

THE OHIO JOURNAL OF  
**SCIENCE**

Volume 89

March, 1989

Number 1



THE OHIO JOURNAL OF SCIENCE

ISSN 0030-0950

Sections of The Ohio Academy of Science — Zoology, Plant Sciences, Geology, Medical Sciences, Physics and Astronomy, Geography, Chemistry, Science Education, Anthropology and Sociology, Conservation, Genetics and Cell Biology, Math and Computer Sciences, Psychology, Junior Academy, Engineering, Administrative Sciences and Planning, Economics, Ecology, Information and Library Sciences.

EDITORIAL POLICY

THE OHIO JOURNAL OF SCIENCE considers original contributions from members and non-members of the Academy in all fields of science. Special consideration will be given to Ohioana. Submission of an article is understood to mean that the article is original and unpublished and is not being considered for publication elsewhere. All manuscripts will be critically reviewed. It should be understood that the opinions expressed by the reviewers are their own, and do not represent the views of the Ohio Academy of Science or THE OHIO JOURNAL OF SCIENCE. Manuscripts and illustrations should be prepared in triplicate in accord with instructions published in at least one issue each year and submitted to Dr. Lee A. Meserve, Editor, THE OHIO JOURNAL OF SCIENCE, Department of Biological Sciences, Bowling Green State University, Bowling Green, OH 43403.

Publication in THE OHIO JOURNAL OF SCIENCE requires consideration of editorial costs. These will be assessed at \$70 per page for members and \$105 per page for non-members. Papers in excess of 12 printed pages may be charged full production costs. A page charge bill will be sent by the Ohio Academy of Science at the time of publication.

Unsupported authors may request a waiver of page charges and will be asked to supply statements from their supervisor (department chairman, their adviser in the case of graduate students, and dean) that institutional and grant funds are not available. The Academy can only subsidize a few papers per year.

Failure to receive any number of the JOURNAL must be reported to the Ohio Academy of Science within six months of the date of issue for the claim to be recognized.

FUTURE MEETINGS

April 28, 29 and 30, 1989 Cuyahoga Community College

April 27, 28 and 29, 1990 Wright State University

May 1, 2 and 3, 1992 The University of Akron

Date of issue — March 1989

Copyright © 1989 by the Ohio Academy of Science

Typesetting — Beacon Graphics Corp., Ashland, Ohio 44805 Printing — Leshner Printers Inc., Fremont, Ohio 43420

U.S. Postal Service STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION (Required by 39 U.S.C. 3685)		
1A. Title of Publication THE OHIO JOURNAL OF SCIENCE	1B. PUBLICATION NO. 0 0 3 0 0 9 5 0	2. Date of Filing November 7, 1988
3. Frequency of Issue March, April, June, Sept., Dec.	3A. No. of Issues Published Annually 5	3B. Annual Subscription Price \$30.00 Domestic \$35.00 Foreign
4. Complete Mailing Address of Known Office of Publication (Street, City, County, State and ZIP+4 Code) (Not printer)		
445 King Avenue, Columbus, OH 43201 Franklin County		
5. Complete Mailing Address of the Headquarters or General Business Office of the Publisher (Not printer)		
Same as Item #4		
6. Full Names and Complete Mailing Addresses of Publisher, Editor, and Managing Editor (This item MUST NOT be blank)		
Publisher (Name and Complete Mailing Address) The Ohio Academy of Science, 445 King Avenue, Columbus, OH 43201		
Editor (Name and Complete Mailing Address) 43403 Dr. Lee Meserve, Dept. of Biological Sciences, Bowling Green State U., Bowling Green, OH		
Managing Editor (Name and Complete Mailing Address) None		
7. Owner (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual must be given. If the publication is published by a nonprofit organization, its name and address must be stated.) (Item must be completed)		
Full Name	Complete Mailing Address	
The Ohio Academy of Science	445 King Avenue, Columbus, OH 43201	

8. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages or Other Securities. If there are none, so state		
Full Name	Complete Mailing Address	
NONE		
9. For Completion by Nonprofit Organizations Authorized to Mail at Special Rates (OMB Series 4321-1-002) The purpose, function, and nonprofit status of this organization and the exempt status for federal income tax purposes (Check one)		
<input checked="" type="checkbox"/> Has Not Changed During Preceding 12 Months <input type="checkbox"/> Has Changed During Preceding 12 Months <i>If changed, publisher must submit explanation of change with this statement.</i>		
10. Extent and Nature of Circulation (See instructions on reverse side)	Average No. Copies Each Issue During Preceding 12 Months	Actual No. Copies of Single Issue Published Nearest to Filing Date
A. Total No. Copies (Net Press Run)	2,972	2,797
B. Paid and/or Requested Circulation 1. Sales through dealers and carriers, street vendors and counter sales	-	-
2. Mail Subscriptions (Paid and/or requested)	2,393	2,567
C. Total Paid and/or Requested Circulation (Sum of 1B1 and 1B2)	2,393	2,567
D. Free Distribution by Mail, Carrier or Other Means Samples, Complimentary, and Other Free Copies	-	-
E. Total Distribution (Sum of C and D)	2,393	2,567
F. Copies Not Distributed 1. Office use, left overs, unaccounted, spoiled after printing	779	250
2. Return from News Agents	-	-
G. TOTAL (Sum of E, F1 and F2 - should equal net press run shown in A)	2,972	2,797
11. I certify that the statements made by me above are correct and complete	Signature and Title of Editor, Publisher, Business Manager, or Owner <i>Lee A. Meserve</i> Publisher	

# The Ohio Journal of Science

Volume 89

March 1989

No. 1



## The Ohio Journal of Science

Department of Biological Sciences  
Bowling Green State University  
Bowling Green, OH 43403  
419/372-2291

Editor Lee A. Meserve  
Associate Editor Robert C. Romans  
Assistant Editor Susan E. Wenig

### Editorial Board

Liberato J. A. DiDio  
Rosanne W. Fortner  
Lazarus Walter Macior  
Robert J. Malcuit  
Roy W. Rings

## The Ohio Academy of Science

445 King Avenue  
Columbus, OH 43201  
614/424-6045

President — Donald L. Wise  
Past President — Andrew M. White  
President Elect — Allen G. Noble  
Secretary — Raymond F. Jezerinac  
Treasurer — Robert H. Essman  
Junior Academy Director — Lois A. Cook  
Executive Officer — Lynn Edward Elfner

The Ohio Journal of Science (ISSN 0030-0950) is published in March, April (Annual Meeting Program Abstracts Issue), June, September, and December by The Ohio Academy of Science, 445 King Avenue, Columbus, OH 43201-2631. Second class postage paid at Columbus, OH. Individual membership and subscription: \$27. Domestic institutional subscription: \$30. Foreign institutional subscription: \$35. Single issues for Academy members and subscribers: \$6; other \$8. © 1989 by The Ohio Academy of Science. All Rights Reserved.

POSTMASTER: Send address changes to The Ohio Journal of Science, 445 King Avenue, Columbus, OH 43201-2631.

## Articles

- 2  
Lack of Toluene-Induced Dominant Lethals in Rats by W. J. Washington, A. Wilson, C. Lyons, D. Dennie, S. Schooler, S. Parham, L. Baxter, C. Shanklin, and C. Herron
- 5  
Chironomid Midges as Indicators of Organic Pollution in the Scioto River Basin, Ohio by J. G. Rae
- 9  
Effect of Level of Glucan Synthesis and Lactic Acid Formation on Caries Development in Golden Syrian Hamsters by S. Beiraghi, S. Rosen, B. Sanders, and M. Beck
- 12  
Distribution of a Wound Epithelium Antigen in Embryonic Tissues of Newts and Salamanders by R. A. Tassava and R. D. Acton
- 16  
Evidence for an Early Delta of the Detroit River in Western Lake Erie by C. E. Herdendorf and M. L. Bailey
- 23  
Tree Trunk Arthropod Faunas as Food Resources for Birds by A. T. Peterson, D. R. Osborne, and D. H. Taylor
- 26  
Impact of Census Error Adjustments on State Population Projections: The Case of Ohio by D. A. Swanson, K. Vaidya, R. Yehya, B. Bennett, and R. Prevost
- 33  
Recent Collections and Food Items of River Darters, *Percina shumardi* (Percidae), in the Markland Dam Pool of the Ohio River by R. E. Sanders and C. O. Yoder

## Departments

List of Reviewers — page 36

Instructions to Authors — inside back cover