

**JOURNAL**  
OF THE  
**Tennessee Academy of Science**

---

VOLUME L

NUMBER 3

---

**CONTENTS**

	Page
Environmental Education: An Experimental Problem-focused Approach for High School Students Jack Rhoton and Ronald B. Childress .....	77
Leaf Cuticular and Morphological Variations in <i>Plantago lanceolata</i> as Indicators of Environmental Pollution Sylvia Wagoner .....	79
Occurrence of Corticolous Lichens in a Rural Locality Prior to the Operation of a New Coal Fired Power Plant Allan C. Skorepa, William H. Nussbaumer .....	83
Possible Effect of Acid Mine Drainage on the Water Quality and Fish Population of Dale Hollow Reservoir, Tennessee and Kentucky Ernest L. Ragsdale and Frank J. Bulow .....	91
Breeding Avifauna Associated with two Strip Mine Areas Richard H. Yahner, Anthony W. Garton and Joseph C. Howell .....	95
Interspecific Behavior of the Prairie Vole ( <i>Microtus ochrogaster</i> ) and the White-footed Mouse ( <i>Peromyscus leucopus</i> ) as a Possible Factor in Habitat Segregation James Moroni .....	98
Range Extension of the Yellow Perch, <i>Perca flavescens</i> (Mitchill), in Tennessee Tom J. Timmons .....	101
A Study of Two Populations of Introduced Redeye Bass, <i>Micropterus coosae</i> Hubbs and Bailey Haywood R. Gwinner, Harold J. Cathey and Frank J. Bulow .....	102
Year to Year Variation in the Germination of Freshly-harvested Seeds of <i>Arenaria patula</i> var. <i>Robusta</i> from the Same Site Jerry M. Baskin and Carol C. Baskin .....	106
Caribou ( <i>Rangifer tarandus</i> L.) from the Pleistocene of Tennessee John E. Guilday, Harold W. Hamilton and Paul W. Parmalee .....	108
Inferred Tidal Flat Paleoenvironments in Leipers Limestone (Ordovician) of Abandoned Quarry, Dade County, Georgia Jimmy McCullough and R. E. Bergenback .....	112
TAS News, Events and Announcements .....	116

---

JULY, 1975

# JOURNAL

## OF THE

# Tennessee Academy of Science

### EDITORIAL STAFF

- GUS TOMLINSON, *Editor*, George Peabody Coll., Nashville 37203
- BERNARD W. BENSON, *High School Science-Mathematics Editor*, The Univ. of Tennessee at Chattanooga 37401
- JAMES MASON, *Medical Sciences Editor*, The Univ. of Tennessee, Memphis 38103
- JAMES D. CAPONETTI, *Botany Editor*, The Univ. of Tennessee, Knoxville 37916
- ROY W. CLARK, *Physics-Astronomy Editor*, M.T.S.U., Murfreesboro, Tennessee 37130
- ROBERT GOODRICH, *Interim Engineering Editor*, Vanderbilt University, Nashville, Tennessee 37203
- ROBERT G. LITCHFORD, *Zoology Editor*, The Univ. of Tennessee at Chattanooga 37403
- STUART W. MAHER, *Geology-Geography Editor*, Tennessee Division of Geology, Knoxville 37919
- JOHN T. NETTERVILLE, *Chemistry Editor*, David Lipscomb College, Nashville 37203
- JAMES STACK, *Mathematics Editor*, Austin Peay State Univ., Clarksville 37040

All articles and communications for publications, 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 the "News of Tennessee Science" department should be addressed to the Editor.

Published quarterly, in January, April, July and October, by the Tennessee Academy of Science at Box 153, George Peabody College, Nashville, Tennessee 37203.

The JOURNAL is sent to all members not in arrears for dues. The subscription price is \$8.00 a year, invariably in advance. Single copies \$3.00.

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
- Tennessee Junior Science and Humanities Symposium

#### Officers

- ALBERT MYERS, *President*, Carson-Newman Coll., Jefferson City 37760
- JOHN M. MALLETT, *President Elect*, Univ. of Tennessee at Nashville, Nashville 37203
- GUS TOMLINSON, *Editor*, George Peabody Coll., Nashville 37203
- JAMES D. CAPONETTI, *Secretary*, Univ. of Tennessee, Knoxville 37916
- ROBERT WILSON, *Treasurer*, Univ. of Tennessee at Chattanooga, Chattanooga 37403
- WINTFRED SMITH, *Director*, Reelfoot Lake Biol. Sta., at U.T., Martin 38237

### Executive Committee

- ROBERT L. AMY, Southwestern, Memphis 38112
- JOHN H. BAILEY, East Tennessee State Univ., Johnson City 37602
- JAMES D. CAPONETTI, Univ. of Tennessee, Knoxville 37916
- CLAY M. CHANDLER, Middle Tennessee State Univ., Murfreesboro 37130
- JULIAN T. DARLINGTON, Southwestern, Memphis 38112
- MYRON S. McCAY, Univ. of Tennessee at Chattanooga, Chattanooga 37403
- JOHN M. MALLETT, Univ. of Tennessee at Nashville, Nashville 37203
- ALBERT MYERS, Carson-Newman Coll., Jefferson City 37760
- RICHARD J. RARIDON, ORNL, Oak Ridge 37831
- JERRY RICE, State Dept. of Education, Nashville 37219
- WINTFRED SMITH, Univ. of Tennessee at Martin, Martin 38237
- GUS TOMLINSON, George Peabody Coll., Nashville 37203
- ROBERT WILSON, Univ. of Tennessee at Chattanooga, Chattanooga 37403
- A. PAUL WISHART, The Univ. of Tennessee, Knoxville 37916

### NOTICE TO AUTHORS

Manuscripts submitted for publication in the JOURNAL should be sent to the Editor. Manuscripts must be approved by the Editor and the appropriate Section Editor before publication. Manuscripts should be submitted in duplicate, typewritten, double 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.

Each paper should be supplied with an abstract not to exceed 250 words.

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 illustrations can be published only with 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	4	8	12	16
	pages	pages	pages	pages	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.

The annual dues are \$8.00 for members except teachers below the college level, whose dues are \$5.00, student dues are \$3.00 and a life membership is \$100. Dues may be sent direct with your application for membership to the Secretary.

This journal is abstracted by Biological Abstracts, Chemical Abstracts, and Nuclear Abstracts, and indexed by Science Citation Index.