

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 No. 1, 2, 4, 5, 6, 14, and 15 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

1. Refer to Volume 59 of the Proceedings for the accepted style of abstracts and papers, and follow this, especially in **literature citations**, headings, and footnotes.
2. Type on 11 x 8½ inch bond paper with a new ribbon, leaving ample margins. Double-space everything, including title, authors' names and institutions, footnotes, quotations, legends and literature list. This original will become the printer's copy; if it must be retyped it will be sent back to the author for this.
3. 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.
4. Literature citations should not occur in footnotes, but in an alphabetized list at the end of the paper headed "Literature Cited." The highly abbreviated form used in some publications has not been adopted for the Proceedings. If your abstract must cite literature, use footnotes for this.
5. Only initial letters of the words in titles, headings, and table headings should be capitalized.
6. Do not underline anything except scientific names.
7. All literature listed, and all tables and illustrations should be referred to in the text.
8. 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.

9. 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.
10. Major professors are urged to review all papers and abstracts by their graduate students, for both form and content, before they are sent in for publication. Of the papers 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.
11. 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 ($4\frac{1}{4}$ ") 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.
12. The originals for line drawings should 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.
13. The summary should be complete and clear in itself, and not over 4 per cent of the length of the paper. For very short papers no summary is necessary.
14. Reprints are paid for by authors, at cost. They are ordered at the time the author returns the corrected galley proof to the editor.
15. The editor needs, at the time he mails out galleys 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. Of those accepted, it is usually necessary that some be reduced in length by the authors, before publication. 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, 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



INDEX TO VOLUME 64

- Academy Committees, 6
- Academy meetings, Executive Committee, 11
 - General session 16
 - spring meeting, 9
- Academy, new members, 18
 - officers, 6
- Acetyl-coenzyme A and succinate requiring enzyme from *Azotobacter*, 53
- Acidophilic granules in basophiles of laying hens, 256
- Adams, T., 254
- Agriculture, Sullivan County, 191
- Alcoholic beverages, 50
- Alcohol consumption, 50
- Algae, lyophilization, 61
- Allen, H. L., III, 237
- Allen, M., 92
- Allen, M. A., 56
- Alston, R. E., 57
- Analysis of pellets of long-eared owl, *Asio wilsonianus*, 257
- Anesthetics, 92
- Angel site, 51
- Animal activity, use of oxygen dissociation curve in interpretation, 258
- Anthocyanins, 57
- Anthropology Division, 49
- Antigen-antibody reactions in agar, 52
- Antimicrobial drugs, 53
- Anxiety, measurement, 241
- Arawak people, 50
- Archaeological excavation, 51
- Areal specialization in Sullivan County, 191
- Ascaridia galli*, choline effect, 288
- Atomic energy and the Ohio River, 219
- Azotobacter vinelandii*, 53
- Bacteria in soil, 54
- Bacterial, internal structure, 54
- Bacterial population change, 52
- Bacteriology Division, 52
- Baer, M., 241
- Baldwin, C. L., 53
- Bandy, O. L., 175
- Barton, J. D., Jr., 88
- Barton, T. F., 219
- Bat banding in Indiana, 284
- Bats of Genus *Lasiurus*, 257
- Becht, J. E., 177
- Beech Creek limestone, 175
- Belinfante, F. J., 238
- Berry, J. E., 254
- Bieber, C. L., 207
- Biological Survey Committee Report, 20
- Bird frequency in Delphi, Carroll County, 256
- Black, G. A., 51
- Blatchley, W. S., 165
- Bog Iron, 179
- Botany Division, 56
- B-Bromovinyl ethyl ether, resonance indicated by infrared spectra, 92
- Brandt, W. W., 105
- Braun, W., 52
- Bray, R., 236
- Brodie, H. J., 59
- Brookley, A. C., Jr., 202
- Brucella, 52
- Brumfiel, C. F., 234
- Bryophyta, selectivity in Indiana mosses, 63
- Bundy, W. M., 179
- Buss, A., 241
- Callender, M. E., 254
- Calorimeter, high-pressure, for specific heats of solutions, 97
- Campbell, D. H., 92
- Canright, J. E., 70
- Catfacing of strawberries, 136
- Cavern development, 175
- Century of entomology in Indiana, 140
- Cercis canadensis* L. ecology, 79
- Cesari, L., 234
- Chao, P. K., 255
- Chemistry Division, 92
- Choline deficiency, *Ascaridia galli*, 288
- Christens, J. M., 97
- Christy, O. B., 40
- Cleveland, M. L., 127
- Clevenger, S. B., 60
- Coal in Sullivan County, 192
- Coal City area, geologic structures in, 194
- Colchicine and reproduction of *Paramecium*, 255
- Coleopterous, parasite of beaver, 115
- Cope, J. B., 284
- Cosmarium botrytis* Meneghini, 56
- Cottingham, J. O., 247
- Craspedacusta, locomotion of frustules, 255
 - recurrence near Richmond, 257
- Crayfish of Indiana, distribution of, 281
- Crowell, S., 255
- Cyathus, 59
- Dactylogyrinae, 260
- Daily, F. K., 244
- Daily, W. A., 61
- Davis, J. J., 116, 121, 155, 156, 157, 173
- Deay, H. O., 140

- DeLisle, A. E., 60
 Derbyshire, W. D., 236
 Development of science major in Indiana, 226
 Dietz, H. F., memorial, 34
 Difluoroacetic acid, 108
 Dillon, L. I., 176
 Dineen, C. F., 278
 Diseases of trees, 116
 Donovan, Sr. A. J., 255
 Dragon flies, 115
 Driver, H. E., 50
Dugesia tigrina, regeneration, 287
 Durkee, A., 241
 Dutch elm disease, 116
 Eberly, W. R., 281
 Edington, W. E., 34, 226, 235
 Education of scientists, 42
 Effect of reduction on heat capacity of Rutile, 237
 Effects of two experimental counseling techniques, 239
Endamoeba histolytica, culture medium, 254
 Entomology Division, 115
 Entomology, history of, 140
 at Indiana universities, colleges, and other institutions since 1854, 140
 Esten, V., 257
 Ethyl-methyl alcohols system, 94
 Experimental amebiasis, rats, 254
 Extreme points of convex sets, 234
 Everly, R. T., 140
 Fast cycling cloud chamber, 237
 Favinger, J. J., 115
 Fiedman, S. A., 209
 Fish, maze learning, 242
 Fixation, 54
 Flora report, 245
 Ford, L., 258
 Forest ecology, 88
 Formation of oxide films on chromium and nickel-chromium, 236
 Fossil plants of Indiana, 70
 Frog muscle, ion movements in, 258
 Fungi, 247
 aberrations, 59
 Gambill, R. A., 235
 Garber, E. D., 54
 Garner, M. R., 257, 287
 Genetics, *Cosmarium botrytis*, 56
 Geologic control of ground-water occurrence in western Marion County, 176
 Geologic structures in coal city and Switz City areas, 194
 Geology and Geography Division, 175
 George, E. F., 257
 Gibby, R. G., 239
 Gifford, C., 256
 Glacial deposits of Tippecanoe County, Conglomerate-sandstone phase of, 176
 Glacial fill, method for mapping permeable zones, 177
 Goodnight, C. J., 258
 Gries, G. A., 62
 Gravitation, new theory, 238
 Hagen, C. W., Jr., 57
 Hamilton County anthropology, 51
 Harrington, R. W., 239
 Heath, E. C., 55
 Heiser, C. B., Jr., 250
 Helianthus, 60
 chromosome numbers in, 250
 Heterozygotes, interference in inversion, 61
 Hexachlorocyclopentadiene, 92
 Hickerson, N. P., 50
 Higher fungi in Marion County, VII, 247
 History of entomology, 140
 History, natural sciences, University of Notre Dame, 228
 History of Science Division, 226
 Host range of *Synchytrium brownii*, 58
 reaction to *Synchytrium brownii*, 58
 Householder, J. C., 51
 Hsu, C. G., 108
 Hurlbut, F., 226
 Idol, J. D., Jr., 92
 Ichthyokinometer, 254
Impatiens balsamina, 57
 Indian ceremonies, Mexico, 49
 Indiana insects, 171
 Indiana Plant Distribution, XV, 245
 Indiana plant fossils, 70
 Indiana's boundaries and size, 214
 Insects of Indiana, 121
 Instrumentation, proposed new major at Marian College, 92
 Integrating factors, 235
 Iron ore, 179
 Irrigation in Indiana, 217
 Isotopes, in microbial physiology, 55
 Jennings, R. K., 52
 Jerison, M., 234
 Job interrelationships, 240
 Job requirements, patterns of, 240
 John, John P. D., 226
 Jordan, David Starr, 226
 Junior Academy of Science, clubs, 32
 council members, 28
 minutes, 30
 officers, 28
 program, 29
 Karling, J. S., 57, 248
 Keesom, P. H., 237
 Keratin, 59
 Kingsbury, T. M., 217

- Kingsolver, J. M., 115
 Kinsey, A. C., 166
 Kottlowski, F. E., 194

 LaPorte, Indiana, 180
 Larson, R. G., 92, 94
 Lewis, R. E., 257
 Lindsey, A. A., 60, 79
 Line-strip vegetational sampling method, 60
 Lingappa, B. T., 59
 Locational patterns of wholesaling within metropolitan centers, 178
 Luginbill, P., Sr., 140
Lygus lineolaris, 127
 Lyophilization, 61
 Lytle, C. F., 255

 McBee, E. T., 92, 108
 McCormick, E. J., 240
 McCowen, M. C., 254
 McEachron, K. B., 35
 McGrain, P., 175
 McGuire, J. M., 61
 McKinley Site, 51
 Magnetic-vertical-coriolis theory of homing, 241
 Mainer, R. E., 242
 Mansfield sandstone, bog iron ore in, 179
 Manufactural geography, LaPorte, 180
 Maps, three dimensions, in color, 175
 Marshall, G. E., 136
 Mason, D. J., 54
 Mathematics Division, 234
 Mathematics for teachers, 234
 Mathews, F. S., 237
 Maxwell, T. J., 49
 Mayfield, R. C., 191
 Maze learning, in fish, 242
 Measurement of nuclear moments of excited states of nuclei, 237
 Medusa, fresh water, recurrence near Richmond, 257
 Meiners, A. F., 112
 Memorials :
 Harry Frederick Dietz, 34
 Karl Boyer McEachron, 35
 Frederick Leverne Serviss, 38
 Methyl-ethyl alcohols system, 94
 Metropolitan centers, locational pattern of wholesaling within, 178
 Meyer, A. H., 180
 Microbial physiology, use of isotopes, 55
Microsynchronytrium sub genus, 59
 Middle Mississippi archaeology, 51
 Miller, B. M., 59
 Miller, P. F., 180
 Minton, S. A., Jr., 256
 Mizelle, J. D., 254, 260
 Montgomery, B. E., 131, 140
 Moran, J. F., Jr., 288

 Mosses, Indiana, 63
 selectivity, 63
 Mucorales, 59
 Mumford, R. E., 284
 Myotis, behavior and food habits, 256
 Myers, R. D., 242
 Myers, R. F., 257

 Nash, H. A., 53
 Necrology, 34
 Needler, W. C., 92
 Non-equilibrium carrier concentration in Ge, 236
 Non-linear differential equations periodic solutions, 35
 North, C., 53
 Notre Dame, history of natural science at, 228
 Nutrition in host-parasite relationship, 54

 Oak wilt, 117
 Oak-hickory woods, 88
 Odonata, 131
 Ohio River, 219
 Onofrio, R., 254
 Orange County, pre-Pennsylvanian erosion, 202
 Orgel, A. R., 241

Pachylomerides adouinii, 256
Paramecium aurelia, maintenance of killer trait, 256
 Paramecium, effects of colchicine, 255
 Payne, F., 256
 Peach injury, 127
 Pearlman, N., 237
 Peaslee, D. C., 237
 Peckham, R. S., 278
 Pennsylvanian, paleobotany, 70
 Perry, T. G., 202
 Peters, B., 53
 Phloem necrosis, 116
 Phosphatase and gonad differentiation, 265
 Photoperiod and temperature, response of spring wheat, 62
 response of *Woodisia obtusa*, 75
 Physics Division, 236
 Pierce, O. R., 108
 Pike County, Indiana, 176
 Pine growth, 60
 Planarians, 287
 Plant distribution record, 245
 Plasma, coagulation, 53
Platyphysilla castoris, 115
 Pleistocene section near Greencastle, Indiana, 207
 Pleistocene terrace levels near Terre Haute, Indiana, 209
 Plummer, G., 79
 Population trends in Pike County, Indiana, 176

- Porter, C. L., 59
 Postlethwait, S. N., 75
 Powelson, D. M., 52, 54
 Pre-Pennsylvanian erosion in Orange County, 202
 Presidential address, 40
 Price, C. C., 92
 Psychology Division, 239
Pycnochytrium sub genus, 59
- Radavick, J. F., 236
 Ransome, J. C., 178
 Recombination, increased in inversion heterozygotes, 61
 Rector, Charlene, 226
 Redbud, ecological life history, 79
 Reduction of difluoroacetic acid, 108
 Regeneration of planarians, 287
 Repaske, R., 53
 Retraction, homotopy integral, 234
 Roberts, C. M., 176
 Roberts, C. W., 92, 112
 Rorschach Determinant Shift, 239
 Rosenshein, J. S., 176
 Rothwell, F. M., 59
 Rural zoning in the United States, 177
- Salamanders, migration, 278
 Salt, in early America, 226
 Salter, L. S., 236
 Sampling method, line-strip, 60
 Schipper, A. L., 255
 Schockel, B. H., 175
 Schuder, D. L., 116
 Schwan, T. C., 92
 Scientists, training of, 40
 Serviss, F. L., memorial, 38
 Sheehan, R. J., 228
 Shutts, C. F., 70
 Singleton, J. R., 61
 Sinski, J. T., 58
 Smith, D. M., 250
 Smith, J. C., 241
 Socio-psychological investigation of attitude change, 242
 Soil, bacteria, 53
 Soil erosion, some consequences of, 224
 Solubility of silver nitrite, 92
 Specific heats of solutions, high-pressure calorimeter for, 97
Spirogyra, variations, 56
Stagnicola reflexa, 291
 Starr, R. C., 56
 Stearns, F., 62, 75
 Steffen, R. M., 237
 Stephenson, W. K., 259
 Stockton, Sr. M. R., 92
 Stotsky, B. A., 239
 Strawberries, catfacing, 136
- Structures, geologic, Coal City and Switz City areas, 194
 Sullivan County, areal specialization, 191
 Switz City area, geologic structures, 194
Synchytrium, australe, 57
 brownii, 58
 classification of species of, 59
 germination of resting spores, 59
 key to subgenera, 248
- Tarnished plant bug, 127
 Taxonomy Division, 244
 Tetraonchidae, 260
 attachment to gills, 254
 status of, 260
 Thermodynamics of crystalline lattices, 236
 Tin and lead complexes with 1,10-phenanthroline, 105
 Tolypella new to United States, rare, 244
 Tolzmann, M. B., 53
 Torrey, T. W., 265
 Toxicity studies on *Stagnicola reflexa*, 291
 Trap-door spider in southern Indiana, 255
 Trematodes, 260
 Trichoptera, 115
- Ulman, P. T., 115, 158
 Upper Mississippian-lower Pennsylvanian stratigraphy, 202
- Varieties of nuclear shell model, 237
 Vegetation in northern Illinois, 88
 Vig, R. J., 176
 Visher, S. S., 214
 Voegelin, E. W., 49
- Wabash River, pleistocene terrace levels, 209
 Ward, P., 177
 Weinberg, E. D., 53
 Welch, W. H., 63
 Wheat, response to photoperiod and temperature, 62
 Wiener, M., 239, 241
 Williamson, E. B., 166
 Wilson, M. C., 140
 Wood, R. A., 291
Woodsia obtusa, response to day length and temperature, 75
 Wrathall, J. E., 224
- "Yahooskin Snakes," 40
 Yearian, H. J., 236
 Young, F. N., 140
- Zimmerman, E. E., 105
 Zoology Division, 254



