104TH ANNUAL MEETING  
THE OHIO ACADEMY OF SCIENCE  
HOSTED BY OTTERBEIN COLLEGE  
AND THE ROSS PRODUCTS DIVISION OF  
ABBOTT LABORATORIES  
APRIL 28-30, 1995  

WELCOME!  

Otterbein College welcomes the 104th Annual Meeting of The Ohio Academy of Science. We invite you to explore our campus and to share in the excitement and challenges represented in this program.

REGISTRATION  

REGISTRATION IS REQUIRED FOR ALL MEETING PRESENTERS AND ATTENDEES. On-site registration will be available at a higher rate. Meals cannot be guaranteed after April 17, 1995.

To assure reservations for banquets, forms must be received by The Ohio Academy of Science by April 17, 1995.

Please use Registration Form on last page. Please send the completed form and fees (payable to The Ohio Academy of Science) by April 17, 1995 to:

OAS Annual Meeting Registration  
P.O. Box 12519  
Columbus OH 43212-0519  
Phone or FAX 614/488-2228

Registration by credit card or purchase order only will be accepted by FAX at 614/488-2228. An acknowledgment will be sent to those preregistered and paid by April 17. Your packets, tickets, and name tag will be ready at the meeting registration desk upon your arrival.

For further information, please call or FAX 614/488-2228.

Friday, April 28 and Saturday, April 29  

Registration will be held in Roush Hall, Fisher Gallery, Otterbein College from 9:00 AM - 5:00 PM. On-site registration is possible by check, VISA, or Mastercard.

PARKING  

Use the Roush Hall, Cowan Hall, Campus Center, and Park Street Parking Lots. There will be no charge.

SMOKING POLICY  

Smoking in buildings is not permitted.

MEALS  

Friday, April 28  

A cafeteria and fast food restaurants are available for breakfast and lunch on and near the Otterbein campus. A list will be available at REGISTRATION.

6:30 PM Science Policy Dinner at The Embassy Suites Hotel. (Reservations required by April 17) - Science Policy Speaker

Saturday, April 29  

Breakfast and lunch are available on campus and at nearby fast food restaurants.

OAS Annual Meeting Banquet at 6:30 PM in Campus Center. (Reservations required by April 17)

HOUSING  

Please contact hotels and motels directly. Listed below are area motels.

HEADQUARTERS HOTEL  

Embassy Suites Hotel  
2700 Corporate Exchange Dr.  
Columbus OH 43231  
614/890-8600

A block of rooms has been reserved at the Embassy Suites Hotel. Embassy Suites room rates are $89.00 single or $99.00 double. The spacious two room suites feature a living room with a queen-sized sofa bed plus a private bedroom. Conveniences include a microwave oven, coffee maker, refrigerator, and wet bar. Guests of the Embassy Suites will be treated to a complimentary breakfast featuring cooked-to-order entrees, fresh fruits, and pastries in the spectacular Atrium. Embassy Suites offers an indoor pool, whirlpool, sauna, and two restaurants. Please make your reservation by calling the Embassy Suites Hotel at (614) 890-8600. Identify yourself as being with The Ohio Academy of Science Annual Meeting to receive this reduced rate (only available until April 14, 1995.)

Other Hotels

<table>
<thead>
<tr>
<th>Hotel Name</th>
<th>Address</th>
<th>Phone Number</th>
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<tr>
<td>Signature Inn</td>
<td>6767 Schrock Hill Ct.</td>
<td>614/890-8111</td>
</tr>
<tr>
<td>Columbus Mariott North</td>
<td>6500 Doubletree Ave.</td>
<td>614/885-1885</td>
</tr>
<tr>
<td>Cross Country Inn - Westerville</td>
<td>909 S. State St.</td>
<td>614/890-1244</td>
</tr>
<tr>
<td>Motel 6</td>
<td>1289 E. Dublin Granville Rd.</td>
<td>614/846-9860</td>
</tr>
<tr>
<td>Knights Inn - Westerville</td>
<td>I-270 at State Route 3</td>
<td>614/890-0426</td>
</tr>
<tr>
<td>Residence Inn by Mariott - North</td>
<td>6191 Zumstein Dr.</td>
<td>614/431-1819</td>
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Shady Lane Motel
3963 Westerville Rd.
Columbus OH 43224
614/471-2141

Red Roof Inn North
I 71 & Morse Rd.
Columbus OH 43229
614/846-8520

Knights Court Suites
1001 Schrock Rd.
Columbus OH 43229
614/431-0208

Comfort Inn - North
1213 E. Dublin Granville Rd.
Columbus OH 43229
614/885-4334

Days Inn - North
1212 E. Dublin Granville Rd.
Columbus OH 43229
614/885-9696

GENERAL SCHEDULE

Friday, April 28, 1995

8:00AM - 3:00 PM  Registration in the Roush Hall Fisher Gallery

9:00 AM - 12:30 PM Symposium (See abstracts for details)

10:00 AM - noon  Ohio Academy of Science Governing Council Meeting in Roush Hall Room 208

12:00 noon  Lunch - Campus Center

1:00 PM - 5:00 PM  Symposium

5:30 - 6:30 PM  Reception at the Embassy Suites

6:30 PM  Dinner at the Embassy Suites Science Policy Speaker

Saturday, April 29, 1995

8:00 AM - 2:00 PM  Registration in Roush Hall, Fisher Gallery

8:00 AM - 9:00 AM  Past Presidents' Breakfast, Campus Center

9:00 AM - 11:00 AM  Morning poster and podium presentations

11:15 AM  ALL ACADEMY LECTURE Riley Auditorium, Battelle Hall

How Do Cells say 'Hello' - A Study of Lectin-Carbohydrate Recognition

Dr. Marilynn E. Etzler
The University of California, Davis

Dr. Marilynn E. Etzler, a 1962 graduate of Otterbein College currently is Professor of Biochemistry at The University of California, Davis. She received both B.S. and B.A. degrees from Otterbein in 1962 and a Ph.D. in biology in 1977 from Washington University, St. Louis. She was a postdoctoral student at Columbia University College of Physicians & Surgeons, New York, from 1967-68.

Her research interests include plant lectins including structure-function relationships; distribution, biosynthesis, and physiological role; intercellular targeting of proteins; and regulation of gene expression. Dr. Etzler is a member of the American Society for Biological Chemistry and Molecular Biology, American Society for Cell Biology, American Society of Plant Physiologists, the Society of Protein Chemists, The Society of Complex Carbohydrates, and the American Association for the Advancement of Science.

Dr. Etzler has served on NSF and NIH panels and since 1982 has been a member of the Editorial Board of Plant Physiology.

She has received over $1.25 Million in grants from NIH, NSF and other sources and is the author or coauthor of more than 60 publications. The legume, *Dolichos biflorus*, is her favorite research model.
PRESIDENT’S ADDRESS

A Cavalcade of Maps

DR. RONALD L. STUCKEY
The Ohio State University
Columbus, Ohio

DR. RONALD L. STUCKEY, Ohio State University Professor Emeritus of Botany, is President of The Ohio Academy of Science for 1994-1995. Since 1963 he has actively participated in the Academy’s Annual Meetings by presenting papers and organizing sessions for Plant Sciences and for its past History of Science meetings (1966-1979). He has contributed articles, obituaries, and book reviews to The Ohio Journal of Science and coauthored a chapter in the Academy’s book, Ohio’s Natural Heritage. A commitment to leadership in the Academy is exemplified by his serving as Archivist-Historian (1967-present); Membership Chairman (1976-1977), and Vice-President (1977-1978) of Plant Sciences; Associate Editor, The Ohio Journal of Science (1982-1984); and Chair of the Necrology Committee (1992-present).

The Crawford County, Ohio native earned a B.S. cum laude (1960) in Biology from Heidelberg College, Tiffin, Ohio; and a M.A. (1962) and Ph.D. (1965) in Botany from The University of Michigan, Ann Arbor. From 1965 to 1991, he served as Professor of Botany in The Ohio State University, Columbus, where he taught courses in General Botany, Local Flora, Aquatic Flowering Plants, and Botanical Nomenclature.

As a researcher, Professor Stuckey is a recognized international authority on the identification and geographical distribution of aquatic and wetland plants in North America. He has also written extensively on the history of botanical exploration of the nineteenth century in eastern North America. After 26 years of teaching he became Professor Emeritus of Botany (1 September 1991), and continues his research and writing in botany at the University. Stuckey’s other intellectual pursuits are photographing and writing about bluegrass musicians.

Ron’s first involvement with the Academy occurred in 1959, when he attended the Annual Meeting at Capital University, Bexley, Ohio. His botany professor, Dr. Percy L. Lilly at Heidelberg College, took him to the meeting, and the following spring, while still an undergraduate, he joined the Academy, affiliating with Section B, Plant Sciences. This was the first professional scientific organization that Stuckey joined.

Since 1963, Dr. Stuckey has attended all of the Academy Annual Meetings except for those in 1985 and 1986 because of illness. His first paper, “The John Samples collection of vascular plants from the lower south-western Ohio (1836-1840),” was presented in 1963 at the Annual Meeting at Central State College, Wilberforce. Through 1994 Stuckey has contributed 38 papers at past meetings. The breadth and diversity of his research are reflected in these papers, focusing on aquatic and terrestrial plants, rare plants, history of botany, botanical biographies, and botanical bibliography.

For the 100th Annual Meeting Stuckey organized and presided at the Centennial Symposium, “100 or More Years of Changes in Ohio Flora and Vegetation,” held at The Ohio State University, Columbus (1991). From 1966 to 1987 Stuckey participated in 11 Academy field trips, serving as a co-leader in 1968 and 1977.

Ron’s membership on the History of Science Committee (1966-1979) and his continuous leadership as Historian-Archivist (1967-present) reveal his keen interest in preserving documents and recording the history of science, especially in botany. In this context he was influential in the development of the History of Science Meetings, held separate from the Academy’s Annual Meetings.

Among Stuckey’s botanical research interests when he joined the faculty in 1965 at The Ohio State University, Columbus, was the flora of Ohio, and he became a member of the Academy’s Ohio Flora Committee (1965). This Committee, organized under the leadership and its first chairperson, E. Lucy Braun, was established in 1951 for the preparation and publication of a definitive, illustrated vascular plant flora of Ohio by the taxonomic botanists of Ohio. While Curator of the Herbarium at The Ohio State University (1967-1976), Stuckey and his students contributed published papers and added many plant specimens as vouchers for the flora. Stuckey has been closely associated with work on this flora project (Meyer 1983), by reviewing manuscripts and publishing a review of a Flora Project publication on the Asteraceae (Stuckey 1993).

Stuckey has written 44 articles and obituaries, in addition to 18 book reviews in The Ohio Journal of Science from 1964 to 1993. Ronald L. Stuckey’s dedicated and continued service to The Ohio Academy of Science has been recognized with special honors. In 1968 he was elected a Fellow of the Academy. He received three grants from the Academy to assist his students with research on aquatic vascular plants (1967, 1970, and 1976). Very special honors were conferred during the Academy’s 100th anniversary, when along with 24 other distinguished members, and one of two botanists, Stuckey was named Centennial Honoree by The Ohio Academy of Science Centennial Celebration Commission.

As he continues his presidency, Stuckey said, “the major goals of the Academy are to increase membership, to organize and select a chairperson and members to serve on the newly approved Ohio Academy of Science Development Council, and to foster the development of the recently established Senior Academy.”

Dr. Stuckey’s strong commitment to education, research and science in his home state of Ohio and numerous years of cooperation with scientists and active citizens will promote a vision in continuing the mission of The Ohio Academy of Science. -- Adapted from an article submitted to the Academy by William R. Burk, a member and librarian in the Department of Biology Library, University of North Carolina, CB#3280 Coker Hall, Chapel Hill, NC 27599-3280.

Sunday, April 30, 1995

8:00 AM Geology Field Trip - see page 8
8:30 AM Plant Sciences Field Trip - see page 8

Special Acknowledgment

The Ohio Academy of Science and Otterbein College express their appreciation to the Ross Products Division of Abbott Laboratories for partial support of this meeting.

LOCAL ARRANGEMENTS COMMITTEE

Co-Chairs
Patricia A. Frick, Ph.D.
Vice President for Academic Affairs
Otterbein College
OUR HOST:
ACADEMIC HIGHLIGHTS OF
OTTERBEIN COLLEGE

Otterbein College, founded in 1847, is a private, independent, coeducational four-year liberal arts institution affiliated with the United Methodist Church. Conveniently situated in the heart of Ohio, Otterbein is located in Westerville, a quiet but growing suburb of Columbus.

The picturesque 137-acre campus at Otterbein includes 43 buildings. The College's newest facility, Edwin L. and Mary Louise Roush Hall was dedicated in June, 1993. Roush Hall is the first general purpose academic facility built on the Otterbein campus since historic Towers Hall was constructed in 1872. The 65,000-square-foot building houses academic departments, multimedia classrooms, contemporary conference rooms, a computer center, a public art gallery, Battelle Computer Center, and administrative offices.

Other facilities on campus include the Courtright Memorial Library which houses more than 200,000 volumes and 1,000 periodicals as well as an outstanding learning resource center and television studio. Scheur-McFadden Science Hall has modern laboratories and classrooms as well as the Weitkamp Planetarium/Observatory. Cowan Hall houses theatre facilities, including an expanded scene shop and WOBN-FM, the campus radio station. Battelle Fine Arts Center is the home for programs in music, art and dance. Towers Hall houses classrooms and student computer labs. The Rike Physical Education-Recreation Center houses the athletic and physical education facilities and offices.

About 2,600 students from Ohio, neighboring states and several foreign countries attend Otterbein including about 900 adult students in day, evening and weekend classes. The student-faculty ratio is 13-1 with more than 63 percent of the faculty holding doctorates or appropriate terminal degrees. Professors are active in campus affairs, serve as advisors to students and participate in a unique sabbatical program to research and study recent developments in their fields.

The College offers majors in 36 different fields of study and individualized majors are also available. Two master's degree programs in education were established in 1989 and a master's degree program in nursing began in 1993. Over the last several years, Otterbein has also developed an outstanding Continuing Studies program for the non-traditional student.

From its innovative career planning programs to its award winning equine team, nationally ranked basketball team and recognized theatre and music programs, Otterbein College has kept pace with the educational demands of today while maintaining its commitment to a quality liberal arts education in the Christian tradition.

OUR CO-HOST:
ROSS PRODUCTS DIVISION OF
ABBOTT LABORATORIES

Ross Products Division of Abbott Laboratories is committed to providing superior, cost-effective health care products that improve the quality of life worldwide. With such long-standing products as Similac, Isomil, and Ensure and at its business base, Ross serves as the U.S. market leader in pediatric nutritionals and a world leader in adult nutritionals. Pediatric pharmaceuticals and consumer products complete the Ross business mix. Established in 1903 and headquartered in Columbus, Ohio, Ross employs about 5000 people nationwide and has plant operations in Columbus, Ohio; Casa Grande, Arizona; Sturgis, Michigan; and Altavista, Virginia.

WORKSHOPS & SYMPOSIA
Friday, April 28, 1995

INTERNET WORKSHOPS
(Sessions will be repeated on Saturday, April 29, 1995)
MUST BE PRE-REGISTERED
Arranged by: PAUL MULLINS, Youngstown State University

I - BASIC INTERNET TOOLS: E-MAIL AND USENET
1:00 PM, Friday, April 28, 1995
Roush Hall Room 015
RICK WIGGENS, The University of Akron

This workshop will include information on the following:
- Personal, one-to-one communication vs. broadcast, Mail
- ing lists vs. e-mail and Usenet, how to: subscribe, unsubscribe, "post"
- Problem resolution: can't receive mail, got a "bounce" message, finding someone's e-mail address, Privacy issues: on your host and in transit, Local (dial-up) Bulletin boards vs. Usenet

Includes 30 minutes for lab time

II - SURFING THE INTERNET
2:30 PM, Friday, April 28, 1995
Roush Hall Room 015
TOM KLINGLER, The University of Akron

This workshop will include information on the following:
- Gopher Space and the World Wide Web (WWW), Static information resource vs. dynamic nature of Usenet, Links between gopher/WWW and Usenet (includes Usenet), Go-
Malacology in Ohio, by Ohio malacologists, has a long history beginning with the studies of Dr. Victor Sterki (1846-1933), a physician in New Philadelphia and leading to the many professional and amateur malacologists that reside in the state today. Malacologists in the state have studied and continue to study the marine members of this phylum, fossil molluscs, and the extant freshwater and land Mollusca that were once so very common in the waters and forests of Ohio but have suffered such recent and massive declines. This workshop will include information on the following:

- Intended for folks that have been using e-mail, useenet, gopher, etc., Host-to-Host sessions, Telnet, rlogin, tn3270, etc., Terminal Emulation, terminal capabilities (VT100), Accessing a host through a commercial Internet provider, File transfers: FTP, ASCII vs. EBCDIC vs. binary, Basic commands, Typical session
- No lab session scheduled.

**OHIO MALACOLOGY: PAST, PRESENT, AND FUTURE**

9:00 AM, Friday, April 28, 1995
Roush Hall Room 117/118
Arranged by: Dr. Michael A. Hoggarth, Otterbein College

Malacology in Ohio, by Ohio malacologists, has a long history beginning with the studies of Dr. Victor Sterki (1846-1933), a physician in New Philadelphia and leading to the many professional and amateur malacologists that reside in the state today. Malacologists in the state have studied and continue to study the marine members of this phylum, fossil molluscs, and the extant freshwater and land Mollusca that were once so very common in the waters and forests of Ohio but have suffered such recent and massive declines. This workshop will examine the roots of malacology in Ohio, the work of Ohio’s current malacologists, and set some direction for studies of Ohio’s Mollusca.

Participants include: Dr. David H. Stansbery, Curator, Museum of Zoology, The Ohio State University, Museum of Biological Diversity, Dr. Martin K. Huehner, Department of Biology, Hiram College, Dr. David Berg, Department of Zoology, Miami University, Dr. G. Thomas Watters, Aquatic Ecology Laboratory, The Ohio State University, Dr. Alfred J. Bury, Biology Department, University of Dayton, and Dr. Michael A. Hoggarth, Department of Life and Earth Sciences, Otterbein College. Moderator: Dr. Michael A. Hoggarth

**WHAT EVERY ACADEMIC DEAN NEEDS TO KNOW ABOUT SCIENCE EDUCATION**

1:15PM, Friday, April 28, 1995
Roush Hall Room 114
Arranged by: Dr. Patricia A. Frick, Otterbein College

In this interactive session, three chief academic officers will discuss the curricular, budgetary, and planning issues involved in providing science education for the 21st Century for undergraduates at liberal arts colleges and universities. Funding for faculty research and equipment, collaborative and interdisciplinary approaches to the teaching of science, and undergraduate research will be among the topics included in the discussion. Participants include:

- Dr. Patricia A. Frick, VP for Academic Affairs and Dean of Faculty, Otterbein College
- Dr. Kenneth J. Porada, VP for Academic Affairs, Heidelberg College
- Dr. Edward Einer, VP for Academic Affairs and Dean of the Faculty, University of Findlay

**INDUSTRY FOCUS ON PRODUCT DEVELOPMENT TEAMS**

3:00 PM, Friday, April 28, 1995
Roush Hall Room 114
Arranged by: Charles Ingram, Loral Defense Systems

To meet the challenge of today’s global economy, industry continues to explore new concepts for improving efficiency. One such approach is the utilization of integrated product or multi-disciplinary development teams. The effective use of multi-disciplinary teams is the subject of this symposium, which will include the following topics:

- Deming Fundamentals Applied to Multi-disciplinary Teams - Isadore Newman, The University of Akron
- Integrated Team Approach to Product Start-Up at GM - Lynn Gilliland, General Motors Corporation, Defiance
- Cross-training of Integrated Product Teams at Loral Defense Systems - Charles Ingram, Loral, Akron

The Team Approach to the Development of Owens-Corning's MIRAFLEX™ Fiber - David Gaul, Owens-Corning, Granville

**THE WHITE-TAILED DEER PROBLEM IN OHIO**

2:00 PM, Friday, April 28, 1995
Science Bldg. Room 201
Arranged by: James Stahl, Metro Parks

In Ohio in pre-settlement times, there were a modest number of native deer which the native Americans utilized as a necessity for food, clothing, and other products. Ohio, being mostly virgin forest, was not prime habitat for white-tailed deer. Early settlers continued using deer for food and clothing, but the deer population steadily declined in Ohio. By the late 1800's they were officially extirpated from the state. In
the 1900's with changing land use patterns, white-tailed deer slowly started to repopulate Ohio until they reached their present population of approximately 500,000 animals, a record high for historic Ohio. With our diverse habitat of agricultural lands interspersed with brush lands, early successional woodlands, mature forests, urban green islands, and lack of natural predators, Ohio is now perfect deer habitat. This symposium will cover the history of white-tailed deer in Ohio, their natural history and habitat requirements, problems their large population is causing Ohioans, management efforts and goals of the O.D.N.R.'s Division of Wildlife, and management efforts of one urban agency. The Franklin County (Columbus) Metro Parks will discuss what they went through in documenting the problems deer caused, possible solutions that were considered, the public education efforts, the two courses of action actually undertaken, and results and lessons learned from the project. Participants include:

ROBERT STOLL, State of Ohio Division of Wildlife
LARRY PECK, Columbus and Franklin County Metro Parks,
JAMES STAHL, Columbus and Franklin County Metro Parks.
Moderator: JAMES STAHL

FUNDING RESEARCH IN THE 21ST CENTURY
2:00 PM, Friday, April 28, 1995
Science Bldg. Room 208
Arranged by: HELEN CHURELLA and CHRIS CORDLE, Ross Products Division of Abbott Laboratories

This symposium will address the significance of funding in solving technical problems versus social problems, changes and driving forces in Ohio, National research funding patterns, and how greater cooperation among members of the research community would benefit all.

2:10PM Academic Perspective - DR. EDWARD HAYES, VP for Research, The Ohio State University
2:40PM - Industrial Perspective - DR. VICTORIA HAYNES, VP for R&D, The BF Goodrich Company
3:00PM - Research Institute Perspective - DR. JULES DUGA, VP for Sponsored Programs, Battelle Memorial Institute
3:20PM - Coffee Break
3:40PM - Medical Research Perspective -
DR. THOMAS H. MOSS, Dean of Graduate Studies & Research Administration, Case Western Reserve University
4:00PM - State Government Perspective - MR. DON SCOTT, The Ohio Department of Development
4:20PM - Panel Discussion - All speakers
Discussion will focus on new ways to generate funding, alliances to be made to maximize funding, funding priorities, and other ideas.

WORKSHOPS & SYMPOSIA Saturday, April 29, 1995

INTERNET WORKSHOPS
(repeated from Friday, April 28, 1995)
MUST BE PRE-REGISTERED
Arranged by: PAUL MULLINS, Youngstown State University

I - BASIC INTERNET TOOLS: E-MAIL & USENET
See Friday's Listing for information
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II - SURFING THE INTERNET
See Friday's Listing for information
1:30 PM, Saturday, April 29, 1995
Roush Hall Room 015
DEBORAH WHITFIELD, Westminster College

III - SEARCHING THE INTERNET
3:00 PM, Saturday, April 29, 1995
Roush Hall Room 015
PAUL MULLINS, Youngstown State University

This workshop will include information on the following:
For users familiar with Usenet, gopher & WWW, Archie, Veronica, Jughead, Library of Congress, lycos, WWW worm, WAIS, etc., pattern match searches of Usenet
Includes 30 minutes for lab.

RISK VERSUS COMMUNITY VALUES: COMPARATIVE RISK PROJECTS IN OHIO; THE DIOXIN PROBLEM AS AN EXAMPLE
3:00 PM, Saturday, April 29, 1995
Roush Hall Room 117/118
Arranged by: F. JOHN KLUTH, National Machine Company

Setting environmental priorities is challenging because of the fact there are unlimited shareholders affected by environmental problems but severely limited funds to address these problems. Scientific assessment of risk is being balanced against public concerns in comparative risk projects in the State of Ohio. Two of the projects will be discussed. The topic of dioxin will be presented as a sample problem which has generated public concerns.

Participants will include:
MICHELE MORRONE, PH.D., State of Ohio Comparative Risk Project Director,
NORMAN ROBBINS, M.D. PH.D., Director, Center for the Environment, Case Western Reserve University,
F. JOHN KLUTH, OAS Coordinator for Environmental Science and Resource Management.