

NEW MEMBERS, 1950¹

Adams, Jack Donald, 3 Cherry Lane Heights, W. Lafayette, Ind.	Bo
Allen, M. Ann, 1318 14th St., Bedford, Ind.	Bo, Z, Ba
Anderson, Dr. Carrolle Elizabeth, Dept. of Biology, Earlham College, Richmond, Ind.	Bo, Z
Armacost, Dr. Richard R., Court D No. 65, W. Lafayette, Ind.	Bo, Z
Bard, Dr. Raymond C., Dept. of Bacteriology, Indiana University, Bloomington, Ind.	Ba
Bernard, Byron G., Dept. of Biology, LaPorte High School, LaPorte, Ind.	Bo, Z
Bidney, Dr. David, Dept. of Anthropology, Indiana University, Bloomington, Ind.	A
Bleicher, Janett, 206 N. Dunn St., Bloomington, Ind.	Ba
Brandt, Prof. Warren W., Dept. of Chemistry, Purdue University, West Lafayette, Ind.	C
Britt, Eugene M., Miles Research Labs., Elkhart, Ind.	Ba
Brittain, David B., 13 Chestnut St., Greencastle, Ind.	Z
Brooks, Erwin R., F.P.H.A. 220-2 W. State St., W. Lafayette, Ind.	Bo
Butler, Jay J., Jr., Woodlawn Courts, Trailer M-8, Bloomington, Ind.	Z
Chichuk, Alexander, 1815 Fletcher Ave., Indianapolis 3, Ind.	Bo
Clark, William R., 310 N. Illinois St., Indianapolis, Ind.	C
Coates, Prof. Donald R., Dept. of Geology, Earlham College, Richmond, Ind.	G
Cowen, Martha Ernestine, Clifton Park, Mechanicville, R.D. 2, N.Y.	Ba
Craig, Joseph T., Hanover, Ind.	C, Bo, Z
Craig, Thomas, 515 E. 4th St., Bloomington, Ind.	Ba
Crowell, Dr. Sears, Dept. of Zoology, Indiana University, Bloomington, Ind.	Z
Daugherty, J. Claude, Attica High School, Attica, Ind.	C, Ph
Diller, Erol R., 923 E. Atwater Ave., Bloomington, Ind.	C
Dimmick, Dr. Robert L., F.P.H.A. Apt. 514-2, W. Lafayette, Ind.	Ba
Dragoo, John R., Room 204, Medical Bldg., Bloomington, Ind.	Bo, Z
Eberly, William R., Laketon, Ind.	Bo, Z
Faulkner, Clifford R., 430 Grant St., West Lafayette, Ind.	Bo
Ferguson, Byron L., Dept. of Chemistry, Valparaiso University, Valparaiso, Ind.	C
Fink, John Benson, Dept. of Psychology, Indiana University, Bloomington, Ind.	Ps
Fletcher, Robert I., 800 S. Locust St., Apt. 6B, Greencastle, Ind.	Bo, Ba
Forney, Dr. Robert B., 5105 Primrose, Indianapolis, Ind.	Z
Franchere, Corinne M., School of Medicine, Indiana University, Indianapolis, Ind.	Z

¹ Abbreviations following the members' listings indicate the section of the Academy with which they are affiliated.

Frank, Joseph Henry, 2116 W. Main St., Muncie, Ind.	Bo, Z
Frey, Dr. David G., Biology Hall, Indiana University, Bloomington, Ind.	Z
Gelber, Mrs. Beatrice, 316 East First St., Bloomington, Ind.	Ps
Gentilcore, Dr. R. Louis, Dept. of Geography, Indiana University, Bloomington, Ind.	G
Goethe, C. M., Capital National Bank Bldg., Sacramento 14, Cal.	Z
Gregor, Dr. Howard F., Dept. of Geography, Indiana University, Bloomington, Ind.	G
Gumpper, C. Richard, 230 W. Jackson, Apt. D, Elkhart, Ind.	Z
Hasenstab, Louis D., 1813 Brookside Ave., Indianapolis 1, Ind.	Bo
Hayek, Dr. Mason, 316 Nichols Ave., McDaniel Crest, Wilmington, Del.	C
Heaton, C. Edward, 824 E. University St., Bloomington, Ind.	Z
Henning, Dr. Carl, Hanover, Ind.	Bo
Hesemeyer, James H., R.R. 9, Stellhorn Rd., Ft. Wayne 8, Ind.	Ph
Hillegas, Prof. William M., 1603 E. 3rd. St., Apt. 03, Bloomington, Ind.	Z
Hull, Dr Ralph, Dept. of Mathematics, Purdue University, Lafayette, Ind.	M
Humm, Dr. Frances D., Dept. of Surgery, Indiana University Medical Center, Indianapolis, Ind.	C
Inlow, Paul M., 212 N. Harrison St., Shelbyville, Ind.	Z
Inlow, Dr. William Deprez, 103 W. Washington St., Shelbyville, Ind.	Z
Johnson, Howard A., R.R. 3, Box 19, Franklin, Ind.	Ph
Joice, Juanita, Tolleston School, 17th & Taney, Gary, Ind.	C, Ph
Jones, J. Johanna, 333 W. Hampton Dr., Indianapolis 8, Ind.	Bo
Kartinos, Dr. Nicholas J., 221 E. Prospect St., Nazareth, Pa.	C
Kaska, Harold V., Apt. K-5, Woodlawn Court, Indiana University, Bloomington, Ind.	G
Klos, Stanley J., Indiana Central College, Indianapolis, Ind.	Z
Kowitz, William, Valparaiso University, Valparaiso, Ind.	G
Kronsbein, Prof. John, Evansville College, Evansville, Ind.	M, Ph
Ladman, Aaron J., Dept. of Anatomy, Indiana University, Bloomington, Ind.	Z
Lapsys, Jacquelyn, 98 Bassford Ave., Lagrange, Ill.	Ba
Lindemeyer, Joan, Delta Zeta House, Greencastle, Ind.	Ba
Lindenschmidt, Mary Jean, Anderson College, Anderson, Ind.	Z
Long, Dr. Norman O., Dept. of Chemistry, Evansville College, Evansville, Ind.	C
McAlpine, Richard J., 613 Greenwood Ave., Michigan City, Ind.	Ph
McCord, Robert Dudridge, P.O. Box 186, Valparaiso, Ind.	Bo, Z
McCormick, Jack, 31 S. Sherman Dr., Indianapolis 1, Ind.	Bo
McIntosh, Glen E., Box 122, Battleground, Ind.	Ph
McNall, Preston Essex, Jr., F.P.H.A. 527-3 Airport Rd., West Lafayette, Ind.	Ph
Madinger, Francis Lee, 3005 S. Villa Ave., Indianapolis, Ind.	Ba

Mason, Richard C., Dept. of Zoology, Indiana University, Bloomington, Ind.	Z
Mayo, Mrs. Marie Joiner, Dept. of Biology, Anderson College, Anderson, Ind.	Bo, Z
Minton, Dr. Sherman A., Jr., Indiana University Medical Center, Indianapolis, Ind.	Z
Moss, Dr. Robert Louis, Dept. of Anatomy, Indiana University, Bloomington, Ind.	Z
Murray, Raymond G., Assoc. Prof. of Anatomy, Dept. of Anatomy, Indiana University, Bloomington, Ind.	Z
Neher, Donald, 424 E. Seventh St., Bloomington, Ind.	Ba
Nicoll, Prof. Paul A., Dept. of Physiology, Indiana University, Bloomington, Ind.	Z
Niemann, Ralph H., 317 N. Vine St., West Lafayette, Ind.	M
Nisbet, Jerry J., 1619 W. Ninth St., Muncie, Ind.	Bo
Niswander, Dr. R. Emerson, Dept. of Entomology, Manchester College, North Manchester, Ind.	Z
Norby, Darwin E., Dept. of Botany, Indiana University, Bloomington, Ind.	Bo
Nussbaum, Prof. Elmer, Dept. of Physics, Taylor University, Upland, Ind.	Ph
Odell, Theodore T., Dept. of Zoology, Indiana University, Bloomington, Ind.	Z
Onyett, Harold R., 1401 S. Henderson St., Bloomington, Ind.	C
Onyett, Mrs. Helen Pon, 1401 S. Henderson St., Bloomington, Ind.	Z
Pahl, Brother George, F.S.C., 147 Lyons Hall, Notre Dame, Ind.	Z
Park, Dr. Byron J., 1104 N. Tuxedo St., Indianapolis 1, Ind.	Z
Patrick, Mrs. Mildred L., 1346 Oak St., Terre Haute, Ind.	Ba
Pittenger, Dr. Robert C., The Lilly Research Labs., Eli Lilly & Co., Indianapolis 6, Ind.	Ba
Powell, Dr. Manly J., Box 437 Taylor University, Upland, Ind.	C
Price, Mrs. Marian W., Indiana University Medical Center, Dept. of Microbiology, Indianapolis, Ind.	Ba
Ramsey, Robert D., 5104 College Ave., Indianapolis, Ind.	Bo
Rarick, Maurice S., Wolcottville, Ind.	Ba
Reeves, Dr. James A., R.R. 2, W. Terre Haute, Ind.	G
Rhodes, Stanley A., Dept. of Zoology, Franklin College, Franklin, Ind.	Z
Rudolph, Kenneth J., 802 S. 3rd, Boonville, Ind.	Ba, Z
Salb, J. P., 715 Mill St., Jasper, Ind.	Ba
Schweiger, Dr. Leonard B., Miles Research Labs., Elkhart, Ind.	Ba
Shellabarger, Claire J., 632 N. College Ave., Bloomington, Ind.	Z
Shrigley, Dr. Edward W., Dept. of Microbiology, Indiana Univer- sity Medical Center, Indianapolis, Ind.	Z
Shutts, Clarence Francis, F.P.H.A. 529-4, W. Lafayette, Ind.	Bo
Slack, Keith V., 422 E. Kirkwood Ave., Bloomington, Ind.	Z
Smiley, Bill B., R.R. 1, Bloomington, Ind.	Z
<u>Smith</u> , Dale Metz, 330 W. Lutz, W. Lafayette, Ind.	Bo

Smith, Emily Ruth, 530 W. 44th St., Indianapolis, Ind.	Z, Bo
Smith, Ned Myron, Trailer E-5, Woodlawn Courts, Bloomington, Ind.	G
Sorensen, Robert R., 1116 N. Dearborn St., Indianapolis, Ind.	Z
Sowers, Ted M., 520 E. 60th St., Indianapolis, Ind.	Ph
Steinmetz, Charles Henry, Dept. of Zoology, Indiana University, Bloomington, Ind.	Z
Stevenson, Prof. William H., Ball State Teacher's College, Muncie, Ind.	G
Stokes, Dr. J. L., Dept. of Bacteriology, Indiana University, Bloomington, Ind.	Ba
Summers, Prof. William A., School of Medicine, Indiana University, Indianapolis, Ind.	Ba
Sweany, James A., 921 E. 11th St., Bloomington, Ind.	Bo, Z
Uland, Nancy Louise, 516 W. Third St., Bloomington, Ind.	Z
Wampler, Lloyd C., Spencer, Ind.	Bo, Z
Ward, Daniel B., 116 Oak Ave., Ithaca, N. Y.	Bo
Weber, Jeanne, 928 E. 3rd St., Bloomington, Ind.	Bo, Z
Webster, Dr. Richard Curtis, University Apts. E 310, Bloomington, Ind.	Ba
Weinberg, Dr. Eugene D., Dept. of Bacteriology, Indiana University, Bloomington, Ind.	Ba
Weiss, Dr. Emilio, Dept. of Bacteriology, Indiana University, Bloomington, Ind.	Ba
Welker, George W., Dept. of Biology, Ball State Teacher's College, Muncie, Ind.	Ba, Bo
Wells, David, Crawfordsville Junior-Senior High School, 705 Water St., Crawfordsville, Ind.	Ph, C
Wenzler, Paul Jordan, Indiana University Medical School, Indianapolis, Ind.	Z
Westmeyer, Paul H., R.F.D. 1, Dillsboro, Ind.	G
Wiebe, Dr. Harold T., Taylor University, Upland, Ind.	Z
Williams, Harry D., Apt. 303 Delaware Arms, Penns Grove, N. J.	C
Wolf, Jack R., F.P.H.A. 227-3, W. State St., W. Lafayette, Ind.	Ph
Wright, Jack Elvin, 1320 E. Market St., New Albany, Ind.	Bo, Z
Wyckoff, L. Benjamin, Jr., Dept. of Psychology, Indiana University, Bloomington, Ind.	Ps
Young, Woodson C., M.D., 740 S. Alabama St., Indianapolis, Ind.	G, Z

JUNIOR ACADEMIES

- Sci-Math Club, Attica High School, Attica, Ind.
 Up-N-Atom Science Club of Crawfordsville High, S. Green, Crawfords-
 ville, Ind.
 Future Scientists of America, Tolleston School, Gary, Ind.

INDIANA JUNIOR ACADEMY OF SCIENCE

Officers for 1950:

President: TOM MOON, Central Junior Academy, Central High School, South Bend.

Vice-President: SUE SHAFFNER, Chemistry Club, Shortridge High School, Indianapolis.

Secretary: MARILYN BECKETT, Biology Club, New Castle High School, New Castle.

Members of the Council: DARL F. WOOD, Mishawaka, (1947-1951); EVELYN WAGONER, Elkhart, (1948-1952); MAX FORSYTH, Indianapolis, (1949-1953); HAROLD STEWART, Bloomington, (1950-1954); ARTHUR L. SMITH, South Bend, (1951-1955).

PROGRAM OF THE EIGHTEENTH ANNUAL MEETING

November 4, 1950

Assembly Room, The Auditorium
Hanover College, Hanover, Indiana

9:00-10:00 a.m. Exhibits. Physics Laboratory, Physics Building

10:00 a.m. Morning Session, Assembly Room, Auditorium.

General session, Tom Moon, presiding.

Greetings, Dr. Grant T. Wickwire, Department of Geology, Hanover College.

Reading of minutes of the 1949 meeting, Marilyn Beckett, Secretary.

1. "Mendelian Laws and the Domestic Fowl," (illustrated), Harry Krueckeberg, Nature Study Club, Arsenal Technical High School, Indianapolis.

2. "The Entomologist and His Work," June Graves, National Scientific Honor Society, Bloomington High School, Bloomington.

3. Demonstration—"Analysis of a War Nickel With Emphasis on Electro-Deposition of Copper," William Arbaugh, (assisted by Miss Mona Jane Wilson), Science Club, Shortridge High School, Indianapolis.

4. "Reaction Rates of Trypsin," Wilfred Buchanan, Biology Club, Lew Wallace High School, Gary.

5. "Hydroponics," Joan Freeman, Science Club, Mishawaka High School, Mishawaka.

6. Demonstration—"Plastics," William Cook, Ralph Daveline, Roman Busick, Noel Kindt, Chemistry Club, Central Junior Academy, Central High School, South Bend.

7. "Medical Mycology Studies," Watson M. Laetsch, Science Club, Thomas Carr Howe High School, Indianapolis.

8. "Construction of Electrical Demonstration Units," Charlie Ellis, Science Club, University High School, Bloomington.

1:15 p.m. Afternoon session, Assembly Room, Auditorium.

Business session

9. "Preliminary Report of a Bird Breeding Population Study," Kelly Wise, Biology Club, New Castle High School, New Castle.

10. Demonstration—"Photography," Judith Shepherd, Jim LaFollette, Jim Pirtle, Bevra Boyll, Camera Club, Sullivan High School, Sullivan.

11. "Bacteria Studies of Vanilla and Chocolate Ice Cream," David Eads, Richard Theobald, Science Club, Thomas Carr Howe High School, Indianapolis.

12. "Taxidermy," Robert Petty, Science Club, Thomas Carr Howe High School, Indianapolis.

13. "Food Habits of Indiana Small Fish," Russell Noyes, Science Club, University High School, Bloomington.

14. "Brief Report on the Progress of the Junior Academy," Howard H. Michaud, State Sponsor, Junior Academy of Science, Purdue University.

15. "Toys and Science," Science Club, Centennial School, Lafayette.

16. Motion Picture—"The Fight Against Cancer," The Indiana Cancer Society, Indianapolis.

MINUTES

The eighteenth annual meeting of the Indiana Junior Academy of Science was held Saturday, November 4, 1950, in the assembly room of the Auditorium, Hanover College, Hanover, Indiana.

The exhibit room opened at 9:00 a.m., in the physics laboratory of the science building. Various scientific projects and demonstrations were displayed.

The general session was called to order by president, Tom Moon, Central Junior Academy, Central High School, South Bend. He next introduced the vice-president, Sue Shaffner, Chemistry Club, Shortridge High School, Indianapolis, and the secretary, Marilyn Beckett, Biology Club, New Castle High School, New Castle.

The minutes of the 1949 meeting were read by the secretary. Dr. Grant T. Wickwire, Department of Geology, Hanover College, welcomed the members of the Junior Academy and spoke of the relation of science to human living. He emphasized that "the soil of freedom is the only soil in which science thrives."

Harry Krueckeberg, Nature Study Club, Arsenal Technical High School, Indianapolis, opened the morning program with an illustrated talk on the "Mendelian Laws and the Domestic Fowl." He explained

the heredity in a chicken and the heredity of tallness and shortness in peas.

June Graves, National Scientific Honor Society, Bloomington High School, Bloomington, followed with a talk on "The Entomologist and His Work." She discussed the value of insect collecting as a hobby and explained the materials required and the methods used to obtain best results.

"The Analysis of a War Nickel with Emphasis on Electro-Deposition of Copper," was the topic presented by William Arbaugh, Shortridge High School's Chemistry Club, Indianapolis. He pointed out that the war nickel actually contained no nickel, but was composed of copper and other metals.

The possibilities of the use of trypsin in combatting tuberculosis and other lung diseases were discussed by Wilfred Buchanan, Biology Club, Lew Wallace High School, Gary, in a talk entitled, "Reaction Rates of Trypsin." He explained how future studies may benefit mankind.

"Hydroponics," was the topic discussed by Joan Freeman, Science Club, Mishawaka High School, Mishawaka. Two methods of growing plants with the use of water and chemicals were mentioned.

Next, William Cook, Ralph Daveline, Roman Busick, and Noel Kindt, Chemistry Club, Junior Academy, Central High School, South Bend, explained various processes used in making plastics.

Watson Laetsch, Science Club, Thomas Carr Howe High School, Indianapolis, explained his "Medical Mycology Studies." He discussed the processes of contamination and the methods used in making slides for the purpose of identification.

The morning program was concluded with a talk by Charlie Ellis, Science Club, University High School, Bloomington, on the "Construction of Electrical Demonstration Units." He used diagrams to show several electrical circuits and explained that these helped in the understanding of the actual circuits.

Many of the Junior Academy members attended the luncheon at which Mr. Marvin Amos spoke on the Soda-Bowl, the recreational center of the college.

The afternoon session was called to order at 1:15 p.m. The following students were elected as officers of the Junior Academy for 1951: David Thomas, Junior Academy, Elkhart High School, Elkhart, president; Judith Shepherd, Camera Club, Sullivan High School, Sullivan, vice-president; Marilyn Swift, Sciemus Club, Valparaiso High School, Valparaiso, secretary.

The first speaker of the afternoon was Kelly Wise, Biology Club, New Castle High School, who reported on "A Bird Breeding Population Study." Slides were shown to illustrate the areas which his study included and the nests found in each section.

A "Demonstration on the Processes Used in Photography" was pre-

sented by members of the Sullivan High School Camera Club. Judith Shepherd, Jim LaFollette, Jim Pirtle, and Bevra Boyll showed the various steps in the development of a photograph.

Next on the program was a "Bacteria Study in Vanilla and Chocolate Ice Cream," by David Eads, Science Club, Thomas Carr Howe High School, Indianapolis. Through experiments it had been found that bacteria multiplied more rapidly in chocolate than in vanilla ice cream.

A paper on "Taxidermy," prepared by Robert Petty, also of the Thomas Carr Howe High School Science Club, was presented. The principles of preparing skins for animal mounts were discussed.

Russell Noyes, Science Club, University High School, Bloomington, explained the "Food Habits of Indiana Small Fish." He described the method of determining the approximate food intake of the fish.

Professor Howard H. Michaud, State Sponsor, reported on the progress of the Junior Academy. He announced the names of the students selected by the Junior Academy Council for the titles of "best boy" and "best girl." The title of "best boy" was awarded to Watson Laetsch, Science Club, Thomas Carr Howe High School, Indianapolis, and Joan Freeman, Science Club, Mishawaka High School, was named "best girl." A new system of voting for election of officers was suggested by Professor Michaud. If the plan is approved by the council, two delegates from each high school represented will conduct the election of officers. The national and state science talent search was mentioned. This annual competition for finding science talented seniors in the high schools is sponsored jointly by Science Clubs of America, the Junior Academy of Science, and the Indianapolis Times.

Following these announcements, a demonstration was presented by students of the Science Club, Centennial School, Lafayette. The scientific principles involved in toys were illustrated with a number of interesting examples. This club is the only elementary science club in the Junior Academy.

The program was concluded with a motion picture, "The Fight Against Cancer," furnished by the Indiana Cancer Society.

Approximately two hundred club members, sponsors, and guests attended the excellent meeting at Hanover.

The meeting was adjourned at 4:15 p.m. by president Tom Moon.

EXHIBITS

The exhibits were installed Saturday morning. An attractive display of exhibits was presented, in spite of the great distance many clubs had to travel. Twenty-five science projects were shown by the following clubs:

National Scientific Honor Society, Bloomington High School, Bloomington, Harold Stewart, Sponsor.

Junior Academy, Chemistry Club, Central High School, South Bend, F. S. Sanford, Sponsor.

Science Club, Morton Junior High School, Hammond, Faye E. Moorman, Sponsor.

Biology Club, New Castle High School, New Castle, Robert Rinehart, Sponsor.

Science Club, Thomas Carr Howe High School, Indianapolis, Jerry Motley, Sponsor.

Science Club, University High School, Bloomington, Jack Munsee, and Prevo L. Whitaker, Sponsors.

Biology Club, Lew Wallace High School, Gary, Mrs. Helen McKenzie, Sponsor.

INDIANA JUNIOR ACADEMY OF SCIENCE CLUBS

Name and School	Date		Sponsor
	Organized		
Anderson Science	1936	B. B. Horton	
Attica Sci-Math	1949	J. Claude Daugherty	
Bloomington National Scientific Honor Society, Bloomington H.S.	1931	Harold Stewart	
Science, University H.S.	1938	P. L. Whitaker Jack Munsee	
Crawfordsville Up-N-Atom	1950	David Wells	
Elkhart Junior Academy	1940	Evelyn Wagoner	
Fort Wayne Phy Chem, Elmhurst H.S.	1935	Ruth Wimmer	
Nature, Central High School	1940	Iva Spangler	
Nature, North Side High School	1936	Vesta Thompson C. H. Ott	
Gary Beaker Breakers, Edison H.S.	1947	Mrs. Martha B. Connor	
Future Scientists of America Tolleston School	1949	Juanita Joice	
Biology, Lew Wallace H.S.	1935	Lola Lemon	
Klub Kem Klub, Lew Wallace H.S.	1941	Mrs. Helen McKenzie	
Biology, William A. Wirt H.S.	1945	Mrs. Frances Huddleston	
Hammond Science, Morton Jr. H.S.	1949	Faye E. Moorman	
Huntingburg Science	1949	Wilmer K. Pellett	
Indianapolis Science, Thomas Carr Howe H.S.	1949	Jerry Motley	
Chemistry, Shortridge H.S.	1931	William Johnson	

Nature, Shortridge H.S.	1947	Mrs. Henrietta A. Parker
Nature, Technical H.S.	1932	Howard L. Cook
Science, Washington H.S.	1937	Estil Van Dorn
Lafayette		
Science, Centennial School	1948	Henrietta S. Ball
Marion		
Science	1936	Keith Stroup
Mishawaka		
Science	1936	Darl F. Wood
New Castle		
Biology	1948	Robert Rinehart
Richmond		
Science, Senior H.S.	1949	Katherine Coulter Elma Eliason
South Bend		
Junior Academy, Central H.S.	1939	
A. Junior Izaak Walton		A. L. Smith
B. Chemistry		F. S. Sanford
Sullivan		
Camera	1939	Ruth Hinkle
Terre Haute		
State Discovery, Laboratory School	1939	Russell McDougal
Valparaiso		
Sciemus	1931	Glenn Fisher

INSTRUCTIONS FOR CONTRIBUTORS

Eligibility

Papers

Indiana Academy of Science members in good standing are eligible to submit papers for publication in the Proceedings. When a paper is signed by two or several authors, all must be members in good standing. Preferably, eligibility should be established before submitting the paper, as such papers are given priority. In any case, all authors must be certified by the Treasurer for payment of dues and old reprint bills at the time of the deadline (see below). Papers reaching the editor after the deadline are ineligible. All papers must be accompanied by an abstract in the form specified below, marked "for the editor".

Abstracts

If the Divisional Chairman puts a paper on his program for the Fall Meeting, the abstract will be printed in the Proceedings regardless of the author's membership status, unless the full paper is published.

Time and procedure for Submitting Abstracts: One typed **original** of each abstract, marked "for the editor" may be submitted to the Divisional Chairman before the meeting or the author may mail it direct to the editor. This should be ready for publication with a minimum of editing, i.e., in the standard abstract form (see a Proceedings abstract) and double spaced; it should not include directions to the chairman regarding time, lantern, etc. The latter information may be added to a copy marked "for the Divisional Chairman" and sent to him. The editor cannot accept carbon copies of abstracts or papers. The length of an abstract should not exceed 200 words. Items A, B, C, E, F, and O apply generally to abstracts as well as papers.

Deadline at Editorial Office

Whether sent *via* the Divisional Chairman as prescribed, or directly, all material for the Proceedings must reach the editor within 20 days following the Fall Meeting.

Preparation of Manuscripts

- A. **Refer to Volume 60 of the Proceedings for the accepted style of abstracts and papers, and follow this, especially in literature citations, headings, and footnotes.**
- B. Type on 11 x 8½ inch bond paper with a new ribbon, leaving ample margins. **Double-space everything**, including title, author's names and institutions, footnotes, quotations, legends and literature list. The original will become the printer's copy; if it must be retyped it will be sent back to the author for this.
- C. Footnotes should be kept to an absolute minimum. Necessary footnotes should be numbered consecutively throughout; asterisks are not used. Acknowledgments may be placed only in the introduction or in a footnote. If your abstract must cite literature, use a footnote.
- D. LITERATURE CITATIONS in a paper should not occur in footnotes, but in an **alphabetized** list at the end of the paper, **headed "Literature Cited"**. The highly abbreviated form used by chemists has **not** been adopted for the Proceedings. Follow this model:
 7. DOE, J. B., and R. C. ROE. 1949. New light from old radioactive carbon. Jour. Am. Biological Soc. **34**:273-305.

- E. Only initial letters of the words in titles, headings, and table headings should be capitalized.
- F. Do not underline anything except scientific names, in headings or elsewhere.
- G. All literature listed, and all tables and illustrations should be **referred to** in the text.
- H. Tables, which are very expensive to print, should be reduced to a minimum. Avoid small tables scattered through the text. Each table should be typed on a separate letter-size sheet.
- I. New authors, especially, are reminded that a scientific paper should summarize the work, not recapitulate it. It must be very much more concise than a university thesis, avoiding all unnecessary material, especially long tables and lists of little interest except to the author.
- J. Major professors are urged to **review** all papers by their graduate students, for both form and content, before they are sent in for publication. Of those based upon university theses, manuscripts carrying a pencilled O. K. and signature by the professor will be given preference over those without such indication of review.
- K. Photographs should be printed on glossy paper, and have good contrast. It is best to mount them trimmed to fit tightly together at the edges, in groups on stiff cardboard with rubber cement. Proportion the group for a full page of the Proceedings, or use the full width of the page (4 $\frac{1}{8}$ ") and any part of the page's height. Do not mix line drawings and photographs in the same group. Legends should be on a separate letter-size sheet, numbered to correspond.
- L. The originals for line drawings need be no more than twice the diameter desired for the printed figure. The lettering should be very carefully done, and of suitable size to allow for the necessary reduction. Do not submit printed maps when the necessary reduction will efface the narrower lines or render some of the lettering hardly legible; such maps should be redrawn and lettered in adequate size letters, omitting unnecessary details. It is suggested that the total of illustrations and tables not exceed 20 per cent of the length of the whole paper.
- M. The summary should be complete and clear in itself, and not over 4 percent of the length of the paper. For very short papers no summary is necessary.
- N. Reprints of papers are paid for by authors, at cost. They are ordered at the time the author returns the corrected galley proof to the editor. Abstracts are not reprinted.
- O. The editor needs, at the time he mails out galley in March, **current addresses** for all coauthors of all abstracts and papers. Many former graduate students lose the opportunity to order reprints when mail addressed to them is returned for lack of forwarding addresses. It is suggested that the student's permanent home address be written on the reverse side of that abstract copy marked "for the editor."

Selection of Papers

Every year a few more papers are submitted than can be published with the available funds. Therefore, not all papers received can be included in the Proceedings. Manuscripts prepared concisely, in the style recommended above, will receive first consideration. Authors should not expect to publish very long papers in the Proceedings. Among papers of primarily regional interest, e.g., in certain aspects of botany, zoology, geology, geography, and anthropology, those dealing with Indiana material will be accorded preference.

The selection of papers for the Proceedings is the responsibility of the Editorial Committee.

INDEX

- Acetodextra amiuri*, 312
Acids, weak effect of pH on toxicity, 53
Acoledidae, notes on tapeworm family, 314
Adams, C. F., memorial, 19
Aggregation, of millipeds, 329
Agricultural research, present status in India, 80
Air, moist, dielectric constant of, 297
Allyl Alcohol, reagent for mercury, 125
Amylase, 141
Analytical Chemistry in the United States, 1830-1850, 268
Anderson, J. R., 229
Angle, impossibility of trisection, 279
Angular correlation of the gamma-Rays emitted from the excited states of A²³⁸, 296
Anthropology, section, 37
Antibiological substances, 58
Antiseptic agents, methods of evaluating new, 73
Aphids, control of, 211
Appleseed, Johnny, 266
Archaeology, the F¹field Village Site in Porter County, Indiana, 38
Authors, instructions for, 344
Bachman, G. B., 123
Bacillus subtilis, glucose metabolism and nutrition, 45
Bacteria, effects on growth of *Trichomonas vaginalis*, 313
Bacteriology section, 45
Balances, analytical, 265
Bard, R. C., 45, 67
Barton, T. F., 236
Bases, weak, effect of pH on toxicity, 53
Becker, M., 295
Beech limits, 80
Beevers, H., 53
Behrens, C. A., memorial, 20, 45
Benzylquinolines, substituted, 153
Beta spectrum of Rb⁸⁶, 294
Bieber, C. L., 226
Billman, J. H., 123
Birthplaces of Indiana scientists, 29
Black, G. A., 37
Black widow spider in Indiana, 315
Bleuler, E. and R. M. Steffen, 294
Blue, J. W., 294
Blumenthal, H. J., 126
Bombidae, 167
Botanical research, present status in India, 80
Botany section, 77
Brandt, W. W., 268
Britt, E. M., 73
Brock, J. E., 298
Brooks, E. R., 77
Bruce, R., 6
Brucella, cultivation in embryonating eggs, 45
Bryophytes, Indiana studies, 117
Bullock, M. L., 294
Burton, Milton, 130
Buttons, insects in designs of, 166
Cacao, morphology and anatomy of, 77
Calcium carbonate, precipitation of, 145
Caldwell, R. M., 102
California, ground water depletion in Ventura County, 226
Callixylon in Lower Mississippian, 78
Calumet region, 227
Campagne, E., 47
Campanularia, additions to knowledge of, 309
Canada, R., 295
Carbostyrylcarboxaldehyde, Schiff bases of N-Methyl-4-, 138
Carnahan, W. H., 6
Cassell, R. K., memorial, 21
Chandler, L., 167
Chaparral, microclimates of, 81
Charter members of the Indiana Academy of Science, 265
Chemical microscopy, isoquinoline in, 162
Chemistry section, 123
Chick embryos, cultivation of bacteria in, 45
Christy, O. B., 6
Christy Woods, herbaceous plants and shrubs in, 114
Chromosome morphology, 77
Circulin, 58
Clark, J. A., 166
Class concept, implications for clinical psychology, 307
Claytonia, chromosome numbers in, 80
Climate and the seasonality of export trade, 228
Clostridium, toxins, mechanisms of action, 67
Committees, 1950, 6, 7
Continuity, 277
Contributors, instructions for, 344

- Cook, D. J., 138
 Corley, R. C., 126, 141
 Corn borer, 222
 Corn, branched ears of, 37
 Corn, Indian, first published figure of, 273
 Cottingham, J. O., 91
 Courses in organic chemistry, changing character of, 123
Craspedacusta, demonstration of polyps, 309
 Cross, A. T., 78
 Crowell, Sears, 6, 309, 312
 Culbertson, C. G., 46
 Daily, W. A., 6, 10, 18
 Damon, S. R., 45
 Davis, J. J., 178, 183
 Deadline, editorial, 344
 Dearborn, R. J., 123
 DeLanney, L. E., 309
 Denenberg, V. H., 305
 DenUyl, D., 93
 Depletion, ground water in Ventura County, California, 226
 Descartes' rules of signs, 278
 Dimmick, Robert L., 141
 Driver, H. E., 6, 37
 Edington, W. E., Necrology, 19, 265
 Eligibility of papers for publication, 344
 England, textile manufacture, 227
 Entomology section, 166
 Epidemic of straw itch mite, 183
 Euclid, fifth axiom, 276
 Evansville, manufactural, 256
 Everly, R. T., 185
 Extinction, resistance to, 308
 F'an, H. Y., 295
 Ferguson, B. L., 145
 Fink, J. B., 305
 Fischer, R. B., 145
 Fisher Focus, a new component in northern Indiana (Fifield site, Porter Co.), 38
 Fish population, stability of, 310
 Flood problem in the watershed of the South Nation River (Ontario), 226
 Flora, Records, 82
 Fluorenone-2-Carboxylic acid, synthesis of 7-Nitro-, 164
 Forage crops, control of meadow spittlebug on, 185
 Forces which build mountains, 228
 Forest composition, Hendricks County, 109
 Fosdick, L. D. and H. M. James, 295
 Four dimensional rotations, 280
 Frazer, L. K., 276
 Friesner, R. C., 82
 Fungicidal testing, 46
 Galois groups, equations with cyclic, 276
 Gambill, Wm., 77
 Gardella, C., 77
 Gary, N. D., 45
 Gay, K. L., 45
 Gelber, B., 306
 Gentilcore, R. L., 226
 Geologists, physicians as, 265
 Geology and Geography section, 226
 Gerking, S. D., 310
 Girton, R. E., 78
 Glycerophosphatase, alkaline, in endocrine glands, 311
 Goat's Beard, 81
 Goodnight, C. J., 309
 Gould, G. E., 6, 166, 187
 Green, R. J., 97
 Gregor, H. F., 226
 Gries, G. A., 102
 Ground water, 229
 Ground water depletion in Ventura County, California, 226
 Growth of Terre Haute, relative location and the, 236
 Hayek, M., 124
 Haynes, E., 45
 Heat, Rumford's test of 18th century theories, 267
 Heiser, C. B., Jr., 80
 Hendricks County, 109
 Hicks, R. L., 123
 High energy radiations from V⁴⁸, 297
 Higher fungi of Marion Co., Indiana, 91
 Hire, C., 294
 History of Rumford's tests of early theories of heat, 267
 History of Science section, 265
 Hitz, B. J., memorial, 22
 Hlavaty, V., 276
 Hoarding, food, in rats, 305
 HO₂ radical in radiobiology, 130
 Hoskins, J. H., 78
 Hull, R., 276
 Humbert, theorem of, 278
 Hurst, F. M., 78
 Indiana, beech distribution, 80
 Indiana plant distribution records, 82
 Indianapolis, fragmentation of the urban fringe, 227
 Indiana Psocid distribution records, 192
 Indiana Scientists, 29
 Indiana State Teachers College, 265
 Indian corn, first published figure of, 273
 India, present status of botanical and agricultural research in, 80

- Inhibitors, action upon respiration of excised maize roots, 78
- Inlow, W. D., 265
- Insect designs on buttons, 166
- Insecticides, 187
- Insecticides, effects on tomatoes and tomato insects, 211
- Insects of Indiana for 1950, 178
- Insects, *Metajapyx* in Indiana, 332
- Insects, tomato, 111
- Iodine-starch complex, 141
- Isomerism of IM^{190} , 294
- Isoquinoline in chemical microscopy, 162
- Itch mite, 183
- Jaffee, O. C., 310
- James, H. M. and L. D. Fosdick, 295
- Johnson, A. C., 294
- Johnson, R. L., 78
- Julia's theorem, 277
- Junior Academies, new, 337
- Junior Academy: officers, program, minutes, exhibits, clubs, 338
- Kappa, chemical and physiological properties, 64
- Kartinos, N. J., 153
- Kaslow, C. E., 124, 153, 158
- Keller, C. O., 80
- Ketchum, H. M., 46
- Klein space, differential geometry of curves in, 276
- Klemm, L. H., 124
- Koffler, H., 6, 58
- Kronsbein, J., 280
- Learning, Animal, 308
- Learning, investigations of the behavior of *Paramecium aurelia*, 306
- Lehman, G. W., 296
- Lindsey, A. A., 1, 6, 17
- Loring, R. A., 296
- Luck, J. V., 79
- Mackell, J. F., 265
- Magnesium, titrimetric determination of, 125
- Maize, first published figure of, 273
- Malott, C. A., 23, 239
- Mansfield sandstone, 239
- Manuscripts, eligibility and preparation for publication, 344
- Markle, M. S., 6
- Marshall, G. E., 166
- Mathematics, a testing program for freshmen in, 277
- Mathematics section, 276
- McAlpine, R. J., 311
- McGrain, P., 239
- McIntosh, G. E., 298
- McMinn, W. O., 294
- Mechanisms of clostridial toxic actions, 67
- Mellon, M. G., 6, 265
- Members, of Indiana Academy, new, 334
- Mentha piperita*, important diseases of, 97
- Mercurous ion, detection of, 125
- Metabolism, glucose, of *Bacillus subtilis*, 45
- Metajapyx subterraneus*, 332
- Methylated uric acids, effect on uric acid excretion, 126
- Meyer, A. H., 227
- Michelson interferometer, 296
- Microclimates of chaparral, 81
- Miller, C. W., 79
- Millipeds, aggregation of, 329
- Minton, S. A. Jr., 315
- Minutes of Executive Committee, 11
- Minutes of General Session, 16
- Minutes of Spring Meeting, 9
- Mitchell, A. C. G., 295
- Mockford, E. L., 192
- Montgomery, B. E., 205, 266
- Morgan Co. Indiana, woodland areas, 229
- Morgan, W. P., 6, 12
- Morpheme classes in American Indian languages, 37
- Mosses, 117
- Moulton, B., 227
- Musci, 117
- Muscle action potential response to tonal duration, 305
- Natural gas industry of Indiana, 260
- Naturalists, physicians as, 265
- Necrology, Memorials, 19
- Nereis*, 311
- Nicoll, P. A., 311
- Nitriles, aliphatic, chlorination of, 123
- Nitrogen effect on the morphology of *Verticillium albo-atrum*, 78
- Nuclear energy levels, 294
- Nutrition of *Bacillus subtilis*, effect on glucose metabolism, 45
- Oak openings, 80
- Obelia*, additions to knowledge of, 309
- Odell, Theodore T., 312
- Odonata, notes and records of Indiana, 205
- Oenothera, 77
- Officers, 1950, 6
- Ontario, South Nation River, Flood, 226
- Optical properties of semiconductors, 295
- Order-disorder transitions, new approximation method for treatment of, 295
- Organic chemistry, college undergraduate course in, 123
- Organic chemistry, problems in, 123

- Organic chemistry, teaching of, 125
 Ort, R. S., 307
 Palmer, C. M., 80
 Papers for publication, selection of, 345
Paramecin, chemical and physiological properties, 64
Paramecium aurelia, investigations of the behavior of, 306
 Parasites, 222
 Pauley, C. O., 277
 Peppermint, important diseases of, 97
 Perkins, K. W., 312
 pH, effect of on toxicity, 53
 Phenylquinolines, 124
Philaenus leucophthalmus (L.), control on forage crops, 185
 Phillips, T. J., 125
Phosphatase, alkaline, in some developing endocrine glands of albino rat, 311
 Physicians as geologists and naturalists, 265
 Physics section, 294
 Phytotoxicity, insecticides on tomatoes, 211
 Pioneer occupancy, 227
 Pith, absence in some Smilax roots, 78
 Plants and shrubs in Christy Woods, systematic study of, 114
 Polley, J. C., 277
 Polypeptide antibiotics, 58
 Porter, C. L., 107, 266
 Porter County, Indiana, archaeology in, (Fifield Village Site), 38
 Potzger, J. E., 80, 109
 Potzger, M. E., 109
 Pounds, N. J. G., 227
 Powell, H. M., 46
 Prairie in Indiana, 80
 Pray, E. G., 313
 Precipitation of calcium carbonate, 145
 Presidential address, S. S. Visher, 29
 Primitive groups, legal procedure of, 37
 Problems in organic chemistry, 123
 Pronephros, development of, 310
 Protozoa for class study, 312
 Psocoptera of Indiana, list, 192
 Psychology, animal, 308
 Psychology section, 305
 Quaternary ammonium compounds, 46
 Quinoloneacetic acids, substituted, 153
 Rabies antiserum, production and assay of, 46
 Radiation chemistry, 130
 Radiations from Mo⁹⁹ and Tc^{99m}, 295
 Radiobiology, elementary processes in, 130
 Radiobiology, mechanism of protection in, 130
Rana pipiens, development of pronephros in, 310
 Rat, alkaline glycerophosphatase in some endocrine glands, 311
 Rats, hoarding behavior of, 305
 Rb⁸⁶, beta spectrum of, 294
 Rector, M. A., 114
 Reeves, J. A., 228
 Reinforcements, number of, 308
 Respiration of excised maize roots, action of inhibitors, 78
 Rohr, F. W., 80
 Roller, D., 6, 267
 Root of Smilax, 78
 Rose Polytechnic Institute, 265
 Ross Biological Reserve, flora of, 79
 Rotations, four dimensional, method of visualizing, 280
 Rothwell, N., 80
 Rusk, M., 309
 Salamanders, transplantation in, 309
 Salicylate, effect on uric acid excretion, 126
 Sampson, M. B., 294
 Say, Thomas, Entomologist in Indiana, 266
 Schaeffer, Harold F., 162
 Schiff Bases of N-Methyl-4-carbostryl-carboxaldehyde, 138
 Schockel, B. H., 256
 Schuder, D. L., 211
 Schutzel, A., 37
 Schweiger, L. B., 46, 73
 Selective toxins, correlation between structure and function of, 47
 Semiconductors, Fermi levels in, 296
 Semiconductors, optical properties of, 295
 Serrin, J. B., 277
 Seymour, K., 6
 Shortridge High School, outstanding science students of, 267
 Shutts, C. F., 81
 Simon, E. W., 53
 Simonsen, D. H., 64
 Siskell, J., 125
 Skinner, R. R., 38
 Smilax root, 78
 Smith, D. M., 81
 Snakes, venomous, of Indiana, 315
 Soil, attempts at isolating *Verticillium albo-atrum* from, 79
 Spider, black widow, 316
 Spittlebug, meadow, control of, on forage crops, 185
 Starch hydrolysis, 141
 Starch-iodine complex, 141
 Starkey, O. P., 6, 228
 State Forest, Indiana's first, 93
 State Teachers College, Indiana, 265
 Stearns, F., 102

- Steffen, R. M., 296
 Steffen, R. M., and E. Bleuler, 294
 Steinmetz, C. H., 324
 Stockton, Sister Mary Rose, 164
 Stoneman, E. A., 260
 Straw itch mite, 183
 Superstitions, 37
 Switzer, J. E., 17
 Systemic insecticides, 187
 Temperature, effect on development of wheat, 102
 Temperature recording method, 298
 Terre Haute, relative location and the growth of, 236
 Testing, a program for freshmen mathematics students in Valparaiso U., 277
 Tetrault, P. A., 45
 Textile manufacture, England, 227
Theobroma cacao L., morphology and anatomy of, 77
 Thiouracil, effect of on ontogeny, 324
 Thyroid function in anuran larvae, 324
 Thyroid-gonadal interrelations, 324
 Thyroid tumors, 313
 Tomato, effect of insecticides on, 211
 Toxicity, weak acids and bases, effect of pH on, 53
 Toxins, clostridial, mechanisms of action, 67
 Tragopogon, 81
 Tree growth records, 93
 Trematode from catfish ovary, 312
Trichomonas vaginalis, growth in presence of various bacteria, 313
 2,4-D, effect on grade, 107
 UNESCO, Science cooperation office for South Asia, 80
 Uric acid, excretion of, in white rat, 126
 Usdin, E., 278
 Valencia, R., 77
 Van Dyke, J. H., 313
 van Tijn, D. E., 278
 Van Wagendonk, W. J., 64
 Vascular patterns, 311
 Venomous animals, injuries by, 315
Verticillium albo-atrum, attempts at soil isolation of, 79
Verticillium albo-atrum, the effect of nitrogen on the morphology, 78
 Visher, S. S., 6, 29
 Vocational interests, of graduate students in chemistry, 124
 Voegelin, C. F., 37
 Wade, F. B., 25, 267
 Ward, D. E., 329
 Water ground depletion in Ventura County, California, 226
 Weatherwax, P., 37, 273
 Webster, J. D., 314
 Welch, W. H., 117
 Welcher, F. J., 125
 Wheat, effect of temperature on, 102
 Whelan, K., 125
 White grub control, 166
 Wiancko, A. T., memorial, 26
 Williams, E. C. Jr., 329
 Williams, H. D., 153
 Williamson, H. J., 125
 Wilson, M. C., 222
 Wyckoff, L. B., 308
 Yeardley, N. P., 279
 Young, F. N., 332
 Ziemann, C. M., 297
 Zill, L. P., 64
Zinaria butleri, aggregation of, 329
 Zinc and cadmium, a reagent for, 162
 Zirkle, G. A., 305
 Zobel, W., 297
 Zoology section, 309



