

Focus

Vol. 1 ON RESEARCH & CREATIVE PROJECTS No. 5



MOREHEAD STATE UNIVERSITY™

1997



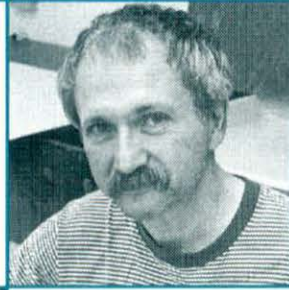
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FOCUS—a point to which something converges or from which something diverges—illustrates the ideals of Morehead State University for bringing the best research together and encouraging new efforts in distinctly different areas. The goal of FOCUS is to recognize faculty and professional staff involvement in sponsored research and creative projects and to illustrate diversity in the University's mission of teaching, research, and service to the people of Eastern Kentucky. Through the combination of teaching with research, scholarship, and creative activities, an environment in which knowledge may be discovered, integrated, and disseminated to educate students is created. FOCUS is intended to illustrate the breadth of research within the University and thus describes only a few of the on-going projects under way in a variety of areas.

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The Best *of* The Best

MSU's recipients of the
Distinguished Researcher
Award and the Distinguished
Creative Productions Award

by Rebecca Bailey

"The awards are not the goal but a nice affirmation along the way."—Shirley Gish

Two of MSU's most prestigious faculty awards are given by the Research and Creative Productions Committee, from the Office of Research, Grants & Contracts. The selections are made from nominations submitted from faculty and staff. The Distinguished Researcher Award was first awarded in 1979 and the Distinguished Creative Productions Award in 1992.

Victor Howard, 1979

Professor Emeritus of History, MSU



Dr. Victor Howard

Retirement hasn't slowed down Dr. Victor Howard. As a professor of history, he taught classes and seminars on American history of the middle period.

Since Dr. Howard received the first Distinguished Researcher Award in 1979, he has had numerous articles published in professional journals and has reviewed more than 300 historical monographs for these journals. He has published four historical monographs since then: "Black Liberation in Kentucky: Emancipation and Freedom, 1862-1884" (University Press of Kentucky, 1983); "Conscience and Slavery: The Evangelistic Calvinist Missions, 1837-1861" (Kent State University Press, 1990); "Religion and the Radical Republican Movement, 1860-1870" (University Press of Kentucky, 1990); and "The Evangelical War Against Slavery and Caste: The Life and Times of John G. Fee" (Associated University Presses, 1996).

The recipient of many honors and awards for both his teaching and research, Dr. Howard was most recently presented with the Gustavus Meyers Outstanding Book on Human Rights Award in 1991 from the Gustavus Meyers Center for the Study of Human Rights in the United States, for Conscience and Slavery.

Dr. Howard received his B.A. from MSU in 1940, his M.A. from George Peabody College in 1946, and the Ph.D. from The Ohio State University in 1961.

Jules DuBar, 1980

**Retired, Research Scientist and
Technical Editor, Bureau of Economic
Geology, University of Texas at Austin**



Dr. Jules DuBar

Now retired and living in Charlottesville, Va., Dr. DuBar describes his days as being filled with "garden work, shoveling snow, and washing dishes. I have completed an autobiographical book drawn from my years at the University of Houston (1957-62) and am now writing a novel. I also have been

looking into the entry and dispersal of early man in North and South America.”

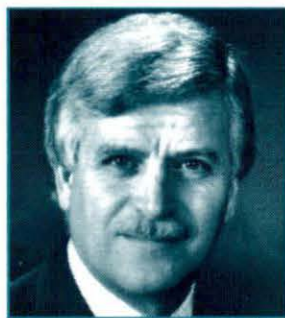
After leaving MSU in 1981, he worked in the Bureau of Economic Geology in Austin, Texas. He was responsible not only for studies in petroleum resources, but also Neogene paleoclimatological and stratigraphic studies; population analyses and paleoecology of late Pleistocene and Recent non-marine mollusks in east-central Texas; paleontological analysis of the super collider superconductor site in Texas; and geological research related to the integrity of a proposed West Texas nuclear waste site. He also served as technical editor for the Department of Energy’s West Texas high-level nuclear waste project. Dr. DuBar has continued to publish in journals such as *Lethaia*, *Nautilus*, and *Journal of Paleontology*.

In addition to numerous awards and recognitions, in 1981 he was a semi-finalist for the National Professor of the Year Award, Carnegie Foundation for the Advancement of Teaching, and he is a Fellow of the Explorers Club, New York.

Dr. DuBar earned the B.S. in geology at Kent State University in 1949, the M.S. in geology at Oregon State University in 1950, and the Ph.D. from the University of Kansas in 1957 in stratigraphy and paleontology.

Ted Pass II, 1981

Professor of Biology, Director—Water Testing Laboratory, MSU



Dr. Ted Pass

A member of MSU’s biology faculty for 25 years, Dr. Pass teaches microbiology courses for nursing, pre-veterinary technology, medical technology, and graduate students. He serves as adviser for the medical technology program.

Dr. Pass received his Distinguished Researcher Award for his work in “Isolation and Identification of *Histoplasma capsulatum* in Kentucky Soils.” As a result of this work, he now serves as a consultant for the state of Kentucky and such agencies as the United States Department of Agriculture.

Since receiving this award, Dr. Pass has continued his research in histoplasmosis, as well as in such areas as water quality and microbial contamination of hemodialysis fluids. As a result of his research efforts he has received 53 grants totaling \$617,338, and has published 25 papers in such journals as the *American Society of Microbiology*, *Artificial Organs*, and *Blood Purification*. He has also presented several papers at the American Society of Microbiology International Meetings and the American Society of Internal Organs.

Dr. Pass acts as the Director/Consultant for the MSU Water Testing Laboratory, which is the state of Kentucky’s Principle Microbiology Laboratory.

He received his B.S. (1966) and M.S. (1968) in biology from MSU and his Ph.D. in plant pathology and mycology from Virginia Polytechnic Institute and State University in 1971.

David Hylbert, 1982

Professor of Geoscience, MSU



Dr. David Hylbert

A member of MSU’s geology faculty since 1963, Dr. Hylbert’s specializations include the geology of mines, especially roof control, remote sensing, and clay mineralogy. He also worked part-time with the U.S. Geological Survey in the late 1960s. In the early to mid-70s, with other faculty colleagues, he produced geological maps of the area, including the Bangor, Soldier, and Cranston 7 1/2” quadrangles published by the U.S.G.S.

Dr. Hylbert holds a private pilot license with instrument rating. “I own and fly a Cessna 182 Skylane,” he said. “As a member of Lifeline Pilots, I fly medical patients for treatment, etc. on a volunteer basis.” Throughout the eighties, he received grants from MSU for documentation and reconnaissance photographic studies of geological features of Kentucky and Appalachia.

He has made a number of presentations recently on coal mine roof falls, coal mine roof rocks, remote sensing, and comparisons of the eastern and western coal fields of Kentucky. In 1995 he served as president of the Kentucky section of the American Institute of Professional Geologists.

Dr. Hylbert earned his B.S. at Ohio University in 1961, his M.S., also at Ohio University, in 1963, and his Ph.D. at The University of Tennessee at Knoxville in 1976, all in geology.

Francis H. Osborne, 1983

Professor Emeritus of Psychology, MSU



Dr. Francis Osborne

Dr. Osborne began his teaching career at Morehead State in 1967 and has logged 30 years of service to the institution. Now, as a professor emeritus of psychology, he still teaches classes and manages the psychology department’s computer networks.

Among his professional interests, Dr. Osborne lists quantitative methods and computer package applica-

tions, perceptual learning, and learning and motivation.

"Most of my research has involved college student learning and motivation in a self-paced, mastery learning (Keller Plan) setting. We have investigated a number of individual characteristics of students in this context, including learning styles, motivational factors and procrastination. Much of this work has been presented at the state level (Kentucky Academy of Science) by my students," Dr. Osborne said. He noted, "My students have earned several awards at KAS for their presentations."

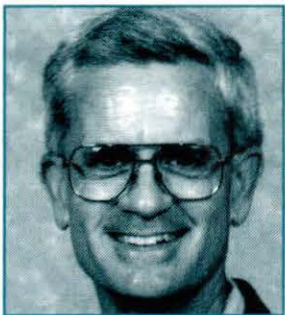
During his tenure at MSU, Dr. Osborne has been active in helping MSU integrate technology into education, serving as a technical consultant to the vice president for academic affairs, and he established and coordinated departmental microcomputer facilities.

Dr. Osborne's papers have appeared in journals such as *Psychopharmacology*, *Society for Neuroscience Abstracts*, and *Physiology and Behavior*. In addition, he has produced three computer software packages — Student Statpack, Psych Tutor, and Computer Gradebook — in use by the undergraduate and graduate psychology programs. He has also presented numerous papers at the Kentucky Academy of Science, the Society for Neuroscience, and the Midwestern Psychological Association.

Dr. Osborne earned a B.A. in psychology from Cornell University in 1957 and an M.S. and Ph.D. in experimental psychology from Syracuse University in 1967 and 1969, respectively.

George Dickinson, 1984

Professor of Sociology, College of Charleston, Charleston, S.C.



Dr. George Dickinson

Dr. Dickinson left MSU in 1985 to become the chair of the Department of Sociology and Anthropology at the College of Charleston, a position in which he served until 1995. He has co-authored 10 books and authored/co-authored 30 articles and chapters in books since receiving MSU's Distinguished Researcher Award.

"I am tracking approximately 1,100 physicians from medical school graduation in 1975 to the present to determine their changing attitudes towards terminally ill patients and their families. This sample was based on my 1975 national survey of U.S. medical schools to see which ones offered thanatology," Dr. Dickinson said. "I am involved in another longitudinal study of current medical students to ascertain their attitudes toward dying and death."

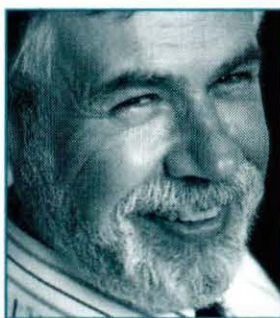
In addition, he has researched first childhood death experiences of 440 young adults; completed a replication study of South Carolina physicians in 1996 to compare their views about physician-assisted suicide to those of Washington state physicians; researched pharmacists'

behavior and attitudes toward working with the elderly; and conducted surveys of U.S. dental, social work, nursing, and pharmacy schools to determine their emphasis on death and dying. He is currently involved in a study of gender roles in the field of pharmacy and a study of college students' perceptions of hospice.

Dr. Dickinson received his B.A. in biology from Baylor University in 1962, his M.A. in sociology from Baylor in 1964, and the Ph.D. in sociology from Louisiana State University in 1969.

Stuart S. Sprague, 1985

Professor Emeritus of History, MSU



Dr. Stuart S. Sprague

Dr. Sprague's most recent contribution to the history of Eastern Kentucky, the publication of *His Promised Land: The Autobiography of John P. Parker, Former Slave and Conductor on the Underground Railroad*, appeared in late 1996. The manuscript was written in the late 1880s about John P. Parker, a mulatto slave who bought his freedom in 1845 and spent the next 20 years helping hundreds of slaves cross the Ohio River from Kentucky into Ohio. The book, which Dr. Sprague edited, has received national critical acclaim.

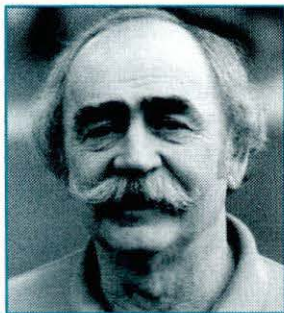
Retired for "too few" years, Dr. Sprague continues to be an active scholar, researcher, and writer. An authority on the history of African Americans in Kentucky, his *Kentucky Black Genealogy*, published in 1995, documents blacks who lived in Maysville from 1874 to 1938 and Ashland from 1908 to 1930, as well as those who served in the 100th U.S. Colored Infantry in the Civil War and afterward.

Additional publications include *Pictorial History of Eastern Kentucky* (1986), "Civil War" in *Kentucky Encyclopedia* (1992), and a number of articles in journals including *The Filson Club History Quarterly*, *Essays in Economic and Business History*, *Journal of Negro History*, and *Journal of the Appalachian Studies Association*.

Dr. Sprague earned the B.A. and M.A.T. degrees from Yale University in 1960 and 1962, respectively, and the Ph.D. from New York University in 1972.

James Gotsick, 1986

Professor of Psychology, MSU



Dr. James Gotsick

The academic interests of Dr. Gotsick include brain damage and aggressive behavior, brain damage and spontaneous activity, dopaminergic systems, and instructional systems in introductory psychology. In addition to his teaching responsibilities, he has served Morehead State in a variety of administrative capacities, including interim dean of Graduate and Extended Campus Programs, dean of the College of Education and Behavioral Sciences, and interim director of the Appalachian Graduate Consortium in Pikeville.

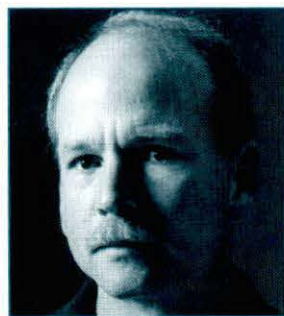
Dr. Gotsick retired following the 1996-97 academic year at MSU after 30 years of service. Since retirement, Dr. Gotsick has focused his creative energies primarily on teaching. He has broadened his interests to researching the use of the multi-media computer in the classroom and conducts multi-media workshops.

He received the University's Distinguished Teacher Award in 1990.

Dr. Gotsick earned the B.S. degree in psychology from Pennsylvania State University in 1960, the M.Ed. in Rehab Counseling from Penn State in 1962, and the Ph.D. in psychology from Syracuse University in 1968.

Bruce A. Mattingly, 1987

Professor of Psychology and Faculty Regent, MSU



Dr. Bruce A. Mattingly

Dr. Mattingly continues to focus his research energies on "the behavioral and biochemical effects of chronic drug use and abuse, and stimulant-induced behavioral sensitization." Recent funding of two grants from the National Institute on Drug Abuse, a division of the National Institutes of Health, have allowed him to further expand his research by concentrating on receptor-dependent sensitization to cocaine in rats.

"The chronic abuse of cocaine appears to produce long-term changes in brain neurochemistry, which may lead to a number of psychiatric disorders," he said.

Since he received the Distinguished Researcher Award in 1987, his research has been supported by 21 internal and external grants; he has published 34 papers in international refereed journals including

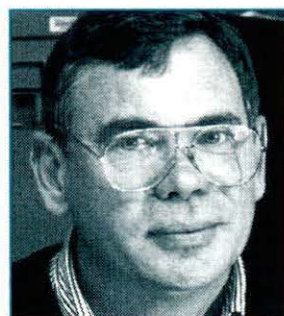
Pharmacology, Biochemistry & Behavior, Synapse, and Psychopharmacology; he and his graduate and undergraduate students have presented 77 papers at conferences; he has been twice elected Faculty Regent on MSU's Board of Regents; and in 1993 he received the Outstanding University Science Teacher Award from the Kentucky Academy of Science. In May he will travel to China to present his research.

Dr. Mattingly's students assist with his research, present their findings at professional meetings, and often publish them in prestigious journals. "Worldwide, the major researchers and research institutions in this field know about our work, and most are surprised to find that my research is conducted primarily by undergraduate students," he said.

Dr. Mattingly received the B.S. degree in psychology and mathematics from MSU in 1974 and the M.S. and Ph.D. in psychology from the University of Kentucky in 1976 and 1979, respectively.

David R. Rudy, 1988

Department Chair, Sociology, Social Work, and Criminology, MSU



Dr. David R. Rudy

Dr. Rudy's research continues to focus on social problems related to alcohol abuse. "I have begun to focus on alcohol-related social movements, including the ACOA movement and Alcoholics Anonymous' socio-cultural development," he said, and added he has also developed interests in correctional substance abuse programs.

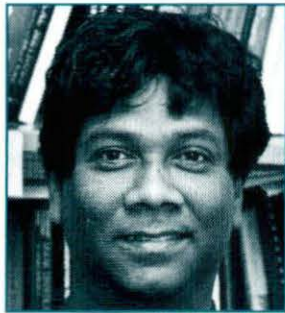
Recent publications include articles in journals such as *Corrections Today*, *Sociological Analysis*, and *Sociological Focus*. He has contributed book chapters to *Drug Use in America: Social, Political, and Cultural Perspectives*, *Society, Culture, and Patterns Revisited*, and *In Gods We Trust*. His research has been supported by grants from the National Institute of Corrections, the Kentucky Corrections Commission, Kentucky Department of Corrections, Alcohol Beverage Medical Research Foundation, and MSU.

Dr. Rudy, since receiving the Distinguished Researcher Award, has made more than 17 presentations at professional meetings, published numerous book reviews in sociological journals, and has written three research monographs and reports: "Community Corrections Programs in Kentucky" (with Goldey and Everman), "Substance Abuse Programs in Kentucky Prisons" (with Johnson), and "Local Option Change and Alcohol-Related Behavior."

Dr. Rudy received the B.A. from Gannon University in 1968, the M.A. from Akron University in 1973, and the Ph.D. from Syracuse University in 1977, all in sociology.

Lloyd R. Jaisingh, 1989

Professor of Mathematics, MSU



Dr. Lloyd R. Jaisingh

Since receiving the award, "I have done some publishing on reliability estimation in professional journals, but most of my emphasis in recent years has been on writing texts and manuals that deal with the integration of technology in the classroom," Dr. Jaisingh said. "Also I have written grant proposals to help integrate technology in the teaching of statis-

tics and have given several talks on the integration of technology in the classroom.

"In addition, I am working with another faculty member in the mathematics department (Dr. Donald Spickler) in developing web-like electronic lecture notes for elementary statistics. These notes will include simulation, exams, and every aspect of an elementary statistics course. This will later be set up as a virtual course on the World Wide Web. Further, I served as an associate editor for the IEEE Transactions on Reliability journal from 1991-93, and currently I am serving on the editorial board for the Indo-Caribbean Journal."

Since 1989, Dr. Jaisingh has published 12 books and manuals with various publishers. His most recent contribution to the textbook field is the 1998 publication of power point software with transparency masters to accompany *Elementary Statistics: A Step by Step Approach* by Alan Bluman from WCB-McGraw Hill. He has published his research in journals including *Microelectronics and Reliability*, *The Management Accountant*, and *IEEE Transactions on Reliability*.

He received the Clement Liew Award for Outstanding Service to International Students from MSU in 1995.

Dr. Jaisingh received the B.S. degree in 1975 in mathematics from the University of Guyana in South America, the M.S. in 1982 in mathematics from Tennessee Tech University, and the Ph.D. in 1985 in industrial engineering from Texas Tech University.

William J. Weikel, 1990

Professor, Leadership and Secondary Education, MSU

Dr. Weikel, recognized nationwide as a leading authority on clinical mental health counseling, is a charter member of the American Mental Health Counselors Association (AMHCA) and the founding editor of its journal.

He is the senior author of two recent books: *Foundations of Mental Health Counseling*, 2nd ed. (1996) and *The Counselor as Expert Witness* (1992). Additionally he has published on topics such as the joint role of

counselors and clergy; various aspects of counselor education; establishing a Handicap Awareness Day in schools; shyness; a comparison of traditional and non-traditional career women; trends in counseling; the effects of father-absence on interpersonal problem-solving skills of nursery-school children; multimodal approaches in dealing with chronic

Epstein-Barr syndrome and older citizens; the role of middle school counselors; and the mental health counselor as political activist.

Recent presentations include "Succeeding in the Private Sector," New Mexico Mental Health Counselors Association (1996); and "Physical and Psychological Concerns of The Mature Woman," Wilma E. Grote Symposium for the



Dr. William J. Weikel

Advancement of Women (1995).

The recipient of the Award for Competence in Counseling from the Enhancement Network in 1997, Dr. Weikel received the B.A. in psychology from Temple University in 1971, the M.A. in rehabilitation counseling from the University of Scranton in 1973, and the Ph.D. in counselor education and rehabilitation counseling from the University of Florida in 1975.

William C. Green, 1991

Professor of Government, MSU



Dr. William C. Green

Dr. Green has written widely on courts and Constitutional law, but he says: "The broad parameters of my research interests are defined by my legal and political studies of economic and social policy issues."

Canadian and Quebec government grants have allowed him to explore with Ernest J. Yanarella of the University of Kentucky the consequences of the Japanese automobile transplants for organized labor in the United States and Canada. Dr. Green's research has appeared in *Labor Law Journal*, in Steve Babson's *Lean Work*, and in *North American Auto Unions in Crisis*, co-edited by Drs. Green and Yanarella and published by the State University of New York Press. Their co-authored articles have appeared in *Canadian Journal of Sociology*, *Labor Studies Journal*, and *Economic Development Quarterly*.

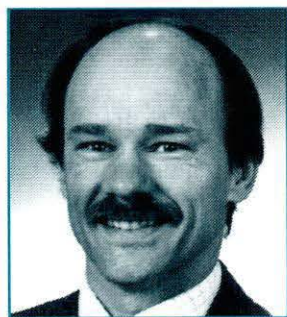
Dr. Green has used MSU and external grants to study the drug Depo-Provera's use as a probation condition and its consumer-directed advertising and contraceptive use. His research has appeared in *Trial*, *Food and Drug Law Journal*, and the *Encyclopedia of U.S. Biomedical Policy*. Currently he is at work on a book-length study of *The Odyssey of Depo-Provera: The FDA, Contraceptive*

Choice, and Chemical Castration.

Dr. Green earned his B.A. in history from Kent State University in 1963, an M.A. in political science from Kent State in 1967, the Ph.D. in political science from the State University of New York at Buffalo in 1977, and the J.D. degree from the University of Kentucky in 1984.

Thomas S. Stroik, 1992

**Associate Professor of English,
University of Missouri-Columbia**



Dr. Thomas S. Stroik

The research of Dr. Thomas Stroik, which deals with issues of language structure as well as language use, has appeared in some of the most prestigious linguistic journals of the world; he has presented papers at professional meetings throughout the United States and Europe. His most recent book is *Minimalism, Scope, and VP Structure*,

which was published in 1996.

Currently associate professor of English at University of Missouri-Columbia, Dr. Stroik said he has been "investigating the logical structure of language," in addition to his teaching responsibilities.

Recent papers include "Formal Literary Linguistics: An American Historiography," forthcoming in the *Journal of Literary Semantics*; "DP Raising and Inner Island Effects" in *Linguistic Analysis* (1997); "On the Distribution of Temporal and Locative Adverbs" in *The Linguistic Review* (1993); and "Adverbs and Antecedent Contained Deletions" in *Linguistics: An International Journal* (1992), among many others.

Dr. Stroik holds three degrees from the University of Wisconsin-Madison: a B.A. in mathematics (1973), and the M.A. (1979) and Ph.D. in English (1987).

John E. Kleber, 1993

**Professor Emeritus of History, MSU, and
Editor-in-Chief, The Encyclopedia of
Louisville**

Dr. Kleber, editor of *The Kentucky Encyclopedia*, retired from MSU in May of 1996, and on Aug. 1 took up another challenge. "I began a new job as editor-in-chief of *The Encyclopedia of Louisville*," said Dr. Kleber, a Louisville native. "I am working for the Thomas D. Clark Foundation, the sponsor of the book, which will be published in 2000 and mark the millennium celebration of the city and metropolitan areas. It will be published by the University Press of Kentucky. I will be working with this project for four years, and my



Dr. John E. Kleber

offices are located in the Ekstrom Library on the University of Louisville campus." He has been doing a great deal of speaking throughout the area, and two speeches are notable. "In November 1997, I was one of six historians to deliver a talk at the Shakertown Roundtable where we reflected on the past's lessons for today's leaders. My talk was entitled 'Kentucky Myths and Reality.' Four former governors were in the audience, as well as Dr. A.D. Albright [former president of MSU]. On Jan. 6, 1998, I spoke to the Senate at the opening of the Kentucky General Assembly. My speech was entitled 'Comparing Kentucky at the End of the Nineteenth and Twentieth Centuries.'" He is a member of the Kentucky Humanities Council Board.

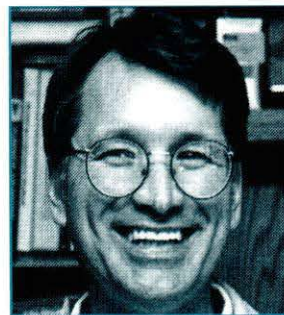
Dr. Kleber wrote the preface to *A Light to the Mountains: Morehead State University 1887-1997*, by Dr. Donald F. Flatt, and has served as a consultant to the state of West Virginia, which is planning a state encyclopedia.

In 1993 he received the Governor's Outstanding Kentuckian Award from former Governor Brereton Jones.

Dr. Kleber earned the B.A. degree from Bellarmine College in 1963, and the M.A. and Ph.D. in 1965 and 1969, respectively, from the University of Kentucky, all in history.

Brian C. Reeder, 1994

Professor of Biology, MSU



Dr. Brian C. Reeder

"My research interests include field studies and simulation modeling of biogeochemical cycles in wetland and lake ecosystems, especially assessing the effects of non-point pollution on biotic communities," Dr. Reeder said. "Current projects include assessing wetland restoration and succession using both biotic and abiotic functional indicators, and the effects of fertilization on plankton and fish communities in reservoirs." This work has been supported by grants from the Kentucky Environmental Protection Cabinet, Kentucky Department of Fish and Wildlife, U.S. Forest Service, and the National Science Foundation.

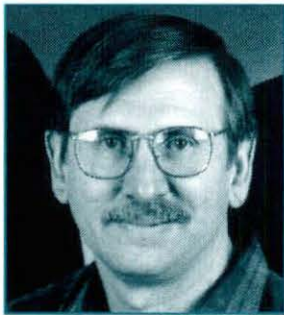
Dr. Reeder's scholarly publications often list his students as co-authors. Recent papers include "Avifauna Use of Constructed Wetlands in the Cave Run Lake Area" in *The Kentucky Warbler* (1997, with A. Haight), "Using Environmental Monitoring as a Teaching Tool: The

Triplett Creek Non-point Pollution Assessment Project" in *Waterworks* (1996), and "Holocene Biogeochemical and Pollen History of a Lake Erie, Ohio, Coastal Wetland" in *Ohio Journal of Science* (1994, with W.R. Eisner), which received the Paper of the Year Award from the Ohio Academy of Science.

Dr. Reeder received the B.S. in biology from Youngstown State University in 1983, the M.A. in biology from Marshall University in 1985, and the Ph.D. in environmental biology from The Ohio State University in 1990.

Edward B. Reeves, 1995

**Professor of Sociology and Director,
R & D Center for Students, Schools,
and Communities, MSU**



Dr. Edward B. Reeves

Dr. Reeves' extensive studies in Ethiopia, Sudan, and Egypt have provided a focus for much of his work in anthropology. He worked as an Arabic translator/interpreter for the U.S. Army, served as field director for USAID/University of Kentucky on the International Sorghum-Millet Farming Systems Project in Sudan, and was a research fellow at the

American Research Center in Cairo, Egypt, as a doctoral student.

Currently working as director of the R & D Center for Students, Schools, and Communities, Dr. Reeves worked during the summer of 1997 to develop the database for research being conducted by the center. "I am currently analyzing KIRIS scores with variables drawn from this data set," he said. Also during the summer of 1997 he attended a training seminar in Rockville, Md., on the use of longitudinal databases.

Another current project "explores the influence of community resources and characteristics on [student] persistence and dropping out," utilizing subgroups of students from urban, suburban, and rural schools.

For Dr. Reeves, 1998 will bring the publication of eight articles in the forthcoming *Encyclopedia of Religion and Society*.

Dr. Reeves earned a diploma for a 47-week course in Arabic from the Defense Language Institute in Monterey, Calif., in 1968, a B.A. in English in 1971, an M.A. in anthropology in 1975, and the Ph.D. in anthropology in 1981, all from the University of Kentucky.

Ronald Mitchelson, 1997

**Professor of Geography, Executive
Director—Center for Community and
Economic Development, MSU**



Dr. Ronald Mitchelson

The most recent recipient of the Distinguished Researcher Award, Dr. Mitchelson came to MSU in 1992 as chair of the Department of Geography, Government, and History. Dr. Mitchelson was instrumental in receiving the grant from the National Science Foundation that recently allowed the department to create a new Spatial Analysis

Laboratory that is revolutionizing the way geography is taught at MSU.

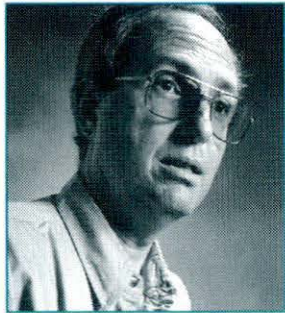
Dr. Mitchelson's specialty is the geography of movement of people, goods, services, resources, and capital. He is involved in several applied research projects in the region, including rural comprehensive planning, space-time issues in transportation of hazardous materials, and an information system to inventory and monitor the state's forest resources. He is working with others across the state on the development of the new *Atlas of Kentucky*, scheduled for publication in the spring of 1998, and with Dr. Yu Luo of Indiana State University is completing the electronic *Atlas of Kentucky*, due out in the summer of 1998.

The former state geographer was invited to submit an article for the Golden Anniversary issue of *The Southeastern Geographer* (one of seven authors invited), titled "Changes in Southeastern Transportation and Communications, 1947 to 1997."

Dr. Mitchelson received the B.A. degree from the State University of New York-Buffalo, and the M.A. and Ph.D. from The Ohio State University.

Robert Franzini, 1992

**Professor of Art,
Department Chair, MSU**



Robert Franzini

"Since 1992, I have been engaged in the production of creative work in printmaking media (intaglio, lithography, monotype) as well as in drawing media and have actively exhibited the work regionally, nationally, and internationally. I have also been engaged in researching lithographic limestone in Kentucky, and presented

"Kentucky Lithographic Limestone: An Example of Identifying, Collecting, and Printing from Local Stone" at the 1996 Mid-America Print Council Conference with Dr. Steve Reid, assistant professor of geoscience."

Exhibiting in numerous group and one-person shows, Franzini received jurors honorable mention in The Society of American Graphic Artists 66th National Print Exhibition in East Hanover, N.J. (1997), the Water Tower Annual, Louisville (1997), and Images from the Mountains, Appalshop, Whitesburg (in which he received jurors merit awards in 1995, 1996, and 1997). He also exhibited in the 18th International Independent Exhibition of Prints in Kanagawa in Japan (1995). His prints are in the collections of the Cincinnati Art Museum, Honolulu Academy of Arts, Portland Art Museum, University of Kentucky Art Museum, and The Southern Graphics Council, among many others

As a resident fellow at Yaddo Artist Colony in Saratoga Springs, N.Y. in 1996, he presented a workshop in Dark Field Monotype to the Fellows, in addition to his other creative endeavors.

Professor Franzini received a B.A. in studio art from Stanford University in 1970, an M.A. in printmaking in 1977, and the M.F.A. in printmaking in 1979, both from the University of Iowa.

Michelle Boisseau, 1993

**Associate Professor of English,
University of Missouri-Kansas City**

Dr. Boisseau has continued to publish prolifically, in poetry and in prose. Her newest collection of poetry, *Understory*, won the 1996 Samuel French Morse Poetry Prize and was published by Northeastern University Press. With Robert Wallace, she has co-authored a textbook, *Writing Poems*, published by Harper Collins in 1995.

She has contributed poetry to a number of anthologies, including

Poets at Large: 25 Poets in 25 Homes (Helicon Nine, 1997); *Cream City Review* 20th anniversary anthology (1997); *Open Door: A Poet Lore Anthology* (1997); and *What Will Suffice: Contemporary American Poets on the Art of Poetry* (1995). Her poems have recently appeared in literary journals, including *Third Coast*, *Cream City Review*, *Crazyhorse*, *New Letters*, and *Ploughshares*, among others. Her fiction has appeared in the anthology *Kentucky Voices: A Collection of Contemporary Kentucky Short Stories* (1997), and *Pikeville Review*, *Greensboro Review*, and *Ohio Review*.

She is a member of the graduate and doctoral faculties at University of Missouri-Kansas City.

Dr. Boisseau earned the B.A. and M.A. in English from Ohio University and the Ph.D. in English from the University of Houston.

Shirley Gish, 1994

Professor of Communications, MSU



Dr. Shirley Gish

After a performance of her one-woman play *Me 'n Susie*, at the Lexington Opera House, Dr. Gish was encouraged to turn the oral histories done in order to write that play into a book.

"In the summer of 1995, I was awarded a residency grant from the Helene Wurlitzer Foundation of Taos in Taos, N.M., where I spent three months editing the oral histories," she said.

The book will contain oral histories, commentary, photographs, and the play script and is expected to be published in the spring of 1998 by the University Press of Kentucky, under the title *Country Doctor: The Story of Dr. Claire Louise Caudill*.

Dr. Gish spent the summers of 1996 and 1997 at the Helene Wurlitzer Foundation in Taos, having been hired as a consultant to organize the library of Dr. Henry Sauerwein, Jr. and Mrs. Helene Wurlitzer; she will continue this work in the summer of 1998. Also in the summer of 1996, she conducted oral history interviews with Taos's most prominent painter, Earl Stroh.

In addition to completing two Readers Theatre scripts, Dr. Gish has continued to perform at MSU, with the Morehead Theatre Guild, and throughout the area. Her recent roles have included Aunt Ev in *The Miracle Worker*, The Mystery Guest in *Die Fledermaus*, Mother

Superior in *Nunsense II*, and Hecuba in *The Women of Troy*.

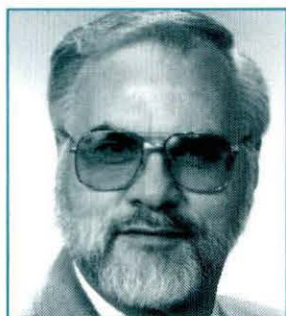
"Hecuba is generally conceded to be the most difficult role for a woman in all of theatre," observed Dr. Gish. "I believe it, too!"

A recent readers theatre script was done with student research to celebrate MSU's recent observation of its 75th anniversary as an institution of higher education. The script was titled "Bells to Belltower". Another script, titled "Sinking Spells, Fainting Fits, and Hot Flashes", was performed this past November by Dr. Gish and four other faculty members of the Department of Communications to raise money for a scholarship.

Dr. Gish earned the B.A. in art history from the University of Minnesota in 1958, the M.A. in art history from the University of Arizona in 1976, and the Ph.D. in speech communication and oral interpretation of literature from the University of Arizona in 1987.

William J. Layne, 1995

Professor of Theatre, MSU



Dr. William J. Layne

"Primarily I am a teacher. I love it," said Dr. Layne. "I enjoy working with students and watching them grow . . . I am as proud of these students' work as I am of my own."

According to Dr. Layne, MSU Theatre performs for more than 3,000 audience members a year. As scenic designer/technical director, Dr.

Layne has either directed or designed the sets for more than 25 productions within the past decade. He designed the sets for *Grapes of Wrath* and *As You Like It* and wrote and directed *Lysistrata Sings the Blues*, all three of which were performed in the 1996-97 theatre season.

His other professional credits are numerous, and include the set designs for plays at the Jenny Wiley Theater, including *The Mystery of Edwin Drood*, *The Jenny Wiley Story*, and *How to Succeed in Business Without Really Trying*, and for *Me 'n Susie* for the Actors Guild of Lexington. He also has served as scenic artist for productions at Georgetown College and Ashland Community College, as well as directing with Children's Arts Fair and Morehead Theatre Guild, including 1993's production of *The Music Man*.

Dr. Layne also started a professional theatre in Palm Springs, Calif., the Palm Canyon Theatre, in 1997. He directed its first production, *The Desert Song*.

Dr. Layne earned the B.A. in theatre/art from MSU in 1962, the M.A. in theatre from Brigham Young University in 1965, and the Ph.D. in communications/theatre from Northwestern University in 1970.

Russell Jay Flippin, Jr., 1996

Associate Professor of Music, MSU



Jay Flippin

Among Jay Flippin's current projects is the appearance on several gospel and jazz compact discs, including a CD of original fusion tunes for Eldon Corporation and a jazz quartet CD with MSU Assistant Professor of Music Gordon Towell. Flippin is also currently involved with the production of a series of promotional jingles for the

University, which will be used on radio and television.

"I continue to compose and arrange music of all styles for a wide variety of soloists and ensembles, both on and off campus," he said.

Flippin said he performs about 50 times a year as an accompanist or soloist on campus and at various engagements throughout the United States. On campus, Flippin has performed at activities such as the Spring Gala, Faculty Follies, Founder's Day, and various dinners and ceremonies. His off-campus schedule includes performances with the Lexington Singers and the Lexington Philharmonic, and he is musical director and keyboardist for Patsy Meyer, whose CD *Don't Stop Now* was just released nationally. Flippin is also organist and choir director for the First Baptist Church of Morehead.

Flippin's faculty duties include teaching keyboards, music theory, and jazz studies courses and directing the Jazz Fusion Ensemble. "I also have 13 private piano students, two private composition students, and am teaching independent studies in Eighteenth Century Counterpoint, Jazz Keyboard, Arranging, and Graduate Musical Styles Analysis," he said.

"I'm completing my 29th year at MSU. Although my rank has changed over the years, my job has remained essentially the same," he said.

Mr. Flippin earned the B.M. from Mars Hill College (N.C.) in 1968 and the M.M. from MSU in 1969, both in piano performance.

Christopher Gallaher, 1997

Professor of Music and Department Chair, MSU

Dr. Gallaher, who joined the MSU faculty in 1972, has nearly 40 compositions and arrangements currently in print which are performed frequently throughout the United States and Europe each year. He also has more than 400 unpublished arrangements written for ensembles ranging in size from eight to 22 members. This year the MSU Marching



Dr. Christopher Gallaher

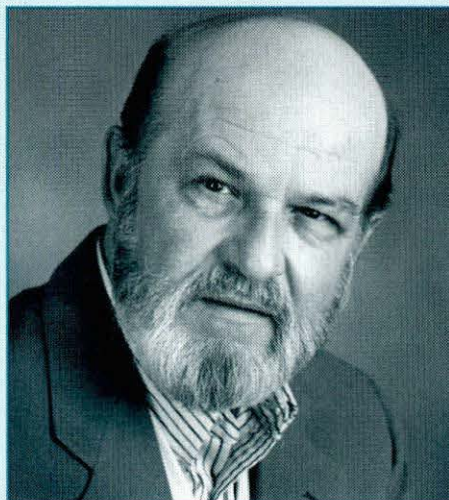
Band included in its repertoire a new arrangement of "My Old Kentucky Home" by Dr. Gallaher.

Currently completing an original work entitled "Music for Flute and Piano," Dr. Gallaher has had compositions premiered recently at the Kentucky Music Educators Conference, the International Conference of Tubist and Universal Brotherhood Association, and the College Conservatory of Music at the University of Cincinnati. He had several other works in progress for various instruments, including flute, trumpet, oboe, and piano. In April, he finished the first movement of a piece entitled "Music for Trumpet Alone" (Almost).

Department chair since 1985, he has performed with many major entertainers, including the Henry Mancini Orchestra, Bob Hope, Johnny Mathis, Doc Severinsen, Mel Tormé, Liza Minnelli, Elvis Presley, Jay Leno, Rich Little, Steve Martin, and Dionne Warwick. Dr. Gallaher produced an arrangement for the 1977 Miss America Pageant winner, Susan Perkins (Miss Ohio). He was also arranger, conductor, and/or performer for five commercial recordings.

Dr. Gallaher earned the A.B. degree in music education/composition from MSU in 1962 (and had his first composition published while he was a sophomore), the M. Mus. in 1965 and the Ph.D. in 1975, both in music theory from Indiana University.

School-to-Work Program Enriches Students at All Levels



C.J. Bailey

"The Kentucky School-to-Work Program provides a seamless thread of education for all students," said C.J. Bailey, quoting the Superintendent of Rowan County Schools Kay Freeland. Bailey is the coordinator for the Local Labor Market Area # 19 School-to-Work Partnership Council.

"The School-to-Work Program is an attempt to tie a student's academic life together with practical applications of what is taught in the classroom," he said.

The School-to-Work program, funded by the Kentucky Workforce Development Cabinet's Office for

School-to-Work, is designed to benefit students throughout their academic careers, from primary to post-secondary education and career placement. A partnership among the school systems, parents, private sector employers, labor, community agencies, local government authorities and many others enables the School-to-Work Program to better prepare students for the work force.

The LLMA #19 School-to-Work program region includes the school systems of Rowan, Morgan, Menifee, Bath and Montgomery counties, in addition to MSU and Rowan Regional Technology Center. Bailey said the program "expands students' opportunities to get hands-on experience." At the primary level, the program's concern is increasing students' awareness of occupations and businesses. For example, Walker Construction Company of Montgomery County brought large construction equipment to an elementary school in Menifee County so excited students could see the equipment up close.

In middle schools, the focus is career exploration. Activities include job shadowing, mentoring, business speakers, and school-based enterprises, such as school stores and outdoor classrooms in which the students are responsible for growing plants and vegetables to learn cost-related investments and marketing.

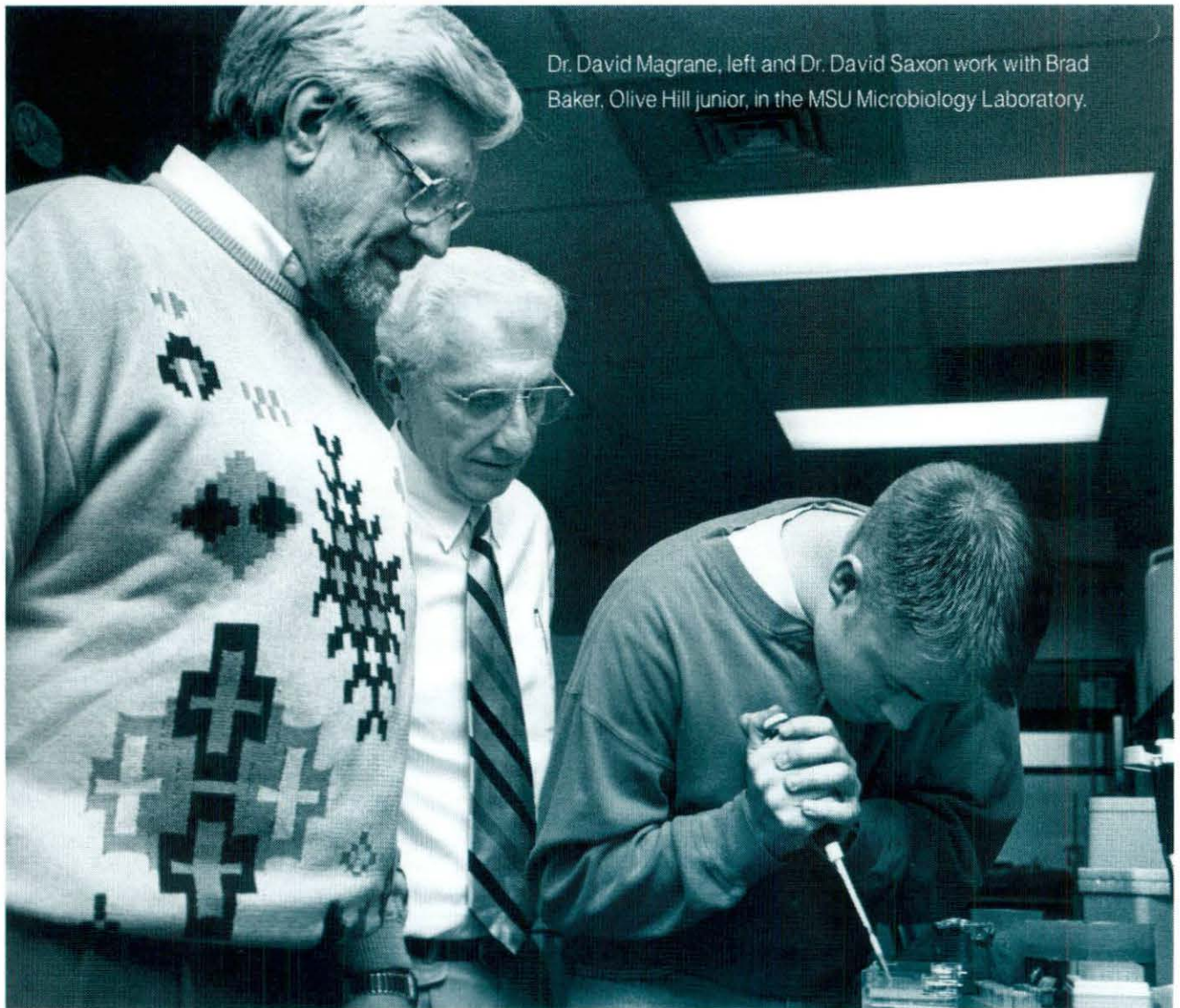
High school and post-secondary students' experience with the program is more job-oriented, giving students a chance to interact with potential employers. Montgomery County High School students designed the landscape for the Donnelly Corporation in their home county. The students attended meetings with company members to discuss the plans, used computer graphics to create the landscape and presented their design to the corporation.

When interested in work experience or job placement after graduation, many University students refer to MSU's Office of Career Services and Cooperative Education Office. It is not uncommon for local employers to contact the School-to-Work program in search of students interested in a cooperative, paid work experience with their companies.

Improving Undergraduate Understanding in Molecular Biology

by Rebecca Bailey

Students can now conduct experiments in gene cloning, DNA analysis, polymerase chain reactions, DNA sequencing, and probe for genes using hybridization methods.



Dr. David Magrane, left and Dr. David Saxon work with Brad Baker, Olive Hill junior, in the MSU Microbiology Laboratory.

Molecular biology is the study of biological phenomena at the molecular level; a molecule is the smallest possible unit of a compound, consisting of two or more atoms. Biology at the molecular level is cutting-edge science; and now MSU students in biology have the resources to allow them to experience and understand modern biological and biochemical methodologies, and to prepare themselves for careers in the health sciences, research, teaching, and other professions.

Dr. Geoff Gearner, associate professor of biology, headed a team of biology professors who received funding from the National Science Foundation to establish the new molecular biology laboratory in Lappin Hall.

Dr. Gearner came to MSU in 1990, bringing expertise in immunology, biochemistry, and molecular biology, and saw immediately that the department was lacking up-to-date equipment. In 1993, the Department of Biological and Environmental Sciences hired a molecular biologist, Dr. Craig Tuerk, assistant professor of biology, who was previously senior scientist at Nexagen, Inc., a biotechnology start-up firm in Boulder, Colo., which he helped found and now serves as a consultant.

Dr. David Magrane and Dr. David Saxon, professors of biology, joined Dr. Gearner and Dr. Tuerk in working to upgrade the lab equipment. In the second renovation of Lappin Hall, a molecular biology lab was included in the remodeling, and it was designed with the needed equipment in mind. The grant for the equipment was funded in March 1996.

The new lab has affected a number of courses. "Some molecular biology was already being taught in lecture, but was lacking in labs," said Dr. Gearner. "Students learn best by doing. Now their work in the lab reinforces the material presented in lecture, in addition to training them in techniques for the job market."

Students can now conduct experiments in gene cloning, DNA analysis, polymerase chain reactions, DNA sequencing, and probe for genes using

"Whereas previously these students could only read about it in journals and textbooks, they can now actually use the techniques of molecular biology and perform the experiments."

hybridization methods.

Courses benefiting include Biology 171, Principles of Biology, which now incorporates a 2-part lab series in molecular biology; Biology 304, Genetics, which has seen significant change in its labs, for in contemporary genetics the emphasis is on genetics at the molecular level rather than Mendelian genetics; Biology 301, Survey of Biochemistry; Biology 317, Principles of Microbiology; and Biology 380, Cell Biology. Two new courses have developed as a result of the project: Biology 446, Biotechnology; and Biology

593, Laboratory Techniques in Biochemistry.

Dr. Saxon, who has taught Cell Biology for many years, said, "This lab allows students to use state-of-the-art equipment, learn significant modern methods and technologies, and gives the students a great opportunity to better understand the concepts of molecular biology as it relates to cell biology. Students use this equipment."

Dr. Gearner said that last fall a gene cloning project was conducted in Principles of Microbiology for the first time. "Students thoroughly enjoyed the activity and learned a lot of molecular biology, even though they were unsuccessful in cloning a bioluminescent gene. From that experience, I have made the adjustments in the procedures so that students should be more successful this semester in cloning the bioluminescent gene from the marine bacterium *Vibrio fischeri* into the common gut bacterium *Escherichia coli*."

"In genetics, a Kanamycin gene is cloned in a plasmid called pBSSK+. This project is always successful and shows simply how such an experiment is initiated, completed, and analyzed," Dr. Tuerk said.

Dr. Magrane, who teaches Cell Biology and the Principles of Biology courses, said, "Our students can now enter into most any professional/graduate school or industrial setting and not be intimidated by the lab technology. Whereas previously these students could only read about it in journals and textbooks, they can now actually use the techniques of molecular biology and perform the experiments."

The lab's equipment includes eight student workstations, each with micropipettors, carousel rack, 250-volt power supply unit, mini sub-cell DNA electrophoresis unit, water bath, and variable speed touch mixer, a floor-model centrifuge, shaking water baths, incubator (for growing cells), digitize photo documentation systems (for electrophoresis gels), a UV spectrophotometer, and a microplate reader. Lappin Hall renovation funds also provided equipment, including spectrophotometers, micropipettors, water baths, a thermocycler, and a UV transilluminator.



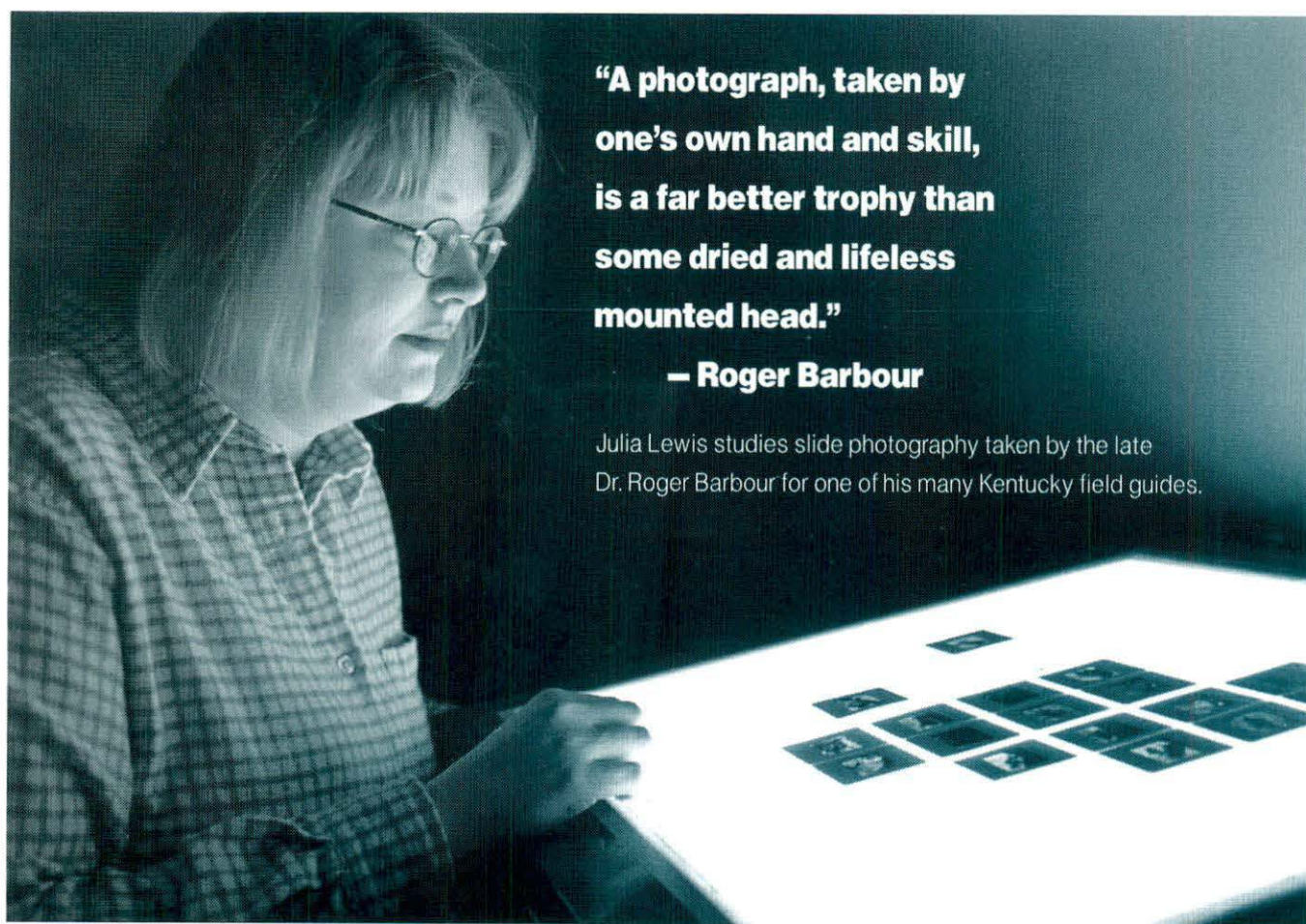
Dr. Geoff Gearner headed efforts to obtain funding for the University's microbiology lab. Also pictured is Sarah Cook, Ashland freshman.

Preserving Dr. Roger Barbour's Trophies

DR. ROGER BARBOUR, KENTUCKY'S MOST ESTEEMED NATURALIST, captured "trophies" for more than fifty years. But he did more than capture the prized images. Many have been published in his books, as well as in those of other biologists, and he used his own slides for his classroom lectures. *Mammals of Kentucky* (from which the quote is taken) is a book that Barbour co-authored with Wayne Davis.

Kentucky Mammals on CD-ROM

by Gena Henry



**"A photograph, taken by
one's own hand and skill,
is a far better trophy than
some dried and lifeless
mounted head."**

— Roger Barbour

Julia Lewis studies slide photography taken by the late Dr. Roger Barbour for one of his many Kentucky field guides.

Julia Lewis, head librarian of government documents and graphic arts department, and Clara Keyes, head librarian of the special collections section, are interested in preserving Barbour's trophies. The two have decided to digitize Barbour's collection of nearly 350 slides of Kentucky mammals, including bats, so the images will be available for use on CD-ROM.

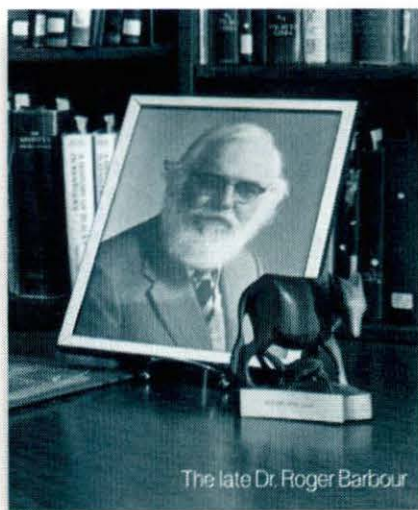
The project is being funded by a University grant, part of which provided a scanner adapter that enables Lewis to illuminate Barbour's transparencies while scanning them. Otherwise, the transparencies would not have been visible—they would have scanned only as black blocks. The equipment will also be used by distance learning faculty and others in Power Point presentations.

Lewis and Keyes will present their work with the digitized images at the 1997 Kentucky Library Association Conference. Lewis plans to press two copies of the CD-ROM, designed with Toolbook, which will be available for general reference. One copy of the CD-ROM will remain with Lewis and the other will be located in the special collections section. Lewis and Keyes are investigating the possibility of making the collection available via the World Wide Web.

Lewis was initially interested in the project because of the growing interest in the use of multimedia in classrooms, and "what librarians can help faculty do." But the main reason both Keyes and Lewis are digitizing the slides is to provide access to Barbour's images without damaging the originals.

Some of the original slides, several of which are 20 years old or older, have begun to degrade after years of use and exposure to light. The library also chances loss of or damage to the slides each time they are viewed. Digitizing the images makes the materials more user-friendly, and Barbour's originals are not sacrificed.

"Dr. Roger W. Barbour was born in Morehead in 1919," Lewis said. "He remained in Morehead to attend school at what was then Morehead State Teacher's College. He began his work as a field biologist here while earning his bachelor's degree in biology, and actually



completed the field work for the master's degree he later received from Cornell University while still an undergraduate student." Dr. Barbour also did his doctoral work at Cornell University.

He came back to Morehead State Teachers College to teach Biology before taking a faculty position at the University of Kentucky.

Many of Barbour's photographs show his desire to capture images that aid students and other naturalists in the identification of a species. The tracks of an eastern cottontail, a close-up shot of a big brown bat's foot, a tree felled by beavers or a face-to-face shot of a skunk are common in Barbour's mammalian collection, in addition to images of teeth and bone structures. Lewis explained that Barbour believed in studying the animals up close.

"When he couldn't get close enough to the animals, he brought the animals to him. There is a legendary story about his dedication to accurately photographing animals. Bats are not particularly easy to photograph, but the Barbours had a spare bedroom, so Dr. Barbour covered the windows and made the bats a new and temporary home, right inside his own. He got his photographs," Lewis said.

Dr. Barbour first began donating his materials to the University in 1986. Many of his donations include slides, books written by himself and those that he found useful as a student, manuscripts, early 1940s photographs of local people, and even some interesting souvenirs from his time spent teaching in Malaysia. In

addition, he established a field-work-based scholarship for biology students. The Barbour Room in the special collections section of the library was created to provide a secure place to house Barbour's work. The room holds nearly 10,000 of the biologist's images, including fish, reptiles, amphibians, birds, mammals, wildflowers, trees, shrubs and people. The Smithsonian Institute is the only other institution with Barbour's images, some of which are still used in print.

Barbour's Kentucky mammals collection is the most sought-after and sizably convenient group to begin digitizing. Keyes views digitizing the Barbour mammals on a CD-ROM as a "pilot project to see how we could digitize the entire collection." By digitizing his trophies, Lewis and Keyes are protecting and preserving one of Kentucky's greatest naturalists' desire for an informative, accurate knowledge base of animals.

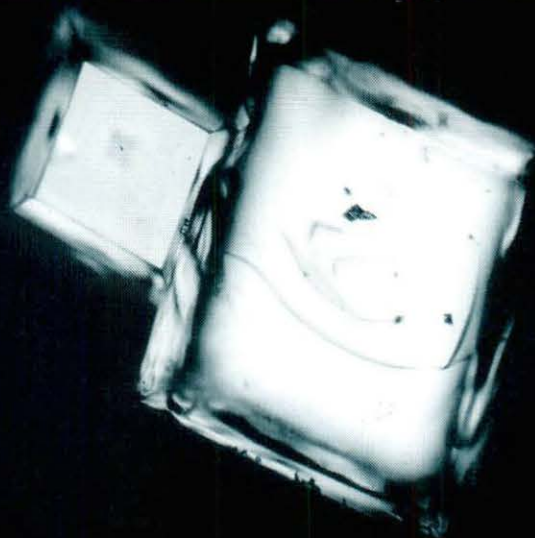
Also in the collection is Barbour's eulogy, written by one of his former students, J. Hill Hamon, who now teaches at Transylvania University in Lexington. There is a memory in the eulogy which describes both Barbour's sense of humor and dedication. "Once, early in the semester in a general zoology laboratory, anxious students nervously asked him if he ever pop-quizzed his laboratory sections. He reacted most indignantly. 'I hate pop-quizzes!' he answered with a snarl, shaking a fist. 'Why, you won't get a pop-quiz from me until you see me ride a motorcycle down the hall and through this lab! Now, that's a promise!'

The class got a great laugh out of that image. 'But,' he continued, slowly, a master of the pregnant pause, 'I expect you to come to lab prepared.' And you guessed it, two weeks later, on a Monday afternoon, ten minutes after the lab was under way, the din of a motorcycle echoed through the building startling everyone . . . and in rode Roger in his grungy field clothes and sporting a three-day growth of beard. He was returning from a weekend of field work. He roared to the front of the room, spun the cycle around, raced its engine three or four times, then killed it, grinning broadly. 'Pop-quiz!' he announced."

Acetic Acid and Drug Bioavailability

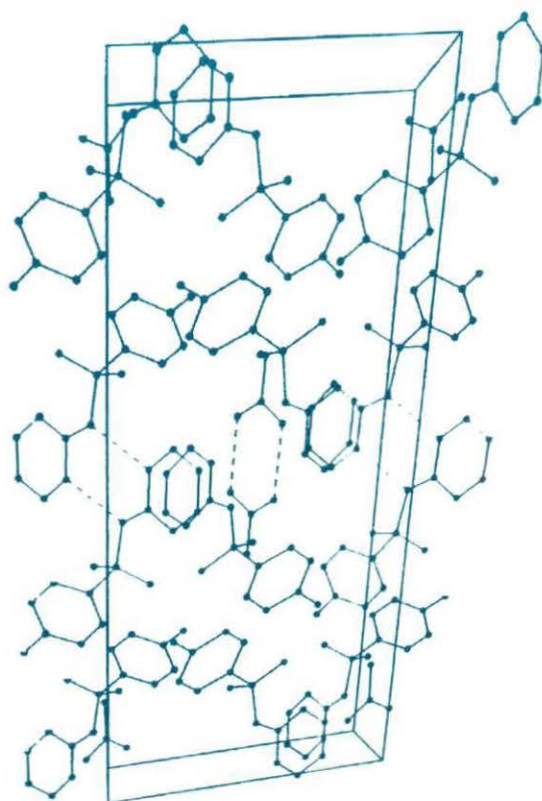
by Rebecca Bailey

Sulfapyridine and acetic acid molecules as seen in the crystals pictured at right. The crystals were grown by Owingsville senior Sherri Gorrell, and the structure (below) was solved by Dr. Mark Whitener at Montclair State University.



The primary goal of this research was to gain insight into the factors influencing the formation of acetic acid solvates, and also to learn something about the role of acetic acid in determining the packing of the host molecule in the crystal,” said Dr. Dan Adsmond, associate professor of chemistry.

“The physical properties of solids are partially determined by how molecules pack in the crystal. If crystal packing changes, physical properties change,” he explained. “In pharmaceuticals, there is an interest in modifying the physical properties of drugs in order to change their solubility, dissolution rate, and rate of absorption into the body. Changing the crystal structure of a drug will affect these properties.”



A solvate, according to Dr. Adsmond, is a crystal of a host compound that has incorporated molecules of the crystallizing solvent into its crystal lattice. He chose to work with the solvent acetic acid; acetic acid is what gives vinegar its sour taste. Important to a chemist, though, is the ability of the acetic acid molecule (CH_3COOH) to form hydrogen bonds: its acidic hydrogen has a partial positive charge; so, it is attracted to nitrogen or oxygen, both of which have partial negative charges. When the positive hydrogen binds to a negative nitrogen or oxygen, this is the

including the acidic hydrogens of the host molecules in our survey, we determined that 70 out of 71 acidic hydrogens in the solvate structures were involved in hydrogen bonding." Closer study revealed that the acidic hydrogen of acetic acid had a preference for hydrogen bonding to the best hydrogen-bond acceptor available in the crystal.

The second objective was to describe the binding of acetic acid in these solvate structures using graph set notation. Dr. Adsmond found that "despite the fact that more than 20 different functional groups [of atoms] were represented by the host molecule, the acetic acid binding always fit one of four general hydrogen bond patterns": acetic acid acted only as a donor in a hydrogen bond to the host; neighboring acetic acid molecules bonded to each other rather than to the host; acetic acid bonded as both a donor and an acceptor to the same host molecule; and acetic acid joined two different host molecules together as a donor and as an acceptor. "If an atom on the host molecule was a better hydrogen-bond acceptor than the one on the acetic acid," he explained, "then acetic acid would bind to the host; if not, its preference was to bind with itself."

Thirdly, the VISTA software allowed the investigators to compare the crystal structures of the pure host compounds with those containing acetic acid to determine how acetic acid changes the way the host molecules pack. Three such compounds were analyzed; two of the three had no hydrogen bond donors and, in the absence of acetic acid, formed no hydrogen bonds. In the third solvate, significant changes were observed. Although the host molecules remained stacked in layers, they were separated by intervening acetic acid molecules, which Dr. Adsmond believes led to an increase in stability.

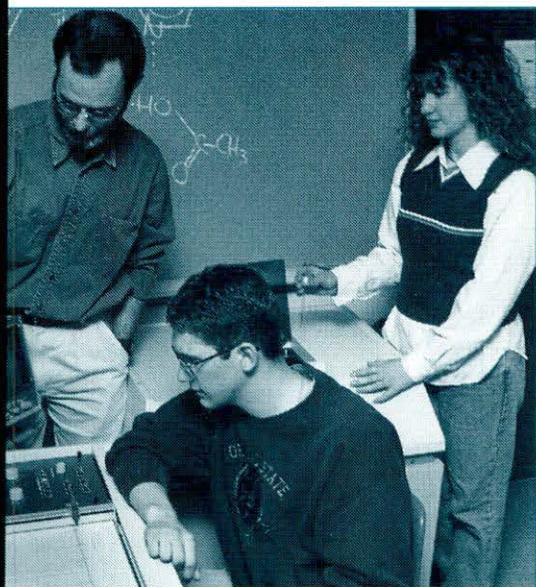
The fourth research objective involved growing crystals of 100 different compounds from solutions containing acetic acid to test their ability to incorporate acetic acid into their crystal lattice and to search for correlation between that ability and obvious molecular features. Underwood grew these crystals by slow evaporation of the acetic acid at room temperature, then used nuclear magnetic resonance (NMR) to determine if acetic acid was in the crystal and how much was there.

Some compounds were so soluble that crystals did not form until all the acetic acid had evaporated (and thus could not form solvates); some were very slow growers. Dr. Adsmond and Underwood were able to grow 10 crystals that yielded acetic acid solvates. Three of these were solvates of sulfa drugs (antibacterial) containing amidine nitrogens, which are good hydrogen bond acceptors.

Underwood has presented portions of this research at the 1996 Midwest Organic Solid State

Chemistry meeting in Lincoln, Neb., and at the 1996 meeting of the Kentucky Academy of Science. Dr. Adsmond's publication in a refereed journal is awaiting completion of additional research in this area.

A second grant is allowing Dr. Adsmond to continue his research, focusing on the structure and stability of the 10 newly discovered crystal compounds. Some solvates slowly lose their solvent molecules over time, and by taking NMR readings every couple of hours the process may be monitored more closely. Another student, Sherri



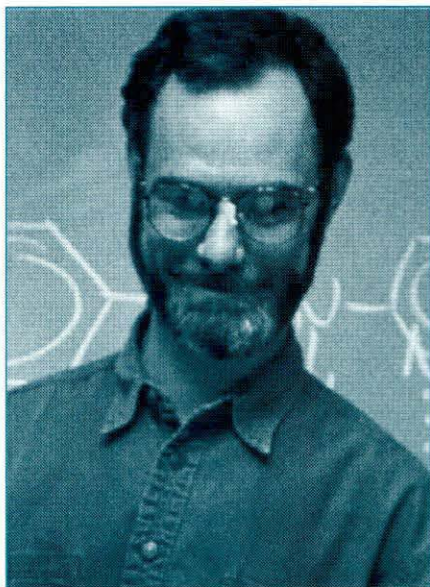
Tollesboro senior Jason Underwood and Sherri Gorrell, Owingsville senior, assisted Dr. Dan Adsmond with his research into solvents.

hydrogen bond, and this hydrogen bonding is what Dr. Adsmond has studied.

His research, funded by a grant from MSU, accomplished four major objectives. The first objective was to obtain the raw data for all published crystal structures of acetic acid solvates from the Cambridge structural database and to use the VISTA software to determine exactly how acetic acid binds to the host molecule in each crystal. The Cambridge structural data base contains over 150,000 crystal structures, and the VISTA software, which comes with the database, allows researchers to see how molecules bind to each other and how they pack in the crystal.

Dr. Adsmond and an MSU student, Jason Underwood, Tollesboro senior, found 26 acetic acid solvate structures. "Each was examined with the goal of discovering the primary binding interactions between acetic acid and the host molecule," Dr. Adsmond said. Specifically, they were looking for hydrogen bonds.

"The first observation that was made upon examining the 26 structures was that in every single crystal structure the acidic hydrogen of acetic acid formed a hydrogen bond," he said. "When



Dr. Dan Adsmond

Gorrell, is working to grow high-quality crystals so their crystal structures can be solved.

Another aspect of the project uses infrared spectroscopy to determine exactly how acetic acid binds to the host. Currently, Dr. Adsmond has found no indication of hydrogen bonding to the amidine nitrogen of the sulfa drugs, as was expected, but instead is finding evidence of acetic acid binding to itself in the crystals. The infrared data is supported by the crystal structure of the 1:1 sulfapyridine:acetic acid solvate solved by Dr. Mark Whitener, a collaborator of Adsmond's at Montclair State University. The crystals, grown by Gorrell show that indeed acetic acid binds to itself while the sulfapyridine molecules bind to each other through the amidine groups.

Adsmond is hoping to obtain and compare crystal structures of several additional anti-bacterial drugs to see how acetic acid affects them.

"If the physical properties of a drug can be modified," Dr. Adsmond said, "then so can its bioavailability. The more that can be learned about structures in a particular class of solvate crystals, the closer chemists will be to predicting which compounds will form solvates and exactly how the formation of a particular solvate will change the physical properties of the drug."



Dr. Brian Reeder

Fertilization of Kentucky's lakes is a new area of study, providing clues as to how wetlands habitats can be maintained.

FOR THE PAST SEVERAL YEARS, DR. BRIAN REEDER, professor of biology, has been involved in a lengthy fertilization study of Grayson Lake, supported by grants from the Kentucky Department of Fish and Wildlife, and in studies of ecosystem development of Kentucky wetlands, supported by the U.S. Forest Service, the United States Environmental Protection Agency, and the Kentucky Division of Water.

"The link between the two," said Dr. Reeder, "is a concern with water

Learning how the Natural World Works

by Rebecca Bailey

quality and the applications of the best science to solve a practical problem, plus the opportunity to learn more about how the natural world works.”

The Fertilization Study of Grayson Lake has been going on since 1992. Dr. Reeder explained that the Kentucky Division of Water fertilizes lakes in hopes of increasing fish production, especially bass, just as ponds are commonly fertilized for the same reason. “All lakes in Kentucky are artificial (except for a part of Reelfoot Lake), so they are not natural ecosystems, just as ponds are not,” he said. “When to fertilize and how much had not been studied.

“The main goal of fertilization is to help young fish survive; so, we time the fertilization so that it works up through the food web to feed the young fish.”

Studies by Dr. Reeder and some of his graduate students found that this was not happening at Grayson Lake.

In an effort for fertilization to be utilized by young bass more effectively, it has been concentrated in areas where young fish are more likely to be found, such as embayments. Dr. Reeder’s lab measures the effect on the lake by regular collecting of water samples, which are then analyzed for environmental indicators such as temperature, dissolved oxygen, pH, chlorophyll a, plankton populations, etc.

“Although phytoplankton production has increased, it isn’t translating into fish production,” he said.

Dr. Reeder said this may turn out to be more of a habitat problem due to insufficient wetlands around the edges of the lake, which are nurseries for the young fish. “Lakes are not built to maintain wetlands but rather for flood control,” he added, and recommended greater collaboration between all the regulatory agencies, such as the U.S. Army Corps of Engineers, the Kentucky Division of Water, and the Kentucky Division of Fish and Wildlife.

How do you create a healthy wetlands, one that doesn’t just look like a wetlands, but, more importantly, also functions as one? These created wetlands are constructed to replace naturally-occurring wetlands

that were destroyed by development. The law requires that if you destroy a wetlands, you have to put it back. “Is this possible?” is a question many environmental scientists are asking.

“It’s easy to go out and plant things,” Dr. Reeder said. “But does it all work together the way that it should? Are you replacing the functions of a wetlands—flood control, nurseries for fish, habitat for species?”

Reclaimers use the best of what is known about the ecosystem and try to predict when the function will come back. Dr. Reeder is evaluating how successful these reclamations are.

Much of Kentucky’s original wetlands were located in the Ohio River basin. When a wetlands is destroyed, members of the community often want the replacement right there in the community rather than in another county, so they can enjoy green space and recreational activities it provides, such as bird watching. One of the problems Dr. Reeder has encountered is that very often there is not enough communication between members of a community and the various agencies involved in the mitigation.

For example, one of the state’s largest reclaimed wetlands sites is being built in Louisville. “The large pools of shallow water were bringing in flocks of birds. The mitigation site is located near the Louisville airport, and you don’t want large flocks of birds around airplanes.” So, the recreated wetlands site is being filled back in.

Dr. Reeder found that at almost all sites, the people being regulated do put dams, trees, etc. where they said they would, but often they do not keep up with testing, such as groundwater monitoring, which helps ecologists assess the functioning of the new wetlands ecosystem.

How do we plan development so that we don’t lose the use of the land? Dr. Reeder believes this is the key question to retaining our existing wetlands, both in Kentucky and elsewhere. “It is not a choice between jobs and the environment,” he stated. “That is very short-term. In the long run, what is best for the environment is also what is best for jobs.”



Several of Dr. Brian Reeder’s graduate students have written their theses on research they have done in conjunction with his work on water quality. Dr. Reeder’s own publications on these topics have been significant.

The Child Development Associate: Providing Quality Child Care

by Rebecca Bailey



The program represents a national effort to credential qualified caregivers who work with children from birth to age five.

According to Debra Mattingly, director of the Child Development Associate (CDA) program, the program represents a national effort to credential qualified caregivers who work with children from birth to age five. These caregivers must demonstrate their ability to nurture children's physical, social, emotional, and intellectual growth in a child development framework. They may be preschool or infant/toddler center-based caregivers, family day care providers, or home visitors who are caregivers that work with parents.

Candidates for the CDA credential are already working in a child care setting, from day care to Head Start.

"They have a high school diploma or GED, have no college or very little college work, and are between the ages of 25 and 40," Mattingly said. "Most of these workers receive minimal pay, but are willing to work for lower wages because they love working with children."

"Working toward a CDA credential offers caregivers an opportunity to take a look at their own work in relation to national standards and to get feedback and support from professionals who have experience working with children and who are knowledgeable about early childhood education and child development. Not only do teachers improve their skills in ways that are satisfying to themselves and beneficial for children, they earn a professional credential that is recognized by early childhood educators nationwide," she said.

MSU's program is funded by various agencies throughout Eastern and Central Kentucky, including Head Start, Early Head Start, Vocational Rehabilitation, public school personnel, day care centers, and Early Intervention programs. It serves 52 Kentucky counties and offers on-site classes.

The CDA program began in the early seventies to sup-

At left and right, Debra Mattingly works with children at the Rowan/MSU Head Start facility.

port Head Start, which began in the sixties. "To truly give children a head start, child care workers need training, and this is what the CDA program provides," Mattingly said.

Assessment and credentialing of child care providers is administered by the Council of Early Childhood Professional Recognition, a national organization. As of 1996, approximately 85,000 child care providers had been credentialed through the program since 1975, with 47 states and the District of Columbia requiring the credential in their child care licensing regulations. In Kentucky, every Head Start classroom must have at least one CDA worker.

Mattingly explained there are various stages in the assessment process. First, an indi-

vidual must meet eligibility requirements: be 18 years of age or older; have a high school diploma or equivalent; speak, read, and write well enough to fulfill CDA responsibilities; sign a statement of ethical conduct; and identify a state-approved child development center where the candidate is observed as a lead caregiver. Additionally, within the past five years, the candidate must have accumulated at least 480 hours of experience working with young children in a group setting, and have completed 120 clock hours of formal child care education under the auspices of an agency or organization with expertise in early childhood teacher preparation.

Secondly, the candidate chooses a professional who conducts a formal observation, using CDA guidelines; collects Parent Opinion Questionnaires; and prepares a Professional Resource File, which contains an autobio-

graphical statement, written examples of competence in six specified areas, and resource materials. The purpose of the CDA program at MSU is to provide CDA candidates the 120 clock hours of training which is mandatory for CDA assessment. This training is offered in the form of three classes: Introduction to the Early Childhood Profession, Skills for Preschool Teachers, and the CDA Practicum.

The material covered in the CDA classes is geared toward the CDA competency goals, Mattingly explained. In the first two classes, topics covered include advocacy and ethics, developmental milestones, observing and assessing young children, setting up learning environments, scheduling, lesson planning,

and recognizing and providing developmentally appropriate activities and materials to meet the physical, intellectual, social, and emotional needs of all children. Assignments and exams to demonstrate competency are required. In the CDA Practicum, CDA students must demonstrate competency in applying the knowledge and skills acquired in the first two classes in their daily work with young children. In the CDA Practicum, the formal observation required for assessment is completed by the instructor. Assistance in compiling the Professional Resource Files as well as practice with interview situations is also provided. In the Practicum, individualized learning is stressed and training activities are based on each person's individual strengths and weaknesses in specific competency areas. When the 120 clock hours of training and required documentation are complete, the can-

didate sends the application for assessment to the CDA Council, which assigns a specially trained, early childhood professional to administer a written examination and conduct an oral interview. A council committee then reviews the candidate's qualifications and documentation of the applicant's work and makes a decision concerning the CDA credential. A CDA credential is valid for three years and is then renewable every five years. Additional work, either 4.5 CEUs or a three credit hour college course is required for renewal. MSU's CDA program has developed training plans that enable CDAs to meet the new renewal requirements.

Currently, there are six Morehead State CDA field trainers who are frequently on the road since classes for CDA candidates are offered on site. Some class locations include Pike County, Prestonsburg, Beattyville, Ashland, Danville, Lexington, Paris, Williamstown, Somerset, Middlesboro, Harlan, and Barbourville. This year, approximately 12 classes each semester are being taught, with 10-15 students in each class. Also four to five classes are taught each summer.

"We all just love it," said Mattingly.

"Being a part of training people to work with children is so rewarding to us as trainers. We here at MSU feel privileged and honored to work with so many dedicated teachers who truly care for children. We are all working for the betterment of our world, and where does it start but with the children?"

I had the pleasure of being involved in the Morehead State University CDA program for over seven years. They were seven of the most fulfilling years of my professional career.

The program touches the lives of so many people who are committed to improving the quality of care for children and their families.

A great many students who work to obtain their CDA have never taken any college course work and are scared and doubtful as to whether or not they can achieve their goal.

One of the reasons I feel the CDA program is so successful is not only because it provides essential training for early childhood professionals, but because the experience of obtaining a CDA builds the confidence of students who might never have otherwise attempted college course work.

**Linda Lockhart
Gateway Head Start
Education Unit Coordinator**



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David Bartlett

Security

ETCHED

**From Photography:
Large Photogravure Prints**

by Gena Henry

"At the heart of the photographic imagination is the phenomenon of noticing, a spontaneous event of consciousness ... during which our sensory experience is illuminated."

- David Bartlett

With grants from Morehead State University and the Kentucky Arts Council, Bartlett is exploring an art form that yields beautiful results from his photographic imagination.

"Photogravure is an art form that combines intaglio print making with photography," explained Bartlett.

Intaglio means to carve, cut into, or etch. Intaglio prints are sometimes referred to as etchings. By combining photography with the intaglio process, Bartlett combines photography's virtue of delicate detail with the rich, smooth tones of intaglio.

The process of photogravure developed in the early nineteenth century, but did not become popular until the 1850's. Much of the literature on photogravure is outdated and many of the recommended materials are unavailable. This is advantageous, though, to artists interested in reviving craft. The lure of combining the old and the new, and the blending of hand crafting with contemporary materials has resulted in photogravure artists who personalize the art form with each printing. The scant knowledge base of photogravure gives artists like Bartlett a full range of artistic freedom.

Bartlett uses no assistants for his work which may involve capturing photographic images along Cave Run Lake, hand cutting and preparing the resist for the photogravure print, and finally printing and exhibiting his work. His current effort is the making of 14" x 17" photogravure prints from images he shot in Kentucky, northern Minnesota and northern Maine.

Making the larger prints created several unexpected obstacles, though. "I had to re-tool the studio. I needed new trays, different

film, and a new way to cut and handle the resist," Bartlett explained. "Photogravure is an intricate process that has many stages, and even the smallest mistake in any of them can require starting over."

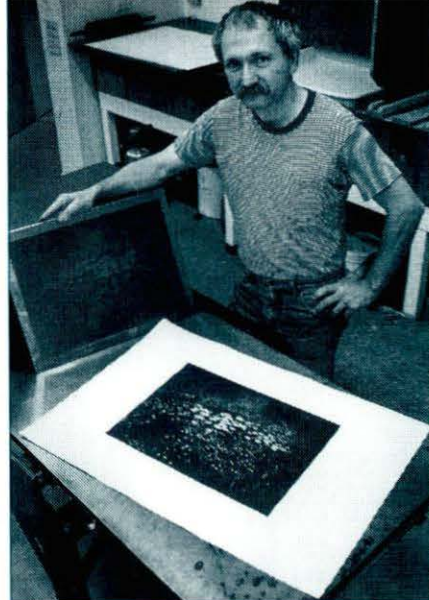
After shooting an image, Bartlett produces a positive, or transparency, of that image. Then he prepares a resist, a sheet of thick paper covered with gelatin and slightly larger than the final print. The resist is submerged in potassium dichromate, which makes it light-sensitive, so that when exposed to the transparency with ultraviolet light, the resist will harden and become insoluble in proportion to the amount of light it has received.

Even the weather can affect the outcome of the prints. If the humidity is low, the resist tends to curl and is difficult to sensitize. "I've heard that Canadian artists have great difficulty with resists because of the low humidity," Bartlett said.

The resist, exposed to the image, is then placed on a polished copper plate. The plates are traditionally dusted with a very fine asphaltum powder. However, this process is dirty, difficult and time-consuming, and the fine asphaltum can be a health hazard. Bartlett has found that using a random-dot, computer-generated, stochastic screen is more practical when producing large photogravure pieces.

"The dusting process is tedious, and even one particle of dust from the air can make tracks through the asphaltum like a seagull through sand," Bartlett explained. Unfortunate occurrences such as this require complete re-cleaning and re-dusting of a plate. The stochastic screen eliminates the need for dusting.

After exposure, both resist and plate are placed in hot water. The sections of resist that received the most ultraviolet light are hard-



Professor Bartlett transforms photographs into large format photogravure prints.

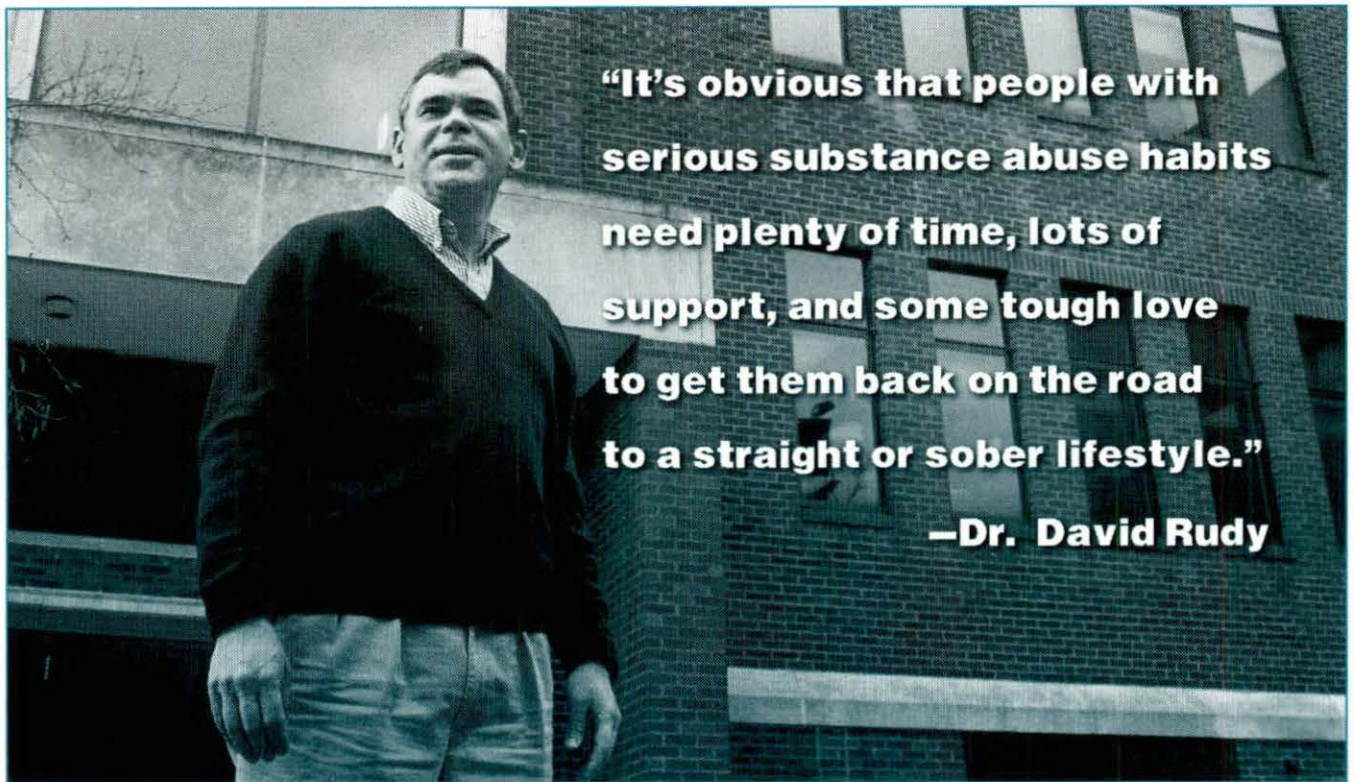
ened and little of these sections is washed away. They become the lighter areas of the print. But sections that received less light are less hardened and will be partially removed by the hot water, becoming the darker areas of the final print.

The plate and resist are then submerged in a mordant, a solution of ferric chloride. The ferric chloride penetrates the resist and, after a short time, reaches the copper plate and begins eating into or etching the copper plate.

"The rate at which the ferric chloride goes through the resist depends on its specific gravity — how much water is in the ferric chloride," Bartlett said. "The more water, the faster it will penetrate the resist; the less water, the more slowly it will pass through the resist." He can control the contrast of the final printed product by altering the water content of the ferric chloride.

Photogravure is an ideal form for artists interested in the aesthetic results of the blending of science and art. Bartlett is careful to employ scientific methodology to ensure artistically desirable prints that reflect his photographic imagination. This involves the use of densitometers to determine the effects of exposure and development on films and resists and also the making of many test plates to determine the effect of the specific gravity of the ferric chloride on its etching rate. The goal is to know how to alter the process to achieve the visualized print.

Bartlett plans to exhibit the 14" X 17" prints and may incorporate photogravure techniques into some of his classes.



Community Corrections Programs Show Potential for Substance Abusers

by Jeff Spradling

Community corrections programs saved Kentucky's taxpayers more than \$2.4 million during 1996, according to research conducted by Morehead State University Professor of Sociology Dr. David Rudy. The programs, which attempt to rehabilitate and mainstream people convicted of drug-related felonies as an alternative to incarceration, were studied by Rudy and his associates, Gregory Goldey and Hugh Everman, through a Kentucky Corrections Commission Grant.

Rudy also received a grant to study substance abuse programs conducted within prisons in Kentucky. That study involved evaluation of programs at the Kentucky State Reformatory in LAGRANGE and the Kentucky Correctional Institute for Women.

"The substance abuse programs started as an evaluation of the new programs that were started in men's and women's prisons with federal money. We initially studied the implementation of the programs and how inmates perceived them. As the programs expanded to halfway houses, we followed some of the participants there," Rudy said.

But Dr. Rudy, who has studied alcoholism and 12-step programs in previous research, points out that, while the programs appear to be cost effective, what they really need is more time to effectively rehabilitate participants.

"It's obvious that people with serious substance abuse habits need plenty of time, lots of support, and some tough love to get them back on the road to a straight or sober lifestyle," he said.

Rudy explained that early in a treatment program, patients often have a higher likelihood of relapse, but over time, that threat can be effectively decreased.

"Time is a significant variable. The longer clients can stay straight, the greater the likelihood they can continue their success," Rudy said.

"It is awfully expensive to handle a person's drug problem by imprisonment. It costs a lot of money to institutionalize someone, when what they need is counseling and a support system. I believe that if you can reduce the frequency of drug use, you can make progress."

Rudy said one of the problems of dealing with drug-law offenders is a conflict centering around the idea of a so-called, victimless crime.

"I see people whose primary destruction is personal. You find people with escalating involvement. It starts as a minor thing with drug use and ends up with a violation of drug laws. The question is, is it worthwhile to incarcerate these people."

He said two key factors in successful rehabilitation are a support system for the client and occupying the time of the person. He said halfway houses use approaches like 12-step programs to rehabilitate substance abusers.

"Halfway houses try to do stuff like intense group sessions, Alcoholics Anonymous meetings, and employment; then gradual access to the community is opened up."

Rudy also points out such alternative corrections programs for clients with drug-related problems have two issues to deal with. One is rehabilitation, and the other is community safety.

He said a typical occurrence is for residents of halfway houses to return to prison for rules infractions that are of minimal threat to communities.

"What you see is clients who return to prison for two reasons. One is technical violations such as drug use and failed urine tests. The second is breaking the law. Most are sent back due to technical violations," Rudy said.

He said a conflict arises between the need to give participants time to rehabilitate and community standards, which are typically conservative and do not allow enough flexibility to treat people with substance abuse problems.

"Not only is the community perception a problem, but it is obvious to me that, for people who have serious habits, rehabilitation is not. If you can cut them more slack you would have greater long-term success."

Rudy's research into community-based corrections and substance abuse programs set out to answer several questions posed by the Kentucky Department of Corrections in its call for proposals. The department wanted to know if projects were serving clients who would have otherwise gone to prison, the cost of alternative programs as compared to imprisonment, and what outside resources are being used and the frequency of their use.

The impetus for the study comes from the Kentucky Community Corrections Act, passed to address the problem of prison overcrowding and the cost of incarceration of

individuals. In response to the law, the state has established programs in New Castle, Louisville, Princeton, Georgetown, Lexington, Henderson, and Fulton, which were serving 220 clients when Rudy began his research.

Rudy published a preliminary report of his study in the October 1997 issue of *Corrections Today*. In the article, he states that the study provides "broad implications for the implementation of substance abuse programs in correctional institutions."

One finding about the state's seven community-based corrections programs is that "the 220 clients currently enrolled in the programs would likely be in prison without the chance to participate in community corrections."

Rudy's research also found a significant difference in costs of the two approaches — imprisonment versus a treatment program.



Dr. Rudy has studied alcoholism extensively during his academic career.

While it cost the state an average of \$12,518.10 per year to incarcerate an individual, the cost for a CCP participant is \$1,483.46 per year. Rudy's findings estimate potential savings of the programs at over \$2 million, annually.

His research also points out that alternative programs have room to be innovative in their rehabilitation efforts. In Georgetown, Ky., for instance, participants have an opportunity to earn GEDs and learn job skills through vocational programs.

Rudy notes that the programs would be more effective if clients were treated with a therapy approach, giving them access to an individual who has more flexibility than

parole officers and other officials in the justice system.

"A person on parole needs a sponsor or someone in a support system who is not constrained like an official in the corrections system — an independent kind of counselor. They need someone they can trust. A therapist can analyze cues that cause drug use and reduce the impact; whereas, a parole officer is constrained by the laws" related to violation of parole conditions.

Participants in the CCPs said the programs do provide a support system which takes the form of an extended family, nourishing "attitudes that combat addiction and encourage trusting." According to Rudy's research, "participants also reported a sense of structure in their lives because of the programs," and as clients work through the program "they help newcomers to the program who don't believe they need to quit using."

Staff members in the alternative programs told researchers they believe the programs to be "much more effective than incarceration." Staffers report a team effort with the legal establishment and that participants are "able to offer restitution through community and government services."

One area where Rudy sees room for improvement in the rehabilitation programs is the need for involvement of the client's family.

"It seems to us that failures center around interpersonal relationships. That seems to be a trigger. We need to better integrate a person's microsystem into the treatment program," he said.

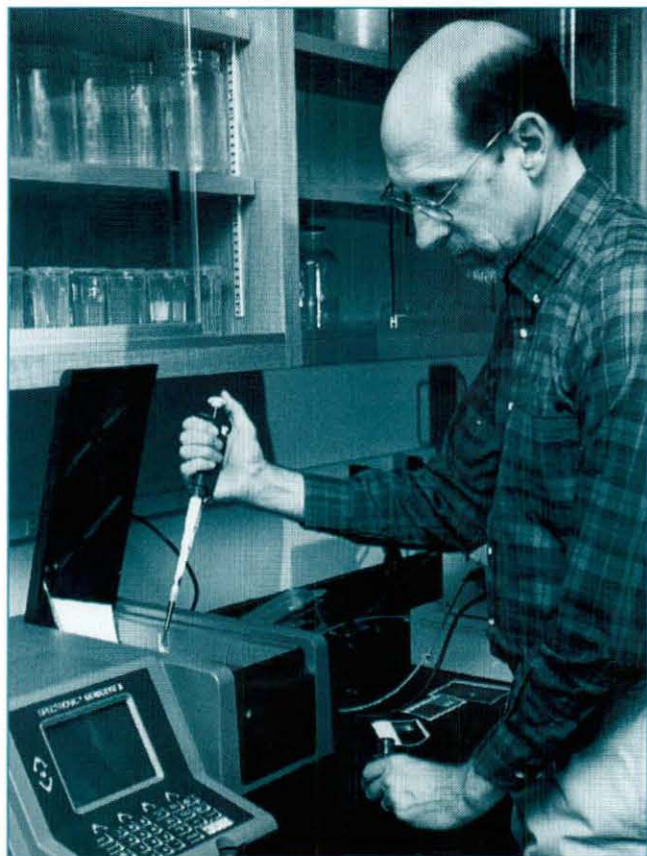
And while Rudy's research did make some findings that can benefit the state's programs and provide insight into the effectiveness of the Community Corrections Act, he remains forever the researcher, always seeking answers to questions that will shed more light on the problems faced by those who are addicted to drugs and alcohol.

Rudy said that clients have an easy time staying straight while they are in prison and participating in substance abuse programs, but predicting success once a person returns to society is rather difficult. Such people "tend to have complicated lives" and those who appear to be highly likely to stay straight sometimes wind up right back in prison.

"I am interested in researching why this happens. What explains success or failure when leaving prison is one of the things we are interested in. We would like to pursue that," Rudy said.

Reproducing Evolution in a Test Tube

by Rebecca Bailey



Dr. Craig Tuerk

Dr. Craig Tuerk and colleagues are exploring ways to harness evolution to produce useful compounds. With funding assistance from Kentucky NSF EPSCoR, Dr. Tuerk is continuing his long-term studies into the generation of random sequence regions in macromolecular libraries.

The size of these libraries depends critically on the length of random DNA sequences that can be synthesized in the test tube, which is relatively small in chemical DNA synthesis. The EPSCoR grant allowed Dr. Tuerk to develop methods by which long random regions could be generated using terminal deoxynucleotidyl transferase (TdT) for protein libraries.

In research conducted at the University of Colorado, he and collaborator Dr. Larry Gold investigated the use of random incorpo-

ration of nucleotides into stretches of DNA sequence to produce libraries of RNA from which pharmaceutically interesting molecules could be selected. These randomized libraries contain billions of unique RNA sequences each of which can be replicated to obtain the sequence that has been selected for a specific function such as inhibition of a crucial enzyme in viral replication.

During evolution, occasional mistakes in DNA replication (mutations) will, if they increase the fitness of an individual, become fixed in a population. "Nature does a rather slow and incomplete search of sequence space, one change at a time," Tuerk said.

Using a random library, Tuerk and Gold were able to find an RNA sequence in two weeks that was identical to that "discovered" by evolution over a period of about a million years of trial and error. Tuerk and Gold selected an RNA sequence that specifically inhibits HIV-1 reverse transcriptase.

Because the functions of RNA molecules are less diverse than those of proteins, several labs have sought to modify "evolution in a test tube" to allow protein selection. In gene expression, the information of genes (composed of DNA) is copied to an RNA intermediate information molecule, from which the genetic sequence is decoded by a ribo-

some to produce a protein which is a string of amino acids.

The genetic sequence specifies the amino acid sequence of the protein, and the specific amino acid sequence of the protein determines the protein's function.

"Three nucleotides are required to encode a specific amino acid," Dr. Tuerk said, "and our current ability to generate novel protein sequences is severely checked by the relatively short chains of the random regions that we can generate by chemical DNA synthesis."

"TdT has long been recognized as a useful enzyme for generating long (over 2000 base) single-stranded DNAs. I had used TdT to successfully create random regions on linear plasmid templates that were ligated to produce heteroduplexes. Transformation yielded clonal isolates whose insertions of approximately 500 base-pairs contained random sequence."

With the work of two graduate students, Mike Spencer and Mehrunissa Lambat, and two undergraduates, Olivia Ison and Susan Melton, Tuerk was able to optimize the in vitro lengthening of random DNAs by TdT, develop the library for the production of random RNAs, and produce proteins whose sizes range from 100 to 300 amino acids in length. On-going research will allow selection of functional proteins from these pools with the attached protein-encoding, replicable RNAs.

The significance of Dr. Tuerk's investigations is important to the studies of protein function and biotechnological innovation.

"Potentially, the field of diagnostics and detection that is presently dominated by monoclonal antibodies could be supplemented or replaced by bacterially or in vitro expressed protein binding domains whose discovery and development could be accomplished without animal experimentation," Tuerk said.

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Intern Program Aids Kentucky's First-Year Principals

"The new criteria really concentrates on what you have to do well to be an administrator."

-Dr. Marium Williams



Dr. Marium Williams

The Kentucky Principship Intern Program is an internship and evaluation program for Kentucky school principals. The Program has received continued and increased support from the Kentucky Department of Education.

After a principal has been hired, he or she begins the year-long internship, which involves being shadowed by a committee of experienced administrators. Dr. Marium Williams, associate professor of education, serves on the State Council on Administrator Standards, which organizes the shadowing committee. The committee consists of a university professor with prior experience as an administrator, a principal in the district where the intern works, and a superintendent or a person designated by the superintendent.

Along with Dr. Williams, four other University representatives with practical experience as administrators serve on the committee that shadows interns in Kentucky.

Dr. Paul McGhee, professor of education, Dr. Barbara Niemeyer, associate professor of education, Dr. Wayne Morella, professor of industrial education, and Dr. Ronald Tucker, professor of industrial education, each shadow an average of four new Kentucky principals each year.

The committee shadows the new principal three times during internship and evaluates the intern's progress. "Areas in need of improvement are outlined by the committee, but an important aspect of the committee's job is to pinpoint the intern's strengths," Dr. Williams said.

The Kentucky Principship Intern Program went into effect in 1988, as a state-wide effort to certify new principals and ease their adjustment to new school systems. Interns are evaluated with the criteria established by the Kentucky Education Professional Standards Board, which was revised in 1994. Three focal points of administrator standards were incorporated into the new criteria: effectiveness as an instructional leader, communicator, and organizational manager.

"The new criteria really concentrates on what you have to do well to be an administrator," Dr. Williams said.

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Math and Science Program Reaches out to Motivate Students

by Gena Henry



Dr. Lemuel Berry, Jr., right, received a check for \$28,202 from GTE regional Public Affairs Manager Robert Williams.

"The Mathematics-Science Outreach Program was initiated to help bridge the gap between the fields of mathematics and science and the students underrepresented in those fields," said Dr. Lemuel Berry, Dean of the Caudill College of Humanities.

Dr. Berry became particularly concerned about the underrepresentation of minorities and women in math and science while working with recruitment and retention at various colleges and universities.

The Mathematics-Science Outreach Program is the first in Kentucky in several years to receive the national GTE grant. The 2-year-old program seeks to advance minorities and women in the fields of mathematics, science, and technology by motivating students to strive for higher levels of achievement in these fields, to provide opportunities for

students to demonstrate their accomplishments, and to recognize students for excellence in performance in mathematics, science and technology.

According to Dr. Berry, the number of students participating each year exceeded expected attendance, resulting in the program's expansion from the original 23-county target area and Louisville to the entire Commonwealth, plus Cincinnati. The program also expanded its focus to include students from high schools with underfunded math and science programs. In 1995, the program's first year in operation, 600 letters of invitation were mailed to schools. In 1997, four thousand were sent.

"The Mathematics-Science Outreach Program is a cooperative effort among Morehead State University's colleges of

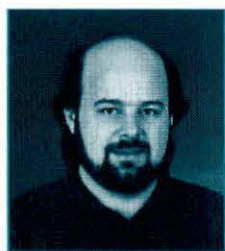
Humanities and Science and Technology and middle and high schools throughout the state, in addition to Cincinnati," Dr. Berry said. "It is an on-going attempt to establish diversified programs for a diversified region."

The program consists primarily of science fair and conference-type activities in which students compete for recognition as one of the top four performers in an area. The competition is divided into the two age levels: grades 7-9 and grades 10-12. The students compete in written tests in the areas of seventh, eighth or ninth grade math, pre-algebra, the metric system, computer concepts, Algebra I, geometry, Algebra II, trigonometry, advanced mathematics, life science, physical or earth science, biology, chemistry or physics. Students may also write position papers, take oral quizzes, or develop individual projects consisting of results from an experiment.

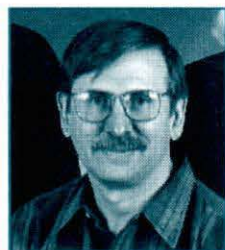
Additionally, there is a group problem-solving level of competition in which students perform at the competition site. Students competing in chemistry activities might be asked to construct models of organic and inorganic compounds using the Benjamin/Maruzen HGS molecular structure models in an allotted amount of time, to be judged for accuracy and number. In mathematics and computers, students might write and run a program in BASIC to solve a given problem in mathematics, with the winners producing a correct print-out in the shortest amount of time. Students competing in physics might design light-sensitive burglar alarms that activate if the path between the light source and the alarm circuit is obstructed. In such an experiment, students would be judged on the sensitivity and distance of separation between the light source and the alarm circuit.

"The Program is an approach to supplement in-school subjects with out-of-school motivational activities, and in the long-term, spark interest and motivate students to continue education in math and science," said Dr. Berry.

Trio's Research Targets View of Rural Schools



Dr. Timothy Pitts



Dr. Edward Reeves



Dr. Deborah Grubb

"The level of effect that the rural community has on a student's success was a relatively unexplored area," said Dr. Deborah Grubb, assistant professor of education. "We were initially concerned with this issue because there was a general lack of information on school accountability in rural areas," she said.

Dr. Grubb, Dr. Timothy Pitts, assistant professor of geography, and Dr. Edward Reeves, professor of sociology, designed a study to explore the effects of community-level resources on high school achievement when individual, family, peer group and school-level effects are statistically controlled.

What they found is surprising. When factors such as family income level are statistically controlled, rural schools do better than expected, while urban schools do worse than expected.

"In the past, it has seemed that rural students tend to do worse on achievement testing, such as the KIRIS tests, than do students from urban areas," said Dr. Pitts. "But we've discovered that after controlling for other factors, that doesn't seem true."

Most available literature on school improvements has been urban-based, which does not accurately represent rural school improvements.

Dr. Reeves stressed the importance of accurate research. "Urban-based research affects the way we view a school's progress, and judging a rural school's achievement by urban standards makes that rural school look like it's doing much worse than it actually is."

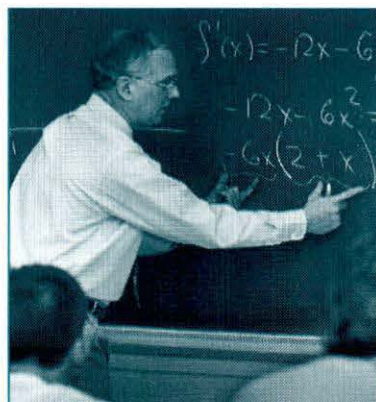
This danger of comparing apples to oranges can be lessened by more accurate evaluations of rural schools. "The effects that family income have on student success are far less serious as long as you look at a single school district and compare it to itself," said Dr. Reeves.

A continuing aspect of this project is mapping the predicted and actual scores to easily assess which schools are doing better than expected and which are doing worse.

"This easy-to-read format will help the public better understand how far above or below expectancies schools score on the KIRIS tests," said Dr. Pitts.

The group plans to send a copy of the research results to the Kentucky Department of Education, the *Lexington Herald-Leader*, and Kentucky school district officials, as well as submitting an article to the *Journal of Research on Rural Education*.

Math Faculty and the TI-92



Dr. Roger Hammons

Effectively implementing technology in the classroom is a growing challenge for instructors. Dr. Roger Hammons, professor of mathematics and chair of the department at Morehead State, is facing that challenge by experimenting with integrating portable, hand-held Computer Algebra

Systems into his Calculus I and II classes.

Computer Algebra Systems (CAS) are software packages that solve algebraic problems. Faculty in the Department of Mathematics have been using CAS systems such as DERIVE and Mathematica in their computer laboratory for several years. When Texas Instruments marketed the TI-92, a portable, hand-held calculator that utilizes a version of DERIVE along with the graphing and numerical computing abilities of the TI-82, math faculty were very excited. With a grant from the National Science Foundation, Dr. Hammons and math instructors from Northern Kentucky University and six Kentucky Community Colleges have included the TI-92 into their math classes.

Dr. Hammons said the TI-92 gives faculty a "new and different opportunity to teach difficult concepts. The challenge lies in implementing the new technology effectively enough to deepen students' understanding of the concepts without their becoming dependent on the calculator," he said.

The excitement about the TI-92 is partially due to a country-wide reform movement in teaching calculus, which concentrates on understanding mathematics beyond a formula. Reform calculus focuses on problem-solving concepts and a student's ability to understand problems graphically, numerically and symbolically, rather than focusing on memorized material. The calculators that have been used in most calculus classes (TI-82s) can perform graphical and numerical functions, but the TI-92 can perform symbolic functions as well.

"The attractiveness of the TI-92 lies in its mobility," Dr. Hammons said. "Previously, students had to go to the lab to access this software, but now students can carry it with them anywhere."

The grant has enabled MSU to purchase 90 of the new calculators. Students check out a TI-92 from the library for a semester, but Dr. Hammons remarked that several were returned to the library within a month of check-out because many of the students had decided to buy their own.

Four other MSU faculty are also including the TI-92 in their classes. Dr. Dora Ahmadi, Dr. Doug Lapp, Dr. Robert Lindahl, and Gordon Nolen are working with Dr. Hammons to integrate this technology into the teaching of calculus.

Napoleon's Involvement in Iberia Studied



Dr. Charles MacKay's investigations have found that affairs with the European colonies in North America played an important role in Napoleon's dealings with Spain and Portugal.

As a doctoral student at Florida State, Dr. Charles MacKay, assistant professor of history, researched the career of Jean Andoche Junot, one of Napoleon's generals. Junot was involved in Spain and Portugal as a diplomat and military commander. Dr. MacKay found that, although historians know a great deal about Napoleon's military involvement in the Iberian Peninsula, very little was known about the origins of the war which took place there.

The Peninsular War was a conflict that resulted from the invasion of the Iberian Peninsula by Napoleon I in 1807 and ended in 1814 with the expulsion of the French by the Spanish, Portuguese, and British.

"The origins of the Peninsular War are significant," explained Dr. MacKay, "because, more than anything else, Napoleon's involvement in Iberia caused the downfall of the First French Empire. The destruction of Bonaparte's Empire ended an era of liberalism, advancement by merit, and many gains of the French Revolution. While histories of the period provide brief explanations of causes of the war, no work in English has been devoted to this topic."

Dr. MacKay is hoping his research will fill that void. Grant support for the project from MSU has allowed him to embark upon some of the necessary travel to examine primary sources. An initial grant allowed for summer travel to Florida State University, where more than 15,000 volumes on the period are located. He has subsequently researched documents in the French Foreign Archives and the National Archives, both located in Paris, and states that additional travel to Britain, Spain, and Portugal is required before he will be able to complete the book he is preparing on the origins of the Peninsular War.

This summer, he will teach a Kentucky Institute for International Studies history course in France and will be able to continue his research there.

"This project is generating opportunities," he said.

Dr. MacKay presented his first paper on the topic in March, "The Spanish Ulcer: Origins of the Peninsular War Reconsidered," at the Consortium on Revolutionary Europe 1750-1850 at Florida State. He is scheduled to present another paper at a conference in Southampton, England, later in the year.

Inclusive Schooling Creates Realistic Environment for Students

"Inclusive schooling helps create meaningful educational outcomes for all students," said Dr. Sunday Obi, assistant professor of education. "It also helps reduce the negative perceptions about students with disabilities."

Dr. Obi and Dr. James Knoll, associate professor of education, conducted research on the status of inclusive schooling in Eastern Kentucky.

"Inclusive schooling focuses on educating all students so that no student is segregated from the rest of the school," said Dr. Knoll. "Artificial barriers between students are eliminated."

Rather than separating students with disabilities from the rest of the school by placing them in specialized education classrooms, inclusive schooling incorporates all students in a single classroom.

This method of education helps dissolve the difficulty of transition into life after school, which has been a noted problem of segregated, specialized education.

"In inclusive schools, all students learn to interact and work together in an environment that includes the full range of human diversity. This benefits both students with and without disabilities," said Dr. Knoll.



Dr. Sunday Obi



Dr. James Knoll

Drs. Knoll and Obi found that less than 10 percent of schools in Eastern Kentucky are practicing inclusive schooling. The primary reason there is such a small percentage of participation seems to be due to discrepancies in teachers' perceptions of inclusive schooling, in addition to discrepancies in the way they view their own roles in inclusive schooling.

The implementation of more inclusive classrooms would also have implications on teacher education. Education programs would need to stress flexibility, development of strategies for dealing with different students, and a highly individualized approach, rather than whole-class instructions.

Drs. Knoll and Obi presented their research to the State Council on Exceptional Children in March 1997, in addition to submitting it to the Educational Resources Information Center database (ERIC). A summary of the project's findings were distributed to all elementary and middle schools in MSU's service region, and in April 1998, the group will present its research to the State Advisory Committee on Special Education.

"In our research, we wanted to develop aggregate information needed to assure that Morehead State University's service region will have a very good experience as we move toward more inclusive educational settings," said Dr. Obi.

Grants Summary 1995-96

EXTERNAL GRANTS

Division of Academic Affairs

William DeBord, "1996-97 Eastern Kentucky Health Sciences Information Network." Universidad San Francisco de Quito, Ecuador, Highlands Regional Medical Center, Meadowview Regional Hospital, Northeast Kentucky Area Health Education Center (AHEC), Our Lady of Bellefonte Hospital, Three Rivers Medical Center, St. Claire Medical Center, Pikeville United Methodist Hospital of Kentucky, Inc.

William DeBord, "1995-96 Eastern Kentucky Health Sciences Information Network." Hospital Metropolitano, Quito, Ecuador

William DeBord, "Health Sciences Information Data Link." National Library of Medicine

Ronald Mitchelson. "I-65 Hazardous Materials Commodity Flow Analysis." Kentucky Emergency Response Commission

John Philley, "Rural Allied Health and Nursing Program—1996." Council on Higher Education

John Philley and Victor Ramey, "Science and Math Alliance—Year 11." Council on Higher Education

Division of Administration and Fiscal Services

April Haight, "Food Services Baler Project." Kentucky Recycling Association

Joe Planck and April Haight, "Technical Assistance Program." U.S. Department of Energy

Joe Planck and April Haight, "Energy Conservation Measure." U.S. Department of Energy

Division of Student Life

Roger Holbrook, "Morehead-Rowan County Local Enforcement and Prevention Program (L.E.A.P.P.)." Morehead City Police Department

Roger Holbrook, "COPS MORE." U.S. Department of Justice

Timothy Rhodes, "1996-97 Student Financial Aid." U.S. Department of Education

Judy Krug, "Regional Network Activity Support—1996." Higher Education Center for Alcohol and Other Drug Prevention

Division of University Advancement

Larry Netherton, "95-97 Radio Community Service Grant." Corporation for Public Broadcasting

Larry Netherton, "95-97 National Program Production and Acquisition Grant." Corporation for Public Broadcasting

Caudill College of Humanities

Lemuel Berry, Jr., "KHC Speakers Bureau Program." Kentucky Humanities Council

Lemuel Berry, Jr., "Mathematics-Science Outreach Program." General Telephone Foundation

Frances Helphinstine, Angela Hilterbrand, and Clara Keyes, "Language Arts Academic Village." Kentucky Department of Education

Jennings Mace, "1996-97 MSU/Lexmark Technical Writing Agreement." Lexmark, Inc.

Nancy Peterson, "University Writing Project—1996." Kentucky Department of Education

Nancy Peterson, "Extension Writing Project for Kentucky Public School Teachers—Year 5." National Writing Project

Nancy Peterson, "University Writing Project—1996 Outreach Training." Kentucky Department of Education

Nancy Peterson, "1996-97 National Writing Project Documentation Project." National Writing Project Corporation

College of Business

Marvin Albin, "1996-97 Teacher Education Enrichment Programs." Cabinet for Workforce Development

Wilson Grier and Kimberly Jenkins. "1995-96 Entrepreneurial Research Service Center." Wal-Mart Foundation

Sue Luckey, "1996 Vocational Education Title II-C: Information Sciences." Cabinet for Workforce Development

Beverly McCormick, "Real Estate Education Grant Program—1996-97." Kentucky Real Estate Commission

College of Education and Behavioral Sciences

Cathy Barlow, "1996-97 Morehead State University Regional Technical Assistance Team." Kentucky Cabinet for Human Resources

Cathy Barlow, "1996-97 Interim Regional Monitoring System for the Regional Technical Assistance Team." Kentucky Cabinet for Human Resources

Rosemarie Gold, "1995 Staff Development for Secondary School Teachers." Bracken County High School, Kentucky Academy for School Executives, Lloyd Memorial High School

Harold Harty, "1996-97 Family Resource and Youth Services Centers Branch Liaison Program Administration." Kentucky Cabinet for Human Resources

Harold Harty, "1995-96 Family Resource and Youth Services Centers Branch Liaison Program Administration." Kentucky Cabinet for Human Resources

Bruce Mattingly, "Receptor-Dependent Sensitization to Cocaine—Year 3." National Institutes of Health

- Debra Mattingly, "1995-96 Child Development Associate Training Program." Bourbon County Head Start, Knox County Head Start #1 and #2, Licking Valley Head Start #1, #2, #3 and #4, Whitley County Board of Education #1 and #2, Bourbon County Head Start, Boyd County Head Start, Middle Kentucky River Head Start #1 and #2, Big Sandy Head Start #1, #2, and #3, Ashland Child Development Center, Northeast Head Start #1 and #2, Learn and Play Child Care Center, Williamstown Head Start #1 and #2, Community Action Council for Lexington-Fayette, Bourbon, Harrison, and Nicholas counties, Lake Cumberland Head Start, Laurel County Head Start, Northeast Head Start #2, Bell-Whitley Head Start, Fairview Board of Education, Gateway Head Start, Jackson Independent Schools, Kentucky River Head Start #1 and #2, Montgomery County Schools
- Debra Mattingly, "1996-97 Child Development Associate Training Program Beginning Supplement." Lincoln County Board of Education
- Connie McGhee and Cathy Barlow, "Head Start Program." Gateway Community Services Organization, Inc.
- Tim Miller, "1995-96 Kentucky Teacher Internship Program Spring and Summer Supplement." Kentucky Department of Education
- Charles Morgan, "1996-97 Psychological Services for the Eastern Kentucky Correctional Complex." Eastern Kentucky Correctional Complex
- Barbara Niemeyer, "Interdisciplinary Early Childhood Education, Birth to Primary, Phase IV." Kentucky Department of Education
- Harold Rose and Kristin Calvert, "1996 Family Literacy Parental Empowerment Model Evaluation." Cabinet for Workforce Development
- Harold Rose and Kristin Calvert, "1996-1997 MSU Adult Learning Center BASIC Grant Program." Cabinet for Workforce Development
- Harold Rose and Kristin Calvert, "1996-1997 Adult Learning Center Enhancement of Information Technology Instruction." GTE Foundation
- Harold Rose and Kristin Calvert, "1995-96 MSU Adult Learning Center Corrections Program." Cabinet for Workforce Development
- Harold Rose, "1995-96 MSU Adult Learning Center BASIC Grant Supplemental." Cabinet for Workforce Development
- Harold Rose and Kristin Calvert, "1996-1997 MSU Adult Learning Center Corrections Program." Cabinet for Workforce Development
- Harold Rose and Kristin Calvert, "1996-1997 Christian Appalachian Project Grant Program, "Christian Appalachian Project
- David Rudy, "Memorandum of Agreement/Evaluation of Current Community Corrections Program." Kentucky Department of Corrections
- David Rudy and Greg Goldey, "Substance Abuse Programs: Success or Failure." Kentucky Department of Corrections
- Michael Seelig, "1996-97 Master of Social Work Program." University of Kentucky
- Michael Seelig, "1995-96 Master of Social Work Program." University of Kentucky
- Michael Seelig and Ted Marshall, "1996-97 MSU Training Resource Center." Eastern Kentucky University
- Jack Sheltmire, "1996 Summer Food Service Program for National Youth Sports Program." Kentucky Department of Education
- Jack Sheltmire, "1996 MSU Summer National Youth Sports Program." National Collegiate Athletic Association
- Ralph Shoaf, "1996-97 Kentucky Teacher Internship Program." Kentucky Department of Education
- George Tapp, "1996-1997 Institute for Psychological Services—Rehabilitation Partnership Grant." Carl D. Perkins Comprehensive Rehabilitation Care Center
- Marium Williams, "1996-97 Kentucky Principal Internship Program." Kentucky Department of Education
- Marium Williams, "1995-96 Kentucky Principal Internship Program." Kentucky Department of Education
- ### College of Science and Technology
- Robert Boram and Phyllis Oakes, "Using Facilitators to Enhance Primary Science Instruction." Council on Higher Education
- Robert Boram, "Preservice Teachers Acquiring Astronomy Instructional Skills from Outstanding Educators." Kentucky Space Grant Consortium
- Charles Coddington, "1996-97 Teacher Education Enrichment Programs." Cabinet for Workforce Development
- Lane Cowser, "1996-97 Teacher Education Enrichment Programs." Cabinet for Workforce Development
- Lane Cowser, "Regional University: Agricultural Initiative." Kentucky Department of Agriculture
- Lane Cowser, "1996 Vocational Education Title II-C: Agricultural Sciences." Cabinet for Workforce Development
- Gerald DeMoss, "1996 Vocational Education Title II-C: Industrial Education and Administration." Cabinet for Workforce Development
- Gerald DeMoss, "1996-97 UK Physician Assistant Program Expansion at Morehead State University." University of Kentucky

- Gerald DeMoss, "1996-97 Teacher Education Enrichment Programs." Cabinet for Workforce Development
- Ben Flora and Joyce Saxon, "Kentucky Middle Grades Mathematics Teacher Network Year 3." University of Kentucky Research Foundation/National Science Foundation
- Ben Flora, "1995-96 Secondary Mathematics Initiative—PRISM Year 4 (KDE/NSF)." University of Louisville Research Foundation, Inc./Kentucky Department of Education/National Science Foundation
- Geoffrey Gearner, "Isolation and Characterization of *lux I* and *luxR* Homologues from *Edwardsiella ictaluri*." Kentucky Academy of Science
- Geoffrey Gearner, Craig Tuerk, David Magrane, and David Saxon, "Undergraduate Molecular Biology Laboratory." National Science Foundation
- Rodger Hammons, Benjamin Malphrus, and Karen Lafferty, "Science/Math Technology Implementation Leadership Training." University of Tennessee/Appalachia Education Laboratory
- Rodger Hammons, "Portable CAS Laboratories." University of Kentucky Research Foundation/National Science Foundation
- Robert Lindahl, Sharon Hudson, Ron Fiel, and Joyce Watson, "Explorations in Science and Mathematics Using the TI-82 Calculator and the CBL System." Council on Higher Education
- Benjamin Malphrus, "JOVE Travel to Enhance Research." National Aeronautics and Space Administration
- Benjamin Malphrus, "1995-96 Travel to NASA Centers to Explore Research Opportunities." Kentucky Space Grant Consortium
- Benjamin Malphrus, "JOVE Faculty Research Associate Program." National Aeronautics and Space Administration
- Benjamin Malphrus, "1996-97 Travel to NASA Centers to Explore Research Opportunities." Kentucky Space Grant Consortium
- Benjamin Malphrus, "1995-96 Partnership for Reform Initiatives in Science and Math (PRISM) Year IV." National Science Foundation/Kentucky Department of Education
- Ted Pass, "Shay Waste Disposal Project, 1995-1996." Office of Karen Shay, D.M.D.
- Ted Pass and Rita Wright, "1996-97 Microbiology Testing for NREPC." Natural Resources and Environmental Protection Cabinet
- Ted Pass, "Porter Waste Disposal Project, 1995-1996." Office of Arvis Porter, M.D.
- Ted Pass, McLoney Waste Disposal Project, 1995-1996." Office of Douglas W. McLoney, Jr., D.M.D.
- Ted Pass, "95-96 Sebree Elementary School Project." Webster County Board of Education
- Ted Pass, "Christian County *Histoplasma capsulatum* Project." Christian County Health Department
- Ted Pass, "Blair Waste Disposal Project, 1995-1996." Office of Don Blair, M.D.
- Betty Porter, "1996-97 UK Nurse Practitioner Program at Morehead State University." University of Kentucky Research Foundation
- Betty Porter, "1995-96 Nurse Practitioner Program Student Services." University of Kentucky
- Betty Porter, "1996 Vocational Education Title II-C: Nursing and Allied Health Sciences." Cabinet for Workforce Development
- Betty Porter, "1995-96 Nurse Practitioner Program Administration and Coordination." University of Kentucky
- Brian Reeder, "Paleoecology of Eastern Kentucky Wetlands." U.S. Forest Service
- Brian Reeder, "Water Quality Assessment and Trophic Status of Eastern Kentucky Reservoirs—1997-98." Kentucky Natural Resources and Environmental Protection Cabinet
- Brian Reeder, "Fertilization Study of Grayson Lake—1996." Kentucky Division of Fish and Wildlife
- Brian Reeder, "Created Wetland Evaluation Project." Kentucky Division of Water
- Marilyn Sampley, "1996 Vocational Education Title II-C: Human Sciences." Cabinet for Workforce Development
- Marilyn Sampley and Jane Ellington, "1996-97 Teacher Education Enrichment Programs." Cabinet for Workforce Development
- Marilyn Sampley and Sue Luckey, "Tech Prep Consortium Serving Eastern Kentucky." Cabinet for Workforce Development
- Rodney Stanley, "Sunrayce 97." Gateway Area Development District
- Craig Tuerk, "Using Terminal Deoxynucleotidyl Transferase to Generate Random Sequence Regions in Protein Libraries." University of Kentucky/National Science Foundation
- Lee Tyner, "The Blood Level (Concentration) Bioequivalence of Praziquantel: The Comparison of the FDA Approved Canine Table Droncit (NADA 111-798) with a new Generic Product (INAD 9247), METXT138." Rhone-Merieux, Inc.
- Lee Tyner, "The Blood Level Bioequivalence of Praziquantel: The Comparison of the FDA Approved Feline Droncit (NADA 111-798) with a New Generic Product." Rhone-Merieux Animal Health, Inc.
- Lee Tyner, Vivian Barnes, and Edward Lundergan, "The Study of the Efficacy of *Clostridium perfringens* Vaccine in Sheep." Colorado Serum Company
- Judy Willard and Lane Cowser, "Construction of an Equine Teaching Facility." Council on Higher Education
- Judy Willard and Lane Cowser, "Equine Trust Program." Council on Higher Education

Office of Academic Support

- C.J. Bailey, "Coordination for School-to-Work Partnership Council." Cabinet for Workforce Development/School-to-Work Partnership Council/Gateway Area Development District, Inc.
- C.J. Bailey, "School-to-Work Leadership Program." Cabinet for Workforce Development/School-to-Work Partnership Council/Gateway Area Development District, Inc.
- Jennifer Cady, "1996 Summer Food Service Program for Upward Bound." Kentucky Department of Education
- Jennifer Cady, "1996-97 Upward Bound Program." U.S. Department of Education
- Dan Connell, "1996 Summer Food Service Program for MOAR." Kentucky Department of Education
- Dan Connell, "MOAR—Morehead Occupational and Academic Retreat—Summer, 1996." TENCO Private Industry Council
- Dan Connell, "1996-1997 MSU Corps." Kentucky Community Service Commission
- Dan Connell, "AmeriCorps Member Training." Kentucky Community Service Commission
- Dan Connell, "KEYS to KERA (Year Two)." Council on Higher Education
- Dan Connell, "School-to-Work Co-op Services." Cabinet for Workforce Development/School-to-Work Partnership Council/Gateway Area Development District, Inc.
- Carolyn DeHoff, "1996-97 Educational Talent Search Program." U.S. Department of Education
- Dail Howard, "1996-97 Educational Opportunity Center." U.S. Department of Education
- Betty Karrick and Dan Connell. "1996-97 Morehead State University Mentoring Program in Rowan County." Rowan County Fiscal Court
- Catherine Riley, "1996 Retired and Senior Volunteer Program for Montgomery County." United Way of the Bluegrass
- Catherine Riley, "Retired and Senior Volunteer Program (RSVP) 1996-1997." ACTION
- Elaine Tyree, "Student Support Services—1996-1997." U.S. Department of Education
- Ernestine Winfield, "1996-97 Minority Teacher Education Program (CHE)." Council on Higher Education
- Ernestine Winfield and Beverly McCormick, "1995-96 Minority Teacher Education Program (CHE)." Council on Higher Education
- Ernestine Winfield, "1996-97 Minority Teacher Education Program (KDE)." Kentucky Department of Education
- Ernestine Winfield, "1996-97 Minority Educator Scholarship Program (CHE)." Kentucky Department of Education

Office of Undergraduate and Extended Campus Programs

- Sharon Jackson, "1996-97 KET GED-ON-TV." Kentucky Educational Television Authority, Inc.
- Debra Salyer, "Spring 1996 Kentucky Motorcycle Program at MSU Ashland Extended Campus Center." Kentucky Motorcycle Program
- Jonell Tobin and Barbara Motley, "1996-1997 Licking Valley Center BASIC Grant Program." Cabinet for Workforce Development
- Jonell Tobin and Barbara Motley. "1996-97 Morgan County JOBS Program." Cabinet for Workforce Development
- Jonell Tobin and Barbara Motley, "1996-97 Morgan County Community Education." Kentucky Department of Education
- Jonell Tobin, "School-to-Work Adult Education Services." Cabinet for Workforce Development/School-to-Work Partnership Council/Gateway Area Development District, Inc.

Center for Community and Economic Development

- C.J. Bailey, "School-to-Work Travel Grant." Cabinet for Workforce Development/School-to-Work Partnership Council/Gateway Area Development District, Inc.
- Jan Burge, "UCA Cheerleading Camp I, II, III, and IV—1996." Universal Cheerleaders Association
- Jan Burge, "1996 Summer Band Camps." Highlands High School, Pike County Central High School, Male High School, Campbellsville Independent High School, Paintsville High School, South Laurel High School, Danville High School
- Jan Burge, "MSU Golf Camp—1996." MSU Golf Camp
- Jan Burge, "Girl Scout Horse Lover's Camp—1996." Wilderness Road Girl Scout Council
- Jan Burge, "MSU Tennis Camp—1996." MSU Men's Tennis
- Jan Burge, "Christian Leadership Institute—1996." The Catholic Diocese of Lexington
- Jan Burge, "NCA Cheerleading Camp—1996." National Cheerleaders Association
- Jan Burge, "Mountain Dulcimer Camp—1996." Each Camp Participant
- Jan Burge, "Girl Scout Camp Cardinal Day—1996." Wilderness Road Girl Scout Council
- Jan Burge, "AmeriCheer Cheerleading Camp—1996." AmeriCheer, Inc.
- Jan Burge, "Girl Scout Junior Wrangler Days—1996." Wilderness Road Girl Scout Council
- Jan Burge, "Teen Issues and Problems—1996." Office of Public Safety

- Jan Burge, "1995 Family Resource and Youth Service Centers Workshop." Region Seven Family Resource and Youth Service Centers
- Jan Burge, "Universal Dance Association Camp—1996." Universal Cheerleaders Association
- Jan Burge, "Girl Scout Equestrian Adventure Camp—1996." Wilderness Road Girl Scout Council
- Jan Burge, "Whitney M. Young Scholars Program I—1996." The Lincoln Foundation, Inc.
- Jan Burge, "Dick Fick Basketball Individual Camp I and II—1996." Dick Fick Basketball Camp
- Jan Burge, "MSU Baseball Day Camp—1996." MSU Baseball Camp
- Jan Burge, "Elderhostel I—1996." Each Camp Participant
- Jan Burge, "State Health and Safety School—1996." State Health and Safety School
- Jan Burge, "Gateway Area Youth Leadership Program." University of Kentucky Research Foundation
- Jan Burge, "Girl Scout Super Sampler Days—1996." Wilderness Road Girl Scout Council
- Jan Burge, "Girl Scout Trail Blazers Overnight—1996." Wilderness Road Girl Scout Council
- Jan Burge, "Summer Keyboard Experience—1996." Each Camp Participant
- Jan Burge, "Kentucky Dance Institute—1996." Kentucky Dance Institute
- Jan Burge, "Kentucky Boys State—1996." American Legion of Kentucky
- Lynn David, "Paintsville Commercial Historic District Survey Project." William F. Carman, Inc.
- Wilson Grier, "1996-97 East Kentucky District Small Business Development Center (State Grant)." Kentucky Cabinet for Economic Development/University of Kentucky Research Foundation
- Wilson Grier and Kimberly Jenkins, "1995-96 Small Business Development Center—Ashland Supplement I and II." First National Bank of Louisa, Bank of Ashland
- Wilson Grier, "1996-97 East Kentucky District Small Business Development Center (Morehead/Pikeville/Ashland)." Small Business Administration/University of Kentucky Research Foundation
- Wilson Grier, "1995-96 Small Business Development Center—Pikeville Supplement I." Pikeville National Bank and Trust Company, Bank One of Pikeville, TransFinancial Bank of Pikeville, Citizens National Bank of Paintsville
- Wilson Grier and Kimberly Jenkins, "1995-96 Small Business Development Center—Ashland Supplement I." Bank of Ashland
- Shirley Hamilton and Dorothy Walter, "1995-96 MSU Two-Year Occupational Skills Training Program Expansion." TENCO Private Industry Council
- Shirley Hamilton, "1996 Kentucky Motorcycle Program of Morehead State University." Kentucky Motorcycle Program
- Michael Harford and C.J. Bailey, "School-to-Work Implementation Project." Gateway Area Development District
- Michael Harford, "Kentucky/ARC Planning Assistance Initiative of the Kentucky Appalachian Task Force." University of Kentucky Research Foundation
- Michael Harford, "Kentucky Wood Products Competitiveness Corporation Awareness Program." Kentucky Wood Products Competitiveness Corporation
- Dorothy Walter, "D.O.E.R.-Development of Effective Responsibility—Summer Youth Program 1996." TENCO Private Industry Council
- Dorothy Walter and Shirley Hamilton, "1996-97 MSU Two-Year Occupational Skills Training Program." TENCO Private Industry Council

INTERNAL GRANTS

Caudill College of Humanities

Lemuel Berry, Jr., "Encyclopedia of Gospel Music"

Department of Art

David Bartlett, "Large Photogravure"

Jay Hanes, "A Study in Ceramic of Local Clays and Culture: Slip Glazes and Wood-Firing in a Post-Industrial Era"

Department of Biological and Environmental Science

Geoffrey Gerner, "Channel Catfish T-lymphocyte Mitogenic Responses to Bacterial Lipopolysaccharide and Time Course Analysis of Antigen Presentation"

David Magrane, "Characterization of Gill and Antennal Gland Na⁺/K⁺ -ATPase and Osmoregulation in the Crayfish *Orconectes putnami*"

David Saxon and David Magrane, "*In Vitro* Antioxidant Effects of Estrogens on the Oxidation of Plasma Low-Density Lipoprotein"

Craig Tuerk, "Optimization of Transformation in Plasmid Randomized by Terminal Transferase"

Department of Elementary, Reading & Special Education

James Knoll and Sunday Obi, "An Analysis of the Status of Inclusive Schooling in Eastern Kentucky"

Department of English, Foreign Languages & Philosophy

Rosemarie Battaglia, "T.S. Eliot and Anti-Semitism"

Joyce LeMaster, "Southern Appalachia: The Career of a Concept"

Ronald Morrison, "'The Uncle Tom's Cabin of the Horse': *Black Beauty* in America"

Sarah Morrison, "The Women's Romance in the 80s"

Department of Geography, Government & History

Xiaobo Hu, "Formalization and Informalization of Property Rights in China"

Fragano Ledgister, "The After Empire: The Remnants of the British Empire in a Post-Colonial Age"

Charles MacKay, "Eagles in Iberia: The Origins of the Peninsular War"

Stuart Sprague, "Economic Impact of the Civil War on Louisville"

Department of Health, Physical Education & Recreation

Michael Ballard, "Health Risk Profile of University Faculty and Staff"

Department of Information Sciences

Hilary Iwu, "Knowledge and Attitudes of College and University Teacher Education Faculty in the Southern Business Education Association Toward the Kentucky's New Teacher Standards"

Department of Leadership and Secondary Education

Wanda Staley, Dan Fasko, and Deborah Grubb, "Relationship Between Adolescents' Approach to Career Decision-Making and Their Self-Concept"

Department of Physical Sciences

Dan Adsmond, "An Investigation of the Preferences and Binding Modes of Acetic Acid in Solvate Formation"

Department of Psychology

Lynn Augsbach, "Children's Production of Metaphor in School"

Department of Sociology, Social Work & Criminology

Ted Marshall and Gabe Wang, "Proposal for the Study of the Relationships Between Family, Religiosity, School Commitment, Peer Activities and Adolescent Substance Use and Deviant Behaviors in Public Schools in Kentucky"

Edward Reeves, Timothy Pitts, and Deborah Grubb, "Multi-Level Effects on Rural High School Student Achievement with Special Reference to Community Resources"

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