

OKLAHOMA ACADEMY OF SCIENCE
OFFICE of EXECUTIVE SECRETARY - TREASURER
P.O. Box 701915 Tulsa, OK 74170-1915

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**Official Program
of the
82nd Annual Meeting**

**OKLAHOMA
ACADEMY of SCIENCE**

Affiliated with the
American Association for the Advancement of Science



**November 12, 1993
East Central University
Ada, Oklahoma**

Official Program - \$1.00

OKLAHOMA ACADEMY OF SCIENCE

Established in 1909

The purpose of the Academy shall be to stimulate scientific research; to promote fraternal relationship among those engaged in scientific work in Oklahoma; to diffuse among the citizens of the State a knowledge of the various departments of science; and to investigate and make known the material, educational and other resources of the State.

From Article I, Section 2 of the Constitution

Activities of the Oklahoma Academy of Science

1. Publication of the Proceedings and Annals of the Oklahoma Academy of Science and Transactions of the Oklahoma Junior Academy of Science.
2. Host annual fall meeting for presentation of scientific papers.
3. Sponsor symposia on selected topics of vital interest to the State.
4. Arrange spring and fall field meetings in various State floral and faunal habitats.
5. Coordinate the Junior Academy of Science activities.
6. Supervise Collegiate Academy of Science activities.
7. Provide research grant funds for outstanding research proposals submitted by State secondary and undergraduate college students.
8. Provide science consultation services to governmental and private agencies.

82nd ANNUAL TECHNICAL MEETING
OKLAHOMA ACADEMY OF SCIENCE
EAST CENTRAL UNIVERSITY

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**EIGHTY-SECOND ANNUAL
FALL TECHNICAL MEETING
Oklahoma Academy of Science**

Program Summary

Thursday, 11 November 1993

6:30 p.m.

Executive Council Dinner and Meeting, Oklahoma Room
Student Union

Friday, 12 November 1993

7:30 a.m. - 3 p.m.

Registration for Technical Meeting, Physical & Environmental
Sciences, Mezzanine

7:30 a.m. - 11 a.m.

Registration for Junior Academy Research Workshop,
Science Hall Mezzanine

8 a.m. - 9 a.m.

Committee Meetings

9 a.m. - 11:15 a.m.

Concurrent Scientific Sessions

11:15 a.m. - 12 noon

OAS Annual Business Meeting, Cameron Theater
All OAS members are encouraged to attend.

12 noon - 1:15 p.m.

OAS Banquet, Student Union Ballroom
Speaker: TBA
Presentation of 1993 OAS Meritorious Service to Science in
Oklahoma Awards
Individual:
Organization:

1:30 p.m. - 5 p.m.

Concurrent Scientific Sessions

ACADEMY NAME BADGES

An OAS name badge, obtained by registering, is required for all individuals attending Academy workshops, meetings, and banquet. All presenters must register and wear badges.

MEETING ROOMS

The Oklahoma Junior Academy of Science Research workshop will be held in The Science Hall. All other OAS sessions, including the Posters, will be held as indicated in the sectional program listings. Any changes or special announcements will be posted in the Registration area.

EN-20460/25

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GENERAL INFORMATION

Parking: East Central University OAS parking is located at the East end of Main Street. Turn left in front of the old Science Hall, park in either of the parking lots located to the west of the new Physical/Environmental Building or to the north of the new Physical/Environmental Science Building.

Place parking permit on dash or window on driver side of vehicle. Busses may unload at the end of Main Street in front of the old Science Hall. Busses are to park in the parking lot designated on the map at Norris Field (FOOTBALL Parking Lot). See map!

Pre-Registration: Individuals who have pre-registered can obtain their registration packets at the Registration Desk. The registration desk will be located in the Physical/Environmental Science Building Mezzanine.

On-site Registration: On-site registration fees: OAS members - \$10.00; Guests - \$15.00; Students - \$5.00; Banquet (if tickets available) - \$12.00.

1993 and 1994 Dues are Payable: The OAS registration desk will accept dues payments. Professional Dues - \$25.00; Student Dues - \$5.00; Family Memberships - \$30.00; Sustaining Memberships - \$100.00; Library Memberships - \$27.50; Lifetime Memberships - \$300.00

Academy Business Meeting: The 82nd Annual Business Meeting of the Oklahoma Academy of Science will be held in the Dorothy Summers Theater (see program summary). All OAS members are encouraged to attend.

Academy and Award Banquet: The annual banquet will be held at noon Friday in the Student Union Ballroom. There will be a speaker and special awards presentation.

Guidelines for paper publication: Papers may be published in the Proceedings of the Oklahoma Academy of Science, subject to editorial policies (P.O.A.S. 72:78-87, 1989) and review of the Editorial Board. Manuscripts (an original and two copies) should be mailed to: Professor Franklin R. Leach, Editor, P.O.A.S., Dept. of Biochemistry, Oklahoma State University, Stillwater, OK 74078. Manuscripts received after December 15 will be accepted for publication the following year. OAS members can expect an average charge of \$30 to \$35 per page.

Executive Secretary-Treasurer: Inquiries concerning the OAS should be directed to the Executive Secretary-Treasurer, P.O. Box 701915, Tulsa, OK 74170-1915.

Membership: Membership application forms will be available at the registration desk and/or by contacting the Executive Secretary-Treasurer at the above address.

Refreshments: will be served only in designated rooms in the P & ES Building from 8:00 to 10:30 a.m. and 2:30 to 3:30 p.m. for OAS technical meeting registrants. Refreshments for the OJAS participants will be available in the OJAS registration area in Science Hall Mezzanine.

EN-17295/13

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by lcpm

Motels: The headquarters hotel for the 82nd OAS Annual Meeting is the Holiday Inn of Ada, 400 NE Richardson Bypass, (405) 332-9000. Call for rates and inform the desk that you will be attending the OAS meetings at East Central University.

Several other fine motels are located even closer to ECU:

Indian Hills Motel	1017 N. Broadway	(405) 332-3883
Raintree Motor Inn	1100 N. Mississippi	(405) 332-6262
Silver Spur Motel	1900 N. Broadway	(405) 436-3310
Trellis Motel	1115 N. Broadway	(405) 332-4995
Village Inn Motel	1121 Craddock Rd.	(405) 332-4000

When calling these motels for reservations, inform the desk you will be attending the OAS meeting at ECU.

Assistance or Information: Look for individuals with OAS staff badges. Persons wearing these badges are members of the ECU community and will assist you in any way they can.

Name Badges: Name badges, provided upon registration, must be worn by all individuals attending Academy Sectional Scientific Sessions, the business meeting and banquet. Without a registration name badge, you will be asked to leave. Should you lose your badge, please see about a replacement at the registration desk.

Official Programs: Bring this program with you. Additional copies will be available at the registration desk for \$1.00.

1994 Spring Field Meetings: The 1994 Spring Field Meeting is scheduled for April 29-30 and May 1 at Cross Point Methodist Camp on Lake Texoma. Dr. Connie Taylor, Southeastern Oklahoma State University, (405) 924-8121, is in charge of arrangements for this meeting. Mark these dates on your calendar. If you have any suggestions for field trips or questions about facilities, call Connie.

No Smoking: Please, no smoking in any of the buildings on campus. Thank you. Also, food or drink is not permitted in any meeting room in the Physical Science/Environmental Science Building.

SECTION A - BIOLOGICAL SCIENCES: BOTANY

P & ES 130

Moderator: Connie Taylor

- | | |
|-------|---|
| 9:00* | The olfactory response of the parasitoid <i>Dacnusa</i> spp. to the odor of plants and aphid-plant complexes. Shin Tan, ORU. |
| 9:15 | Screening of Actinomyces that can produce herbicidal and fungicidal compounds. M.A.B. Malik & Cleoide Watson, III, Langston U. |
| 9:30 | Characterization and function of TAL-18, and aluminum-induced proteins in wheat. Rocio Cruz-Ortega & James Ombry, OSU. |
| 9:45 | Botanizing in China - Part 1. Ronald J. Tyrl, OSU. |
| 10:00 | Botanizing in China - Part 2. Ronald J. Tyrl, OSU. |
| 10:15 | Break |
| 10:30 | Wetland plant communities of western Oklahoma. Bruce Hoagland, Okla. Biol. Survey. |
| 10:45 | Bryophyte Communities at Beebler Seeps. Susanne Kallister & Susan Studlar, OSU. |
| 11:00 | Seasonal changes in plant community composition in a little bluestem-dominated prairie at the UCO Research Area, Arcadia Lake. Gloria Caddell, UCO. |
| 11:15 | Biological Sciences Section Meeting (P & ES 106) |
| 11:30 | OAS Business Meeting (Dorothy Sumner Theater) |
| 12:00 | Banquet & Awards Luncheon (Student Union Ballroom) |
| | Moderator: Gloria Caddell |
| 1:30 | A pre-Columbian Kelto-Irish trader on the Cimarron River. Troy Dorrie, OSU. |
| 1:45 | Plants Involving Oklahoma. Connie Taylor, SEOSU. |
| 2:00 | A preliminary analysis of the western North American flora. Michael Palmer, OSU. |
| 2:15 | Flora of North America update - volume 1 & 2. Rahmona Thompson, ECU. |
| 2:30 | Meeting: Flora of Oklahoma. |

SECTION A - BIOLOGICAL SCIENCES: ZOOLOGY

P & ES 106

Moderator: Nicholas J. Chaper

- 8:30* Observations of the mating behavior of the desert tortoise (*Xerobates agassizii*) at the Tulsa Zoological Park. Sarah E. Myer, ORU.
- 8:45* Notes on the biology of the Central American lizard *Scoloporus mulachticus*. Donna Stewart, Phillips U.
- 9:00 Computer generated animations and the behavioral ecology of snakes. Paul A. Shipman & Stanley F. Fox, OSU.
- 9:15 Life after tail loss: survival, growth, and reproduction in the lizard *Uta stansburiana*. Stanley F. Fox & John K. McCoy, OSU.
- 9:30 Proximate causation of "stealthy" behavior in yearling male collared lizards: an ongoing field study. Mark A. Moore & Troy A. Baird, UCO.
- 9:45 Break

Moderator: Jeff Black

- 10:00 Average arrival and departure dates for selected breeding birds in southwestern Oklahoma, 1938-92. Jack Tyler, Cameron U.
- 10:15 A new interspecific feeding association between two Caribbean fishes: evaluation of foraging consequences. Troy A. Baird, UCO.
- 10:30 Bat rabies in Oklahoma. William Cairre, UCO.
- 10:45 The use of radar (MEXRAD) to monitor Mexican free-tail bat exit flights in Oklahoma. William Cairre, UCO & Michael L. Branstet, US Natl. Weather Service.
- 11:00 Ecology of an endangered mussel. Caryn Vaughn, Okla. Biol. Survey.
- 11:15 Biological Sciences Section Meeting (P & ES 106)
- 11:30 OAS Business Meeting (Dorothy Summers Theater)
- 12:00 Banquet & Awards Luncheon (Student Union Ballroom)

Moderator: David Bass

- 1:30 Species composition and distribution patterns of macroinvertebrates in a tall grass prairie stream system. David Bass, UCO.
- 1:45 Downstream drift of aquatic insects in the Blue River. Margaret Matzinger, Rose State College & David Bass, UCO.
- 2:00 Application of island biogeography theory to temporary pools in eastern Oklahoma. Ferrellia Carey & David Bass, UCO.
- 2:15 Patterns of distribution and abundance in a guild of benthic Oark fishes. Christopher M. Taylor, Okla. Biol. Survey.
- 2:30 Impact of Lake Tenkiller on downstream fishery communities. Jimmie Pigg, Okla. Dept. of Envir. Qual.
- 3:00 Seasonal variation of fish assemblages in the Cottonwood River (Chase Co., KS). Linda Fuseller, Murray State

SECTION B: GEOLOGY
P & ES 154

MORNING SESSION: MODERATOR: LYMAN WILLIAMS, PU

- 8:30 Sequence Stratigraphy and Conodont Biofacies of the Admire Group in Southern Kansas and Northern Oklahoma. Bradley Vann, OSU
- 8:45 Teaching Evolution Using General Systems Theory. Dr. Vernon Scott, OSU.
- 9:00 Marine Condensed Sections in Late Carboniferous and Early Permian Strata. Dr. Darwin Boardman II, OSU.
- 9:15 Ancient Life in Oklahoma: Bringing Paleontology to the Classroom. Dorene Recker, OSU.
- 9:30 Morrowan Pressure Regime in the Anadarko Basin. Jim Puckette, OSU.
- 9:45 Strike Slip Movement During the Deformation Stage of the Southern Oklahoma Anlacogen. Ibrahim Cemen, OSU.
- 9:45 BREAK
- 10:00 Use of Computers in Geological Education. Tim Walsh, OSU.
- 10:15 Ovoid Alkali Feldspars in the Mount Scott Granite, Wichita Mountains, Oklahoma. Jonathon D. Price, John P. Hogan, M. Charles Gilbert, OU.
- 10:30 Orbicular Granites, Wichita Mountains, Oklahoma. John P. Hogan, Tom Dewers, M. Charles Gilbert, OU.
- 10:45
- 11:00 Business Meeting, Section A: Physical and Environmental Science Center 154
- 11:15 OAS Annual Business meeting, Science Hall, Dorothy Summers Theater.

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SECTION B: GEOLOGY
P & ES 154

AFTERNOON SESSION: MODERATOR: DR. DARWIN BOARDMAN II, OSU

- 1:30 Facies Analyses of the Pennsylvanian Cottage Grove Sandstone ("Osage/Layton Sand") - Conoco 33-5 Well, East Newkirk Field, Kay County, Oklahoma. James R. Chaplin, Oklahoma Geological Survey.
- 1:45
- 2:00 A Land Apart - The Geology and Ecology of New Zealand: Perspectives of an Oklahoma Geologist. Neil H. Suneson, Oklahoma Geological Survey.
- 3:00 (Note: All OAS attendees are invited to this presentation, which is to be an overview told by photographic slides. It will be informative and enjoyable.)
- 3:00 Staff Development Workshop: Student Field Activities for 5th through 12th grade science teachers in the Ada School District and surrounding School Districts. Lyman O. Williams, Phillips U.; Darwin Boardman II, OSU; Charles Belcher, Henryetta Public Schools; and Paul Greer, Edmund Public Schools.
- 6:30 [All participants please meet in Physical and Environmental Science Center Mezzanine-registration area.]

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SECTION C: PHYSICAL SCIENCES
 PHYSICAL AND ENVIRONMENTAL SCIENCES BUILDING ROOM 156
 MORNING SESSION: MODERATOR: GEORGE GORIN, OSU

SYMPOSIUM ON TEACHING CHEMISTRY IN OKLAHOMA HIGH SCHOOLS

8:55 Introductory Remarks.

- 9:00 Laboratory based instruction: Theoretical considerations.
 Michael R. Abraham, OU
 9:15 Laboratory based instruction: Practical considerations.
 William F. Norman, H.S.
 9:30 Chemistry in Oklahoma High Schools and the Oklahoma
 School of Science and Mathematics. Charles M. Roberts, OSSM
 10:00 Break
 10:15 "ChemSource": A resource for high school teachers.
 John I. Geider, OSU

- 10:30 Periodic Table: Is there a way out of the column label
 morass? Ann E. Ratcliffe, OSU
 10:45 Some statistics concerning the teaching of chemistry in
 Oklahoma high schools. George Gorin, OSU
 11:15 Section Business Meeting P & ES 156
 11:30 OAS Business Meeting, Science Hall, Dorothy Summers
 Theater.
 12:00 All Academy Banquet and Awards: Student Union Ballroom

AFTERNOON SESSION: MODERATOR: J. S. MEYER, SGC

- 1:30 Calculation of the line strength for a $2\Sigma^+ \rightarrow 2\Sigma^+$ two-photon transition in
 a diatomic molecule, John A. Guthrie and Joshua B. Halpern, UCO
 1:45 An exactly solvable non-linear classical model of the electron, Weldon J.
 Wilson, UCO
 2:00 Business meeting, Section C: election of vice-chair
 2:15 Gravitational wave dispersion using the Maxwellian form of linearized grav-
 ity, *Paul A. Wells, Sr., UCO
 2:30 Determination of the lipid content of soils by extraction of methylene chlo-
 ride, *Lori D. Calhoun, ECU
 2:45 Spherical surfaces under stress: a study utilizing Newton's rings, *Shanon
 I. Freeman, *John P. King, ECU

Note: An asterisk preceding the author's name indicates a paper submitted
 under the aegis of the Collegiate Academy.

- 3:00 Round Table Discussion. P & ES 156

SUPPORTING THE TEACHING OF CHEMISTRY IN OKLAHOMA HIGH SCHOOLS
 MODERATOR: ANN E. MALLEY, CAMERON UNIVERSITY

Several teachers have been invited by the Oklahoma Section
 of the American Chemical Society to take part in this
 discussion. This session is open to all persons who are
 interested

SECTION D: SOCIAL SCIENCE
 AFTERNOON SESSION: MODERATOR: LOIS ALBERT, OU
 P & ES 218

- 2:15 The Norman site (34WG2): A mound site in Wagoner County.
 Lois E. Albert, OU
 2:30 What would a conservative welfare state look like?
 Thomas D. Watts, UT-Arlington
 2:45 Section Business Meeting (Elect a vice-chair for 1994.)

MORNING SESSION: SECTION E: SCIENCE EDUCATION
 MODERATOR: JOE D. FERGUSON, MADILL SCHOOLS
 P & ES 123

- 9:00 Active student participation in critical thinking with
 a broad perspective: The deer overpopulation problem.
 Duane Thurman, Oral Roberts University
 9:15 Development of title III supported science laboratories.
 Dale A. Williams, St Cloud University, MN.
 9:30 A teacher's response to rapidly changing school reforms.
 David Lollis, Norman, Oklahoma
 9:45 Dinosaurs live with humans and other pseudoscience beliefs.
 Bruce Stewart, Angela Eddy and Tracey Eddy, Murray S.C.
 10:00 Coffee Break
 10:15 Panel Discussion - "O.B.E.? - P.A.S.S.? Where and how
 does science fit?"
 David Lollis, Sec. Science Instructor, Retired
 Ed Cusato, Sec. Science Instructor, Geronimo H.S.
 Lorraine Minto, Sec. Math Instructor, Geronimo H.S.
 11:15 Section Business Meeting P & ES 123
 11:30 OAS Business Meeting, Science Hall, Dorothy Summers
 Theater.
 12:00 All Academy Banquet and Awards: Student Union Ballroom
 AFTERNOON SESSION: JOINTLY WITH SECTION C: PHYSICAL SCIENCES
 3:00 Round Table Discussion. P & ES 156

SUPPORTING THE TEACHING OF CHEMISTRY IN OKLAHOMA HIGH SCHOOLS
 MODERATOR: ANN E. MALLEY, CAMERON UNIVERSITY

Several teachers have been invited by the Oklahoma Section
 of the American Chemical Society to take part in this
 discussion. This session is open to all persons who are
 interested

SECTION F: GEOGRAPHY

PHYSICAL & ENVIRONMENTAL SCIENCES BLDG., ROOM 132

MODERATORS: CHUCK ZIEHR & JOE SEIG

9:00 a.m. How to use Oklahoma's weather Mesonet. Stephen J. Stadler, OSU; Fred V. Brock, OSU; John D. Carlson, OSU; Kenneth C. Crawford, OSU; Gerrit W. Cuperus, OSU; Michael D. Eilts, OSU; Ronald L. Elliott, OSU; Howard L. Johnson, OSU.

9:15 a.m. An approach to estimate regional soil moisture using Oklahoma Mesonet. Ol-ming Daniel Yuen, OSU.

9:30 a.m. Land use land cover analysis of Oklahoma City area using LANDSAT TM. Bineta Sinha, OU.

9:45 a.m. Using 'Cross Timbers' to describe vegetation. Marshall K. Methington, OSU.

10:00 a.m. How oil shaped Healdton, Oklahoma. Sean P. Terry, OU.

10:15 a.m. Decline of Oklahoma retirement destination counties: 1980-1990. Louis Seig, OSU.

10:30 a.m. The politics of heroin in southwest China (with apologies to Alfred W. McCoy). Kent H. Sarmann, OU.

10:45 a.m. Section F Business Meeting

11:15 a.m. OAS Annual Business Meeting, Science Hall, Dorothy Sumners Theater

12:00 noon-1:15 p.m. OAS Banquet, Student Union Ballroom

THERE WILL BE NO AFTERNOON SESSION FOR SECTION F: GEOGRAPHY.

SECTION G: FISH AND WILDLIFE CONSERVATION
PHYSICAL AND ENVIRONMENTAL SCIENCE CENTER
ROOM # 206

MORNING SESSION: MODERATOR: KEITH R. THOMAS, ODMC

8:30 * Distribution and habitat of the river otter (*Lutra canadensis*) in three drainage basins in southeastern Oklahoma. Jann L. Shackelford, Julianne W. Hoagland, and David T. Bess, University of Central Oklahoma.

8:45 * Herpetofaunal responses to even-aged management and selective harvesting in the Ouachita Mountains, AR. Doyle L. Crosswhite, Stanley Fox, and Ronald E. Thill, Department of Zoology, Oklahoma State University.

9:00 * Rats, bats, and caves. Bryon K. Clark, Brenda S. Clark, and David M. Leslie, Jr., Dept. of Biological Sciences, Southeastern Oklahoma State University.

9:15 * Genetic variation in smallmouth bass populations in eastern Oklahoma. William J. Stark, Anthony A. Rehelle, and William L. Fisher, Dept. of Zoology, Oklahoma State University.

9:30 * Least terns at Salt Plains National Wildlife Refuge: A comparison of census methods. Sara B. Schwalter and David M. Leslie, Jr., Oklahoma Cooperative Fish and Wildlife Research Unit.

9:45 Coffee break

10:00 * Migrating shorebird habitat use and response to burned habitats in southcentral Kansas. Rolli L. Stone and David M. Leslie, Jr., Oklahoma Cooperative Fish and Wildlife Research Unit.

10:15 * Use of the bur-route in evaluating the recreational smallmouth bass (*Micropterus dolomieu*) fishery in a southeastern Oklahoma stream. Craig T. Martin and William L. Fisher, Oklahoma Cooperative Fish and Wildlife Research Unit.

10:30 * Oklahoma's statewide biodiversity project. Norman Murray, Natural Resources section, Oklahoma Department of Wildlife Conservation.

10:45 * Oklahoma Gap Analysis Project: A geographic approach to biodiversity conservation. William L. Fisher, Oklahoma Cooperative Fish and Wildlife Research Unit.

11:00 Section G Business Meeting

11:30 OAS Annual Business Meeting

12:00 OAS Banquet

* Denotes collegiate paper

SECTION G: FISH AND WILDLIFE CONSERVATION
PHYSICAL AND ENVIRONMENTAL SCIENCE CENTER
ROOM # 206

AFTERNOON SESSION: MODERATOR: MELISSA M. NAGEL, TNC

- 1:30 A historical review of the fishes of the North Canadian River in Oklahoma. Jimmie Pigg, Oklahoma Department of Environmental Quality.
- 1:45 * Fishes of the Chikaskia River. Geoffrey R. Inntrell, Anthony A. Echelle, and Alexander V. Zale, Department of Zoology, Oklahoma State University.
- 2:00 * The suitability of Kerr Reservoir, Oklahoma, for striped bass: A GIS approach. Michael Louis Wilkerson and William L. Fleher, Oklahoma Cooperative Fish and Wildlife Research Unit.
- 2:15 * GIS-based evaluation of great blue heron rookeries throughout Oklahoma. Bruce A. Corley, William L. Fleher, and David M. Loefer, Jr., Oklahoma Cooperative Fish and Wildlife Research Unit.
- 2:30 * Factors affecting least tern nesting success on the Arkansas River below Keystone Dam, Oklahoma. G. Keith Wood, David M. Loefer, Jr., and Tracy S. Carter, Oklahoma Cooperative Fish and Wildlife Research Unit.
- 2:45 * Least tern nesting in relation to selenite crystal digging at the Salt Plains National Wildlife Refuge. Marcus T. Koenen and David M. Loefer, Jr., Oklahoma Cooperative Fish and Wildlife Research Unit.
- 3:00 * Trapping for success: Black-capped vireo reproductive success, that is. Joseph A. Gryzbowski, University of Central Oklahoma.
- * Denotes college paper

SECTION H: MICROBIOLOGY

SUBSECTION 1: P & ES Room 250

MORNING SESSION: 9:30 a.m.

MODERATOR: Michael S. Gilmore, University of Oklahoma Health Sciences Center

- 9:30 Studies relating to the functional anatomy of streptococcal conjugative transposon Tn5252. Ali O. Kilic and Moses N. Vijayakumar, Oklahoma State University.
- 9:45 * *Cryptococcus* yeasts in soil are indigenous. Jennifer L. Hibbard* and Helen S. Vishniac, Oklahoma State University.
- 10:00 * Adaptation processes in subsurface microbial populations. Angela S. Moore* and Guy Sewell, East Central University and Robert Kerr Environmental Research Laboratories.
- 10:15 Coffee Break
- 10:30 Response of *Pseudomonas aeruginosa* to UVA and UVB light. Melissa G. Booth and Robert V. Miller, Oklahoma State University.
- 10:45 * Variation in DNA and protein profiles among triply cloned isolates of three *Spiroplasma citri* lines differing in transmission or subculturing history. Gary D. Myers* and Jacqueline Fletcher, Oklahoma State University.
- 11:00 Structure and function of the *Enterococcus faecalis* cytotoxin activator. Mary C. Booth, University of Oklahoma Health Sciences Center.
- 11:15 Section H Business Meeting
- 11:30 OAS Business Meeting, Science Hall, Dorothy Summers Theater

SECTION H: MICROBIOLOGY

SUBSECTION 2: P & ES Room 252

MORNING SESSION: 9:30 a.m.

MODERATOR: Robert V. Miller, Oklahoma State University

- 9:30 *Distribution of microbial activity for nitrate-based BTEX biodegradation within a petroleum-contaminated aquifer. Virginia L. Boren and Steve Hutchins, East Central University and Robert Kerr Environmental Research Laboratories.
- 9:45 *Leathopet transmissibility of the phytopathogen *Spiroplasma citri* after repeated subculture in artificial medium. Benjamin Stevens* and Jacqueline Fletcher, Oklahoma State University.
- 10:00 Isolation and characterization of a *recA* analogue in *Zymomonas mobilis* CP4. M. Adnan El-Masri and Robert V. Miller, Oklahoma State University.
- 10:15 Coffee Break
- 10:30 Evidence for a novel antibiotic with toxic activity. Charles P. Bogle and Michael S. Gilmore, University of Oklahoma Health Sciences Center.
- 10:45 DNA sequence analysis of a region that may encode a relaxation protein in the conjugative transposon, Tn5252. Pravina Srinivas and Moses N. Vijayakumar, Oklahoma State University.
- 11:00 Diversity of fluorescent pseudomonads from wheat rhizosphere. Li and David H. Demezas, Oklahoma State University.
- 11:15 Section H Business Meeting, P & ES Room 250
- 11:30 OAS Business Meeting, Science Hall, Dorothy Summers Theater

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SECTION H: MICROBIOLOGY

SUBSECTION 2: P & ES Room 252

AFTERNOON SESSION: 1:45 p.m.

MODERATOR: Robert V. Miller, Oklahoma State University

- 1:45 Identification of SOS-like genes in *Pseudomonas aeruginosa*. Steven Ripp and Robert V. Miller, Oklahoma State University.
- 2:00 Mechanism of target specificity and insertion of the conjugative transposon Tn5252 in pneumococci. Sathu Ayalew and Moses N. Vijayakumar, Oklahoma State University.
- 2:15 Host-parasite relationships in intraocular infection. Rajeshwari V. Alkuri and Michael S. Gilmore, University of Oklahoma Health Sciences Center.
- MORNING SESSION: P&ES 125 MODERATOR: BAXTER VIEUX, OU
- 9:00 The influence of selected surfactants and water quality parameters on surfactant-enhanced soil flushing of hydrocarbons from contaminated soil. Sarah L. Kimball, OSU
- 9:15 Anionic surfactant mobility in a fine-grained unsaturated soil. Barry J. Allred, Glen O. Brown *
- 9:30 Analysis of subsurface hydrocarbon releases using the hydrocarbon spill screening model. James W. Weaver, Randall J. Charbeneau, Bob K. Lien
- 9:45 Evaluation of kinematic and dynamic models of soil moisture flow using laboratory data, simulation models and 3D computer graphics. James W. Weaver, Kent E. Boomhower and Wayden W. Wedderburn.
- 10:00 Break
- 11:15 Engineering Sciences Business Meeting, Jesse Everett, OU, pres (Elect a new vice chairman.)
- 11:30 OAS Annual Meeting, Science Hall, Dorothy Summer Theater

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SECTION J BIOCHEMISTRY/BIOPHYSICS/MOLECULAR BIOLOGY
 PHYSICAL AND ENVIRONMENTAL SCIENCES CENTER, ROOM 262
 MORNING SESSION MODERATOR Charles G. Sanny, OSU-COM

- 10:00 a.m. Coffee Break
- 10:15 a.m. Binding of gadalium ions to diethylenetriaminepentaacetic acid. Analysis of binding constants, stoichiometry of binding, and gadalium ion concentrations using difference spectroscopy. Charles G. Sanny, OSU-COM.
- 10:30 a.m. * Biomass activity of aliphatic hydrocarbon utilizers in soil contaminated with specific hazardous wastes. Marjorie L. Hellingsworth, East Central University.
- 10:45 a.m. Estrogen induction of progesterone receptors in adipose tissue of sheep. Jary S. Mayes, Timothy C. Owenby, Joseph P. McCann, and Gary H. Watson, OSU-COM and OSU-CVM.
- 11:00 a.m. Section J Business Meeting, P&ES Center, 262
- 11:15 a.m. OAS Annual Meeting, Science Hall, Dorothy Summers Theater
- 12:00 noon-1:15 p.m. OAS Banquet, Student Union Ballroom
- *Collegiate

- SECTION K: MICROSCOPY
 PHYSICAL/ENVIRONMENTAL SCIENCE CENTER, ROOM 240
 MORNING SESSION: MODERATOR: SCOTT RUSSELL, OU
- 9:00 Technique for handling air-sensitive materials in the ESEM. C. Cook, Phillips Petroleum Co.
- 9:15 Electron microprobe analysis of refinery catalysts. M.D. Phillips, Phillips Petroleum Co.
- 10:00 Break
- 10:15 Endosymbiosis of the free-living alga *Chroomonas* in *Gymnodinium acidotum*: a quantification of endophyte modifications revealed by serial reconstruction. S.D. Fields and S.D. Russell, OU **student competition**
- 10:30 Somatic embryos of carrot may show shoot meristem abnormalities that interrupt conversion. T.C. Nickel and E.C. Yeung, OSU.
- 10:45 Distribution of cytoskeletal actin and microtubules during cell motility. B. Saflejko-Hrocicka, J.J. Dymtryk, and P.B. Bell, OU.
- 11:00 OMS Business Meeting
- 11:15 OAS Annual Business Meeting
- 12:00 OAS Luncheon

- SECTION K: MICROSCOPY
 PHYSICAL/ENVIRONMENTAL SCIENCE CENTER, ROOM 240
 AFTERNOON SESSION: MODERATOR: PAUL RICHARDSON, OSU
- 1:25 Announcement of Timpiano Award Winner
- 1:30 Diagnostic virology by electron microscopy. Sara Miller, Duke University Medical Center, Durham, N.C.
- 2:30 Break
- 2:45 Mitosis in the generative cell of tobacco (*Nicotiana tabacum*): ultrastructural and three-dimensional organization. S.D. Russell and H. Yu, OU.
- 3:00 Morphology of the midgut of the leafhopper *Circulifer tenellus*. G.R. Baker, A.C. Wayadande, and J. Fletcher, OSU.
- 3:15 Electron microscopic demonstration of human papova virus in *Veruca plantaris*. E. Johnston and B. Meek, OSU and OSU-COM.

Section L: Mathematics, Computer Science and Statistics
Physical & Environmental Science Center Room 120

Morning Session Moderator: Scott P. Randy, SEOSU

- 9:45 A Simulator for CPU Scheduling Algorithms
Bill K. Walker, ECU
- 10:00 Systems Security and Networks
Robert Walkup, ECU **Collegiate Academy**
- 10:15 Break
- 10:30 Forecasting Using Neural Nets
John G. McGrew, ECU
- 10:45 The IBM Experience
Neal Hale, ECU **Collegiate Academy**
- 11:00 Section business meeting, election of officers
Afternoon Session Moderator: John G. McGrew, ECU
- 1:30 Embedding Complete Graphs in Line Graphs
Scott P. Randy, SEOSU
- 1:45 Evaluation of the Multigrid Solution Technique for Hydrodynamic Simulations in the Artificial Aquifer
Kenneth D. Brantley, ECU **Collegiate Academy**
- 2:00 Positive Definite Functions on Rational Rotations
Karla J. Oty, SEOSU
- 2:15 Computational Aspects of the Leaning Tower of Pisa
John McArthur, SEOSU

SECTION M
PHYSICAL AND ENVIRONMENTAL SCIENCES BUILDING: ROOM # 228

MODERATOR: Jim Blankemeyer, OSU

- 8:45 a.m. Ecodesign: Selling Energy Efficient Design to Landscape Architecture Students, Timothy J. Schmoll, Oklahoma State University
- 9:00 a.m. Villa Philbrook: Historic Designed Landscape.
Charles L. Leider, Oklahoma State University
- 9:15 a.m. Influence of Hydrogeology on the Water Quality of Natural Discharges from the Arbuckle-Simpson Aquifer of South Central Oklahoma. Julia M. Mead, East Central University **
- 9:30 a.m. Solvent Transport in Porous Media. Crystal K. Stearns, East Central University**
- 9:45 Coffee Break.
- 10:15 a.m. Effects of Groundwater Sampling. Mary S. LaFever, East Central University.**
- 10:30 a.m. Evaluation of Respiration as an Indicator for Subsurface Assimilative Capacity. Casey Williams, East Central University**
- 10:45 a.m. Risk Assessment using Biomonitoring. James T. Blankemeyer, Mary Bowerman, and Percy Bolen, OSU
- 11:00 a.m. Environmental Science Business Meeting
- 11:15 a.m. OAS Business Meeting
- 12:00 a.m. OAS Banquet
** STUDENT PAPER

SECTION N: BIOMEDICAL SCIENCES

PHYSICAL & ENVIRONMENTAL SCIENCES CENTER, ROOM 166

MORNING SESSION A: MODERATOR: J. THOMAS PENTO, OUHSC, OKC

9:15 Flagellates of *Naegleria fowleri*.

David T. John and Marsha J. Howard, OSU-COM

9:30 Pathogenic free-living amoebae in Tulsa area waters.

Marsha J. Howard and David T. John, OSU-COM

9:45 Neonatal lung damage monitored by exhaled volatiles.

William T. Potter, Chad Baerly and Paul Papademos, Univ. of Tulsa

10:00 Break

MORNING SESSION B: MODERATOR: WILLIAM YAMANASHI, VA HOSP., OKC

10:15 Establishing a histologic basis for false negative mammograms.

Alan B. Hollingsworth, Lisa D. H. Taylor and Dan C. Rhodes, OUHSC-COM

10:30 Effect of aniestrogens on genotoxicity.

Talitha Rajah and J. Thomas Pento, OUHSC-COP

10:45 Effects of aniestrogens on insulin like growth factor-1 (IGF-1)-stimulated growth

of MDA-MB-231 breast cancer cells.

Gina M. Hurt, Talitha Rajah and J. Thomas Pento, OUHSC-COP

11:00 Section Business Meeting and Election of Vice Chair for 1993-94.

12:00 OAS Banquet

RESEARCH WORKSHOP
FOR
SCIENCE TEACHERS AND STUDENTS (7-12)
NOVEMBER 12, 1993
EAST CENTRAL UNIVERSITY
SCIENCE HALL THEATER
ADA, OKLAHOMA

SCHEDULE

7:30 a.m. - 8:00 a.m.

Registration and Refreshment, Lobby of Science Theater

8:00 a.m. - 8:15 a.m.

Welcome, Jimmie Piggs, Director OJAS

8:15 a.m. - 9:00 a.m.

Botanical Research: Looking at Plants Up Close personal. Dr Ron Tyrl, Oklahoma State University.

9:05 a.m. - 9:50 a.m.

Research in Animal Sciences, School of Agriculture and Natural Resources. Oklahoma State University

9:50 a.m. - 10:05 a.m.

Break

10:05 a.m. - 10:50 a.m.

Research in Plant Sciences, School of Agriculture and Natural Resources. Oklahoma State University

10:50 a.m. - 11:10 a.m.

"Operation Research + You - An Exciting Career" Operation Research Society of America.

11:15 a.m. - 1:45 p.m.

Lunch on your own. There is a cafeteria on campus at student union and fast food outlets just off campus.

1:45 a.m. - 4:45 p.m.

Students and teachers may attend any of the OAS paper session in the area below. Please check your program for titles of interest. There will be papers presented in the following areas.

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|---------------------------|----------------------------|
| A. Botanical Sciences | G. Geography |
| B. Geology | H. Wildlife Conservation |
| C. Physical Science | I. Microbiology |
| D. Social Sciences | J. Engineering Science |
| E. Environmental Sciences | K. Biochemistry/Biophysics |
| F. Mathematics | L. Electron Microscopy |
| | K. Computer science |

1910	H. L. Lane, OU	1952	V. B. Monnett, OAMC
1911	D. W. Ohern, OK City	1953	S. P. Massie, LU
1912	S. W. Reeves, OU	1954	A. N. Murray, TU
1913	C. W. Shannon, OU	1955	R. E. Olson, OU
1914	No meeting	1956	A. M. Stiebler, OAMC
1915	C. W. Shannon, OU	1957	D. E. Howell, OAMC
1916	C. N. Gould, OU	1958	G. J. Goodman, OU
1917	L. C. Ralford, Iowa State	1959	Elmer Lucas, OU
1918	No meeting	1960	P. E. Smith, OUMS
1919	No meeting	1961	E. M. Hodnett, OSU
1920	M. M. Wickham, Norman	1962	H. B. Barclay, TU
1921	A. F. Reller, PU	1963	G. A. Moore, OSU
1922	J. B. Thoburn, OK City	1964	A. D. Buck, NOJC
1923	R. O. Whitenton, OAMC	1965	J. E. Webster, OSU
1924	S. Weldman, OU	1966	C. R. Williams, PU
1925	(Spring) C. E. Senborn	1967	C. D. Riggs, OU
1926	(Fall) H. L. Dodge, OU	1968	E. A. Reynolds, SWSC
1927	J. H. Cloud, OAMC	1969	L. V. Scott, OUHSC
1928	C. N. Gould, OU	1970	C. C. Carpenter, OU
1929	O. M. Smith, OAMC	1971	Paul Buck, TU
1930	A. Richards, OU	1972	W. A. Carter, ECSU
1931	Leroy Long, OK City	1973	C. J. Mankin, OU
1932	A. O. Weese, OU	1974	N. N. Durham, OSU
1933	Herbert Patterson, OAMC	1975	B. Barbara Shirley, TU
1934	J. E. Knowles, PU	1976	G. W. Todd, OSU
1935	C. E. Decker, OU	1977	D. E. Kizer, Noble Foundation
1936	H. J. Harper, OAMC	1978	George Odell, OSU
1937	B. D. Barclay, TU	1979	Richard Couch, ORU
1938	C. M. Perry, OU	1980	Gary Wolgamott, SWSU
1939	H. D. Chase, TU	1981	Elroy Rice, OU
1940	G. L. Cross, OU	1982	Everett Grigsby, NSU
1941	R. W. Jones, OAMC	1983	Jack Bokatch, OUHSC
1942	H. L. Featherly, OAMC	1984	Mary Whitmore, OU
1943	O. F. Evans, OU	1985	Jeff Black, ORU
1944	V. G. Heller, OAMC	1986	Jeffery Willem, ORU
1945	J. R. Nielsen, OU	1987	Merrford K. Patterson, Noble Foundation
1946	O. C. Derman, OAMC	1988	Mary P. Carpenter, OU
1947	J. T. Self, OU	1989-1990	Kenneth E. Conway, OSU
1948	L. S. McLeod, TU	1991-1992	James K. McPherson, OSU
1949	J. C. Shipley, PU	1993-1994	James K. Estes, OU
1950	Howard Taylor, OCW	1995-1996	Jack D. Tyler, Cameron
1951	H. W. Larsh, OU		

