

PROCEEDINGS

of the

Indiana Academy of Science

Founded December 29, 1885



Volume 81

1971



MARION T. JACKSON, Editor

Indiana State University

Terre Haute, Indiana



Spring Meeting

April 23-24

MARY GRAY BIRD SANCTUARY, Connersville

Fall Meeting

October 28-29

EARLHAM COLLEGE, Richmond

Published at Indianapolis, Indiana

1972

1. The permanent address of the Academy is the Indiana State Library, 140 N. Senate Ave., Indianapolis, Indiana 46204.

2. **Instructions for Contributors** appear at the end of this volume, P. 410-411.

3. **Exchanges.** Items sent in exchange for the Proceedings and correspondence concerning exchange arrangements should be addressed:

John Shepard Wright Memorial Library of the Indiana Academy of Science
c/o Indiana State Library
Indianapolis, Indiana 46204

4. *Proceedings* may be purchased through the State Library at \$5.00 per volume.

5. **Reprints of technical papers** can often be secured from the authors. They cannot be supplied by the State Library nor by the officers of the Academy.

6. The Constitution and By-Laws reprinted from Vol. 74 are available to members upon application to the Secretary. Necrologies reprinted from the various volumes can be supplied to relatives and friends of deceased members by the Secretary.

7. Officers whose names and addresses are not known to correspondents may be addressed care of the State Library. Papers published in the *Proceedings of the Academy of Science* are abstracted or indexed in appropriate services listed here:

Annotated Bibliography of Economic Geology

Bibliography of Agriculture

Bibliography of North American Geology

Biological Abstracts

Chemical Abstracts

Chemisches Zentralblatt

Current Geographical Publications

Geological Abstracts

Metallurgical Abstracts

Pesticides Documentation Bulletin

Psychological Abstracts

Review of Applied Entomology

The Torrey Bulletin

Zoological Record

TABLE OF CONTENTS

Part 1

THE WORK OF THE ACADEMY

	Page
Officers and Committees for 1971	3
Minutes of the Spring Meeting (Executive Committee)	6
Minutes of the Spring Meeting (General Session)	10
Minutes of the Fall Meeting (Executive Committee)	11
Minutes of the Fall Meeting (General Session)	15
Annual Financial Statement	17
Annual Report, Indiana Junior Academy of Science	22
Necrology	27
New Members for 1971	37

Part 2

ADDRESSES AND CONTRIBUTED PAPERS

Presidential Address	45
"Minicourses and the Audio-Tutorial System," S. POSTLETHWAIT	
"The Role of Scientists in the Preparation and Evaluation of	
Environmental Impact Statements," ALTON A. LINDSEY	51

Anthropology

B. K. SWARTZ, JR.—A Brief Synthesis of Indiana Prehistory*	55
G. M. HEATHCOTE, Y. TOYODA and B. K. SWARTZ, JR.—A Second	
Report on Earthwork Seven, the New Castle Site, a Portion of	
the Southeast Quadrant—1971*	55
H. G. STACY and B. K. SWARTZ, JR.—Continued Excavation of	
Earthwork Four, New Castle Site, Indiana*	55
R. E. PACE—Aerial Photography in Archaeological Survey*	56
R. LITTLE—Archeology of Tell Hesban, Jordan*	56
G. K. HOUCK and B. K. SWARTZ, JR.—The Commissary Site: A	
Woodland Cemetery*	56
A. J. PERZIGIAN—Bone Growth in Two Prehistoric Indian Popu-	
lations	58
R. M. LITTLE—The McKinley Site	65
R. W. ALEXANDER, JR.—The Hybrid Origin of the Arikara	
Indians	71

*Abstract or Note only

	Page
M. L. BRASHEAR, SHARON K. CUPP and DEBORA MACKIE— Excavations at the Daughtery-Monroe Site, 1971	76
B. K. SWARTZ, JR.—A Provisional Taxonomy of Pruffer's Scioto Tradition	81
R. W. ALEXANDER, JR.—Multivariate Analysis and Human Skeletal Populations	86

Botany

R. K. TOGASAKI and MARGARET O. HUDOCK—Inorganic Arsenate as a Tool for Genetic and Biochemical Analysis of Photosynthetic Metabolism in Algae*	91
P. WEATHERWAX—The "Liquid" Endosperm of Grasses*	91
A. T. GUARD—The Dichotomous Dilemma*	91
R. A. RIEPE and D. L. DILCHER—A Comparison of Modern and Cretaceous Sassafras Leaves*	91
C. T. HAMMOND and P. G. MAHLBERG—Structure of Glandular Hairs of Marihuana*	92
L. R. YODER and P. G. MAHLBERG—Chromic Acid as a Selective Stain for Laticifers in <i>Vinca rosea</i> *	92
C. L. GEHRING and S. N. POSTLETHWAIT—The Terminal Inflores- cence of the Maize Mutant Tassel seed-2*	93
G. E. DOLPH—A Review of the Fossil Apocynaceae from the Eocene of Western Tennessee and Kentucky*	93
F. W. POTTER, JR., and D. L. DILCHER—Revaluation of Engelhardia of the Eocene of Southeastern United States*	94
C. P. DAGHLIAN and D. L. DILCHER—Middle Eocene Sabaloid Palms*	94
R. K. HORINE—Cell Wall Regeneration Around Protoplasts Iso- lated from <i>Convolvulus arvensis</i> Tissue Culture*	95
R. W. OLSON and A. L. EISER—Initiation of Callus Tissue of <i>Abies concolor</i> (White Fir) by Tissue Culture Techniques ...	96

Cell Biology

F. PADGETT and W. A. SUMMERS—Electron Microscopic Study of Anaplasma marginal by Negative Staining*	101
L. F. ELLIS and R. J. DOUTHART—Growth Cycle of <i>Penicillium</i> <i>chrysogenum</i> Virus*	101
D. A. WERDERITSH, D. SHELTON, C. SWAN, C.-M. HAUN, W. YUNGHANS and D. J. MORRE—Toxic Response of Mice to a DDT Diet, Its Suppression by Feeding and the Effect of Estrogen*	101

*Abstract or Note only

	Page
D. M. HUANG, D. J. MORRE and T. W. KEENAN—NADH Dehydrogenase Activity of Golgi Apparatus from Rat Liver* ..	102
T. W. KEENAN, C. M. HUANG and D. J. MORRE—Golgi Apparatus-Medicated Cytomembrane Differentiation in Rat and Bovine Mammary Gland*	102
ANNE S. SUSALLA and P. G. MAHLBERG—Ultrastructure of Green Plastids in Leaves of Genetic Albino Tobacco*	103
SHIRLEY SIEW—Use of the Scanning Electron Microscope in the Investigation of Cardiac and Pulmonary Tissue*	103
G. B. BODER and L. F. ELLIS—Ultrastructure of Mouse Heart Cell Culture*	103
I. WATANABE, V. PATEL and W. ZEMAN—Ultrastructures of Neuronal Lipofuscin and Ceroid*	104
M. E. JACOBS—Effect of Beta-alanine on Glucose Catabolism and Growth of Ehrlich Ascites Tumor Cells*	104
P. V. BLAIR and L. Y. CHAO—Inhibition of Succinate Oxidation in Beef Heart Mitochondria by Derivatives of Pyridine Adenine Dinucleotide*	104
J. H. ELDER, C. A. LEMBI, L. ANDERSON and D. J. MORRE—Scale Calcification in a Chrysophyceean Alga: A Test System for the Effects of DDT on Biological Calcification	106
R. BARR, J. D. HALL, T. BASZYNSKI, J. BRAND and F. L. CRANE—The Effect of Mineral Deficiency on the Photosynthetic Apparatus in Maize. I. The Role of Chloroplast Sulfolipid	114
F. E. WILKINSON, SALLY E. NYQUIST, W. D. MERRITT and D. J. MORRE—Aryl Sulphatases: Properties and Subcellular Distribution in Rat Liver	121
T. W. KEENAN and F. L. CRANE—Constancy of Unsaturation in Molecular Species of Cardiolipin and Phosphatidyl Ethanolamine from Beef Heart Mitochondria	133

Chemistry

L. MULLINS, T. L. KRUGER, THERESA CHENG, and J. SHARP—The Synthesis and Decomposition of Some Interesting 1-Pyrazolines*	139
T. L. KRUGER, NANCY E. THARP, and JAMES W. KRESS—Properties and Reactions of Some N, N-Diethylaniline Oxides* ...	139
J. E. ROGERS, JR., and JAMES JOSE—Synthesis and Identification of p-Benzoquinones Occurring in Arthropod Defensive Secretions*	139

	Page
C. T. BOTKIN and R. E. VAN ATTA—A Chemical Study of the White River at Muncie*	140
B. N. STORHOFF and D. F. STORHOFF—A New Experiment for Advanced Inorganic Chemistry*	140
B. N. STORHOFF—Rhenium (I) Complexes of 2-Cyanoethyl-diphenylphosphine*	140
J. A. SCARLETT and W. J. STRATTON—Chelating Behavior of Some New Sterically Hindered Tetrafunctional Azine Ligands* ...	140
D. J. HARRIS and W. J. STRATTON—Conductivity Studies in Acetonitrile for a Novel Series of Metal Chelates with 2-Pyridylmethylketazine*	140
J. D. NAYLOR and J. H. MEISER—A Counterdiffusion Study of Ferric and Silicate Ions in Agar Media*	141
R. M. LAWRENCE and J. R. RELFORD—Liquid X-Ray Diffraction Studies of the Structures of Aqueous Metal Nitrate, Acetate, and Perchlorate Solutions Using Overviewing Techniques* ..	141
T. L. KRUGER and J. W. KRESS—Molecular Orbital Calculations on Some Nitrogen Heterocycles*	141
R. M. BROOKER—An Anticholinesterase Agent and Myasthenia Gravis*	142
P. ANDERMATT—The Biosynthesis of Steroidal Sapogenins*	142
B. A. THORNBURGH and P. F. MA—Thin-Layer Gel Filtration Studies of Adenosine Deaminases from Beef and Beef Fetus Livers*	143
T. A. MAGERS and P. F. MA—A Comparative Study of Adenosine Deaminase in Human Tissue*	143
M. L. DRUELINGER and S. R. LAMMERT—Photochemical Synthesis and Destruction of Oxaziranes*	143
L. L. GARBER—Some New Approaches to Teaching Chemistry for Non-Science Majors*	144

Ecology

P. T. MCKELVEY—A Water Quality Study of the Tippecanoe River*	147
R. H. L. HOWE—The Howe's Rapid Biochemical Oxygen Demand Index and its Technique*	147
W. R. CHANEY and A. C. LEOPOLD—Stimulation of Branch Abscission in <i>Quercus alba</i> by 2-Chloroethylphosphonic Acid*	147
H. E. McREYNOLDS—Basic Leakage Considerations in Ecological and Hydrological Studies of Experimental Watersheds*	147

*Abstract or Note only

	Page
J. W. HART and JESSIE M. TURNER—A New System for Ecological Education—SEE*	148
R. M. HOFFER and L. A. BARTOLUCCI—Calibration Techniques for Remote Sensing Measurements of Water Temperatures	150
LINDA K. ESCOBAR and A. A. LINDSEY—Natural Areas in the Beech-maple and Maple-basswood Forest Regions of Nine States	154
CHRISTINE O. HOPKINS, W. E. HOPKINS and G. W. BARRETT—Importance Per Cent Values of a Browsed Southeastern Indiana Forest	160
R. E. KIRKPATRICK, MARSHA R. ROY, G. A. WISE and L. L. HARDMAN—Contents of Southern Indiana Wild Turkey Drop-pings	165

Entomology

R. W. MEYER and J. V. OSMUN—Insects and Other Arthropods of Economic Importance in Indiana During 1971*	171
B. E. MONTGOMERY—Survival of Odonata Naiads Through Drought and Freezing*	171
R. E. SIVERLY—Myiasis in Delaware County, Indiana, 1971, with a Confirmed Case of Infestation by <i>Wohlfahrtia vigil</i> (Walker) (Diptera:Sarcophagidae)*	171
S. BETRAS and R. E. SIVERLY—Preliminary Investigation of the Effects of Three Hormonomimetic Compounds on Larvae of <i>Culex pipiens pipiens</i> L (Northern House Mosquito)*	172
D. A. SHROYER and R. E. SIVERLY—A Preliminary Study of Autogeny and Host Preference of <i>Culex pipiens pipiens</i> L. (Northern House Mosquito) in East-Central Indiana*	172
F. N. YOUNG—Genetic Studies on Melanic Forms of <i>Tropisternus collaris</i> (Fabricius) from North and South America*	173
H. R. LAWSON—The Planipennia (Neuroptera) in Indiana*	173
E. M. SHULL—Indiana State Records and Notes on Some Rare Butterflies and Skippers in the State	175
GERTRUDE L. WARD—Aggregations of <i>Chalybion californicum</i> (Saus-sure) (Hymenoptera:Sphecidae) near Centerville, Wayne County, Indiana	177
R. E. DOLPHIN—Observations of <i>Halictus confusus</i> Smith (Hy-menoptera:Halictidae) on Woodland and Field Flowers	182

Geography and Geology

M. J. MURPHY and J. P. SZABO—Glacial Geology of St. Joseph County, Indiana (Map 1:62,500)*	187
--	-----

*Abstract or Note only

	Page
R. W. ORR and W. D. REBUCK—Age and Correlation of Middle Devonian Strata of Jasper County, Indiana*	187
R. L. POWELL—Structural Control of Cavern Development in Northwestern Washington County, Indiana*	188
J. H. CLEVELAND—To Harmonize a County—A Proposed Integrated Study of Vigo County, Indiana*	188
A. H. MEYER—Geography's Inherent Role in Environment Control*	189
S. K. PONTIUS—Factors Associated with the Decline of Central Place Functions on the Rural Poor of Monroe County, Indiana*	189
H. W. BULLAMORE—The Relationship of Expensive Residential Dwellings to Hilly Terrain*	189
F. P. KALLAY—Fulmendosa River: A Multipurpose Irrigation Project in Sardinia*	190
D. L. DILCHER—Coal Age Tree Stumps in Indiana*	190
S. H. MURDOCK—Earth Dam Problems—and the Geological Site Investigation	191
N. K. BLEUER and M. C. MOORE—Glacial Stratigraphy of the Fort Wayne Area and the Draining of Glacial Lake Maumee	195
T. R. WEST—Engineering Soils Mapping in Indiana by Computer from Remote Sensing Data	210
S. H. MURDOCK and R. A. PETTIJOHN—Status of Interagency Erosion and Sediment Studies in Indiana	217
A. J. RUDMAN, J. MEAD, R. F. BLAKELY and J. F. WHALEY—Precambrian Geophysical Provinces in Indiana	223
G. S. AUSTIN and J. B. PATTON—History of Brick Manufacture in Indiana	229
A. C. FREEMAN and G. W. WEBB—A Comparison of Public Utility and Governmental Rates and Services Provided Mobile Home Park Residents and Other Residents: A Case Study of Tippecanoe County, Indiana	238
C. H. JUDY—Heavy Water—A Natural Tracer	242
L. V. MILLER—A Preliminary Investigation of Sludge Refuse from Indiana Coal Mines	246
D. B. WALDRIP and M. C. ROBERTS—The Distribution of Slopes in Indiana	251

Microbiology and Molecular Biology

R. H. L. HOWE—Comparative Growth Kinetics of Microbial Bio-Oxidation*	259
---	-----

	Page
J. BUTLER, D. DOCAUER, M. DOWNING, M. DULIN, K. FISCHVOGT, W. GARDINER, J. HOLLOWAY, J. JACOBY, J. NEFF and L. SCHELL—A Survey of Pollution Levels in the Bean Blossom Watershed (Lake Lemon) and in the Salt Creek Watershed (Lake Monroe)—Brown and Monroe Counties, Indiana*	259
R. F. RAMALEY—The Use of Pollution Surveys as Aids in Environmental Protection and Planning*	259
S. C. BURT—The Impact of Water Pollution on Recreational Areas in Delaware County*	260
D. L. PETERSON and A. S. BENNETT—The Effects of Glucose, Acetate, and Malonate Upon Fatty Acid Distribution in <i>Aspergillus niger</i>	262

Physics

I. J. HANSEN and E. M. COMPY—Effects of Pressure on Electronic Properties of Bismuth*	267
R. KAITCHUCK and N. G. SPRAGUE—Photoelectric Photometry of an Eclipsing Binary Star System*	267
D. E. MICHAEL and L. M. REYNOLDS—Neutron Activation Cross Sections Using 2.8 MeV Neutrons*	267
J. SWEZ, J. WESTGARD and L. PLEW—The Numerical Lathe Fabrication and Theoretical Evaluation of an Electron Lens*	268
J. B. WESTGARD and D. G. PITTS—Tayex: A Taylor Expansion Equation Solver*	268
C. T. WUNKER and P. R. ERRINGTON—D-178B Minuteman Missile Computer Interfacing*	268
D. L. DEMOSS and C. C. SARTAIN—Growth of Single Crystals of Alkali Niobates*	268
K. E. WRIGHT and C. C. SARTAIN—A Critical Study of the Various Factors Limiting Resolution in Solid State Detectors*	269
P. S. MARCUS—Calculus Without Differentials	269
T. K. E. ALVAGER, R. A. LLEWELLYN and R. E. PACE—Neutron Activation Analysis of a Metal Button from the Site of Fort Harrison*	269
G. E. HARING and E. B. NEMANIC—A Study of the Rate of Absorption of Methylated Mercury by <i>Carassius auratus</i>	271

Plant Taxonomy

T. J. CROVELLO—The Computerization of the Edward Lee Greene Herbarium (NDG) at Notre Dame*	275
--	-----

	Page
C. B. HEISER, JR.—The Origin of Seed Planting*	275
L. and A. BEESLEY—Wild Flowers of Franklin County and Indiana*	275
G. M. BROOKS and T. R. MERTENS—A Biosystematic Study of <i>Polygonum ramosissimum</i> and <i>Polygonum tenue</i>	277
WINONA H. WELCH—Studies in Indiana Bryophytes XIV	284
L. C. BROWN—The Effects of Preservation Time on Chroma- tographic Patterns in <i>Equisetum hiemale</i>	290
FAY K. DAILY—Comments on a Check List of Indiana Algae: Purpose and Problems	294

Science Education

L. L. BODIE, JR.—Uses of a Student Responder System*	297
C. C. HINDS—An Audio-tutorial, Independent Study Program for the Elementary Teacher*	297
S. S. SHIMER, LINDA B. KNIGHT and H. H. JAUS—Training Supervising Teachers to Evaluate and Counsel Pre-Service Teachers on the Basis of Teaching Techniques Derived from Methods Courses*	298
H. D. SHOCK—An Environmental Science Conservation Course* .	298
W. D. BROOKS—Reading Habits of Prospective Secondary Earth Science and Geography Teachers*	299
J. W. HART and JESSIE M. TURNER—SEE—System for Ecological Education	301

Soil Science

J. L. WHITE and MARIBEL CRUZ—Soil Colloids and Behavior of Pesticides in Soils*	305
D. E. PHINNEY and J. E. NEWMAN—The Precision Associated with Sampling Frequencies of Total Particulate at Indi- anapolis, Indiana*	305
R. K. STIVERS—High Rates of Urea Fertilizer for Corn (<i>Zea mays</i> L.) on Two Soils, 1969-1971	306
J. E. NEWMAN and D. E. PHINNEY—Weekly and Seasonal Changes in Total Suspended Particulate Concentrations at Indianapolis, Indiana	312
D. E. LINVILL and R. F. DALE—Temperature and Relative Hu- midity Inside Corn Canopies and in Standard Shelters during July and August, 1970 and 1971	319

*Abstract or Note only

W. L. STIRM, M. BAUER and O. LOEWER, JR.—Predicting Southern Corn Leaf Blight Development in 1971 by Computer Simulator EPIMAY	325
E. J. MONKE and R. M. ALVERSON—Some Effects of Soil and Ambient Air Temperature Differences on Tomato Growth ...	330

Zoology

K. ADLER and D. H. TAYLOR—Perception of the Plane of Polarized Light and its Use by Orienting Salamanders*	339
C. E. MAYS and M. A. NICKERSON—A Population Study of the Ozark Hellbender Salamander, <i>Cryptobranchus alleganiensis bishopi</i> *	339
J. H. CLARK, J. A. ANDERSON and E. J. PECK, JR.—Specific Estrogen Binding Sites in the Nuclear Fraction of the Rat Uterus*	340
A. LAIRJE and N. A. DIAL—Effects of Differentiated Brain on the Development of the Nervous System of the Explanted Chick Embryo*	340
T. JOSEPH—Coccidial Immunity Studies in the Grey Squirrel* ...	341
K. BELCHER—Relationship between Metabolic and Emergency Rhythms in <i>Drosophila melanogaster</i> *	341
R. L. SUDDITH—Sites of Cell Proliferation in a Colonial Hydroid, <i>Campanularia flexuosa</i>	342
R. S. BENDA—Fish Populations in the White River near Petersburg, Indiana*	343
N. A. DIAL—Some Effects of Methylmercury on Early Frog Development*	343
SUSAN L. DONALDSON, J. L. ALBRIGHT and W. C. BLACK—Primary Social Relationships and Cattle Behavior	345
SUSAN L. DONALDSON, J. L. ALBRIGHT and MARY ANN ROSS—Space and Conflict in Cattle	352
D. R. GOINS—A Check List of Freshwater Ostracods of Indiana—Including Sixteen New Recordings and a Description of Two New Species	355
D. R. LANK, JR.—Parasites of the Bullfrog in Indiana	359
VIRGINIA R. FERRIS and J. M. FERRIS—Distribution of Free-living Soil Nematodes of the Belonidiroidea in Indiana and the United States	365
R. L. RICHARDS—The Woodrat in Indiana: Recent Fossils	370
J. O. WHITAKER, JR., and R. E. MUMFORD—Notes on Occurrence and Reproduction of Bats in Indiana	376

*Abstract or Note only

	Page
W. C. HOUTCOOPER—Rodent Seed Supply and Burrows of <i>Peromyscus</i> in Cultivated Fields	384
L. G. MARTIN, T. F. MYERS and GRACE E. WERTENBERGER—Effect of Aging on Ability to Acclimate to Chronic Hypoxia of Simulated Altitude	390
W. G. GUNTHER and M. W. WAGNER—Preferences for Natural and Artificial Sweeteners in Heat-Stressed Chicks of Different Ages	401
Instructions for Contributors	410
Index	413
Cumulative Index Volumes 71-80	423

PART 1

THE WORK
OF THE
ACADEMY

1971

SAMUEL N. POSTLETHWAIT, *President*

OFFICERS AND COMMITTEES FOR 1971

OFFICERS

PresidentSAMUEL N. POSTLETHWAIT, Purdue University
President-electOTTO K. BEHRENS, Eli Lilly & Co.
SecretaryJ. DAN WEBSTER, Hanover College
TreasurerDAMIAN V. SCHMELZ, St. Meinrad College
EditorMARION T. JACKSON, Indiana State University
Director of Public RelationsPAUL E. KLINGE, Indiana University
Program ChairmenCARROLLE A. MARKLE and W. K. STEPHENSON,
Earlham College

DIVISIONAL CHAIRMEN

AnthropologyWILLIAM R. ADAMS, Indiana University
BotanyJAMES R. REES, Anderson College
Cell BiologyWILLIAM J. GRIFFING, Eli Lilly & Co.
ChemistryWILMER J. STRATTON, Earlham College
EcologyCARL H. KREKELER, Valparaiso University
EngineeringROBERT L. SWAIM, Purdue University
EntomologyROBERT E. DOLPHIN, U. S. Dept. of Agriculture
Geography and Geology .CHARLES E. WIER, Dept. of Natural Resources
Microbiology and Molecular BiologyROBERT F. RAMALEY
Indiana University
PhysicsMALCOLM E. HULTS, Ball State University
Plant TaxonomyFAY K. DAILY, Butler University
Science Education .KENNETH W. UHLHORN, Indiana State University
Soil ScienceRUSSELL K. STIVERS, Purdue University
ZoologyWILLIAM J. BRETT, Indiana State University

EXECUTIVE COMMITTEE

(Past Presidents*, Current Officers, Divisional Chairmen,
Committee Chairmen)

ADAMS, W. R.	*GUARD, A. T.	*MICHAUD, H. H.
BEHRENS, O. K.	*GUTHRIE, F. A.	*MORGAN, W. P.
BRETT, W. J.	*HAENISCH, E. L.	MOULTON, B.
BROOKER, R. M.	HOPP, W. B.	NEWMAN, J. E.
CHANDLER, L.	HULTS, M. E.	NISBET, J.
*CHRISTY, O. B.	JACKSON, M. T.	PATTON, J. B.
*CLELAND, R. F.	*JOHNSON, W. H.	PETTY, R. O.
COATS, NELLIE	KAUFMAN, K. L.	POSTLETHWAIT, S. N.
DAILY, FAY K.	KESSEL, W. G.	*POWELL, H. M.
*DAILY, W. A.	KLINGE, P. E.	RAMALEY, R. F.
*DAY, HARRY G.	KREKELER, C. H.	REES, J. R.
DHONAN, C. A.	*LILLY, ELI	SCHMELZ, D. V.
DOLPHIN, R. E.	*LINDSEY, A. A.	STEPHENSON, W. K.
*EDINGTON, W. E.	*MARKLE, CARROLLE A.	STRATTON, W. J.
*EDWARDS, P. D.	MCBURNEY, W. F.	STIVERS, R. K.
*GIRTON, R. E.	*MELLON, M. G.	*WAYNE, W. J.
GRIFFING, W. J.	*MEYER, A. H.	*WEATHERWAX, P.

WEBSTER, J. D.	*WELCHER, F. J.	WINSLOW, D. R.
*WELCH, WINONA H.	WIER, C. E.	*YOUSE, H. R.
	WILLIAMS, E. C.	

BUDGET COMMITTEE

President, SAMUEL N. POSTLETHWAIT; President-elect, OTTO K. BEHRENS; Secretary, J. DAN WEBSTER; Treasurer, DAMIAN V. SCHMELZ; Editor, MARION T. JACKSON; Director of Public Relations, PAUL E. KLINGE; Retiring President, FRANK A. GUTHRIE; Director of Junior Academy, DONALD R. WINSLOW; Library Committee, NELLIE COATS; Relation of Academy to State, WILLIAM A. DAILY; Program Chairmen, WILLIAM K. STEPHENSON and CARROLLE A. MARKLE.

COMMITTEES ELECTED BY THE ACADEMY

Academy Foundation: WILLIAM A. DAILY, 1972, Chairman; W. P. MORGAN, 1971.

Bonding: ROBERT M. BROOKER, 1971, Chairman; HOWARD H. MICHAUD, 1971.

Research Grants: JAMES E. NEWMAN, 1973, Chairman; NELSON R. EASTON, 1974; JOHN B. PATTON, 1972; WILLIAM K. STEPHENSON, 1971; WINONA H. WELCH, 1975.

COMMITTEES APPOINTED BY THE PRESIDENT

(President an ex officio member of all committees.)

Academy Representative on the Council of the A.A.A.S.: WILLIS H. JOHNSON.

Auditing Committee: C. A. DHONAN, Chairman; ROBERT E. DOLPHIN.

Youth Activities Committee: PAUL E. KLINGE, Chairman; SR. MARY ALEXANDRIA; ROBERT M. BROOKER; JERRY COLGLAZIER; JOHN V. DAVIS; WILLIAM FIELD; EMIL HOFFMAN; KARL L. KAUFMAN; RALPH W. LEFLER; WENDELL F. MCBURNEY; JAMES D. SCHWENGEL; DONALD R. WINSLOW.

Indiana Science Talent Search: MARK BAMBENEK; ROBERT L. HENRY; WENDELL F. MCBURNEY; ALFRED R. SCHMIDT; HOWARD R. YOUSE; HAROLD L. ZIMMACK.

Indiana Science Fairs, State Coordinator: KARL L. KAUFMAN.

Indiana Science Fairs, Regional Fair Directors: P. V. FLANNERY, Calumet; A. C. KOESTER, Northwestern; HARRY WEIMER, Northern; A. W. FRIEDEL, Northeastern; WILLIAM W. HILL, JR., N.E. Tri-State; WILLIAM J. FISCHANG, Lafayette; WILLIAM F. PHILLIPS, West Central; GEORGE W. WELKER, East Central; WILLIAM GOMMEL, Central; W. F. MCBURNEY, South Central; RICHARD L. CONKLIN, Southeastern; H. A. SCHLETER, Tri-State.

Indiana Junior Academy of Science Council: DONALD R. WINSLOW, 1975, Chairman; SR. MARY ALEXANDRIA, 1972; MARY J. PETERSEN, 1973; LAWRENCE POORMAN, 1974; HELEN REED, 1971.

- Library Committee:** LOIS BURTON, Chairman; NELLIE COATS; WILLIAM R. EBERLY; JOHN W. KLOTZ; Eli Lilly.
- Program Committee:** CARROLLE MARKLE and WILLIAM STEPHENSON, Co-Chairmen.
- Publications Committee:** MARION T. JACKSON, Chairman; MARION F. BAUMGARDNER; HARRY G. DAY; WILLIAM R. EBERLY; WILTON N. MELHORN; JOHN F. PELTON; B. K. SWARTZ, JR.
- Newsletter:** FRANK A. GUTHRIE.
- Relation of the Academy to the State of Indiana:** WILLIAM A. DAILY, Chairman; JAMES A. CLARK; WILLIAM R. EBERLY; HELMUT KOHNKE.
- Membership Committee:** MARVIN SCHREIBER, Chairman; ELIOT C. WILLIAMS.
- Fellows Committee:** BEN MOULTON, 1973, Chairman; JAMES A. AHLRICHS, 1973; CHARLES E. BRAMBEL, 1973; RICHARD L. CONKLIN, 1971; SEARS CROWELL, 1972; FAY K. DAILY, 1971; WILLIAM W. DAVIS, 1973; ROBERT E. GORDON, 1972; CHARLES B. HEISER, 1971; DONALD E. MILLER, 1971; B. E. MONTGOMERY, 1972; GEORG K. NEUMANN, 1972; JOHN PELTON, 1972.
- Resolutions Committee:** ARTHUR T. GUARD, Chairman; HOWARD R. YOUSE, ROBERT O. PETTY.
- Invitations Committee:** JAMES R. GAMMON, Chairman; ALTON A. LINDSEY; JAMES C. LIST; PAUL R. QUINNEY; WILLIAM K. STEPHENSON.
- Parliamentarian:** PAUL WEATHERWAX.

SPECIAL COMMITTEES APPOINTED BY THE PRESIDENT

- Biological Survey Committee:** LELAND CHANDLER, Chairman; JACK E. HUMBLES; GAYTON C. MARKS; RUSSELL E. MUMFORD; JACK R. MUNSEE; WINONA H. WELCH; FRANK N. YOUNG.
- Emeritus Member Selection Committee:** RALPH E. CLELAND, Chairman; ROBERT H. COOPER, EDWARD L. HAENISCH; HOWARD MICHAUD; WINONA H. WELCH; J. DAN WEBSTER.
- Preservation of Scientific Areas Committee:** ROBERT O. PETTY, Chairman; RAY GUTSCHICK; CARL H. KREKELER; CARROLLE MARKLE; BEN MOULTON; DAMIAN V. SCHMELZ; ROBERT WEBER; WINONA H. WELCH.
- "Speaker of the Year" Selection Committee:** RALPH E. CLELAND, Chairman; WILLIS H. JOHNSON; A. J. ULLSTRUP.
- Science and Society Committee:** WILLIS H. JOHNSON, Chairman; RALPH E. CLELAND; HARRY G. DAY; WILLIAM R. EBERLY; ALTON A. LINDSEY; PAUL E. KLINGE; ROBERT D. MILES; ROBERT MENKE; ROBERT E. GORDON; MILTON BURTON; JOHN B. PATTON; D. JAMES MORRE; HERMAN B. WELLS, Honorary; HELMUT KOHNKE, Executive Secretary.
- Member, Indiana Natural Resources Commission:** SAMUEL N. POSTLETHWAIT.

SPRING MEETING

MARY GRAY BIRD SANCTUARY, Fayette County, Indiana

MINUTES OF THE EXECUTIVE COMMITTEE MEETING

April 23, 1971

The meeting was called to order at 4:39 PM by President Samuel Posthlethwait in Earl Brooks Hall, Mary Gray Bird Sanctuary, near Connorsville. Nineteen members were present. The president reported briefly, chiefly noting points of the agenda which were considered later in the meeting. The secretary moved the approval of the minutes of the November 5, 1970, meeting, which had been duplicated and distributed. Seconded and carried.

Treasurer: Rev. Damian V. Schmelz distributed duplicated copies of his report for the period January 1 to April 23, 1971. It was moved, seconded, and carried that it be accepted.

Academy Foundation Committee: William A. Daily, Chairman, reported that legal counsel had been retained to clarify the tax status of the academy with the United States Internal Revenue Service. He moved that attorney Donald G. Sutherland be granted Power of Attorney to act for the academy in tax matters. Seconded and carried. (This action had previously been taken by the Council.)

Bonding Committee: Robert M. Brooker, Chairman, recommended no change in our program.

Academy Representative on the A.A.A.S. Council: Willis H. Johnson, Representative, reported the following interesting actions at the December, 1970, meeting of the council: 1) Passed resolution recommending phaseout of the use of herbicides in Southeast Asia; 2) Passed resolution recommending that all scientists start using the metric system in their publications and also recommending that the government establish a national policy on its use; 3) Passed resolution reaffirming its commitment to equal opportunity for all scientists regardless of sex, race, creed or national origin.

A new rule of the A.A.A.S. requires representatives from affiliated organizations (such as ours) to serve 2-or-more-year terms. It was moved that the constitution of the academy be amended as follows: (italicized words added)

“Article V, Section 1. The following named committees shall be appointed by the President, to serve for one year, *except as noted otherwise below and* except as rotation is provided, and except as otherwise provided *they* shall be announced . . .

“(1) The Academy Representative on the Council of the American Association for the Advancement of Science. *This person shall serve for a three-year term beginning January 1, 1972, and every 3 years thereafter.*

“(2) Auditing. . .” Seconded and carried.

Auditing Committee: Robert Dolphin, Chairman, stated that no report was necessary at this time of year.

Library Committee: Mrs. Lois Burton, Chairwoman, reported that in December the Academy received a grant of \$15,000 from Lilly Endowment, Inc., to be expended in general support of the John Shepard Wright Memorial Library. The amount is on the Treasurer's books as Lilly Fund IV. We plan to begin carrying out provisions under this grant during the coming summer.

A second mailing of Volume 79 of the *Proceedings* has been completed, courtesy of the Indiana State Library. The total number mailed to members to date is 1,127.

Monograph Number 2 has been received and is ready for mailing under our Exchange program to libraries, universities, and scientific societies.

Some sales of *Natural Features of Indiana* were made. Sixty-five copies remain in stock.

Program Committee: Mrs. Carroll A. Markle reported no problems.

Publications Committee: Marion T. Jackson, Editor, reported that Monograph 2 has been published and will be distributed free to members who request it, pending investigation of costs and past actions of this committee. Volume 80 of the *Proceedings* will be published about September and will be larger than the last volume. The possibility of page charges or of a limitation of allowable published papers per year per member should be considered for future volumes.

Relation of Academy to State of Indiana: William A. Daily, Chairman, reported that no change had been made in the State's budget allowance for publication of the *Proceedings*.

Membership Committee: Eliot C. Williams, Chairman, reported no radical changes.

Invitations Committee: The secretary reported official approval from Indiana Central College of that school as our meeting site for 1973.

Emeritus Members Committee: The secretary read a report from Chairman Ralph Cleland which recommended that Ralph W. Lefler be elected to emeritus status. It was moved, seconded, and carried that Dr. Lefler be so elected.

Natural Areas Committee: Rev. Damian V. Schmelz reported that the registry of natural areas in the state has been extended, intensified, and more effectively computerized.

Speaker of the Year Committee: The committee consisted of Ralph F. Cleland (chairman), Willis H. Johnson (reporting), and Arnold Ullstrup. Willis Johnson moved that,

The Special Lecturer should be paid an honorarium of \$500.00 by the Academy.

A committee should select the Special Lecturer each year. While the Executive Committee might do this and the contacting of the colleges, you may prefer to appoint a special committee for this purpose. If you decide on a special committee of three, each should serve three years except in the beginning when one should serve for three years, one for two, and one for one. Thus, after the first year one new member would be appointed by the President each year.

The job of the committee would be two-fold: 1) to select the speaker, and 2) to contact the colleges.

The speaker should be a member of the Academy (preferably). He should be a forceful speaker, able to communicate with young people. His subject should be relevant. It might be on his research, but it should be related to social problems. On the other hand, it might be on a social problem or problems not directly related to his research. The committee should know the subject of a prospective speaker before he is selected. It is understood that the speaker will give his lecture before the fall meeting of the Academy, preferably in a session immediately following the lunch period. This lecture will be printed in the *Proceedings of the Indiana Academy*. In addition to the lecture before the Academy, the speaker will give his lecture at four or five colleges in the state. It is understood that this is a program for the colleges of the state. The second job of the committee each year will be to contact the colleges where the speaker will give his lecture. Once a college has been served it should not be contacted again for a special lecturer until all of the colleges of the state have had an opportunity to have a special lecturer. It may be that the committee will want to select colleges in a particular region of the state for a given year. It is understood that the colleges will pay for any meals and lodging involved in the visit; the colleges will not pay an honorarium.

Seconded and carried.

Willis H. Johnson moved that the speaker of the year for 1971 be Alton A. Lindsey, with first alternate William R. Breneman and the second alternate Charles B. Heiser, Jr. Seconded and carried.

Science and Society Committee: Willis H. Johnson, Chairman, reported that the committee and its Executive Director, Helmut Kohnke, had been able to advise several branches of the state and city governments concerning environmental and other scientific problems.

The President reported that a group of engineers at Purdue University had requested the formation of an Engineering Section of the Academy. It was moved by Rev. Damian V. Schmelz, seconded, and carried, that an Engineering Section be organized at the 1971 fall meeting; that the section follow all appropriate procedures and restrictions consistent with the constitution and by-laws of the Academy. The President appointed Robert L. Swaim Chairman for 1971.

Marion T. Jackson reported the recent death of Georg K. Neumann, who was the elected 1971 chairman of the Anthropology Section. The President appointed William R. Adams Chairman for the remainder of the year.

There was an extended discussion of some recent attributions by news media of "official Indiana Academy of Science" positions to public statements by certain members. Mrs. Fay K. Daily moved that the Parliamentarian draft a disavowal statement for publication by the Academy, disassociating the academy officially from all public statements by its members. The motion was seconded; a vote by show of hands was tied. It was moved by Willis H. Johnson, seconded, and carried that the motion be tabled until next meeting.

The President requested an investigation of the possibility of hiring an Executive Secretary. No objection being raised, consent was declared.

The President stated:

"The President of the Academy by law is the official appointee to the Natural Resources Commission. It is believed that it would serve the best interests of the Academy and the Natural Resources Commission if the law were changed to permit the appointee to be the president or his representative."

It was moved by Willis H. Johnson, seconded, and carried that the Academy petition the Indiana State Natural Resources Commission and the legislature of the State of Indiana to change the law so that the member of the Natural Resources Commission not be "The President of the Indiana Academy of Science", but, rather, "The President of the Indiana Academy of Science *or his designated representative.*"

On motion the meeting adjourned at 6:32 PM.

Approved October 28, 1971.

Respectfully submitted,
J. DAN WEBSTER, Secretary

MINUTES OF THE GENERAL SESSION

April 23, 1971

The meeting was called to order by President Samuel N. Postlethwait at 7:49 PM in Earl Brooks Hall, Mary Gray Bird Sanctuary, near Connersville. Thirty members were present.

The secretary moved the following proposed amendment to the by-laws of the Academy—

Article III, Section 1. Delete the last clause, reading, "provided that any bill for fifty dollars or more shall be approved by the president." As a result, Article III, Section 1, would read: "The treasurer is authorized to issue checks in payment of bills submitted by officers or committees for which provision has been made in the budget for that year."

Seconded and carried. (This was the second passage; the amendment is now effective.)

A. T. Guard moved the following resolution—

The Indiana Academy of Science members and friends here assembled express their most sincere appreciation to Dr. Carrolle A. Markle and Dr. W. K. Stephenson for the fine program which they have arranged. Our sincere thanks are extended to the officials of the Indiana Audubon Society and especially to Mr. and Mrs. Denzil Barricklow, Resident Naturalists of the Mary Gray Bird Sanctuary, for making their facilities available to us.

Our thanks also go to Dr. Gary Barrett of Miami University for his timely, instructive and interesting address on "The New Ecology".

We also wish to express our appreciation to those ladies who served us such excellent meals.

Our appreciation is extended to the leaders of the various field trips which are always such an integral part of the spring meeting of the Academy.

Seconded and carried.

Dr. Carrolle A. Markle announced details of field trips and meals. The evening feature was an illustrated lecture by Gary Barrett entitled "The New Ecology".

The meeting adjourned at 9:15 PM.

Approved October 28, 1971.

Respectfully submitted,
J. DAN WEBSTER, Secretary

FALL MEETING

EARLHAM COLLEGE, Richmond, Indiana

MINUTES OF THE EXECUTIVE COMMITTEE MEETING

October 28, 1971

The meeting was called to order at 7:47 PM by President Samuel N. Postlethwait in the Orchard Room of Runyan Center, Earlham College. Twenty-two members were present at the start; ten more came in later. The secretary moved the approval of the minutes of the executive committee and general session meetings of April 23, 1971, as duplicated and distributed. Seconded and carried.

Treasurer: Rev. Damian V. Schmelz presented his report for the period January 1 through October 28, 1971, as follows:

Academy accounts

Income	\$ 5,759.03
Expenditure	5,865.49
Net loss	106.46
Balance December 31, 1970	10,296.09
Balance October 28, 1971	10,189.63

Administered accounts

Income	39,586.79
Expenditure	47,005.93
Net loss	7,419.14
Balance December 31, 1970	43,920.55
Balance October 28, 1970	36,501.41

It was moved by the Treasurer, seconded, and carried that the report be accepted. (On all following committee reports, action, unless noted otherwise, was accepted by general consent.)

Bonding Committee: Robert M. Brooker, Chairman, wrote in, recommending no change in our program.

Director of Public Relations: Paul Klinge wrote in, reporting excellent press coverage during the past year.

Research Committee: James E. Newman, Chairman, reported the following grants in 1971:

- J. Dan Webster (Hanover College). Breeding bird censuses in Indiana old growth forests.\$ 378.
- Robert E. Pace (Indiana State University). Aerial survey of archeological sites in the Lower Wabash Valley.\$ 505.
- Paul T. McKelvey (Tippewa Tech. Institute). Study of water quality of the Tippecanoe River.\$ 530.
- D. James Morr  (Purdue University). Chlorinated hydrocarbons and egg shell changes.\$ 500.

Winona H. Welch (DePauw University). Hookeriaceae in the West Indies	\$ 200.
Damian V. Schmelz (St. Meinrad College). A comparative study of the physical environment and biotic elements of three strip-mine lakes	\$ 299.
Charles E. Mays (DePauw University). To continue a study of salamander and turtle populations on the North Fork River in Ozark County, Missouri.	\$ 450.
Total grants approved	\$2,862.

Also, one more proposal is under consideration and another from last year has been extended. A manuscript by Sherman Minton, "*Reptiles and Amphibians of Indiana*," has been approved by the Publications Committee as *Monograph No. 3*; the research committee will consider underwriting the publication cost.

Academy Representative to the A.A.A.S. Council: Willis H. Johnson reported no actions by the council relevant to our Academy.

Youth Activities Committee: A written report by Paul E. Klinge, Chairman, was presented by Donald R. Winslow. The anti-animal-experimentation rule set up by the National Science Talent Search still hampers Indiana student biologists. Reorganization of the entire youth program is under discussion, but no proposals are ready.

Science Talent Search Committee: A report was written in by Wendell F. McBurney, Director. The report was accepted, but no action was taken on the request to support the position of the Indiana Science Talent Search Committee regarding experimentation on vertebrate animals.

Science Fairs: A report was written in by Karl Kaufman, director.

Indiana Junior Academy of Science: Donald R. Winslow presented his report and distributed copies of the program for the forthcoming Saturday meeting. It appears that a valuable and interesting meeting for high school students is scheduled. It will include a report on a successful high school applied ecology program, six invited research reports by high school students, an address by Lawrence E. Poorman, and a tour of the Earlham College research facilities.

Library Committee: Mrs. Lois Burton, Chairwoman, reported that 600 square feet of additional floor space have been obtained, but without the needed shelving. Four hundred volumes have been bound. Sixty-six additional journals have been received as exchange; more are being sought.

Trustees of the Academy Foundation: William A. Daily gave this annual report, as of September 30, 1971—

I. Foundation fund	
Last year's balance	\$ 979.96
Receipts	897.05

Disbursements	300.00
Balance	536.57
Market value of securities held	\$ 19,472.00
II. John S. Wright fund	
Last year's balance	\$ 16,627.99
Receipts	16,917.19
Disbursements	14,590.11
Balance	18,955.07
Market value of securities held	\$596,440.00

Program Committee: Mrs. Carrolle A. Markle, Co-chairman, reported that no serious problems were handicapping her committee.

Publications Committee: Marion T. Jackson, Editor and Chairman, reported. The cost of the current Volume 80 of the *Proceedings* now being distributed, has risen sharply over preceding years, but no final figure is yet available. The size increase was 9% in the divisional reports section; had there not been a more careful review system initiated, this increase would doubtless have been much greater. The 10-year index is due in Volume 81.

Frank A. Guthrie moved that *Monograph No. 2* and all subsequent monographs be sold to members at one-half price; it was seconded and carried. (The vague action on the same subject taken April 23, 1971—see minutes—is herewith rescinded.)

Newsletter: Frank Guthrie, Editor, reported that the last issue came out in December, and that the next will be published in November 1971.

Relation of Academy to the State of Indiana: As it has for many years, the legislature in 1971 appropriated \$4,000 per year for the next two fiscal years to aid printing of the *Proceedings*.

Fellows Committee: Benjamin Moulton, Chairman, moved the election of these 7 members to the rank of Fellow of the Academy—

Robert E. Dolphin	Holm W. Neumann
John D. Favinger	B. K. Swartz, Jr.
John W. Hart	Gertrude L. Ward
Edward V. McMichael	

The motion was seconded and carried.

Invitations Committee: A report was written in by James R. Gammon, Chairman. We will meet at St. Mary's College in 1972, at Indiana Central College in 1973, and at DePauw University in 1974.

Preservation of Scientific and Natural Areas Committee: Robert O. Petty, Chairman, reported that a current listing of 429 areas and their outstanding features is on magnetic computer tape and available on request.

Speaker of the Year Committee: Willis H. Johnson, Chairman *pro tem*, reported that the list of colleges where speaker of the year Alton A. Lindsey would appear was under consideration.

Science and Society Committee: The death of Ralph F. Cleland has been acutely felt by the committee.

A booth which was operated with much effort at the recent state fair resulted in some publicity.

Special Committee on Executive Secretary: Jerry Nisbet, Chairman, reported that his committee had decided that the idea of having an Executive Secretary was valid, but expensive. At present, it is beyond our means unless we can find a considerable new source of funds.

When the President called for old business, Mrs. Fay K. Daily called for her tabled motion from the April 23, 1971 meeting. (See page 9.) Mrs. Daily stated that her motion should read: "The Indiana Academy of Science shall not be responsible for public statements of opinion of its members concerning governmental or political matters." After further discussion, the motion was put to a vote by show of hands; it was defeated. In discussion, all were agreed that the Academy must be chary of expressing opinions on political or governmental matters officially. However, public expressions by members, or even officers, not based on official actions may be reported in the public news media as the news media prefer. Alton A. Lindsey moved that any statements made by him, as Speaker of the Year, in 1971-72 be considered individual opinions and not official positions of the Academy. Seconded and carried.

New business was called for. William J. Brett suggested the establishment of an animal behavior section, or at least the investigation of such a possibility for next year. Rev. Damian V. Schmelz moved that the annual dues schedule be increased to: Regular \$6, Family \$8, Student \$3, with no change in the initiation fee; the motion was seconded. Frank A. Guthrie moved to amend so that the action was merely a recommendation to the budget committee and council at their forthcoming December 4, 1971 meeting; the amendment was seconded and carried. Helmut Kohnke moved to amend to increase the recommended dues schedule to \$8, \$10, and \$4 but abolishing the initiation fee; this amendment was seconded, but defeated. The original motion was carried as amended.

A showing of his pictures from the Galapagos Islands by Robert Cooper after the close of the meeting was announced.

The meeting adjourned on motion at 10:39 PM.

Approved April 28, 1972.

Respectfully submitted,
J. DAN WEBSTER, Secretary

GENERAL SESSION—OCTOBER 29, 1971

RICHMOND, INDIANA

President Postlethwait called the meeting to order at 2:07 PM in Wilkinson Theater of Runyan Center, Earlham College. Provost Helen Hole welcomed us to Earlham College in a few gracious words. The secretary read a brief summary of the actions of the executive committee at its meeting last night, and moved its acceptance. Seconded and carried. The secretary moved approval of the following amendment to the constitution; which had been passed by the executive committee on April 23, 1971:

Article V, Section 1. The following named committees shall be appointed by the President, to serve for one year, *except as noted otherwise below and* except as rotation is provided, and except as otherwise provided *they* shall be announced . . .

(1) The academy representative on the council of the American Association for the Advancement of Science. *This person shall serve for a three-year term beginning 1 January 1972 and every 3 years thereafter.*

(2) Auditing . . .

(added words italicized)

Seconded and carried.

Mrs. Fay K. Daily named the members of the Academy who had died during the past year. (See Necrology Report, page 27.) A moment of silence was observed in their honor.

As speaker of the year, Dr. Alton A. Lindsey gave an outstanding lecture, "The Role of Scientists in the Preparation and Evaluation of the New Environmental Impact Statement Requirement." Recent history of the federal government shows encouraging new laws for protecting the environment, much lip service to conservation by many politicians, but little real protection of the environment.

The meeting was temporarily adjourned at 3:15 PM.

The meeting was recalled to order at 8:08 PM, after dinner in the Friend's Room of Earlham Hall by President-elect Behrens. The secretary read these results of the elections of chairman in the various sections:

Section	1972 Chairman	1973 Chairman-elect
Anthropology	Edward Dolan	
Botany	Willard F. Yates	C. L. Gehring
Cell Biology	Charles W. Goff	
Chemistry	Richard Pilger	William Nevill
Ecology	Alton A. Lindsey	
Engineering	Robert Swaim	
Entomology	Claude F. Wade	Walter J. Weber

Section	1972 Chairman	1973 Chairman-elect
Geography-Geology	Richard L. Powell	Arther Mirsky
Micro-and Molecular Biology	Morris Pollard	
Physics	Torsten Alväger	Peter Skadron
Plant Taxonomy	Gerald Gastony	Ted Crovello
Science Education	Frederick K. Ault	Jack Brewer
Soil Science	Christian Johannsen	William R. Gommel
Zoology	Dorothy Adalis	

Dr. Arthur T. Guard moved the following resolution—

Members of the Indiana Academy of Science, here assembled, wish to express our sincere thanks to Earlham College for opening their facilities to us for our meetings. We are also grateful to Provost Helen Hole for her warm words of welcome. Our thanks also go to Dr. A. A. Lindsey for his timely, instructive and interesting address. We extend our appreciation to Carrolle A. Markle and William K. Stephenson, co-chairmen of the program committee, for their careful planning of the many details associated with our meeting and also to the chairmen of the various divisional meetings that make the fall meeting both stimulating and instructive.

It was seconded and carried. The resolutions committee consisted of Robert O. Petty, Howard R. Youse, and A. T. Guard, Chairman.

The nominating committee (Harry G. Day, Chairman, A. T. Guard, and Frank A. Guthrie) presented the following slate of candidates for office—For President-elect, William B. Hopp. For Treasurer (1972-75), Clyde R. Metz. For Trustee of the Academy Foundation, Damian Schmelz. For Bonding Committee, Robert Brooker and John A. Ricketts. For Research Grants Committee (1972-76), Kenneth E. Nichols. A. T. Guard moved that these men be nominated and that we cast a unanimous ballot for their election. Seconded and carried.

Samuel Postlethwait presented a study of his methods of teaching botany, entitled, "Individualized Study for Today's Student." It was thought-provoking for all teachers, and well illustrated by movies and still photographs.

The meeting adjourned, on motion, at 9:15 PM.

Approved April 28, 1972.

Respectfully submitted,
J. DAN WEBSTER, Secretary

FINANCIAL REPORT OF THE INDIANA ACADEMY OF SCIENCE

JANUARY 1—DECEMBER 31, 1971

I. ACADEMY ACCOUNTS

	Income	Expenditure	Budgeted
Dues	\$ 3,866.00		
Interest	2,227.39		
Secretary		\$ 421.30	\$ 500.00
Clerical			
Postage, etc.	\$ 421.30		
Treasurer		233.15	225.00
Clerical	29.00		
Postage, etc.	204.15		
Office		143.45	175.00
Travel, AAAS Dues		171.30	180.00
Transfer to Adm. Accts.		2,775.00	
Proceedings: Pub.	500.00		500.00
Proceedings: Mailing	100.00		100.00
Library Binding	1,000.00		1,000.00
Science & Society	600.00		600.00
Natural Areas	575.00		575.00
President's Fund			100.00
Membership Comm.			75.00
Junior Academy		104.37	200.00
Program Committee		707.18	600.00
1970 Meetings			
Chairman	20.00		
Printing	214.00		
1971 Meetings			
Chairman	174.29		
Printing	239.79		
Mailing	59.10		
Publications: Editor		400.00	400.00
Speaker of the Year			
Honorarium		500.00	500.00
Administrative			50.00
Newsletter		105.68	100.00
	\$ 6,093.39	\$ 5,561.43	\$ 5,880.00
Reprints: Vol. 78	270.00		
Vol. 79	706.55		
Vol. 80	1,730.70	2,790.70	
Miscellaneous		3,538.49	
Attorney Fees	3,460.49		
Bonding Fee	63.00		
Public Relations	15.00		
	\$ 8,800.64	\$11,890.62	

II. ADMINISTERED ACCOUNTS

	January 1 Balance	1971 Income	1971 Expenditure	December Balance
Science Talent	\$ 1,834.37	\$ 1,600.00	\$ 1,587.73	\$ 1,846.64
Science Fairs	2,310.98	21,891.32	21,472.01	2,730.29
Science & Society	811.82	600.00		1,411.82
Research	6,118.57	6,554.00	9,634.80	3,037.77
Natural Areas	—13.50	575.00	310.00	251.50
J. S. Wright Library	134.28			134.28
Lilly III Library	2,922.82		182.09	2,740.73
Lilly IV Library	15,000.00		3,966.75	11,033.25
Library Binding	1,033.55	1,000.00	2,033.15	0.40
Publications	997.01	8,668.39	8,168.39	1,497.01
NSF Grant	12,770.65	8,349.97	15,667.79	5,452.83
	<u>\$43,920.55</u>	<u>\$49,238.68</u>	<u>\$63,022.71</u>	<u>\$30,136.52</u>

III. SUMMARY

	Academy Accounts	Administered Accounts	Total
1971 Income	\$ 8,800.64	\$49,238.68	\$58,039.32
1971 Expenditure	11,890.62	63,022.71	74,913.33
Net Loss 1971	—3,089.98	—13,784.03	—16,874.01
1970 Balance	10,296.09	43,920.55	54,216.64
December 31, 1971 Balance	7,206.11	30,136.52	37,342.63

IV. BANK BALANCES

Terre Haute First National Bank, Terre Haute, Indiana	\$ 4,365.32
Great Western Savings & Loan, Los Angeles, California	11,602.80
First Western Savings & Loan, Las Vegas, Nevada	21,374.51
	<u>\$37,342.63</u>

REV. DAMIAN V. SCHMELZ, Treasurer
December 31, 1971

January 19, 1972

We, the undersigned, have audited the Treasurer's records for the Indiana Academy of Science for the year 1971 and have found them to be accurate and in order.

CURTIS A. DHONAN
ROBERT E. DOLPHIN
January 19, 1972

FINANCIAL REPORT

19

BUDGET FOR 1972

Anticipated Income

Dues, Initiation and Reinstatement Fees	\$ 5,800.00
Interest on Savings	1,200.00
Reprints: Net Profit on Sale to Authors	125.00
	\$ 7,125.00

Budgeted Expenditures:

Secretary	\$ 500.00
Treasurer	225.00
Office	175.00
Officer Travel Allowance, AAAS Conference Dues, etc.	180.00
President's Fund	100.00
Membership Committee	150.00
Program Committee	600.00
Proceedings: Editor's Travel and Office Expenses	500.00
Youth Activities: Chairman	50.00
Public Relations: Director	50.00
Speaker of the Year	
Honorarium	500.00
Administrative	50.00
Newsletter	150.00
CPA Fees: Tax Forms and Auditing	500.00
Transfers to Administrative Accounts	3,025.00
Publications: Publication of Proceedings	\$ 500.00
Publications: Mailing of Proceedings	150.00
Library Binding	1,000.00
Science & Society	600.00
Natural Areas	575.00
Junior Academy	200.00
	\$ 6,755.00

Approved by the Budget Committee at the meeting held at the Indiana State Library, Indianapolis, on December 4, 1971.

NOTES

Membership Dues—According to the Treasurer's records, the current status may be summarized as follows: 892 paid, emeritus, life, and honorary members and clubs; 105 on file from 1970 but not yet paid for 1971; 15 resigned or lost by reason of no current address; 5 deceased during this year; 103 new members (last ones to begin during 1972); 6 previous members reinstated during the year.

Our attorney has confirmed that we may increase dues during 1972 according to Phase II legislation. Accordingly: \$6.00 regular and high school club memberships; \$3.00 student membership; \$8.00 family membership; \$1.00 initiation fee for regular, club, and student; \$2.00 initiation fee for family.

Interest—The Treasurer, from the total assets of both Academy and Administered Accounts, has maintained sufficient funds in the checking account to pay current bills throughout the year; the remainder has been invested in savings certificates: Certificates redeemed during 1971. 1) \$10,000.00 invested at 5.25% February 1971; September 1971 redemption value \$10,324.81. 2) \$5,000.00 invested at 5.25% April 1971; September 1971 redemption value \$5,139.09. 3) \$5,000.00 invested at 5.75% February 1971; December 1971 redemption value \$5,185.29.

Certificates current: 1) \$10,000.00 invested at 6.00% April 1970; current value \$10,941.86; maturity April 1972. 2) \$5,000.00 invested at 5.75% April 1971; current value \$5,205.39; maturity April 1972. 3) \$4,465.07 invested at 5.75% April 1970; current value \$4,938.07; maturity March 1973. 4) \$6,000.00 invested at 6.00% April 1970; current value \$6,664.73; maturity March 1973. 5) \$5,000.00 invested at 5.75% October 1971; current value \$5,061.87; maturity October 1972.

Treasurer—Expenditure exceeded budget mainly due to considerable amount of xeroxing materials and telephone calls relative to work with the attorney on tax status problems.

Program Committee—Expenditure exceeded budget due to some 1970 bills which arrived months late.

Newsletter—Expenditure exceeded budget this first year for the newsletter. Next year's budget has been increased.

Reprints—Volumes 78 & 79 appeared in 1970. Payments by authors were not completed until this year; this account showed a deficit in 1970; net profit to the Academy = \$572.54.

Volume 80 appeared this year. Currently more than one third still owe for reprints. Anticipated profit = \$125.00.

The profit to the Academy pays for office expenses in billing and the expense for President's address, necrology report, and instructions for contributors.

Attorney Fees—ICE, MILLER, DONADIO & RYAN of Indianapolis have been representing us in clarifying our tax-exemption status. One additional quarterly billing can be expected in 1972. Although IRS has not completed study of documents and has not sent formal ruling, the attorney has instructed us to continue operating under the assumption of a final favorable determination.

The 1972 budget allows for contracting a CPA firm to prepare the Indiana and Federal Non-Profit Organization Tax Forms and to perform an informal audit of the Treasurer's records.

Science Talent—Refunds of \$67.50 from the director and \$16.00 from *Scientific American* have not been entered in this report as either income or expenditure.

Science Fairs—A refund of \$2,866.32 has been entered in this report as both income and expenditure.

The unusually large expenditure is explained by \$13,500.00 having been transferred to the Indiana Science Education Fund, Inc.

Research—\$5,870.00 was transferred from the Indiana Academy of Science Invested Income Account 11-430-2 (income) to pay for *Monograph 2* (expenditure).

Other income includes \$384.00 from A.A.A.S. and \$300.00 annual transfer from the Indiana Academy of Science Foundation Fund 11-430 for research grants.

Other expenditure was \$3,764.80 in grants to nine Academy members.

NSF Grant—Request for extension on use of funds, originally scheduled for August 31, 1971, was granted first until December 31, 1971, and most recently until June 30, 1972.

Publications—Income includes \$7,565.89 transferred from the J. S. Wright Fund 11-430-1 and \$500.00 from Academy Accounts to pay for publishing Volume 80 of the Proceedings.

The State of Indiana contributes \$4,000.00 towards the publication of each volume of the *Proceedings*, provided we contract with the state-approved publisher; this amount is subtracted from our bill by the publisher; the state pays the publisher directly so that this amount never appears on the Treasurer's records.

Additional income includes: \$65.00 for sale of *Proceedings*; \$285.50 for sale of *Natural Features*; \$152.00 for sale of Monographs; \$100.00 transferred from Academy Accounts for mailing Volume 80.

Additional expenditure includes \$102.50 for mailing Volume 80.

Budget for 1972—Increase from 1971 budget: Membership Committee from \$75.00 to \$150.00. *Proceedings*: Editor from \$400.00 to \$500.00. Newsletter from \$100.00 to \$150.00. *Proceedings*: Mailing from \$100.00 to \$150.00.

New items: Youth Activities: Chairman. Public Relations: Director. CPA Fees.

Change from Academy Accounts to Administered Accounts: Junior Academy.

INDIANA JUNIOR ACADEMY OF SCIENCE

OFFICERS

President: JOHN JOSEPH FARRELL, Brebeuf Preparatory School,
Indianapolis, Indiana

Vice-President: DENNIS DEROSA, Morton High School, Hammond,
Indiana

Secretary: BARBARA KONKLE, Madison High School, Madison, Indiana

JUNIOR ACADEMY COUNCIL

HELEN REED, (1971), Manual High School, Indianapolis, Indiana

SISTER MARY ALEXANDRA, (1972), Roncalli High School, Indianapolis,
Indiana

MARY J. PETERSEN, (1973), Morton High School, Hammond, Indiana

LAWRENCE E. POORMAN, (1974), Physics Department, Indiana State
University, Terre Haute, Indiana

STATE DIRECTOR

DONALD R. WINSLOW, Owen Hall 205, Indiana University, Bloomington,
Indiana 47401

REGISTRATION

All members, sponsors, and guests were requested to register (no
charge) in Dennis Science Hall, Lobby, 8:00 AM to 11:00 AM.

PROGRAM

Thirty-Ninth Annual Meeting

Earlham College Campus Richmond, Indiana

Saturday, October 30, 1971

8:00 AM

Junior Academy Council Meeting. Dennis Science Hall, 2nd Floor
Conference Room

8:30-10:00AM

Junior Academy Council Interviews for "Best-Boy"—"Best-Girl"
Scientists Awards. Dennis Science Hall, 2nd Floor Conference Room.

8:30-10:00AM

Tours and Demonstrations of Research Facilities, Faculty-Student
Research Projects. Arranged by ANSEL M. GOODING, Earlham
College.

10:00-11:30 AM

General Session I, JOHN FARRELL, presiding. Dennis Science Hall,
Room 110.

PROGRAM OF PAPERS

“The School Ecology Club—An Active or Passive Role”, University School Ecology Club, Bloomington, GEORGE LUGINBILL, sponsor.

Invitational Papers

- 1) The Symptoms of Anxiety Neurosis that Result from Injections of Lactic Acid. KEVIN POELHUIS, Harrison High School, Evansville.
- 2) The Effect of Time on the Transfer of Information for Cell Division in *Escherichia coli* B/r. DALE PURDY, Student, Indiana University, Bloomington. (High school research funded by T. A. Kleckner Science Grant Award, Indiana Heart Association Grant)
- 3) Variance in Visual Latency on the Human Retina. MARK CRISWELL, Morton Senior High School, Hammond.
- 4) The Effects of Acetylstrofludin on Conduction and Automaticity of a Mammalian Heart. DEBORAH RAJSKI, Ladywood-St. Agnes School, Indianapolis.
- 5) Design and Construction of a Laser for Research Purposes. RAY LICHTENHAN, Morton Senior High School, Hammond.
- 6) The Effects of Adrenal Demedullation on the Urinary Catecholamine Concentration as Related to Pheochromocytoma. MILTON J. MILLER II, Harrison High School, Evansville.

11:30 AM-1:00 PM Lunch

1:30 PM

General Session II, JOHN FARRELL, presiding. Dennis Science Hall, Room 110.

ANNUAL BUSINESS MEETING

Election of Officers

Address: “Synthesis from Divergence: The Coming Revolution in Science” LAWRENCE E. POORMAN, Associate Professor of Physics, Indiana State University, Terre Haute.

3:00 PM

General Announcements, Presentation of Awards, Adjournment. DON WINSLOW, State Director.

AWARDS

Awards will be presented to the “Best Boy” and “Best Girl” scientists by the American Association for the Advancement of Science. Nominations may be sent by teachers to the Director (October 22 deadline) at the following address:

DONALD R. WINSLOW, Director
Indiana Junior Academy of Science
Owen Hall 205
Indiana University
Bloomington, Indiana 47401

MINUTES OF THE THIRTY-NINTH
ANNUAL MEETING OF THE
INDIANA JUNIOR ACADEMY OF SCIENCE

The thirty-ninth annual meeting of the Indiana Junior Academy of Science was held Saturday, October 30, 1971, on the campus of Earlham College in Richmond, Indiana. One hundred twenty-two members representing 14 high school clubs attended.

President John Farrell called to order the morning session at 10:00 AM in Room 110 of Dennis Science Hall. Prior to the meeting members and their sponsors were given tours and demonstrations of research facilities and faculty-student research projects. These were arranged by Ansel M. Gooding, Earlham College.

A panel discussion on "The School Ecology Club—An Active or Passive Role" was presented by members of The University School Ecology Club. Mr. George Luginbill, sponsor, moderated the presentation.

Vice-President Dennis DeRosa presided over the presentation of papers. Those presenting papers were Kevin Poelhuis, Milton J. Miller II, Harrison High School, Evansville; Dale Purdy, Indiana University, Bloomington; Mark Criswell, Ray Lichtenhan, Morton Senior High School, Hammond; and Deborah Rajski, Ladywood-St. Agnes School, Indianapolis.

The afternoon session was called to order at 1:30 PM by President John Farrell. The election of officers followed; nominations were received from the floor. The results were as follows:

President—RAY LICHTENHAN, Hammond Morton, Indianapolis

Vice President—ERIC VALAINIS, Brebeuf Preparatory School

Secretary—LAURA FISHER, Lew Wallace Senior High

A presentation by Lawrence E. Poorman, Associate Professor of Physics, Indiana State University, Terre Haute, followed. It was entitled "Synthesis from Divergence: The Coming Revolution in Science."

Next, the AAAS award for the "Best Boy Scientist" was presented to Mark Criswell of Hammond Morton. The "Best Girl Scientist" award was presented to Laura Fisher, Lew Wallace Senior High School, Gary.

President John Farrell adjourned the meeting at 3:00 PM.

Respectfully submitted,
BARBARA KONKLE, Secretary



FIGURE 1. Front row: Miss Laura Fisher, Freshman, Lew Wallace High School, Gary—"best girl" and Mr. Mark Criswell, Senior, Morton Senior High School, Hammond—"best boy". Back Row: Mr. Lee E. Moss, Lew Wallace High School, Gary, sponsor of Miss Fisher; Donald R. Winslow, State Director, Indiana Junior Academy of Science, Indiana University; and Dr. Mary J. Pettersen, Hammond, sponsor of Mr. Criswell. Photo taken at Earlham College, October 30, 1971, by Richard Rodgers, Photographer, Richmond, Indiana.

NEW CLUBS For 1971

<u>Club</u>	<u>School</u>	<u>Sponsor</u>
Griffith Science Club	Griffith Senior High School	LYNN OROUTT
Science and Math Club	Lowell High School	OMER BEECHING and LAWRENCE OUWENGA
East Washington Science Club	E. Washington High School, Pekin	J. E. EVENSOLE
Physics Club	St. Joseph Academy, Tipton	SISTER MARY ANN, C.S.J.
Indian Creek	Indian Creek Senior High, Trafalgar	HAROLD HECKMAN
Beech Grove High School Science Club	Beech Grove High School	BEN CHAPIN

NECROLOGY

FAY KENOYER DAILY, Butler University

(SAMUEL) CLIFFORD ADAMS

Rockville, Indiana
February 12, 1912

Hanover, Indiana
August 13, 1971

Dr. (Samuel) Clifford Adams, a geology professor, was at his desk at Hanover College when he died August 13, 1971, of a heart attack.

Born on a farm near Rockville, Indiana, February 12, 1912, Dr. Adams was of English descent. He graduated with a Bachelor of Arts Degree *cum laude* at Hanover College in 1935; obtained a Master of Science Degree (1940) and a Doctor of Philosophy Degree (1942) from the University of Iowa. He was an instructor of geology at Hanover College from 1935 to 1937, and clerk of mapping for the Agricultural Adjustment Agency, United States Department of Agriculture in Indiana from 1936 to 1937. He was an assistant at the University of Iowa from 1938 to 1942. He also served as Junior Geologist with the Soil Conservation Service, United States Department of Agriculture from 1939 to 1941, and field assistant for the Iowa Geological Survey in 1940.

In 1942, he entered the United States Army and served until 1945. He was a combat intelligence officer and was permanently blinded by enemy mortar fire during the invasion of the Leyte Islands, the Philippines. For his heroism, he received the Combat Infantryman Medal, the Bronze Star and the Purple Heart. Posthumously, his wife received a certificate signed by President Nixon which states: "The United States honors the memory of Samuel C. Adams. This certificate is accorded by a grateful nation in recognition of devoted and selfless consecration to the service of our country."

In September, 1945, Dr. Adams returned to Indiana to teach geology as an associate professor at Hanover College. Familiar with the campus from student days, he had little difficulty finding his way around, which he accomplished unassisted. An article in the magazine section of the *Indianapolis Star* (February 2, 1947) commended his classes. With the use of models, blackboard illustrations and free discussions, his classes maintained a high degree of interest. It was stated that he was the only professor in a Hoosier College, blinded in World War II actively engaged in teaching at that time. His wife, Mrs. Blanche Adams, also taught at Hanover College. They were both alumni of Hanover and she was a student at the University of Iowa at the same time as Dr. Adams. Clifford Adams was especially interested in soil erosion, recent stream and valley sedimentation, accelerated

sedimentation of the Galena River Valley, soil conservation, stratigraphy and sedimentation, general, surficial and structural geology and ground water. He became a full professor in 1951 serving the college with great distinction.

Dr. Adams joined the Indiana Academy of Science in 1945 and was a Divisional Chairman of the Geology and Geography Section in 1953. He delivered a paper at that meeting on *Modern Floodplain Deposits*. In 1962, he gave a talk before the History of Science Section of the Indiana Academy of Science on *A Century and a Quarter of Geology at Hanover College*. The study of Hanover history was a hobby for Dr. Adams. He was also very interested in sports, particularly football and baseball.

In addition to belonging to the Indiana Academy of Science, Dr. Adams was a Fellow of the Geological Society of America and belonged to the Geochemical Society, American Geophysical Union, Iowa Academy of Science, Sigma Xi, Delta Epsilon, Pi Gamma Mu, and was a charter member of the Indiana Section of the American Institute of Professional Geologists. He was awarded an alumni achievement award from Hanover College in 1967.

Poised and sure, Dr. Clifford Adams faced a dark world with confidence and without self pity. He leaves with us the inspiration of an exemplary life.

HERBERT FAUST CALL

Madison County, Florida
October 2, 1904

Indianapolis, Indiana
September 1, 1969

Few practicing physicians have been a member of the Indiana Academy of Science, but Dr. Herbert Faust Call, a pediatrician, joined in 1935 because of a life long interest in natural science and because of his interest in archeology. These interests stemmed from early boys camp experiences and the collection of Indian relics and butterflies. He became a world traveler and a sportsman. On a "camera safari", Dr. Call and Katharine, his wife, visited eight national game preserves in East Africa in 1966. Then, they took their daughter Karen (now a pediatrician) and their son, William H. (an otolaryngologist) with them to the Fiji Islands, Australia and New Zealand in 1968.

Born in Madison County, Florida, October 2, 1904, Dr. Call came to Indiana as a boy and attended grade and high school in Anderson, Indiana. He then attended Indiana University Medical School. He took his internship there and a residency at the James Whitcomb Riley Hospital for Children, receiving an M.D. Degree and his license to practice in Indiana in 1929. Post graduate work was done at Washington University at St. Louis, Missouri, and at the Children's Memorial Hospital in Chicago, Illinois. He opened his first office in Indianapolis in 1932 and developed one of the largest practices in pediatrics in Indiana.

Dr. Call was also a member of Sigma Chi Fraternity, Phi Rho Sigma, medical fraternity, Marion County Medical Society, the American Medical Association and the Woodstock Club. A good biographical account of Dr. Call appeared in the *Indianapolis Star*, September 2, 1969.

Cancer was the cause of Dr. Call's death, September 1, 1969, bringing a busy, successful career to a close at only 65 years of age (lacking about a month).



DR. RALPH E. CLELAND
Distinguished Professor Emeritus of Botany
Indiana University

RALPH ERSKINE CLELAND

Le Claire, Iowa
October 20, 1892

Bloomington, Indiana
June 11, 1971

Dr. Ralph Erskine Cleland was a Distinguished Service Professor Emeritus at Indiana University when he suddenly died of a heart attack

in his office June 11, 1971. He had gained international recognition for his study of the heredity and evolution of the evening primrose, *Oenothera*.

Born in Le Claire, Iowa, October 20, 1892, Dr. Cleland was reared in Philadelphia. He attended the University of Philadelphia where he received an A.B. degree in 1915 with a major in the classics and history. During his junior year, a friend suggested that he take a course in botany. He was so interested that he became a botany major receiving an M.S. in 1916 and a Ph.D. in 1919. Reprints of his Ph.D. thesis on the red alga, *Nemalion*, were lost at sea. He received honorary degrees from the University of Pennsylvania, Hanover College and Indiana University. He served the United States in Italy during World War I from 1917 to 1918.

He began his teaching career as Instructor of Biology at Gaucher College, Baltimore, Maryland, in 1919, and had become chairman of the department before leaving in 1938. He was an instructor at the Woods Hole Marine Laboratory in 1924, and a Guggenheim Fellow from 1927 to 1928 when he traveled to Germany to study. He had begun research on *Oenothera* while at Gaucher and had published a joint paper with A.F. Blakeslee in 1931 on analytical procedure in the study of genetic behavior in this genus and had begun to work out the probable evolutionary pathways in speciation.

In 1938, he moved to Indiana University to become professor of botany and head of the department. In 1946, Dr. Cleland's research received further recognition and financial support as one of several participants in a 6-year program in the field of genetics financed by the Rockefeller Foundation and Indiana University. He became Dean of the Graduate School from 1950 to 1958 and Distinguished Service Professor in 1958. He retired in 1963 becoming Distinguished Service Professor Emeritus. He was co-director of the Indiana University Aerospace Research Applications Center from 1963 to 1967.

Dr. Cleland joined the Indiana Academy of Science in 1938, the year he began teaching at Indiana University and was honored as a Fellow in 1940. Even though he was active in many other organizations both national and international, he devoted considerable time to our society and contributed many papers on *Oenothera* at the sectional meetings. He was a divisional chairman of the Botany Section in 1941, president in 1959 and served on many committees. Recently, he was active in planning the establishment and program of the Science and Society Committee.

Dr. Cleland was a member of many other societies and received many honors and positions of responsibility from them. He served as editor-in-chief of the *American Journal of Botany* from 1940 to 1946 and was president of the Botanical Society of America in 1947. He was awarded a certificate of merit as a distinguished botanist by that society "for his extensive researches into the species relationships and segmental interchange problems in *Oenothera* and also for his statesmanship in representing plant science at the national level" (Golden

Jubilee Volume of the Botanical Society of America, William Steere, Ed., McGraw-Hill Co., N.Y., 1958).

He was a member of a group instrumental in forming the American Institute for Biological Sciences. While the Institute was still under the aegis of the National Academy of Science and National Research Council (1948 to 1949), he was a chairman in the society. He was chairman of the Division of Biology and Agriculture of the National Research Council from 1949 to 1952, editor of the section on plant cytology of *Biological Abstracts* 1925-. He was elected to the National Academy of Sciences in 1942; the Philosophical Society, which presented him with the Lewis Award in 1937, and he was Fellow of the American Academy. He was secretary of the Society of Naturalists from 1938 to 1940 and president in 1942. He was president of the Genetics Society in 1956 and vice-president in 1954. He was a member of the Society of Study of Evolution and was vice-president (1953 to 1958) of the International Union of Biological Science. Dr. Cleland was starred in the *American Men of Science* and was the subject of numerous articles in newspapers, scientific journals and biographical publications.

In 1960, Dr. Cleland and Dr. Farrington Daniels, vice-president of the National Academy of Science were "academic ambassadors of Science" on a visit to 11 Asian countries to meet with Asian leaders, both scientific and governmental, to discuss the possibilities of the development of these countries by science and technology. They planned to give a number of lectures to lay and professional groups on solar energy and plant genetics.

In 1948, at a Paris meeting, the Committee of Science and Social Relations of the International Council of Scientific Unions discussed science and the maintenance of peace. Questions were directed to the National Research Council Committee on UNESCO and Dr. Cleland was one of the persons replying to the request. He said (*Science and the Maintenance of Peace* by Bart J. Bok, 1949. *Science* 109:131-137): "Most modern wars have been brought about as a result of economic pressures, based on the Malthusian principle. Only science can relieve the basis of these pressures. Scientific control of population, the production of more efficient crop plants and domestic animals, the proper exploitation of vast areas of potentially usable land, control of soil erosion, development of irrigation and other projects designed to increase arable land, the discovery of new sources of energy—these are activities which will remove the chief cause of war. Without such activities, no amount of talk or education will achieve lasting peace."

While chairman of the botany department and dean of the graduate school at Indiana University, Dr. Cleland and his wife were guests at the first state dinner to which leading scientists were invited by President and Mrs. Eisenhower.

Dr. Cleland was the subject of an interesting article in *The Indianapolis Star Magazine* (May 13, 1962). After describing Dr.

Cleland's scientific achievements, the author wrote: "One gets the impression in talking with this great scientist that primroses must have a tranquilizing influence, for Professor Cleland's calm and gentle manner gives no hint of his abilities as a dynamic, efficient administrator." Then later he wrote: "Professor Cleland is a deeply religious man. He holds that there is no true conflict between science and religion. 'Both science and religion', he says, 'have the same goal; that is the finding of truth.'"

Dr. Cleland was quite active until death. One would invariably find him in attendance and often in a place of honor at national and international botanical meetings. He had just sent the manuscript to the publisher for his new book, *Oenothera Cytogenetics and Evolution*, dedicated to his wife, Elizabeth. Three sons are also scientists. They are William W. Cleland, professor of biochemistry at the University of Wisconsin, Robert Erskine Cleland, professor of botany at the University of Wisconsin and Charles F. Cleland, assistant professor of biology at Harvard University. A brother, Dr. James W. Cleland, is a Philadelphia pediatrician.

The Indiana Academy of Science lost a great friend and valuable member with the death of Dr. Ralph E. Cleland.

C(LARE) F(RANCIS) COX

Hudson, Illinois
March 9, 1888

Indianapolis, Indiana
February 24, 1971

Dr. Clare Francis Cox considered secondary education as the most stimulating professional field, because of the opportunity to encourage young people to develop an interest in science and specifically, ecology. He taught at Arsenal Technical High School in Indianapolis, Indiana, from 1917 to 1958, becoming head of the botany department in 1931. After he retired, an annual science award was established in his name in appreciation of his services.

With Milo H. Stuart, he was influential in establishing a nature preserve at Tech (part of the campus later replaced by a school) and he sponsored a nature study group there for many years. He was active in the Indiana Nature Study Club. He also taught Microbiology at the Indiana College of Mortuary Science 1958 and 1959.

Dr. Cox was born in Hudson, Illinois, March 9, 1888, and attended a country elementary school. He rode horseback to high school in Vandalia, Illinois. His teaching career began in a country elementary school the year after graduating from high school. He attributed his knowledge of birds, wildflowers and trees to his country boyhood rambles and curiosity. He also taught high school and was a basketball coach from 1913 to 1916 teaching at Herrin, Illinois, and Marion, Illinois.

He began his college education during this period, too, receiving a Bachelor of Arts Degree from Illinois State University in 1917. Immediately afterwards, he started teaching at Arsenal Technical High School and also served in the United States of America Air Force Reserve from 1917 to 1919.

A Doctor of Philosophy Degree was obtained at Chicago University in 1931. The influence of John Merle Coulter, while he was there, further stimulated his interest in science. Also, summer field trips in Utah and Colorado taught by Dr. Henry Cowles and Dr. George D. Fuller influenced Dr. Cox to study ecology and alpine vegetation. He became known here and abroad as an authority in this field. For three summers he and his wife established headquarters at 12,000 ft elevation near James Park, Colorado, in an abandoned gold miner's shack and explored the surrounding peaks for alpine plants. Tolland, 14 miles away, was their supply base to which they hiked every week climbing 3,000 feet to reach it.

Dr. Cox joined the Indiana Academy of Science in 1922 and was honored by being elected to Fellow in 1935. He served on the Junior Academy of Science Committee in 1939, 1940 and 1941. He also wrote a memorial to Emerson Blane Wright for the Necrology Report for 1928 (*Proceedings*, V. 38, 1929).

Dr. Cox was also a member of the American Association for the Advancement of Science, Ecological Society of America and was elected to Sigma Xi at Chicago University where he held a Coulter Fellowship for one year. He was life deacon at the Woodruff Place Baptist Church. Dr. Cox is listed in *American Men of Science* and *Indiana Scientists*. He has a son, Dr. Milton D. Cox, teaching at Miami University.

Dr. Clare F. Cox died February 24, 1971, at 82 years of age. He had lived a full life, but considered his personal influence on his pupils and their enthusiastic response to his teaching as his greatest satisfaction. This is the ultimate reward for the dedicated teacher.

G(EORG) K(ARL) NEUMANN

Hamburg, Germany
June 6, 1907

Bloomington, Indiana
April 13, 1971

The practical application of many academic scientific research activities is obscure, but this was not so with the work of Dr. Georg K. Neumann. Widely known for his knowledge of the physical characteristics of human skeletons, Dr. Neumann was a consultant to the Indiana and Illinois state police departments in identification of unknown persons. In an *Indianapolis News* story (April 2, 1952) some of the more famous murder trials in which he had testified were discussed. It was astonishing that a bit of bone, even a charred bone, could reveal the sex, age, size and region of ancestry of the deceased. Dr.

Neumann was an associate professor of anthropology at Indiana University and an archeologist. He had written two books and a book chapter relative to these subjects. He had participated in many Indian site excavations and was an authority on American Indians, their physical types, racial differentials and racial history.

Born in Hamburg, Germany, June 6, 1907, Dr. Neumann received his higher education in America obtaining a Ph.B. degree in 1930, an A.M. in 1936 and a Ph.D. in 1943 from the University of Chicago. He taught at the University of Chicago, Western Reserve University and was assistant director of the University of Tennessee archeological projects. He left the museum of anthropology at the University of Michigan to become an assistant professor of anthropology at Indiana University in 1942.

Dr. Neumann also became a member of the Indiana Academy of Science that same year, 1942, and was honored as a Fellow in 1957. He was a popular chairman of the Anthropology Section having served in 1943, 1944, 1949, 1956 and 1959. He was to have served again in 1971. He presented numerous papers at Academy meetings concerning Indian physical types, racial affiliations, migrations and culture. He had served a number of years on the Fellows Committee and was a member at his death. Dr. Neumann also belonged to the Central States Anthropological Association, of which he had been president; to Phi Beta Kappa, honor society; and to the Mexican and German Societies of Anthropology.

Not only were the macabre details of the murder trials in which Dr. Neumann testified newsworthy to reporters, but also the mysteries of aboriginal life determined by Dr. Neumann from the bones excavated from Indian mounds. Thus, several articles about his work in this field appeared also in Indianapolis newspapers. Some of these appeared in the *Indianapolis Times* (December 26, 1948), the *Indianapolis Star* (August 4, 1956) and *Indianapolis News* (April 2, 1952), and upon moving to Indiana University, his professional qualifications were discussed in an article in the *Indianapolis Star*, February 7, 1942.

Dr. Georg Karl Neumann died April 13, 1971, at only 63 years of age, when his unusual talent was lost to us prematurely.

CLAUDE E (DGAR) O'NEAL

Coatesville, Indiana
January 29, 1884

Delaware, Ohio
February 8, 1971

Dr. Claude Edgar O'Neal, botanist, died February 8, 1971. He had been a member of the Indiana Academy of Science since 1912, joining when a student working on a graduate degree at Indiana University. He gave a paper in 1914 on the species of *Nummularia* common in Indiana. Later, he became interested in the cytology of *Datura* and the embryologic development in *Oenothera*.

Dr. O'Neal was a native of Coatesville, Indiana, born January 29, 1884. He attended Indiana State Teacher's College in Terre Haute for 4 years where he received a certificate. He then attended Indiana University where he received an A.B. in 1911, was a teaching fellow 1912 to 1913, obtained an A.M. in 1913 and a Ph.D. in botany in 1922. He was head of the Department of Science at Brazil (Indiana) High School; principal of the Coatesville (Indiana) High School and Hadley (Indiana) High School; and taught at Reno, Indiana. He became an instructor at Ohio Wesleyan University in 1913 and served as head of the botany program until retirement. In 1920, he was named Professor of Botany on the Allen Trimble Foundation. He taught there until his retirement in 1954 when he became Professor Emeritus. He also taught one term after that from 1957 to 1958. In recognition of his service to Ohio Wesleyan University, the greenhouse adjacent to Bigelow-Rice Science Hall was dedicated as the Claude E. O'Neal Greenhouse in 1964. Former students and colleagues joined in this tribute. A memorial statement said, "The building housing the beauty and vitality of growing plants and, in its utilitarian function, serving his driving interest in botanical education, shall always stand as a fitting memorial."

Besides his membership in the Indiana Academy of Science, Dr. O'Neal was a member of Phi Beta Kappa, Sigma Xi and Omicron Delta Kappa, honor societies. He had been vice-president of the Botanical Section of the Ohio Academy of Science twice, and president of the Ohio Academy of Science from 1938 to 1939. He also belonged to the American Association for the Advancement of Science and Botanical Society of America.

Although Dr. O'Neal had been in Ohio for many years, he kept in touch with former teachers, students and friends in Indiana. The high regard which they held for him was quite evident. His former students are too numerous to be mentioned, but hold many positions of honor and distinction as professors, department chairman, directors of research or heads of national botanical laboratories. Letters of love and gratitude from them to Claude and Mabel O'Neal were a great satisfaction.

MILO BOSTWICK SAMPSON

Erie, North Dakota
June 18, 1908

Bloomington, Indiana
April 10, 1971

Dr. Milo B. Sampson was a professor of physics at Indiana University and a leading authority on cyclotron design and operation. He was in charge of the development of a large cyclotron at Indiana University when he died, April 10, 1971, at his home. He had received a grant from the National Science Foundation for this work.

Born at Erie, North Dakota, June 18, 1908, Dr. Sampson went to the State College of Washington, where he received a Bachelor of

Science Degree in 1931 and a Master of Science Degree in 1933. He was a Queen scholar and obtained a Doctor of Philosophy degree in physics at Princeton in 1937.

Dr. Sampson was a physicist at the Biochemical Research Foundation of the Franklin Institute, Philadelphia, from 1937 to 1942. From 1942 to 1943, he was research associate in the Office of Scientific Research and Development and the National Defense Research Committee at Princeton. From 1943 to 1944, he was physicist and section chief of the metallurgical laboratory, University of Chicago Laboratory, where the first nuclear reaction had been achieved in 1942. In 1944 to 1946, he was physicist at the Los Alamos Science Laboratory in New Mexico. In the atomic energy laboratories there, the atomic bomb was made. It was tested July 16, 1946, in the desert region just west of Sierra Oscura, about 50 miles northwest of Alamogordo.

Dr. Sampson came to Indiana in 1946 as an assistant professor at Indiana University. He became associate professor in 1952 and professor in 1958. He was in charge of cyclotron research from 1946 on. The old cyclotron at Indiana University, which has been dismantled, was one of the first to be built in the country.

Dr. Sampson joined the Indiana Academy of Science in 1967, and was author or co-author of a number of papers presented at sectional meetings before and after that date. These dealt, primarily, with the results from use of the cyclotron and the measurement of energy levels with a spectrometer. He was also a member of the American Physical Society, a member of Sigma Xi, scientific honorary society, Phi Kappa Phi and Pi Mu Epsilon. Biographical sketches can be found in *American Men of Science*, *Indiana Scientists*, and the *Indiana University Alumni Magazine* (1971, V. 33, No. 9, p. 40).

Awesome nuclear power under the control of man, although devastating and controversial as an instrument of war, has undoubtedly saved more lives than it has taken because of these qualities. It is thus a deterrent to war between nations possessing it. Furthermore, with wise management, it is sure to find a prominent place as a peacetime power source. Radio isotopes have improved man's lot remarkably in the field of medicine. These accomplishments will stand as a tribute to physicists like Milo B. Sampson who were intelligent and resourceful enough to seek the truth about nuclear energy and how to control it.

NEW MEMBERS FOR 1971

The following list contains the names and addresses of all new members who joined during 1971. The letter(s) following the address indicates the Section of the Academy in which the member has indicated his major interest, according to the following code:

A—Anthropology	N—Engineering
B—Botany	O—Cell Biology
C—Chemistry	P—Physics
D—Science Education	R—Microbiology & Molecular Biology
E—Entomology	S—Soil Science
G—Geology and Geography	T—Plant Taxonomy
H—History of Science	Y—Psychology
L—Ecology	Z—Zoology
M—Mathematics	

- DR. A. HASAN AL-ABBAS, Agronomy Dept., Purdue Univ., Lafayette, Ind. 47907 SB
- DR. RALPH W. ALEXANDER JR., Dept. Anthropology, 736 Bolton Hall, Univ. of Wisconsin-Milwaukee, Milwaukee, Wis. 53201 ALR
- MR. ROBERT M. ALVERSON, Sperry Rand Corp, New Holland, Pa. 17557 LSH
- DR. GEORGE T. ASTERIADIS JR., Purdue Univ.-North Central, Westville, Ind. 46391 ROD
- DR. FREDERICK K. AULT, 207 Meeks Ave., Muncie, Ind. 47304 DC
- MR. GEORGE S. AUSTIN, Indiana Geological Survey, Bloomington, Ind. 47401 ORB
- DR. RITA BARR, Dept. Biological Sciences, Purdue Univ., Lafayette, Ind. 47907 ORB
- MR. STEVEN BATRAS, Entomology Dept., Ball State Univ., Muncie, Ind. 47306 ECR
- DR. JESSIE L. BOBBITT, 8101 Rosemead Lane, Indianapolis, Ind. 46240 COR
- MR. ARTHUR BRANHAM, 201 Morningside, Gary, Ind. 46408 DZT
- MR. MELVIN L. BRASHEAR, 5428 South Woodlawn, Apt. C-1, Chicago, Ill. 60615 AGS
- MR. LARRY C. BROWN, Biology Dept., Ball State Univ., Muncie, Ind. 47306 BGO
- MR. HENRY W. BULLAMORE, Dept. Geography, 220 Davenport Hall, Univ. Illinois, Urbana, Ill. 61801 GAS
- MRS. MARGARET ANN BURES, S. Maish Rd., R. 3 Box 18, Frankfort, Ind. 46041 CDO
- DR. TIMOTHY J. BURKHOLDER, Dept. Biology, Taylor Univ., Upland, Ind. 46989 ZOL
- MR. JAMES C. BYSE, Box 315, Earlham College, Richmond, Ind. 47374 AG
- DR. WILLIAM R. CHANEY, Dept. Forestry & Conservation, Purdue Univ., Lafayette, Ind. 47907 LBS
- DR. JAMES H. CLARK, Dept. Biological Sciences, Purdue Univ., Lafayette, Ind. 47907 OZR
- MR. MICHAEL COE, St. Meinrad College, St. Meinrad, Ind. 47577 L

- MR. THOMAS L. CRISMAN, Zoology Dept., Indiana Univ., Bloomington, Ind. 47401 ZLG
- MISS SHARON K. CUPP, 3606 East Wabash Ave., Terre Haute, Ind. 47803 AL
- MR. CHARLES P. DAGHLIAN, Botany Dept., Indiana Univ., Bloomington, Ind. 47401 BLR
- MR. GEORGE B. DAVIS, Eli Lilly & Co., Dept. G265, 445 W. 46th St., Indianapolis, Ind. 46208 AGH
- DR. ALFRED DEVITE, Dept. Education, Purdue Univ., Lafayette, Ind. 47907 DGH
- DR. LEE ENGSTROM, Biology Dept., Ball State Univ., Muncie, Ind. 47306 OZE
- DR. MICHAEL EOFF, Biology Dept., Marian College, E 3220 Cold Spring, Indianapolis, Ind. 46222 ZLE
- DR. WARREN W. EPINETTE, Dept. Dermatology, IU Medical Center, 1100 W. Michigan St., Indianapolis, Ind. 46202 O
- DR. & MRS. AUSTIN W. FERGUSSON, P.O. Box 263, Wolf Lake, Ind. 46796 LOD
- DR. LAWRENCE L. GARBER, Indiana Univ., South Bend, Ind. 46615 C
- MR. GEORGE A. GENZ, Dept. Anthropology, Ball State Univ., Muncie, Ind. 47306 A
- DR. JOHN D. GOODMAN, Biology Dept., Anderson College, Anderson, Ind. 46011 ZL
- DR. RICHARD W. GREENE, Biology Dept., Univ. Notre Dame, Notre Dame, Ind. 46556 Z
- MR. WALTER R. GREGG, JR., 2428 South 5th St., Terre Haute, Ind. 47802 AGS
- MR. & MRS. DAVID A. GRIGGS, 7612 Wohama Dr., Ft. Wayne, Ind. 46809 LBD
- MISS ELIZABETH GUNN, Dept. Anthropology, Ball State Univ., Muncie, Ind. 47306 A
- MR. WILLIAM J. HAHN, Agronomy Dept., Purdue Univ., Lafayette, Ind. 47907 SGL
- DR. JUDY DALE HALL, Dow Chemical Co., P.O. Box 10, Zionsville, Ind. 46077 O
- DR. DONALD A. HENDRICKSON, Biology Dept., Ball State Univ., Muncie, Ind. 47306 RL
- MR. THOMAS J. HERRICK, 329 Grissom Hall, Purdue Univ., Lafayette, Ind. 47906 NDP
- MR. HORTON H. HOBBS, III, Zoology Dept., Indiana Univ., Bloomington, Ind. 47401 ZLG
- DR. RANDALL KEITH HORINE, Biology Dept., Earlham College, Richmond, Ind. 47374 BOR
- MR. WAYNE C. HOUTCOOPER, Dept. Life Sciences, Indiana State Univ., Terre Haute, Ind. 47809 LZ
- MR. GARY HUFFMAN, 2585 E. 91st St., Indianapolis, Ind. 46240 DZ
- DR. MERLE E. JACOBS, Zoology Dept., Goshen College, Goshen, Ind. 46526 ZLE
- MRS. MARY LU JOHNSON, P.O. Box 333, Princeton, Ind. 47670 LTB
- DR. THOMAS JOSEPH, Biology Dept., Indiana Univ., South Bend, Ind. 46615 ZLO
- MR. GLENN P. JUDAY, 134-3 Nimitz Dr., W. Lafayette, Ind. 47906 LGA
- DR. CLARK JUDY, Dept. Geography, Ball State Univ., Muncie, Ind. 47306 LGD
- DR. FERENCZ P. KALLAY, Geology Dept., Valparaiso Univ., Valparaiso, Ind. 46383 G
- MRS. MARSLA KIMMERLING, Country Park Estates, RR. 5, Kokomo, Ind. 46901 DGL
- DR. GERALD H. KROCKOVER, Education Bldg., Purdue Univ., Lafayette, Ind. 47907 DGC

- MR. DOYAL R. LANK, JR., 147 Woodland Terrace, Mobile Home Park, W. Lafayette, Ind. 47906 ZER
- DR. CAROLE A. LEMBI, Dept. Botany and Plant Pathology, Purdue Univ., Lafayette, Ind. 47907 OLB
- MR. EDMUND C. LEWIS, 5939 N. College Ave., Indianapolis, Ind. 46220 A
- MR. DALE E. LINVILL, Agronomy Dept., Purdue Univ., Lafayette, Ind. 47907 SLG
- DR. PAUL S. LYKOUDIS, Aeronautics, Astro-Engineering, Purdue Univ., Lafayette, Ind. 47907 NPH
- MRS. DORILA A. MARTING, 413 E. Prince Rd. 41, Tucson, Ariz. 85705 G
- MR. JON DORSEY MARTING, 413 E. Prince Rd. 41, Tucson, Ariz. 85705 CPZ
- MR. KENNETH MILLER, Biology Dept., Purdue Univ-North Central, Westville, Ind. 46391 LEZ
- MR. HERBERT S. MILLSTEIN, 2090 Suffolk Lane, Indianapolis, Ind. 46260 NM
- MR. WILLIAM S. MISKA, Federal Bldg., 7th & College Sts., Bloomington, Ind. 47401 GLA
- MR. F. H. MONTAGUE, JR., Dept. Forestry & Conservation, Purdue Univ., Lafayette Ind. 47907 ZL
- MR. LUPO A. MONTECILLO, Agronomy Dept., Purdue Univ., Lafayette, Ind. 47907 SGC
- MR. JOHN N. MONTGOMERY, 101 Hurricane St., Franklin, Ind. 46131 DOG
- MR. MICHAEL C. MOORE, Indiana Geological Survey, 611 N. Walnut Grove, Bloomington, Ind. 47401 GZ
- MRS. JOANNE MUELLER, Biology Dept., Univ. Evansville, P. O. Box 329, Evansville, Ind. 47701 D
- DR. JAMES NORWINE, Dept. Geography, Indiana State Univ., Terre Haute, Ind. 47809 GLH
- DR. ERNEST J. PECK, JR., Dept. Biological Sciences, Purdue Univ., Lafayette, Ind. 47907 ROC
- MR. DAVID L. PETERSON, R.R. 1, Monterey, Ind. 46960 ORC
- MR. ROBERT A. PETTIJOHN, 1819 N. Meridian St., Indianapolis, Ind. 46202 LSG
- MR. RAYMOND N. PHEIFER, Redbud Hill Apts. #304, Bloomington, Ind. 47401 GBL
- MR. RONALD A. PIEPE, Dept. Geology, Indiana Univ., Bloomington, Ind. 47401 GB
- MR. STEVEN K. PONTIUS, Geography Dept., Univ. Minnesota, Minneapolis, Minn. GLH
- MR. FRANK POTTER, Botany Dept., Indiana Univ., Bloomington, Ind. 47401 BLG
- DR. MICHAEL C. ROBERTS, Dept. Geography, Indiana Univ., Bloomington, Ind. GSN
- MR. TERRY A. ROGERS, 129 W. Green, Montpelier, Ind. 47359 ELZ
- DR. ALBERT RUESINK, Botany Dept., Indiana Univ., Bloomington, Ind. 47401 BOL
- MR. RAYMOND A. SCHUTTLE, Dept. Life Sciences, Indiana State Univ., Terre Haute, Ind. ZL
- MR. WAYNE M. SCHUTTLE, Agronomy Dept., Purdue Univ., Lafayette, Ind. 47907 SPH
- MR. H. DOUGLAS SHOCK, R.R. 3, Box 387, Muncie, Ind. 47302 DBL
- DR. SHIRLEY SIEW, Pathology Dept., Indiana Univ. School Medicine, 1100 West Michigan St., Indianapolis, Ind. 46202 ORZ

- MR. WALTER L. STIRM, National Weather Service, Purdue Univ., Lafayette, Ind.
47907 S
- DR. WILMER J. STRATTON, Chemistry Dept., Earlham College, Richmond, Ind. 47374 C
- DR. JOHN E. STUMP, Dept. Veterinary Anatomy, Lynn Hall, Purdue Univ., Lafayette,
Ind. 47907 OZ
- MR. ROBERT L. SUDDITH, Zoology Dept., Indiana Univ., Bloomington, Ind. 47401 ZO
- MISS ANNE A. SUSALLA, Botany Dept., Indiana Univ., Bloomington, Ind. 47401 BOR
- DR. ROBERT L. SWAIM, Aeronautics-Eng., Grissom Hall, Purdue Univ., Lafayette, Ind.
47807 NPL
- DR. MICHAEL R. TANSEY, Botany Dept., Indiana Univ., Bloomington, Ind. 47401 BRL
- DR. ROBERT K. TOQASAKI, Botany Dept., Indiana Univ., Bloomington, Ind. 47401 BOC
- MRS. JESSIE M. TURNER, Box 267, R.R. 3, Richmond, Ind. 47374 LDA
- MR. HARLEY J. VANCULIN, Dept. Biological Sciences, Purdue Univ., Lafayette,
Ind. 47907 LTS
- MR. WILLIAM J. VAN DER WOODE, Dept. Botany and Plant Pathology, Purdue Univ.,
Lafayette, Ind. 47907 BOR
- MR. CLAUDE F. WADE, 113 State Office Bldg., Indianapolis, Ind. 46204 E
- MR. CHARLES WALLACE, Dept. Anthropology, Ball State Univ., Muncie, Ind. 47306
- SISTER DONNA R. WHIPPLE, Ladywood-St. Agnes School, 5355 Emerson Way,
Indianapolis, Ind. 46226 CZO
- MISS CAMILLE M. WIGGS, 419 E. 48th St., Indianapolis, Ind. 46205 RGD
- MR. RICHARD E. WILKEY, 118 W. Cherry St., Bluffton, Ind. 46714 E
- MR. CLAY A. WILKINSON, 309 N. 14½ St., Terre Haute, Ind. 47808 LEA
- Blackford Science Club, Blackford High School, R.R. 2, Hartford City, Ind. 47348
- East Washington Science Club, East Washington High School, Pekin, Ind. 47165
- Griffith Science Club, Griffith Senior High School, Griffith, Ind. 46319
- Indian Creek Science Club, Indian Creek Senior High School, P.O. Box 6, Trafalgar,
Ind. 46181
- Lowell Science and Math. Club, Lowell High School, Lowell, Ind. 46356
- St. Joseph Physics Club, St. Joseph Academy, Tipton, Ind. 46072
- Madison High School Science Club, Madison High School, Madison, Ind. 47250

PART 2

ADDRESSES
AND
CONTRIBUTED
PAPERS

Richmond, Indiana
October 29, 1971

PRESIDENTIAL ADDRESS

The address, "Minicourses and the Audio-Tutorial System," was presented by retiring president, Dr. Samuel N. Postlethwait, Department of Biological Sciences, Purdue University, West Lafayette, Indiana 47907, at the annual Fall Meeting dinner at the Runyan Center, Earlham College, Richmond, Indiana, on Friday, October 29, 1971.

SPEAKER-OF-THE-YEAR ADDRESS

The address, "The Role of Scientists in the Preparation and Evaluation of Environmental Impact Statements", was presented by the Speaker of the Year for 1971-72, Dr. Alton A. Lindsey, Professor of Plant Ecology, Department of Biological Sciences, Purdue University, West Lafayette, Indiana 47907, at the annual Fall Meeting luncheon at the Runyan Center, Earlham College, Richmond, Indiana, on Friday, October 29, 1971.

