. H. Otto, Sponsor: Maple leaf collection (both cultivated and native); Japanese beetle; turtles.

8. Science Club, High School, Mishawaka, Darl F. Wood, Sponsor: Working model of lime kiln; periodic chart of the elements; bird slides; flora of house gardens, catalog; finger-, hand-, and footprints.

9. General Science Club, Bloomington High School, M. M. Williams, Sponsor: Snakes; radio; chimes; artificial gas; pressure in liquids; Archimedes' principle; three states of equilibrium; fossils.

10. Nature Study Club, Arsenal Technical Schools, Indianapolis, Charlotte L. Grant, Sponsor: Demonstration of plants growing in nutrient solution; fruit collection; picture made from fruits and seeds; leaf collections; programs of club and clippings of club activities; 4 boards of nature photos (28 photographs); 2 boards of club activities (19 photographs); 4 special enlarged flower photographs; 2 posters; 3 club calendars: bird, wild flower, weather.

11. Discovery Club, State H. S. Laboratory School, Terre Haute, Walter Woodrow and Frank Briggs, Sponsors: Oil thermometer.

12. Junior Academy of Science, Greencastle, F. N. Jones, Sponsor: Exhibit of photographs, photography section directed by H. M. Stewart.

JUNIOR ACADEMIES

Anderson.....	Science	1936	M. J. Brozier
*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.....	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
	Science Club (North Side H. S.).....	1936	Vesta Thompson H. H. Michaud
	Phi-Chem Club (North Side H. S.).....	1937	H. A. Thomas
	Phy-Chem (Elmhurst H. S.)...	1937	Ruth Wimmer
Gary.....	Biology (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 Acad. of Sci. (Thos. Edison High School).....	1937	Mac McCowen
Indianapolis.....	*Crispus Attucks High School (Biology).....	1931	C. E. Ransom
	Radio		A. C. Cox, G. W. Wade and L. C. Parker
	Zoology		
	Chemistry		
	*Technical Schools—Nature Study	1932	C. F. Cox Charlotte L. Grant
	*Shortridge—Chemistry	1931	Lois Martin
	George Washington Jr. H. S.—Science.....	1937	J. H. Otto
Lafayette.....	Biology—(Jefferson H. S.).....	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	Mrs. Pauline Mayhugh
Mishawaka.....	Science	1936	Darl F. Wood
Montmorenci.....	Jr. Acad. of Science.....	1933	I. W. Vance
Mooreville.....	Science	1936	Fitzhugh Lee
Muncie.....	Science (Blaine Jr. H. S.).....	1934	F. Kyger
New Albany.....	Jr. Acad. (Jr. High School)...	1935	Gladys Knott
North Madison....	*Hilltop Nature Study.....	1931	V. Shoemaker
North Terre Haute..	Otter Creek Jr. Acad. Science..	1939	Prevo L. Whitaker
Paoli.....	Science	1935	O. R. Whitlock
South Bend.....	Science Club (Central High School)	1939	O. C. Osborn
Terre Haute.....	Jr. Science Club (Labora- tory School).....	1939	Geraldine Shontz
	State High Discovery Club Senior H. S., Laboratory	1939	Walter Woodrow and Frank Briggs
	School		
Tipton.....	Junior Academy of Science Club.	1933	W. D. Hiatt
Valparaiso.....	*Science	1931	C. O. Pauley
Wabash.....	Science	1936	A. B. Krom
West Lafayette....	Science (Biology).....	1933	Anna Inskeep

*Charter members.

MEETINGS OF RELATED GROUPS

As has been the custom for several years, members of the Academy interested in entomology and systematic botany held informal meetings on Saturday forenoon, November 11.

Entomology.—The meeting was called to order by P. T. Ulman, chairman. No formal papers were presented, but brief reviews of the past year's work were presented by A. C. Kinsey, Indiana University; L. F. Steiner, of the United States Department of Agriculture, stationed at Vincennes; and a number of workers connected with the Department of Agriculture or with Purdue University and stationed at Lafayette.

The Indiana State Teachers College, Earlham College, and Butler University were represented by students who gave reports on classroom activities in entomology.

L. F. Steiner was elected chairman of the group for 1940.

Systematic Botany.—The meeting was called to order by Fred A. Loew, chairman. The program consisted chiefly of a discussion of "The Limitations of the Distribution of Vegetation in Indiana." Ralph M. Kriebel gave a report on the summer field meeting held in Southwestern Indiana in September. Taxonomic notes on some Indiana plants, prepared by R. M. Tryon, were also presented.

In the symposium on plant distribution in Indiana, the following papers were presented: Flora of the Unglaciated Area, R. M. Kriebel; Relic Colonies and Boreal Flora, Winona Welch; The Prairie Flora, Scott McCoy; Dune Area and Coastal Plain Flora, Naomi Mullendore; Post-Glacial Flora, J. L. Potzger. These were discussed informally as far as time would permit.

A growing interest in the summer field meetings was expressed, and suggestions were made as to the one to be held in 1940.

Paul Weatherwax was elected chairman for 1940.

NEW MEMBERS 1939

- Allen, Donald E., 415 Maple Street, West Lafayette.
Banning, John W., R. R. 3, Attica.
Barbee, Miss Rula E., R. R. 2, Terre Haute.
Benninghoff, William, 2 Rutland Street, Cambridge, Mass.
Breneman, Dr. W. R., Indiana University, Bloomington.
Briggs, Harry E., 1330 South Fifth Street, Terre Haute.
Brost, Sister Josepha, St. Francis High School, Lafayette.
Burns, Raymond E., 213 N. Washington, Knightstown.
Campbell, William G., 104 Woodlawn Avenue, Crawfordsville.
Carlson, Dr. J. F., Purdue University, West Lafayette.
Conner, Miss Miriam E., 1027 Maple Avenue, Terre Haute.
Cowan, Dr. J. C., 210 E. Walnut, Greencastle.
Dawson, Dr. Ray F., 1009 S. College Street, Greencastle.
Dobelbower, Kenneth H., 628 N. 18th Street, Lafayette.
Doran, Ray L., 213 University Street, West Lafayette.
Easton, William Heyden, Box 174, Bedford.
Edwards, J. Gordon, 2834 Carrollton Avenue, Indianapolis.
Eisenmenger, Sister Mary Petrona, Saint Francis High School,
Lafayette.
Elving, Dr. Philip J., Purdue University, West Lafayette.
Ervin, Robert Francis, 814 E. Madison Street, South Bend.
Fender, Hollis Blair, 715 West 13th Street, Bloomington.
Forsyth, Max Allyn, 714 S. 8th Street, Terre Haute.
Greenwood, Henry R., 804 E. Main Street, Washington.
Groves, Miss Carol Louise, Indiana University, Bloomington.
Guthrie, Andrew, Purdue University, West Lafayette.
Hamp, Frank A., 3251 Baltimore Avenue, Indianapolis.
Harris, Chauncy D., 624 East 8th Street, Bloomington.
Harris, Miss Louise, R. R. 1, West Terre Haute.
Harrison, Prof. H. P., 487 Ridge Avenue, Lawrenceburg.
Heap, George E., Farmersburg.
Hinkle, Miss Ruth, 427 S. Troll Street, Sullivan.
Hunter, Dr. Loraine, Clarksville, Tennessee.
Johnson, Miss Joy Dillistin, 840 DeGraw Avenue, Newark, New
Jersey.
Johnson, Paul E., R. R. 2, Summitville.
Josey, Dr. Charles C., Butler University, Indianapolis.
Killeen, John Anacetus, 116 North C Street, Livingston, Montana.
Koch, Dr. G. David, Indiana State Teachers College, Terre Haute.
Kuonen, Charles E., 821 S. Grant Avenue, Crawfordsville.
Long, Dr. Alma, Purdue University, West Lafayette.
McCaskey, Miss Lois, 3551 Washington Blvd., Indianapolis.
McCowen, Max, 1554 Second Avenue, Terre Haute.
Miller, Miss Dorothy C., R. R. 4, Box 1A, Indianapolis.
Morris, D. Markland, 705 S. 14th Street, Richmond.

Morris, Miss Inez, Indiana State Teachers College, Terre Haute.
 O'Neal, Mrs. Perry, 1040 W. 42nd Street, Indianapolis.
 Osterman, Henry, 511 W. 6th Street, Seymour.
 Ostrander, Dr. Allen R., 218 Bloomington, Greencastle.
 Peters, Sister Mary Josephine, St. Francis Convent, Lafayette.
 Piety, Elbert Warrick, R. R. 2, Farmersburg.
 Plew, Wayne F., 214 West Donaldson, Sullivan.
 Reyniers, Prof. James A., University of Notre Dame, Notre Dame.
 Reynolds, Harold W., Washington.
 Rose, L. Sebastian, 2236 Shelby Street, New Albany.
 Sample, Dr. James H., Indiana Central College, Indianapolis.
 Sandground, Dr. J. H., Eli Lilly & Company, Indianapolis.
 Seaman, Lyle S., Wabash College, Crawfordsville.
 Seifert, Miss Laverne, R. R. 1, Mt. Vernon.
 Shields, Miss Veva, 220 E. Indiana Avenue, Bloomfield.
 Shively, Dr. L. S., 2110 W. Jackson Street, Muncie.
 Smith, Charles G., 1434 Haugh Street, Indianapolis.
 Smith, Mrs. Fred S., 5640 Guilford Avenue, Indianapolis.
 Spangler, Walter B., 210 West Jefferson, Albion.
 Sparks, George R., 1724 Garfield Avenue, Terre Haute.
 Vestal, Dr. A. G., University of Illinois, Urbana, Illinois.
 Welborn, Dr. E. L., Indiana State Teachers College, Terre Haute.
 Whitaker, Prevo L., R. R. 5, Terre Haute.
 Wise, Robert E., 218 North 6th Street, West Terre Haute.
 Zahnle, Vincent, 120 Sheridan Place, Lake Bluff, Illinois.

NEW JUNIOR CLUBS 1939

Jefferson High School Science Club, Jefferson High School, Lafayette.
 Phi-Bi-Chemi, Lawrenceburg High School, Lawrenceburg.
 Otter Creek Junior Academy of Science, Otter Creek High School, North Terre Haute.
 Junior Science Club of Laboratory School, Indiana State Teachers College, Terre Haute.
 State High Discovery Club, Laboratory School, Indiana State Teachers College, Terre Haute.

