

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 ($4\frac{1}{8}$ ") 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.
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 62

- Acetic acid, metabolism in tomato, 101
 Acorns in the Indian diet, 56
 Actinophaga, 64
 Adjustment, 293
Agabus confusus, 171
 Alfalfa, insects affecting seed production, 181
 Algae, growth of, 99
 of Lake Wawasee, 98
 Alkylation reaction, 158
 Allen, M., 144
 Alternate routes of metabolism, 64
 American Pharmaceutical Association, 278
 Ammonoetes, 318
 Amylase, bacterial, 65
 Andrew, K. L., 291
 Anthropology reaction, 52
 Antibiotics, effect on bacterial reduction of triphenyltetrazolium chloride, 63
 Aquatic plants, respiration of Verduin method, 104
 Araneology of Indiana, 299
 Archaeology, Marion County, Indiana, 53
 Armacost, R. R., 103
 Arthropod, infestation of man by, 298
Ascaris lumbricoides var. *suum*, ova of, 323
Ascites tumor cells, in vitro cultivation of, 87
 "Ask the Biologist," 103
 Aster\$, 104
 Attitude, measurement, toward effective teaching, 292
 Authors, directions for, 23, 331
 Azeotropes, composition, 144
 Aztec corn festival, 52
- Bacteriology division, 63
 Baker, P. C., 292
 Ball State, thirty-four years of science at, 279
 Barber, S. A., 223
 Barton, T. F., 250
 Beech Creek limestone, 223
 Beetles, water, 207
 Bell, R. L., 297
 Benkeser, R. A., 167
 Berberian, J. A., 320
 Berg, P. W., 211
 Bibbins, F. E., memorial, 34
 Bieber, C. L., 228
 Billman, J. H., 158
 Biologists, work of, 103
 Blair, H. W., 292
 Blair, W. B., 225
 Bloom, W. W., 139
- Blume, H., 226
 Botany Division, 98
 Bracken, L. E., 256
 Brain injuries, effect on sensory motor capacities, 295
 Brazil, a regional interpretation, 224
 Brooker, R. M., 145
 Bryophyta, studies in Indiana, 122
 Bud-break in woody plants, 103
 Bumblebees, the domestication of, 278
 Burdick, A. B., 279
 Buser, F. B., 101
- Cabbage maggot, 170
 Cable, R. M., 298
 Caird, R. S., 290
 Calumet region, sequent occupance, 223
Campanularia, regression and replacement of hydranths, 297
 Canright, J. E., 105
 "Catface" peaches, 170
 Carbohydrate metabolism, 64
 Cations, qualitative analysis, 145
 Caulobacter, 65
 Cell cultures, long-term; applications of, 87
 Cells, mammalian, long-term cultivation of, 87
 Cerebral palsies, 295
 Ceremonies, agricultural, in Peru, 52
 Chandler, L., 129
 Characeae, 107
 Chemistry division, 144
 Chemistry, symposium on teaching, 166
 Chemists, training in safety, 144
Choerostromyglus pudendotectus, 319
 Christens, J. M., 145, 150
 Christy, O. M., 279
 Chromatography, in quantitative determination, 145
 Cicada in Indiana, 203
 Cinematography, 67
 Cities, Indiana, 250
 Claytonia, 102
 Coal mine spoil banks, 99
 Coleman, R. M., 321
 Coleoptera: Dytiscidae, 171
 Hydrophilidae, 207
 Colorimetry, copper determination by, 156
 Committees of the Academy, 6
 Conglomerate, Mansfield sandstone, 228
 Constitution, Indiana Academy of Science, 19
 Contacts, bridge transfer in electric, 291
 Contributors, instructions for, 23, 331
 Cooper, R. H., 279

- Copper, a reagent for, 156
 Corn, Indian varieties of, 104
 Corn festival, Aztec, 52
 Corn root tips, ability to respire sugars, 98
 Cottingham, J. O., 143
 County records for plants, 108
 Croplands, Indiana, 256
 Crowell, S., 297
 Culture, applications of plant tissue, 81
 Current directions, Mansfield sandstone, 228
 Cyanide on *Ascaris* ova, effect of, 323
 Cyto-genetics of Asters, 104
- Dally, F. K., 107
 Dally, W. A., 6, 10, 18, 98
 Davis, J. J., 176
 Davis, R. L., 181
 DDT, experiments on resistance in *Drosophila melanogaster*, 211
 Deam, C. G., 108
 Deay, H. O., 203
 Dellisle, A. L., 104
 Den Uyl, D., 99
 Dichloro-argenate ion, dissociation constant of, 144
 Downie, N. M., 293
 Driver, H. E., 56
 Drosophila, an Indiana microsporidian parasitic on, 297
Drosophila melanogaster, experiments on resistance to DDT, 211
- Ebert, J. D., 72
 Ecology, organic terrain, 98
 Edington, W. E., 287
 necrology for 1952, 34
 Education, attitudes toward public, 295
 Edwards, P. D., Presidential address, 45
 Electrical contacts, bridge transfer in, 291
 Elliott, F. R., 299
 Embryo, early chick, the development and role of PABA in, 72
 Embryology of *Tripsacum dactyloides*, 104
 Employee selection, 293
 Entomology division, 170
 Everly, R. T., 217
- Factor analysis, personality, 294
 Farquharson, L., 104
 Fillers, of rubbers, 150
 Filter-paper disc assay, 65
 Fischer, R. B., 160
 Fisher, D. J., 160
 Fisher, T. R., 106
 Flora, Indiana, 106
 Forest succession, 100
 Forest survey, Laughery Creek, 129
 Friesner, R. C., 108, 278
- Fungi of Marion County, 143
 Fungus antibiosis, a short history, 278
 significance in medicine and industry, 278
 Fungus sclerotia, 101
- Gabriel Synthesis, 158
 Gaillardia, 107
 Gentilcore, R. L., 272
 Geography, regional, Brazil, 224
 Geology and geography division, 223
 Geology of streams, 244
 Geomorphology, Mohawk region, 226
 Germanium spark spectrum, 291
 Girton, R. E., 98, 281
 Goldschmidt, E. P., 64
 Gould, G. E., 170
 Gross, E. W., 169
 Grula, E. A., 65
 Guard, A. T., 102
 Guernsey, F. S., 101, 102
 Guthrie, N., 168
- Haemonchus contortus*, development, 320
 Haensch, E. L., 166
 Hagen, C. W., Jr., 81
 Hardwood tree planting on coal mine spoil banks, 99
 Hartsell, S. E., 63
 Headlee, W. H., 298
 Heal, W. E., Indiana pioneer mathematician, 287
 Heath, E. C., 64
 Heiser, C. B., Jr., 106
 Heliopsis, 106
 Helium, 290
 Helmen, V. R., 53
 Hemoglobin, synthesis in the chick embryo, 72
 Hepaticae of Indiana, 136
 Herbicide, 100
 Highway patterns in Indiana, 266
 Hire, C., memorial, 35
 Histochemistry, ascorbic acid, 321
 History of science division, 277
 Hoehn, M. M., 64
 Hollis, N. S., 294
 Homicide, records given by suicidal and homicidal subjects, 296
 Honey bees, pollen, 114
 Howland, W. E., 278
 Huddleston, C. M., 290
 Hull, R. N., 87
 Hurlbut, F., 266
 Hurlbut, Z., 279
 Hydrology, Indiana, 244
Hylemya brassicae (Bouche), 170
Hymenolepis nana var. *fraterna*, 321
- Indiana, bryophytes, 122
 Indiana flora, 106

- Indiana harvests 1926-50, 256
 Indiana Junior Academy of Science, 28
 Indiana plant distribution, 108
 Indiana, pre-Cambrian rocks in, 234
 Indiana scientists, 277
 Indian trails in Indiana, 266
 Indian varieties of corn, 104
 Indian village sites in Indiana, 266
 Indians, North American, 56
 Infectious viral particles, 95
 Infestation, some unusual Arthropod cases of, 298
 Insecticides used on alfalfa, 181
 Insects of Indiana, 176
 Insects, taxonomy, 172
 Insects which "catface" peaches, 170
 Isomer, Rb^{84m}, 290
- Jacobs, M. E., 171
 Jordan, E. T., 295
- Karst topography of Puerto Rico, 225
 Kessel, W. G., 147
 Kirk, R. B., 295
 Klenner, J., 318
 Kline, D. R., 171
 Knight, P. L., 319
 Kofler, H., 64
 Kossack, C. F., 65
 Kottlowski, F. E., 234
 Kuster, R. J., 103
- LaCroix, J. D., 100
 Lakes of Indiana, Lake Wawasee phyto-plankton, 98
 Lamprey, larval, 318
 Langston, R., 101
 Laughery Creek valley forests, 129
 Lee, C. O., 278
 Legume insects, 217
 Leopold, A. C., 101, 102
 Leopold, C. A., 103
 Lesser clover leaf weevil, 217
 Liming, A. N., 100
 Lindsey, A. A., 6, 98
 Lipscomb, R., 106
 Liverworts, notes on Indiana, 136
 Longitudinal vibrations in a hollow metal tube, 291
 Lungworms, swine, 319
 Lysozyme and gram positive bacteria, 63
- Mackell, J. F., 277
 Mackenzie Basin, Canada, ecology, 98
Magicicada septendecim, 203
 Magnoliaceae, 105
 Mahin, E. G., memorial, 37
 Mammalian viruses, 92
 Mansfield sandstone, 228
 Manufacturing, intra-city, 225
 Manuscripts, preparation of, 23, 331
 Marion County, archaeology, 53
- Market areas, 225
 Marshall, G. E., 170
Marsilea quadrifolia, 139
 Marsilea sporocarps, germination, 139
 Martin, E., 291
 Mathematics, role of, 45
Matus bicarinatus, 172
 Maxwell, T. J., 52
 Meibohm, A. W., 156
 Meissner, K. W., 291
 Memorials :
 Francis Eugene Bibbins, 34
 Charles Hire, 35
 Edward Garfield Mahin, 37
 Alfred Peter Poorman, 39
 Harvey Wesley Rhodehamel, 40
 Ernest Rice Smith, 41
 Jesse Elmer Switzer, 43
 Metabolism, oxidative, 64
Metastrongylus apri, 319
 Metaphosphate, 65
 Meyer, A. H., 223
 Michaud, H. H., 6, 31
 Microscopists, pioneer, 281
 Miner, E. E., 98
 Mine water problem, 147
 Minutes, executive committee, 11
 general session, 17
 spring meeting, 9
 Mitchell, A. C. G., 290
 Mitchell, M. L., 244
 Mizelle, J. D., 320
 Mockford, E. L., 198
 Mohawk region, geomorphology, 226
 Monaco, L. H., 323
 Montgomery, B. E., 200, 278
 Mont Tremblant Biological Station, 106
 Mosses, Indiana, 122
 Moulton, B., 1, 6, 224
 Moving, effect on adjustment, 293
 Munsee, J. R., 207
 Murray, R. G., 67
 Myerholtz, L., 63
 McGrain, P., 244
 McGuire, J. M., 64
 McKenna, F. S., 294
 Nash, H. A., 145
 Nitrogen, in tomato fruit abnormalities, 102
 Nuclear Spectra, 290
- Oak forests, 129
Obelia, regression and replacement of hydranths, 297
 Odonata, mating behavior, 171
 Odonata, 1951-1952, notes and records, 200
 Organic terrain, plant communities on, 98
 Origins, theories of, 277
 Oscillographic method for study of solution behavior at radio frequencies, 160

- Oxygen consumption of developing *Ascaris ova*, 323
- p-Aminobenzoic acid in the chick embryo, 72
- Parasites, infestation of man by arthropods, 298
- Patton, J. B., 234
- Peake, J. S., 144
- Penicillium chrysogenum, 64
- Pentatomid bugs, 170
- Perceptual intelligence, 295
- Performance tests, in motor handicapped cases, 295
- Periodical cicada in Indiana, 203
- Perry, T. G., 223
- Personality measurement, 294
- Personality traits, 294
- Personnel psychology, 293
- Peru, agricultural ceremonies in, 52
- Pharmaceutical, American Association, 278
- Photographs, Edward Garfield Mahin, 36
- Photomicrography, 67
- Photomicrography, pollen grains, 114
- Photosynthesis, measurement by Verduin method, 105
- Physics division, 290
- Phytoplankton of Lake Wawasee, 98
- Pine seedlings, effect of petroleum naphtha on, 100
- Plant Distribution Records, 108
- Plants new to Indiana, 108
- Plant records, Parke and Fountain counties, 101
- Plant succession on abandoned farm lands, 100
- Poa pratensis* L., water absorption, 104
- Pollen analysis in Quebec, 106
- Pollen, collected by bees, 114
- Pollen morphology, 105
- Ponds, effect of light intensity on growth of algae, 99
- Poorman, A. P., Memorial, 39
- Population, in Indiana, 250, 272
- Porter, C. L., 101, 278
- Potzger, J. E., 100, 106, 129
- Powell, H. M., 6
- Pratt C., 296
- Pre-Cambrian in Indiana, 234
- Pre-illumination, morphology and response in slit pea test, 103
- Presidential address, 45
- Prison, problems of a clinical psychologist, 294
- Psocoptera, 198
- Psychologist, clinical in a prison situation, 24
- Psychology division, 202
- Qualitative analysis of cations, 145
- Rafinesque, 278
- Rainfalls, Indiana's records to 1953, 230
- Rasmussen, G. K., 104
- Rb⁸², Rb⁸⁴, nuclear spectra, 290
- Red clover, mammoth, effect of weevil on seed yields, 217
- Regression and replacement of hydranth, 297
- Reinforcement of rubbers, 150
- Remmers, H. H., 292
- Resistance to DDT, experiments with *Drosophila melanogaster*, 211
- Respiration, measurement by Verduin method, 104
- Rhodehamel, H. W., memorial, 40
- Riedhart, J. M., 103
- Ripley County, 100
- Rohrer, C. S., 144
- Rorschach Test, 296
- Rothwell, N., 102
- Rubber reinforcement by fillers, 150
- Russia, science, 279
- Schizophrenia, social behavior of, 292
- Schmidt, F. C., 167
- Schockel, B. H., 225
- Science and a Free World, 279
- Science at Ball State, 279
- Science, role of mathematics in, 45
- Science, Soviet Russia, 279
- Sciences, sketches of their local development, 277
- Scientific contributions made 1870-1950 by Indiana Colleges and Universities, 277
- Scientific method, the, 278
- Sclerotia, fungus, 101
- Seaman, D. E., 105
- Sequent occupancy study, 223
- Seymour, K. M., 144
- Shaver, R. J., 325
- Sheep stomach worm, development, 320
- Silver chloride, complex formation from, 144
- Sitler, L., 64
- Slit pea test, Pre-illumination, morphology and response, 103
- Smashley, A. R., 145
- Smith, A. G., 52
- Smith, D. M., 102
- Smith, E. R., memorial, 41
- Snowfalls, Indiana's records to 1953, 230
- Soil type, 223
- Solution behavior at radio frequencies, 160
- Soviet Russia, science, 279
- Spayth, F. J., 291
- Spiders, Indiana, 299
- Starch, agar, 65
- Stark, E., 65
- Starvation, effect on corn root tips to respire sugars, 98

- Steigert, F. E., 290
 Stoutamire, W. P., 107
Streptomyces venezuelae 8-44, 64
 Strip mines, planting, 99
 Sulcide, records, 296
 Sulfonamides, effect on chick embryo, 72
 Switzer, J. E., memorial, 43
- Taxonomy, discussion of, 172
 Taxonomy in Indiana, 278
 Taxonomy, pollen grains, 114
 Teaching, attitude toward, 292
 Teaching, symposium on teaching of chemistry in secondary schools and colleges, 166
 Temperature, effect of -10° and -16° C. on *T. spiralis* larvae, 325
 Temperature, Indiana's records to 1953, 230
 Test holes in Indiana, pre-Cambrian rocks, 234
 Tetrault, P. A., 65
 Thomas, J. G., 101
 Thompson, J. R., 99
 Thompson, R. L., 92
 Three-dimethylaminopropylamine, in copper determination, 156
 Tissue culture, application of plant, 81
 newer methods and practical application, 87
 time lapse cinephotomicrography, 67
 virus particle counts in, 95
 Tomato, abnormal fruits, 102
 fruit-set, 101
Tragopogon, 102
 Transfer, bridge transfer in electric contacts, 291
 Trematodes, Puerto Rico, 298
Trichinella spiralis, 325
 Triphenyltetrazolium chloride, effect of antibiotics on bacterial reduction of, 63
Tripsacum dactyloides, embryology, 104
Tropisternus, biometrical studies, 207
- Universe, origin of, 277
 Urban geography, 225
- Veratrum album*, 145
 Verduin method, use of, 105
 Vibrations, longitudinal in a tube, 291
 Viruses, factors affecting growth in vitro, 92
 Visher, S. S., 230, 277
 Vitamin C, 321
 Volutin, 65
- Wachholz, P. F., 224
 Wagner, K. A., 136
 Wallace, A., 99
 Water problem in a mine, 147
 Waterways in Indiana, 266
 Weather forecasting, 224
 Weather, Indiana's, some extremes and advantages to 1953, 230
 Weather prophet, 224
 Weatherwax, P., 52, 104
 Weaver, E. E., 166
 Weaver, R. H., 65
 Weed killer, 100
 Weinberg, E. D., 63
 Weiss, E., 95
 Welch, W. H., 122
 Welcher, F. J., 6
 Wellerson, R. J., 65
 Westmeyer, P., 100
 Wilson, M. C., 181
 Woody plants, bud-break in, 103
- Young, F. N., 170, 172
 Young, R. N., 225
 Youse, H. R., 114
 Yuncker, T. G., 108
 Zoology division, 297

