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## 66th Annual Meeting, 1982. Program

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# **PROGRAM**

## **Arkansas Academy of Science**

Sixty-Sixth Annual Meeting  
HENDERSON STATE UNIVERSITY  
Arkadelphia, Arkansas

Meeting concurrently with sessions of:

The Collegiate Academy of Science

*Friday, 2 April*

SENIOR AND COLLEGIATE ACADEMIES -- Registration

SENIOR ACADEMY -- Executive Board Meeting

SENIOR ACADEMY -- First General Business Meeting

WESTINGHOUSE SCIENCE TALENT SEARCH AWARDS

Lunch

SENIOR AND COLLEGIATE ACADEMIES -- Registration

SENIOR AND COLLEGIATE ACADEMIES -- Papers [Concurrent Sessions]:

Chemistry I  
Biology I -- Invertebrate Zoology/Physiology  
Geology  
Biomedical Sciences  
Biology II -- Vertebrate Zoology

SENIOR AND COLLEGIATE ACADEMIES -- Buffet

POST BUFFET SPEAKER -- Mr. Ray Thornton,  
President, Arkansas State University

*Saturday, 3 April*

SENIOR AND COLLEGIATE ACADEMIES -- Registration

SENIOR AND COLLEGIATE ACADEMIES -- Papers [Concurrent Sessions]:

Biology III -- Botany  
Chemistry II  
Aquatic Environment  
Geography

COLLEGIATE ACADEMY -- Business Meeting

SENIOR ACADEMY -- Second General Business Meeting

## SECTION PROGRAMS

[Papers marked with \* are presentations by Collegiate Academy members]

### CHEMISTRY I

Section Chairperson: Alex Nisbet

#### INTRALABORATORY RELIABILITY AND SENSITIVITY OF SELECTED TEST METHODS FOR USE IN BEHAVIORAL TERATOLOGY STUDIES.

J. Adams, C. A. Kimmel, J. Buelke-Sam, D. R. Miller, and C. J. Nelson, National Center for Toxicological Research/National Toxicology Program/DHHS, Jefferson, Ark. 72079.

#### FIBRINOGENASE AND FIBRINOLYTIC ACTIVITY OF A COMPONENT ISOLATED FROM TIMBER RATTLESNAKE VENOM.

David J. Civello, Jeffrey B. Moran and Collis R. Geren, Department of Chemistry, University of Arkansas, Fayetteville, Ark. 72701.

#### THE PROTEOLYTIC FRACTION IVA OF NORTHERN COPPERHEAD VENOM.

John M. James, David J. Civello, and Collis R. Geren, Department of Chemistry, University of Arkansas, Fayetteville, Ark. 72701.

#### PURIFICATION AND CHARACTERIZATION OF LOW MOLECULAR WEIGHT SERUM FACTORS IN REGRESSION OF ROUS SARCOMAS IN CHICKENS.

John B. Blakenship, Craig Whitfill, N. R. Gyles, and John A. Thoma, Department of Chemistry, and Department of Animal Science, University of Arkansas, Fayetteville, Ark. 72701.

#### MECHANISM FOR THE REACTION OF 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN WITH OXYGEN UNDER ATMOSPHERIC PRESSURE IONIZATION NS CONDITIONS.

R. K. Mitchum, W. A. Korfmacher and J. R. Althaus, National Center for Toxicological Research, Jefferson, Ark. 72079.

#### STEREOSELECTIVE ADDITION OF ORGANOCOPPER REAGENTS TO A NOVEL HEX-1-ENOPYRAN-3-ULOSE.

C. Michael Crowder, R. Bruce White, and Thomas E. Goodwin, Department of Chemistry, Hendrix College, Conway, Ark. 72032.

#### ANALYSIS OF IRON IN VITAMINS BY ATOMIC ABSORPTION SPECTROSCOPY.

Craig Lagrone and M. Warfield Teague, Department of Chemistry, Hendrix College, Conway, Ark. 72032.

#### A PRELUDE TO THE SYNTHESIS OF MAYTANSINOIDS.

R. Bruce White, John S. Swanson and Thomas E. Goodwin, Department of Chemistry, Hendrix College, Conway, Ark. 72032.

#### ANORGANIC MECHANISTIC STUDY CONCERNING HYDRIDE TRANSFER TO DICHLOROCARBENE.

John Landgrebe, Department of Chemistry, The University of Kansas, Lawrence, Kansas, and Curtis Erickson, Department of Chemistry, Hendrix College, Conway, Ark. 72032.

#### THE CHEMISTRY AND BIOLOGY OF TENTOXIN, A BIOLOGICALLY-PRODUCED PHYTOXIN.

Ben H. Harmon, Hendrix College, Conway, Arkansas, and George F. Templeton, University of Arkansas, Fayetteville, Ark. 72701.

#### SPECULATIONS ON LEVELS OF DESCRIPTION AND THE UNITY OF PHYSICAL LAW.

Tim Best, Department of Chemistry, Hendrix College, Conway, Ark. 72032.

#### SYNTHESIS OF A FENTANYL ANALOGUE.

Ronald F. Borne, Department of Medicinal Chemistry, School of Pharmacy, University of Mississippi, Oxford, MS 38677; Cindy Lassiter, Hendrix College H-256, Conway, Ark. 72032.

#### KINETICS AND TRANSITION STATE STRUCTURE OF THE HYDRAZINOLYSIS OF PHENYL ACETATE.

B. H. Harmon, Department of Chemistry, Hendrix College, Conway, Ark. 72032, and R. L. Schowen, Department of Chemistry, University of Kansas, Lawrence, Kansas 66045.

#### SYNTHESIS OF ENKEPHALIN ANALOGS.

David Coussens, Department of Chemistry, Hendrix College, Conway, Ark. 72032, and Nelson Voldeng, Medicinal Chemistry Department, College of Pharmacy, University of Arkansas Medical Sciences, Little Rock, Ark.

#### APPLICATION OF NONLINEAR REGRESSION ANALYSIS TO THE USE OF ENZYMES IN THE DETERMINATION OF SUBSTRATE CONCENTRATIONS.

Collis R. Geren and Francis S. Millett, Department of Chemistry, University of Arkansas, Fayetteville, Ark. 72701.

#### THE ROLE OF FRICTION IN THE SIMPLE MACHINE.

H. E. McCloud, Department of Agricultural Engineering, Arkansas State University, State University, Ark. 72467.

### BIOLOGY I — INVERTEBRATE ZOOLOGY/PHYSIOLOGY

Section Chairperson: Tom Duncan

#### ZOOPLANKTON POTENTIAL AS A HIGH QUALITY NUTRIENT FOR RIFFLE MACROBENTHOS IN OZARK STREAMS.

Arthur V. Brown and Don Jackson, Department of Zoology, University of Arkansas, Fayetteville, Ark. 72701.

#### MICROINVERTEBRATE UTILIZATION OF LEAF DETRITUS IN A RIFFLE OF THE ILLINOIS RIVER, ARKANSAS.

Arthur V. Brown and Janet P. Ricker, Department of Zoology, University of Arkansas, Fayetteville, Ark. 72701.

#### COMPARISON OF SILVER-STAIN AND N-BAND TECHNIQUES FOR NUCLEOLAR ORGANIZER REGIONS ON MEIOTIC CHROMOSOMES OF MALE *Dissosteira carolina*.

Charles M. Swanson and William L. Evans, Department of Zoology, University of Arkansas, Fayetteville, Ark. 72701.

#### FUNCTIONAL MORPHOLOGY OF THE MANTLE FLAP "EYESPOTS" OF *Lampisilis* (MOLLUSCA: BIVALVIA: UNIONIDAE).

Louise Russert Kraemer and Charles Swanson, Department of Zoology, University of Arkansas, Fayetteville, Ark. 72701.

#### NEW RECORDS FOR TROGLOBITIC ASELLIDS IN NORTHWEST ARKANSAS.

Mark D. Schram, Department of Zoology, University of Arkansas, Fayetteville, Ark. 72701.

#### LEAF PROCESSING RATES AND MACROINVERTEBRATE COLONIZATION IN A SLOUGH ON THE ILLINOIS RIVER IN NORTHWESTERN ARKANSAS.

F. Don Petty and Arthur V. Brown, Department of Zoology, University of Arkansas, Fayetteville, Ark. 72701.

#### AQUATIC MACROINVERTEBRATES OF THREE ACID BOGS ON CROWLEY'S RIDGE IN NORTHEAST ARKANSAS.

Jerry Lin Farris, 381 New Kent Rd. (Virginia Polytechnic Institute and State University), Blacksburg, VA 24064, and George L. Harp, Department of Biological Sciences, Arkansas State University, State University, Ark. 72467.

**AQUATIC MACROINVERTEBRATE TAXA PRESENT IN TWO OZARK SPRINGS IN RANDOLPH COUNTY, ARKANSAS.**

G. Randy Guntharp and George L. Harp, Department of Biological Sciences, Arkansas State University, State University, Ark. 72467.

**NOTES ON THE BIOLOGY OF *Meneles insertus* (SAY) (HEMIPTERA: PENTATOMIDAE) AS OBSERVED IN THE FIELD AND LABORATORY.**

Harvey E. Barton and Linda A. Lee, Department of Biological Sciences, Arkansas State University, State University, Ark. 72467.

**SOIL TRAVERSING ARTHROPODS OF SUNFLOWER AND THREE ADJACENT COMMUNITIES AS SAMPLED BY PITFALL TRAPS.**

Linda A. Lee and Harvey E. Barton, Department of Biological Sciences, Arkansas State University, State University, Ark. 72467.

**\*\*FINE STRUCTURE OF SPERM FROM THE FREE LIVING NEMATODE, *Turbatrix aceti*.**

Laura Wooldridge and Maurice G. Kleve, Department of Biology, University of Arkansas at Little Rock, 33rd and University, Little Rock, Ark. 72204.

**\*A PRELIMINARY STUDY OF SPIDERS OF THE EASTERN OZARK MOUNTAIN AREA OF ARKANSAS.**

Mary Beck and Peggy Rae Dorris, Department of Biology, Henderson State University, Arkadelphia, Ark. 71923.

**\*1980 B.C. AND NOW: COMPUTER AWARENESS AT UAM.**

N. Minx Olsen, NSF CAUSE project, UAM Box 3457, Monticello, Ark. 71655.

**INVERTEBRATE FAUNA OF DEVILS DEN, A ZOOGEOGRAPHICALLY IMPORTANT SANDSTONE CAVE IN NORTHWESTERN ARKANSAS.**

Stewart B. Peck, Department of Biology, Carleton University, Ottawa, Ontario, K1S 5B6, Canada, and James H. Peck, Department of Biology, University of Arkansas at Little Rock, Little Rock, Ark. 72204.

\*\*Winner of the undergraduate research award.

**GEOLOGY**

Section Chairperson: Walter L. Manger

**A PRELIMINARY REPORT ON THE DEVELOPMENT OF THE ROCK STREAMS AND ADJACENT CLIFFS ON MT. MAGAZINE, ARKANSAS.**

Victor Vere, Amada Duke and Shaleigh Hutchinson, Dept. of Physical Sciences - Geology, Arkansas Tech University, Russellville, Ark. 72801.

**PALYNOLOGY OF THE BRENTWOOD MEMBER OF THE BLOYD FORMATION, LOWER PENNSYLVANIAN, OF NORTHWEST ARKANSAS.**

James E. Edson, Department of Natural Sciences, University of Arkansas at Monticello, Monticello, Ark. 71655.

**STRATIGRAPHY OF A PENNSYLVANIAN DELTAIC SEQUENCE IN RUSSELLVILLE, ARKANSAS.**

Christopher F. Moyer and Ken Fritsche, Department of Geology, Arkansas Tech University, Russellville, Ark. 72801.

**REGIONAL DEPOSITIONAL SETTING OF LOWER MISSISSIPPIAN WAULSORTHIAN MOUND FACIES, SOUTHERN MIDCONTINENT.**

Walter L. Manger, Department of Geology and University Museum, University of Arkansas, Fayetteville, Ark. 72701 and Thomas L. Thompson, Missouri Geological Survey and Water Resources, P.O. Box 250, Rolla, Missouri 65401.

**SR/MG RATIOS IN NORTHWEST ARKANSAS LIMESTONE UNITS.**

George H. Wagner, Kenneth F. Steele and Doy L. Zachry, Geology Department, University of Arkansas, Fayetteville, Ark. 72701.

**RECONNAISSANCE OF THE GROUND WATER RESOURCES OF STONE AND INDEPENDENCE COUNTIES, ARKANSAS.**

Albert E. Ogden, Assistant Director, Edwards Aquifer Research and Data Center, SWTSU, San Marcos, Tex. 78666, and James R. Musgrove and Lisa Milligan, Dept. of Geology, University of Arkansas, Fayetteville, Ark. 72701.

**RECONNAISSANCE OF THE BEDROCK AQUIFERS AND GROUND WATER RESOURCES OF POPE, FAULKNER, CRAWFORD, FRANKLIN, AND SEBASTIAN COUNTIES, ARKANSAS.**

Samuel R. Rothermel, Wyndal M. Goodman, Julie L. Wanslow, James Musgrove, and Daryl Saulsberry, Dept. of Geology, Uni. of Ark., Fayetteville, Ark. 72701, and Albert E. Ogden, Edwards Aquifer Research and Data Center, SWTSU, San Marcos, Tex. 78666.

**BIOMEDICAL SCIENCES**

Section Chairperson: James Daly

**METABOLISM OF 6-NITROBENZO(A)PYRENE: A MUTAGENIC ENVIRONMENTAL POLLUTANT.**

Ming W. Chou and Peter P. Fu, Carcinogenesis Research Division, National Center for Toxicological Research, Jefferson, Ark. 72079.

**BLOOD LEVELS OF 5'-BROMO-2-DEOXYURIDINE IN INTRA-PERITONEAL INFUSION FOR DETERMINATION OF SISTER CHROMATID EXCHANGE INDUCTION USING THE HPLC.**

Angelo Turturro, Narendra P. Singh, Johnny Bazare, Jr. and Ronald W. Hart, National Center for Toxicological Research, Jefferson, Ark. 72079.

**A NEW TECHNIQUE FOR THE EVALUATION OF SISTER CHROMATID EXCHANGES *IN VIVO* IN TRANSPLACENTAL SYSTEMS.**

Narendra P. Singh, Angelo Turturro, Tom Grafton, Ming J. W. Chang and Ronald W. Hart, National Center for Toxicological Research, Jefferson, Ark. 72079.

**SEARCH FOR CIRCADIAN VARIATION IN THE BODY TEMPERATURE OF THE NORMAL AND NERVOUS POINTER DOG.**

Horace N. Marvin and William G. Reese, Departments of Anatomy and Psychiatry, University of Arkansas College of Medicine, Little Rock, Ark. 72205.

**CONSIDERATIONS OF PRESSURE-INDUCED MYOCARDIAL HYPERTROPHY: CYCLIC NUCLEOTIDE LEVELS AND THE EFFECTS OF CATECHOLAMINE DEPLETION.**

James R. Nichols and Norberto C. Gonzalez, Department of Biology, University of Central Arkansas, Conway, Ark. 72032, and Department of Physiology, University of Kansas Medical Center, Kansas City, Kansas 66103.

Program

**DARK REPAIR OF LETHAL DAMAGE INDUCED IN A HYBRID MAMMALIAN TISSUE CULTURE CELL LINE BY ULTRAVIOLET LIGHT.**

Robin L. Haetten, Margaret C. M. McGuinness and H. Gaston Griggs, Department of Biology, John Brown University, Siloam Springs, Ark. 72761.

**\*EFFECTS OF VARIOUS TREATMENTS ON THE DISTRIBUTION IN RATS OF IMMUNE COMPLEXES CONTAINING ANTIGENS OF MuLV LEUKEMIA VIRUS.**

Wail M. Saig, Jean Matchett, and Joe M. Jones, Department of Microbiology and Immunology, and Pathology. University of Arkansas for Medical Sciences, Little Rock, Ark. 72205.

**PHYSIOLOGICAL STUDIES OF HEAT STRESS ACCLIMATION DURING A SPECIFIC EXERCISE REGIMEN.**

Leland F. Morgans, Department of Biology, University of Arkansas at Little Rock, Little Rock, Ark. 72204.

**SLEEP OF ELDERLY PATIENTS ON A GERIATRIC WARD.**

Edgar A. Lucas, Carla Brakhop and L. E. Scheving, Department of Anatomy, University of Arkansas for Medical Sciences and Department of Geriatrics, Veterans Administration Hospital.

**EFFECTS OF ETHANOL METABOLISM ON SELECTION BEHAVIOR.**

J. Russell, D. Serbus and R. Stull, University of Arkansas for Medical Sciences, Colleges of Medicine and Pharmacy, Little Rock, Ark. 72205.

**DIMINUTION OF MEMBRANE-BOUND ERYTHROCYTE ZINC CONCENTRATIONS FOLLOWING CHRONIC ETHANOL EXPOSURE.**

D. Serbus, J. Russell and R. Stull, University of Arkansas for Medical Sciences, Colleges of Medicine and Pharmacy, Little Rock, Ark. 72205.

**ULTRASTRUCTURAL ASPECTS OF THE LEGIONNAIRE'S DISEASE BACTERIUM.**

William R. Bowen, Paul Morgan, and Chao N. Sun, Department of Biology, University of Arkansas at Little Rock and Veterans Administration Medical Center at Little Rock.

**EFFECT OF BACTERIAL CONCENTRATION ON REVERSIONS INDUCED IN THE *Salmonella*/MICROSOME ASSAY.**

G. L. White, D. T. Beranek, and R. H. Heflich, National Center for Toxicological Research, Jefferson, Ark. 72079.

**AURAMINE O AS AN INHIBITOR OF F<sub>1</sub> ATPase ACTIVITY.**

R. C. Steinmeier, R. S. Kyle, C. J. Graham, and D. G. Ragland, Department of Chemistry, University of Arkansas - Little Rock, Little Rock, Ark. 72204.

**BIOLOGY II — VERTEBRATE ZOOLOGY**

Section Chairperson: Kelly Oliver

**PREY SIZE IN FISH-EATING WATER SNAKES (*Nerodia rhombifera*).**

Michael V. Plummer and Jo M. Boykin, Department of Biology, Harding University, Searcy, Ark. 72143.

**OBSERVATIONS ON PERIPHERAL DISTRIBUTION OF FOUR SPECIES OF PRAIRIE-ASSOCIATED VERTEBRATES FROM RICE PRAIRIE, BENTON COUNTY, ARKANSAS.**

F. Don Petty and Robin Rhinehart-Buff, Department of Zoology, University of Arkansas, Fayetteville, Ark. 72701.

**SELECTION OF BREEDING PONDS BY THE RINGED SALAMANDER, *Ambystoma annulatum*.**

Peter P. Brussock and Arthur V. Brown, Department of Zoology, University of Arkansas, Fayetteville, Ark. 72701.

**PROTECTIVE IMMUNE RESPONSES OF RABBITS TO *Ascaris suum* LARVAL ANTIGENS.**

Lawrence W. Hinck and Myra B. Finch, Department of Biological Sciences, Arkansas State University, State University, Ark. 72467.

**AN INFESTATION OF THE BED BUG *Cimex pilosellus* ON AN ARKANSAS POPULATION OF BIG BROWN BATS (*Eptesicus fuscus*).**

Alan D. Price, Renn Tumblison, and V. Rick McDaniel, Department of Biological Sciences, Arkansas State University, State University, Ark. 72467.

**INDICATIONS OF A COMMENSAL RELATIONSHIP BY RIVER OTTER WITH BEAVER.**

Renn Tumblison and Mark Karnes, Department of Biological Sciences, Arkansas State University, State University, Ark. 72467.

**MORPHOLOGY, REPLACEMENT MECHANISMS, AND FUNCTIONAL CONSERVATION IN DENTAL REPLACEMENT PATTERNS OF THE BOBCAT.**

Renn Tumblison and V. Rick McDaniel, Department of Biological Sciences, Arkansas State University, State University, Ark. 72467.

**ANALYSIS OF REGURGITATED SHORT-EARED OWL (*Asio flammeus*) PELLETS FROM THE ROTH PRAIRIE, ARKANSAS COUNTY, ARKANSAS.**

Ron Smith and Earl Hanebrink, Department of Biological Sciences, Arkansas State University, State University, Ark. 72467.

**A COMPARISON OF EVAPORATIVE WATER LOSS IN TWO SNAKE SPECIES.**

Robert L. Rountree, Steve Maes and Dennis A. Baeyens, Biology Department, University of Arkansas at Little Rock, Little Rock, Ark. 72204.

**A COMPARISON OF TOOTH MORPHOLOGY AND DIETARY PATTERN IN FOUR SNAKE SPECIES.**

Sid F. Eudy and Dennis A. Baeyens, Biology Department, University of Arkansas at Little Rock, Little Rock, Ark. 72204.

**NOTES ON THE WINTER FOOD HABITS OF MINK (*Mustela vison* SCHREBER) FROM NORTHEAST ARKANSAS.**

Ronald A. Smith and V. Rick McDaniel, Dept. of Biological Sciences, Arkansas State University, State University, Ark. 72467.

**REPORTED ANIMAL RABIES IN ARKANSAS: 1950-1981.**

Gary A. Heidt, Dept. of Biology, University of Arkansas at Little Rock, Little Rock, Ark. 72204.

**CAVE FAUNA OF ARKANSAS: FURTHER RECORDS.**

James D. Dunivan, Renn Tumblison, and V. Rick McDaniel, Dept. of Biological Sciences, Arkansas State University, State Univ., Ark. 72467.

**STATUS OF THE SMALL-FOOTED BAT, *Myotis leibii*, IN ARKANSAS.**

V. Rick McDaniel, Renn Tumblison, and Ken N. Paige, Department of Biological Sciences, Arkansas State University, State University, Ark. 72467.

**MENSURAL DISCRIMINATION OF THE SKULLS OF ARKANSAS SPECIES IN THE BAT GENUS *Myotis*.**

James D. Dunivan, Renn Tumblison, and V. Rick McDaniel, Dept. of Biological Sciences, Arkansas State University, State Univ., Ark. 72467.

TEMPERATURE EFFECTS ON O<sub>2</sub> CONSUMPTION IN NEOTENIC GRAYBELLY SALAMANDERS (*Eurycea multiplicata griseogaster*) FROM SAVOY CAVE, ARKANSAS.

Chris T. McAllister, Thomas L. Beltinger and Lloyd C. Fitzpatrick, Dept. of Biological Sciences, North Texas State University, Denton, TX 76203.

### BIOLOGY III — BOTANY

Section Chairperson: Dan Marsh

#### THE ENDEMIC FLORA AND FAUNA OF ARKANSAS.

Henry W. Robison and Kenneth L. Smith, Department of Biology, Southern Arkansas University, Magnolia, Ark. 71753; Arkansas Natural Heritage Commission, Suite 501, Continental Bldg., Main & Markham, Little Rock, Ark. 72201.

#### \*EARLY STAGES OF PRAIRIE RESTORATION ON A THREE-ACRE FIELD IN FAULKNER COUNTY, ARKANSAS.

Robert Wright and Donald Culwell, Department of Biology, University of Central Arkansas, Conway, Ark. 72032.

#### HAZARD RATING SYSTEM OF ARKANSAS FORESTS FOR SOUTHERN PINE BEETLE.

Timothy T. Ku, Department of Forest Resources, University of Arkansas at Monticello, Monticello, Ark. 71655.

#### SEVEN SIGNIFICANT VASCULAR PLANT RECORDS FOR ARKANSAS.

J. H. Rettig, Arkansas Natural Heritage Commission, Suite 500, Continental Building, Main and Markham, Little Rock, Ark. 72201.

#### THE EFFECTS OF MOWING AND BURNING ON A RESTORED PRAIRIE AT PEA RIDGE NATIONAL MILITARY PARK, BENTON COUNTY, ARKANSAS.

Edward E. Dale, Jr., Department of Botany and Bacteriology, University of Arkansas, Fayetteville, Ark. 72701.

#### NEW AND INTERESTING PLANTS TO THE ARKANSAS FLORA FROM NORTHEASTERN ARKANSAS.

Edward L. Richards, Department of Biological Sciences, Arkansas State University, State University, Ark. 72467.

#### A SURVEY OF OVERCUP OAK- AND PIN OAK-DOMINATED SWAMPS IN THE BOSTON MOUNTAINS OF ARKANSAS.

Gary E. Tucker, Biological Sciences Department, Arkansas Tech University, Russellville, Ark. 72801.

#### ALLOCHTHONOUS DETRITUS PROCESSING IN AN OZARK CAVE STREAM.

Arthur V. Brown, and Mark D. Schram, Department of Zoology, University of Arkansas, Fayetteville, Ark. 72701.

#### HOST REACTIONS AND PHYSICAL PROPERTIES OF 4 ISOLATES OF TOBACCO RINGSPOT VIRUS.

Dr. James M. McGuire and Lisa Smith, Department of Plant Pathology, University of Arkansas, Fayetteville, Ark. 72701.

### CHEMISTRY II

Section Chairperson: Alex Nisbet

#### EXPERIMENTAL CONFIRMATION OF THE INCONGRUENT VAPORIZATION OF K<sub>2</sub>S AT HIGH TEMPERATURES.

J. Edward Bennett, Department of Chemistry, Arkansas State University, State University, Ark. 72467.

#### SPECTROPHOTOMETRIC DETERMINATION OF NITRITE.

Dyeann Shaver, James W. King, Jr. and Norman L. Trautwein, Department of Chemistry, Arkansas State University, State University, Ark. 72467.

#### ADJUVANT-INDUCED POLYARTHRITIS IN COPPER DEFICIENT MALE RATS.

Vimal Kishore, John R. J. Sorenson and Neal Latman\*, Department of Biopharmaceutical Sciences, College of Pharmacy and Department of Pharmacology, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, Arkansas and \*School of Pharmacy, Southwestern Oklahoma State University, Weatherford, Oklahoma.

#### ANTICANCER ACTIVITIES OF SOME COPPER SALICYLATES.

John R. J. Sorenson<sup>1, 2</sup>, Larry W. Oberley<sup>3</sup>, Terry D. Oberley<sup>4</sup>, Susan W. C. Leuthauser<sup>5</sup>, K. Ramakrishna<sup>6</sup>, Lisa Vernino<sup>7</sup>, and Vimal Kishore<sup>1</sup>, <sup>1</sup>Department of Biopharmaceutical Sciences, College of Pharmacy, and <sup>2</sup>Department of Pharmacology, College of Medicine, University of Arkansas for Medical Sciences; <sup>3</sup>Radiation Research Laboratory, University of Iowa, <sup>4</sup>Department of Pathology, College of Medicine, University of Wisconsin; and <sup>5</sup>Department of Chemistry, Lane College.

#### ANALYSIS OF PESTICIDES BY LOW TEMPERATURE PHOSPHORIMETRY.

Norman L. Trautwein, Department of Chemistry, Arkansas State University, State University, Ark. 72467, and John C. Guyon, Department of Chemistry, Southern Illinois University, Carbondale, Ill. 62901.

#### WHATEVER HAPPENED TO....?

Billie G. Broach, Department of Chemistry, University of Arkansas at Little Rock, 33rd and University, Little Rock, Ark. 72204.

### AQUATIC ENVIRONMENT

Section Chairperson: Kenneth Beadles

#### NEW ARKANSAS RECORDS FOR *Etheostoma cragini* GILBERT AND *Etheostoma microperca* JORDAN AND GILBERT (PISCES: PERCIDAE).

Kenneth L. Smith and John Harris, Arkansas Natural Heritage Commission, Suite 501, Continental Bldg., Main and Markham, Little Rock, Ark. 72201; Arkansas Highway and Transportation Department, Little Rock, Ark. 72203.

#### EFFECT OF STOCKING DENSITY ON CHANNEL CATFISH GROWTH, SURVIVAL, AND FOOD CONVERSION IN CAGES.

Walter R. Robison and Scott H. Newton, Department of Agriculture, University of Arkansas at Pine Bluff, Pine Bluff, Ark. 71601.

#### THE WARMWATER FISH COMMUNITY OF A COLD TAILWATER IN ARKANSAS.

Richard A. Frietsche, U. S. Fish and Wildlife Service, Box 705, Ouachita Baptist University, Arkadelphia, Ark. 71923.

#### AN OVERWINTERING, FEEDING STUDY OF CHANNEL CATFISH IN CAGES.

Walter R. Robison, Department of Agriculture, University of Arkansas at Pine Bluff, Pine Bluff, Ark. 71601.

#### WATER QUALITY AND BENTHIC INVERTEBRATE COMMUNITIES IN LAKE GREESON TAILWATER.

Stephen B. Smith, U. S. Fish and Wildlife Service, Multi-Outlet Reservoir Studies, Box 705, Ouachita Baptist University, Arkadelphia, Ark. 71923.

## Program

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### WATER CHEMISTRY OF FARM PONDS IN ARKANSAS.

Stanley L. Chapman, D. Leroy Gray, and Dennis King, Cooperative Extension Service, University of Arkansas, Little Rock, Ark. 72203.

### EFFECTS OF WATER RELEASED FROM STRATIFIED AND UNSTRATIFIED RESERVOIRS ON THE DOWNSTREAM WATER QUALITY.

Stephen B. Smith, Multi-Outlet Reservoir Studies, U. S. Fish and Wildlife Service, Arkadelphia, Ark. 71923.

### WILD COMMERCIAL FISHERY OF ARKANSAS.

Tommie Crawford and Mike Freeze, Arkansas Game and Fish Commission, Number Two Resources Drive, Little Rock, Ark. 72205.

### POLYCULTURE OF FRESHWATER PRAWNS AND FLATHEAD MINNOWS.

Tommie Crawford and Mike Freeze, Arkansas Game and Fish Commission, Number Two Natural Resources Drive, Little Rock, Ark. 72205.

### THE FUTURE OF WATER RESOURCES RESEARCH IN ARKANSAS.

Leslie E. Mack, Water Resources Research Center, University of Arkansas, Fayetteville, Ark. 72701.

### GEOGRAPHY

Section Chairperson: Carl Jameson

### ARKANSAS PRECIPITATION MAPS: A NEW APPROACH.

Don W. De Spain, Department of Geography, University of Arkansas, Fayetteville, Ark. 72701.

### ATMOSPHERIC CIRCULATION PATTERNS AND ARKANSAS DROUGHT.

John C. Fouke, Department of Geography, University of Arkansas, Fayetteville, Ark. 72701.

### A LOCATIONAL ANALYSIS OF RECREATIONAL SUBDIVISIONS IN THE UNITED STATES.

Hubert B. Stroud, Department of Sociology and Geography, Arkansas State University, State University, Ark. 72467.