

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Transactions of the Nebraska Academy of
Sciences and Affiliated Societies

Nebraska Academy of Sciences

1988

***Transactions of the Nebraska Academy of Sciences* Volume XVI (1988): Table of Contents**

Follow this and additional works at: <https://digitalcommons.unl.edu/tnas>



Part of the [Life Sciences Commons](#)

"*Transactions of the Nebraska Academy of Sciences* Volume XVI (1988): Table of Contents" (1988).
Transactions of the Nebraska Academy of Sciences and Affiliated Societies. 195.
<https://digitalcommons.unl.edu/tnas/195>

This Article is brought to you for free and open access by the Nebraska Academy of Sciences at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Transactions of the Nebraska Academy of Sciences and Affiliated Societies by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

**STATE BOARD OF EDUCATION
AND
STATE BOARD OF VOCATIONAL EDUCATION**

William C. Ramsey, president	Omaha	District 8
James H. Monahan, vice-president	Omaha	District 2
Max Larsen	Lincoln	District 1
Walter M. Thompson	Oakland	District 3
Helen Greene	Ashland	District 4
William Marshall III	Grand Island	District 5
Russell Worthman	Gering	District 6
Thelma Lang	Litchfield	District 7

DEPARTMENT OF EDUCATION

Joe E. Lutjeharms, Commissioner of Education
301 Centennial Mall South
Lincoln, Nebraska 68509

Establishment of the Transactions of the Nebraska Academy of Sciences

In 1969, during its eightieth session, the State Legislature of Nebraska passed Legislative Bill 776, which appropriated funds to aid the Nebraska Academy of Sciences in the publication of scientific works submitted by Nebraska scientists. Volumes I and II of the *Transactions* were published under this arrangement, but Volume III was privately financed. Volume IV and succeeding volumes are being published under the auspices of the Nebraska Department of Education with funds authorized by the State Legislature, supported by the last four governors, J. James Exon, Charles Thone, Robert Kerrey, and Kay A. Orr. Volume V was supported by the Nebraska Department of Education, but the publishing of Volume XI—Special Issue, Symposium (*Man and the Changing Environments in the Great Plains*), August 1983, was made possible by a grant from the Peter Kiewit Charitable Trust, Omaha, Nebraska. The Symposium on 16-18 April 1980 was sponsored by the Center for Great Plains Studies, College of Arts and Sciences, University of Nebraska—Lincoln, and the Institute for Tertiary and Quaternary Studies (TER-QUA), a Division of the Nebraska Academy of Sciences.

Funded by
THE NEBRASKA DEPARTMENT OF EDUCATION
Lincoln, Nebraska

1988

This cover design represents the merging of the disciplines of the biological and social sciences
with those of the earth and physical sciences.

TRANSACTIONS OF THE NEBRASKA ACADEMY OF SCIENCES

Volume XVI
1988

STACKS

APR 20 1989

UNIVERSITY OF NEBR.
LIBRARY

DIVISIONS

Greater Nebraska Association of Teachers of Science, GNATS
Institute for Tertiary and Quaternary Studies, TER-QUA

AFFILIATED SOCIETIES

American Association of Physics Teachers, Nebraska Section, AAPT
Lincoln Gem and Mineral Club, Inc.
Nebraska Chapter National Council for Geographic Education
Nebraska Geological Society
Nebraska Graduate Women in Science
Nebraska Ornithologists' Union
Nebraska Psychological Association
Nebraska Section Mathematical Association of America
Prairie/Plains Resource Institute

The Nebraska Academy of Sciences was founded 30 January 1880
and is affiliated with the American Association for the Advancement
of Science and the National Association of Academies of Science.

ALL PERSONS interested in science, including the changing environments in the
Great Plains, are welcome to become members in the Nebraska Academy of Sciences.

NEBRASKA ACADEMY OF SCIENCES, INC.
306 Morrill Hall, 14th & U Streets
Lincoln, Nebraska 68588-0339

OFFICERS

President: 1987-88	Dale D. Rathe, Lincoln Public Schools
President Elect: 1987-88	John F. Hertner, Kearney State College
Executive Director: 1985-88	C. Bertrand Schultz, University of Nebraska-Lincoln
Treasurer: 1987-89	Robert B. Johnston, University of Nebraska-Lincoln
Corresponding Secretary: 1988-90	James Woodland, Nebraska Department of Education
Recording Secretary: 1988-90	Karen K. Messenger, Lentz Center for Asian Culture
Councillors: 1985-88	Carroll L. Moore, Nebraska Wesleyan University
1986-89	Marvin E. Glasser, Kearney State College
1987-90	Donald E. Shult, University of Nebraska at Omaha
Junior Academy:	James Woodland, Nebraska Department of Education
	Kathleen Jacobitz, Henderson Community Schools
Science Teaching:	Mary K. Romjue, Naponee
	James E. McGahan, Northwest High School, Grand Island
AAAS and NAAS Representative:	Claire M. Oswald, College of Saint Mary
Long Range Planning:	Theodore J. Urban, Creighton University
	Claire M. Oswald, College of Saint Mary
	M. Rosalind Morris, University of Nebraska-Lincoln
Program Chairman and Editor of PROCEEDINGS:	Albert W. Zechmann, University of Nebraska-Lincoln
Editor of TRANSACTIONS:	Robert B. Kaul, University of Nebraska-Lincoln
Manager of Maiben Research Center	David T. Lewis, University of Nebraska-Lincoln

POLICY COMMITTEE 1988

Bellevue College, Bellevue	Jacqueline Schol
Central Community College, Columbus, Grand Island, and Hastings.....	Steve Heinisch
Chadron State College, Chadron	Ronald R. Weedon
College of Saint Mary, Omaha	Jerome J. King
Concordia College, Seward	Gilbert Daenzen
Creighton University, Omaha.....	Theodore J. Urban
Dana College, Blair	Larrie E. Stone
Doane College, Crete	David H. Smith
Hastings College, Hastings.....	Clyde C. Sachtleber
Kearney State College, Kearney	Carl D. Sterne
McCook Community College, McCook	Roger Wilson
Metropolitan Technical Community College, Omaha	Dennis Kingery
Midland Lutheran College, Fremont	Steven J. Rothenberge
Mid-Plains Community College, North Platte	Boyd Gentry
Nebraska Wesleyan University, Lincoln	William Wehrbein
Nebraska Western College, Scottsbluff	Robert M. Kruger
Northeast Technical Community College, Norfolk	Roger Gipson
Peru State College, Peru.....	David L. Pippert
Southeast Community College, Lincoln	Robert E. Res
Union College, Lincoln	G. Gilbert McMiller
University of Nebraska-Lincoln.....	M. Rosalind Morris
University of Nebraska at Omaha	Thomas B. Bragg
University of Nebraska Medical Center, Omaha.....	Edward Holyoke
Wayne State College, Wayne	Harland Pankratz
York College, York	Jerry Krepp

TRANSACTIONS of the NEBRASKA ACADEMY OF SCIENCES

Volume XVI

July 1988

CONTENTS

	Page
Nebraska Academy of Sciences, Officers, Policy committee	ii
Editorial Board	iv
Membership Objectives and Friends of the Academy.....	vi

BIOLOGICAL AND MEDICAL SCIENCES

The vascular flora of the Niobrara Valley Preserve and adjacent areas in Nebraska	1-15
Steven P. Churchill (New York Botanical Garden), Craig C. Freeman (Kansas Biological Survey), and Gail E. Kantak (Saginaw Valley State University, Michigan)	
Butterflies of the Niobrara Valley Preserve	17-30
Neil E. Dankert and Harold G. Nagel (Kearney State College, Nebraska)	
An annotated list of the vascular plants of Fontenelle Forest and Neale Woods in eastern Nebraska	31-49
Marjorie Mueller Garabrandt (University of Nebraska at Omaha)	
Interpreting modern and paleo-environments by analysis of water-stress in xylem: examples from Nebraska and Arkansas.....	51-61
James Landon (Seward High School, Seward, Nebraska)	
Habitat utilization by an introduced fish, <i>Gambusia affinis</i> , in Nebraska (Actinopterygii: Poeciliidae)	63-67
John D. Lynch (University of Nebraska-Lincoln)	
A water-quality assessment using aquatic macroinvertebrates from streams of the Long Pine Creek watershed in Brown County, Nebraska	69-84
Terry R. Maret (Nebraska Department of Environmental Control, Lincoln)	
New distributional records of lizards in Wyoming.....	85-86
Randall Morrison and Lawrence Powell (University of Nebraska-Lincoln)	
A new species of <i>Aphodius</i> (Coleoptera: Scarabaeidae: Aphodiinae) from Nebraska	87-89
Brett C. Ratcliffe (University of Nebraska-Lincoln)	

The vascular flora and plant communities of Seward County, Nebraska.....	91-1
Steven B. Rolfsmeier (Doane College, Nebraska)	
New and corrected floristic records for Nebraska.....	115-1
Steven B. Rolfsmeier and Robert B. Kaul (University of Nebraska–Lincoln) and Marjorie M. Garabrandt and David M. Sutherland (University of Nebraska at Omaha)	
Seed-germination studies of <i>Psoralea esculenta</i> Pursh (Indian turnip) and <i>Psoralea argophylla</i> Pursh (silver scurfpea)	123-1
Linda L. Spessard (Kearney State College, Nebraska)	

EARTH SCIENCES

Late Pleistocene pronghorn, <i>Antilocapra americana</i> , from Natural Trap Cave, Wyoming	127-1
John Chorn (University of Kansas), Barbara Frase (Bradley University, Illinois), and Carl D. Frailey (Midland College, Texas)	
Lagomorphs (Mammalia) from the Oligocene (Orellan and Whitneyan) Brule Formation, Nebraska.....	141-1
William W. Korth (University of Nebraska–Lincoln) and Jeffrey Hageman (Lincoln, Nebraska)	
Saber-toothed cats from the Plio-Pleistocene of Nebraska	153-1
Larry D. Martin (University of Kansas) and C. B. Schultz and Marian R. Schultz (University of Nebraska–Lincoln)	
The giant marmot <i>Paenemarmota sawrockensis</i> (new combination) in Hemphillian deposits of northeastern Nebraska.....	165-1
Michael R. Voorhies (University of Nebraska–Lincoln)	
Systematics and population ecology of Late Pleistocene bighorn sheep (<i>Ovis canadensis</i>) of Natural Trap Cave, Wyoming.....	173-1
Xiaoming Wang (University of Kansas)	

HISTORY OF SCIENCE

Roscoe Pound and the <i>Seminarium Botanicum</i> at the University of Nebraska, 1888–1889	185-1
Michael R. Hill (University of Nebraska–Lincoln)	
Historical notes on collections and taxonomy of <i>Penstemon haydenii</i> S. Wats. (blowout penstemon), Nebraska’s only endemic plant species	191-1
David M. Sutherland (University of Nebraska at Omaha)	

EDITORIAL BOARD

Editor	Robert Kaul
Managing Editor	C. Bertrand Schultz
Consulting Editor	T. Mylan Stout
Division Editors:	
Anthropology	Peter Bleed
Biological and Medical Sciences	Nicolaus Hansl
Dental Research	Theodore J. Urban
Earth Sciences	T. Mylan Stout
History of Science	Claire M. Oswald and T. Mylan Stout
Mathematics	Walter Mientka
Philosophy of Science	Gonzalo Munevar
Physics	Raymond Guenther
Psychology	Frank J. Dudek

† † † † † † †

Instructions for contributorsinside back cover

EDITOR'S CORNER

The *Transactions of the Nebraska Academy of Sciences* is a medium for the publication of the results of original research by members in good standing of the Academy. Presentation of a paper at the annual meeting is not a prerequisite or a guarantee of publication in the *Transactions*. Individuals wishing to submit a paper for consideration should consult the inside of the back cover of this volume for information regarding manuscript preparation and style.

Manuscripts are reviewed by a minimum of two referees, including at least one from an institution other than that of the author. Following review by referees and the editorial board, the author is notified whether or not the paper is accepted for publication and, if accepted, of necessary revisions.

The following persons, in addition to the regular editorial board, have reviewed articles for Volume XVI. Their valued assistance is gratefully acknowledged.

Ralph Brooks, Steven Churchill, Eric Davies, Charles Ely, Robert Hrabik, William Korth, John Lynch, John McClendon, Ronald McGregor, Harold Nagel, Brent Nickol, Kenneth Pruess, Stephen Spomer, Richard Stasiak, John Storer, David Sutherland, Michael Voorhies, John White.

Robert B. Kaul, Editor
Nebraska Academy of Sciences
306 Morrill Hall, 14th & U Streets
Lincoln, Nebraska 68588-0339

REPRINTS

Reprints may be ordered when galley proof is sent to authors. Arrangements for the purchase of reprints may be made through the Nebraska Academy of Sciences office. Contact C. Bertrand Schultz, managing editor.

NEBRASKA ACADEMY OF SCIENCES, INC.

The membership of the Academy consists of those individuals and institutions interested in science, and those persons actively working and contributing science in the State of Nebraska. It includes nonprofessional persons, as well as representatives from education, the professions, industry, and government agencies.

The Academy was organized in 1880 in Omaha with seventy-five charter members, and reorganized in 1891 in Lincoln. The Academy was incorporated in 1950 as a nonprofit educational institution, and it is neither a state agency nor is it sponsored by any particular university, college, or other Nebraska education organization. In 1963 the Internal Revenue Service established the Academy's rating as "Section 501(c)(3)" of the Internal Revenue Code. The Policy Committee of the Academy is made up of one representative from each of the colleges and universities of the State.

OBJECTIVES: The objectives of the organization are to further the work of scientists and science teachers in the high schools and colleges of the State, facilitate cooperation among them, to improve the effectiveness of science in the promotion of human welfare, and to increase public understanding and appreciation of the importance and promise of science in human progress.

RESOLUTION: The following resolution concerning our environment was recently approved by the Academy membership: "Be it resolved that the Nebraska Academy of Sciences, as the principal organization representing the scientists of the State, is greatly concerned with the deterioration of the environment. The scientific talent of Nebraska is considerable, and it is hoped that individually-collectively it may be better utilized by both State and federal agencies in addressing problems of destruction of trees, native prairie, groundwater resources, and habitats."

"FRIEND OF SCIENCE" AWARDS: These awards are given to persons who are not actively engaged in scientific teaching or research, but who have shown unusual interest in promoting science and in sponsoring scientific programs in Nebraska. The following Nebraskans have received a Friend of Science Award: Mrs. Mabel L. Criss, Omaha (1970); Dr. Walter D. Behlen, Columbus (1976); Dr. Vance D. Rogers, Lincoln (1977); George and Olivia Lincoln, Lincoln (1980); Mr. and Mrs. Thomas C. Woods, Jr., Lincoln (1981); and Dr. Lewis E. Harris, Lincoln (1984).

FRIENDS OF THE ACADEMY: In 1959 the Academy received a farm (Maiben Scientific Research Center in Otoe County) and its first endowment from the estate of Benjamin and Rachael Corr Maiben (Academy Life Members). In addition, the following individuals and organizations have shown interest in the program of the Nebraska Academy of Sciences and have generously provided funds (including donations for scholarships, memorials, and research involved with the interdisciplinary environmental division, TER-QUA) during the past ten years to help expand the work of the Academy in promoting research and good basic teaching of science and technology especially through the Junior Academies and the GNATS Division in the science departments of the high schools, community colleges, colleges, and universities of the State:

INDIVIDUALS:

Miss Alice Abel, Lincoln
Mr. and Mrs. R.D. Amen, Lincoln
Mr. Emery L. Blue, Lincoln
Mr. Robert G. Bowman, Lincoln
Diana Garcia Castillo, Rio Piedras, Puerto Rico
Mr. Frank Crabill, Riverside, Connecticut
Mrs. Loren Eiseley, Wynnewood, Pennsylvania
Elizabeth and Wilbur Gaffney, Lincoln
Dr. Lewis E. Harris, Lincoln
Mr. David B. Jones, Worthington, Minnesota
Mr. and Mrs. Oliver Joy, Lincoln
Mr. and Mrs. O.E. Kingery, Lincoln
Mr. Clarence Kubicek, Eureka Springs, Arkansas
Mrs. Sara Mica Kubicek, Paris, Tennessee
Esperanza Castillo Kwitchoff, Mayaguez, Puerto Rico
Olivia and George Lincoln, Lincoln
Mr. Earl Luff, Lincoln
Antonio Rodriguez Mauro, Arecibo, Puerto Rico
Dr. Rosalind Morris, Lincoln
Jose Victor Oliver, Guayanago, Puerto Rico
Mrs. Merrill Reller, Lincoln
Mica Ann Kubicek Reynolds, Lincoln
Mrs. Hilda Ricky, Lincoln
Mr. Don C. Ross, Wichita, Kansas
Marian and C. Bertrand Schultz, Lincoln
Eunice and T. Mylan Stout, Lincoln
Marie and Howard Taylor Family, Lincoln
Mr. John T. Van Dyck III, Paris, Tennessee
Dr. and Mrs. Lynn Robert Wolfe, Boulder, Colorado
Mr. and Mrs. Thomas C. Woods, Jr., Lincoln

ORGANIZATIONS:

Berkshire Hathaway, Inc., Omaha
Builders, Inc., Lincoln
Cornhusker Bank, Lincoln
Dale Electronics, Norfolk
DeLay 1st National Bank, Norfolk
Donald F. and Mildred Topp Othmer Foundation,
Brooklyn, New York
Dorsey Laboratories, Lincoln
Duncan Aviation, Lincoln
FirsTier Bank, Lincoln and Omaha
Garvey Family Foundation, Wichita, Kansas
Gillette Dairy, Inc., Norfolk
Harris Laboratories, Inc., Lincoln
Henningsen Food, Inc., Norfolk
Lan Construction, Norfolk
Lincoln Family Foundation, Lincoln
Lincoln Foundation, Lincoln
Lutheran Community Hospital, Norfolk
Miller and Paine, Lincoln
National Bank of Commerce, Lincoln
Norden Laboratories, Lincoln
Peter Kiewit Charitable Trust, Omaha
Roger Anderson Charitable Foundation, Inc., Florida
Rogers Foundation, Lincoln
Security Mutual Life Insurance Company, Lincoln