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PROGRAM

Arkansas Academy of Science

Seventy-Second Annual Meeting

ARKANSAS TECH UNIVERSITY

Russellville, Arkansas

Meeting concurrently with sessions of

The Collegiate Academy of Science

Friday, 1 April, 1988

SENIOR AND COLLEGIATE ACADEMIES -- Registration

SENIOR ACADEMY -- Executive Board Meeting

SENIOR ACADEMY -- First General Business Meeting

Lunch

SENIOR AND COLLEGIATE ACADEMIES: Registration

SENIOR AND COLLEGIATE ACADEMIES: Papers [Concurrent Sessions]:

Agronomy-Forestry
Aquatic and Environmental I
Biomedical-Microbiological I
Botany
Chemistry I
Geology-Earth Science
Science Education I
Vertebrate Zoology I

SENIOR AND COLLEGIATE ACADEMIES -- Banquet

POST BANQUET SPEAKER -- Dr. Warren H. Wagner, Jr.
University of Michigan
Ann Arbor, MI

Saturday, 2 April, 1988

SENIOR AND COLLEGIATE ACADEMIES -- Registration

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

Aquatic and Environmental II
Biomedical-Microbiological II
Chemistry II
Invertebrate Zoology
Physics-Mathematics
Vertebrate Zoology II

ARKANSAS SCIENCE TALENT SEARCH

SENIOR ACADEMY -- Second General Business Meeting

SECTION PROGRAMS

AGRONOMY - FORESTRY

Session Chairperson: O. D. Smith (Timber Staff Officer,
Ozark-St. Francis National Forests, Russellville, AR)

ADVENTURES IN FORESTRY - THE TAIWAN CONNECTION.
Timothy T. Ku, R. Scott Beasley, and James M. Guldin, Dept.
of Forest Resources, Arkansas Agric. Exp. Sta., UAM, Monticello,
AR 71655.

**FORESTRY ON THE ISLAND OF TAIWAN, REPUBLIC OF
CHINA - THE STATE OF THE ART.**

James M. Guldin, R. Scott Beasley, and T. T. Ku. Dept. Forest
Resources, Arkansas Agric. Exp. Sta., UAM, Monticello, AR
71655.

**ARKANSAS' FORESTS: YESTERDAY, TODAY, AND
TOMORROW.**

Richard A. Kluender and R. Larry Willett. Dept. of Forest
Resources, Ark. Agric. Exp. Sta., UAM, Monticello, AR 71655;
Extension Forester, Arkansas Cooperative Extension Service, Mon-
ticello, AR 71655.

**A FOUR YEAR ANALYSIS OF WILDFIRES IN SOUTHEASTERN
ARKANSAS.**

Richard A. Kluender, Gregory W. Callahan, and Lynne C. Thomp-
son. Department of Forest Resources, UAM, Monticello, AR
71655.

**INFLUENCE OF NITROGEN FERTILITY ON MILLING YIELD
OF RICE (*Oryza sativa*).**

R. H. Dilday, USDA-ARS, Box 287, Stuttgart, AR 72160.

**IMPACTS OF SILVICULTURAL ALTERNATIVES ON NUTRIENT
EXPORT VIA STREAMFLOW IN THE OUACHITA MOUNTAINS.**

R. S. Beasley, E. L. Miller, and E. R. Lawson. Department of
Forest Resources, UAM, Monticello, AR 71655; Dept. of Forestry,
OSU, Stillwater, OK 74078; Forest Hydrology Lab, US Forest Ser-
vice, Oxford, MS 38655.

**STANDARD AND SEMIDWARF RICE (*Oryza sativa*) CULTIVARS
AND THE ASSOCIATION OF PLANT HEIGHT, SEEDLING
VIGOR, AND MESOCOTYL/COLEOPTILE ELONGATION.**

S. L. Skinner, R. H. Dilday, M. A. Mgonja, and S. A. Amonsilpa,
USDA-ARS, 287, Stuttgart, AR 72160.

**SEEDLING GROWTH RESPONSE IN A GREENHOUSE TO FOUR
RATES OF OLD AND NEW PAPER MILL SLUDGE.**

J. L. Yeiser, Department of Forest Resources, UAM, Monticello,
AR 72655.

**HERBICIDE TREATMENTS FOR CONTAINER-GROWN SEED-
LINGS IN PROGENY TESTS.**

J. L. Yeiser (UAM), J. W. Boyd (Extension), and D. J. Reed
(UAM). Dept. of Forest Resources, UAM, Monticello, AR 72655;
Arkansas Cooperative Extension Service, Little Rock, AR 72203.

**SURVIVAL AND GROWTH TWO YEARS AFTER CONTROL OF
HERBACEOUS COMPETITORS IN NEWLY PLANTED SEED-
LINGS OF LOBLOLLY PINE.**

J. L. Yeiser and J. W. Boyd. Department of Forest Resources,
UAM, Monticello, AR 71655; and UA Cooperative Extension
Service, Little Rock, AR 72203.

**THE EFFECTS OF ANTHROPOGENIC STRESSES ON SOIL
WATER CHEMISTRY OF SOUTHERN PINE FORESTS.**

G. L. Wheeler, T. T. Ku, and R. J. Colvin; Dept. of Horticulture
and Forestry, UA, Fayetteville, AR 72701; Dept. of Forestry
Resources, UAM, Monticello, AR 71665; and SW Research and
Extension Center, UA, Hope, AR 72801.

AQUATIC - ENVIRONMENTAL I

Session Chairperson: Dr. Harlan McMillan (Biology, ATU)

PCB CONTAMINATION IN LAKE PINE BLUFF.

Bruce Shackelford, Arkansas Department of Pollution Control &
Ecology, 8001 National Drive, Little Rock, AR 72209.

**DISTRIBUTION AND HABITAT OF DARTERS AS FOUND
IN REPRESENTATIVE STREAMS OF CLARK COUNTY,
ARKANSAS.**

Thomas Brett Hobbs, HSU, Arkadelphia, AR 71923.

**RAPID BIOASSESSMENTS OF MACROINVERTEBRATE
COMMUNITIES IN ARKANSAS STREAMS.**

Bruce Shackelford, Arkansas Dept. of Pollution Control and
Ecology, 8001 National Drive, Little Rock, AR 72209.

A PRACTICAL WATER SAMPLER.

Richard S. Mitchell and Edward L. Richards, Depts. of Chemistry
and Biological Sciences, ASU, State University, AR 72467.

PHYTOTOXICITY OF SOIL RESIDUES OF JP-4 AVIATION FUEL.

Richard H. Brown, Biology Department, OBU, Box 3686,
Arkadelphia, AR 71923.

**CATFISH (*Ictalurus punctatus*) AQUACULTURE AND OFF-
FLAVOR RELATED TO BLUE-GREENS.**

Richard S. Mitchell and Edward L. Richards, Depts. of Chemistry
and Biological Sciences, ASU, State University, AR 72467.

**BIOLOGICAL RESPONSE TO HABITAT ALTERATION IN A
SMALL OZARK STREAM.**

Danny J. Ebert and Stephen P. Filipek. U.S. Forest Service, 605
W. Main, Russellville, AR 72801; and Arkansas Game and Fish
Commission, #2 Natural Resources Drive, Little Rock, AR 72201.

BIOMEDICAL - MICROBIOLOGY I

Session Chairperson: Dr. John Martin (Chemistry, ATU)

**PLASMA CORTICOSTERONE CONCENTRATION DECREASES
WITH INCREASE OF BODY TEMPERATURE IN BACTERIAL
LIPOPOLYSACCHARIDE-INJECTED RABBITS.**

Stanley N. David and Lawrence W. Hinck. Department of
Biological Sciences, ASU, State University, AR 72467.

**THE EFFECT OF METRONIDAZOLE ON THE MURINE IMMUNE
RESPONSE TO PNEUMOCOCCAL POLYSACCHARIDE AND
Plasmodium yoelli.**

Dale Ferguson (UALR), Steve Koeller (UALR), and Jim Daly
(UAMS). UALR, Little Rock, AR 72204; and UAMS, Little Rock,
AR 72205.

**ATTEMPTED SYNTHESIS OF ENKEPHALIN ANALOGUES AS
OPIATE RECEPTOR LABELS.**

Danny L. Lattin (UAMS), John Moix (UAMS), and Eric Pierce
(SAU). College of Pharmacy, UAMS, Little Rock, AR 72204; and
SAU, Magnolia, AR 71753.

**MALATE DEHYDROGENASE KINETICS OF AN ANAEROBIC
VERTEBRATE.**

J. M. Walters, D. A. Baeyens, and W. G. Smith. Biology Dept.,
UALR, Little Rock, AR 72204.

***Strongyloides stercoralis*: IMMUNOBIOLOGICAL STUDIES OF AN
UNUSUAL WORM.**

Yvette Randle and Robert Genta. Dept. of Biology, UAPB, Pine
Bluff, AR 71601; Laboratory for Infectious Diseases, Cincinnati
Veterans Hospital, Cincinnati, OH 45219.

Program

ISOLATION OF SODIUM FLUORIDE RESISTANT MUTANTS OF *Streptococcus sanguis* AND *S. salivarius*.

Hamid R. Janloo and Timothy R. Kral. Dept. of Botany and Microbiology, UA, Fayetteville, AR 72701.

COMPARISON OF FLUORIDE RESISTANCE LEVELS OF *Streptococcus Mutans* MUTANTS GROWING ON DIFFERENT CARBOHYDRATE SOURCES.

Ralf Krahe, Michael E. Scheinost, and Timothy A. Kral, Dept. of Botany and Microbiology, UA, Fayetteville, AR 72701.

CYCLIC AMP PHOSPHODIOESTERASE ACTIVITY IN THE HAPLOID STAGE (MYXAMOEBIA) OF THE MYXOMYCETE *Physarum flavicomum*.

Tammy K. Ebsen and Thomas J. Lynch. Dept. of Biology, UALR, Little Rock, AR 72204.

FURTHER STUDIES OF A HEAT STABLE NUCLEAR CYCLIC-GMP AND CYCLIC-AMP PHOSPHODIOESTERASE FROM THE PLASMODIUM OF *Physarum flavicomum*.

C. Kay Holtman (UALR), Judith A. Bean (UCA), and Thomas J. Lynch (UALR). Dept. of Biology, UALR, Little Rock, AR 72204; and Dept. of Biology, UCA, Conway, AR 72032.

DEVELOPMENT OF MONOCLONAL ANTIBODIES TO THE MUCOID EXOPOLYSACCHARIDE OF *Pseudomonas aeruginosa*.

John T. Stine, James M. Saunders, and R. Mark Wooten. Dept. of Botany and Microbiology, UA, Fayetteville, AR 72701.

ANTIMICROBIAL PROPERTIES FROM LAND SNAIL EGGS.

Winifred Fraser, Arkansas College, Batesville, AR 72501.

BOTANY

Session Chairperson: Dr. Gerald Hutchinson
(Mining and Mineral Resources Research Institute, ATU)

GIBBERELLIN FUNCTION IN CASTOR BEAN IS ASSOCIATED WITH CHANGES IN TISSUE SENSITIVITY.

James G. Taylor and John S. Choinski, Jr. Dept. of Biology, UCA, Conway, AR 72032.

SPECIES BIOLOGY OF *Lindera melissifolia*, PONDBERRY, A FEDERALLY LISTED SPECIES, IN NORTHEAST ARKANSAS.

Robert D. Wright, Dept. of Biology, UCA, Conway, AR 72032.

A SURVEY OF THE VASCULAR PLANTS OF CARROLL COUNTY, ARKANSAS.

Michael E. Murphy. Dept. of Biological Sciences, ASU, State University, AR 72467.

IDENTIFICATION, SURVEY, AND EVALUATION OF POTENTIAL HABITATS OF *Geocarpon minimum* MACKENZIE IN ARKANSAS.

Albert B. Pittman. Arkansas Natural Heritage Commission, The Heritage Center, Suite 200, 225 E. Markham, Little Rock, AR 72201.

SELECTED SPECIES OF NATIVE PLANTS FOR USE ON HIGHWAY RIGHT OF WAY.

Don Culwell and Wendy Welch. Dept. of Biology, UCA, Conway, AR 72032; and Arkansas Highway and Traffic Department, Environmental Division, Box 2261, Little Rock, AR 72203.

LITERATURE TO ARKANSAS FIELD BOTANY.

James H. Peck and Carol J. Peck. Department of Biology, UALR, Little Rock, AR 72204.

IN MEMORIAM: MAXINE CLARK, 1905-1988.

Gary Tucker. Biological Sciences Dept., ATU, Russellville, AR 72801.

POPULATIONS AND SUCCESSION OF PROTOSTELIDS ON *Zea mays*.

S. W. Miller and F. W. Spiegel. Dept. of Botany and Microbiology, UA, Fayetteville, AR 72701.

STATUS AND REPRODUCTION OF LOG FERNS (*Dryopteris*) IN ARKANSAS.

James H. Peck and Carol J. Peck. Dept. of Biology, UALR, Little Rock, AR 72204.

DELZIE DEMAREE, BOTANIST, 1889-1987.

Gary Tucker. Biological Sciences Dept., ATU, Russellville, AR 72801.

CHEMISTRY I

Session Chairperson: Dr. Robert Allen (Chemistry, ATU)

SYNTHESIS OF CARBOHYDRATE-DERIVED CHIRONS FROM D-ARABINOSE.

Heidi E. Mills and Thomas E. Goodwin. Dept. of Chemistry, Hendrix College, Conway, AR 72032.

REACTION OF ALLYLIC SULFIDE ANIONS WITH CARBOHYDRATE-DERIVED EPOXIDES.

Angela K. Wilson, Belinda Shirkey, and Thomas E. Goodwin. Dept. of Chemistry, Hendrix College, Conway, AR 72032.

SYNTHESIS OF NOVEL PRIMAQUINE ANALOGUES.

John C. Byrd, Warren A. Tucker, and Thomas E. Goodwin. Dept. of Chemistry, Hendrix College, Conway, AR 72032.

SYNTHESIS AND SUBSEQUENT TRANSFORMATION OF CARBOHYDRATE-DERIVED ENZYMES.

Michele N. Rothaman and Thomas E. Goodwin. Dept. of Chemistry, Hendrix College, Conway, AR 72032.

SYNTHESIS, REARRANGEMENT AND SUBSEQUENT TRANSFORMATIONS OF ISOXAZOLIDINE TOSYLATES.

Cheryl F. Lichti, Van Anh Pham, James E. Montgomery, and Thomas E. Goodwin. Dept. of Chemistry, Hendrix College, Conway, AR 72032.

NOVEL APPLICATIONS OF THE STETTER REACTION.

Sam Clark, and Thomas E. Goodwin. Dept. of Chemistry, Hendrix College, Conway, AR 72032.

THE X-RAY CRYSTALLOGRAPHY RESEARCH PROGRAM AT UALR.

A. F. Gremillion and S. E. Wallace. Dept. of Chemistry, UALR, Little Rock, AR 72204.

SECONDARY STRUCTURE IN OVALBUMIN mRNA AND ITS PRECURSORS.

Paul M. Henry and Randall A. Kopper. Dept. of Chemistry, Hendrix College, Conway, AR 72032.

METAL ION COFACTOR REQUIREMENTS OF ALKALINE PHOSPHATASE.

Jennifer R. Thompson and Randall A. Kopper. Dept. of Chemistry, Hendrix College, Conway, AR 72032.

ISOLATION AND IDENTIFICATION OF PRECURSOR mRNAs.

Frances Suria and Randall A. Kopper. Dept. of Chemistry, Hendrix College, Conway, AR 72032.

ENZYME KINETICS IN HYDROPHOBIC SOLVENTS.

Tonya L. Scruggs and Randall A. Kopper. Dept. of Chemistry, Hendrix College, Conway, Ar 72032.

Arkansas Academy of Science

THE SYNTHESIS AND CHARACTERIZATION OF ANTINEOPLASTIC AND SUPEROXIDE DISMUTASE-MIMETIC MANGANESE(II) COMPLEXES.

LaWanda d. Jones, Richard A. West, Kenneth Foster, and William M. Willingham, Department of Chemistry, UAPB, Pine Bluff, AR 71601.

FLUORESCENCE-FREE RAMAN SPECTROSCOPY.

Skip Williams. Chemistry Dept. UALR, Little Rock, AR 72204.

GEOLOGY - EARTH SCIENCES

Session Chairperson: Dr. Victor Vere (Geology, ATU)

ATYPICAL RAINFALL EVENTS IN NORTHEAST ARKANSAS, 1987.

David M. Chittenden II. Chemistry Dept., ASU, State University, AR 72467.

THE WILCOX GROUP OF UNION COUNTY, ARKANSAS: STRATIGRAPHY AND GEOHYDROLOGIC APPLICATIONS.

Lesli J. Wood. Dept. of Geology, UA, Fayetteville, AR 72701.

GAMMA RAY MEASUREMENTS IN HOT SPRINGS NATIONAL PARK ARKANSAS.

Claude E. Epperson and Noel R. Rhodes. College of Pharmacy, UAMS, Little Rock, AR 72205.

COMPARISON OF EARTHQUAKE MITIGATION IN SMALL COMMUNITIES VS. URBAN CENTERS.

David L. Vosburg, Dept. of Chemistry, ASU, State University, AR 72467.

TREETHROW AS A MASS WASTING PROCESS IN THE BOSTON MOUNTAINS OF NORTHERN FRANKLIN COUNTY, ARKANSAS.

John D. Hall. Dept. of Geography, UA, Fayetteville, AR 72701.

EVOLUTION OF THE MISSISSIPPI RIVER FLOOD PLAIN NEAR BLYTHEVILLE, ARKANSAS.

M. J. Guccione. Dept. of Geology, UA, Fayetteville, AR 72701.

SCIENCE EDUCATION I

Session Chairperson: Dr. Robbin Anderson (Chemistry, UA)

UNDERGRADUATE RESEARCH AS SCIENCE EDUCATION.

Frank Millett, Dept. of Chemistry, UA, Fayetteville, AR 72702; Thomas J. Lynch, Dept. of Biology, UALR, Little Rock, AR 72204; Thomas E. Goodwin, Dept. of Chemistry, Hendrix College, Conway, AR 72032.

VERTEBRATE ZOOLOGY I

Session Chairperson: Dr. Glyn Turnipseed (Biology, ATU)

FOOD HABITS OF THE NINE-BANDED ARMADILLO (*Dasypus noveminctus*) IN SOUTHWESTERN ARKANSAS.

Robert S. Sikes (MSU), Gary A. Heidt (UALR), Joni L. Matthews, (UALR), and Douglas Elrod (UALR). Dept. of Biology, MSU, Memphis, TN 38152; and Dept. of Biology, UALR, Little Rock, AR 72204.

USE OF FOREST OPENINGS BY WILD TURKEYS ON THE OZARK NATIONAL FOREST.

Thomas A. Nelson (ATU), Lowell Aberson (ATU), and Gary Hartman (USFS). Biological Sciences Dept., ATU, Russellville, AR 72801; and USFS, Ozark-St. Francis National Forests, Russellville, AR 72801.

THE BATS OF HOT SPRINGS NATIONAL PARK.

David A. Saugey (USFS), Dianne G. Saugey (USFS), Gary A. Heidt, (UALR), and Darrell R. Heath (UALR). USFS, Ouachita National Forest, Hot Springs, AR 72902; Dept. of Biology, UALR, Little Rock, AR 72204.

AUTUMN DIETS OF WHITE-TAILED DEER IN ARKANSAS.

Thomas A. Nelson (ATU), Luke Eggering (ATU), and Danny Adams (IPC). Biological Sciences Dept., ATU, Russellville, AR 72801; and International Paper Company, Arkadelphia, AR 71923.

EFFECT OF FIRE ON POPULATIONS OF THE PRAIRIE VOLE (*Microtus ochrogaster*) ON THE GRAND PRAIRIE IN CENTRAL ARKANSAS.

Mark Kirchner, Belinda Raybon, and Gary Heidt. Dept. of Biology, UALR, Little Rock, AR 72204.

AN ANALYSIS OF BARN OWL PELLETS FROM A SINGLE LOCATION.

T. W. Steward (ATU), J. D. Wilhide (ASU), V. R. McDaniel (ASU), and Dan England (SAU). Dept. of Biological Sciences, ASU, State University, AR 72467; Biology Dept., SAU, Magnolia, AR 71753.

DISTRIBUTION AND ASPECTS OF REPRODUCTION AND NATURAL HISTORY OF THE BRAZILIAN FREE-TAIL BAT, *Tadarida brasiliensis cynocephala*, IN ARKANSAS.

David A. Saugey (USFS), Tim W. Steward (ASU), Daniel R. England (SAU), V. R. McDaniel (ASU), and Gary A. Heidt (UALR). U. S. Forest Service, Ouachita National Forest, Hot Springs, AR 71902; Dept. of Biological Sciences, ASU, State University, AR 72467; Biology Dept., SAU, Magnolia, AR 71753; and Dept. of Biology, UALR, Little Rock, AR 72204.

REPRODUCTIVE CHARACTERISTICS OF SOUTH FLORIDA *Sternotherus odoratus* AND *Kinosternon baurii* (TESTUDINES: KINOSTERNIDAE).

Walter E. Meshaka, Dept. of Biological Sciences, ASU, State University, AR 72467.

EGGTOOTH DEVELOPMENT AND MORPHOLOGY IN THE SIX-LINED RACERUNNER, *Cnemidophorus sexlineatus* (SAURIA: TEIIDAE) USING SCANNING ELECTRON MICROSCOPY.

Stanley E. Trauth, Dept. of Biological Sciences, ASU, State University, AR 72467.

A COMPARISON OF EIGHT AGING TECHNIQUES OF WHITE-TAILED DEER (*Odocoileus virginianus*) IN ARKANSAS.

Bruce Shackelford. Biology, UCA, Conway, AR 72032.

SURFACE TOPOGRAPHY OF THE TONGUE IN THE NINE-BANDED ARMADILLO.

Douglas Elrod (UALR), William R. Bowen (UALR), Gary A. Heidt (UALR), Robert Sikes (MSU), and Tina Green (UALR). Dept. of Biology, UALR, Little Rock, AR 72204; Dept. of Biology, MSU, Memphis, TN 38152.

UNUSUAL HUMMINGBIRDS IN ARKANSAS.

William Shepherd, Joseph Neal, Thomas Foti, and Douglas James. Arkansas Natural Heritage Commission, Little Rock, AR 72201; and Dept. of Zoology, UA, Fayetteville, AR 72701.

AQUATIC - ENVIRONMENTAL II

Session Chairperson: Bruce Shackelford
(Arkansas Department of Pollution Control and Ecology)

REPRODUCTION AND HABITAT SELECTION IN TWO SPECIES OF DARTERS (OSTEICHTHYES: PERCIDAE) IN THE UPPER SALINE RIVER, SALINE COUNTY, ARKANSAS.

John Rickett and Diana Garland, Biology Department, UALR, Little Rock, AR 72204.

Program

THE EFFECTS OF BARITE MINING ON THE SOUTH FORK OF THE CADDO RIVER.

George L. Harp and Paul L. Raines, Department of Biological Sciences, ASU, State University, AR 72467.

SPAWNING FREQUENCY AND FECUNDITY OF BLUE TILAPIA.

Thomas J. Aureli and Les Torrans. Arkansas Power and Light Co., 9005 Penrose Lane, Little Rock, AR 72205; and Dept. of Agriculture, UAPB, Pine Bluff, AR 71601.

COMPARATIVE FEEDING HABITS OF CREOLE (*Etheostoma collettei*) AND REDFIN (*E. whipplei*) DARTERS IN THE UPPER SALINE RIVER, SALINE COUNTY, ARKANSAS.

Diana Garland and John Rickett, Biology Department, UALR, Little Rock, AR 72204.

HOUSEHOLD CHEMICALS AND SEPTIC TANK.

Rao P. Gullapalli and Mark A. Gross, Graduate Institute of Technology, UALR, 2801 South University, Little Rock, AR 72204.

BENTHIC INVERTEBRATES OF THE SALINE RIVER.

John C. A. Marr, Department of Biology, UCA, Conway, AR 72032.

BIOMEDICAL - MICROBIOLOGY II

Session Chairperson: Dr. Scott Kirkconnell (Biology, ATU)

A NEW LOOK AT GRANULOPHOIESIS IN MOUSE BONE MARROW.

Bonnie L. Wright and William C. Guest. Arkansas Children's Hospital, Little Rock, AR 72205; Dept. of Zoology, UA, Fayetteville, AR 72701.

SURVIVAL AND GROWTH OF *Trichomonas vaginalis* IN HUMAN SEMEN.

Lynn Green, Jerome Sherman, Terry Hostetler, and James Daly. Dept. of Chemistry, MSU, Memphis, TN 38152; Dept. of Anatomy, UAMS, Little Rock, AR 72204; and Dept. of Microbiology and Immunology, UAMS, Little Rock, AR 72204.

RADIOPROTECTION OF MICE BY MANGANESE(II)(3,5-DIISOPROPYLSALICYLATE).

William M. Willingham (UAPB), LaWanda D. Jones (UAPB), Kyle B. Bond (UAMS), Ahmid Salari (UAMS), and John R. J. Sorenson (UAMS). Dept. of Chemistry, UAPB, Pine Bluff, AR 71601; Dept. of Biopharmaceutical Sciences, College of Pharmacy, UAMS, Little Rock, AR 72205.

ALTERATIONS IN TUMOR BINDING BY SPLEENOCYTES AND PERITONEAL EXUDATE CELLS FROM cis-DIAMINEDICHLOROPLATINUM(II) TREATED L1210 TUMOR-BEARING MICE.

Bruce M. Whitney Dwight Talburt, Dept. of Botany and Bacteriology, UA, Fayetteville, AR 72701.

SCANNING ELECTRON MICROSCOPIC DEMONSTRATION OF THE BACTERIAL GLYCOLALOX.

W. Bowen (UALR), M. Kleve (UALR), B. Good (UALR), M. Bartelt (UAMS), R. Evans (UAMS), C. Nelson (UAMS), and B. Harrison (UAMS). UALR, Little Rock, AR 72204; UAMS, Little Rock, AR 72205.

CORRELATION BETWEEN ISOLATION pH AND LEVELS OF RESISTANCE IN FLUORIDE-RESISTANT MUTANTS OF *Streptococcus mutans*.

David W. Clay, Susan M. Brussock, Karen A. Lau, and Timothy A. Kral. Dept. of Botany and Microbiology, UA, Fayetteville, AR 72701.

ANTIVIRAL MANGANESE(II) COMPLEX WITH SUPEROXIDE DISMUTASE-MIMETIC ACTIVITY.

R. West, L. W. Jones, K. Foster, and W. M. Willingham. Dept. of Chemistry, UAPB, Pine Bluff, AR 71601.

TESTING A MODEL FOR ISOCHROMATID DEPLETION PRODUCTION RESULTING FROM UV IRRADIATION OF G1 PHASE HAMSTER CELLS.

Dana Roberts, Laura Fratzke, Tim Gryder, and Gaston Griggs. Biology Dept., John Brown University, Siloam Springs, AR 72761.

CHEMISTRY II

Session Chairperson: Dr. William Trigg (Chemistry, ATU)

HIGH TEMPERATURE CHEMISTRY OF ETHANOL-FIRED MAGNETOHYDRODYNAMICS. I. COMBUSTION STUDIES.

J. Edward Bennett, Michael Martin, and Colin Hester. Dept. of Chemistry, ASU, State University, AR 72467.

HIGH TEMPERATURE CHEMISTRY OF ETHANOL-FIRED MAGNETOHYDRODYNAMICS. II. EXPERIMENTAL SYSTEM FOR CHARACTERIZATION OF THERMAL IONIZATION.

J. Edward Bennett, Michael Martin, and Colin Hester. Dept. of Chemistry, ASU, State University, AR 72467.

THE MASS SPECTRA OF OXAZOLIDINES FORMED BY CONDENSATION OF EPHEDRINE AND PSEUDOEPHEDRINE.

Don S. Moore, Michael D. Massey and Richard B. Walker. Dept. of Chemistry, UAPB, Pine Bluff, AR 71601.

RUTHENIUM MERCAPTAN COMPLEXES.

D. Minick (ASU), M. Draganjac (ASU), F. Evans (NCTR), and A. W. Cordes (UA), Dept. of Chemistry, ASU, State University, AR 72467; National Center for Toxicological Research, Jefferson, AR 72079; and Dept. of Chemistry and Biochemistry, UA, Fayetteville, AR 72701.

RING-OPENING AND RING-FORMING POLYMERIZATIONS: POLYAMINES AND POLYAMIDES FROM DIALLYLAMINE AND ETHYLOXAZOLINE.

Harper Wood and Tito Viswanathan. Chemistry Dept., UALR, Little Rock, AR 72204.

THE OXIDATION OF ALCOHOLS WITH CHROMIUM TRI-OXIDE IN ACETONITRILE.

Paul M. Nave and D. B. Holt, Dept. of Chemistry, ASU, State University, AR 72467.

MONITORING SURFACE WATER FOR ORGANOCHLORINE PESTICIDES AND PCBs FROM 121 SAMPLE SITES OF THE NORTHEAST ARKANSAS ENVIRONMENTAL QUALITY GRID.

William V. Wyatt and Paul D. Gwinup. Dept. of Chemistry, ASU, State University, AR 72467.

LICHENS AS AIR QUALITY MONITORS.

William V. Wyatt, Paul D. Gwinup, and Johnny W. Cude. Dept. of Chemistry, ASU, State University, AR 72467.

PHOTOCHEMISTRY OF CYCLOPENTADIENYL BRIDGED DINUCLEAR COMPLEXES.

E. F. Askew and B. Durham. Dept. of Chemistry and Biochemistry, UA, Fayetteville, AR 72701.

INVERTEBRATE ZOOLOGY

Session Chairperson: Dr. Raymond D. Couser (Biology ATU)

TWO NEW SPECIES OF DIPLURA FROM THE OUACHITA MOUNTAINS OF ARKANSAS.

Robert T. Allen, Department of Entomology, UA, Fayetteville, AR 72701.

Arkansas Academy of Science

CORTICAL SINGLET MICROTUBULES AND MOTILITY OF THE AFLAGELLATE SPERMATOOZON OF *Hydrolymna*.

W. Donald Newton, Department of Biological Sciences, ASU, State University, AR 72467.

ADDITIONS TO THE KNOWN ENDEMIC FLORA AND FAUNA OF ARKANSAS.

Robert T. Allen, Department of Entomology, UA, Fayetteville, AR 72701.

NOTES ON THE BIOLOGY OF *Thyanta calceata* (HEMIPTERA: PENTATOMIDAE) ON *Tephrosia virginiana* (LEGUMINOSAE), A NEW HOST PLANT.

Phoebe A. Harp and Harvey E. Barton, Department of Biological Sciences, ASU, State University, AR 72467.

PHYSICS - MATHEMATICS

Session Chairperson: Dr. Mostafa Hemmati, Physics, ATU

ON THE APPLICABILITY OF STOKES' LAW.

Stephen R. Addison, Physics Dept., UCA, Conway, AR 72032.

MEASUREMENTS OF THE DRAG ON SPHERES FALLING THROUGH THE AIR.

J. G. Ross, N. O. Gaiser, and Stephen R. Addison, Physics Dept., UCA, Conway, AR 72032.

ANALYSIS OF HIGH TEMPERATURE SERIES IN CRITICAL PHENOMENA USING FIRST ORDER ORDINARY DIFFERENTIAL APPROXIMANTS.

M. J. George, Dept. of Computer Science, ASU, State University, AR 72467.

X-RAY WOOD DENSITOMETER.

Hudson B. Eldridge, Bruce A. Yee, and Harold L. Pray, Physics Dept., UCA, Conway, AR 72032.

EQUATIONS OF VARIATION FOR ORDINARY DIFFERENTIAL EQUATIONS ON MANIFOLDS.

John B. Bennett, Dept. of Computer Science, Mathematics, and Physics, ASU, State University, AR 72467.

THERMAL DIFFUSIVITY OF YITTRIUM ALUMINUM GARNET AND YITTRIUM ALUMINATE BETWEEN 20 AND 200 DEGREES CELSIUS.

John Beasley and Pradip Bandyopadhyay, Department of Physics, Hendrix College, Conway, AR 72032.

X-RAY SPECTROMETER APERTURE MEASUREMENT.

M. Fields and Hudson B. Eldridge, Physics Dept., UCA, Conway, AR 72032.

AN EXPERIMENTAL INVESTIGATION OF EXCITED STATE ABSORPTION OF DIVALENT EUROPIUM IN ALKALI HALIDES.

Stephen Fenno and Pradip Bandyopadhyay, Department of Physics, Hendrix College, Conway, AR 72032.

X-RAY FLUORESCENCE ANALYSIS OF TREATED WOOD.

Bruce A. Yee, Hudson B. Eldridge, and Harold L. Pray, Physics Dept., UCA, Conway, AR 72032.

IONIZING WAVES MOVING INTO A PREIONIZED MEDIUM: SOLUTIONS OF THE ELECTRON FLUID DYNAMIC EQUATIONS FOR QUASI-NEUTRAL REGION (CLASS II WAVES).

Mostafa Hemmati, Physical Sciences Dept., ATU, Russellville, AR 72801.

SCIENCE EDUCATION II

Session Chairperson: Dr. Robbin Anderson (Chemistry, UA)

STATUS REPORT AND PROJECTIONS: NEW ARKANSAS STANDARDS SEEN IN EFFECT.

R. C. Anderson, Dept. of Chemistry and Biochemistry, UA, Fayetteville, AR 72701.

LAB SAFETY - BUSINESS AS USUAL?

Michael W. Rapp, Dept. of Chemistry, UCA, Conway, AR 72032.

AN ACADEMIC SCIENTIST'S ROLE IN ECONOMIC DEVELOPMENT: ONE PERSON'S VIEW.

Collis Geren, Dept. of Chemistry and Biochemistry, and the Arkansas Biotechnology Center, UA, Fayetteville, AR 72701.

NSF UNDERGRADUATE SUPPORT PROGRAMS.

Karl David Straub, John L. McLellan VA Hospital, Little Rock, AR 72204; and Richard Anderson, Physics Dept., UA, Fayetteville, AR 72701.

A SIMPLE EXERCISE TO ILLUSTRATE UNCERTAINTY OF MEASUREMENT AND SIGNIFICANT FIGURES.

Syed M. Aijaz, Chemistry Dept., UAPB, Pine Bluff, AR 71601.

COMPUTER AIDED INSTRUCTION AND STUDENT REMEDIATION: A PROPOSAL FOR ARKANSAS.

J. Edward Bennett and Tom Barber, Dept. of Chemistry, ASU, State University, AR 72467.

THE VETERANS ADMINISTRATION ENGINEERING TRAINING CENTER.

J. O. Wear, Eng. Trn. Ctr. (10A4A), VA Medical Center, North Little Rock Division, North Little Rock, AR 72114.

VERTEBRATE ZOOLOGY II

Session Chairperson: Dr. Tom Nelson (Fisheries and Wildlife Management, ATU)

IDENTIFYING FACTORS AFFECTING ANNUAL DEER HARVEST IN ARKANSAS.

R. A. Kluender (UAM), T. B. Wigley (UAM), and M. E. Cartwright (AG&FC), Dept. of Forest Resources, Arkansas Agric. Exp. Sta., UAM, Monticello, AR 71655; Arkansas Game and Fish Commission, Rt. 1, Box 56, Calico Rock, AR 72519.

COMMENTS ON ESTIMATING RATE OF INCREASE FROM AGE FREQUENCY DATA.

Renn Tumilson and V. R. McDaniel, Dept. of Zoology, OSU, Stillwater, OK 74078; and Dept. of Biological Sciences, ASU, State University, AR 72467.

FOREST HABITAT USE BY WHITE-TAILED DEER IN THE ARKANSAS COASTAL PLAIN.

T. B. Wigley and M. E. Garner, Dept. of Forest Resources, Arkansas Agric. Exp. Sta., UAM, Monticello, AR 71655.

FEEDING BEHAVIOR, FOOD, SEX RATIOS AND MEASUREMENTS OF THREE SPECIES OF WATER SNAKES COLLECTED IN NORTHEASTERN ARKANSAS.

Walter Meshaka, William Byrd, and Earl Hanebrink, Dept. of Biological Sciences, ASU, State University, AR 72467.

MANDIBULAR DENTITION IN SIX SPECIES OF SALAMANDERS, GENUS *Plethodon* (CAUDATA: PLETHODONTIDAE), FROM ARKANSAS USING SCANNING ELECTRON MICROSCOPY.

Richard A. Atwill and Stanley E. Trauth, Dept. of Biological Sciences, ASU, State University, AR 72467.

Program

TOE TIP SURFACE MORPHOLOGY IN SIX SALAMANDER SPECIES, GENUS *Ambystoma* (CAUDATA: AMBYSTOMATIDAE), FROM ARKANSAS USING SCANNING ELECTRON MICROSCOPY.

Stanley E. Trauth and J. D. Wilhide. Dept. of Biological Sciences, ASU, State University, AR 72467.

SEX RATIOS IN BOBCAT POPULATIONS.

Renn Tumblison and V. R. McDaniel. Dept. of Zoology, OSU, Stillwater, OK 74078; and Dept. of Biological Sciences, ASU, State University, AR 72467.

A PRELIMINARY INVESTIGATION OF HERPTILES INHABITING THE STATE PARKS OF ARKANSAS.

Darrell R. Heath (UALR), Glyn Turnipseed (ATU), and David A. Saugey (USFS). Dept. of Biology, UALR, Little Rock, AR 72204; Biological Sciences Dept., ATU, Russellville, AR 72801; and USFS, Ouachita National Forest, Hot Springs, AR 71902.

SURVEY OF BATS IN THE OUACHITA MOUNTAINS OF ARKANSAS.

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