JOURNAL OF THE Tennessee Academy of Science

OFFICIAL PUBLICATION OF THE

Tennessee Academy of Science

Volume XXXVIII, 1963

Published Quarterly by
TENNESSEE ACADEMY OF SCIENCE

Vanderbilt University Nashville 5, Tennessee

INDEX TO VOLUME XXXVIII, 1963

Volume XXXVIII, 1963

Acetanilide, removal of methylene blue from	40	Hirsch, Jerry A., article
Aquatic pest program at Reelfoot Lake,		Holt, Perry C., article
an evaluation	42	Hydrocephalus, experimental
Allison, Henry C., 1963 President	49	Hymenolepis diminuta, radiation induced
Aromatic ligands, effect of coordination		Hymenolepis microstoma
on reactivity	. 87	Instrument for thermal analysis
Bahama Islands, carbonate environments in		Jones, Arthur W., article
Baker, C. L., articles		Jones, Mark M., articles 87
		Juniperus virginiana
Bates, Conrad W., article		Laurence, Robert A., article
Beatley, Janice C., article	. 135	Leucocytes in rats
Bergenback, R. E., article		Lundberg, Gustave H., new editor
Bile ducts of mice, effect of cestode		Mai, Nguyen Thi Xuan, article
Bingham, Roy H., article	126	Major, James L.
Bidens	135	Methylene blue removal from acetanilide
Branchiobdellid, new	. 97	Multivariate analysis of admissions criteria
Burbank, James H., article		Neely, James Robert, article
Cambarincola ahiend, new species	. 97	News of Tennessee Science,14, 41, 51, 73, 74,
Carbonate environments in the		84, 90, 94, 100, 104, 121, 125,
Bahama Islands, observations	31	Osburn, Robert L., article
Carcinogenic iron, chemical properties of	91	Parmelia isidiosa, growth rate
Chrysopsis		Petrology of Limestone and Coquina of
Clingmantha, n. gen., 101; C. copeland, n. sp., 10	1	Central Tennessee
Cohen, Eckford, article	133	Phillips, Haskell C., article
Coker, Alford E., article	83	Quadric in an affine Galois space
Collembola of Great Smoky Mountains, 85;		Read, William F., article
C. of North America,	101	Reelfoot Lake Biological Station,
Copeland, T. P., article	85	report of Director
Cosberella, n. gen., 103; C. conatoa, n. sp., 103		Reelfoot Lake, evaluation of the aquatic
Cryptobranchus alleganiensis bishopi	1	pest program
Dalmanella coquina	15	Reelfoot Lake, yellow bass in
Dates of mailing Volume 37 (1962)	39	Schoffman, Robert J., article
Davis, R. B., article	85	Sherman, Gordon R., article1
Delano, James B., article	134	Silnhium
DeLoach, Will S., article	40	Skipper John T. orticle
Dextran complex	91	Skinner, John T., article
		Smithville meteorite locality, a new find at
Downs, William G., Jr., articles	105	Society of Microbiology, abstracts of papers—
Exploring the secrets of the sea, review of book	, 81	Oak Ridge National Laboratory,
Friauf, James J., new editor	9	technical reports
Ground-water in Tennessee	51	Stearns, Richard G., article
Hatcher, Robert D., article	01	Stiles, Raeburn, article
Helianthus angustifolius, 135; H. annuus, 135;	91	Sunflowers in Tennessee1
H. atrorubens, 136; H. decapetalus, 136; H.		Tanner, James T., article
divaricatus, 136; H. divaricatus x H. micro-		Tennessee Academy of Science, proceedings for
cephalus, 147; H. doronicoides, 145; H. eggertii,		1962, 52; new President, 49; new Editors, 51,
136; H. giganteus, 135; H. glaucophyllus, 136;		121; report of Treasurer, 74; collegiate division,
H. glaucus, 146; H. grosseserratus, 135; H.		75; new science math teacher section, 50; state
hirsutus, 136; H. hirsutus x H. tuberosus, 147;		grant received, 85; talent search, 134; Tennes-
H. laetiflorus, 135; H. laevigatus, 136; H.		see Junior Academy of Science, 134
longifolius, 148; H. maximiliani, 135; H. micro-		Tennessee mineral localities1
cephalus, 136; H. mollis, 136; H. mollis x		Williams, H. E., article
H. divaricatus, 145; H. occidentalis, 136; H.		Wilson, James L.
petiolaris, 143; H. salicifolius, 136; H. silphioides,		Wilson, R. L., article
136; H. strumosus, 136; H. tuberosus, 136; H.		Wray David I articles
verticillatus, 153		Wray, David L., articles 85, 1
· · · · · · · · · · · · · · · · · · ·		Yellow bass in Reelfoot Lake

JOURNAL

OF THE

Tennessee Academy of Science

EDITORIAL STAFF

H. I UNDBERG, Editor, Vanderbilt University, Nashville CHARD STEVENSON, News Editor, East Tennessee State College, Johnson City

ANK H. BARCLAY, *Botany Editor*, East Tennessee State College, Johnson City

D. EAVES, Mathematics Editor, University of Tennessee, Knox-

BERT J. FLOYD, Geology-Geography Editor, Tennessee Division of Geology, Nashville

YMOND G. WYMER, Chemistry Editor, Oak Ridge National Laboratory, Oak Ridge

RS. BURT FRANCIS, High School Science Mathematics Editor, Isaac Litton High School, Nashville

endell G. Holladay, *Physics-Astronomy Editor*, Vanderbilt University, Nashville

ILLIAM G. DOWNS, Jr., Medical Sciences Editor, Tennessee Polytechnic Institute, Cookeville

MES T. TANNER, Zoology Editor, University of Tennessee, Knoxville

D. WOMAK, Engineering Editor, University of Tennessee, Knoxville

All articles and communications for publication, books, and ublications for review, should be addressed to the Editor.

New subscriptions, changes of address and applications for embership should be addressed to the Secretary. Personal ems, news of events in the scientific world, and other notes uitable for the "News of Tennessee Science" department should e addressed to the News Editor.

Published quarterly, in January, April, July and October, by the Tennessee Academy of Science at Station B, Box 1522 anderbilt University, Nashville, Tennessee.

The JOURNAL is sent to all members not in arrears for dues. The subscription price is \$4.00 a year, invariably in advance. Single copies \$1.00.

Second Class Postage Paid at Nashville, Tennessee.

THE TENNESSEE ACADEMY OF SCIENCE

(Founded 1912, at Nashville, Tennessee)
Affiliated with the American Association
For the Advancement of Science

AFFILIATED SOCIETIES

Tennessee Ornithological Society, Nashville, Tennessee

Barnard Astronomical Club, Nashville

Tennessee Science Teachers' Association

Tennessee Psychological Association

OFFICERS

HENRY C. ALLISON, *President*, University of Tennessee, Martin Branch

JAMES W. WARD, President-Elect, Vanderbilt School of Medicine, Nashville

G. H. LUNDBERG, Editor, Vanderbilt University, Nashville

JAMES L. WILSON, Secretary, Belmont College, Nashville

WM. G. Downs, Jr., *Treasurer*, Tennessee Polytechnic Institute,

CLINTON L. BAKER, Director of the Reelfoot Lake Biological Station, Southwestern University, Memphis

EXECUTIVE COMMITTEE

HENRY C. ALLISON, University of Tennessee, Martin Branch CLINTON L. BAKER, Southwestern University, Memphis NORMAN CAMPBELL, University of Tennessee, Martin Branch WM. G. DOWNS, JR., Tennessee Polytechnic Institute, Cookeville G. H. LUNDBERG, Vanderbilt University, Nashville WILLARD B. JEWELL, Vanderbilt University, Nashville MYRON S. McCay, University of Chattanooga, Chattanooga Albert L. Myers, Carson-Newman College, Jefferson City Elsie Quarterman, Vanderbilt University, Nashville RICHARD STEVENSON, East Tennessee State College, Johnson City JAMES W. WARD, Vanderbilt School of Medicine, Nashville JAMES L. WILSON, Belmont College, Nashville

NOTICE TO AUTHORS

Papers submitted for publication in the JOURNAL may be sent to any member of the editorial staff. Manuscripts must be approved by the Editor and the appropriate Section Editor before publication. Manuscripts should be typewritten, double or triple spaced, with wide margins, and with legends for figures typed on a separate page. Recent issues should be consulted with regard to matters of style. Each table should be placed on a separate sheet. Footnotes should not be used except very rarely. Greek letters and symbols should be avoided as much as possible.

The style for the list of references should conform to the style used in recent issues of the JOURNAL. This list should be headed Literature Cited. The following example illustrates the proper style to be used for references:

W. E. Snow and Eugene Pickard, 1954. Observations on the seasonal activity of some night-biting Diptera. J. Tenn. Acad. Sci. 29:17-22.

Photographs (black and white glossy prints) may be accepted as illustrations; however, line drawings and diagrams are preferable. Drawings should be made in India ink on white paper or Bristol Board. An article containing more than 2 or 3 illustrations can be published only with the financial cooperation of the author.

A per page charge of \$10.00 will be made to industrial contributors.

A blank form for ordering reprints from the printer is enclosed with the galley proof. The cost of reprints is as follows:

2 pages	4 pages	8 pages	12 pages	16 pages
100 copies \$12.00	\$20.00	\$38.00	\$47.00	\$56.00
Ea. add. 100 2.00	3.00	8.50	12.25	16.00

The Tennessee Academy of Science is very anxious to include in its membership all teachers and professors of science, research workers in science both in educational institutions and industrial establishments, and all others who are interested in some phase of science. We invite you to join our organization and take part in our activities.

The annual dues are \$4.00 for members except teachers below the college level, whose dues are \$2.00, and \$10.00 for sustaining members. They may be sent direct with your application for membership to the Secretary.

TABLE OF CONTENTS

Volume XXXVIII, 1963

Number 1, January	PAGE	Number 3, July
Report of the Director of the Reelfort Lake Biological Station. C. L. Baker	1	Collembola of the Great Smoky Mountains
Spermatozoa and Spermateleosis in Cryptobranchus and Necturus. C. L. Baker	1	D. L. Wray, T. P. Copeland and R. B. Davis
Book Review. Exploring the Secrets of the Sea by William J. Cromie. Reviewed by James T. Tanner		Academy Receives State Grant The Effect of Coordination on the Reactivity of
Age and Rate of Growth of the Yellow Bass in Reelfoot Lake, Tennessee, for 1957 and 1962. Robert J. Schoffman, C. S. V.		Aromatic Ligands. VII. Some Further Examples. Mark M. Jones
News of Tennessee Science		News of Tennessee Science
Petrology of the Laminated Argillaceous Limestone and Dalmanella Coquina in the Hermitage Formation (Ordovician) of Central Tennessee. Richard G. Stearns and Robert D. Hatcher, Jr.	15	Some Chemical Properties of the Carcinogenic Iron (III)—Dextran Complex. Mark M. Jones, Robert V. Dilts and Jerry A. Hirsch
A New Find at the Smithville Meteorite Locality. William F. Read	22	Growth Rate of <i>Parmelia isidiosa</i> (Mull. Arg.) Hale. Haskell C. Phillips
A Radiation- Induced Variant of the Cestode, Hymenolepis diminuta, with Two-hooked Oncospheres. Arthur W. Jones and James A. Dvorak	26	A New Branchiobdellid (Branchiobdellidae: Cambarincola). Perry C. Holt
Observations of Present-Day Carbonate Environments in the Bahama Islands. R. L. Wilson and R. E. Bergenback	31	Collembola of North America; Part I, Hypogastrurinae. David L. Wray
A Multivariate Analysis of Admissions Criteria at Vanderbilt Engineering School. Raeburn Stiles and H. E. Williams	37	Response of Leucocytes and Serum Protein Fractions to Stress in Rats. James Robert Neely, William
Dates of Mailing Volume 37 (1962)	39	G. Downs, Jr. and John T. Skinner
Removal of Methylene Blue from Acetanilide by Norit A. Will S. DeLoach, Robert L. Osburn and Nguye Thi Xuan Mai	n 40	A Combinatorial Problem Arising from Scheduling University Classes. Gordon R. Sherman
An Evaluation of the Aquatic Pest Plant Control Program at Reelfoot Lake. James H. Burbank	42	
Number 2, April		Number 4, October
Professor Henry C. Allison, 1963 President of the Tennessee Academy of Science	49	Experimental Hydrocephalus Thomas M. McCutchen, Jr., M.D.
Our New Section of the Tennessee Academy of Science. Conrad W. Bates	50	G. H. Lundberg, Editor of the Journal of the Tennessee Academy of Science
James J. Friauf, New Editor of the Journal of the Tennessee Academy of Science	51	News of Tennessee Science
News of Tennessee Science	51	
Proceedings of the Tennessee Academy of Science for 1962. James L. Wilson	52	Summary of Ground-Water Levels in Tennessee, 1952-'61. Roy H. Bingham
Report of the Treasurer of the Tennessee Academy of Science. William G. Downs, Jr.	74	The Number of Planes Contained in the Complement Of a Quadric in an Affine Galois Space.
Thirteenth Annual Meeting of the Collegiate Division. Tennessee Academy of Science	75	Eckford Cohen The Eighteenth Tennessee Science Talent Search an
Abstracts of Papers Presented at the 1962 Meetings of the Kentucky-Tennessee Society for Microbiology, October 26-27, 1962	78	The Twenty-first Tennessee Junior Academy of Science. James L. Major and James B. Delano
The Effects of the Cestode Hymenolepis microstoma on the Bile Ducts of Mice. James A. Dvorak	81	The Sunflowers (Genus Helianthus) in Tennessee. Janice C. Beatley
A Low Cost Recordings Instrument for Differential Thermal Analysis. Otto C. Kopp and Alfred E. Coker	83	Some "Lost" Tennessee Mineral Localities. Robert A. Laurence

JOURNAL

OF THE

Tennessee Academy of Science

VOLUME XXXVIII

NUMBER 1

CONTENTS

	PAGE
Report of the Director of the Reelfoot Lake Biological Station C. L. Baker	1
Spermatozoa and Spermateleosis in Cryptobranchus and Necturus. C. L. Baker	1
Book Review. Exploring the Secrets of the Sea by William J. Cromie. Reviewed by James T. Tanner	9
Age and Rate of Growth of the Yellow Bass in Reelfoot Lake, Tennessee, for 1957 and 1962. Robert J. Schoffman, C. S. V.	12
News of Tennessee Science	14
Petrology of the Laminated Argillaceous Limestone and Dalmanella Coquina in the Hermitage Formation (Ordovician) of Central Tennessee. Richard G. Stearns and Robert D. Hatcher, Jr.	15
A New Find at the Smithville Meteorite Locality. William F. Read	22
A Radiation-Induced Variant of the Cestode, Hymenolepis diminuta, with Two-hooked Oncospheres. Arthur W. Jones and James A. Dvorak	26
Observations of Present-Day Carbonate Environments in the Bahama Islands. R. L. Wilson and R. E. Bergenback	31
A Multivariate Analysis of Admissions Criteria at Vanderbilt Engineering School. Raeburn Stiles and H. E. Williams	37
Dates of Mailing Volume 37 (1962)	39
Removal of Methylene Blue from Acetanilide by Norit A. Will S. DeLoach, Robert L. Osburn and Nguyen Thi Xuan Mai	40
An Evaluation of the Aquatic Pest Plant Control Program at Reelfoot Lake. James H. Burbank	42

JANUARY, 1963
AUSTIN PEAY STATE COLLEGE
LIBRARY
CLARKSVILLE, TENNESSEE

JOURNAL

OF THE

Tennessee Academy of Science

EDITORIAL STAFF

HELEN L. WARD, Editor, University of Tennessee, Knoxville FRANK H. BARCLAY, Botany Editor, East Tennessee State College, Johnson City

E. D. Eaves, Mathematics Editor, University of Tennessee, Knoxville

ROBERT J. FLOYD, Geology-Geography Editor, Tennessee Division of Geology, Nashville

RAYMOND G. WYMER, Chemistry Editor, Oak Ridge National Laboratory, Oak Ridge

Mrs. Burt Francis, High School Science Editor, Isaac Litton High School, Nashville

WENDELL G. HOLLADAY, Physics-Astronomy Editor, Vanderbilt University, Nashville

WILLIAM G. DOWNS, JR., Medical Sciences Editor, Tennessee Polytechnic Institute, Cookeville

James T. Tanner, Zoology Editor, University of Tennessee, Knoxville

J. D. WOMAK, Engineering Editor, University of Tennessee, Knoxville

Entered as second class matter at the post office at Knoxville, Tennessee, under Act of August 24, 1912, acceptance of mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, and authorized September 16, 1931.

Published quarterly, in January, April, July and October, by the Tennessee Academy of Science at Knoxville, Tennessee.

The Journal is sent to all members not in arrears for dues. The subscription price is \$4.00 a year, invariably in advance. Single copies \$1.00.

All articles and communications for publication, books, and publications for review, should be addressed to the Editor.

New subscriptions, changes of address, and applications for membership should be addressed to the Secretary. Personal items, news of events in the scientific world, and other notes suitable for our "News of Tennessee Science" department should be addressed to the Editor.

THE TENNESSEE ACADEMY OF SCIENCE

(Founded 1912, at Nashville, Tennessee) Affiliated with the American Association For the Advancement of Science

AFFILIATED SOCIETIES

Tennessee Ornithological Society, Nashville, Tennessee Barnard Astronomical Club, Nashville Tennessee Science Teachers Association Tennessee Psychological Association

OFFICERS

HENRY C. ALLISON, President, University of Tennessee,

JAMES W. WARD, President-Elect, Vanderbilt Medical School, Nashville

HELEN L. WARD, *Editor*, University of Tennessee, Knoxville JAMES L. WILSON, *Secretary*, Belmont College, Nashville

WM. G. Downs, Jr., Treasurer, Tennessee Polytechnic Institute, Cookeville

Myron S. McCay, Sponsor of the Junior Academy, University of Chattanooga

EXECUTIVE COMMITTEE

HENRY C. Allison, University of Tennessee, Martin Brane Clinton L. Baker, Southwestern University, Memphis Wm. G. Downs, Jr. Tennessee Polytechnic Institute, Cookeville

WILLARD B. JEWELL, Vanderbilt University, Nashville
MYRON S. McCAY, University of Chattanooga, Chattanoog
JAMES W. WARD, Vanderbilt Medical School, Nashville
ALVIN H. NIELSEN, University of Tennessee, Knoxville
ELSIE QUARTERMAN, Vanderbilt University, Nashville
RICHARD STEVENSON, East Tennessee State College,
Johnson City

HELEN L. WARD, University of Tennessee, Knoxville James L. Wilson, Belmont College, Nashville

NOTICE TO AUTHORS

Papers submitted for publication in the Journal may sent to any member of the editorial staff. Manuscripts mube approved by the Editor and the appropriate Sectification before publication. Manuscripts should be typewritten, double or triple spaced, with wide margains, an with legends for figures typed on a separate page. Recentissues should be consulted with regard to matters of style Each table should be placed on a separate sheet. Footnote should not be used except very rarely. Greek letters an symbols should be avoided as much as possible.

The style for the list of references should conform to the style used in recent issues of the *Journal*. This list should be headed Literature Cited. The following example illustrates the proper style to be used for references:

Snow, W. E. and Eugene Pickard. 1954. Observations on the seasonal activity of some night-biting Diptera. J. Tenn Acad. Sci. 29: 17-22.

Photographs (black and white glossy prints) may be accepted as illustrations; however, line drawings and diagrams are preferable. Drawings should be made in Indiaink on white paper or Bristol Board. An article containing more than 2 or 3 illustrations can be published only with the financial cooperation of the author.

A per page charge of \$10.00 will be made to industria contributors.

A blank form for ordering reprints from the printer is enclosed with the galley proof. The cost of reprints is a follows:

2 pages 4 pages 8 pages 12 pages 16 page 100 copies ____ \$12.00 \$20.00 \$38.00 \$47.00 \$56.00 Ea. add. 100 ___ 2.00 3.00 8.50 12.25 16.00

The Tennessee Academy of Science is ve anxious to include in its membership all teache and professors of science, research workers science both in educational institutions and indutrial establishments, and all others who are inteested in some phase of science. We invite you join our organization and take part in our activitie

The annual dues are \$4.00 for members except teachers below the college level, whose dues are \$2.00, and \$10.00 for sustaining members. They may be sent direct with your application for membership to the secretary.