

OKLAHOMA ACADEMY OF SCIENCE
Office of the Executive Secretary-Treasurer
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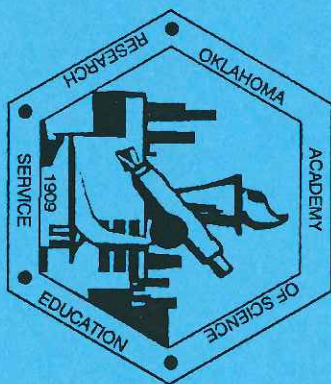


OFFICIAL PROGRAM
89TH ANNUAL TECHNICAL MEETING

OF THE

OKLAHOMA ACADEMY OF SCIENCE

Affiliated with the
American Association for the Advancement of Science
National Association of Academies of Science
American Junior Academy of Science



FRIDAY
November 10, 2000

ORAL ROBERTS UNIVERSITY
TULSA, OK

OKLAHOMA ACADEMY OF SCIENCE

Since 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 disciplines of science; and to investigate and publicize the human, natural and educational resources of the State."

Article I, Section 2 OAS Constitution

Activities of the Academy

- > Publishes the Proceedings of the Oklahoma Academy of Science, Annals of the Oklahoma Academy of Science and Transactions of the Oklahoma Junior Academy of Science.
- > Hosts the Annual Technical Meeting for the presentation of scientific papers by professional, graduate student and collegiate student scientists.
- > Sponsors symposia on selected topics of timely and vital interest to the State and Nation.
- > Arranges spring and fall field meetings in varied biogeographic regions of the State.
- > Promotes the activities of the Oklahoma Junior Academy of Science with regional and state meetings and provides monetary and certificate awards to science students and their teachers.
- > Supervises the activities of the Oklahoma Collegiate Academy of Science, which gives monetary and certificate awards to outstanding paper on scientific research presentations submitted by undergraduate college students.
- > Provides scientific consultation services to governmental and private agencies throughout the State.

OKLAHOMA ACADEMY OF SCIENCE

EIGHTY-NINTH ANNUAL TECHNICAL MEETING
ORAL ROBERTS UNIVERSITY

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THE OKLAHOMA ACADEMY OF SCIENCE 89TH ANNUAL FALL TECHNICAL MEETING

Oral Roberts University
Program Summary

Thursday, 9 November 2000

6:30 p.m. Executive Council Dinner and Meeting Regents Dining Room

7:30 a.m. - 11:30 noon Friday, 10 November 2000
Registration for Technical Meeting LRC 2 Foyer

7:30 a.m. - 11:00 a.m. Registration Junior Academy Workshop Howard Auditorium
8:00 a.m. - 11:00 a.m. Concurrent Scientific Paper Sessions Listed Below

Section A Botany	LRC 235	Section A Zoology	LRC 236 - 237
Section B Geology	LRC 204F	Section C Physical Sciences	LRC 218 C
Section D Social Science	LRC 203	Section E Science Education	LRC 113 A
Section F Geography	LRC 204 D	Section G Fish and Wildlife	LRC 204 B
Section H Microbiology	LRC 204 E	Section I Engineering Sci	LRC 204 G
Section J Biochem/Biophysics	LRC 204 A	Section K Microscopy	LRC 218 A&B
Section L Math/Computer Sci	LRC 105 C	Section M Environmental	LRC 204 C
Section N Biomedical Science	LRC 218 D	All Sections Posters	LRC 113 F&G
Section Z Junior Academy	Workshop on Student Research		Howard Aud.

Key to Building Abbreviations: LRC= Learning Resources Center - North Entrance

11:00 a.m. - 11:15 a.m. Section Meetings in assigned meeting rooms listed above.
Please participate in the election of the 2001 Section Vice Chair.

11:20 a.m. - 11:50a.m. All Academy Business Meeting LRC 236-237
OAS members are encouraged to attend and visitors are welcome.

12 noon - 1:30 p.m. OAS AWARDS LUNCHEON Mabee Center Mezzanine

Admission by ticket only. Tickets in preregistration packet at desk.

Dr. Calvin B. DeWitt
Professor of Environmental Studies, U. Wisconsin -Madison

"Science, Ethics and Praxis: A Framework for Doing Science in a New Century"

A limited number of tickets which admit only to the colloquy will be distributed on request.

1:45 p.m. - 5:00 p.m. Continuation of Concurrent Scientific Paper Sessions

2:00 p.m. - 3:00 p.m. Oklahoma Partners for Biological Sciences LRC 218 E

An OAS name badge, obtained by registering, is required for all individuals attending Academy workshops and meetings.

All presenters must register and wear an official name badge.

AWARDS LUNCHEON COLLOQUIST WORLD CLASS ENVIRONMENTAL SCHOLAR.

Following the long standing tradition of inviting outstanding scholars for our awards luncheon speaker the ORU site planning committee has invited Dr. Calvin DeWitt, Professor of Environmental Studies at the University of Wisconsin since 1972 to address the 89th Annual Technical Meeting Awards Luncheon.

As a professor of environmental studies Dr. DeWitt works across all the disciplines related to understanding environmental processes and policies, particularly the biological sciences, physical sciences, environmental ethics and stewardship practices. He interprets the word "Studies" in his title to mean that, while he may teach a course in environmental science, he must go beyond the boundaries of the natural sciences to "wissenschaft" and thereby include economics, policy and ethics. He explains that his teaching while deeply rooted in the natural sciences, is not confined to them but includes the context and application of environmental science in society.

Within the last eight years Dr. DeWitt has been advisor to the Vice President of the United States in developing a wide range of environmental issues. He was a key advisor to the Secretary of the Interior, Bruce Babbitt, in response to Babbitt's request for assistance in developing an ethical response to departmental issues. He has worked with Congressman Vernon Ehlers on developing approaches to making the environment common ground in Congress. The chair of the Senate Committee in Environment and Public Works asked him to compile information addressing questions of wetlands definition in the Clean Water Act of 1995.

Interestingly enough his beginnings in environmental activism began in his adopted home town of Dunn, Wisconsin, a rural community south of the capitol of Madison. In response to the concern of his neighbors over the phenomenon of urban sprawl of Madison encroaching upon their idyllic village life, he permitted himself to stand for election to the Board of Supervisors of the town. In this capacity, his flair for subtle persuasion and his knowledge of the natural environment, he led the town of Dunn in halting the rampant subdivision of farm land for building lots, shopping malls and light industry. They preserved six square miles of farmland interspersed with natural wetlands. Today these wetlands are noted as the refuge of a relict population of Blanding's turtle, an endangered species. This was only the beginning of responsible, nonviolent, citizen's environmental protection of the world's many diverse ecosystems. Dr. DeWitt's philosophy is having global impact.

Don't miss this outstanding scientist who will inspire you to become fully involved in thinking thoughts of an active environmental scientist and steward of land and environment. He has done this so successfully with his undergraduate students that in the past two years two of them have been White House Fellows to the administrative branch of the federal government.

FREE special tickets for the colloquy only may be obtained from the section moderators and at the registration desk before 11:00 a.m.

GENERAL INFORMATION

Preregistration assists greatly in the planning by the host institution to accommodate a large influx of visitors.

Fee Schedule: Members - \$10 Nonmembers - \$15 Student Members - \$5
Student Nonmembers - \$8 Awards Luncheon - \$10.

The preregistration period will continue until November 6, 2000. If you have not already done so please utilize the registration form provided in this booklet and register before November 6. You will save time and money by preregistration. The cost will increase on November 7-10. Banquet tickets may not even be available. They usually are but they will cost more on Nov. 10.

On Site Registration creates a chaotic condition of congestion at the registration area. In order to reduce this situation, on site prices have been increased as a disincentive to on site registration.

On site Fee Schedule: Members - \$15 Nonmembers - \$20

Student Members - \$8 Student Nonmembers - \$12 Banquet - \$15
2000 and/or 2001 Dues are Payable Now.

The OAS registration desk will accept annual dues payments that are accompanied by an appropriate application or renewal form. Payment of registration, banquet admission and dues may be combined in a single check. If you need a hand written receipt request one from the several student clerks serving you.

Academy Business Meeting: The 89th Annual Business Meeting of the Oklahoma Academy of Science will be held in Learning Resources Center, Room 236-237 at 11:20 a.m. All OAS members are encouraged to attend and registered visitors are welcome.

All Academy Award Luncheon

This affair will be held in the Mezzanine of the Mabee Center. Tickets are required for the meal, awards ceremony and featured speaker. Students and others not holding luncheon tickets will be admitted after the meal by special passes available on request at the registration desk or from section moderators in order to hear the featured speaker, Dr. Calvin B. DeWitt, Professor of Environmental Studies, University of Wisconsin-Madison as space allows.

Papers may be published in the Proceedings of the Oklahoma Academy of Science, subject to the editorial policies and instructions to authors as published in v. 79, pp. 134-140. Manuscripts, an original and two copies are required; or alternatively manuscripts may be submitted on computer disk or transmitted as an e-mail document if requested by the editor. Mail manuscripts or diskettes to Dr. Thomas L. Warren, Editor, POAS, Department of English, 205 Morrill Hall, Oklahoma State University, Stillwater, OK 74078-0135. E-mail: twarren@okstate.edu Manuscripts received after April 15, 2001 will be accepted for publication in November 2001. OAS members are charged \$30 per page and nonmembers are charged \$90 per page.

Inquiries relating to OAS policies, activities and membership may be directed to the Executive Secretary-Treasurer, P.O. Box 701915, Tulsa, OK 74170-1915, Fax 918 743-2428, Home Office 918 742-5709 or E-mail estreas_osu@ionet.net

OAS Home Page: <http://www.biochem.okstate.edu/OAS/OASHomePage.html>

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Parking will be permitted by visitors in Lots A, B, C and D surrounding the Mabee Center.

These parking areas are easily accessible east of Lewis avenue or north of 81st Street. Refreshments will be served only in designated areas adjacent to the meeting rooms from 8:00 - 10:30 a.m. and from 2:00 - 3:30 p.m.

No Smoking is permitted in any classroom on the campus. Also food and drink are not permitted in any meeting room.

Motel / Hotel Information

Each attendee is expected to make his/her own reservation. No specific number of rooms have been set aside. Designated headquarters hotel (most proximal to ORU campus): Hilton Southern Hills, 7902 S. Lewis Avenue, Tulsa, OK 74136, 918-492-5000, Single \$79, Double \$79. Request Oklahoma Academy of Science rate when you call.

Other area hotels,

Days Inn South, 8888 S. Lewis Avenue, Tulsa OK 74137, 918 299-8511, Single \$45, Double \$53
Marriott Southern Hills, 1902 E. 71st Street, Tulsa, OK 74136, 918 493-7000, Single \$74, Double \$74

Name badges prepared prior to your arrival if you preregistered or prepared on site if you did not preregister must be displayed at all times while attending Academy sectional programs, business meetings, refreshment centers and banquet. Without displaying OAS identification you may be asked to leave by the persons in charge of these areas. Lost badges may be replaced at the registration desk upon the verification of your status.

Official Program Booklet: Bring this copy that was mailed to you to the meeting. A replacement copy may be purchased for \$2.00 at the registration desk.

FUTURE MEETINGS

2001 Spring Field Meeting is not yet scheduled. **Dr. Vince Cobb**, NSU, is in charge of this meeting. The meeting site selected is Group Camp 2, Beavers Bend State Park Tentative dates March 30- April 1 is a likely date. Convey your suggestions for tailoring this meeting to meet your needs to Ed Nelson e-mail: estreas_osu@ionet.net or Vince Cobb, cobbva@nsuok.edu If you need more details before the March 2000 OAS Newsletter they are the ones who will know first.

2000 Fall Field Meeting is still in the planning stages. **The Section Chair of Section G: Fish and Wildlife**, Dana Winkelman, OSU will select a site after the first of the year and will recruit the field trip leaders shortly thereafter. If you have any site or field trip in mind call the Section Chair and give him the details danaw@okstate.edu

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The 2001 Annual Technical Meeting has been invited to Cameron University tentatively on November 9, 2001. If you have serious, valid or reasonable objections to this date let your elected officers know now. Otherwise make plans to attend.

The 2002 Annual Technical Meeting has been invited to Oklahoma Christian University, in Oklahoma City tentatively on November 8, 2002, tentatively on November 8, 2002. If you have serious, valid or reasonable objections to this date let your elected officers know now. Otherwise make plans to attend.

The 2003 Annual Technical Meeting has been invited to the University of Sciences and Arts in Chickasha, OK tentatively on November 14, 2003. If you have serious, valid or reasonable objections to this date let your elected officers know now. Otherwise make plans to attend.

OAS EXECUTIVE SECRETARY-TREASURER RESIGNS.

Ed Nelson, who has held the office for over nine years submitted his resignation to the OAS Executive Council at their September 8th meeting at Osage Hills State Park. A search committee will be appointed by OAS President David Bass. In the meanwhile persons interested in serving the Academy in this capacity should contact their section chairman and submit a *curriculum vitae* and letter of application to the search committee chair who will be introduced to the membership at the Annual Technical Meeting on November 10th.

The office was created in the early 1970's to give the Academy an officer who had continuous tenure and could oversee and organize the Academy's many diverse activities with a sense of the history of the academy activities from year to year. This continuous exposure to the ever changing membership of the Executive Council gives the Executive Secretary-Treasurer an insight into problems that arise within the academy and to advise the elected officers how to deal with them.

Ed's resignation shall be effective December 31, 2000. He will be active in a transition period that may last six months and will work closely with his successor in the transfer of a large amount of archival material, computer records and software that are essential to the administration of the Academy's affairs.

SECTION A: BIOLOGICAL SCIENCES - BOTANY LRC 235

Morning Session: Moderator BRUCE SMITH, McCloud H.S

8:00 The Spider Orchids of Western Australia. Mia Molvray and Paul Kores, OU

8:15 *Production of dominant negative forms of BRIGT. Jillian Riley, OCU

8:30 *Genetic and Morphological Diversity of Sugar Maples in Oklahoma.
Brent A. Berger, OCU

8:00 Cytosolic Delivery and Characterization of the lethal domain from *Clostridium difficile* Toxin B using a heterologous protein fusion. Lea Spyres and Jimmy Ballard, OU

8:30 The effect of point source effluent on hyporheic communities in four Ozark streams.
Gary W. Hunt, TCC

8:45 Change in vegetation and landscape composition between the years 1871 and 1897,
Murray County, Oklahoma. Bruce Hoagland and Brad Watkins, OU-OBS

9:00 Vegetation composition and pattern at Black Mesa, Cimarron County, Oklahoma.
Marco Miccozzi and Bruce Hoagland, OU

9:15 Vegetation Spatial Analysis of the Tallgrass Prairie Preserve, Osage County.
Peter Earls and Michael Palmer, OSU

9:30 Dual-purpose and grain-only management system effects on shoot and N use traits
at anthesis of wheat. Vernon A. Clifford, Charles T. Mackown, Brett F. Carver,
and Eugene G. Krenzer, Jr., RCC

9:45 Algal distribution and physiochemical characteristics of the Great Salt Plains, Alfalfa Co.
Kelly M. Major and William J. Henley, OSU

10:00 Break

10:15 Interaction of heat and salt stress in two halotolerant algae from the Salt Plains NWR.
William J. Henley, Janice Hironaka, Kelly Major and Mark Buchheim, OSU

10:30 The Gaura-Stenosiphon complex (Onagraceae). Gloria Hogard, Mia Molvray OU
10:45 *Schoenoplectus halimifolius* (Cyperaceae): A Phylogenetic look at a vulnerable species.
Laura Young.

11:00 Section A: Biological Sciences Business Meeting. LRC 335

11:20 All Academy Business Meeting. LRC 236 - 237

12:00 Awards Luncheon and Invited Colloquy. Mabree Center Mezzanine

SECTION A: BIOLOGICAL SCIENCES - BOTANY
LRC 235

Afternoon Session: Moderator RON TYRL, OSU

- 1:45 *Comparison of Three Forested Areas in the Lake Texoma Floodplain. Diana Bannister, Carol Richards, Luke Bell, and Erica Corbett, SOSU
- 2:00 An Update on vulnerable Oklahoma plants. Paul J. Kores and Mia Molvray, OU
- 2:15 Isolation of *Arabidopsis thaliana* mutants defective in regulating alcohol dehydrogenase expression during germination. Terry R. Conley, OCU
- 2:30 Biogeochemical controls on phosphorus fractions in semiarid soils. Anne Cross, OSU
- 2:45 The systematics and biogeography of *Littorella* (Plantaginaceae). Ron Hoggard, Paul Kores, Mia Molvray, and Gloria Hoggard, OU
- 3:00 Willow flats revisited: Thirty-six years of observations. Bruce A. Smith, McLeod H.S. Linda Gatti Clark, UCA, Ronald J. Tyrl, OSU
- 3:15 Species composition on mounds and pits created by a blowdown in a Minnesota forest. Suzanne McAlister and Michael Palmer, Jose Ramon Arevalo, James K. Decoster, OSU
- 3:30 Flora and Vegetation of the Tallgrass Prairie Preserve, Michael Palmer and Suzanne McAlister, OSU
- 3:45 Tallgrass prairie soils, seasonal and species effect on N, P and C contents. Chris Sellers, and Anne Cross, OSU
- 4:00 Effects of vegetation on the activity of imported red fire ants in a grassland. Stanley A. Rice, Erica Corbett, J. T. Vogt, Anthony Erwin, and Steven Armstrong, SOSU
- 4:15 Editorial Committee - Flora of Oklahoma Project

SECTION A: BIOLOGICAL SCIENCES - ZOOLOGY
LRC 236 - 237

Morning Session: Moderator DOYLE CROSSWHITE, SGU

- 8:00 *Characterization and utility of the nuclear dentin gene for resolving phylogenetic relationships within bats. Serena A. Reeder, Eric W. Hansen, Steven R. Hoofar, and Ronald A. Van Den Bussche, OSU
- 8:15 *A comparison of animal performance under either conventional confinement feeding or feeding on pasture for finishing beef cattle. Weston L. Graham, William A. Phillips, Michail M. Brown, RCC
- 8:30 *Stocker performance of St. Croix, Dorset, and crossbred lambs on wheat pasture. Jeremy D. Knox, Michael A. Brown, William A. Phillips, RCC
- 8:45 *Strategies for Preserving Stored Food by Least Chipmunks. Rick Patrick, OU
- 9:00 *Phospholipase activities in nerve growth cone and synaptosome particles from rats fed diets enriched with essential fatty acids. Gerardo López Mejía, UCO
- 9:15 *Characteristics and alterations of retinal neurons in cultures: An *in vitro* model for studying neuronal aging. Amy D. Parker, OCU
- 9:30 *Effect of Medusa Size on Prey Selectivity in the Jellyfish *Aurelia aurita* in the Northern Gulf of Mexico. Ryan M. Kroutil, OCU
- 9:45 *Features of novel sigma receptor antagonists for the attenuation of cocaine-induced convulsions. Jayson P. Bell, OCU
- 10:00 Break
- 10:15 Invertebrate community composition and physicochemical conditions of Boehler Lake. Chuck Potts and David Bass, OWRB and UCO,
- 10:30 Field Determinations of the Number of Soybean Cyst Nematode Generations in Central Missouri. Charriss Hayes and Pat Donald, OSU
- 10:45 Energetics and thermoregulation of male tarantulas (Theraphosidae: *Aphonopelma anax*). Cara Shillington, OSU
- 11:00 Section A: Biological Sciences Business Meeting. LRC 335
- 11:20 All Academy Business Meeting. LRC 236 - 237
- 12:00 Awards Luncheon and Invited Colloquy. Mabree Center Mezzanine

SECTION A: BIOLOGICAL SCIENCES - ZOOLOGY
LRC 236 - 237

Afternoon Session: Moderator: VINCENT COBB, NSU

- * 1:45 Effects of vegetation on the activity of imported red fire ants in a grassland.
Stanley A. Rice and Erica Corbett, SOSU
- 2:00 An unusual case of polygyny in a northern temperate yellowjacket species (Hymenoptera: Vespidae: Vespula). Hal Reed, ORU and Peter Landolt, USDA
- * 2:15 Female mimicry by juvenile male collared lizards (*Crotaphytus collaris*): Avoidance of adult male aggression? Jerry F. Husak, Stanley F. Fox and J. Kelly McCoy, OSU
- * 2:30 Does prior experience influence territorial behavior in male collared lizards?
Andrew M. Schwartz and Troy A. Baird, UCO
- * 2:45 Winter survivorship, movement, and thermal ecology in transplanted Oklahoma timber rattlesnakes (*Crotalus horridus*). Jeffrey R. Mohr and David Duvall, OSU
- * 3:00 Physiological variation in estivation among mud turtles (*Kinosternon* spp.). Day B. Ligon, OSU
- 3:15 Scatter-caching strategies in two sympatric chipmunk species.
Jennifer Penner and Lynn Devenport, OU
- 3:30 Protein nutrition of Southern Plains small mammals. Jennifer L. Parsons, Eric C. Helligren
David M. Leslie and Eric E. Jorgensen, OSU
- * 3:45 *Microtus ochragaster* from Washita Local Fauna. Jeanette Bartow, SWOSU
- * 4:00 *Microtus ochragaster* from Washita Local Fauna. Samuel M. Adu-Lartey, SWOSU

SECTION B: GEOLOGY
LRC 204 F

Moderator: Vernon P. Scott, Oklahoma State University
(Presenter is in boldface type. * Graduate student paper. * Collegiate Academy Paper.)

MORNING SESSION:

- 8:45 Special paper: Natural Gas Oklahoma's Energy Future. Charles J. Mankin, Director: Oklahoma Geological Survey
- 9:00 * Capillary Pressure Determination of Seal and Reservoir Intervals in the Vicksburg Sandstone, Gulf Coast Area. Amy Rebecca Close OSU, Zuhair Al-Shaleb OSU
- 9:15 * Sedimentology of the Canadian River Alluvium Adjacent to the Norman Landfill, Oklahoma. Kelli L. Collins OSU, Stanley T. Paxton OSU, Richard A. Marston OSU
- 9:30 * Heavy Metals in Fluvial Sediments in the Pitcher Mining Field, Northeast Oklahoma. Randa N. Hope OSU
- 9:45 BREAK
- 10:00 * Stratigraphy of the Sedimentary Rocks in the Ash Meadows Area, Death Valley, California and Nevada: Implications in Tectonic Evolution of Northern Death Valley Regions. Amy M. Johnson OSU
- 10:15 * Sequence Stratigraphy of the Cherokee Group, Eastern Oklahoma. Thomas R. Marshall OSU, Darwin Boardman II OSU
- 10:30 * Structural Geometry of Thrust Faulting in the Summerfield and LeFlore SE 7.5-Minute Quadrangles, LeFlore County, Oklahoma. Kristopher McPhail, OSU, Ibrahim Cermen OSU
- 10:45 * Geomorphic Stability of the Canadian River and Floodplain Adjacent to the Norman Landfill, Oklahoma. Barbara E. Pickup OSU, Richard A. Marston OSU, Stanley T. Paxton OSU

11:00 GEOLOGY SECTION BUSINESS MEETING
11:20 ALL ACADEMY BUSINESS MEETING LRC 236 - 237
12:00 OAS AWARDS LUNCHEON AND INVITED COLLOQUY, Mabee Center Mezzanine

AFTERNOON SESSION

- * 1:45 DISCUSSION FORUM: The Evolution/Creation Controversy in Oklahoma Geology and Earth Science Classrooms. Topic introduction: Vernon P. Scott OSU
- 2:15 * Yellowstone Caldera Complex-Geology, Dynamics, and Hot Spot Origin.
*George R. Standridge NSU
- 2:30 * The Importance of Diagenesis and Petrology of Iron Oxides in the Garber-Wellington Formation. Jessica Witt OSU
- Poster in LRC 105 D: * Depositional Facies of the Garber Sandstone.
Bradley N. Brittain OSU, Thomas A. Kropatsch OSU
- 2:45 BREAK
- 3:00 Revisiting the Buckhorn Asphalt Quarry (Pennsylvanian), Murray County, Oklahoma. James R. Chaplin OGS
- 3:15 Mined-land Reclamation in the Coal Field of Eastern Oklahoma.
LeRoy A. Hemish OGS
- 3:15 Geomorphic Adjustment of Reclaimed Channels and Hillslopes at a Surface Coal Mine in Northwest Colorado. Richard A. Marston OSU
- 3:30 New Incentives for Performing Provenance Studies in Sedimentary Rocks.
Stanley T. Paxton OSU

SECTION C: PHYSICAL SCIENCES LRC 218 C

Morning Session: Moderator DAVID L. MARTIN, UCO

*Collegiate Academy Competition

8:00 Using PIDS to obtain Real-Time Beam Profile Measurement.
Karen Williams, East Central University

8:15 *Synthesis of Copper Complexes that Mimic the Structure of the Copper Z site of Nitrous Oxide Reductase. Scott Collins, Oklahoma Christian University

8:30 *Study of the Optimum Momentum Resolution in the CMS Muon System.
Timothy McDonald, Oklahoma Baptist University

8:45 Study of Solution Methodology in CFD Analysis.
Yuan-Liang A. Chen, Oklahoma Baptist University

9:00 Temperature change due to selective photothermal interaction using 805 nm laser and indocyanine green. Shawn Barker, UCO, Sarah Kimball, OSU and Wei R. Chen, UCO

9:15 *Reduced Group Technique For Neutron Spectral Unfolding. Chris Mackey, UCO

11:00 Section C: Physical Sciences business Meeting LRC 218 B

11:20 All Academy Business Meeting, LRC 236 - 237

12:00 noon Awards Luncheon and Invited Colloquy. Mabee Center Mezzanine

Special Campus Tour Opportunity:

Dr. Nate Meleen, Professor of Earth Sciences, Oral Roberts University, will lead a tour to the Eising Gem and Mineral Museum, ca. 1.5 mi. south of the main campus. Meet at 2:00 p.m. outside LRC 105 D amongst the museum cases of the Earth Science's Eising Mineral Teaching Collection. The assembled group will depart via school van for a one hour tour of the Eising Museum, a world class collection of minerals and gems with interesting commentary by the owner and curator.

Special Demonstration

How to Use the Recently Digitized On Line Proceedings of the Oklahoma Academy of Science vols. 69-79. Cokie G. Anderson, MILS, Assistant Professor, Digitization and Patent Librarian, Oklahoma State University.

9:00 - 9:45 LRC 203
11:25 - 11:45 Howard Auditorium
2:00 - 2:45 LRC 203
3:00 - 3:45 LRC 203
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SECTION D: SOCIAL SCIENCES LRC 203

MODERATOR: LOIS ALBERT, OKLAHOMA ARCHEOLOGICAL SURVEY

10:00 *Effects of various incubation periods on creative and semantic problem solving tasks.
Melanie Fulton, University of Central Oklahoma

10:15 *Relationships between parenting style, self-esteem, depression, anger, and time perspective on academic success. Geoffrey Sheaffer, University of Central Oklahoma

11:00 Section D: Social Sciences Business Meeting (Elect Vice Chair for 2001)

11:20 All Academy Business Meeting LRC 236 - 237
12:00 noon Awards Luncheon and Invited Colloquy, Mabee Center Mezzanine

SECTION E: SCIENCE EDUCATION

LRC 113A
MODERATOR: STANLEY RICE, SEOSU

8:15 Lake Austen Marine Science Institute: An Alternative Classroom Environment "Engulfing" St. Gregory's Students. Kathryn M. Barry and Doyle Crosswhite, St. Gregory's University, Shawnee.

8:30 Building Learning Communities in Cyberspace. Doyle Crosswhite, St. Gregory's University, Shawnee.

8:45 The Game of "Life History." Erica Corbett, Southeastern Oklahoma State University, Durant.

9:00 South With The Spring: Studying Evolution Through Budburst Dates. Stanley Rice, Southeastern Oklahoma State University, Durant.

9:15 Illegal Roadside Dumping Activities for Elementary Schools. Kay Frank, Solid Waste Institute of Northeast Oklahoma, Tahlequah.

9:30- 10:45 Visit other Sectional paper sessions or posters

11:00 Section E Business Meeting (Elect vice chair for 2001)

11:20 All Academy Business Meeting. LRC 236 - 237
12:00 noon Awards Luncheon and Invited Colloquy, Mabee Center Mezzanine

Special Demonstration

How to Use the Recently Digitized On Line Proceedings of the Oklahoma Academy of Science vols 69-79. Cokie G. Anderson, MILS, Assistant Professor, Digitization & Patent Librarian, Oklahoma State University

9:00 - 9:45 LRC 203
11:25 - 11:45 Howard Auditorium
2:00 - 2:45 LRC 203
3:00 - 3:45 LRC 203
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SECTION F: GEOGRAPHY
LRC 204D

MORNING SESSION: MODERATOR: ED PUGH, UCO

- 9:30a.m. An historical geography of black residential occupancy of Oklahoma City. 1890-1990. Ed Pugh, UCO
- 9:45a.m. A historical geography of industrial town morphology in Sand Springs, Oklahoma. Brad A. Bays, OSU
- 10:00 a.m. Application of a sequence-alignment method to assess similarity of rainstorms. John McIntosh, OU
- 10:15 a.m. The Oklahoma GIS Council, Robert Springer, Oklahoma Conservation Commission
- 10:30 a.m. The status of K-12 geography Education in Oklahoma and its implications for higher education. Gary Gress and Rebecca Scott, OU
- 11:00 a.m. Business Mtg. LRC 204D
- 11:20 a.m. OAS Business Meeting, LRC 236-237
- 12:00 NOON -1:45 PM Awards Luncheon, Mabee Center Mezzanine
- 1:45 p.m. Overview of the ECU web mapping project, Gregory Plumb, ECU
- 2:00 p.m. A web map design of the ECU campus. Amy Guinn, ECU
- 2:15 p.m. A web design of ECU buildings. Serena Aldrich, ECU
- 2:30 p.m. Designing route maps to Ada and ECU, Jonathan Boeck, ECU

SECTION G: FISH AND WILDLIFE CONSERVATION
LRC 204 B

Morning Session: MODERATOR ERIK S. TERDAL, NSU-TULSA

- 8:00 Assessing the effects of flow alterations on the spatial distribution of fish habitat in an Oklahoma stream using GIS. W. Jason Remshardt and William L. Fisher, OSU
- 8:15 Regional variation in physical and biological characteristics of Eastern Oklahoma streams. Ellen Tejan and William L. Fisher, OSU
- 8:30 Porcupines, Piñon pines, and pine engraver beetles: Is there a connection? Linda Ilse and Eric Helgren, OSU
- 8:45 Effects of Prescribed Burning on Decadent Cattail Marshes. Shane Kasson and David M. Leslie, Jr. OSU
- 9:00 The effects of burning and grazing on the Texas horned lizard. Anna Burrow, Richard Kazmaler, Eric C. Helgren, and Donald C. Ruthven III, OSU
- 9:15 Population dynamics of small mammals across a nitrogen amended landscape. Jay E. Clark and Eric C. Helgren, OSU
- Moderator: DANA WINKLEMAN, OSU
- 9:30 Ecology of the alligator snapping turtle at Sequoyah National Wildlife Refuge. J. Daren Riedle, Stanley F. Fox, Paul A. Shipman and David M. Leslie, Jr. OSU
- 9:45 Competition for food resources among cattle egrets and other North American ardeids. Shane T. Feirer and David M. Leslie, Jr., OSU
- 10:00 Genetic structure of wolverines (Gulo gulo) from nunavut and the northwest territories based on microsatellites and mitochondrial DNA. Derrick E. Chappell and Ronald A. Van den Bussche
- *10:15 Genetic assessment of stream populations of smallmouth bass associated with introgressed reservoir populations. Terrence Malloy, Jr., Anthony Echelle, Ronald A. Van den Bussche, and William L. Fisher
- 10:30 The spatial distribution of nests in a breeding colony of California Least Terns. Denise M. Woods and Carolee Caffrey, OSU
- 10:45 Movement patterns of two snake species in northeast Oklahoma. Vincent Cobb, NSU
- 11:00 Section G: Fish and Wildlife Conservation Business Meeting LRC 204 B
- 11:20 All Academy Business Meeting LRC 236 -237
- 12:00 Noon Awards Luncheon and Invited Colloquy Mabee Center Mezzanine

SECTION H: MICROBIOLOGY
LRC 204 E

Morning Session: MODERATOR CHARLES BILES, ECU

- 9:00 Time-course of Fenofibrate Treatment on Endotoxemia in Mice.
Adam Hoffhines* and Molly Hill. Oklahoma Christian University.
- 9:15 Induction of Toxin Production in Pathogenic Bacterium *Enterococcus faecalis*.
David Johnson* and Mike Gilmore. Oklahoma Christian University, OU-HSC.
- 9:30 Construction of Plasmid Based Genomic Library from *Disulfotoluidro desulfuricans*.
Mike Maline* and Jimmy Ballard. Oklahoma Christian University, OU.
- 9:45 The Effect of Varying Salinity Concentrations on Naturally Occurring Marine Bacteriophage-Host Interaction.
John P. Winters* and Robert V. Miller. Department of Microbiology, OSU.
- 10:00 Break
- 10:15 Response of Antarctic Bacterial Isolates to Ultra Violet Radiation.
Shekher Mohan* and Robert V. Miller. Department of Microbiology, OSU.
- 10:30 Response of Antarctic Bacterioplankton to Solar Ultra Violet Light.
Karen E. Brown and Robert V. Miller. Department of Microbiology, OSU.
- 10:45 Production of BACMV pp65 and pp71 Recombinant GST Fusion Proteins for Diagnostic ELISA. R. Preston Rogers and Earl L. Blewett. OSU-COM.
- 11:00 Microbiology section business meeting LRC 204 E
- 11:30 Academy business meeting: LRC 236 - 237
- 12:00 Awards Luncheon: Mabee Center Mezzanine

* Collegiate Academy Competition

SECTION H: MICROBIOLOGY
LRC 204 E

Afternoon Session: MODERATOR ALAN LENNON, SOSU

- 1:45 Using a Lambda Expression Library to Identify Immunologically Important Baboon Cytomegalovirus Antigens. Tami G. Ross and Earl L. Blewett. OSU-COM.
- 2:00 Antimicrobial Peptide Resistance in *Pseudomonas aeruginosa*.
Arden Aspedon. Division of Allied Health, SWOSU.
- 2:15 *In Vitro* Translation Analysis of Genomic and Subgenomic RNAs of Maize Chlorotic Mottle Virus. Kay Scheets. Department of Botany, OSU.
- 2:30 REP-PCR Analysis of Bacteria Isolated from a Deep Subsurface Well in New Mexico. Grant Severson and Robert V. Miller. Department of Microbiology, OSU.
- 2:45 A Study of Receptor Utilization for Lakewater *Pseudomonas aeruginosa* Bacteriophages.
Cory M. Pfeiffer and Robert V. Miller. Department of Microbiology, OSU.
- Posters in LRC 113 F & G
- Chlamydospore Production of *Acremonium spp.* in Various Sugars.
Christy Carson* and Terry Cluck. Department of Biological Sciences, ECU.
- Coliform Bacteria in Konawa Reservoir in Relation to Human Use. Tammi Eldridge*, Charles Biles, and Terry Cluck. Department of Biological Sciences, ECU.
- Esterase Isozymes and General Protein Variation Among *Fusarium* species.
Leisha Lawson*, Charles Biles, and Terry Cluck. Department of Biological Sciences, ECU.
- Morphological Characterization of *Fusarium spp.* Grown on Various Media.
Loretta Rush*, Charles Biles, and Terry Cluck. Department of Biological Sciences, ECU.

* Collegiate Academy Competition

SECTION I: ENGINEERING SCIENCES
LRC 204 G

Morning Session: Moderator La DONNA C. MCCOWAN, OSU

9:00 *Effects of low-level electromagnetic fields on autonomic nerve conduction.
Kandace Eaves, Oklahoma Christian University

9:15 *Design and construction of an affordable, durable wheel chair for third world conditions.
Amanda Cody, Oral Roberts University

9:30 Monte Carlo techniques for neutron spectral unfolding.
Evan Lemley, University of Central Oklahoma

9:45 BREAK

10:00 - 11:00 Schedule papers that were registered after this program was printed.

11:00 Section I Engineering Sciences Business Meeting, (elect vice chair) LRC 204 G

11:20 All Academy Business Meeting LRC 236 - 237

12:00 All Academy Awards Luncheon, Mabee Center Mezzanine

Afternoon Session: Moderator ELLEN W. STEVENS, OSU

2:00 - 4:00 Schedule other papers that were registered after this program was printed.

SECTION J: BIOCHEMISTRY /BIOPHYSICS
LRC 204 A

Morning Session: MODERATOR: HIROYUKI MATSUMOTO, OUHSC

11:00 am Section J : Biochemistry / Biophysics Business Meeting, LRC 204 A

11:20 am All Academy Business Meeting, LRC 236 - 237

12:00 noon Awards Luncheon and Invited Colloquy, Mabee Center Mezzanine

Afternoon Session: MODERATOR: JACK DILLWTH, OSU

1:45 ■ Analysis of Transgenic Cotton Plants for Inheritance of the Transgene.
*Lisa Ann Mayer, OSU

2:00 Dual activation of human platelets generates strongly procoagulated products.
*Amanda Davenport, OCU

2:15 DNA Cleavage by Coordination Compounds. *Christopher Newey, OCU

2:30 Orthogonal Approaches in peptide mass fingerprinting: Iodination and oxidation of amino acid side chains. Sadamu Kurono, OUHSC

2:45 Prostaglandin E2 Biosynthesis in the salivary glands of the Lone Star Tick,
Amblyomma americanum (L.). Majd Aljamali, OSU

3:00 Protein secretion in tick salivary glands: Evidence of a role for SNARE proteins.
Shahid Karim, OSU

3:15 Triglyceride Storage in Response to Low Temperatures in Pea Aphids.
Jorigtoo Chen, OSU

Section K: MICROSCOPY
LRC 218 A & B

Morning Session: MODERATOR- BILL CHISSOE, OU

8:30 Welcome and introduction of new officers

8:40 Focused ion beam preparation techniques for SEM and TEM in the biological and physical sciences. Keynote Speaker - Lucille Giannuzzi. University of Central Florida, Orlando, FL

9:40 Break

10:00 *A Novel Technique for the Fabrication of Ordered Arrays of Nanostructures. P.R. Larson, A.M. Elliot, M. Keil, and M.B. Johnson. University of Oklahoma.

10:15 * *Mannheimia haemolytica* Leukotoxin Induces β_2 -Integrin Capping of Bovine Lymphoma Cells. Bryan K. Taylor, Phoebe Doss and Kenneth D. Clinkenbeard. College of Veterinary Medicine, Oklahoma State University.

10:30 * Free-standing layer-by-layer assembled films. A.A. Mamedov, N.N. Mamedova, N.A. Kotov. Oklahoma State University.

10:45 * TEM Embedding Technique for Immunocytochemistry of Cultured Cells. S.S. Sands, W.D. Meek. Oklahoma State University College of Osteopathic Medicine.

11:00 * Using electron microscopy to examine bacteriophage receptors. Cory M. Pfeiffer, Robert V. Miller. Oklahoma State University.

11:15 OMS Business Meeting LRC 218 B

11:20 OAS Business Meeting LRC 236 - 237

11:45 Ugly Bug judging (LRC 218A)

12:00-1:45 OAS Awards Luncheon and Invited Colloquy -Mabee Center Mezzanine

Section K: MICROSCOPY
LRC 218 A & B

Afternoon Session: MODERATOR: STEVE FIELDS, OMRF

1:45 ** Effect of endotoxin challenge on PPAR expression in troglitazone-treated mice. Billy Novosad. Oklahoma Christian University.

2:00 **Localization of ACL-myotoxin by immunogold labeling in murine skeletal muscle. Isaac Mitropoulos. Oral Roberts University.

2:15 **Functional and statistical analysis of neurocircuitry and their synapses in retinal IPL of the macaque. Thomas Massey. Oral Roberts University.

2:30 Knockouts of CluA protein homologues cause mitochondrial clustering in diverse organisms. Steve Fields. Oklahoma Medical Research Foundation.

2:45 Wheat soilborne mosaic virus: ultrastructural relationships of virus, host roots and the protozoan vector. Larry J. Littlefield and Jeanmarie Verchot. Oklahoma State University.

3:00 Coordinated cell cycle in male and female gametes of tobacco during double fertilization. Hui Qiao Tian, Tong Yuan, Zhaojie Zhang and Scott D. Russell. University of Oklahoma.

* Timpano Competition
** Collegiate Academy Paper Competition

SECTION L: MATHEMATICS AND COMPUTER SCIENCES
LRC 105 C

Morning Session : MODERATOR: KARLA OTY, SEOSU

- 10:00 Elementary Proofs of Divisibility Rules. Anita Walker , ECU
- 10:15 Exploring Number Theory with Mathematica Christopher Moretti ,
- 10:30 Truth-table reductions and the Borel-Cantelli Lemma, Patrick Reardon,
- 10:45 Positive Definite Functions and Fourier Algebras, Karla Oty , SEOSU
- 11:00 Section L : Mathematics and Computer Science, Business Meeting
- 11:20 OAS Business Meeting- LRC 237 -237
- 12:00 Awards Luncheon and Invited Colloquy, Mabee Center Mezzanine
- 1:45 A Bird Population Model, Robert Ferdinand and Michael Bay, ECU
- 2:00 Web Tools, Bill Walker, ECU
- 2:15 First Come First Serve Scheduling on a Token Ring Local Area Network, Art Kazmierczak , OCU
- 2:30 Anaglyphs for Fluid Visualization, John McArthur, SEOSU

SECTION M: ENVIRONMENTAL SCIENCE AND PLANNING
LRC ROOM 204C

Morning Session: MODERATOR: TALYA HENDERSON, OSU

- 9:00 Landscape of Peru. Kenny Kowis, Oklahoma State University
- 9:15 Landscape Designs of Peru. Jerrey Beitz, Oklahoma State University
- 9:30 Sir Geoffrey Jellicoe: Britain's Landscape Architect of the 20th Century. Carl Rodrigue, Oklahoma State University
- 9:45 Fletcher Steele: Pre-Modern Landscape Architect. Michael Crumb, Oklahoma State University
- 10:00 BREAK
- 10:15 Dan Kiley: Collaboration in Landscape Architecture. Steve Rice, Oklahoma State University
- 10:30 Analysis and Use of Sight Lines in Landscape Architecture. Charles Leider, Oklahoma State University
- 11:00 Section M: Business Meeting, LRC
- 11:30 Academy Business Meeting, LRC 236 - 237
- 12:00 Awards Luncheon and Invited Colloquy, Mabee Center Mezzanine
- Afternoon Session:
- 1:45 Analysis of Carbon Dioxide, Vinyl Chloride, and Methyl t-Butyl Ether (MTBE) in Aqueous Solution Using the Bubble Stripping Method. Daniel McInnes, Bryan Roehl, Don Kampbell, East Central University.

SECTION N: BIOMEDICAL SCIENCES
LRC 218 D

MORNING SESSION: MODERATOR: DAVID R. WALLACE, OSU-COM, TULSA

9:00 Predictors related to attendance of the intervention component of Phase I in the Penn Family Caro H.E.L.P. weight management study. * Tambara Stevenson, OSU

9:15 Genomic targeting using recombinant activated cell fluorescence.
* Courtney Copeland, Oklahoma Christian University

9:30 Seizure activity: Implications of kindling in female rats,
* Brian Franklin, Oklahoma Christian University

9:45 Generation of large nested deletions in a 200 KB mouse genomic BAC clone.
* Todd E. Bridges (Sponsor: Jonathon S. Coren), SOSU

10:00 BREAK
10:30 Intrathymic transplantation of genetically modified thymic epithelial cells.
Sandra S. Sands and Robert J. Ketchum, OSU-COM

10:45 Polymorphisms of the amelogenin gene in *Bovidae*.
Heather Adams and Lee Rickords, OSU-COM

11:00 Biomedical Sciences Section Business Meeting LRC 218 D

11:30 Academy Business Meeting LRC 236 - 237
12:00 OAS All-Academy Luncheon and Invited Colloquy, Mabee Center Mezzanine

AFTERNOON SESSION : MODERATOR: DAVID R. WALLACE, OSU-COM TULSA
2:00 Electrophysiological study of the retinal ganglion cells in the frog, *Rana pipiens*.
James Henley, Warren E. Finn, and Peter L. LoPresti OSU-COM and TU

2:15 Isolation and identification of pathogenic amebae from Taylor Ferry, Fort Gibson Lake, Oklahoma. Kristopher K Hart, Keenan L. Ferguson, Marsha J. Howard and David T. John, OSU-COM

2:30 Structural and physiological changes in *Staphylococcus aureus* adapted step-wise to vancomycin resistance. Marvita D. McGuire, and Robert S. Conrad, OSU-COM

2:45 Urea transport in the inner medullary collecting duct (IMCD): Possibility of an imidazo@ne-mediated mechanism. Alexander J. Rouch, and L. Kudo, OSU-COM and University of Sao Paulo, Brazil

3:00 Effect of HIV-associated proteins on dopaminergic neurons.
David R. Wallace, OSU-COM

3:15 Intracellular markers for ganglion cells in the retina.
Stacey L. Nelson, Caroline Merritt, Warren E. Finn and Peter L. LoPresti, TU, OSU-COM

* Collegiate Paper Competition

SECTION Z: OKLAHOMA JUNIOR ACADEMY OF SCIENCE
HOWARD AUDITORIUM

Director: Kathleen Donovan, University of Central Oklahoma

9:00 Kevin Manning, Rogers High School - Tulsa. Wright Fellow 1999 - 2000
"The Excitement of Scientific Research in Secondary School"

10:00 Bradley Brauser, Westmoore High School, Moore,
Jimmie Pigg Outstanding Teacher Award 2000
"How to produce high quality science projects."

11:00 Kevin Bogle, Classen School of Advanced Studies,
"Effect of Student Type & Gender on the Attribution of Cheating."

11:10 Ashely Tidwell, Westmoore High School,
"The Role of the Downdraft in Tornadogenesis."

11:25 Cokie Anderson, OSU Patent Librarian,
"Effective Internet Searches of the Proceedings of the Oklahoma Academy of Science."

OKLAHOMA ACADEMY OF SCIENCE PRESIDENTS

1910	H. L. Lane, OU	1953	S. P. Massey, LU
1911	D. W. Ohern, OKC	1954	A. N. Murray, TU
1912	S. W. Reaves, OU	1955	R. F. Olson, OU
1913	C. W. Shannon, OU	1956	A. M. Stebler, OAMC
1914	No meeting	1957	D. E. Howell, OAMC
1915	C. W. Shannon, OU	1958	G. J. Goodman, OU
1916	C. N. Gould, OU	1959	Elmer Lucas, OU
1917	L. C. Raiford, Iowa State	1960	P. E. Smith, OLRMS
1918	No meeting	1961	E. M. Hodnett, OSU
1919	No Meeting	1962	H. B. Barclay, TU
1920	M. M. Wickham, Norman	1963	G. A. Moore, OSU
1921	A. F. Reiter, PU	1964	A. D. Buck, NOJC
1922	J. B. Thoburn, OKC	1965	J. E. Webster, OSU
1923	R. O. Whitten, OAMC	1966	C. R. Williams, PU
1924	S. Weidman, OU	1967	C. D. Riggs, OU
1925	(Spring) C. E. Sandborn	1968	F. A. Reynolds, SW/SC
1925	(Fall) H. I. Dodge, OU	1969	L. V. Scott, OUHSC
1926	J. H. Gould, OAMC	1970	C. C. Carpenter, OU
1927	C. N. Gould, OU	1971	Paul Buck, TU
1928	O. M. Smith, OAMC	1972	W. A. Carter, ECSU
1929	A. Richards, OU	1973	C. J. Mankin, OU
1930	Leroy Long, OKC	1974	N. N. Durham, OSU
1931	A. O. Weese, OU	1975	Barbara Shirley, TU
1932	Herbert Patterson, OAMC	1976	G. W. Todd, OSU
1933	J. E. Knowles, PU	1977	D. E. Kizer, SFNF
1934	F. G. Brooks, OCU	1978	George, Odell, OSU
1935	C. E. Decker, OU	1979	Richard Couch, ORU
1936	H. J. Harper, OAMC	1980	Gary Wolgamott, SWSU
1937	B. D. Barclay, TU	1981	Elroy Rice, OU
1938	C. M. Perry, OU	1982	Everett Grigsby, NSU
1939	H. D. Chase, TU	1983	Jack Sokatch, OUHSC
1940	G. L. Cross, OU	1984	Mary Whitmore, OU
1941	R. W. Jones, OAMC	1985	Jeff Black, OBU
1942	H. I. Featherly, OAMC	1986	Jerry Wilhm, OSU
1943	O. F. Evans, OU	1987	Manford K. Patterson, SFNF
1944	V. G. Heller, OAMC	1988	Mary P. Carpenter, OU
1945	J. R. Neilson, OU	1989&1990	Kenneth E. Conway, OSU
1946	O. C. Derner, OAMC	1990&1991	James K. McPherson, OSU
1947	J. T. Self, OU	1992	James R. Estes, OU
1948	L. S. McLeod, TU	1993 -1995	Jack D. Tyler, Cameron U
1949	J. C. Shirley, PU	1996&1997	Connie Taylor, SOSU
1950	Howard Taylor, OCW	1998&1999	Ronald J. Tyrl, OSU
1951	H. W. Larsh, OU	2000&2001	David Bass, UCO
1952	V. B. Mornett, OAMC	2002&2003	Craig W. Clifford, NSU

NOTES

OKLAHOMA ACADEMY OF SCIENCE
89TH ANNUAL TECHNICAL MEETING
ORAL ROBERTS UNIVERSITY
FRIDAY, NOVEMBER 10, 2000
REGISTRATION FORM
 Register only one person per sheet.

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REGISTRATION FEE	Before November 8	November 13	ON SITE	You fill in the amount
Professional Members*	\$10.00	\$15.00		
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*If 2000 dues are paid

ALL ACADEMY AWARDS LUNCHEON
Speaker: Calvin DeWitt, University of Wisconsin
 † PREPAID ON SITE

Banquet Admission \$10.00

On site availability may be limited.

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Regular Membership	\$25.00	
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 New Members please, furnish the following to ensure essential future communication.

THE OKLAHOMA ACADEMY OF SCIENCE
2001 MEMBERSHIP APPLICATION

Name _____ (last) _____ (first) _____ (mi) _____ (University, College, High School, etc.)
 Professional Address (when applicable) _____ Dept., Bldg. Office no. etc. (if necessary for campus mail delivery)
 OR not both _____ (city) _____ (state) _____ (zip)
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Section Affiliations: Number no more than three areas of interest. 1=first choice; 2= second choice; 3= third choice
 A Biological Sciences _____ E Science Education _____ I Engineering Sciences _____ M Environmental Sci.
 B Geology _____ F Geography _____ J Biochemistry, Biophysics _____ N Biomedical Science
 C Physical Sciences _____ G Fish and Wildlife _____ K Microscopy _____ Y Collegiate Academy
 D Social Sciences _____ H Microbiology _____ L Mathematics, Computer _____ Z Junior Academy

Mail this form with your payment to The Oklahoma Academy of Science, P.O. Box 701915,
 Tulsa, OK 74170-1915 before November 6, 2000

