

## TABLE OF CONTENTS



**89th ANNUAL MEETING**

**APRIL 18,19,20, 1980**

**The University of Toledo**

**and**

**The Medical College of Ohio**

Registration Form . . . . .	1
Map . . . . .	Center Spread
Parking and Registration . . . . .	4
Luncheon and Banquet . . . . .	4
Exhibits and Coffee . . . . .	4
General Meetings . . . . .	4
Special Meetings and Field Trips . . . . .	6
Our Hosts . . . . .	8
Local Section Hosts . . . . .	10

Sectional Meetings

A. Zoology . . . . .	11	K. Genetics & Cell Biology . . . . .	64
B. Plant Sciences . . . . .	17	L. Math & Computer Sciences . . . . .	70
C. Geology . . . . .	29	M. Psychology . . . . .	72
D. Medical Sciences . . . . .	36	N. Junior Academy . . . . .	76
E. Physics & Astronomy . . . . .	47	O. Engineering . . . . .	85
F. Geography . . . . .	47	P. Administrative Science & Planning . . . . .	86
G. Chemistry . . . . .	49	Q. Economics . . . . .	88
H. Science Education . . . . .	52	R. Ecology . . . . .	89
I. Anthropology & Sociology . . . . .	58	S. Information & Library Sciences . . . . .	97
J. Conservation . . . . .	63		

Poster Sessions . . . . .	99
---------------------------	----

Academy Presidents . . . . .	106
Housing and Restaurants . . . . .	108
Index . . . . .	109
Academy Officers . . . . .	Inside Back Cover
Ohio Science Honor Role . . . . .	Back Cover

## Parking

Campus parking is available in the East Ramp Parking Garage and Lots 1 and 2. See center spread map. Watch for signs. A shuttle bus will be available on Saturday afternoon to take meeting participants to and from the Medical College of Ohio. Bus schedule will be posted at the registration desk.

## Registration

Registration is required and will be held in the Lobby of the Engineering-Science Building. The registration desk will be open on Saturday, April 19 from 8 a. m. to 3 p. m.

Members of the Academy are urged to register in advance by returning the registration form at the end of this program. Registrations and meal reservations must be mailed to The Division of Continuing Education, The University of Toledo, Toledo, Ohio 43606. Please mail them in time to reach Toledo by April 16. This will give time to prepare name tags and plan dining arrangements.

An Academy representative will be present in the registration area to accept dues, membership applications, and contributions to The Ohio Academy of Science Endowment Fund.

## Meals

Academy Luncheon (Saturday, April 19, "T" Section of Student Union  
Buffet style. Served from 12:00 - 1:30 p. m. Price: \$4.50)

Academy Banquet (Saturday, April 19, Continuing Education Center  
Buffet at 6:30 p. m. Price: \$8.00)

Visitors without meal reservations may eat off-campus. A list of restaurants is included at the end of this program.

## Housing

Overnight housing must be arranged by the individual. A list of local motels is included at the end of this program.

## Exhibits and Coffee

The work of The Ohio Academy of Science receives the support of many of the state's leading corporations and institutions. Some of these organizations have scientific and educational exhibits that may be viewed near the registration desk. Coffee will also be served.

## General Meetings

Friday, April 18, 1980

- |            |  |
|------------|--|
| 9:00 a. m. | Registration for Junior Academy [See Separate Program]   |
| 12:00 Noon | OAS Executive Committee Luncheon. Continuing Education, Room 12  |
| 1:30 p. m. | OAS Executive Committee Meeting. Continuing Education, Room 11   |
|            | Ohio Biological Survey Executive Committee Meeting. Continuing Education, Room 6   |
| 4:30 p. m. | OAS Fellowship Committee. Continuing Education, Room 6   |
| 6:00 p. m. | Joint Academy Council - OBS Executive Committee Dinner. Continuing Education Dining Room. Advance reservations required. |
| 7:30 p. m. | OBS Advisory Council Meeting. Continuing Education, Room 9 - 10  |
| 8:00 p. m. | OAS Council Meeting. Continuing Education, Room 11 - 12  |

Saturday, April 19, 1980

- 8:00 a. m. - 3:00 p. m. Registration. Lobby of Engineering-Science.  
Exhibits. Lobby of Engineering-Science.  
Poster Sessions. Lobby of Engineering-Science.
- 8:00 a. m. - 5:00 p. m. Sectional Meetings. See specific section.
- 11:00 a. m. - 12:00 Noon All-Academy Lecture. Dana Auditorium, Engineering-Science.  
Introductions: Harold L. Allen, Dean, Graduate School  
The University of Toledo  
Welcome: Glen R. Driscoll, President  
The University of Toledo  
Richard D. Ruppert, President  
Medical College of Ohio  
Address: Harold W. Rice, Vice President  
Video and Audio Services  
American Communications, Inc., RCA  
"Satellite Challenges"
- 12:00 a. m. - 1:30 p. m. All Academy Luncheon Buffet in "T" Section of Student Union.  
Editorial Board, The Ohio Journal of Science.  
Student Union, Room 3016.  
Ohio College Biology Teachers' Conference. Student Union,  
Room 3018.  
Past Presidents' Council Luncheon. Student Union, Room 3020.
- 5:00 p. m. Cash Bar. Lobby of Continuing Education.
- 6:30 p. m. Annual Banquet. Continuing Education Dining Room.  
Toastmaster: Harold L. Allen, Dean, Graduate School  
The University of Toledo  
Greetings: Glen R. Driscoll, President  
The University of Toledo  
Richard D. Ruppert, President  
Medical College of Ohio  
Response: Jerry H. Hubschman, Past President  
The Ohio Academy of Science  
Awards and Recognition  
Presidential Address: "Highlights of a Scientific Career"  
Liberato J. A. DiDio, President  
The Ohio Academy of Science
- 9:00 p. m. Business Meeting: President Liberato J. A. DiDio, Presiding

## Special Meetings & Field Trips

Friday, April 18

- 6:00 p. m. Maumee Bay Boat Trip. Maumee Bay is a shallow embayment of Lake Erie located at the mouth of one of the largest of the Great Lakes tributaries. Lining the shores of the Lower Maumee River are commercial and industrial development of the City of Toledo. Further in the Bay the shoreline becomes residential and agricultural in character. In Maumee Bay waters from the Lower River mix with water from Lake Erie creating a productive ecotone. Limnological measurements and plankton sampling, taken on the field trip, will illustrate the ecotone nature of the Bay. The trip will leave the Law School parking lot, adjacent to the Department of Biology, at 5:30 p. m. and return at approximately 9:00 p. m. Transportation will be by private car, however, carpooling is desirable. The trip will be limited to twenty people. Those wanting to participate should contact Dr. Peter Fraleigh of the Biology Department, The University of Toledo (419) 537-2125.

Saturday, April 19

- 9:00 a. m. Tour of Psychology Laboratories. Members of Psi Chi, the National Honor Society in Psychology, will sponsor a tour of the psychology laboratories on Saturday, April 19. A tour of the departmental, clinical, environmental, perception, and animal laboratories is planned. The tour will include explanations, demonstrations, films, and discussions regarding the variety of research being conducted in the Psychology Department. The public will have the opportunity to participate in demonstration of psychological equipment (e. g. biofeedback; memory drums; computer games; two-way mirrors). The laboratories will be open from 9:00 a. m. to 5:00 p. m. on Saturday. Tours will begin on the hour at 9:00 a. m., 10:00 a. m., 1:00, 2:00, and 3:00 p. m. Enter University Hall from the south side using the second door from the southeast corner of the building. Further directions will be available at the Registration Area.
- 10:00 a. m. The Library and the Classroom: A Workshop on Integrating Library Resources and Instruction. Cooperation between librarians and classroom instructors in the development of assignments requiring library use can result in instructional activities which are informative and stimulating. Library assignments beyond the traditional lecture or tour will be discussed and displayed; procedures (and pitfalls to be avoided) will be emphasized. The workshop is open to all meeting participants and will convene in Room 1009 of the Carlson Library. The workshop is expected to last approximately one hour. Further information may be obtained from Dr. Sharon Rogers of the Carlson Library (419) 537-2822.
- 1:00 p. m. Stranahan Arboretum. The University of Toledo's 47-acre Stranahan Arboretum will be open to visitors; tour guides will be on hand. The Arboretum has two small ponds, a ten-acre old-growth woodlot, and the largest collection of ornamental woody plants in northwestern Ohio. Transportation will be by private car. The Arboretum is ten minute's drive northwest of the University. Proceed north on Secor Road to Central Avenue, west on Central to Talmadge, north on Talmadge to Sylvania Avenue, and west on Sylvania 1.2 miles to Tantara Road on your right.
- 1:30 p. m. Searching the Library with Computers: A Workshop. Automated database searching is a service provided by many academic libraries today. The effectiveness of such searches depends largely upon careful program structuring. Determining the best search strategy for your information needs requires some knowledge of available databases and their organization. Sample programs will be developed; the benefits and limitations of computerized searching will be emphasized. The workshop will last approximately one hour, and will be repeated again at 3:30 p. m. The workshop is open to all meeting participants, and will be held in the Carlson Library at a location to be announced at the meeting registration desk. Further information is available from Dr. Sharon Rogers of Carlson Library (419) 537-2822.
- and  
3:30 p. m.

3:30 p. m. Citation Indexing: A Workshop. The constellation of reference tools developed for citation searches will be explored in depth. The database supporting these tools may be manipulated in a variety of ways; new approaches to the literature result. Comparisons between citation indexes and conventional sources will emphasize the advantages and disadvantages of each. The workshop is open to all meeting participants and will convene in Room 1009 of the Carlson Library. The workshop is expected to last approximately one hour. Further information may be obtained from Dr. Sharon Rogers of the Carlson Library (419) 537-2822.

Sunday, April 20

9:00 a. m. Geology Field Trip. The annual Ohio Academy of Science field trip will leave parking lot #13, just north of the West Ramp and Bowman-Oddy Laboratories at 9:00 a. m. on Sunday, April 20. Transportation will be by private car, however, carpooling is desirable. We should return by 4:00 p. m. Box lunches will be available at an estimated cost of \$3.50 per person. Registration will be available on Friday, April 18 and Saturday, April 19, at The Ohio Academy of Science registration desk.

The trip will proceed into the glaciated terrain of southeastern Michigan. Stops will be made to observe typical proglacial lake features, morainic topography, glaciofluvial features, and hydroseres. Stops are also planned to observe the bedrock of southeastern Michigan.

The Department of Geology Museum in Bowman-Oddy 3049 and the Subsurface Data Center in University Hall 186 will be open during the Saturday session. The museum contains representative collections of minerals and fossils. An operating seismograph recording unit is located in the hallway outside the museum. The Subsurface Data Center houses a large research collection of well cores, well cuttings, well logs, sediment samples, Lake Erie soft sediment cores, and maps. The center makes it easier for governmental agencies, private industry, and universities to more efficiently and effectively utilize known information in studies of Ohio's natural resources.

9:00 a. m. Field Trip to Ottawa National Wildlife Refuge and Crane Creek State Park. This 10,000+ acre collection of wetlands along the Lake Erie shore is the site of high concentrations of migrant water and land birds each spring. Thousands of ducks and geese, nesting bald eagles and great horned owls, hundreds of herons and egrets, and numerous other bird species should be present. If the sun shines, uncommon reptiles such as the fox snake and Blanding's turtle can also be seen. Those wanting to participate should contact Dr. Elliot J. Tramer of the Biology Department, The University of Toledo (419) 537-2451. Transportation will be by private car; carpooling is urged. The refuge is about 30 minute's drive east of the University; directions and further information will be available at the meeting registration desk.

9:00 a. m. Bus Tour of Selected Metropark and Other Natural Areas of Lucas County. The facilities of Wildwood Preserve, Secor and Oak Openings metroparks will be featured. Additionally, the tour will pass through the Irwin and Schwamberger Prairie natural areas. Specifically, the nature centers at Wildwood Preserve and Secor Park, the walking center at Oak Openings and a dunes area at Oak Openings will be visited. In the event that the spring season has progressed rapidly enough, a wildflower walk at Swan Creek metropark may be scheduled. The tour will be adjusted in this event.

The tour will be limited to twenty persons and registration will be available on Friday, April 18 and Saturday, April 19 at the meeting registration desk. Travel will be by University bus and the tour will convene at the southwest entrance of the Bowman-Oddy Laboratory. Persons desiring additional information should contact Dr. Lloyd Jones of the Biology Department, The University of Toledo, Toledo, Ohio 43606 (419) 537-4159.

9:00 a. m. Field Trip to the Oak Openings. The Plant Sciences Section is sponsoring a botanical excursion to Irwin Prairie, Schwamberger Preserve, and to one of the dune areas of Oak Openings Metropolitan Park. These areas are located 12 to 15 miles west and southwest of Toledo. Irwin Prairie is a state nature preserve of 187 acres; Schwamberger Preserve (120 acres) is scheduled to become a state nature preserve; and the Oak Openings Metropolitan Park (3,600 acres) is part of the Toledo Metropolitan Park District. Irwin Prairie is described as a wet prairie; Schwamberger Preserve as a mesic prairie; and the dune area as a sand prairie. The season is early for blooming plants in the Oak Openings, but we can observe the differences in the wet, moist, and dry habitats. Leader: Dr. Nathan William Easterly, Bowling Green State University. Meet at Mallard Lake Pavilion at entrance to Oak Openings near Wilkins Road and Swan Creek Boulevard.

## Our Hosts

### The University of Toledo

A member of the state university system of Ohio since July of 1967, The University of Toledo observed its 100th anniversary in 1972 as one of the nation's major urban universities.

The University had its origin in 1872 with the gift of 160 acres of farmland donated by Jesup W. Scott, a public-spirited Toledo who felt that the city should have a university to train young people for responsible positions in the growing community. Today the original land endowment is the site of the University's Scott Park campus, home of the University Community and Technical College.

In early years the University held classes in various temporary locations. As reflected in its first name — Toledo University of Arts and Trades — courses were initially concentrated in architecture, painting and manual training.

The first academic expansion came in 1904 when the University became affiliated with the Toledo Medical College and established a college of pharmacy. Affiliation with the Toledo YMCA College of Law followed in 1909. Other colleges — education, commerce and industrial science — were formed in the next decade.

A municipal institution for 84 years, the University's greatest period of growth dates from 1928. In that year Toledoans voted a bond issue for the development of a modern new campus and the construction of the first two buildings — University Hall and the Field House. Occupied in 1931, the original campus has since been expanded to more than 200 acres with 30 major collegiate structures. Situated in one of Toledo's finest residential areas, the campus provides a suburban atmosphere, yet remains an integral part of the civic, cultural and commercial life of the city.



The campus has undergone extensive expansion and improvement in recent years. Completed in 1976 were the 9,000-seat Centennial Hall multipurpose activities center and a new Performing Arts Center. A new Continuing Education Center was opened in 1978.

Glen R. Driscoll, previously chancellor of the University of Missouri-St. Louis, became the eleventh president of the University in 1972. The University is engaged in a 10-year, \$10,500,000 Centennial Development Program directed toward the achievement of a "margin of excellence" in education not attainable from basic fees and state-appropriated funds alone.

Projects wholly or partially funded through the Centennial Development Program include Centennial Hall; endowment funds for fellowship and scholarship support, for research and instructional equipment, and for additional library resources; and erection of the Continuing Education Center.

Opened in 1969, the University Community and Technical College Scott Park campus is located 1 1/2 miles southeast of the main campus. Its facilities include six major classroom and laboratory structures and a Student Center, completed in 1975.

The University also maintains the R. A. Stranahan (Sr.) Arboretum, a 47-acre site northwest of the main campus which was given to the University in 1964 in memory of the late Toledo industrialist and civic leader. The Arboretum serves as a natural laboratory for studies in botany, ecology and medicinal plantlife.

#### The Medical College of Ohio

The Medical College of Ohio, the 100th medical school in the nation and the only free-standing medical college in Ohio, was established by the Ohio Legislature in 1964. The charter class of 32 candidates for the M.D. degree entered in 1969. Class size effective in September 1980 will be 150.

In addition to the M.D. degree, MCO grants a Ph.D. in Medical Sciences. Because of its proximity to The University of Toledo and Bowling Green State University, MCO has played a leading role in planning, implementing and regionalizing community college nursing and allied health programs. Since 1971, nursing education leading to a baccalaureate degree has been provided by MCO in conjunction with UT and BGSU.

Graduate medical education is furnished in cooperation with five Toledo community hospitals. Residency programs are under the direction of the Medical College of Ohio clinical department chairmen of anesthesia, dentistry, family medicine, medicine, neurosciences, obstetrics-gynecology, pathology, pediatrics, psychiatry, radiology and surgery. Programs in continued medical education are offered by MCO for doctors, nurses, and allied health technologists.

The MCO campus at 3000 Arlington in South Toledo includes five buildings: the Raymon Mulford Library/Administration building, Health Science, Health Education, the Hospital Support center and a new 258-bed MCO Hospital. A sixth building on the 250-acre site, the rehabilitation center and clinical office facility, is scheduled to open in the summer of 1980.



## Local Section Hosts

Dr. Harold L. Allen, Chairman  
Dean of Graduate School  
The University of Toledo

<u>Section</u>	<u>Local Host</u>	<u>Department</u>
A. Zoology	Dr. Harold L. Shaffer	Biology
B. Plant Sciences	Dr. Lloyd A. Jones	Biology
C. Geology	Dr. Mark J. Camp	Geology
D. Medical Sciences	Dr. Delmas J. Allen	Medical College of Ohio
E. Physics & Astronomy	Dr. Adolf N. Witt	Physics & Astronomy
F. Geography	Dr. Larry A. Hoffman	Geography and Urban Planning
G. Chemistry	Dr. Gordon A. Parker	Chemistry
H. Science Education	Dr. Jerry L. Underfer	Elementary Education
I. Anthropology & Sociology	Dr. Steven B. McConnell	Sociology, Anthropology, & Social Work
J. Conservation	Dr. Peter C. Fraleigh	Biology
K. Genetics and Cell Biology	Dr. Louis Glatzer	Biology
L. Mathematics & Computer Science	Dr. Paul Shields	Mathematics
M. Psychology	Dr. Robert A. Haaf	Psychology
N. Junior Academy	Dr. Harold L. Allen Dr. Richard A. Crofts	Graduate School
O. Engineering	Dr. James B. Farison	Electrical Engineering
P. Administrative Sciences and Planning	Dr. Richard T. Rudduck	Management
Q. Economics	Dr. Henry G. Rennie	Economics
R. Ecology	Dr. Elliot J. Tramer	Biology
S. Information & Library Sciences	Dr. Sharon J. Rogers	Carlson Library

### Other Resource Personnel

Mrs. Patricia A. Hite Associate Dean	Continuing Education
Mr. Fred Mollenkopf	Public Information