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The Western Scholar

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The Western

SCHOLAR

THE SPIRIT OF SCHOLARSHIP AND RESEARCH AT WESTERN KENTUCKY UNIVERSITY



The Western Scholar is published semiannually for members of the public interested in Western Kentucky University scholarship and research.

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CO-EDITORS

Dr. Gay Helen Perkins
University Libraries
<gay.perkins@wku.edu>

Dr. Phillip Myers
Office of Sponsored Programs
<phillip.myers@wku.edu>

ASSISTANT EDITOR

Ms. Pamela Napier
Office of Sponsored Programs
<pamela.napier@wku.edu>

FACULTY SCHOLARSHIP COUNCIL MEMBERS

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Dean of Graduate Studies

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ART DIRECTOR

Mr. Tom Meacham

CONTRIBUTING WRITERS

Ms. Carol Cummings

Ms. Mary E. Frith

Ms. Deborah T. Givens

Mr. Tommy Newton

Ms. Beth Sewell

CONTRIBUTING PHOTOGRAPHERS

Dr. John Andersland

Mrs. Sheryl Hagan-Booth

Mrs. LaDonna Harmon

CONTRIBUTING DESIGNERS

Mr. Marcus Dukes,

Senior Designer

Mr. Sigurdur Oskar Larus Bragason

Ms. Inga Dora Gudmundsdottir

Mrs. Mondana Mahdavi

Mr. Robby Owen

COVER PHOTO

Dr. John Andersland

ABOUT THE COVER

Closeup of a bottle gentian (*Gentiana Andrewsii*), which grows in disturbed wet meadows in the floodplain of the Green River.



The Western SCHOLAR

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THE RESPONSIBILITIES OF WESTERN KENTUCKY UNIVERSITY as an institution of choice include our students, faculty members, and an increasing variety of community constituents throughout our region of South-Central Kentucky, the state and the nation. The first four issues of *The Western Scholar* disclosed the variety of scholarly projects that are meeting these diverse needs, and this issue proves to be no different. Western continues to excel in making the match among teaching, research, and public service, as well as the operational and financial responsibilities that will ensure that "The Spirit Continues to Make the Master."

In this issue you will find stories about basic and applied research and creative activities in our academic colleges that provide insights into aging, the natural environment, buying habits, cave and karst applied research, relations between manufacturers and suppliers, change in the church, the humanity of Robert Penn Warren, railroads and Southern culture, and a dangerous parasite that we all need to understand. Following the stories, "Research Briefs" continues to show the diversity of our expertise by demonstrating how Western faculty members contribute to basic research, public school leadership, social work education, early interventions for our children, and assessing educational initiatives to increase learning proficiencies. Finally, Western has taken a significant step to facilitate scholarship by creating the Western Kentucky University Research Foundation, Inc. The WKURF's contributions are discussed as a success story that has huge potential to ease the way for faculty members, students, and the external community to uncover and exchange new knowledge for the public good.

Dr. Dan Roenker, Distinguished University Professor of Psychology in the College of Education and Behavioral Sciences, discusses his many years of research with a nationwide NIH-funded project that tests visual acuity in the elderly. The outcomes of his work with a team of researchers at a number of other institutions have been beneficial in increasing safety standards and re-formulating public policies.

From Ogden College of Science and Engineering, Dr. Albert Meier's leadership in Biology and the Biodiversity Center has resulted in the purchase of a large outdoor classroom and research area along the Green River in Hart County. Read about how it will enhance Western's academic endeavors and integrate the community into learning more about the environment and how to preserve it. His colleague in Biology, Dr. Cheryl Davis, discusses *Trypanosoma cruzi*, popularly known as the "Kissing Bug," which is the leading cause of heart disease and heart failure in Latin America. The research she and her students are performing to combat this insect is important since the "bug" has been found in the Southern region. In Ogden's Department of Geography and Geology, Dr. Nick Crawford's work with the Center for Cave and Karst Studies illuminates the region's underground world. His applied research and public service



work with his students is significant in assessing the impacts of humans on the environment and the impact of caves on all of us.

The Gordon Ford College of Business continues to be a leader in marketing and management research. In the Department of Economics and Marketing, Dr. Lou Turley's story about the "'Entertain Me' Generation" is of widespread interest for all consumers, especially those of us who frequent malls and sports venues, which is probably about all of us. He is an expert in helping us to understand why we go where we go and buy what we buy. His colleague in Management Information Systems, Dr. Zubair Mohamed, can tell you about the "push" and "pull" systems that get products made in the most cost efficient way so that we can purchase them at the mall or in retail stores. His story will help us better understand the fluctuations in our economy from the perspective of how production is managed and how goods are distributed.

Diverse interests characterize the stories about the scholarship of faculty members in the Potter College of Arts, Humanities and Social Sciences. Perhaps even closer to our spirit is the story about Dr. Carl Kell's research and writing in the Department of Communication about recent efforts within the Southern Baptist Convention to incorporate more diversity among pastors. This story is one of the push and pull between Conservatives and Moderates in what he has called a Holy War to better incorporate the diverse needs of society. In the Department of English, Mary Ellen Miller's leadership of the Robert Penn Warren Center attracts national attention among literary circles. Read more about Professor Miller's dedication to the Center and the truths that her work have revealed that can help us all see a clearer way. Her colleague in the English Department, Dr. Joe Millichap, exhibits a different fascination, although one no less literary, in his new book *Dixie Limited* about how trains have helped to define the South.

As an administrator who works daily with a variety of constituencies in the pursuit of knowledge, it has been a pleasure to introduce the intellectual vigor of our faculty that lies within this issue and perhaps supply some of the excitement the editors felt as we read through this unique combination of stories. This age is one of partnerships between disciplines and university-community partnerships, and I think that you will see these dynamic educational movements in the magazine. The theme persists throughout this issue of an unrelenting spirit and curiosity. As you identify this theme you'll want to read on and challenge yourself, as so many do here, to "put it all together" for your satisfaction.

Phil Myers
Director, Office of Sponsored Programs and
Executive Director, Western Kentucky University
Research Foundation, Inc.
Co-Editor, *The Western Scholar*

WE KNOW THE STEREOTYPE. THE LITTLE OLD LADY HUNCHED BEHIND THE STEERING WHEEL BARELY ABLE TO SEE THE ROAD. THEY ARE THE DRIVERS WHO CAUSE ALL KINDS OF TROUBLE, RIGHT?

“Actually, only a tiny percentage of older drivers are risky drivers,” said Dan Roenker, a professor of psychology at Western Kentucky University. “People have this image that the older driver is a hazard on the road. Yes, there are some who are, but the majority are not. Research has shown that easily 80 percent of older drivers drive safely even into their 70s, 80s, and some into their 90s. Age itself is not the cause of risky driving, rather it is what happens to us as we age that makes some risky and others not.”

Dr. Roenker and his colleagues have been working on ways to identify older drivers who are more accident-prone and develop a way to keep them from becoming risky older drivers.

“For the last 30 years, researchers have been attempting to discover which factors discriminate between crash prone and crash free older adults, with little success,” said Dr. Roenker, who has a doctorate in experimental psychology from Kansas State University.

In 1990, Dr. Roenker and other researchers with the Edward R. Roybal Centers for Research on Applied Gerontology, now housed at the University of Alabama at Birmingham, discovered a way to measure the speed of pro-

R I S K Y D R I V I N G

BY BOB SKIPPER



Dr. Dan Roenker

PHOTO BY LADONNA HARMON

cessing of visual information, called the Useful Field of View, or UFOV.

UFOV measures how much information an individual can extract from a rapidly presented visual display. By 1998, Dr. Roenker and his colleagues published data that showed that people with a poor UFOV, or a slow visual processing speed, were two to seven times more likely to crash in a three-year period than those with a good UFOV.

The test, however, was long and difficult to adapt to use in the field. And prediction is only part of the process. What happens after the higher-risk drivers have been identified? Can anything be done to help them and thus make the roads safer for other drivers?

The test has evolved from its early days of being a DOS-based program that took 40 minutes to administer, to a Windows program (that can run on a personal computer or laptop) that takes 8 to 10 minutes to administer. “It has



ILLUSTRATION BY MARCUS DIJKES

Dr. Roenker said that preliminary analyses indicate that the UFOV test accurately identified those older drivers who both had a crash history and are likely to crash in the future.

moved from a clunky research tool to a much more polished, professional looking test," Roenker said. "It's the same basic test, but it has evolved a long, long way."

The Maryland Department of Motor Vehicles spent the last two years using this version of the UFOV test as a screening tool for identifying potentially dangerous older drivers. DMV personnel administered the test in a "real

world" setting at the end of the license renewal process. Dr. Roenker said that preliminary analyses indicate that the UFOV test accurately identified those older drivers who both had a crash history and are likely to crash in the future. People who fail the test, are three to four times more likely to be involved in a crash within one to two years.

"It's one thing to test people in a laboratory setting. Such participants tend to be above average in intelligence, motivation, and general health, particularly in a university setting," he said. "In Maryland we trained MVA staff to give the test instead of employing trained researchers and we recruited participants from those renewing their licenses. Thus we were able to get a more representative sample of the population. Older adult volunteers were given a battery of tests, and then we looked at who was crashing and who was not crashing. It turns out that the UFOV test worked just as well in this practical situation; it's not just a laboratory test."



PHOTO BY SIGURDUR O. L. BRAGASON



PHOTO BY LADONNA HARMON

At WKU, Dr. Roenker puts subjects through three to four hours of testing, including memory, hearing, vision, and other tests to measure processing speed. After testing, some receive training on how to use a computer while others receive training designed to boost their processing speed."

While some training has been designed for a lab setting, Dr. Roenker and his colleagues have been developing a series of videotape training aids that can be used at home. Once the series of eight tapes, which are graduated in difficulty, is completed by the individuals, they are re-tested to see if processing speed is increased.

If that works, researchers will then look to see if that transfers to improved mobility, he said. "The whole thrust of the last three or four years has been to get the results of

'We've done a number of studies now looking at ways to improve visual processing speed. In these studies, we have trained some older adults and not trained some others, and looked at how the training transfers to driving, to falling, and to other aspects of everyday mobility.'

The next step is to devise some type of intervention to help those who are at risk.

"We've done a number of studies now looking at ways to improve visual processing speed. In these studies, we have trained some older adults and not trained some others, and looked at how the training transfers to driving, to falling, and to other aspects of everyday mobility," Dr. Roenker said. "The results have been very encouraging and served as the basis for an ongoing national clinical trial which is examining the benefits of such training for many aspects of mobility. When older adults lose their mobility, it is often a very rapid decline to the nursing home."

The most commonly accepted theory of aging is cognitive slowing, that there is a general slowing of cognitive process, probably with some neuronal basis. This cognitive slowing manifests itself in all kinds of ways—slower memory retrieval and slower reaction time. Is that theory right? I don't know. We are currently testing some of the predictions of that theory through a longitudinal test. We're testing lots of older adults on a huge battery of tests, following some, training some, and re-testing them periodically."

our research out of the lab to where it may do some good."

He added that the possibility of remediation or rehabilitation training will make UFOV screening more acceptable to older drivers "than a scenario in which drivers are threatened with losing driving privileges altogether. Our goal from the beginning has been to find ways to extend mobility, not limit it."

Another project that is awaiting funding is a training video for physicians.

"Physicians are often asked to make decisions about whether older adults should continue to drive. There are very few tools available to them, especially ones which assess cognitive capabilities, that can help them make this decision," he said. "This video would help them determine which patients would be most at risk and allow them to take appropriate actions, including training."

The UFOV test "has the real potential to change how we treat and how we view older adults," he said, and is part of a larger public policy issue. Not only will results save lives, but they will also lead to better safety features in cars, and will reduce insurance rates.

DR. ALBERT J. MEIER IS PROJECT DIRECTOR AND PRINCIPAL INVESTIGATOR FOR AN "EXTRAORDINARY" GRANT-FUNDED PROJECT OF NEARLY ONE MILLION DOLLARS THAT WILL HAVE FAR-REACHING EFFECTS. DR. MEIER IS DIRECTOR OF THE CENTER FOR BIODIVERSITY. THE GRANT IS FROM THE KENTUCKY HERITAGE LAND CONSERVATION FUND TO INITIATE THE PURCHASE AND DEVELOPMENT OF THE PROPOSED UPPER GREEN RIVER BIOLOGICAL PRESERVE IN HART COUNTY. DR. MEIER DESCRIBES THE PROPOSED PRESERVE, JUST A FEW MILES UPSTREAM OF MAMMOTH CAVE NATIONAL PARK, AS AN "EXTRAORDINARY PLACE TO WORK WITH TO PROTECT A LOT OF SPECIAL, VERY RARE SPECIES." IN ADDITION TO PROTECTING RARE SPECIES, OTHER PURPOSES FOR THE PROPOSED PRESERVE ARE EDUCATIONAL PROGRAMS IN ECOLOGY, ADVANCED RESEARCH IN WATER QUALITY, AND COOPERATIVE RESEARCH VENTURES IN MAMMOTH CAVE NATIONAL PARK.

In the section of the Green River bounded by the proposed preserve are beds of several endangered mussel species. According to the site project description, one bed houses five types of mussel which have been listed as endangered: fanshell (*Cyprogenia stegaria*), northern riffleshell (*Epioblasma torulosa rangiana*), ring pink (*Obovaria retusa*), clubshell (*Pleurobema clava*), and rough pigtoe (*Pleurobema plenum*). Dr. Meier states that the mussels found in such diversity at the proposed preserve are "some of the rarest organisms on Earth." The project plan also describes the upper Green River as home to 109 fish species and a "breeding and migratory habitat for neotropical songbirds."

In addition to pasture and forest, the property features a waterfall and the McCoy Blue Hole, one of the largest springs along Green River and part of the karst drainage system. Found in this underground system which feeds to

An Extraordinary Place to Work

BY DEBORAH T. GIVENS



Bottle Gentian (*Gentiana Andrewsii*)

PHOTO BY JOHN ANDERSLAND

the Blue Hole is another endangered species, the Mammoth Cave Shrimp (formerly the Kentucky cave shrimp). Two caves have also been identified on the property, although to date only one has been investigated. Gray Bats, a federally endangered species, have been spotted in this cave.

Several threats currently exist to the property, the river, and the many species found there. Addressing these threats will be the first step in developing the preserve. The largest issue concerning endangered species will be the closing of an estimated 24 oil wells, which Dr. Meier describes as "largely failed" or pumping only "sporadically" in recent years. Until the wells are closed and the pump equipment removed, there remains a danger of an oil or a brine spill which, in addition to damaging the proposed preserve area, would flow into Mammoth Cave National Park. Further steps to protect rare species will be closing

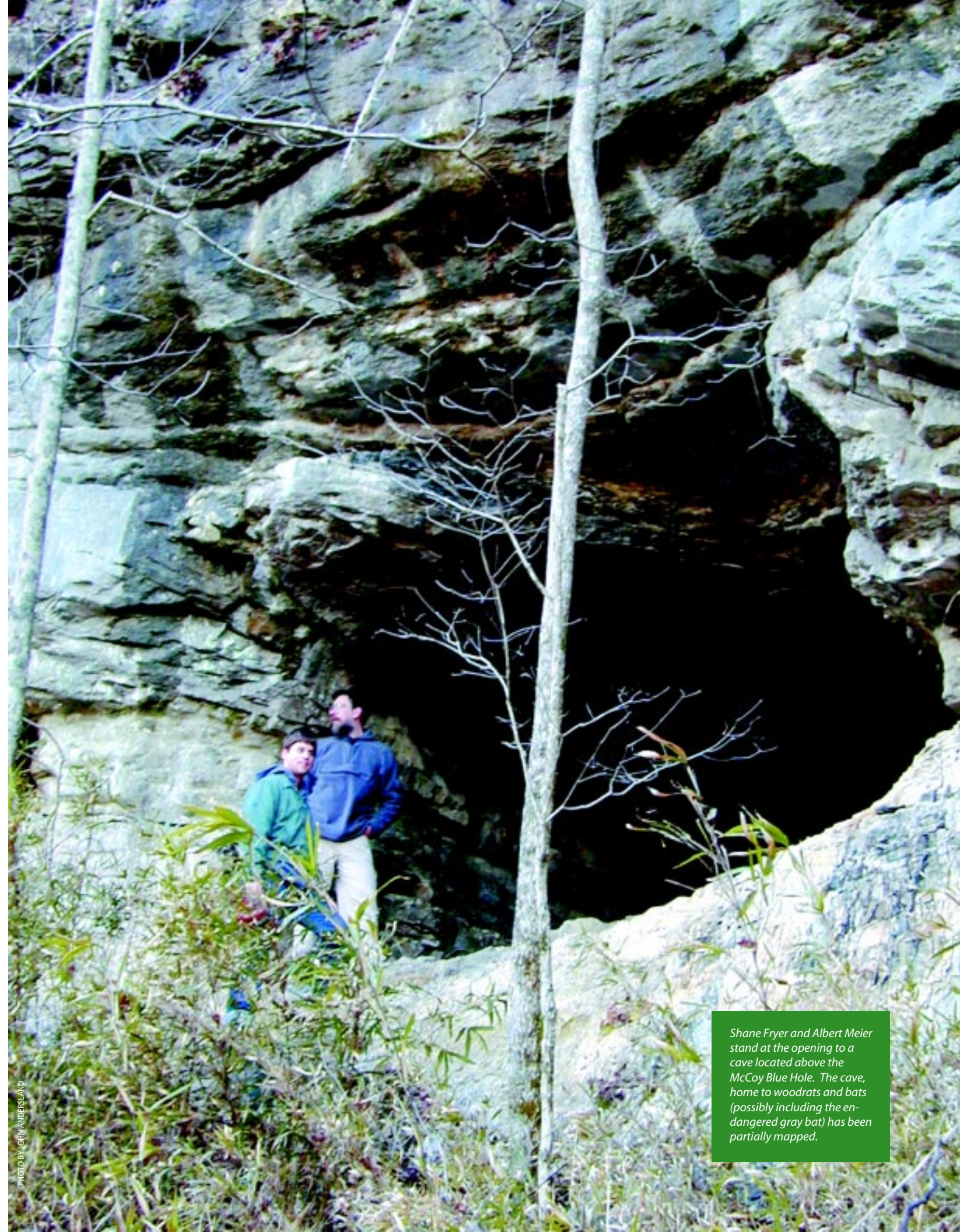


PHOTO BY JOHN ANDERSLAND

Shane Fryer and Albert Meier stand at the opening to a cave located above the McCoy Blue Hole. The cave, home to woodrats and bats (possibly including the endangered gray bat) has been partially mapped.



Left, an 1803 brick house on the south side of the river. Upper right, one of the many falls at 300 Springs on the Green River upstream of Munfordville. Lower right, a pipevine swallowtail.

Dr. Meier describes the area as “a great place to carry on education.” The long range goal is to establish a low-impact biological research station with a building for classes and for housing researchers.

the access to a gravel pit along the river, stabilizing river banks, and ending cattle grazing, which adds to bank erosion. Land improvements will include restoring approximately 50 acres of bottomland pasture to hardwood forest and 250 acres of upland pasture to forest and barrens.

The property also boasts an extra feature unrelated to a biological preserve. Located on the site is a house constructed in 1803 and possibly the oldest building standing in Hart County. Money to stabilize the structure has been included in the funding, and Dr. Meier hopes it will eventually be fully restored.

In addition to protecting rare species, Dr. Meier lists education and research as two other purposes for the proposed preserve. “In terms of educational programs in ecol-

ogy, the upper Green River has almost anything you could ask for in a river.” Centers at Western that will make use of the preserve include the Center for Biodiversity Studies; the Center for Mathematics, Science, and Environmental Education; the Technical Assistance Center for Water Quality; and the Center for Water Resource Studies. Classes expected to benefit from the proposed preserve include Ecology, Ecological Methods, Limnology, Ichthyology, Ornithology, Mammology, Entomology, Invertebrate Zoology, Plant Taxonomy, and Advanced Ecology.

Located approximately an hour from Western’s campus, the proposed preserve will be easily accessible for use by university classes. Summer workshops will draw university students from across the country. The proposed preserve will also be available as a field trip destination for area elementary and high school classes, and for teacher training courses. Dr. Meier describes the area as “a great place to carry on education.” The long range goal is to establish a low-impact biological research station with a building for classes and for housing researchers. A low-impact canoe access site is also planned along with the purchase of canoes and equipment. The project plan notes that public use of the land will be “controlled and limited” since the “first priority for this site is to protect the resource.”

As far-reaching as the proposed Upper Green River Biological Preserve is, it is only “part of a much bigger picture” of basic and applied research, according to Dr. Meier. Working together are several ecological programs which will improve the Upper Green River and in which Western’s Biology Department, Center for Biodiversity Studies, and Center for Water Resource Studies are participating.

Of major importance is the Green River Conservation Reserve Enhancement Program (CREP) through the Department of Agriculture. In this program, each state selects one location to implement a CREP program in an effort to improve water quality. In Kentucky, that location is the upper Green River, identified as the area below Green River Dam and above the lower boundary of Mammoth Cave National Park, encompassing one million acres. According to Dr. Meier, in excess of \$100 million will be spent, with most of it going to farmers, to improve practices that affect the river. CREP will be similar to land bank programs with farmers receiving funding for projects such as creating

buffer zones along the river, stopping pesticide runoff, implementing erosion control and keeping cattle from the river.

With no large cities and few major industries in the upper Green River watershed, most people would think there would be little threat to water quality. But according to Dr. Meier, even in the absence of those anthropogenic impacts, much damage in Kentucky is caused by poor agricultural practices and by small municipalities which do not have the funds to properly maintain and replace sewage treatment systems. Also in rural areas, most homes have septic tanks rather than a connection to public sewer systems. The upper Green River is a karst region with numerous caves and sinkholes. “A karst region is the definition of the wrong place to have septic systems,” explains Dr. Meier.

Dr. Meier believes the CREP program “will have a substantial influence on water quality, fishing, and hunting.” The Department of Biology will be working with CREP and with the Environmental Protection Agency, which is fund-

Of major importance is the Green River Conservation Reserve Enhancement Program (CREP) through the Department of Agriculture. In this program, each state selects one location to implement a CREP program in an effort to improve water quality.



The bottomland forests alongside the Green River form a thick riparian corridor that helps filter out sediments and contaminants from runoff before it enters the river.

ing studies to set the baseline information for CREP. The combined projects — Upper Green River Biological Preserve and CREP — are seen by Dr. Meier as the “biggest environmental project in the state by far.”

In addition, work on the proposed Upper Green River Biological Preserve has also led to more cooperation and more projects with Mammoth Cave National Park. Through these efforts, Western Kentucky University will become a partner in the Southern Appalachian-Cooperative Ecosystem Studies Unit (SA-CESU) and will become eligible for funding to do research in the national park system. Dr. Meier says this will open numerous research opportunities for the University’s faculty and students who will be able to do “advanced research at national parks.”

Emphasis on the Green River is well deserved according to Dr. Meier, who states, “That river is really special.” By helping to protect the rare species in the Green River, in addition to safeguarding Mammoth Cave National Park, the proposed preserve will be an asset to the state and the nation.”



THE
“ENTERTAIN ME”
GENERATION

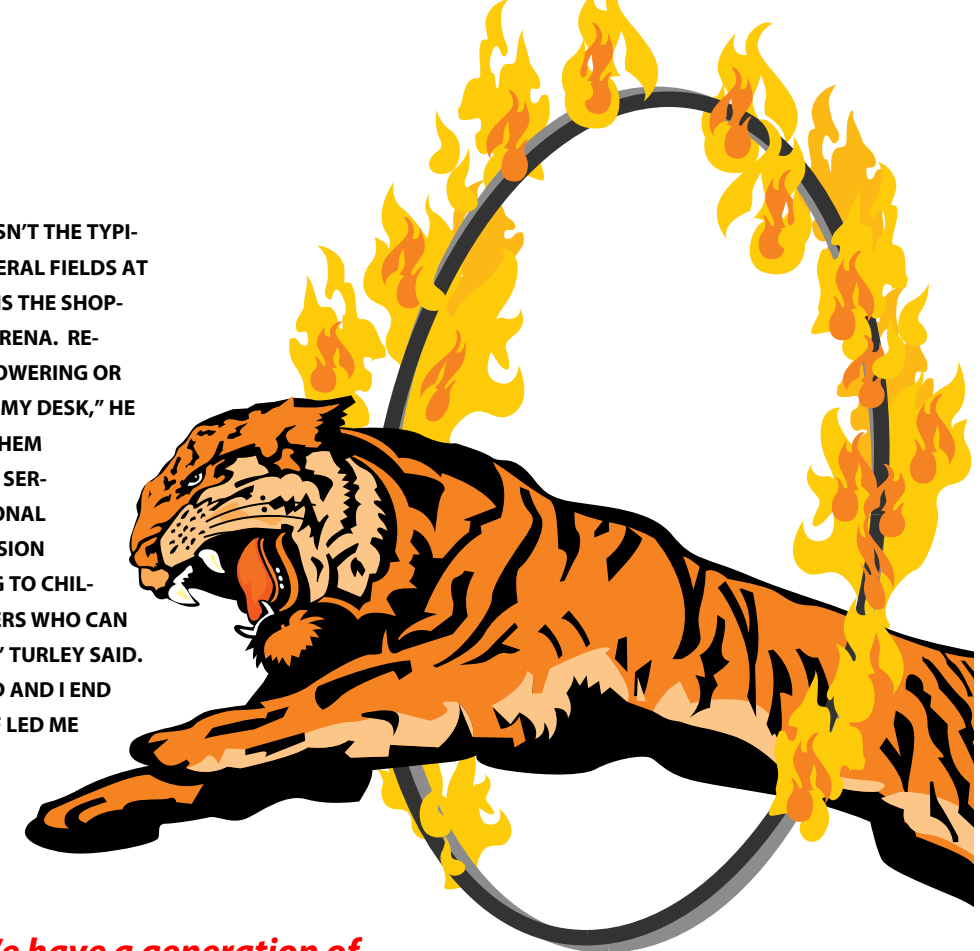
BY TOMMY NEWTON

MARKETING PROFESSOR LOU TURLEY SAYS HE ISN'T THE TYPICAL RESEARCHER. "I TEND TO DO RESEARCH IN SEVERAL FIELDS AT THE SAME TIME," TURLEY SAID. HIS RESEARCH LAB IS THE SHOPPING MALL, THE GROCERY STORE, OR THE SPORTS ARENA. RESEARCH IDEAS OFTEN COME TO HIM WHILE HE'S SHOWERING OR DRIVING. "I DON'T GET THEM WHILE I'M SITTING AT MY DESK," HE SAID. "I HAVE TO PULL OFF THE ROAD AND WRITE THEM DOWN." HIS RESEARCH INTERESTS HAVE INCLUDED SERVICES MARKETING, RETAIL MARKETING, INTERNATIONAL MARKETING, SPORTS MARKETING, CONSUMER DECISION MAKING, MARKETING EDUCATION, AND MARKETING TO CHILDREN. "I'VE ALWAYS KIND OF ADMIRER RESEARCHERS WHO CAN GO INTO ONE RESEARCH STREAM AND STAY THERE," TURLEY SAID. "BUT I JUST CAN'T DO IT. MY INTERESTS ARE VARIED AND I END UP FOLLOWING MY CURIOSITY AND THAT'S KIND OF LED ME INTO A VARIETY OF DIFFERENT AREAS.

As a marketing researcher, Turley strives to make sure the people who operate businesses, retail stores, malls or sports venues aren't confused about what they should be doing or the atmosphere they are creating. "One of the neat things about marketing is that we don't understand consumers enough to perfectly hypothesize how they're going to react." Consumers have their own wants and needs and continue to amaze researchers and retailers, he said. "Today's consumer is really different from the consumer of 20 years ago." Turley said today's consumer is part of the "entertain me" generation. Consumers, he said, want convenience and time savers along with the experience of shopping. "We have a generation of consumers that have grown up with expectations of being entertained. When

they come into a store shopping, they expect to be entertained."

Retail atmosphere and its impact on shoppers' behavior



"We have a generation of consumers that have grown up with expectations of being entertained. When they come into a store shopping, they expect to be entertained."

has been one area that Turley and others have studied in recent years. One of his works in progress is a study of adolescents and their perceptions of malls. "We are finding that what we do in regard to the atmosphere we use in the mall has a direct effect on what goes on inside the store," Turley said. Music, color schemes, store layout and interactive displays all play an impor-

tant role in the 21st century shopping experience. For example, he said, some big-city malls are grouping stores together in an area that is more colorful and plays louder music. "It's not just enough to have the product any more," he said. "You have to surround it with a package of entertainment."

That concept is evident in another research area: sports marketing. At sporting events just a few years ago, the game, a public address announcer, and cheerleaders were enough to keep fans interested and enthusiastic, he said. "That's not enough any more. You've got to have an interactive video screen that shows replays. You've got to have a mascot. You've got to have the pep band. At every timeout, something happens on the floor."

Those forms of entertainment aren't limited to professional or college athletics. "Even high school games use multimedia things to fill in the dead spaces," he said. "I think we have entered into the 'entertain me' generation.

People have very short attention spans and if you lose them, they're gone."

Attention spans and marketing savvy are at the heart of another project Turley is completing this year. He and Dr. Scott Kelley of the University of Kentucky have analyzed five years of Super Bowl advertisements to determine what makes an ad successful and memorable. "The Super Bowl is the one time where everyone watches together," Turley said. "The ads take on a life of their own. If you spend \$2 million for an ad, you hope people will like it afterward." Among their early findings in reviewing more than 250 Super Bowl ads: Creative ads that use emotion, humor, cartoon characters, or other quirky setups typically score higher, while informational and service-related ads have lower appeal. Viewers of the evening news might want to see informational ads for new products, but during the Super Bowl "they want to be entertained," Turley said.



PHOTO BY LADONNA HARMON

To keep fans interested and enthusiastic at sporting events, it used to be enough to have the game, a public address announcer, and cheerleaders. Today, audiences expect souvenirs, mascots, interactive video, instant replays and analysis. They expect a pep band and constant activity on the floor, even during timeout. High schools are responding to fans' short attention spans by using multimedia to fill in during athletic events.

Despite the attention to the atmosphere and shopping experience, "you still want to put the milk in the back of the store and have shoppers walk by as much merchandise as they can," Turley said. "As they walk by the merchandise, you have displays to slow them down." That's why some stores have learned that offering free cookies to children makes good business sense from a public relations and sales standpoint. When parents stop to pick up a cookie as a way to make the shopping experience more pleasurable for the child, they're more likely to purchase an item or two from the bakery aisle, he said. "If people just walked into stores and bought the things that were on their lists a lot of retailers would go broke. The idea is to foster impulse buying." Turley is fond of a quote from a Wal-Mart executive who called his store a sandbox where people come to play. "I think there are a lot of retail firms and marketers these days trying to figure out how to make their sandbox more fun than their competitors' sandbox," Turley said.

As the eclectic marketing researcher, Turley will continue to follow his curiosity, looking for ways to help make



PHOTO BY LADONNA HARMON

People have very short attention spans and if you lose them, they're gone.

Marketing professor Lou Turley

businesses more successful and to keep his teaching more vibrant. "The primary benefit to any research is the sense of closure you get as a researcher. You have posed the question that says 'What if?' or 'What happens when you do this?' Then you go out and perform a study, determine the variables and answer the question. At least for me, it keeps me more alive and thinking in my discipline. I think as long as you're alive and thinking in your discipline, it

makes you a better teacher."

Turley became a college teacher in 1978 after earning his master's and bachelor's at Murray State University. After teaching marketing and coaching soccer for several years, he returned to Kentucky and received his doctorate from the University of Kentucky in 1989. A member of the Western Kentucky University faculty since 1989, he has received several awards for his teaching and research and

has had his work published in numerous publications such as the *Journal of Business Research*, the *Journal of Advertising*, *European Business Forum*, the *Journal of Marketing Management* and the *Journal of Services Marketing*.

As the father of four, Turley anticipates his next research project will involve marketing to children. "My kids are a real sense of joy and pride. They just see things differently. A kindergartner looks at life differently than his dad does."

A Beacon of Intellectual Light

BY CAROL CUMMINGS

THE NAMES OF MARY ELLEN MILLER AND ROBERT PENN WARREN ARE CLOSELY LINKED TO MANY ON THE CAMPUS OF WESTERN KENTUCKY UNIVERSITY AND TO THE LITERARY COMMUNITY AS A WHOLE.

For more than 15 years, Miller has been a driving force in making the Robert Penn Warren Center what it is today. Yet she is modest about her many accomplishments, giving credit to others, particularly to Joy Bale Boone, the first chair of the Robert Penn Warren Center. She refers to herself and Joy as the “founding mothers” of the Center.

Robert Penn Warren, a distinguished scholar-writer, achieved fame as a poet, novelist, essayist, critic, and editor. His many awards included three Pulitzer Prizes: *All the King's Men* (Fiction, 1947), *Promises* (Poetry, 1958), and *Now and Then* (Poetry, 1979). In 1986 Robert Penn Warren was named as the first U. S. Poet Laureate, an honor confirming his stature as an outstanding poet.

Professor Miller describes Robert Penn Warren as “one of the most extraordinarily gifted writers and critics that the country has produced. He combined those extraordinary gifts with an amazing humility.”

The history of the Robert Penn Warren Center is a colorful one and one that Miller professes to be able to talk about for hours. “Robert Penn Warren was born in Guthrie, Kentucky, just 40 minutes down the road,” she said. “In the mid-80s the house where he was born was on the market, listed at \$34,000. Then-President Kern Alexander thought Western should buy it. He appointed Joy and me to head a committee to look into buying it and moving it here. After that, people in Guthrie decided they didn't want to let go of it, so they formed a committee to buy it and restore it.”

This turn of events sent the committee back to the proverbial drawing board and they decided to establish the Robert Penn Warren Center. The committee worked diligently, dedicating a room to Warren in Cherry Hall and establishing an annual symposium and The Center for Robert Penn Warren Studies.

Created in 1986, The Center honors Kentucky's native



son for his worldwide literary achievements and his dedication to education. The committee's annual activities include the presentation of an annual graduate fellowship to a qualified student for study of Warren's writing; the annual Robert Penn Warren Symposium that attracts scholars from across the nation; and the establishment and maintenance of the Robert Penn Warren Room and Robert Penn Warren Center. The Center publishes an annual journal, titled “rWp: A Robert Penn Warren Annual.”

“People in the literary world recognize Robert Penn Warren as quite possibly the most distinguished writer and critic this country has ever had,” Miller said. “One reason they do is because his literary criticism has affected the state of literature forever. He wrote both poetry and fiction and is the only writer ever to receive the Pulitzer Prize in both poetry and fiction. Perhaps his most famous work, *All the King's Men*, is something of a masterpiece.”

Miller said it is an honor that Western is in Robert Penn Warren's corner of the world. “Having his library and the symposium bring to this campus one of the most prestigious and important academic events of the year. Hav-

ing the kind of scholars we have on our advisory board and speakers we have each year have given us literary prestige in the country. We are proud to have these scholars at the symposium and proud to have them come here to conduct their research.”

According to Miller, the Warren Center and its many activities remind us of what a university is all about. “A university should be about learning the best there is to learn,” she said. “The Center stands as a literary beacon of intellectual light on this campus.”



Mary Ellen Miller

PHOTO BY SHERYL HAGAN-BOOTH

“People in the literary world recognize Robert Penn Warren as quite possibly the most distinguished writer and critic this country has ever had,” Miller said.

DR. NICHOLAS CRAWFORD, A WESTERN PROFESSOR OF GEOGRAPHY AND GEOLOGY AND THE DIRECTOR OF WKU'S CENTER FOR CAVE AND KARST STUDIES, HAS BEEN USING MICROGRAVITY SINCE 1985 TO GET AN IDEA OF WHAT LIES UNDERGROUND IN WARREN COUNTY'S EXTENSIVE KARST REGION.

One of his assistants, Leigh Ann Croft, a research hydrologist, has been taking microgravity readings on Dishman Lane in Bowling Green, Kentucky, where a large section of new road collapsed. These readings give her and her fellow researchers an indication of the extent of the collapse, and of whether or not a larger collapse could be expected.

Dishman Lane, Dr. Crawford said, crossed a room in State Trooper Cave where part of the roof had already collapsed. Storm water runoff likely caused the rock to shift, and that portion of the road collapsed. As a public service, Dr. Crawford and the center's staff used microgravity and electrical resistivity to map the area around the collapse. "We feel confident that the collapse is not going to extend further," he said.

This is the kind of applied research in which Dr. Crawford and the Center are engaged. "We work on real-world problems. We work out in the field," he said.

Dr. Crawford first began using microgravity when the EPA came to Bowling Green to investigate fumes rising from the ground.

"We had toxic vapors rising out of the caves under the city and getting into homes, businesses and two elementary schools," he said. "We started looking for a geophysical technique that would allow us to find the caves under Bowling Green."

A fellow researcher recommended microgravity and, using the EPA's Superfund, they rented a LaCost and Romberg Microgravity Meter—only 50 to 60 machines were available in the world at that time. Microgravity readings would indicate the voids and a drilling rig would drill into them.

"We went down the streets of Bowling Green using microgravity and we were able to pick up caves," Dr. Crawford said. On two occasions they drilled 30-inch holes and sent cavers into the system. "We mapped about a mile and a half of Robinson Cave using that technique."

Dr. Crawford began refining his technique, combining microgravity with other detection methods such as electrical resistivity, which involves injecting an electric current into the ground and measuring the resistivity. Soils trans-

BELOW

BY BOB SKIPPER

mit a current easily whereas air, found in a cave or other void, is highly resistive.

The techniques have been in demand. Dr. Crawford and others from the Center have used them to investigate a sinkhole collapse under Interstate 65 near Elizabethtown and under a NASA building at Red Stone Arsenal in Huntsville, Alabama; to locate a monitoring well near a factory in Frankfort; to locate 20,000 gallons of gasoline that had spilled into the karst aquifer in Albany, Georgia; and to investigate the sinking of a town in Alabama.

They also mapped several miles of the caves under Bowling Green, Dr. Crawford said. And, the Center has used the techniques to investigate numerous sinkhole collapses, particularly ones that have occurred under buildings and highways.

Their technique caught the attention of NASA and the Federal Emergency Management Administration. After the terrorist attacks on the World Trade Centers on September 11, 2001, Dr. Crawford was contacted by NASA and FEMA about using microgravity to locate pockets in the rubble.

"They wanted us to try to use it at that location to see if there was any chance of us picking up any void spaces where people might still be trapped," he said. "For approximately a month, my suitcase was packed and my car was loaded up with the instruments and we were ready to take off to go up there to do what we could."

However, the call didn't come. The problem was that the terrain was rugged with steel jutting up 300 feet and a huge hole in the middle.

"The New York Fire Department was in charge of the site and they didn't want to stop their frantic efforts to dig it out and find people physically for us to try some experi-



Leigh Ann Croft, a research hydrologist, takes microgravity readings using a LaCost and Romberg Microgravity Meter.

PHOTO BY SHERYL HAGAN-BOOTH

THE SURFACE



PHOTO BY SHERYL HAGAN-BOOTH

mental technique that may or may not work," he said. "They were actually going to have to put me in a bucket with the machine and lower it with a crane place by place because there was no way to go across."

Those difficulties led to another idea.

"We have been thinking a lot about this, that maybe we could use our technique of microgravity and electrical resistivity to find voids after earthquake disasters, looking for people trapped in collapsed buildings," Dr. Crawford said, adding he also submitted a proposal to Ft. Knox to develop military applications to find bunkers, tunnels and caves.

"The military has a need for being able to see what's underground. But one problem we have with the microgravity machine is that it's pretty slow and you have to physically be able to move across the landscape."

Dr. Crawford has received a large grant through the Innovative Commercialization Program of the Kentucky Science and Technology Corporation to develop a robotic system for measuring microgravity. The possibilities could include suspending the machine on a steel cable over a collapsed building and using a laser to measure the depth of the ground surface, or using a remote-controlled car.

"We're looking at inventing a robotic system for taking these readings where we could actually take them behind

enemy lines and areas that are too rugged to take the readings using some other technique," he said.

In the meantime, students working for the Center are gaining experience while helping solve real problems. One such student, Jeremy Richardson, is completing his master's thesis using the techniques to investigate a flood-prone parking lot on the WKU campus.

"He's trying to map the Lost River Cave and look for a location to drill a storm water drainage well," Dr. Crawford said. "He is also designing a filtration and wetland treatment system for the first flush of storm water runoff, so we don't just dump it into the cave, but try to do something about the water quality as well." That first flush, he said, contains most of the pollutants such as motor oil and gasoline, he said.

That same technique may be used as U.S. 31W is widened to four lanes through Bowling Green, Dr. Crawford said.

Dr. Crawford would like to see this technique used to find potential problems before roads and other projects are built. He has proposed using microgravity and electrical resistivity measurements on the site of the proposed Kentucky Trimodal Transpark near Oakland before the runway is built.



Global Supply Chain

BY MARY E. FRITH

DR. ZUBAIR MOHAMED'S RESEARCH INTO THE INTERWORKINGS OF THE GLOBAL SUPPLY CHAIN HAS THE POTENTIAL TO CHANGE THE WORLD — THE BUSINESS WORLD, THAT IS. MOHAMED, PROFESSOR OF MANAGEMENT AND INFORMATION SYSTEMS IN THE GORDON FORD COLLEGE OF BUSINESS, HAS BEEN RESEARCHING THE GLOBAL SUPPLY CHAIN SINCE 1996. HIS RESEARCH FOCUSES UPON THE EXAMINATION OF SYSTEMS AND THE DETERMINATION OF HOW THOSE SYSTEMS CAN BE ADJUSTED TO SAVE COMPANIES MONEY.

For example, how does Ford make cars? It makes some components and buys many components and subassemblies from its suppliers, and assembles them into cars and relies on its distributor network to sell them to the final customer. Ford's suppliers in turn depend on their suppliers, and this interdependency is repeated to form a supply chain. About half of the cost that goes into the making of a product comes from the components and subassemblies bought from suppliers. This figure is likely to increase. The competitive importance is apparent for optimizing the functioning of the supply chain.

Dr. Mohamed's research is based upon the idea that the relationship between customer and supplier has become more of a partnership. This occurs when organiza-

tions readily share information and thus share ways of saving money.

The former nature of business included no guarantee of continuing relationships with vendors from one year to the following year. However, Dr. Mohamed suggests that in today's business world the lack of relationship building with vendors *will cost money*. For example, if a business can contract with a supplier for 10 to 15 years, savings can be shared and more money can be put into the development of the organization. The development of one organization may potentially lead to the development of its partner organizations, which poses a maximized situation for everyone in the supply chain.



Dr. Zubair Mohamed

PHOTO BY LADONNA HARMON

Mohamed has developed mathematical models that allow manufacturers and their coordinating global supply chain to maximize efficiency by making decisions that positively affect all partners. His models encourage businesses to take an active role in improving both internal and external processes related to their organization. Dr. Mohamed's models also allow businesses to visualize what actions to take to get the desired result. The models are easy to understand and are spreadsheet based so that today's manager can easily use them to optimize the performance of the function they oversee.

The models encourage the businesses to ask questions

such as "What would be the savings to us and our partners if we allowed our first and second tier suppliers to make decisions on their own instead of providing strict guidelines to them?" and "What would be the effect of using local vendors versus foreign vendors?"

When working to determine vendors, many companies closely examine exchange rates and use local currency as a tool for profit. Dr. Mohamed's research has encouraged other scholars to further examine how exchange rates closely affect vendor selection. He proposes that even though revenue is often fixed, companies can look at innovative outsourcing methods to reduce cost. Again, Dr. Mohamed's models can be used to assist companies in making just these types of decisions.

"We are not working in isolation. We are interacting with other people, other countries. It's all borderless," Dr. Mohamed said. Organizations across the globe agree that Dr. Mohamed's research plans include methods very applicable to businesses.

Dr. Mohamed's plans include the examination of the links between the customers and suppliers throughout the global supply chain. "The chain is only as strong as its weakest link," he said. Basing the research on his previous findings that relationships among suppliers and buyers are crucial to success and maximization of profits, Dr. Mohamed plans to identify a commonality among weakest links in global supply chains.

Also, he plans to examine systems within the chain to find the point at which push systems and pull systems combine. The push system and the pull systems are opposite systems. With the push system, inventories are higher and the material is pushed into the system at the starting point.

The material progresses through all subsequent stations and, as Dr. Mohamed says, "we may end up producing more than what was demanded of the final product." The businesses at the bottom of the chain like raw material manufacturers will be working with push systems. A steel manufacturer is an example of a supplier at the bottom end working with the push system because it has to have huge raw materials to fire up its furnaces to produce steel in the most cost efficient way. In a supply chain, some partners will be working with pull systems, especially those close to the finished product. The pull system keeps the inventories to a minimum level. Toyota is an example of a manufacturer working at the upper end of the supply chain with the pull system.

In today's business environment, companies look at economic information, make decisions, and share that information with their suppliers. There is always some capacity of "push" built into the chain. Other areas further down the supply chain work on just-in-time systems, which "pull" in order to meet demand. However, everyone cannot work on one system. So, where do the push and pull systems meet in the global supply chain? What are the implications when they do meet? And, how does their interaction affect the overall supply chain?

Dr. Mohamed is a 1979 graduate of Bangalore University in India. He earned his Master of Science and doctoral degrees at the University of Kentucky in 1988 and 1991, respectively. He began contributing to the academic environment of Western Kentucky University when he joined the faculty in 1989. A widely published author, Mohamed is currently serving as a project co-director of a grant from the U.S. Department of Education that will allow the "internationalization" of the business curriculum at Western Kentucky University.

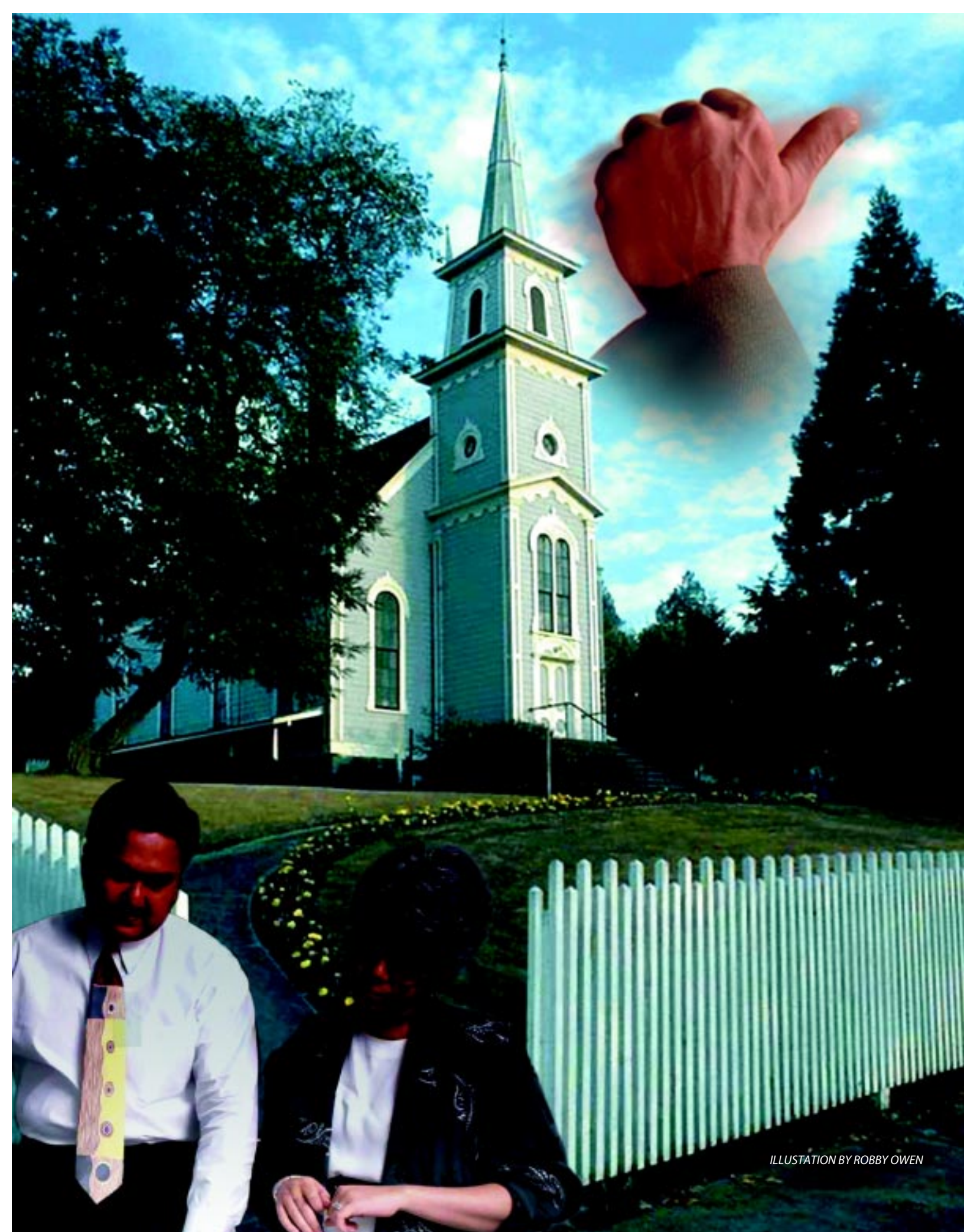


ILLUSTRATION BY ROBBY OWEN

Exiled

BY BETH SEWELL

IN A COUNTRY WHERE WARS ARE FOUGHT FOR FREEDOM, DR. CARL KELL DISCOVERED ONE BATTLE THAT HAS BEEN BREWING FOR MANY YEARS — THE BATTLEFIELD OF THE SOUTHERN BAPTIST CONVENTION.

Dr. Kell, a professor of communication at Western, has devoted the past twenty years, and counting, to the research of the supposed demise of the Southern Baptist Convention. It has been his project and passion, resulting in the book *In the Name of the Father: The Rhetoric of the New Southern Baptist Convention*, co-authored with Ray Camp, North Carolina State University, and published by Southern Illinois University Press. His current (in progress) work is *Exiled: Voices of the Southern Baptist Conference Holy War*.

Dr. Kell sits at his desk pushing his glasses back as he begins to explain the problems in the Southern Baptist Convention. He takes a moment to shuffle through the organized chaos of his papers, and briefly pauses.

"I sniffed it out in the beginning," Dr. Kell said with a smile. "It had all the makings of a huge, enormous fire fight that would last for a long, long time."

He explained that the controversy within the denomination began with the growing intensity of leadership within the Southern Baptist Convention. Two groups began to form and the lines were clearly drawn. Conservatives took one side and moderates the other. The conservatives' key areas of attack were on women's role in the church, homosexuals, and liberals. The moderates believed that they should have the freedom to make their own judgments in these areas as long as they stayed true to the basic framework of the Southern Baptist perspective.

The battle escalated in 2001 when more than 5,000 Southern Baptist foreign and home missionaries were asked to sign a statement that they affirm the 2000 Baptist Faith and Message, understood by some to be one of the most radical statements of faith in the denomination's history. The statement specified many beliefs on a variety of controversial issues, including women as senior pastors. Many missionaries have refused to sign the document, and many have begun fighting for their freedom.

"[The moderate Baptists] believe that they've got the freedom to interpret whatever the Bible says to them, in any way they want to," Dr. Kell said. "And that's become

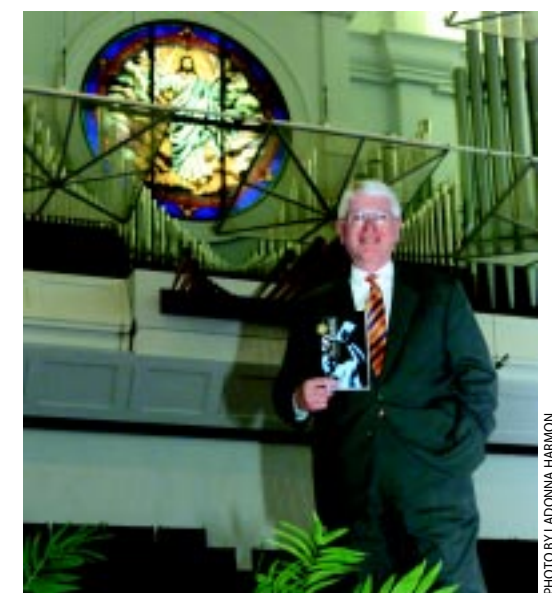


PHOTO BY LADONNA HARMON

the rallying cry of what could be labeled as a conservative/moderate crisis today.” Conservatives desire a strict constructionist approach to the Bible, while moderates would interpret Scripture in light of current cultural perspectives.

Dr. Kell and co-author Dr. Raymond Camp investigated each side of the conflict, and found that there were a variety of issues that reached a lot of people, from key figures in the church to average members. (The Southern Baptist denomination is the largest non-Catholic group in America, affecting 36,000 plus churches.) As a positive result, Kell and Camp’s book went on to win the Religious Communication Association’s Book of the Year Award in 2000, as well as (for Dr. Kell) the 2001 James Applegate Research Award (the Commonwealth of Kentucky’s top research award in communication) for its efforts to bring such a massive issue and conflict into the spotlight.

“We’ve been very fortunate in that the book has been successful,” Dr. Kell said.

After the success of the first book, Dr. Kell realized that there were still more issues surrounding the conflicts within the Convention that he and Camp did not touch on that should have been exposed. That is when he began his second book.

The book, *Exiled: Voices of the Southern Baptist Conference Holy War*, delves further into the conflict and pinpoints the specific issue of those who are shut out of the church. Dr. Kell presents the stories of Southern Baptists who have left their denomination, letting them speak for themselves.

The book, Exiled: Voices of the Southern Baptist Conference Holy War, delves further into the conflict and pinpoints the specific issue of those who are shut out of the church.

“[The book] is an effort to reach out and bring in major and minor voices who felt the harsh results of the controversy,” Dr. Kell said. “Many people have written eloquent essays, but there are some who have been asked and have declined — afraid to write because they live in conservative Baptist communities and are reluctant to comment on the issue.”

Dr. Kell’s non-fiction work with the church has led him into writing about fictional prototypes in the church. His literary imagination has enabled him to turn a new page and begin writing a murder mystery, which takes place in a church. Having switched gears completely, Dr. Kell has found the world of fiction writing harder, but only because it’s a new concept.



PHOTO BY LADONNA HARMON

“I began thinking it out,” Dr. Kell said, “and then, not knowing what in the sam hill I was doing, literally, I sat down, and in about six months wrote Part One of the book called *Stone Mountain*.”

Dr. Kell’s passion for research is evident in his extensive work with the Southern Baptist Convention. Daycross, Georgia, the mythical setting of the first chapter in *In the Name of the Father* serves as the location for *Stone Mountain*. He interviewed a number of people about the history of Southern Georgia, asking policemen how a murder case is handled, as well as other sources about life and work in a deep southern town.

“What I do is I sit down and write a chapter or two, and

then look at it and try to think about it. Then I try to pick up some magazine like *Fiction Writer*, and read some things about what I’m doing and if I am doing anything close to what’s right,” Dr. Kell said.

He explained that many times voices and characters just come to him, and he writes what they say. Dr. Kell has found this experience of writing fiction fun, because he can sit and read chapters out loud. He explains that he moves from one chapter to the next by reading to his wife, making corrections accordingly. Her advice is always “right on.”

“I never try to plan anything or plant anything and when I try to get poetic it’s just too corny, too mushy,” Dr. Kell said. “So, I just write.”

DIXIE LIMITED

BY CAROL CUMMINGS

DR. JOSEPH MILLICHAP HAS BEEN FASCINATED WITH TRAINS SINCE HE WAS A SMALL CHILD. NOW HE IS COMBINING THAT PERSONAL INTEREST WITH HIS PROFESSIONAL SPECIALIZATION IN SOUTHERN LITERATURE.

According to Dr. Millichap, his new book *Dixie Limited*, published earlier this year by the University Press of Kentucky, presents “a reading of the complex, often ambivalent relation and resonance among technology, culture, and literature as represented by railroads in selected writers and works of the Southern Renaissance.”

“This book combines my personal and professional interest in railroads,” Dr. Millichap, an English professor at Western Kentucky University, explained. “When I was a little kid, my grandfather would take me down to the railroad stations and railroad yards. He had friends who worked there. From that time forward, I have always been fascinated by trains.”

On the professional side, Dr. Millichap specializes in American literature, particularly Southern literature and the Southern Renaissance, described as the period from the 1920s to recent decades. Having published four other books and more than 50 articles, Dr. Millichap felt he had completed what “was expected” of him and decided it was time to have fun doing what he wanted to do.

The Dixie Limited was a real train that ran from St. Louis to Florida, with stops in Nashville, Chattanooga and Atlanta. Dr. Millichap says a “limited” was a fast train that made fewer stops.

He gleaned the book’s title from a quote written by Flannery O’Connor in “Some Aspects of the Grotesque in Southern Fiction.” O’Connor wrote, “The presence alone of Faulkner in our midst makes a great difference in what the writer can and cannot permit himself to do. Nobody wants his mule and wagon

stalled on the same track the Dixie Limited is roaring down.”

In his introduction, Dr. Millichap writes: “O’Connor’s complicated metaphor resonates beyond her immediate situation to suggest the complex meanings inherent in the relation of Southern railroads, Southern culture, and Southern literature. At the most universal level, Flannery O’Connor’s heroic metaphor projects the plight of the apprentice writer who must simultaneously emulate and escape the accomplished master.”

“The railroad is a kind of symbol that brings folks together,” Dr. Millichap expanded. “It is a complex symbol and image, as a kind of technology that interfaced with everyday life and changed it in the South. The railroad and its tracks are symbolic of those technological changes, because once they are made, they become like tracks that are laid down and must be followed. You are determined

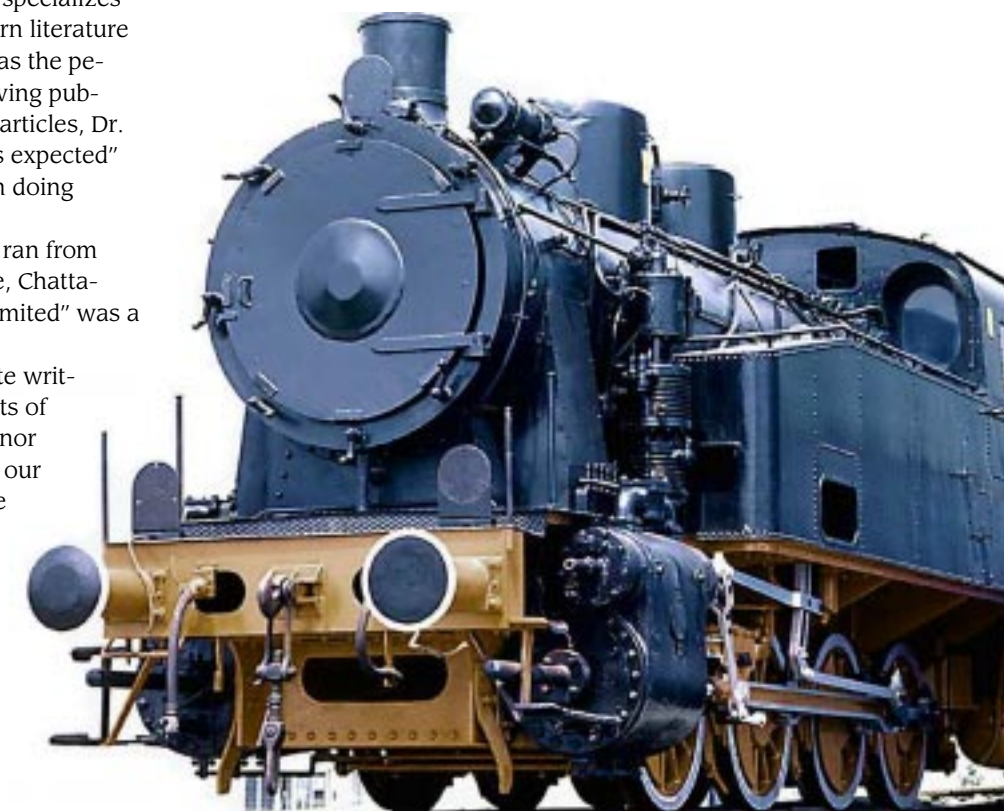




PHOTO BY SHERYL HAGAN-BOOTH

by this technological history. Culture is determined by it.”

In addition to Faulkner, the book includes readings from the works of Thomas Wolfe, Robert Penn Warren, Eudora Welty, Ralph Ellison, and Dave Smith. “My first draft of the book included railroads in American literature in general,” Dr. Millichap said. “The initial readers recommended that it be broken into two parts.”

This first book focuses on the Southern Renaissance, and the other half of the material will be presented in a companion piece, *20th Century Limited*, which is anticipated for release within the next year. The “20th Century Limited” was another real train that ran from New York to Chicago. It represents the symbol of modern America in general, focusing on authors such as F. Scott Fitzgerald, Edith Wharton, and Toni Morrison.

Dixie Limited encompasses readings about railroads, trains, and tracks as images and symbols in Southern literature. “The finest writings on this movement are dealing with the ambivalence of the situation,” he said. “It is a positive situation in that it brings about change. The negative focus relates to machinery entering the garden, factories replacing the farms, and subdivisions growing where the country used to be.

At the same time, Dr. Millichap acknowledges there is a responsibility to contemplate the critical position on the Southern Renaissance. “The Southern Renaissance has long been recognized as a critical concept,” he explained. “There was a real birth of Southern literature during this period.”

However, a number of scholars have created interest in questioning the idea of the Southern Renaissance, insisting it was made up to fit scholarly needs of that time and place. “In my book I am reacting against that reaction, insisting that the railroad is a good metaphor for saying that there is a South, there was a Southern Renaissance, and these writers were great ones.”



PHOTO BY SHERYL HAGAN-BOOTH

“The railroad is a kind of symbol that brings folks together,” Dr. Millichap expanded. “It is a complex symbol and image, as a kind of technology that interfaced with everyday life and changed it in the South.”

The Dixie Limited became an image of Faulkner, and Dr. Millichap says people who question the Southern Renaissance ultimately question Faulkner. “He was a powerful historical force, but he was limited,” Dr. Millichap said. “His texts are problematic and powerful. They did establish

the Southern Renaissance and folks ran on those tracks or away from them until the end of the Southern Renaissance. It represents modernism coming to the American South.”

He writes, “It becomes appropriate as we enter the 21st century that we recall how much the 20th-century South was shaped by railroads built in the 19th century, as well as how much our future will be determined by the technological and cultural tracks laid down both before and after us.”

Charles Reagan Wilson, director of the Center for the Study of Southern Culture, calls the book “an ambitious study, which ranges across issues of traditional and modern culture, the relationships of African Americans and white writers in the South, and post-southernism. [Millichap] effectively portrays the ambivalent and conflicted relationships of technology and literature.”

Millichap earned his doctorate in English from Notre Dame University, and he later taught at the universities of North Carolina-Greensboro, Montana, and Tulsa. His research interests in American and Southern culture, literature, and film are reflected in publications including four

books, a monograph, and more than 50 articles and essays in addition to *Dixie Limited*.

He is an avid model railroader and enjoys traveling by train when he can, though he admits to the irony of the inconvenience of the long timeframe involved in rail travel. Dr. Millichap’s longest train journey of a day and a half took him through the west, through the Twin Cities and Montana to Seattle.

“The Kissing Bug”

BY TOMMY NEWTON



CHAGAS' DISEASE IS A CHRONIC PARASITIC INFECTION THAT AFFECTS MILLIONS OF PEOPLE IN LATIN AMERICA. NO VACCINE OR EFFECTIVE DRUG TREATMENT EXISTS AND AWARENESS IS LIMITED IN THE UNITED STATES.

But Western Kentucky University professor Cheryl Davis and her students want to change that. For the past 11 years at WKU, Davis and her students have focused their efforts on studies involving *Trypanosoma cruzi*, the parasite that causes Chagas' disease, and looking for ways to ease its impact.

“Chagas' disease is the leading cause of heart disease and heart failure in Latin America,” said Davis, who has been at Western since 1991. *Trypanosoma cruzi* infects 12 million to 14 million people in parts of Latin America.

Among those infected, 50,000 will die each year because of the lack of an effective form of drug treatment and the absence of a vaccine.

The parasite is carried by an insect called the “kissing bug.” The parasite isn't transmitted through the bug's saliva but through its feces, Davis said. When the person rubs or scratches the bite area, the parasite enters the wound. The parasite also can enter through the mucus membranes of the eye, nose or mouth. In the early stages of the disease while the parasite is in the bloodstream, the infected person will experience fever and swollen lymph nodes. The parasite then moves into the tissues where it can damage the heart and other organs.

The parasite occurs commonly from the Mexican border to Argentina but the bug and the parasite have been

found in the United States. “I feel there are more patients than we know of because physicians in this country are woefully unaware of *Trypanosoma cruzi* and other parasitic diseases because they just don't deal with them that much,” Davis said.

In recent years, a baby was infected in Tennessee. “It really was almost an accident that anyone knew about it,” Davis said, adding that luckily the baby's mother had seen a television show about the insect and the disease. Davis expects Chagas' disease will increase in the United States as more Latin American immigrants move into this country.

The potential for increased exposure and the potential to find a treatment are motivating Davis and her students to search for answers.

In the biology labs in Thompson Complex North Wing, studies on mice focus on supplementing their diets with antioxidants like vitamin E and selenium. “What we discovered is that it is very beneficial,” Davis said. The antioxidant supplements increased longevity, reduced the number of parasites in the blood, reduced weight loss during infection and decreased tissue damage. “The bottom line is that it greatly increases survival,” she said. Students are now investigating the

impact antioxidant supplementation has on cytokines, or the small proteins that function as chemical messengers to regulate immune response. Preliminary studies suggest that cytokine synthesis in supplemented mice shifted from a susceptible profile to a resistant profile.

Davis hopes the research on mice will provide the impetus for research on humans. “My mission here at West-

ern is to train master's and undergraduate students,” she said. “It's not very practical to think about doing human Chagas' disease research. But that certainly interests me.” The research could prove beneficial to colleagues working in Ecuador, Brazil and the Centers for Disease Control, Davis said. “We hope that when we publish our findings about the beneficial effects of antioxidants in mice that people who do human clinical research in the field will say ‘Wow, I wonder if antioxidants would also be beneficial to humans!’” she said. “It's very easy to tell people to take vitamin E supplements and selenium supplements. “It certainly warrants investigation in humans. That's what we hope. We hope it will spark interest and the attention of people who can do those studies in humans.”

Trypanosoma cruzi isn't the only parasite getting the attention of Davis and her students. They're doing similar research on *Toxoplasma gondii*, a human pathogen that causes toxoplasmosis. The parasitic disease, transmitted

through cat feces and undercooked meat, can cause health problems for pregnant women and for AIDS patients. In the Western lab, students have tested the antioxidant supplementation theory on mice infected with *Toxoplasma gondii*. “The results just really bowled us over,” Davis said.

Instead of seeing similar results, the students found results that were quite opposite. The supplement didn't work. Mice that received no antioxidants saw their weight and conditions improve. “That's been a fascinating thing to me as a biologist to look at parasite systems that behave in opposite ways and ask why,” Davis said.

That's the response Davis passes onto to her students in the lab and in the biology, microbiology, immunology and parasitology classes she teaches. “I knew from a very early age that I was interested in living things,” she said.



Cheryl Davis

When she took her first class in parasitology at Oklahoma University, “it opened my eyes in the same way I see my students' eyes being opened by this incredible world,” she said. At Western, Davis has spread her enthusiasm for immunology and parasitology and her knowledge of parasitic diseases. A large percentage of her undergraduate students have gone onto medical

school while master's level students have gone onto other research labs or pursued their doctorates. “When I reflect on the students I've had, most of them have stayed in the

Chagas' disease is the leading cause of heart disease and heart failure in Latin America.



The “kissing bug,” also known as the conenose bug, reduviidae bug, or in Latin America, “vinchuca,” can feed on a sleeping victim's blood by painlessly piercing the lips, eyelids or ears.

field of medicine, scientific research or teaching,” she said. “That is very, very rewarding.”

After nearly 20 years of researching *Trypanosoma cruzi*, Davis continues to find her work rewarding. “That's the wonderful thing about science. The whole nature of inquiry is you may answer one question but by answering one question you usually end up generating a dozen more questions to pursue,” she said. “I have the intention to continue working with the *Trypanosoma cruzi* antioxidant system and who knows where that work may lead us.” Dr. Davis received her bachelor's and master's degrees from Oklahoma. She earned her doctorate at Wake Forest, where her research into *Trypanosoma cruzi* began in 1984.

RESEARCH BRIEFS

Proficiency by 2014: Closing the Achievement Gap

As part of a statewide education initiative, Western Kentucky University and other state AEL, Inc. co-venture partners are collaborating with the Kentucky Department of Education to try to close the minority achievement gap. The other AEL Inc. partners include universities from Virginia, West Virginia, Tennessee, and in Kentucky, University of Kentucky and University of Louisville. In his efforts to move all children in Kentucky to proficiency by 2014, Commissioner Wilhoit has charged the group with identifying successful

strategies of individual schools and school districts to decrease the minority achievement gap. Western Kentucky University is a major player in the efforts to move all children in the commonwealth to proficiency. As such, the University is in a position to help improve the education of all of our youth.

Through a grant from KDE, Dr. Jackie Pope-Tarrence, Associate Professor of Psychology, is assisting three of the seven pilot school districts in their efforts to research and evaluate the development and implementation of strategies designed to reduce the minority achievement gap and move all students to proficiency.

Although there are common questions that will be addressed across all of the participating districts, each district has implemented its own plan in an effort to close the gap.

Researchers at the three universities will:

- assist the school districts in deciding the types of data to be assembled
- help the schools implement the necessary procedures to collect the data
- assist with analyzing and interpreting the data collected
- help each district address key questions common to all participating school districts
- determine which strategies were successful and disseminate this information to other schools across the Commonwealth

Each district and participating school has organized a team of administrators, teachers, and staff personnel to implement their plan and assess its effects on student achievement. Assistance from the participating universities will help schools use data more effectively in making curriculum and instructional decisions, help faculty use data to confront issues that are critical to improving student achievement, help school administrators and teachers use data to develop strategies for engaging parents and the community in decreasing the gap, and help school administrators and teachers use data to evaluate the effectiveness of chosen strategies.



Dr. Jackie Pope-Tarrence



Liz Jensen and Denise Henry, far left, two WKU Writing Project teachers at Cumberland Trace Elementary School, Bowling Green, have lunch with Governor Patton at the Kentucky Council of Teachers of English/Language Arts Annual Conference, February 2002, at Ft Thomas, KY.

WKU Writing Project Improves Teachers' Skills

"As a teacher I feel revitalized both personally and professionally. I feel a confidence I haven't felt before in my writing and teaching." — Anonymous

The WKU Writing Project — an affiliate of the National Writing Project (NWP), now in its 17th year at the university — is designed to make K-12th grade teachers better writers and teachers of writing. The project is funded annually by the NWP and the Kentucky Department of Education for about \$50,000 a year. Dr. John Hagaman, Professor of English, has managed these funds to improve public school teachers' abilities to teach writing; and the summer institutes have paid great dividends for students.

Dr. Hagaman has perfected the summer institutes. Every summer 20 exemplary teachers are invited to participate in an invitational Institute on Western's campus. Teachers brainstorm, write, revise, workshop, and publish their writing; research current theory and practice in the teaching of writing; and demonstrate best teaching practice before their peers. The participants laud the workshop.

"The greatest benefit of my experi-

ence in the WKU Writing Project has been a refocusing of my methods, strategies, and evaluation techniques for teaching writing. I feel as if I have been able to develop more fully my philosophy of teaching writing." — Jon Fredericks, Barren County Schools

There are many similar comments that come in from the evaluation of the activity each summer and during fall follow up school visits to observe the teachers implementing what they learned in the workshops.

To make this happen, the Kentucky Department of Education, the National Writing Project, and Western



A writing response group from the 2002 June WKU Writing Project Institute share their writing at an orientation session, prior to the Institute's opening.

have collaborated to fund the Project for over a million dollars over the years. Teachers receive both a stipend and graduate credit hours for their participation. The results are impressive.

Nearly 340 teachers will have completed the Project by summer's end, empowering them to reach students and other teachers in their home districts and schools. The State of Kentucky benefits from increased quality in teacher performance: over a dozen Project teachers have become principals, six have been tapped by the KDE for state positions, four have be-

come presidents of state professional organizations, and over a hundred function as writing consultants or Cluster Leaders for their schools. Finally, Western benefits by assisting teachers in achieving their Rank I and II, and National Board certification — and by keeping active in the development and evolution of the Kentucky Education Reform Act.

Listen to the teachers:

"I've taught high school English for 31 years. The WKU Writing Project was the single best teacher preparation I've ever had. How I wish I had had that opportunity in the early years of my

teaching." — Carolyn Smith, Grayson County High School

"The Writing Project has been the best and most beneficial thing I have done in graduate work. Not only did it improve my comfort level with writing, it also improved my competence. My students, however, have benefited the most!" — Jayne Squires, Green County Middle School

First Steps Monitoring, Resource and Assistance Project

The First Steps Monitoring, Resource and Assistance Project directed by Dr. Vicki Stayton has been housed at Western Kentucky University since July 1, 1993 with total funding over that period of time being approximately \$1,000,000. Funded by the Kentucky Cabinet for Health Services, the project has two major goals: (a) to provide training and technical assistance for professionals and family members specific to First Steps' (early intervention) services for infants and toddlers with disabilities; and (b) to monitor programs that provide First Steps' services for infants and toddlers with disabilities and their families. Geographically, this project serves the counties within the Barren River and Green River Area Development Districts.

Two professional staff members, a program consultant, and a parent con-

sultant provide the training and technical assistance. The program consultant has professional experience in the First Steps' program, and the parent consultant has a child who received First Steps' services. Training and technical assistance to First Steps occurs



Brain research has documented the need for varied stimulation early in life.

through workshops, on-site consultation, and quarterly informational meetings. An extensive resource center with a variety of print and video materials is housed on Western's campus and is available for use by First Steps' providers and families within the region, as well as Western faculty and students. In addition, the program and parent consultants serve as staff to the regional First Steps' advisory groups, the District Early Intervention Committees, in both the Barren and Green River Area Development Districts.

One professional staff member, a monitoring specialist, ensures that the First Steps' programs in these two regions are following state policy and regulations in the implementation of early intervention services. The monitoring specialist also has professional experience in the First Steps' program. Monitoring occurs through paper review and on-site visits to programs on an alternating schedule. Written reports are provided to the Kentucky First Steps' office in Frankfort with any follow-up with programs initiated through that office.

College of Education and Behavioral Sciences Grant Addresses Diversity in Public School Leadership

Dr. Lois Jircitano of the Department of Educational Administration, Leadership and Research directs the WKU Administrative Leadership Institute-Principalship Program. This grant is funded at \$135,000 by the Kentucky Department of Education. It is designed to address the under-representation of minority administrators currently available in the State of Kentucky. Applicants are selected from several geographical areas, from

a pool of candidates serving in various positions in the Kentucky schools. Individuals are recommended for participation by building supervisors; and represent multiple disciplines, years of experience, and different grade levels.

Students can earn a Master's Degree in Education, while obtaining administrative certification. Upon graduation, students become eligible for employment in an administrative

capacity throughout the state. Several have achieved these positions during the four years the program has been in existence.

The WKU Kentucky Administrative Leadership Institute-Principalship Program has contributed to the development of a diverse corps of qualified leaders essential to assisting Kentucky schools to meet the challenges of a multicultural global economy in the 21st century.

WKU Projects Receive Research Enhancement Grants

Six Western Kentucky University faculty members have received awards totaling more than \$120,000 in the Kentucky NSF EPSCoR Research Enhancement Grants competition. Of the seven full \$25,000 awards made to universities in Kentucky, researchers in Western's College of Science and Engineering received three of them. The Research Enhancement Grants provide valuable seed money to support and encourage science and technology research and often supplement existing grants to move the state's research agenda forward.

The National Science Foundation established the Experimental Program to Stimulate Competitive Research

(EPSCoR) in the late 1970s to balance the geographical distribution of federal research funds. The goal of the Kentucky NSF EPSCoR Research Enhancement Grant Program is to encourage talented faculty to remain in the Kentucky education system and to strengthen undergraduate teaching and research in the areas of science and technology.

The WKU faculty members who received awards are:

Dr. Michael Carini, Physics and Astronomy, "Photometric Monitoring of BI Lacertae Objects," \$10,173.

Dr. Bonnie Furman, Biology, "Resurgence of Elk (*Cervus Elaphus*) in Kentucky: PCR-Based Standards for

Long-Term Population Monitoring and Use in Law Enforcement," \$25,000.

Dr. Sigrid Jacobshagen, Biology, "Circadian Output Pathways Studies in *Chlamydomonas*," \$13,439.

Dr. Doug McElroy, Biology, "Spectral Sensitivity and Tuning of ERG b- and d- Waves in Lake Malawi Cichlid Fishes," \$25,000.

Dr. Ralph Salvatore, Chemistry, "Cesium Base Promoted Chemoselective P-Alkylations for the Generally Efficient Synthesis of Substituted Phosphines," \$25,000.

Dr. Young-Seok Shon, Chemistry, "Synthesis and Technological Applications of Functionalized Dendritic Nanocapsule," \$22,450.

Western Leads Social Work Training in the Region

The Western Kentucky University Program of Social Work's Training Resource Center (TRC) is an adult professional development program. The Training Resource Center is a Federally funded project under contract with Kentucky's Cabinet for Families and Children. The TRC's primary client is the Training Branch for the Division of Community-Based Services.

Each year the TRC receives a grant in excess of \$100,000 to provide multipurpose adult professional development training for social, human, and juvenile justice services professionals. It addition, it develops quality educational experiences for at-risk and delinquent youth.

Western's efforts, through the TRC, are part of a larger public service effort. In 1989, Western became the first training consortium of what now includes all eight of Kentucky's public universities. The University Training Consortium (UTC) is a unique, nationally recognized profes-

sional development partnership between Kentucky's eight public universities and the Cabinet for Families and Children. Each year this partnership helps provide more than 2,400 training events.

The primary goal of WKU's University Training Resource Center is to support opportunities to further enhance the excellence in training, teaching, and organizational growth for those human service workers (which total nearly one thousand) in the regions of Barren River, Green River, and Lincoln Trail. Thus, nearly every county west of I-65 and east, from the Land Between the Lakes, is included.

The TRC is committed to providing adult and child welfare workers with the necessary professional training to meet the demands of their jobs, to enhance job performance, and to improve service delivery. As a service oriented program, the Training Resource Center has adopted five principles of opera-



tion which guide its efforts: quality and timely service, a spirit of collaboration, friendliness and sincerity, making the Center a good place to work, and the development of outstanding staff and students.



THE WESTERN KENTUCKY UNIVERSITY
RESEARCH FOUNDATION, INC.

PHOTO BY SHERYL HAGAN-BOOTH

In December 1998, President Gary Ransdell directed the formation of the Western Kentucky University Research Foundation, Inc. (WKURF) to facilitate and expedite scholarship at Western. His vision resulted in approval of the WKURF by the WKU Board of Regents in September 1999, the State of Kentucky in November, and by the IRS as a 501(c)(3) not-for-profit to serve the educational needs of Western and the community in February 2000. Since July 1, 2001 the WKURF has become operational as the unaffiliated fiscal agent of most external funds from grants, contracts, and cooperative agreements.

The WKURF is governed by a thirteen-member Board of Directors that is community-oriented. The Chair of the Board must not be a Western employee. Community members serving on the board hail from a variety of community agencies and businesses. Six members of the board represent Western's principal academic units. Serving the board in *ex officio* capacities are the WKU President, Chief Financial Officer, Provost and Vice-President for Academic Affairs, and the WKURF Executive Director, who is charged with the financial management and development of the foundation. A Business Manager assists the Board in ensuring that accountability, allocability, and consistency standards are met. The board's guidance and the cooperation of senior university officials have enabled the WKURF to implement a management agreement and financial procedures with WKU. Currently, the board is working to provide more incentives for faculty members performing research and creative activities.

The rapid growth of external funding in the form of grants, contracts, and cooperative agreements stimulated

the formation of the WKURF. Over the past five years the efforts of Western's faculty and staff members, along with their students, have increased external awards from \$11,500,000 to nearly \$23,000,000. The Foundation is thus a big step to the next level of funding. The goal is to reach the \$30,000,000 mark by June 30, 2006. However, the figures are not as important as the research, instruction, and public service programs that these funds make possible. New programs to increase student learning and faculty development are the results of these combined efforts. New positions in all of the academic colleges and many support units have invigorated Western with activities and infrastructures that would not have been possible under state funding alone.

The WKURF provides many services that would not otherwise be available to Western. It promotes financial flexibility, provides incentives for intellectual property opportunities, provides customized services for contracting with business and industry, and, most importantly, helps Western to attract and retain quality researchers. The WKURF accomplishes these services by promoting the development, implementation, and coordination of extramurally-funded sponsored programs. The investment policy of the Board of Directors has the potential for providing even more incentives to best accomplish our educational purposes.

We hope that you'll take an interest in the growth of the WKURF as one new feature among many exciting areas of growth of Western Kentucky University. You can reach the WKU Research Foundation at 270-745-4652 and ask for Dr. Phil Myers, the Executive Director, or e-mail research.foundation@wku.edu.