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of Science

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P. D. EDWARDS, EDITOR

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Spring Meeting
CORYDON, INDIANA
May 9 and 10, 1947

Sixty-Third Annual Meeting
BALL STATE TEACHERS COLLEGE
October 16, 17, and 18, 1947

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

Reprints of certain parts of recent volumes of the Proceedings are available for distribution as follows: copies of the constitution and by-laws (Vol. 44), and complete membership list (Vol. 56), 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. O. B. Christy, Ball State Teachers College, Muncie, 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.

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OFFICERS AND COMMITTEES FOR 1947

OFFICERS

- President*, J. F. MACKELL, Indiana State Teachers College.
Vice-President A. R. BECHTEL, Wabash College.
Secretary, WINONA H. WELCH, DePauw University.
Treasurer, W. P. MORGAN, Indiana Central College.
Editor, P. D. EDWARDS, Ball State Teachers College.
Press Secretaries, C. M. PALMER, Butler University, and W. E. EDINGTON, DePauw University.
Trustees of Academy Foundation: J. S. WRIGHT, Eli Lilly & Company, (term expires 1948), chairman; F. B. WADE, Shortridge High School, (term expires 1947).
Committee for Bonding of Trustees: R. C. FRIESNER, Butler University, chairman; SCOTT MCCOY, Arsenal Technical High School.
Research Grant Committee: T. G. YUNCKER, DePauw University, (term expires 1949), chairman; E. G. MAHIN, University of Notre Dame, (term expires 1947); H. H. REMMERS, Purdue University, (term expires 1950); PAUL WEATHERWAX, Indiana University, (term expires 1951); J. S. WRIGHT, Eli Lilly & Company, (term expires 1948); J. F. MACKELL, Indiana State Teachers College, (ex officio); WINONA H. WELCH, DePauw University, (ex officio).

DIVISIONAL CHAIRMEN

- Anthropology*, ERMINIE W. VOEGELIN, Indiana University.
Bacteriology, S. E. HARTSELL, Purdue University.
Botany, NOE HIGINBOTHAM, University of Notre Dame.
Chemistry, ALVIN STRICKLER, Evansville College.
Geology & Geography, C. F. DEISS, Indiana University.
History of Science, C. A. BEHRENS, Purdue University.
Mathematics, J. C. POLLEY, Wabash College.
Physics, B. A. HOWLETT, Rose Polytechnic Institute.
Psychology, ALMA LONG, Purdue University.
Zoology, A. E. REYNOLDS, DePauw University.

EXECUTIVE COMMITTEE

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

- A. R. Bechtel, C. A. Behrens, O. B. Christy, W. A. Cogshall, E. R. Cumings, J. J. Davis, C. C. Deam, E. F. Degering, C. F. Deiss, W. E. Edington, P. D. Edwards, H. E. Enders, R. C. Friesner, W. G. Gingery, S. E. Hartsell, Noe Higinbotham, B. A. Howlett, Theodor Just, Eli Lilly, Alma Long, J. F. Mackell, E. G. Mahin, C. A. Malott, M. S. Markle, K. S.

Means, M. G. Mellon, H. H. Michaud, W. P. Morgan, C. M. Palmer, F. Payne, J. C. Polley, R. R. Ramsey, A. E. Reynolds, W. E. Ricker, B. H. Smith, Alvin Strickler, J. E. Switzer, Erminie Voegelin, F. B. Wade, F. N. Wallace, Paul Weatherwax, Winona H. Welch, J. S. Wright, T. G. Yuncker.

BUDGET COMMITTEE

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

J. F. Mackell, O. B. Christy, P. D. Edwards, R. C. Friesner, W. G. Gingery, H. H. Michaud, W. P. Morgan, F. N. Wallace, Winona H. Welch.

STANDING COMMITTEES

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

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

Biological Survey: W. E. Ricker, W. P. Allyn, A. R. Bechtel, J. J. Davis, H. O. Deay, H. H. Michaud, B. E. Montgomery, C. M. Palmer, J. E. Potzger, Winona H. Welch.

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

Invitations: B. H. Smith, R. B. Abbott, Edward Kintner, S. S. Visher.

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

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

Membership: J. E. Switzer, J. J. Davis, G. F. Hennion, G. D. Koch, R. Earl Martin, W. E. Martin, J. E. Potzger, J. S. Wright.

Necrologist: W. E. Edington.

Nominations: M. S. Markle, W. E. Edington, R. R. Ramsey.

Program: O. B. Christy, G. Alexander, R. Cooper, D. Hartley, Floy Hurlbut, R. McCormick, D. Miller, C. Peirce, R. Shelley.

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

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

Representative on Council of A.A.A.S.: E. F. Degering.

Resolutions: W. E. Edington, S. E. Elliott, M. E. Hufford.

MINUTES OF THE SPRING MEETING

CORYDON

MAY 9, 10, 1947

President Mackell called the Executive Committee meeting to order at 4:30 p.m., May 9, in the auditorium of the Methodist church.

W. P. Morgan presented the final report of the treasurer for the year 1946. Accepted.

P. D. Edwards announced that galley proof for 1946 Proceedings had been returned to the printer. The State Legislature has granted \$2500 annually for aid in printing the Proceedings during the next two years.

C. M. Palmer stated that Butler University Publicity Department and the various presses had co-operated with him in the publicity concerning the Corydon meeting. He recommends the use of the printed programs of the Academy in giving the information to the various reporters and editors.

Ray C. Friesner hopes to send the 50-year index to the printer about the middle of June. The State Legislature appropriated \$2500 for the publication of the index.

Nellie M. Coats, Academy Librarian, prepared the following report:

There has been a noticeable increase in the use of materials in the Academy's library particularly by other special libraries in the state. Requests have come also from such libraries as those of Northwestern University and of the U. S. Department of Agriculture. A file of the Proceedings was presented to the new Indiana Water Supply Commission upon its request. Scarce volumes of the Proceedings making such gifts possible were returned to the Academy recently by St. Mary of the Woods College and the Michigan State Department of Health. Eleven boxes of duplicate scientific periodicals accumulated by the Academy library were presented to the American Book Center at the Library of Congress for distribution to war devastated institutions. Twenty-three new titles were added to the list of periodicals currently received. These included such publications as Pacific Science (University of Hawaii); New Zealand Museum Records in Ethnology; Istituto Italiano di Idrobiologia Memorie; Indian Academy of Science Proceedings; Los Angeles County Museum Quarterly; South Africa Government Metallurgical Laboratory Memoirs. The Library supplied material to an Indianapolis Star reporter for an article about the Academy and a volume of the Proceedings was included in a display of books at L. S. Ayres recently. Many school children visited the State Library during the legislative session and to each group something was said about the Junior Academy.

J. E. Switzer presented 22 applications for membership. Elected.

O. B. Christy reported 126 dinner reservations for the evening program.

E. F. Degering, Indiana's representative on A.A.A.S. Council, announced that H. H. Michaud was elected president of the Academy

Conference at the Boston meeting last December. H. H. Michaud reported that extraordinary interest was expressed at the Academy Conference in the Junior Academy movement. A mimeographed copy of the Conference minutes was presented to the secretary for the Academy files.

It was recommended that H. H. Michaud, Chairman of Indiana Junior Academy of Science, attempt to bring into active membership all clubs which have been organized in Indiana and to present the list of active clubs at the fall meeting.

Ray C. Friesner presented the objection of many botanists concerning the present state flower, the Zinnia, and recommended that the president appoint a committee for the purpose of selecting a new state flower. Motion was made and carried.

C. M. Palmer, Press Secretary, presented his resignation due to his anticipated absence from the state at the time of the fall meeting. It was accepted with sincere regret. A motion was made and carried that the nominating committee appoint a Press Secretary to complete the Palmer unexpired term.

President Mackell read a letter from a Fellow of the Academy with proposals concerning two annual \$25.00 prizes which he wishes to give beginning in 1947 for the two best papers published in the Proceedings during the preceding five years. The details of procedure planned by the anonymous donor were read. The gifts and the proposals were accepted with appreciation and the editor, P. D. Edwards, was made chairman of the committee to make the 1947 selections.

The Executive Committee expressed the need of broader publicity concerning the available A.A.A.S. Academy research grants.

Meeting adjourned at 5:45.

Following the dinner at 6:30 an address of welcome was given by Judge S. Morris Wilson, a talk on the local history of Corydon and vicinity was given by Fred Griffin, and short talks on the Geology and Botany of the area were given by Preston McGrain and Ray C. Friesner.

On Saturday morning, May 10, three field trips were organized. These trips and the leaders follow:

Bird hike led by Howard Michaud.

Botanical trip led by Ray Friesner.

Geology trip led by Preston McGrain.

MINUTES OF THE EXECUTIVE COMMITTEE

MUNCIE, OCTOBER 16, 1947

The Executive Committee was called to order by President Mackell at 8 p.m., in Committee Room, Hotel Roberts. The minutes of the Corydon meeting were read and approved. The reports of officers and committee representatives were presented and accepted as follows:

Academy Trustee. Report of John S. Wright and Frank B. Wade, Trustees of the Foundation Fund, Indiana Academy of Science for the year 1946-1947.

Balance from the previous year.....	\$1.07
Total Receipts	184.50
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Total	\$185.57
Expenditures—Union Trust Co. Fee 5% on \$184.50.....	9.23
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Cash balance at Union Trust Company.....	\$176.34

Assets in the Fund as of September 30, 1947

Five \$1,000 U. S. Savings Bonds Series "D", Cost.....	\$3,750.00
\$6,900 U. S. Treasury Bonds Series "G", Cost.....	6,900.00
Six shares Standard Oil of Indiana Common Stock, par.....	150.00
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Total at par or cost.....	\$10,800.00

Treasurer. W. P. Morgan presented a tentative financial report for the period from January 1 to October 1, 1947. His final report, approved by the Auditing Committee at the end of the year, follows:

Receipts

Balance on hand January 1, 1947.....	\$3,272.85
Dues and initiation fees.....	1,074.00
Refund for research from A.A.A.S.....	200.00
Designated gift	200.00
Gift designated for author awards (1947).....	50.00
Gift designated for author awards (1948).....	50.00
Author's reprint Vol. No. 54.....	2.70
Author's reprints Vol. No. 55.....	398.10
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	\$5,247.65

Disbursements

1—Program Committee.....	\$ 243.78
2—Editor Vol. No. 56.....	200.00
3—Expenses of Secretary.....	157.99
4—Expenses of Treasurer.....	77.50
5—Mailing Proceedings	54.18
6—Stationery	84.50
7—Mary Fritsche (50 yr. index).....	130.50
8—Doris Colligan (50 yr. index).....	15.75
9—Reprints Vol. No. 55.....	541.34
10—Jr. Academy expenses.....	16.91
11—Publications for Library.....	6.69

12—Author award 1947 R. C. Friesner.....	25.00
13—Author award 1947 J. P. Scott.....	25.00
14—Research grant A. E. Reynolds.....	37.50
15—Research grant W. E. Thrun.....	37.50
16—Research grant Robt. Drummond.....	25.00
17—Surety Bond (3 yr. term).....	62.50
18—Eunice Henley (50 yr. index).....	300.00
19—Refund to Section Chairman.....	4.00
20—Research grant J. R. Potzger.....	125.00
21—Reprints Vol. No. 56.....	746.25
22—Returned check.....	1.00

 \$2,917.89

*Balance on hand..... 2,329.76

 \$5,247.65

* Balance includes \$1,000.00 in gifts designated for the completion of work on the fifty-year index and the preparation for publication of the "Indiana Men of Science."

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

(Signed) KARL S. MEANS

S. E. ELLIOTT, *Auditors*

Auditing Committee. Accounts of the Academy Trustees and Treasurer have been carefully checked and found in good order.

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

Editor and Publication of Proceedings. P. D. Edwards reported that the presswork on volume 56 has been completed and that the 1600 volumes are now at the bindery. The printing of the 10,750 reprints has just been finished.

Research Grant Committee. T. G. Yuncker reported that only one request for a grant had been received during the year, that of J. E. Potzger for \$50.00 to partially cover expenses in connection with a problem in the study of pollen in bogs in Quebec, Canada; that W. E. Martin, who had a grant for \$75.00, had left the state and the unpaid half of his grant had reverted to the treasury; that the final report of Kenneth Wagner had been received and his grant completed; that grants not used by the Academy during the two-year period immediately following the making of same by A.A.A.S. will revert to A.A.A.S.; and that approximately \$300.00 are now available, awaiting applications for same.

Biological Survey. W. E. Ricker submitted the following report:

Since the last report of this committee, given in 1944, faunal and floral work in Indiana has made considerable progress in spite of the handicap of the diversion of national energy and manpower to war needs.

Algae and Lower Plants: William A. Daily has published two papers on algae and one on Myxomycetes. Fay Kenoyer Daily has a preliminary report on Indiana Characeae.

Bryophytes: Winona Welch is continuing her collecting and identifying of these forms as well as collecting Myxomycetes and lichens.

Vascular Plants: The State Flora Committee and others have continued work on the distribution of vascular plants. Two recent revisions including Indiana material are of *Asclepias* (milkweeds) and *Liatris*.

Ecological and General Floristic Surveys of Limited Regions: A considerable number of papers have appeared in these fields, largely in the Butler University Botanical Studies, by J. E. Potzger, Ray C. Friesner, C. O. Keller, Mordie B. Lee, and Howard L. Cook.

Insects: In two recent papers read before the Academy, B. Elwood Montgomery has reported on the spatial and seasonal distribution of *Agrionidae* and has reviewed a century of odonatology in Indiana. Donald C. Scott has published a list of Odonata from the Tippecanoe River State Park.

Indiana lists have been recently published for Thysanoptera by C. C. Blickenstoff, and for Culicidae (mosquitoes) by John W. Hart. Work in progress or near completion includes a survey of fleas from Indiana mammals (Frank Skinner), a study of Mecoptera (John Kingsolver), of Aphididae (Virgil Knopp), of various Hemiptera and Homoptera (Howard O. Deay), and of miscellaneous insects from light traps (Donald Schneider).

Attention should be called to H. H. Ross's recent monograph on the "Mosquitoes of Illinois", which will be of great value in Indiana.

Mollusks: Goodrich and Van der Schalie have now published their synopsis of the Mollusca of Indiana which brings the work of Call and Blatchley into the modern form as well as adding new records.

Fishes: Shelby D. Gerking has published the "Distribution of Indiana Fishes" giving the results of his four years of collecting. More recently he has discussed the use of post-glacial drainage connections in the invasion of Indiana by various species.

Birds and Mammals: New Indiana bird records appear from time to time in the various ornithological journals. The quarterly reports of the Pitman-Robertson Wildlife Research Project of the Division of Fish and Game contain much information on game birds and mammals, and also on other birds and mammals, especially fur-bearers.

The detailed bibliographic citation of the works referred to above have been added to the file already in the Committee's hands.

The Committee recommends that some one actively working with birds (and possibly also mammals) be added to its membership in order to facilitate its work.

Fifty-Year Index Committee. R. C. Friesner presented the following detailed report.

Manuscript for the 50-year index is in the hands of the State Printing Board. The Committee makes the following recommendations:

1. The volume will be 6 x 9 (same size as the Proceedings), two columns per page; 8-point type, bound in cloth of different color from the Proceedings. Estimated number of pages, 350.
2. Number of copies to be printed: 2,000.
3. Distribution:
 - a. Public and college libraries and all exchanges free.

- b. Members of five years standing, or any who will pay dues in advance sufficient to make a five-year membership, free upon request. Return announcement card to be sent each member at the first regular Academy mailing following date of issue of the Index.

One copy only to the member on this basis.

- c. Sale copies available to all not included in the above. Sale price to be \$3.00 (same as the Proceedings).

4. Financing: The 2,000 copies are expected to cost approximately \$1,000 more than has been appropriated by the State.

The Committee will endeavor to secure these additional funds.

Library Committee. W. G. Gingery presented a report prepared by Nellie M. Coats, Academy Librarian.

Since the May report 22 new serial titles have been added, a total of 45 for the year, including such publications as the University of Sydney, Department of Zoology Monographs; University of Arizona, Laboratory of Tree-ring Research Bulletins, the New Zealand Dominion Museum Records in Zoology and Records in Entomology.

Certain early files have been filled in by further gifts from issuing agencies such as the Swedish entomological society.

Some issues of the New York Academy of Science Annals and the Kansas Academy of Science Transactions, long since out of print, were purchased from dealers.

Gaps of the last few years in foreign titles were filled by materials held for American libraries during the war.

Volumes of the I. A. S. Proceedings held here during this period were distributed to 35 agencies which had been inaccessible. Volumes destroyed by war were replaced for nine agencies in Belgium, England, France, Holland, and Norway.

In addition to the file of the Proceedings supplied the Indiana Water Supply Commission, a file was completed for the Indiana Geological Survey's Bloomington office.

As a delegate, representing the State Library, your librarian attended the national convention of the Special Libraries Association at Chicago and visited various scientific libraries there, with, it is hoped, some profit to the academy.

Press Secretary. C. M. Palmer is in India for a period of two years. W. E. Edington has substituted as Press Secretary for this meeting, which has received publicity in numerous papers throughout the state.

Membership. J. E. Switzer presented the following report on Interests and Geographic Distribution of Academy Membership.

The chairman of the Membership Committee of the Academy of Science, in an effort to find a more efficient method of canvassing the educational institutions of the state for new members, made a study of the distribution of the membership of the academy as listed at the close of the last calendar year. It was soon discovered that the members could not be listed by institutions and departments, because too many gave only their home addresses with no reference to the institution, if any, in which they were employed. Therefore, the only groupings that seemed feasible were on the basis of the Sections of the Academy in which they listed their major interests, and their geographic distribution in cities. A graph to show the facts in regard to these two items was constructed and composes a part of this report to the Academy.

Distribution in Academic Interests. Many persons naturally have more than one subject of major interest. In construction of the graph, each interest indicated by a person was counted, hence the total number of persons represented in this part of the chart is much greater than the actual membership. Botany and Biology, grouped together in the chart, stand out as greatly in the lead of the others, 320 members having expressed their interest in them. Zoology ranks next with 253 persons naming it as a major interest. Chemistry ranks third with 222, Physics fourth with 148, and Geology-Geography fifth with 118. These five Sections comprise 80% of the total preferences expressed. The remaining four sections contain only 20%. Apparently those interested in the Section of Entomology recorded their interest subject as Zoology. The sections of Anthropology and Bacteriology are relatively new sections but seem to be making a healthy growth. The addition of 134 new members this year will probably make changes in the relative ratings of the sections.

Geographic Distribution of Members. In the geographic distribution of members, the chart indicates the outstanding importance of Indianapolis. This reflects the influences of Butler University, Indiana Central College, the I. U. and Purdue University extension divisions, Eli Lilly Laboratories, the Department of Conservation, and others. Indianapolis, plus Lafayette and Bloomington contain 42% of the total membership. The size of the two state universities account for the importance of the two latter cities. Fifteen other towns, with as many colleges, in the state are given as the home addresses of 22% of other members. Another 13%, without indicating any connection with any college, give their addresses in other towns of the state. A striking fact is that more than 23% have addresses outside the state of Indiana. These addresses reach from Florida to Minnesota, and from California to Maine. It suggests that members of the Academy who leave the state consider their membership in the Academy of sufficient importance to maintain it, though they may not be able to attend any of its sessions.

Junior Academy of Science. H. H. Michaud presented the following report:

The fourteenth annual meeting of the Indiana Junior Academy of Science was held Saturday, October 19, 1946, in the Sycamore Theatre of the Laboratory School, Indiana State Teachers College, Terre Haute.

Approximately one hundred members, sponsors, and friends attended the meeting. Ten clubs and their sponsors were represented.

During the past year more than two hundred science teachers have been informed by mail about the activities of the Junior Academy. On the basis of responses received during the past two years, there are at present about 20 Junior Academy Clubs that are more or less actively engaged in science club activities.

Last year the Budget Committee of the Academy voted to allow \$50.00 to the Junior Academy for operating expenses. The amount spent to date is \$16.91. This does not include this year's expenses for the annual meeting which should not exceed \$15.00. These expenditures included mailing of mimeographed materials, announcements of the fall meeting, and paper materials for a News Letter sent to active and prospective clubs last spring. If the State Sponsor had more time to devote to promotion it would not be difficult to use all of the budget allotment. It is hoped that the Academy will see fit to continue the funds for next year.

There are a few hopeful signs that the Junior Academy clubs will increase in number during the next few years. Five or six requests for applications for new clubs have been received during the past few months.

The status of the Junior Academy was a special topic of discussion at the Academy Conference held in Boston last December during the meeting

of the American Association for the Advancement of Science. Because there was such intense interest in the subject, the topic will be included again at the meeting next December in Chicago. Moreover, a Junior Scientists Assembly, sponsored jointly by the AAAS and the National Science Teachers Association, was instituted last year for high school students and was so successful that it will be repeated again this year.

Scientists are becoming more concerned with the effectiveness of science teaching at all the school levels. It is recognized that science talent must be found and stimulated through both interest, and financial aid if future scientists are to be developed. Seventy-six Indiana students completed the science examination of the Westinghouse Science Search conducted by Science Clubs of America last spring in competition with more than three thousand high school students of the nation. There were no Indiana winners, but two received honorable mention. Forty national winners are selected each year and a full subsistence, four year scholarship of \$2,400.00 each is given to the two top ranking contestants.

Reference is made to this Science Talent Search because it provides the mechanism for finding future scientists in our own state. Steps are under way at Purdue for developing a plan to grant full subsistence scholarships to students who show scientific promise. In many cases industry and local community groups might be called upon to lend financial support. It is hoped that this plan will set a pattern for other state colleges and universities to do the same. The results of the Westinghouse examination are available to our state. However, it does not mean that the state cannot conduct its own science talent search. The important thing is that such a plan when put into operation will do much toward stimulating more effective teaching of science and it will also promote greater activity among Junior Academy clubs. It should be an obligation of the Senior Academy to support any worthwhile plan to develop the best possible scientists in Indiana.

The Executive Committee voted to continue the appropriation, not to exceed \$50.00, to aid Dr. Michaud in advancing the work of the Junior Academy.

Relation of Academy to State. F. N. Wallace stated that the State Legislature has appropriated \$2500.00 for aid in printing the Proceedings and \$2500.00 for aid in printing the 50-year Index.

Relation of Academy to A.A.A.S. E. F. Degering reported that 30 attended the Academy Conference in Boston in 1946 and that a good program has been prepared for the 1947 meeting in Chicago. He urged all Academy members to attend the December, 1947, meetings of A.A.A.S.

Nominations Committee. President Mackell announced that the committee consisted of M. S. Markel, chairman, W. E. Edington, and R. R. Ramsey. No report was made by the committee due to the absence of one of the members.

Old Business. W. E. Edington presented a detailed progress report for the Committee on History of Science in Indiana or Indiana Men of Science. President Mackell announced the membership of the State Flower Committee to be R. C. Friesner, chairman, Nellie M. Coats, C. C. Deam, D. DenUyl, B. H. Smith, and F. N. Wallace.

New Business. F. B. Wade was elected to succeed himself as Trustee of Academy Foundation, (term expires in 1951). R. C. Friesner and

Scott McCoy were elected to succeed themselves as committee on Bonding of Trustees, (term expires in 1948). E. G. Mahin was elected to succeed himself on Research Grant Committee, (term expires in 1952). The application of the Entomologists for a Section or Division in the Indiana Academy was granted. It was voted to invite the Civil, Electrical, Chemical, and Mechanical Engineers to organize a Section in the Academy, the invitation to be presented through Dean A. A. Potter, School of Engineering, Purdue University. A letter was read from A.A.A.S. suggesting that representatives on the Council be elected for a term of office not less than two years, and informing the Academy that only Fellows may serve on the Council of the Association.

The following resolution was read by J. S. Wright and adopted by the committee.

WHEREAS the Secretary, Treasurer, Press-Secretary, Editor and Librarian serve the Academy more or less continuously throughout the year at a sacrifice of leisure; and

WHEREAS they receive no compensation for arduous work that can be done only by those with special experience and training; and

WHEREAS it is incumbent on these officers to attend all meetings of the Academy in the performance of their official duties: Therefore be it

RESOLVED, That in addition to the present allowance for postage, stationery and other expenses involved in the work of their respective offices, the Academy as a token of appreciation allow the Secretary, Treasurer, Press-Secretary, Editor and Librarian each an amount not exceeding twenty (20) dollars per year to help defray personal expenses incurred in attending the annual winter meeting and the spring field meeting; furthermore be it

RESOLVED, That the treasurer be authorized to pay such allowances out of the Academy treasury on vouchers presented in compliance with the procedure provided for the payment of accounts owed by the Academy.

The meeting adjourned at 10 p.m.

MINUTES OF THE GENERAL SESSION

BALL STATE, OCTOBER 17, 1947

Dr. J. R. Emens, President of Ball State Teachers college, delivered the Address of Welcome. President Mackell responded in behalf of the Academy.

W. E. Edington presented the Necrology.

Minutes of the Executive Committee meeting of October 16, 1947, were read by the Secretary and approved by the Academy.

A motion was made and accepted that because of the inability of the Nominations Committee to meet before the Executive Committee meeting to nominate Fellows of the Academy at the October 16 meeting that the rule be suspended at this meeting of the Academy and that nominations for Fellows and their election occur at the dinner meeting.

Following the annual dinner in the Burriss School Recreation Room, J. E. Switzer presented 115 applications for membership. The Secretary was instructed to cast an unanimous ballot for the 115 applicants. Total for 1947 is 137 new members.

M. S. Markle read the nominations of the committee as follows: *Fellows*, J. H. Hoskins, Scott McCoy, R. Earl Martin, H. H. Michaud, and C. F. Voegelin; *President*, Winona H. Welch, DePauw University; *Vice-President*, Mason E. Hufford, Indiana University; *Secretary*, O. B. Christy, Ball State Teachers College; *Assistant Secretary*, Donald E. Miller, Ball State Teachers College; *Treasurer*, W. P. Morgan, Indiana Central College; *Editor*, P. D. Edwards, Ball State Teachers College; and *Press Secretary*, William A. Daily, Butler University.

The Divisional Chairmen elected in the sectional meetings for 1948 were announced as follows: *Anthropology*, Arthur B. Carr, Indianapolis; *Bacteriology*, M. S. A. Campbell, Indianapolis; *Botany*, H. J. Brodie, Indiana University; *Chemistry*, E. S. Gantz, Purdue University; *Entomology*, W. P. Allyn, Indiana State Teachers College; *Geology and Geography*, Floy Hurlbut, Ball State Teachers College; *History of Science*, S. S. Visher, Indiana University; *Mathematics*, L. H. Whitcraft, Ball State Teachers College; *Physics*, J. C. Hendricks, Franklin; *Psychology*, D. G. Ellson, Indiana University; and *Zoology*, J. W. Baechle, St. Joseph's College.

P. D. Edwards, Chairman of the Committee on Prize Awards, read the following report:

Last February a Fellow of the Academy wrote President Mackell a letter expressing his desire to give anonymously two prizes each year for distinguished papers published in the *Proceedings*. By the terms of the gift, the President and Editor choose each year the two fields in which the award is made. The final selection is made by a committee consisting of those who during the preceding five years have served as President or Editor of

the Academy and those who during the same period have served as Chairmen of the two sections selected.

Your President and Editor have selected for this year fields to honor the first two men who served as Presidents of the Academy: David Starr Jordan and John B. Coulter. The fields are Vertebrate Zoology and Botany.

Your committee has made the following selections to receive the awards in 1947:

The Jordan award is made to Dr. J. Paul Scott, formerly Professor of Zoology at Wabash College and now Director of Behavior Studies, Hamilton Station, Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine. Dr. Scott's paper in volume 53 appearing under the title "Social behavior, range, and territoriality in domestic mice" is significant in marking the beginning of a series of important investigations in behavior studies of vertebrates.

The John B. Coulter award is made to Dr. Ray C. Friesner, Dean of the School of Science of Butler University, for his work as Secretary of the State Flora Committee, whose report is an annual feature of the *Proceedings*, and for his researches on tree growth.

B. H. Smith, chairman of the Committee on Invitations, announced that the invitation from Indiana University, Bloomington, had been accepted for the 1948 Fall Meeting of the Academy.

W. E. Edington, chairman of the Resolutions Committee, and in behalf of the Academy, read the following Resolution:

The Indiana Academy of Science, assembled in its sixty-third annual meeting, expresses its appreciation and thanks to the faculty and students of Ball State Teachers College for their hospitality, and in particular to President Emens for his words of welcome, to Choir Director, F. Lemuel Anderson, for the music of the A Capella Choir, and to Professor O. B. Christy and his committee of faculty and students who have made this meeting pleasant and successful.

With regard to "Save the Shades", W. E. Edington read the following resolution:

Whereas: The Indiana Academy of Science, from its very inception, has exerted active leadership in State conservation projects, in such fields as conservation of natural resources, bird protection, stream pollution, weed eradication, and forest preservation, and

Whereas: Such great leaders in the Academy, past and present, such as David Starr Jordan, Amos W. Butler, Willis S. Blatchley, Stanley Coulter, Richard Lieber, Father Nieuwland, Marcus W. Lyon, Arthur L. Foley, Charles C. Deam, John S. Wright, and many others, have been alert to the State conservation needs and have tirelessly and unselfishly worked for the preservation and development of the State's resources in lakes, parks and forests, and

Whereas: There is a distinct need of prompt and active coöperation of all possible agencies to secure and preserve The Shades, at Waveland, for the future enjoyment of ourselves and posterity,

Therefore be it resolved: That the Indiana Academy of Science recommends to its membership their active participation in the securing of funds and their influence in publicizing the need and promoting the coöperation of all civic and State groups, civic clubs, and other organizations and individuals, in the addition of The Shades to the State Park System.

And be it further resolved: That the Academy urges Governor Gates and the State Legislature to use all means to secure The Shades and to develop a long range program that will provide for similar future acquisitions, and

Be it further resolved: That copies of this Resolution be sent to Governor Gates and the Director of the State Conservation Department.

Vice-President Bechtel introduced President Mackell who delivered a challenging address on "Graduate Degrees for College Science Teachers."

The 63rd annual meeting of the Indiana Academy of Science, with a general attendance of 350 and a dinner attendance of 136, was adjourned.

WINONA H. WELCH, *Secretary.*

TAXONOMISTS MEETING

R. C. Friesner, Butler University, Chairman

The Plant Taxonomists held their meeting on Saturday morning at Ball State Teachers College. Naomi Mullendore was elected chairman for 1948.



INDIANA JUNIOR ACADEMY OF SCIENCE

Officers for 1947:

President: ROBERT REINHOLD, Junior Izaak Walton Club, Central High School, South Bend.

Vice-President: MARILYN LEECH, Science Club, William A. Wirt High School, Gary.

Secretary: RAE SAFERIGHT, Science Club, George Washington High School, Indianapolis.

Members of the Council: Prevo L. Whitaker, (1943-1947); Roy McKee, (1944-1948); Ruth Wimmer, (1945-1949); Darl F. Wood, (1946-1950); G. Donald Klopp, (1947-1951).

PROGRAM OF THE FIFTEENTH ANNUAL MEETING

October 18, 1947

Auditorium, The Burriss Laboratory School
Ball State Teachers College, Muncie

9:00 a.m. Exhibits

10:00 a.m. Morning session, Auditorium, Burriss School

General session, Robert Reinhold, presiding.

Greetings, Howard H. Michaud, State Sponsor.

Reading of minutes of the 1946 meeting, Rae Saferight, Secretary.

1. "A Field Trip," Ann Arbogast, Junior Academy of Science Club, Elkhart.

2. "History and Principles of Astronomy," Alan Haber, Central High School Junior Academy, South Bend.

3. "A Trip to the Moon," Harley Sachs, Central High School Junior Academy, South Bend.

4. "The Dunes and William A. Wirt School Grounds," Donald Krebs, Science Club, William A. Wirt High School, Gary.

5. "Coloring and Analysis of Turquoise," Chemistry Club, Shortridge High School, Indianapolis.

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

1. "Tissue Culture of Chick Embryos," James B. Thomas, Science Club, Howe High School, Indianapolis.

2. "Introducing Natural Science to Others," Robert Craig, Biology Club, Lew Wallace High School, Gary.

3. "Marine Invertebrates," Dale Mitch, Biology Club, Lew Wallace High School, Gary.

4. "A Bird Survey of Technical High School Campus," David Schultz, Nature Study Club, Technical High School, Indianapolis.

5. "Stimuli," Phyllis Gouker, 1945 Academy Award Winner, Ball State Teachers College, Muncie.

Business session.

MINUTES

The fifteenth annual meeting of the Indiana Junior Academy of Science was held Saturday, October 18, 1947, in the auditorium of the Burris Laboratory School, Ball State Teachers College, Muncie, Indiana.

The meeting was called to order at 10:00 a.m. by the president, Robert Reinhold, Central High School, South Bend. He next introduced the other officers as follows: Vice President, Marilyn Leech, Science Club, William A. Wirt High School, Gary, and Secretary, Rae Saferight, Science Club, George Washington High School, Indianapolis. Miss Saferight served as secretary for the meeting.

The president introduced the State Sponsor of the Indiana Junior Academy of Science, Professor Howard H. Michaud of the Department of Forestry of Purdue University. Professor Michaud extended greetings to the Junior Academy clubs and spoke briefly of the progress of the Junior Academy of Science during the past year.

As a special surprise, Professor Michaud introduced and called upon Dean Howard E. Enders of Purdue University to speak. Dean Enders who served as the first sponsor of the Junior Academy from 1931 to 1945, urged the clubs to keep a record of the achievements of members after they had graduated. He also related a few of his most interesting experiences of travel during the past year, while on leave from the University.

The first speaker on the program, Ann Arbogast, Junior Academy of Science, Elkhart, presented a talk on "A Field Trip." She outlined the essentials of a field trip, then told of a trip which the Elkhart club had taken to Detroit. She mentioned especially the cooperation of the bus driver, ways to break the monotony while traveling, notification of guides, and planning of extensive tours. She closed with the motto, "Plan your work, then work your plan."

The next speaker, Alan Haber, Central High School Junior Academy South Bend, presented an interesting discussion of the "History and Principles of Astronomy." He explained the term astronomy and spoke of planets, stars, size, orbits about the sun, and of the earlier belief that the earth was flat. He described in detail the "Helio-centric" and "Geo-centric" theories and various other ideas of the early Greeks. Galileo's first discovery of the telescope, his belief in the Copernican theory, and a summation of his contribution to astronomy proved very interesting, as well as, his explanation of gravity. Diagrams were used to illustrate various points of the highly educational talk.

The president next called on Harley Sachs, another member of the Central High School Junior Academy, South Bend, who talked on "A Trip to the Moon". First, he explained the drawings which were on display in the exhibit room. In order to reach the moon, Mr. Sachs said, the rocket would have to leave the equator at midnight and travel at varying, increasing velocities as it progressed toward its destination. He gave definite figures on velocity readings and mentioned the kind of supplies and fuel that would be needed. While the ideas presented seemed somewhat fantastic it is not entirely beyond the realm of possibility.

Donald Krebes, Science Club, William A. Wirt High School, Gary, spoke on "The Dunes and William A. Wirt School Grounds." He explained the formation of dunes, the glaciers involved, the abundance of sand found in the glaciers, and the names of the forms of plant life around the dunes. He concluded by showing kodachrome slides which showed the beauty of the Wirt High School grounds.

The next speaker was Francis Huber, Chemistry Club, Shortridge High School, Indianapolis. He discussed the "Coloring and Analysis of Turquoise," as to discovery of a new method of preparation, the preparation itself, coloring, cleaning, mixing of cleaning solution, polishing, and setting. Two stones were passed around which illustrated a poor and a fine grade of turquoise.

The morning session was adjourned until 1:00 p.m.

The afternoon session was resumed at 1:00 p.m. The first speaker called upon was James B. Thomas, Science Club, Howe High School, Indianapolis, who talked on "Tissue Culture of Chick Embryos." He told about the cultures he had prepared on chick embryos in the laboratory, and the kind of preparations required for study.

"Introducing Natural Science to Others," by Robert Craig, Biology Club, Lew Wallace High School, Gary, was the next presentation. It related the experience of the speaker as a nature counsellor in a summer camp. The kind of teacher and the method of teaching was explained as important in teaching nature to others.

Dale Mitch, Biology Club, Lew Wallace High School, Gary, talked about "Marine Invertebrates." With examples of each, he described sponges, starfish, sea fans, sea urchins, sand dollars, and oysters as to description, enemies, culture, food, habitat classification, damage, reproduction, and structure.

The president then called upon David Schultz, Nature Study Club, Technical High School, Indianapolis, who discussed the topic, "A Bird Survey of Technical High School Campus." He told about robins, woodthrushes, brown thrashers, cardinals, white throated sparrows, woodpeckers, killdeers, yellow warblers, wood pewees, and scarlet tanagers. He mentioned the different kinds of habitat, food, size, and characteristics of each bird. The talk was illustrated with kodachrome slides which were greatly appreciated by the club members.

The final speaker on the program was Phyllis Gouker, 1945 Academy Award Winner, Ball State Teachers College, Muncie, who spoke on "Stimuli." She related what influences had been responsible to cause her to continue in science. She encouraged all of the club members to go on in science and her enthusiasm should prove very stimulating to all of us to work harder in our scientific efforts.

Business session.

Following the last speaker of the afternoon session, the president called upon the State Sponsor to read the list of nominees selected by the council, and the club members balloted for and elected the following officers for 1948: *President*, DONALD KREBES, Science Club, William A. Wirt High School, Gary; *Vice President*, ROBERT CRAIG, Biology Club, Lew Wallace High School, Gary; *Secretary*, JANE NILES, Junior Academy of Science, Elkhart High School, Elkhart.

It was also announced that the council had selected Miss Evelyn Wagoner, biology teacher and sponsor of the Junior Academy of Science at Elkhart to succeed Mr. Prevo L. Whitaker on the council from 1948 to 1952.

The council read its nominations of the "Best Boy" and "Best Girl" of the state for the award of honorary membership in the American Association for the Advancement of Science for the ensuing year. Alan Haber, Junior Academy of Science, Central High School, South Bend, and Ann Arbogast, Junior Academy of Science, Elkhart High School, Elkhart, were chosen by the council and nominated for these honorary memberships. Their selection also entitles them to represent the Indiana Junior Academy at the meeting of the Junior Scientists Assembly in Chicago, December 27.

Approximately one hundred Junior Academy members, sponsors, and friends attended the meeting. Fifteen high school science clubs were represented.

The meeting was adjourned at 3.00 p.m.

EXHIBITS

The exhibits were installed Saturday morning. While the exhibits were rather limited there was a keen interest manifested by members of the visiting clubs as well as those who showed their own club projects. The following clubs prepared exhibits:

Science Club, University High School, Bloomington, Prevo L. Whitaker, Sponsor.

Science Club, Burriss Laboratory School, Muncie, Dr. Robert Cooper and Ruth Dutro, Sponsors.

Nature Club, Central High School, Fort Wayne, Iva Spangler, Sponsor.

Nature Club, North Side High School, Fort Wayne, Vesta Thompson, Sponsor.

Science Club, Mishawaka High School, Mishawaka, Darl F. Wood, Sponsor.

Central Junior Academy of Science, Central High School, South Bend, A. L. Smith, Sponsor.

INDIANA JUNIOR ACADEMY OF SCIENCE CLUBS

Name and School	Date Organized	Sponsor
Anderson Science	1936	B. B. Harris
Bloomington General Science, Jr. H.S.	1931	Harold Stewart
University School-Science	1938	Prevo L. Whitaker
Elkhart Junior Academy	1940	N. E. Adams Evelyn Wagoner
Fort Wayne Nature Club, North Side H.S.	1936	Vesta Thompson
Phy Chem Club, Elmhurst H.S.	1935	Ruth Wimmer M. Miller
Nature Club, Central H.S.	1939	Iva Spangler
Gary Biology Club, Lew Wallace H.S.	1935	Lola Lemon
Klub Kem Club, Lew Wallace H.S.		Mrs. Helen MacKenzie
Beaker Breakers, Edison H.S.	1947	Mrs. Martha B. Conner
Biology Club, Wm. A. Wirt H. S.	1945	Mrs. Frances Huddleston
Indianapolis Science Club, Washington H.S.	1937	J. H. Otto
Nature Study Club, Technical H.S.	1932	Howard L. Cook
Chem Club, Shortridge H.S.	1931	William Johnson
Nature Club, Shortridge H.S.	1946	G. Donald Klopp
Marion Science Club	1936	Keith Stroup
New Castle Biology Club	1947	Edna Banta Max Forsyth
Mishawaka Science Club	1936	Darl F. Wood
South Bend Central Junior Academy, Central H.S.	1939	
A. Junior Izaak Walton Club		A. L. Smith
B. Junior Audubon Club		A. L. Smith
C. Chemistry Club		
Sullivan Camera Club	1940	Ruth Hinkle
Terre Haute State Discovery Club		
Laboratory School, Senior H.S.	1939	Russell McDougal

NEW MEMBERS, 1947

Ahrendt, Mr. M. H., Anderson College, Anderson	M
Alexander, Prof. Gerald L., 409 Tillotson Ave., Muncie	C
Allen, Dr. Martin, Dept. of Chemistry, Butler University, Indianapolis 7	C
Asher, Prof. E. J., Purdue University, West Lafayette	Ps
Babcock, Mr. W. Clay, 508½ W. Charles Street, Muncie	M
Baker, Dr. Lawrence M., Biology Annex, Purdue University, West Lafayette	Ps
Baker, Mr. Linville A., Research Department, Eli Lilly & Co., Indianapolis	Ba
Barton, Prof. Thomas F., 1800 Maxwell Lane, Bloomington	G
Bieber, Dr. Charles L., Geology Dept., DePauw University, Greencastle	G
Bijou, Dr. Sidney W., 400 E. Side Drive, Bloomington	Ps
Boisen, Harold L., 570 E. Fall Creek Drive, Indianapolis 5	
Boone, Miss Betty Jane, 2425 Fletcher Street, Anderson	Bo
Bruce, Dr. Robert W., 612 W. Pike Street, Crawfordsville	Ps
Brumfel, Prof. Charles, 306 N. Talley Street, Muncie	M
Burr, Proof. Irving W., 265 Littleton St., West Lafayette	M
Byrne, Mr. Edward, Jr., 660 Park Avenue, Franklin	G
Caldwell, Mr. A. Lee, 949 E. 86th., R.R. 14 Box 271, Indianapolis 44	C
Callender, Mr. Maurice E., 1506 Dawson, Indianapolis	Ba, Z
Campbell, Mr. Guy, R.R. 4 Box 1, Corydon	G
Campbell, Mr. M.S.A., Indiana State Board of Health, 1098 W. Michigan Street, Indianapolis 7	Ba
Campbell, Mr. S. L., Psychology Dept., Indiana University, Bloomington	Ps
Caroline, Mr. Milton, Purdue Housing Court F No. 99, State Street, West Lafayette	Z
Chanin, Dr. Martin, Evansville College, Evansville	C
Clauser, Mr. Charles E., No. 1 Briar Road, Muncie	A
Cohen, Miss Millicent, Biology Dept., Purdue University, West Lafayette	Ba
Cole, Dr. LaMont C., 744 E. 3rd Street, Bloomington	Z
Connor, Mrs. Martha B., 4418 Washington Street, Gary	Bo, Z
Coppock, Mr. Harold, Psychology Dept., Indiana University, Bloomington	Ps
Coverstone, Mr. Harry V., 1207 North 9th Street, Terre Haute	C
Craig, Mr. David R., Psychology Dept., Indiana University, Bloomington	Ps
Crull, Dr. Harry E., 2461 Park Avenue, Indianapolis 5	M
Davis, Dr. Wm. W., Beech Park, Greenwood	Ph, C
Dearborn, Dr. Robert J., Wabash College, Crawfordsville	C

Dragoo, Mr. Donal W., R.R. 4, Bloomington	A
Dreiling, Rev. B. R., St. Joseph's College, Colledgeville	Ph
Ellson, Dr. Douglas G., Psychology Dept., Indiana University Bloomington	Ps
Esten, Mrs. Sidney R., Botany Dept., Butler University, Indianapolis	Bo
Fields, Dr. Paul E., Psychology Dept., Wabash College, Crawfordsville	Ps
Finn, Miss Theresa, 537 Connecticut Street, Gary	C, Ph
Forsyth, Mr. Max Allyn, 714 South 8th Street, Terre Haute	Bo, Z
Franklin, Mr. Joseph Charles, P.O. Box 501, West Lafayette	Ps
Fritsche, Miss Mary, 2852 Brill Road, Indianapolis 3	Bo
Furgason, Dr. Waldo H., Zoology Dept., Wabash College, Craw- fordsville	Z
Gage, Miss Margaret E., Mason Hall, Greencastle	Ba, Z
Gage, Dr. N. L., Psychology Dept., Purdue University, West Lafayette	Ps
Godfrey, Mr. Robert R., 2300 Lafayette Avenue, Terre Haute	Bo, Z
Golomb, Prof. Michael, Mathematics Dept., Purdue University, West Lafayette	M
Graves, Dr. Gordon Harwood, 227 South Grant Street, West Lafayette	M
Graybrook, Miss Irene, 520 State Street, New Albany	Ba, Bo, M
Gross, Mr. E. Wayne, 303 East 6th Street, Bloomington	Ph
Gunsalus, Dr. Irwin C., Bacteriology Dept., Indiana University, Bloomington	Ba
Hanna, Mr. Ray, 321 South Meridian, Jasonville	Bo, C, Ph, Z
Harker, Mr. David H., Centerton	G
Hazard, Prof. Clifton T., 344 Northwestern Avenue, West Lafayette	M
Heiser, Jr., Dr. Charles B., Botany Dept., Indiana University Bloomington	Bo
Heller, Mr. Noah C., Science Dept., Indiana State Teachers' College, Terre Haute	C
Helmen, Mr. Vernon R., 208 Murray Street, South Bend	A
Hiatt, Mr. George A., 5545 Rockville Road, Indianapolis	M, Ph
Hill, Mr. Charles F., 1132 Blaine Avenue., Indianapolis	Bo
Hoagland, Mr. John Edward, 4527 Young Ave., Indianapolis 1	Ph
Holmes, Dr. Arthur, College of Religion, Butler University, Indian- apolis	Ps
Hoshaw, Mr. R. W., 703 Evergreen Street, West Lafayette	Bo
Hughes, Mr. Norwood R., Jamestown	M
Hummel, Dr. A. D., Physics Dept., Ball State Teachers' College, Muncie	Ph
Johnson, Mr. L. W., 44 North Salisbury Street, Lafayette	M
Johnson, Mr. Paul E., 324 Sheetz Street, West Lafayette	Ph
Jonah, Prof. H.F.S., Mathematics Dept., Purdue University, West Lafayette	M
Karst, Charles E., Mishawaka High School, Mishawaka	C
Kent, Mr. George N., 431 Lowell Street, Manchester, N. H.	Bo
Keyler, Mr. Robert Dean, 3122 North Keystone, Indianapolis	Bo. C

Kleiderer, Dr. Ervin C., 5105 N. Illinois Street, Indianapolis 8 W. Lafayette	C Ba
Koffler, Dr. Heinrich, No. 75, Purdue Housing, West State Street,	
Koenker, Prof Robert H., 3000 Riverside, Muncie	Ps
Konopinski, Prof. Emil J., Physics Dept., Indiana University, Bloomington	Ph
Kossack, Prof. Carl F., Mathematics Dept., Purdue University, West Lafayette	M
Krekeler, Mr. Carl H., 360 McIntyre Court, Valparaiso	Z
Lauterbach, W. Walter, Central High School, South Bend	Bo, Z
Lawrence, Mr. John O., 3212 East Hulman Street, Terre Haute	C, Z
Ledgerwood, Dr. Richard Carnes, Education Building, Purdue Uni- versity, West Lafayette	Ps
Lemler, Mr. Everett H., Bourbon, Indiana	Ph
Lindsey, Dr. Alton A., 57-D West State Street, Lafayette	Bo
Loring, Mr. Robert D., 2361 Valentine Ave., Bronx, New York 57, New York	G
Luria, Mrs. Zella H., Psychology Dept., Indiana University, Bloom- ington	Ps
Machata, Miss Helen, Biology Dept., Purdue University, West Lafayette	Ba
Marks, Mr. Robert L., 306 South Main Street, Jersey Shore, Pa.	G
Marling, Bro. John A., St. Joseph's College, Collegeville	Ph
Miller, Mr. Chester Wayne, 4110 E. 10th Street, Indianapolis	Bo
Miller, Mr. Garrett Hobert, R.R. 1, Paxton	G
Mitchell, Mr. Howard W., 1508 North Seventh Street, Terre Haute	C, Z
Myer, Mr. William H., 3955 College Avenue, Indianapolis 5	Bo
Myers, Mr. William Andrew, 3955 College Avenue, Indianapolis 5	Bo
Niles, Mrs. Louise A., Eli Lilly & Co., Research Building Room 165, Indianapolis	Ba
Ofiesh, Mr. Gabriel D., Psychology Dept., Butler University, Indi- anapolis	Ps
Osterhoust, Miss Josephine, Lilly Research Laboratories, Eli Lilly & Co., Indianapolis	Ba
Patton, Mr. John B., Geology Dept., Indiana University, Bloomington	G
Poe, Miss Elisabeth, Marion College, Marion	Bo, Z
Rath, Miss Lila Jean, Dept. of Botany & Plant Pathology, Purdue University, West Lafayette	Bo
Reimer, Mr. Charles W., R.R. 2 Box 563-B, Indianapolis 44	Bo
Reynolds, Dr. Thomas E., R.R. 1 Box 226, Michigan City	A, C, G, Z
Rosenthal, Prof. Arthur, Recitation Hall, Purdue University, West Lafayette	M
Rostofer, Dr. Howard H., R.R. 1, Bloomington	Z
Rudd, Mr. Robert, Indiana State Teachers' College, Terre Haute	C, G
Rushton, Mrs. LaVella, 528 South Street, Noblesville	Ba
Ruster, Mr. Marvin H., 325 South Butler Avenue, Indianapolis	Ba

Sauer, Miss Pauline L., 226 W. Jackson Blvd., Elkhart	Bo
Schultz, Jr., Dr. Fred H., 2266 Deming Street, Terre Haute	C, Z
Shaffer, Mr. Robert E., 2013 South Gate Avenue, New Castle	Bo, Z
Shepherdson, Prof. Wayne, Huntington College, Huntington	Ph
Shuyler, Mr. Harlan R., Cottage Grove, R.R. 1, Lafayette	E
Sidebottom, Mr. Kenneth J., 1397 Windermire Street, Indianapolis 3	M
Smith, Prof. Aubrey H., Mathematics Dept., Purdue University, West Lafayette	M
Smith, Miss Jean, 725 N. Pennsylvania, Indianapolis	Ba, C
Smolar, Rev. Joseph, St. Joseph's College, Collegeville	Bo, Z
Smucker, Mr. Silas J., 403 S. Weston Street, Rensselaer	Bo
Sparks, Prof. Blair W., 4151 North Graceland, Indianapolis	Ps
Stokes, Mr. John J., Jr., 301 McKinley Street, Valparaiso	C
Streitelmeier, Mr. John H., 1082 Linnwood Ave., Valparaiso	G
Sturm, Miss Tillie, 2030 W. 5th Ave., Gary	Bo, Z
Sullivan, Mr. Gerald, 1017 North Harrison Street, Alexandria	Bo, Z
Summers, Mr. Robert M., Chemistry Department, Indiana Uni- versity, Bloomington	C
Taylor, Miss Edith S., Anthropology Dept., Indiana University, Bloomington	A
Thomas, Mr. Virgil A., 810 North State Street, Greenfield	Ba, C
Truman, Dr. Lee C., 2701 Winthrop Avenue, Indianapolis	E
Van Dyke, Prof. John H., School of Medicine, Indiana University, Bloomington	Z
Van Liere, Mr. Donald W., 1306 North Fess Avenue, Bloomington	Ps
Vernberg, Mr. Frank John, Box 239, Greencastle	Z
Voigt, Mr. John W., 3013 Harrison Avenue, Terre Haute	Ph
Waddell, Mr. Courtney, 2431 E. Riverside Drive, Indianapolis	G
Wagner, Dr. William F., Hanover College, Hanover	C
Wagoner, Dr. Kenneth S., Psychology Dept., DePauw University, Greencastle	Ps
Wallace, Dr. William J., Dept. of Anthropology, Indiana Uni- versity, Bloomington	A
Watanabe, Dr. Kenichi, Wabash College, Crawfordsville	Ph
Weaver, Mr. Jack R., 1406 E. 5th Street, Anderson	Bo, Z
Webb, Prof. Richard L., 1408 Maxwell Lane, Bloomington	Z
Wegrich, Dr. O. G., Commercial Solvents Corp., Terre Haute	Bo
Weigand, Dr. Clayton G., 5234 North Capitol Street, Indianapolis	Z
Welshimer, Dr. Herbert J., Dept. of Bacteriology, Indiana Uni- versity, Bloomington	Ba
White, Prof. Virginia B., Home Economics, Purdue University, West Lafayette	Bo
Wier, Mr. Charles E., R. F. D. 2 Box 118, Jasonville	G
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