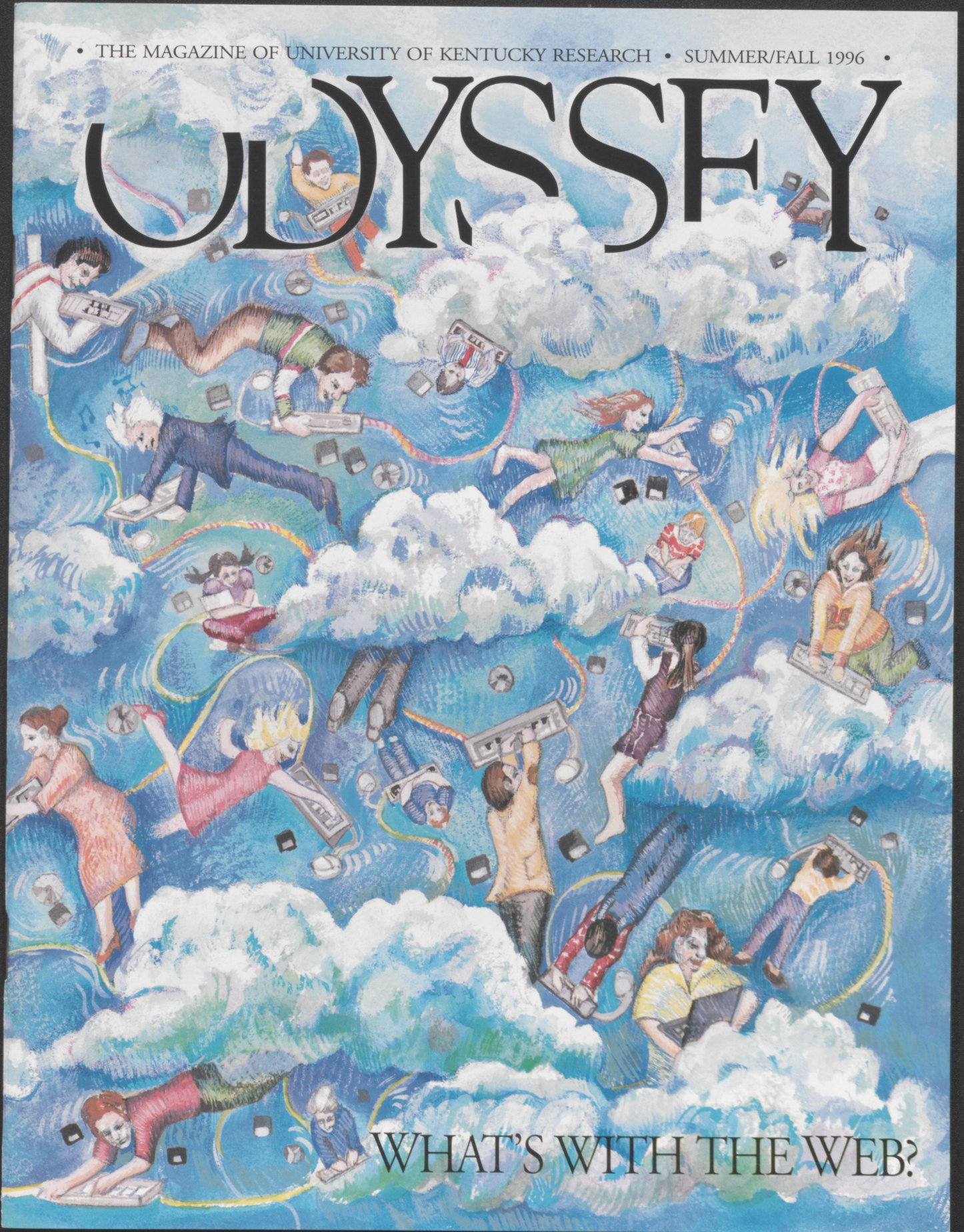
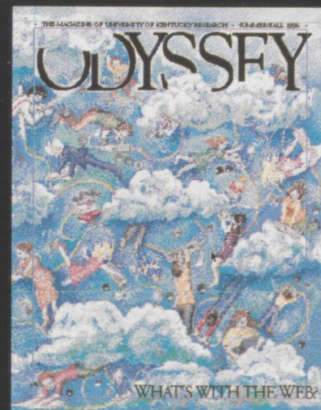


• THE MAGAZINE OF UNIVERSITY OF KENTUCKY RESEARCH • SUMMER/FALL 1996 •

ODYSSEY

WHAT'S WITH THE WEB?





The University of Kentucky, the commonwealth's graduate education and research institution, exists to provide opportunities for the education, personal growth and development of individuals and to contribute to the improvement of society.

With this mission as its premise, one goal of the university is to conduct programs of basic and applied research which support graduate and professional education, provide for the advancement of knowledge, and seek solutions for the acute problems of society.

The university's research mission also acts as a magnet for attracting top graduate students who want to participate in nationally competitive research projects. This research experience can offer them a significant advantage in their education while laying the foundation for future research and development. Odyssey, through articles about various research projects and graduate education programs, reflects the breadth of the university's search for new knowledge and the myriad of research endeavors under way. The progress that the university has made toward achieving its research mission and securing the extramural funds required to support these types of endeavors would have been impossible without the talents and dedication of our researchers.

The goal of Odyssey is to offer the reader the opportunity to share in some of the excitement, curiosity and creativity evident in the research under way at the University of Kentucky.

Copy 1

HONORABLE
MENTION

University Archives
Margaret I. King Library - North
University of Kentucky
Lexington, Kentucky 40506

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SUMMER/FALL 1996
VOLUME XIV, NO. 1

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Cover illustration by Teresa Shear

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Editor
Susan Hodgetts Stempel

Associate Editor
Jeff Worley

Designer
Shear & Shear

Production Manager
Lisa D. Lizer

President
University of Kentucky
Charles Wethington, Jr.

Vice President for Research and Graduate Studies
Fitzgerald Bramwell

UK
University of Kentucky

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Thank you so much for sending the maiden copy of the newly formatted *Odyssey*. It certainly is both an exciting and interesting production, for which you deserve a lot of credit. Well done.

Jay Katzen
Commonwealth of Virginia
House of Delegates

What a wonderful cover picture! Is this picture available as a poster by chance? I would love to have a copy.

Janet Leigh
Classes of 70 & 72
Virginia Cooperative Extension, Gloucester County Office

The article "Growing Old in the New Millennium" by Jeff Worley [Winter/Spring 1996 issue] was an extremely interesting one for an 80 year old. However, I was disappointed that a magazine reporting on research provided so little information about how the researchers arrived at some of their conclusions. For example, a statement that "...after some sophisticated number crunching... it is unlikely that the life expectancy at birth would increase much beyond 85." And "if no one ever died before reaching the age of 50...the increase in life expectancy would be only 3 1/2 years." These two statements would be more understandable and acceptable if they were supported by data and information about the statistical methods used.

Terrell L. Noffsinger
Auburn, KY

Our copy of *Odyssey* arrived yesterday. It really has strong mailbox appeal, and with the feet on the cover—raises one's curiosity. You're certainly blessed to have Lee Thomas' photography. It contributes mightily to the impact of the magazine, converting what could be dull head and shoulder photos into portraits of real people.

Suzanne Mitten Owen
Bloomington, IN

Correction: The cutline under Graham Rowles's photo in the last *ODYSSEY* was incorrect. The caption should have read, *Graham Rowles says that in the year 2030 the over-65 population of Kentucky is projected to be 802,000, double the current number of over-65 residents currently in the state.*

Odyssey Magazine welcomes letters from our readers. Our address is: *Odyssey* Magazine, Kinkead Hall, University of Kentucky, Lexington, KY 40506-0057. Fax 606-257-8298. E-mail: jworley@pop.uky.edu. Contributors should include their name, address, and daytime phone number. Letters are subject to editing for style and space limitations.



DOWNTOWN LEXINGTON: THE ANIMATED VERSION



James Black, a 1995 College of Architecture graduate, says that "construction" of a computer model of downtown Lexington has been slow but steady.

Lexingtonians may be surprised to learn that on the northeast corner of Main and Limestone streets there is a grassy pedestrian mall with trees, flowers and benches. If you know this downtown corner, you will be further surprised that this grassy area extends north for two blocks from Main to the Federal Building at Limestone and Barr streets.

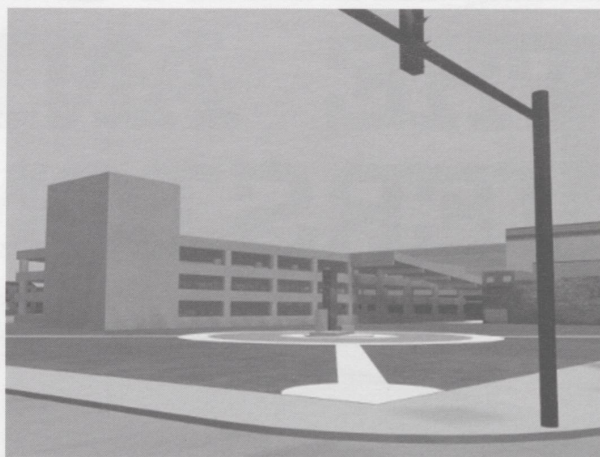
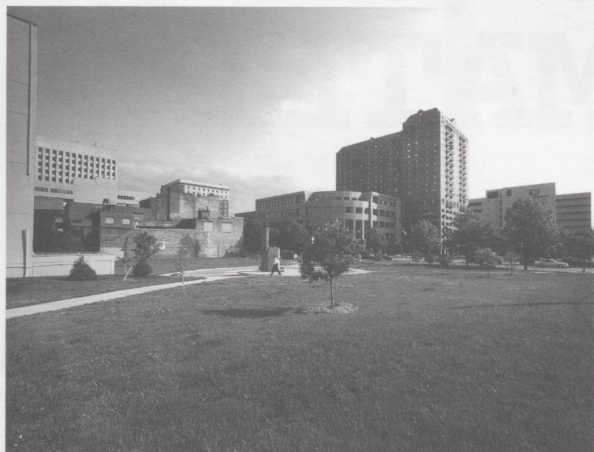
For now, this extensive renovation exists only as a three-dimensional, computer-animated version of downtown Lexington designed by the UK College of Architecture. But such glimpses into the city's future may be a harbinger for actual changes in the city landscape.

Developed by James Black, a professor in the UK College of Architecture, the 3-D Lexington "aniscap" was created with the same computer animation technology used in making the popular 1995 Disney movie "Toy Story." The UK program was developed using commercially available, "off-the-shelf" computer animation software and a new computer system.

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WRITTEN BY
JOHN DYER FORT
PHOTOS BY LEE THOMAS

The northeast corner of Main and Limestone streets (left) may someday have quite a different look (right). This "aniscap" version of the downtown corner has been developed by James Black in the UK College of Architecture.



Black, a 1995 College of Architecture graduate, learned computer-aided design (CAD) while a student at UK, taking advantage of the college's CAD courses. Last year, one of Black's original, computer-aided building designs won a national student competition sponsored by *Architecture Magazine* and Graphisoft U.S.

While architecture students have traditionally relied on everything from balsa wood to styrofoam to model their original designs, UK began encouraging students to use computerized modeling tools in the 1980s.

When the college received the computer animation package last year, Black and several architecture students began in earnest the

tailed layouts of Lexington city streets, buildings, parks and other facilities.

Next, architecture students took photographs of the fronts of Lexington's downtown buildings. The photos were then scanned by computer and "pasted onto semi-articulated models" of downtown buildings, Black says.

Photographing building facades and downloading their scanned images allows the computer system to go to work, "modeling in detail the buildings down to the bricks," says Black. Instead of a grid of streets lined by various-sized boxes, the computer can generate lifelike models easily recognizable to anyone familiar with the

So far, Black and his colleagues have created a fully rendered, computer-animated area of downtown Lexington roughly equivalent to 24 city blocks—south and north from Vine Street to Barr Street and the Federal Building, and east and west from Thoroughbred Park to Triangle Park.

task of creating a computerized version of downtown Lexington. The team quickly discovered that building a computer model of downtown—even with the advanced technology at hand—is a long and involved process, and "construction" has been slow but steady.

Building a computer model involves several stages. First, the college downloaded a computerized "floorplan" of downtown Lexington into their computer's memory. The digitized, one-dimensional layout of the city was made from aerial photos taken of Lexington and were provided to the college by the Lexington-Fayette Urban County Government. The floorplan provided de-

structures of downtown Lexington.

The amount of detail and the size of the area included in the computer animated model are "up to the resources," adds Black. "Right now, the hard drive can only do so much, we have only so much RAM, the software can only hold so many materials."

So far, Black and his colleagues have created a fully rendered, computer-animated area of downtown Lexington roughly equivalent to 24 city blocks—south and north from Vine Street to Barr Street and the Federal Building, and east and west from Thoroughbred Park to Triangle Park.

ODYSSEY

ODYSSEY

As it stands, the 3-D model of Lexington has many advantages. The animation system allows the user to explore Lexington from a seemingly infinite number of angles and points of view. Since all the downtown coordinates are mapped out in the computer's memory, the program automatically renders a scene depending on the chosen point of view, complete with accurate landscape perspectives, scaling, a powder blue sky and white puffs of clouds in the distance. A "visitor" can choose between a bird's-eye view of Lexington, "walk around" and see the city from street level, or view a scene from a city bench.

With the help of senior architecture students Dave Silvernell, Jeff Pickett, and several other students, Black has started putting together a series of video visits through down-

takes 500 minutes.

"Each frame has a possibility of 16 million colors," Black explains. "The computer puts them together in these movie files, which are full resolution, TV resolution, so we can videotape them. To flip through this much information that fast takes a lot of computer power and that's what our new equipment does," Black adds.

In addition to recreating downtown as it appears today, proposed changes can be made to the computer model, replacing old buildings, empty lots and existing streets with new buildings, parks and pedestrian-friendly streets. While creating alternate versions of downtown is one way to show what the new computer modeling system can do, the computer animation system also allows students to present models of their original designs

one-way city streets with two-way lanes divided by large parking islands with easy, diagonal parking.

With the help of Black and architecture instructor Randall Stevens, who teaches some of the college's CAD classes, students have created original, alternate designs of parts of downtown Lexington, including a two-block pedestrian mall for the vacant Snyder Block at Main and Limestone streets, as well as pedestrian-friendly designs with more on-street parking for Main and Esplanade streets near the Kentucky Theater.

In addition to exploring the city of the future, the college plans to use the new computer animation system to help preserve Lexington's past. The college is seeking approval to offer an architecture major in historic preservation, redesigning, reno-

In addition to recreating downtown as it appears today, proposed changes can be made to the computer model, replacing old buildings, empty lots and existing streets with new buildings, parks and pedestrian-friendly streets.

town—several short, animated "walks" through a three-dimensional model of Lexington. The video includes easily recognizable features of historic Lexington, from the Kentucky Theater marquee extending over Main Street to the otherworldly rock formations of Phoenix Park's boulder pool.

The animated videos—complete with soundtrack—are complex and time-consuming to make. Like a director of a film, the user sets up several shots and decides where to place the "camera." After the area of the model to be shot and the point of view are chosen, the computer system runs through the vast sequence of coordinates and renders the scene frame by frame, producing a "real time" video. A simple three-second shot looking west down Main Street takes a hundred frames to render.

"The computer renders the frame individually in about five minutes, then goes on to the next frame," Black explains. "A hundred frames, about three seconds of video,

created for class. Many of the designs represent improvements in urban appearance, convenience and safety.

One such change envisioned is to make downtown's one-way streets handle two-way traffic and to add large pedestrian islands. This design represents a new trend in urban thinking, the opposite of vehicle-oriented street design that dominated downtown planning for the last quarter century. With many downtowns all over America in decline, city planners hope to encourage a slower, more park-like atmosphere that pedestrians would want to visit and spend time in. Vehicle traffic is purposefully slowed and made safer using two-way streets with larger sidewalks, medians and "pave-throughs," brick paths equivalent to current crosswalks.

Downtown design of the future would also provide more on-street parking and encourage people to visit downtown businesses and walk city streets. Various plans made by architecture students have substituted wide,

vating and finding new ways to use old buildings.

Associate professor of architecture Mark O'Bryan recently used a computer-animated model for a presentation at the University of Louisville to describe the revitalization of Louisville's historic Russell neighborhood, an urban area that has suffered years of decline.

"It's good to test the limits of this technology," O'Bryan says, "and explore all the possibilities of video computer animation. And it's been a lot of fun." ☐

Contact James Black in the Department of Architecture for information about a video of the 3-D downtown project described in this article. The project can also be accessed via the internet <<http://www.uky.edu/Architecture/dt/dthome.html>>



WHAT'S WITH THE WEB?

The World Wide Web is being used more and more as a teaching tool. How can it be useful? Will the Web gradually supplant the teacher in the classroom? Will the Web help to redefine the word *learning*?



t Cyberspace University there are no tree-lined lawns with benches dedicated to the "Class of '46," no classrooms or dormitories, no libraries with dusty shelves and *no basketball*—all of which may make some Kentuckians feel downright bewildered by the ruckus caused by computers.

Thanks to the World Wide Web (WWW), the modern university is extending electronically across the globe so that now research labs can share their latest findings instantaneously. Anyone at the tap of a few keys can find Web sites dedicated to the popular or the arcane, and foreign exchange students on American campuses

can stay in touch with family and friends from around the world.

For a new generation of college students—many of whom began to go on-line almost as soon as they learned to read—the personal computer may be as familiar as a well-thumbed dictionary and as intriguing as Captain Kangaroo's magic drawing board was for kids a generation ago. On today's increasingly electronic campus, there is nothing unusual about browsing the library's circulation catalogue from the comfort of a dorm room or e-mailing composition themes to instructors across campus.

Universities have both largely contributed to, and been the beneficiaries of, the World Wide Web, but government offices, commercial industries, entertainment companies and thousands of at-home network subscribers have made the Web a sort of universal coffee shop, electronic newspaper and classic Greek symposium all in one. In terms of sharing ideas and information and communicating with far-flung colleagues, the Web does resemble the traditional university: there are a vast number of "rooms," from libraries, research outlets and academic offices to social hangouts, TV and

music lounges and spots to hear news, sports and the latest gossip.

GETTING LAUNCHED INTO CYBERSPACE

In the King Library's computer microlab, WWW resources librarian Rob Aken works with about 15 students, each of whom is seated in front of a computer terminal. The students are enrolled in Communications 449, "The Social Processes and Effects of Mass Communication," taught by communications professor Ramona Rush. Aken, a librarian at UK for 12 years, regularly introduces students to the library's computer resources, including how to access and navigate the World Wide Web. The Web, Aken tells them, is basically an "inter-connected collection of networks."

In conjunction with instructional sessions, Aken sometimes works with professors from departments throughout the university in designing and creating a "Home Page"—a specifically designed site on the UK server that acts as a doorway into the Web for each class. A home page resembles an illustrated library directory and class newsletter with direct links to a wide

WRITTEN BY
JOHN DYER FORT
PHOTOS BY LEE THOMAS

array of information resources found by both the professor and Aken—resources that would take students working on their own hours to find. For the COM 449 home page, the resources available include information on the environment and the media which is gathered from government agencies, social and environmental watchdog groups and research, and not-for-profit organizations which actively publish on the Web. There's even a list of popular movies, such as "Blade Runner" and "Mad Max," having to do with "eco-dystopias."

"In the old library," Aken explains to the students, "you look up a catalogue number, then look on the shelf and, hopefully, find your book, which of course stays the same no matter how many times someone reads it. On the Web, items are catalogued via an internet address, and the 'books' can change every day."

While the sheer volume of information and resources on the Web may often be overwhelming, Aken explains that the technology behind it is still in its infancy. "In terms of a car," Aken says, "we're not to the Model T."

Nonetheless, Aken jokingly warns students, "keep your class schedule near you so you can remember you have class to go to." None of the students smile or look up when he tells them this: they are too busy looking at their screens and pecking away at their keyboards.

TEACHING THROUGH THE WEB

Ramona Rush, UK professor and former dean of the College of Communications, has studied and written about mass communications and the electronic media for more than 40 years. She has been an enthusiast of computers since the 1960s, when



*Government offices,
commercial industries,
entertainment
companies and
thousands of
at-home network
subscribers have
made the Web a sort
of universal coffee
shop, electronic
newspaper and
classic Greek symposium
all in one.*

the first software packages were developed for the "big" computers at campuses all over the U.S.

Rush has seen computer technology change significantly, from the days when computer programming meant lugging around heavy trays containing hundreds of carefully ordered punch cards to be run through a card sorter/counter. Her "hands-on" experience with this now ancient technology included, as a graduate student at the University of Wisconsin, "spilling a whole shopping cart of punch cards in the busiest street in Madison."

With the help of Aken, Rush developed a home page on UK's computer network where students can easily access the various electronic resources available to them, including the Web. First used for COM 453, Mass Communication and Social Issues, and CJT 619, Global Information and Communication Perspectives, Rush says the home page evolved over two years. Aken says this home page is a model for other courses taught at UK.

Rush describes Aken as "our guru on the Web. He works at the Web far more than I can. He keeps up with new resources appearing every day. I'll check them out and if they're good for my courses, I'll put them on the home page."

Rush believes many college students today are caught in a "computer gap"—between an older generation forced to become computer proficient at a relatively late age and a younger generation that has been exposed to computers since toddling off to grade school. "Students today have to be exposed to the Web. They have little brothers and sisters going to computer camps."

In addition to traditional materials such as books and periodicals, Rush requires her

continued on page 8

students to use electronic sources when writing class papers. "Students didn't take me seriously when I told them I wanted them to use the home page to locate their electronic sources," Rush says. "Then they became really interested once they started to use it. Now they say, 'You won't believe what I found!'"

Eventually, Rush sees a day when the home page will evolve into a hypertext, multi-media college course. "It'll bring video, film, audio, all the printed material I want them to read, everything they need in one place. It's all there."

BIOINFORMATICS

The School of Biological Sciences' Chuck Staben represents a newer generation of college professors who have been using computer network resources since their own graduate school days or earlier. Staben came to UK in 1989 after receiving his doctorate from the University of California at Berkeley in 1984 and doing postdoctoral work at Stanford.

Energetic and talkative, Staben admits to occasionally "fooling around on the computer when I should be home with my family." In addition to using the computer in his molecular biology research, Staben utilizes it in teaching and advising his biology students.

For example, Staben has used resources on the Web to develop "demos" to show in class. One such image, published by the National Institutes of Health, is a detailed, full-color "virtual DNA molecule." In one of Staben's classes, DNA molecules and proteins are colored, moved, and rotated by students so that they better understand these structures. Using a computer projector in the School of Biological Sciences microlab, Staben also projects large-scale images of these molecules during class lectures.



In addition to finding resources for his students, Staben has used the Web in his research, developing professional contacts in his own fields of mycology and molecular biology, using bibliographic search services and accessing a variety of biological data bases.

One of the most important tools available on the Web is a vast library of DNA sequences, protein sequences and analysis programs (WWW address: www.niti.gov). Some information is "too large" to be published in books, and cannot be manipulated or analyzed easily without a computer, Staben explains. "Around 1980, biologists started archiving genetic information, making it available on computer networks. This information has been accessible to biologists for years, but the amount of information has mushroomed and access has improved," Staben says. "Some labs are even putting their protocols on the Web," he adds, referring to the carefully designed research methods and investigative procedures labs use to conduct their studies.

Staben also wrote the department home page for the School of Biological Sciences (WWW address: www.uky.edu/ArtsSciences/Biology). "Now undergraduates and graduate students can find out about our programs and faculty on the Web," Staben says, a handy information-gathering method he uses himself. "Before giving a seminar at Georgetown University not long ago, I

realized I had no idea who I was going to talk to," Staben says. "I got on the Web and looked up the microbiology faculty so I'd know who they were."

For the last year or so, Staben has been preparing to teach a new "Web intensive," computation-based course at UK called "Bioinformatics," which is listed in the class catalogue as Arts and Sciences 500. Staben will be teaching the course, which will combine modern molecular biology with information-gathering and networking techniques, this fall.

There are only about 10 to 20 such courses world-wide right now, Staben says, that specialize in bioinformatics. He hopes to teach a diverse mix of undergraduate and graduate students majoring in the physical sciences, and also cross-disciplinary students interested in innovative methods in scientific research.

"WEB 102"

Some students enrolled in English 102—the traditional second-semester composition class endured by generations of college students—are experiencing a new spin on an old theme. Several course sections offered by UK's English department are now designed to introduce students to writing on the Web and creating their own home pages.

Second-year English master's student Gardner Rogers is one of the graduate students teaching the new course, first offered by UK in the spring 1996 semester.

"We spend a lot of time looking at Web pages. We ask students to incorporate the writing skills they learn into their own pages," says Rogers, who made the 1995 List of Excellent Writing Program Instructors (compiled by the English department), with the special distinction of being the only instructor ranked excellent in every section he has taught.

In addition to the time-honored challenge of developing and refining their writing skills, students in Rogers' class must learn to use the Web and write in a new language called "Hypertext Markup Language." HTML, as it is referred to, is an interactive computer language that organizes and links text and graphics on a page. HTML, used universally throughout the Web, allows a reader to electronically skip over a page, from text to graphics and back, and even to jump ahead to other related ideas and sources.

"Basically, it's easily learned," Rogers says. He assures his students that "It's a class in English and not computer science."

So far this semester, Rogers says the class is "an interesting mix. Some students are really excited about the Web and looking forward to it and some students are intimidated."

This summer, Rogers says, the English department's Writing Program intends to set up Web pages so that students can go look up course materials and examples of papers required in a course. Also in the works is an on-line writing lab. "This is the work of Gail S. Cummins, head of the Writing Center," Rogers says, "and is something we've seen other universities do. It'll give a real presence to the Writing Program at UK," Rogers adds. "We won't be confined to a little bound Source Book the students buy."

"The underlying assumption for the future is that the World Wide Web is here to

RAMONA RUSH BELIEVES THAT MANY COLLEGE STUDENTS TODAY ARE CAUGHT IN A "COMPUTER GAP"—BETWEEN AN OLDER GENERATION FORCED TO BECOME COMPUTER PROFICIENT AT A RELATIVELY LATE AGE AND A YOUNGER GENERATION THAT HAS BEEN EXPOSED TO COMPUTERS SINCE BEGINNING GRADE SCHOOL.



Some worry that not so far in the future the traditional university may be competing with the Web for the attention of students and faculty.

stay," Roger says, "and the Writing Program sees writing as a very necessary skill."

COURTROOM SLEUTHING ON THE WEB

When Sheila Donovan, a first-year student in UK's College of Law, was assigned a paper in her contracts class, she wasn't sure

where to turn for information. The case involved a recently filed lawsuit by Brown and Williamson Tobacco Company of Louisville against former industry-executive-turned-whistle-blower Jeffrey Wigand—a case so current that Donovan feared traditional library resources would prove unhelpful.

A further complication was the typical behind-the-scenes legal maneuvering going on between the two parties. Rumors had it that Wigand had secretly co-

operated with the Mississippi State Attorney General's Office and filed a deposition claiming Brown and Williamson had known for 20 years that cigarette smoking was harmful—evidence the state was planning to use to file a massive lawsuit against the tobacco company. In response, Brown and Williamson sued for an injunction in a Louisville court against Wigand who, as a former executive of the company, had signed an agreement never to disclose company secrets.

At issue in Donovan's law class was the rights of industry to protect trade secrets versus the protection of public safety. Her personal feelings to the contrary, Donovan

continued on page 10

was assigned to argue on behalf of the tobacco company "to protect its trade secrets and have litigation resolved behind closed doors and not in the public eye."

Unsure where to begin, Donovan began checking sources on the Web at the suggestion of a fellow law student. To her surprise, she found more than she expected. First, on the "Court TV" Web site, she found a complete copy of the actual court document filed by Brown and Williamson seeking an injunction against Wigand. "I would have had to go to Louisville to get a copy," Donovan says, "which I doubt I would have done." By having a copy of the injunction, she now knew the arguments and previous court cases the lawyers for Brown and Williamson were using to block Wigand's testimony. But she didn't stop there.

Browsing the Web even further, Donovan found a copy of Wigand's original deposition on the "Wall Street Journal" site—secret testimony that was not intended for public consumption. "The deposition was supposed to be confidential," Donovan says. "Obviously, somebody in Mississippi that was pretty high up let it get out because it's the complete document."

"The funny thing is," Donovan adds, "one of the last things on the deposition was the question someone asked, 'Can we trust this not to get out?' You know, there's a roomful of lawyers and stenographers and court employees. And someone says, 'No, these people can all be trusted.' Now any-

ROB AKEN SAYS THAT WHILE THE VOLUME OF INFORMATION AND RESOURCES ON THE WEB MAY BE OVERWHELMING, THE TECHNOLOGY BEHIND IT IS STILL IN ITS INFANCY: "IN TERMS OF A CAR, WE'RE NOT TO THE MODEL T."



one who wants to get it can. It's floating around in cyberspace."

A SMALL WORLD

As is the case with many of UK's graduate programs, students at the Martin School of Public Policy and Administration come from all over the world. With the crumbling of the Iron Curtain and the opening up of Eastern Europe, students from countries such as Poland and the former Czechoslovakia are taking advantage of educational opportunities in the U.S.

Initiated by Congress in 1989, the East Central European Scholarship Program was designed to promote privatization and democratization in these countries. So far, the ECESP has brought several hundred local

democratic leaders, rural managers and small businessmen to U.S. campuses on scholarship.

Arriving at UK in January of this year, Tomas Vlasak of the Czech Republic, and Igor Otcenas and Stano Kosima, both of the Slovak Republic, are enrolled in the Martin School on ECESP scholarships. In addition to adjusting to the rigors of university classes and acclimating themselves to a different culture, the three men will be without their families while in the U.S. Fortunately, all three are able to keep in touch with their families, friends and colleagues back home through the World Wide Web.

While finding a computer linked to the Web at UK is no problem, on the other end resources are much more limited.

Otcenas says computers in the Slovak Republic are considered a luxury. The limited government resources required to buy computers for schools and businesses are needed to provide basic health services and safety programs. In addition to computers, money is lacking to develop computer networks and purchase modems and telephone service.

Otcenas, who lives in Bratislava, is a former journalist and now an executive for a firm that produces and distributes films and videos. He estimates there might be "1,600 people with access to the Web in a country of five million people."

Also from Bratislava, Kosima, who "teaches computers at the Academia Istropolitina," or Institute of Advanced Studies, is a bit more fortunate when it

comes to computer access. At the institute where he works, Kosima says there are 60 computers among the 20 employees there.

Originally trained as a physicist, Kosima switched to computers due to the lack of funding traditionally available for scientific research. He remembers "smuggling my first computer from Germany in the gas tank of my car 15 years ago" because computers were not available in the former Czechoslovakia. "I bought my first PC in 1988," he says.

Before he left, Kosima hooked up his computer and a new modem in his home in order to stay in contact with his family. He is also able to communicate over the Web with his colleagues at the institute.

Vlasak, a magistrate in the city of Pardubice in the Czech Republic, left behind a three-month-old baby girl when he came to the U.S. in January. Using the Web, he manages to stay in contact with his wife and six-year-old son through "a friend of the family with a modem" and computer. While acknowledging that computer networks are often limited to a "special, small group of friends," Vlasak estimates there are at least 60 e-mail addresses and network sites in the Pardubice city hall alone. He also knows of two professors at the nearby university who use the Web.

In addition to keeping in touch with family, all three students hope to use the Web to transmit and share what they are learning in the U.S. with colleagues, public officials and business associates back home. Otcenas, using e-mail, sent an article he wrote for the Martin School to his native



TOMAS VLASAK, A SCHOLAR AT THE MARTIN SCHOOL FOR PUBLIC ADMINISTRATION, USES THE WEB TO KEEP IN TOUCH WITH HIS FAMILY IN THE CZECH REPUBLIC CITY OF PARDUBICE. FROM LEFT TO RIGHT ARE HIS WIFE HELENA, HIS EIGHT-MONTH-OLD DAUGHTER KRISTYNA, AND HIS SEVEN-YEAR-OLD SON TOMAS.

Stano Kosima from the Slovak Republic remembers "smuggling my first computer from Germany in the gas tank of my car 15 years ago" because computers were not available in the former Czechoslovakia.

Slovak Republic. Kosima plans to use the Web to research issues concerning public safety administration. "I use the Internet in Slovak, but it often takes too much time to reach the U.S.," he says. "Now, I can get more information and get data to write a paper on public safety."

The World Wide Web also contains many popular "non-academic" features, including specialized "chat rooms" where people with common interests can talk to each other on-line, share new information and generally point each other in new and related directions across the Web. There can also be found a variety of on-line magazines written by students and faculty. In fact, the Web seems limited only by what people can download onto computers—an electronic cornucopia that currently includes film, three-dimensional video, music, music videos, sound, speeches, whole libraries of books, encyclopedias, periodicals and reference materials, accurately colored and detailed images of paintings, photos and graphics, mega-databases, interactive communication tools and on and on.

Some worry that not so far in the future the traditional university may be competing with the Web for the attention of students and faculty. Others insist that the intimate, flesh-and-blood contact that universities were founded on can never be replaced by interactive networks, no matter how innovative and exciting the technology may become. While the argument goes on, the new-age love affair between universities and the Web continues. ☒

KENTUCKY WOMEN:

LOSING
THE
FIGHT
AGAINST
ALCOHOL
AND
DRUGS



WRITTEN BY
MARGUERITE FLOYD
PHOTOS BY
LEE THOMAS

She's 24. She managed to get through the 11th grade. She has one child and is pregnant with her second. She grew up in a dysfunctional family where she most likely suffered physical abuse.

While there's no such thing as a "typical" Kentucky woman with a substance abuse problem, Jeanne Keen, program coordinator of PRIDE (Perinatal Recovery Infant Development and Education) in Lexington, was able to sketch this composite from statistics about women who enter the PRIDE program.

Kentucky women with alcohol or drug addictions face a myriad of obstacles that would daunt the strongest person without addiction problems. And far too often, these barriers stand between women and the treatment and other services they desperately need.

The unique problems of Kentucky women addicted to drugs or alcohol have been receiving special attention for several years. The Kentucky Legislative Task Force on Alcohol and Drug Use During Pregnancy was established in 1990 to examine the extent of the problem. One result of the findings and recommendations from the 1990 Task Force was the passage of House Bill 192. Among the mandates included in this bill is the requirement that all businesses that sell alcohol, as well as all private doctors' offices, post notices warning women that drinking alcohol before conception or during pregnancy can cause birth defects.

Another result of House Bill 192 was the establishment in early 1993 of the Substance Abuse and Pregnancy Work Group to continue the work of the Task Force and study the special needs of pregnant women with substance abuse problems. This group collaborated with the Kentucky Coalition for Women's Substance Abuse Services to produce a comprehensive study published as *Kentucky Women Are Losing the Race: Alcoholism and Other Drug Addiction* (1995).

"Kentucky is one of only a few states focusing so much energy on this problem," says Carl Leukefeld, director of UK's Center on Drug & Alcohol Research. "Few, if any, other states have an organization such as UK's Institute on Women and Substance Abuse to help meet the needs of chemically dependent women."

The High Costs of Abuse

Chemical dependency, the compulsive use of drugs and/or alcohol, is a chronic, progressive disease. "This is something that can happen to absolutely any one of us," says Alayne White, director of UK's Institute on Women and Substance Abuse. "No one is immune to chemical dependency." According to a Substance Abuse and Pregnancy Work Group report in 1994, the five most abused substances in Kentucky were alcohol, cocaine, marijuana, opiates, and barbituates/benzodiazapines.

It is estimated that 82,000 Kentucky women abuse alcohol or drugs. Of these, 60,000 (nearly 73 percent) are of childbearing age. Each year, from 4,000 to 6,000 Kentucky newborns will have been exposed in the womb to alcohol or other drugs.

The costs of chemical dependency are enormous. In monetary terms alone, the 1990 Task Force found that "Kentucky's portion of alcohol and drug abuse costs to the national economy is \$2.16 billion annually, or \$584 yearly to each man, woman, and child in Kentucky."

But beyond the financial cost is the far greater human cost.

A newborn who was exposed to alcohol or drugs while in the womb is likely to be



underweight and have neurological damage. As the child grows she may have learning disabilities, a shorter attention span than her peers, or suffer mental retardation.

Worse, perhaps, than the physical damage to the child is the environment in which she will probably be raised. Many women with substance-abuse problems live with men who also have such problems. The 1990

Of the 82,000 Kentucky women abusing drugs or alcohol, nearly 73 percent (60,000) are of childbearing age.

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"ANYBODY CAN BECOME CHEMICALLY DEPENDENT," SAYS ALAYNE WHITE, DIRECTOR OF UK'S INSTITUTE ON WOMEN AND SUBSTANCE ABUSE. "NO ONE IS IMMUNE."

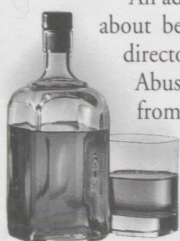
KENTUCKY WOMEN

Task Force reported that a home where substance abuse is a daily part of the environment can be chaotic, and spouse and child abuse and child neglect may be common occurrences.

It's an ugly and damaging cycle: children who grow up neglected and abused are at increased risk for abusing alcohol and drugs. The problem is passed, like a bad gene, from generation to generation.

Roadblocks to Treatment and Recovery

Shame and stigma are the biggest obstacles a chemically addicted woman faces—both her own shame and her family's shame. "Women are expected to keep their bodies 'clean' to protect their children or future children—an expectation not held for men. And this stereotype of chemically dependent women as immoral, unfit mothers causes tremendous guilt and shame for women trying to face their disease," says White.



"The stigma in this town is awful. Many of the women who attend AA meetings, their husbands think they're at the grocery store."

—from *The Gehshan Report*



"WOMEN METABOLIZE ALCOHOL DIFFERENTLY FROM MEN AND REACH PEAK BLOOD ALCOHOL LEVELS FASTER," SAYS JEANNE KEEN.

"An addicted woman already feels a great deal of shame about being addicted," says Barbara Ramlow, assistant director of the Institute on Women and Substance Abuse. "She's probably trying to hide her addiction from family members and uses the drugs or alcohol in secret. Add into the formula a history of abuse, and the woman suffers infinitely more," says Ramlow. "She doesn't feel worthy of getting help. She thinks she's bad and is being punished; and she believes she deserves the punishment. She simply doesn't believe that things can get better."

Depression, which is often an attendant result of substance abuse, can isolate and immobilize a woman, causing

her to feel that getting help is a hopeless waste of time. Other frequent barriers to treatment include lack of transportation and the financial means to pay for treatment.

Fear of what might happen to their children is another major obstacle for addicted women who consider getting help. Will her children be taken away from her or put in a foster home while she's in a treatment program? If she's attending an outpatient program she may not be able to afford child care or have family members willing or able to care for her children.

Keen explains that the Department of Social Services can and does remove children from the home until the mother receives treatment. "It's difficult to gauge how a mother's chemical addiction affects her kids," says Keen. "Many chemically dependent people are good parents, but we do know that child abuse and/or neglect may be common in households where one or both parents are out of control due to their addiction."

An Important Gender Difference

Recognizing and diagnosing a woman with a drug or alcohol addiction can be tricky and can keep a woman from getting help. Because most research on substance abuse prior to 1984 was done with male subjects, with the results generalized to women, it is only recently that researchers have been able to accurately describe the differences between male and female substance abusers. Women who abuse drugs or alcohol develop serious health problems faster than men.

"For example, women metabolize alcohol differently from men and reach peak blood-alcohol levels faster," Keen explains. "Many women have less of a liver enzyme called alcohol dehydrogenase. This enzyme forms a protective barrier and helps to break down alcohol before it can be absorbed into the bloodstream. Alcoholic women have virtually none of this enzyme." Keen also notes that it's difficult to predict the effects of alcohol because of a woman's individual estrogen cycles.

"Women not only tend to become alcoholic more quickly than men, they also tend to have attendant health problems such as

KENTUCKY WOMEN

In 1992 the Federal Drug Enforcement Administration listed Kentucky highest in the nation for misuse of codeine.



anemia, liver disease, hypertension, malnutrition, and breast cancer; and these will show up at a quicker rate," says White. "By the time most women get into treatment, they're very sick—not only physically sick, but they've often lost the important connections in their lives."

Physicians and other professionals often misdiagnose or ignore chemical dependency in women, and are more likely to over-prescribe and encourage the use of other drugs, which makes the woman's abuse problems worse.

"I was taking 30 Xanax a day," a 20-year-old Kentucky woman told researchers for The Gehshan Report, a two-year study of infant mortality conducted in four areas of the U.S. and Puerto Rico (10 counties in northeastern rural Kentucky constituted one of these areas). "I was miserable. But my husband said, 'You don't have a problem, you ain't no junkie, you aren't doing drugs, you're just doing what the doctor said.'"

The Gehshan Report found that prescription abuse was higher in Kentucky than in the other areas studied, and in 1992 the Federal Drug Enforcement Administration listed Kentucky highest in the nation for misuse of codeine.

"Women seek help from physicians more often than men do," says Ramlow. "And when a woman describes symptoms of psychosocial distress to her doctor, she's often given a prescription. A 1989 study showed that three-fourths of all legal psychotropic prescriptions (drugs that act on the brain) in the U.S. are written for women."

The Violence Factor

The Gehshan Report also found over half of the women studied at the Kentucky sites mentioned that an abusive

CONTINUED ON PAGE 16

KENTUCKY WOMEN

relationship or a history of abuse kept them from getting help, far more than at any of the other sites studied. Studies have shown that between 45 to 90 percent of women in treatment have been childhood or adult victims of physical or sexual abuse, including incest. "About 90 percent of women throughout the nation who enter treatment for substance abuse are victims of childhood sexual abuse and physical violence," says White.

"When a child is abused she believes it was her fault," says Ramlow. "Children simply cannot comprehend an all-powerful adult being out of control, and they will give themselves all sorts of reasons why they brought the abuse upon themselves." This internalized sense of "causing" the abuse steadily erodes the child's sense of self-worth until she believes she deserves every bad thing that happens to her, and she carries that belief into adulthood.

Getting Help

Once a woman overcomes the internal and external barriers and is ready to enter treatment, she needs a wide range of services in order to recover. "You can't take a woman out of her world, drop her into a 28-day treatment program, and ignore everything else that might be going on in her life," says White. "We need to work with women through the relationships in their lives. We have to look at the systems that are going to be needed to help support their recovery."

A comprehensive continuum of community-centered services is needed, states White. Some of these services include psychiatric and

"I remember when I was pregnant. My doctor told me to drink beer — that it would help my milk."

—a Louisville woman

other mental health care for women and their families, housing, transportation, child care, and parenting and other life-skills classes.

White adds that often one of the issues that's important to a woman's

long-term recovery is the ability to be self-sufficient. Many of these women are single, or are single mothers, so it's important to look at their level of education, their job training, their ability to get jobs," she says. "We also have to look at housing issues for these women," says White. "Finding safe, drug-free housing can be an incredible problem for women."

"It's important that this issue become part of the women's health-care agenda," says White. "It's important to recognize that these women are not 'bad,' and that they can be helped. Treatment *does* work; we just have to get them into treatment sooner. If we continue

to ignore this issue we're just allowing them to die."

The Problem of Funding

Kentucky currently has two perinatal programs: PRIDE in Lexington and Project Link in Louisville. Both programs are funded by federal dollars, which will run out within 18 months.

Kentucky Governor Paul Patton did provide for continued funding for these programs in his current budget. However, the current state legislature failed to fund House Bill 275, which would have implemented many of the recommendations in *Kentucky Women Are Losing the Race*.

"This is a very unfortunate turn of events for all the women of Kentucky," says Leukefeld.

Keen, however, feels more positive about the experience with the state legislature. "The bill stayed alive a lot longer than we thought it would. It was a learning experience for all of us, and we'll be even better prepared the next time."

White agrees. "It's very positive that we've been able to mobilize people in every mental health region in this state to contact their legislators about this issue. It's probably the first time in Kentucky this has happened."

Ramlow adds, "We're looking forward to the upcoming session of the General Assembly to revisit the issues and recommendations of *Kentucky Women Are Losing the Race*." ■



BARBARA RAMLOW: "AN ADDICTED WOMAN FEELS A GREAT DEAL OF SHAME ABOUT BEING ADDICTED. SHE THINKS SHE IS BAD AND IS BEING PUNISHED—AND THAT SHE DESERVES THE PUNISHMENT."

HONORABLE MENTION

COMPILED AND EDITED
BY SUSAN HODGETTS STEMPEL

IMPACT AND ACHIEVEMENTS OF UK GRADUATE PROGRAM ALUMNI

STORY MUSGRAVE,

M.S., Physiology and Biophysics, '66, was selected as a scientist-astronaut by NASA in 1967 and is the veteran of five space flights. He served aboard the Challenger on its maiden voyage, aboard the Space Shuttle Discovery, the Space Shuttle Atlantis and, most recently, as the payload commander aboard Space Shuttle Endeavor, the first Hubble Space Telescope servicing and repair mission. Among his many honors are two NASA Exceptional Service Medals and the NASA Distinguished Service Medal, which he received in 1992. At UK, Musgrave studied with professors Loren Carlson and Fred Zechman on projects focused on spaceflight physiology. He considers Lexington, Kentucky, to be his hometown.

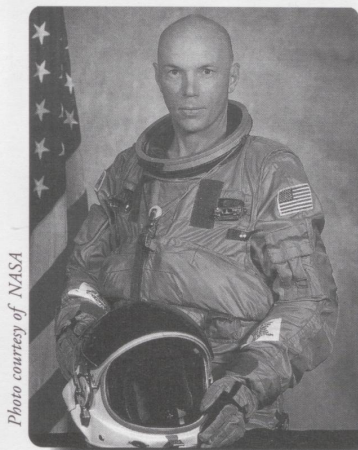


Photo courtesy of NASA

STORY MUSGRAVE RECENTLY SERVED AS THE PAYLOAD COMMANDER OF THE FIRST HUBBLE SPACE TELESCOPE SERVICING AND REPAIR MISSION.

JOSEPH G. WETTSTEIN,

Ph.D., Pharmacology, '84, works in Strasbourg, France, as a group coordinator in psychopharmacology with Hoechst Marion Roussel. At UK, along with W.R. Martin and J. Flesher in the Department of Pharmacology, he worked on a research project assessing the effects of "opiod antagonists." Wettstein says that his most significant scientific achievement to date is that he built and directed a department of pharmacology at a small drug company in Freshnes, France. He is married and has two children.

DON C. KELLY,

M.S.C.E., Civil Engineering, '67, received a Governor's Excellence Award for Environmental Leadership in Government in 1995, and is currently Kentucky's Secretary of Transportation. One important accomplishment to date is his implementation of electronic technology in the development and operation of Kentucky's transportation system, through the Advantage I-75 project for which Kentucky is the lead state. He is married to the former Janice Payne ('63),

and they have three children—Laura, Craig, and Sean—who are all married and starting their own careers.

LAWRENCE M. BAKER,

M.A., Psychology, '32, Ph.D., Psychology, '33, has the distinction of receiving the first Ph.D. in psychology at UK. Recently retired, he says one career achievement was teaching experimental and clinical psychology, especially his work with 60 graduate students who obtained Ph.D. degrees under his supervision. Baker wrote a book published by Oxford University Press, titled *General Experimental Psychology*, that is widely used in the English-speaking world. In addition, as a result of spending 18 months in India as a University consultant, he wrote *India from Independence to Changing Times*. "At age 88 I keep trying to learn and work every day," Baker says. "I just may finish writing another book!"

J. KEVIN CHANDLER,

MSW, Social Work, '92, is currently employed as a therapist at Central Psychiatric Clinic/Alcohol & Substance Abuse Inc. in Cincinnati. His most significant achievement to date, he says, is adapting a long-standing model for treating chemical dependency to accommodate the demands of managed-care, which he accomplished in collaboration with his co-workers. "I'm happily married to my wife, Jane," Chandler says, who adds that he is also working part-time with City Gospel Mission in Cincinnati.

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GRADUATE ENROLLMENT

As of the Fall 1995, graduate enrollment at UK reached an all-time high of 5,485, an increase of 5.3% over the Fall 1994 term. Of these numbers 2,996 were female graduate students—an increase of 2.3% over the previous year.

Enrollment in doctoral programs also rose by 4.0%, with the largest increase in the programs in Business & Economics.

DEGREES AWARDED -1994-95

An increase of 8.8% during AY1994-95 in the number of graduate degrees awarded over the previous year. These included 223 doctoral degrees, six specialists, and 1,065 master's degrees.

The number of master's degrees rose by 11.3%. Doctoral degrees to women and minorities each increased by 5.9% over 1993-94.

Graduate programs in Arts and Sciences produced the largest number of graduate degrees: 233; followed by 217 in Education.

WILLIAM H. (BILLY) LIVINGS,

M.A., *Physical Education*, '59, now works as the athletic director, Indian River County Schools, and head football coach at Vero Beach High School in Vero Beach, Florida. Currently sixth in all-time wins as a Florida high-school coach, Livings was on a full football scholarship while at UK. He lists several accomplishments: being a high-school educator for 36 years, winning two state football championships, and lecturing nationwide on high-school football. He and his wife Rosemarie, who have three children and five grandchildren, recently celebrated their 40th wedding anniversary.



SHIPLEY IS A WIDELY PUBLISHED
POET AND EDITOR OF *CONNECTICUT
REVIEW*.

VIVIAN SHIPLEY,

M.A., *English*, '67, earned a Ph.D. in English at Vanderbilt University in 1974. She is currently professor of English and director of creative writing at Southern Connecticut State University. She also serves as editor of *Connecticut Review*. Shipley lists as her most significant achievement to date "surviving a brain tumor the size of a baseball in 1974." She also mentions that she was "probably the only Homecoming Queen at the University of Kentucky who was never crowned," but that "that's a story for some other time." Shipley's poetry has been published widely in such magazines and journals as *The American Scholar*, *The New York Quarterly*, and *Quarterly West*. Her most recent book of poetry is *Devil's Lane*, published by Negative Capability Press.

ALI REZA SABOUNI,

M.S. *Civil Engineering*, '85, worked at UK with Professor M. Vaziri in the Department of Transportation (civil engineering) on a project titled "Trip Generation and Distribution for Metropolitan Areas in the U.S." Currently employed as a project engineer at the Department of Water & Power in Los Angeles, he is married to Soheila Shirazi, who received an MBA from Pepperdine University in Los Angeles. They have two children—a daughter, Nica, 1 1/2, and a son, Ryan, eight months old.

WILLIAM R. SUMMERHILL,

M.S., *Agriculture*, '60, received additional graduate degrees at the University of Chicago and at North Carolina State University. He is currently a professor of agriculture education and director of personnel at the Institute of Food and Agriculture Sciences in Gainesville, Florida. He lists his career

highlights as being an extension agent at UK from 1960 to 1963, and area extension director at UK from 1965 to 1977. At UK he worked with Durward Olds in the Department of Dairy Science. His wife, Faye Weller Summerhill, also holds an M.S. degree from UK, in agricultural economics.

MIKE FLACK,

MPA, *Martin School*, '88, has been the executive director of the Blue Grass Airport in Lexington for the past nine years. He says his most important career achievement to date is "leading the Blue Grass airport into the 21st century." During his tenure as executive director, the airport has made many significant changes, including a major terminal expansion in 1990 and a major runway renovation and ramp extension in 1995. Flack lives with wife Judy and two daughters in Woodford County.



YOUNG, WHILE A STUDENT AT UK, PLAYED VIOLIN AT LOCAL MOVIE THEATERS TO ACCOMPANY SILENT FILMS.

DAVID WILSON YOUNG, M.S., Chemistry, '35, while at UK financed his education by playing the violin as background music in local movie theaters for silent films. His parallel interests in chemistry and music have never waned: for over 10 years he served as a tour speaker for the American Chemical Society, speaking on "Antonio Stradivari, the Artist and the Chemist." During his career he has been granted over 500 patents; at Esso Research Engineering in Linden, New Jersey, he received 100 patents in 12 years. "When the Patent Office granted my 200th patent," Young says, "they recognized the event with a party!" Young married Eloise Conner, who also received an M.A. from UK, in 1935.

KENNETH WILLIAM NOE, M.S.L.S. Library and Information Science, '83, who also has a Ph.D. degree in history (1990) from the University of Illinois, is currently associate professor of history at West Georgia College in Carrollton, Georgia. His book, *Southwest Virginia's Railroad*, was published last year by the University of Illinois Press; two other books will be published, by the University of Tennessee Press, in 1996 and 1997. Noe says he is also under contract with the University Press of Kentucky to write a book on the Battle of Perryville. He lives with his wife, Nancy Wahlbrink Noe (M.S.L.S., '83), and son Jesse.

MARTIN B. SOLOMON, M.B.A., Business and Economics, '66, Ph.D., Business and Economics, '67, took a new position last June with the University of Utah as the assistant to the president for Information Technology at the University of Utah. Prior to that he held positions as vice president for Computing & Commu-

CONTINUED ON PAGE 20

LARISSA OSTROVSKY, M.A., Patterson School of Diplomacy and International Commerce, '94, is currently working in the International Division of the CoreStates Bank, where her focus is on Central/Eastern European and German markets. As an administrative intern at UK, she worked at the Kentucky World Trade Center, where she conducted research on aspects of the export/import process. Ostrovsky is a native of St. Petersburg, Russia, where her parents still reside.



OSTROVSKY, A RECENT UK GRADUATE, HAS FOCUSED HER STUDIES ON THE EXPORT/IMPORT PROCESS.

PLACEMENT OF DOCTORATES

Eighty-one Kentucky residents were among the doctoral degree recipients in 1994-1995. Sixty-five percent of them took jobs (or returned to positions) in Kentucky, thus providing a significant measure of the impact of UK's doctoral programs on potential economic development and higher education advancement in the Commonwealth.

Some other numbers:

55% of UK's doctoral graduates entered academic positions in Kentucky and throughout the nation, including some international placements.

31% went into teaching positions in Kentucky colleges and universities.

22% took post-doctoral appointments.

13% went into business and industry or federal, state, and municipal government positions.

Only two percent reported having sought a position and were yet unemployed.

Among the 50 international students who received doctorates, 20% returned to their home country and 38% reported that they were continuing in post-doctoral positions.

DIVERSITY

African-American student enrollment increased 22.2% over the previous academic year.

Despite gains, African-American enrollment represents only 4.4% of the 1995 Fall semester enrollment.

MINORITY STUDENT SUPPORT

In 1994-95, 85 minority graduate students received Lyman T. Johnson fellowships.

This year, the LTJ program was changed to incorporate shared funding by the degree programs in which students are enrolled. Thus, they hold a portion of their support from the Graduate School as LTJ fellows and serve as Teaching or Research Assistants within their department.

The Graduate School initiated a new Commonwealth Incentive Award Program for Kentucky-resident African-Americans and other minorities. The program is also aimed at support of women in underrepresented areas of study. Fifty students received in-state tuition scholarships and a modest cost of education allowance in the Fall of 1995. The program for women has enrollees in civil engineering, manufacturing systems engineering, political science, and philosophy.

KIMBERLY MICHELLE MAYO,

M.A., Patterson School of Diplomacy and International Commerce, '94, during her graduate days at UK was an intern with the Kentucky long-term Policy Research Center in Frankfort, Kentucky, and the United States General Accounting Office in Chicago. She now works with Ericsson, Inc., located in Research Triangle Park, North Carolina, where she is an Order Administrator for the Northeast and Southern Gulf regions of the North American Market and for Latin America, Canada and the Pacific Rim.



communications at the University of South Carolina and director of academic computing at Ohio State University. Solomon also served as the director of the UK Computing Center for several years. He has authored or co-authored four books, a monograph and numerous articles on computing and communications topics. He has held academic rank at three universities and has been a consultant to various companies, colleges, universities and the United Nations.

CAROLINA FERNANDEZ,

M.B.A., Marketing, '81, has owned her own hand-painted children's clothing business since 1992. Her products, previously sold through retail gift and specialty clothing stores, are sold on the home-party plan, which she says allows her to keep the prices down. She has home-show representatives in Lexington, Philadelphia, Washington, D.C., and Atlanta.

GEORGE H. SCHERR,

Ph.D., Microbiology, '51, worked at UK with Professor Ralph Weaver, Department of Microbiology, on studies of the distinct forms of yeast. Since graduating from UK,

he has taught at Creighton University, the University of Illinois, and the Governor's State University in Park Forest South, Illinois. Scherr is currently president and director of research for Technam, Inc., in Park Forest South. He has also published over 60 papers and abstracts. He considers his most significant achievement to date his studies on pathogenic fungi and his development of clinical diagnostic products.

HERBERT HIRSCH,

Ph.D., Political Science, '68, with funding from the Office of Economic Opportunity, worked on evaluating the War on Poverty while a graduate student at UK. The author of seven books, he is currently a professor of political science at Virginia Commonwealth University, where he teaches courses on the politics of war, violence, and genocide. His book *Genocide and the Politics of Memory*, which was published by the University of North Carolina Press in 1995, has been nominated for four awards. He has three daughters and one son.

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INFORMATION FOR ODYSSEY MAGAZINE
OUTSTANDING ACCOMPLISHMENTS OF OUR GRADUATE SCHOOL ALUMNI

PLEASE TYPE OR PRINT

Your Name: _____
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Name of institution granting your undergraduate degree: _____

Year your UK graduate degree awarded: _____

Degree: _____ UK College: _____

UK Department: _____

Additional Graduate Degrees

Degree: _____ Institution: _____

Year Awarded: _____

Degree: _____ Institution: _____

Year Awarded: _____

Professional Experience

Current Position: _____

Name of Company/Institution: _____

Location: _____

Career Highlights: _____

UK Background

Were you a fellowship recipient? ☐ Yes ☐ No A scholarship recipient? ☐ Yes ☐ No

If yes, to either, please indicate the name of the fellowship or scholarship: _____

Were you involved in working on any faculty research projects during your graduate years at UK? ☐ Yes ☐ No

If yes, please complete the following:

Name of faculty member(s) with whom you worked: _____

Department(s): _____

Brief description of project: _____

Agency, if any, that funded the research: _____

(INCLUDE ADDITIONAL PAGES IF NEEDED)

-OVER-

What do you consider your most significant achievement to date?
(include additional pages if needed)

Family information that you would like to include:

Any other information you would like us to have:

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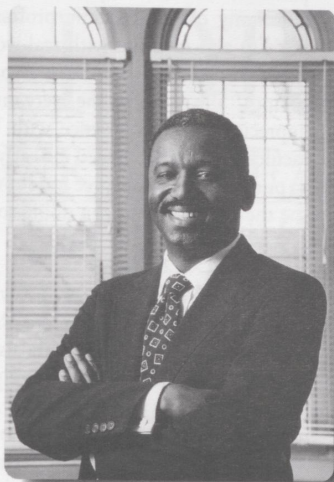
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HONORABLE
MENTION



WRIGHT HAS RECENTLY BECOME PROVOST AND VICE PRESIDENT FOR ACADEMIC AFFAIRS AT THE UNIVERSITY OF TEXAS IN ARLINGTON.

GEORGE WRIGHT,

M.A., History, '74, returned in 1993 to Duke University, where he had earned a doctorate in 1977, to take the position of vice provost, William R. Kenan history professor and African and Afro-American Studies director. In January of this year, Wright left Duke to become provost and vice president for academic affairs at the University of Texas in Arlington. "I guess you could say it was a dream come true," Wright says. "When this opportunity came along, I thought it was just right." He admits to having an affinity for the University of Texas, where he worked for 13 years (UT at Austin) before taking the position at Duke.

ANDREW K. SPEER,

M.F.A., Fine Arts, '78, is currently an assistant professor of art at the Metropolitan State College of Denver, where he directs a painting and design program. His many awards include an Al Smith Fellowship from the Kentucky Arts Council and a National Endowment for the Arts/Southern Arts Federation Regional Fellowship. His art has been exhibited widely in the U.S. as well as in Ecuador. Speer is married to Linda Bukszar Speer, who received her undergraduate degree from UK in 1974.



SPEER HAS BEEN AWARDED AN AL SMITH FELLOWSHIP AND A NATIONAL ENDOWMENT FOR THE ARTS FELLOWSHIP.

GRADUATE STUDENT SUPPORT

During 1994-95, 315 fellowships were awarded and administered. The graduate program targets high-achieving graduate students throughout the University. Special emphases include fellowships for Women in Underrepresented Areas of Study, the Lyman T. Johnson Fellowship program for minority persons, and Quality Achievement multiple-year Fellowships for the top 10% of high-academic-achievement applicants.

Of the \$1,781,990 provided to fellowship support:

- 42% came from indirect costs on grants and contracts;
- 8% from external sources;
- 37% from institutional funds;
- 13% from endowments.

DANIEL W. PETERS,

M.A., Patterson School of Diplomacy and International Commerce, '94, held a Graduate School Fellowship while attending the Patterson School. He was an English professor in Ecuador, where he taught ESL courses to businesspeople and other students. As an undergraduate he held a Presidential Scholarship at Augustana College. Peters was also a GTE Academic All-American in cross-country and a Knute Erickson award winner. He passed the Foreign Service Exam and entered the U.S. Foreign Service last December, one of fewer than 100 survivors of an examination process that began with 12,000 applicants.

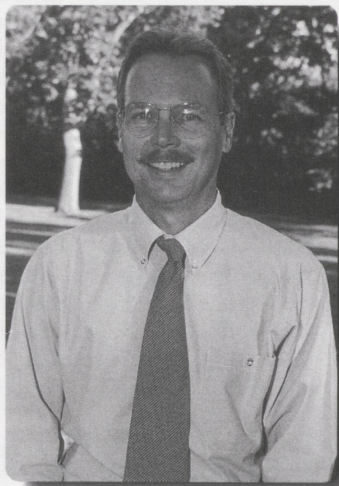
BRENDA R. MOTHERAL,

M.A., Business Administration, '93, who had a Rawlins Scholarship while at UK, continued her graduate work at the University of South Carolina, where she earned a Ph.D. in pharmaceutical economics last year. She is currently an assistant professor at St. Louis College of Pharmacy and director of pharmacoeconomic research at Express Scripts. "Since this is a dual

CONTINUED ON PAGE 24

PREPARING FUTURE FACULTY

During 1994-1996, the Graduate School and Undergraduate Studies have carried out a program to enhance the preparation of graduate students for future faculty positions. The program is aimed primarily at graduate students who are considering teaching as a career possibility, despite the fact that they may be in a field where opportunities for experience as a TA are limited or non-existent. Funded by the Pew Charitable Trusts, under the auspices of the American Association of Colleges and Universities and the Council of Graduate Schools, UK was one of 17 universities nationwide to receive a grant for this program. Activities include a graduate course on College Teaching, sponsorship of a university-wide forum on Preparing Future Faculty, and the development of a database to provide colleges and universities in the region access to information about graduate students who are seeking part-time, interim, or future teaching assignments. Collaborating institutions in the PFF project include Eastern Kentucky University, Centre College, Kentucky State University, and Lexington Community College.



LUSK NOW LIVES IN IDAHO, WHERE HE DIRECTS THE SCHOOL OF SOCIAL WORK AT BOISE STATE UNIVERSITY.

MARK W. LUSK,

MSW, Social Work, '78, Ed.D., Education and Social Work, '81, currently directs the School of Social Work at Boise State University in Boise, Idaho. At UK he worked with Professor Betty Kirlin, College of Social Work, on a book on social work and rehabilitation. Since leaving UK, Lusk has worked in several Western states: he has been director of the Social Work Program at Utah State University and chair of the Department of Social Work at the University of Wyoming. The Radcliffe, Kentucky, native has received two Senior Fulbright Fellowships—to the Catholic University of Peru (1983) and the Catholic University of Rio de Janeiro, Brazil (1989). Lusk's "mentors at UK" were Professor Jon Hesseldenz in the College of Education and Professor Connie Wilson in the College of Social Work. He is married to Barbara Bailey, who earned a B.A. in social work at UK in 1974.

position," Motheral says, "I have the autonomy of an academic professor, but I'm also involved with real-world issues through my research at Express Scripts." She adds that she "very much appreciates" her experience with UK faculty: "They encouraged me early on to pursue a graduate degree and showed me the value to society in doing so."

DALE S. DECKER,

M.S.C.E., Civil Engineering, '77, while at UK worked with Professor Jerry Rose, civil engineering, to evaluate the use of coal mine refuse to make synthetic lightweight aggregate for use in hot mix asphalt, concrete and concrete blocks. Currently vice president for research and technology for the National Asphalt Pavement Association in Lanham, Maryland, he has also been elected president of the Association of Asphalt Paving Technologists. Decker is married to UK alum Anne McMannes (B.A., '74), and the couple have two children, Ashley and Jason.

ALUMNI OF ANY OF UK'S GRADUATE PROGRAMS ARE INVITED TO COMPLETE THE INFORMATION FORM ON PAGES 21-22. WE WILL SHARE AS MANY OF YOUR RESPONSES AS POSSIBLE IN FUTURE ISSUES OF ODYSSEY.



DUSTING FOR EVIDENCE:

UK RESEARCHERS' DISCOVERIES ABOUT STARDUST ATTRACT INTERNATIONAL ATTENTION

In the final scene of "2001: A Space Odyssey," we see an incredibly old man lying motionless in what we take to be his death bed. Seconds later, superimposed in the room, is a newborn baby. This scene, says Zeljko Ivezic, personifies his current work in astrophysics. "I'm focusing on the birth and death of stars—how and why stars form and die," says Ivezic, a postdoctoral scholar in the UK Department of Physics and Astronomy. "I guess you could say I'm at the nursery and deathbed both."

Ivezic, from Croatia, is interested in these first and last life phases of stars, he says, because "so much in between is known. We need to understand the full life cycle of a star to better understand the evolution of our galaxy and of other galaxies."

Traditionally, Ivezic explains, scientists have had a problem studying the death stage of stars because the interstellar dust and gas that dying stars give off literally clouds the astronomers' vision. "We know that when stars get old they lose mass, they 'puff out,'" Ivezic says. "The gas that is puffed out cools down, and dust condenses—huge clouds the naked eye can't penetrate."

"For generations this was the bane of astronomy," says Moshe Elitzur, UK pro-

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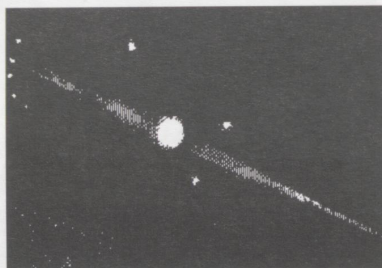
WRITTEN BY
JEFF WORLEY
PHOTOS BY LEE THOMAS

fessor of physics. "It's as if someone has stuck a basketball in your field of vision when you're trying to see the stellar light." Some of the star's radiation, however, does escape through this dense dust cloud. And though this radiation can't be seen by the human eye, it can be detected by an infrared telescope and its properties measured.

For the past three years, Ivezić and Elitzur have teamed up to do just this. "What we're doing is trying to systematize the properties of infrared radiation that we receive because that tells us the nature of the star behind the dust as well as the nature of the dust itself," Elitzur says. In a sense, he says, one of the things they're doing is cataloguing the age of stars.

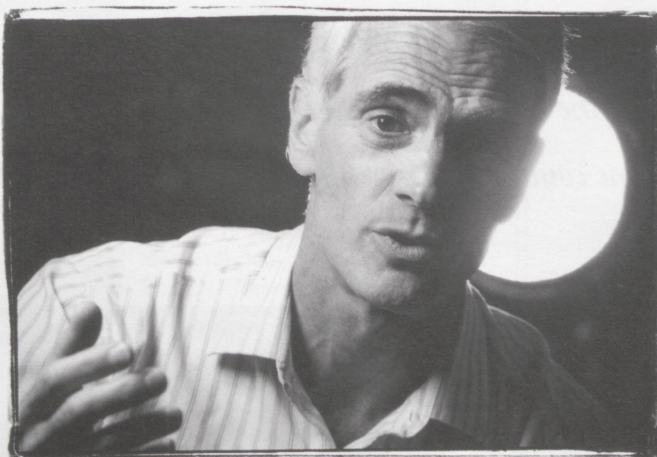
Ivezić and Elitzur have no shortage of raw data to work from, thanks to the Infrared Astronomical Satellite (IRAS), which was launched by NASA in 1983, a cooperative effort of the Netherlands, Great Britain, and the United States. Its 57-centimeter telescope has provided information on what the sky looks like in infrared wavelengths. "We have this huge body of data," Elitzur says, "and with the computer capability we have now we can retrieve this data easily."

In their work to discover the characteristics of these enormous stretches of interstellar dust, which the researchers refer to as "envelopes," they have found them to be fairly "airy." "We think of these envelopes as having about the consistency of fog," says Ivezić. "If you were in a spaceship traveling through such an envelope, it would be like driving through fog with the windows down. The person sitting next to you would be



"We need to understand the full life cycle of a star to better understand the evolution of our galaxy and of other galaxies."

Zeljko Ivezić



MOSHE ELITZUR SAYS THAT HE AND ZELJKO IVEZIC ARE, AMONG OTHER THINGS, "CATALOGUING THE AGE OF STARS."

clearly visible, but you wouldn't be able to see a hundred yards in any direction."

Ivezić adds that these dustclouds are actually composed almost entirely of gas, not dust. "Ninety-nine percent of the mass is gas, only one percent is dust. But because gas is a very bad absorber of light, we want to focus on the dust, which absorbs light at all wavelengths. This is why," Ivezić continues, "one percent of dust is more important than 99 percent of the gas."

One discovery the researchers have made has attracted international attention—their simplification of an established calculation to determine the characteristics of the dust. "Lots of parameters used to be taken into account in order to characterize the dust around a star," says Elitzur. "For example, the density and distribution of the dust, the stellar temperature, the luminosity of the star, and so forth. What Zeljko and I found is that all of these parameters combine into one—infrared 'optical depth'—which will tell you how much dust is present and its ability to absorb radiation."

Ivezić adds that a very important aspect of this finding is that now, for the first time, astrophysicists can determine whether the dust envelopes of a star are close to the celestial object or relatively far away. This is important information, Ivezić explains, because proximity of the dust can tell scientists whether a star is dying or just being born.

"With baby stars, the dust is further away—the newly formed star has already attracted what dust it could and the rest floats

CONTINUED ON PAGE 28

The Music of the Spheres

ZELJKO AND PAM IVEZIC. PAM IS
NOW ABD IN MUSICOLOGY.

One long-known physical rule of the universe—that opposites attract—has been good news for a UK couple who met in a teaching assistant training session here in the fall of 1991. Pam Ivezic, now ABD in musicology, reports that her first encounter with Croatian-born Zeljko (pronounced “Zshell-ko”), who came to UK as a graduate student to continue his study of astrophysics, was mostly frustrating for both of them.

“I was curious what was going on in what was then Yugoslavia,” she says. “I had a lot of questions about the conflict there. Zeljko wanted to tell me about it, but the situation was too complex for his English back then.”

“It would have been hard enough to try to explain it in Croatian,” Zeljko says. “The situation over there was such a mess, I couldn’t even begin to explain it to her.”

After a couple of other casual meetings around campus, the two began corresponding by e-mail while Zeljko was working on a research project in Japan. Their cyberspace romance led to spending a lot of time together, and they were married in May of 1994. Though they obviously connected well on a personal level, the question could be asked, What in the world do an astrophysicist and a musicologist have in common professionally?

“Well, there’s obviously a mathematical basis for both the study of stars and the study of music,” Pam says, “but beyond that, for me, there’s an appreciation for someone else’s good work. I don’t have a clue in terms of the formulas Zeljko uses, but I get the general idea of what he does.”

Zeljko, for his part, has an immense appreciation for someone as accomplished as Pam, especially since he dabbled in music for a short time himself. “I tried to play the accordion and



took some lessons,” he says, “but I was hopeless. My teacher threw up his hands and told my parents: ‘Don’t waste your money. Whatever you do, keep this kid away from instruments.’”

Pam’s primary instrument is her voice (she has a master’s degree in voice from the University of Northern Colorado), but since she wanted to be more competitive in the job market, she decided to expand her expertise. “I was studying with Rey Longyear, then head of the musicology department here at UK, who one day handed me two scores of music by a 19th-century Russian named Alexander Dargomyzhsky,” Pam recalls. “‘Here, do these,’ he said. I liked the proposal since I have always been interested in Slavic cultures and Slavic music; so that’s where I’ve concentrated my study for the past four and a half years.” She is currently writing her dissertation on Dargomyzhsky’s music, and expects to have it completed this fall.

Pam got a close-up look at Slavic culture in July of 1994 when she and Zeljko

went to Croatia for their honeymoon. Zeljko recalls one very memorable incident, which happened in Cavtat, a resort town south of Dubrovnik.

“Pam was on the beach, and a little girl came up to her and started to talk. It was terrifically hot, so Pam bought the girl a Coke. As they kept talking, they were suddenly overrun with other kids—around 30 of them—all wanting a Coke too.” The children, Zeljko explains, were war refugees staying in a nearby hotel. “I bought Cokes for everybody,” says Pam, “because I understood how much it meant to them. It looked like,” she adds, “a Coke advertisement.”

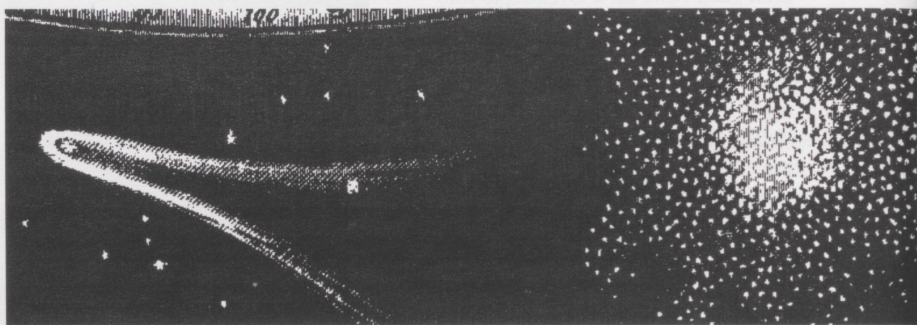
Although both Pam and Zeljko have traveled widely in the world—they’ve been together in Russia, Turkey, Greece, Croatia, Bosnia, Austria, Germany and Hungary—they feel very much at home in Lexington. “We’d really like to stay here,” Zeljko says. “We love central Kentucky, and feel very much in tune with our colleagues here at UK.”

Both researchers underscore the importance of UK's Center for Computational Sciences, which houses the IBM 3090 supercomputer. "Without it," Ivezić says, "we might still be working on this problem."

relatively far away," he says. "Since the dust from an old star comes from the star itself, it tends to stay closer to the star." Both researchers underscore the importance of UK's Center for Computational Sciences, which houses the IBM 3090 supercomputer, without which, Ivezić says, "we might still be working on this problem."

It was primarily this mathematical breakthrough, the results of which were published in the prestigious *Ap.J. (Astrophysical Journal)*, that led to their receiving a \$176,000 grant from NASA to continue their work and support a series of invited lectures overseas.

"I started in Russia then lectured in Turkey," Ivezić says. "Then to Croatia and Germany. It was terrific talking with people from these different backgrounds, and they were very excited about what we were doing here at UK." Elitzur is currently planning a trip to Turkey for an international astrophysics meeting in June. "Everywhere we go and talk about this thing, the reactions are very, very positive," he says. "I think we're making some good waves." "People are usually surprised at first that the solution of the optical depth parameter can be so simple," adds Ivezić. "But when you prove it with your results, people love it."



Their scientific collaboration, Elitzur and Ivezić both admit, is a bit unusual—Ivezić started out at UK as Elitzur's student. "UK offered me a teaching assistantship beginning in the fall of 1991, so I came over from Croatia that summer. I met Moshe soon after I hit the UK campus."

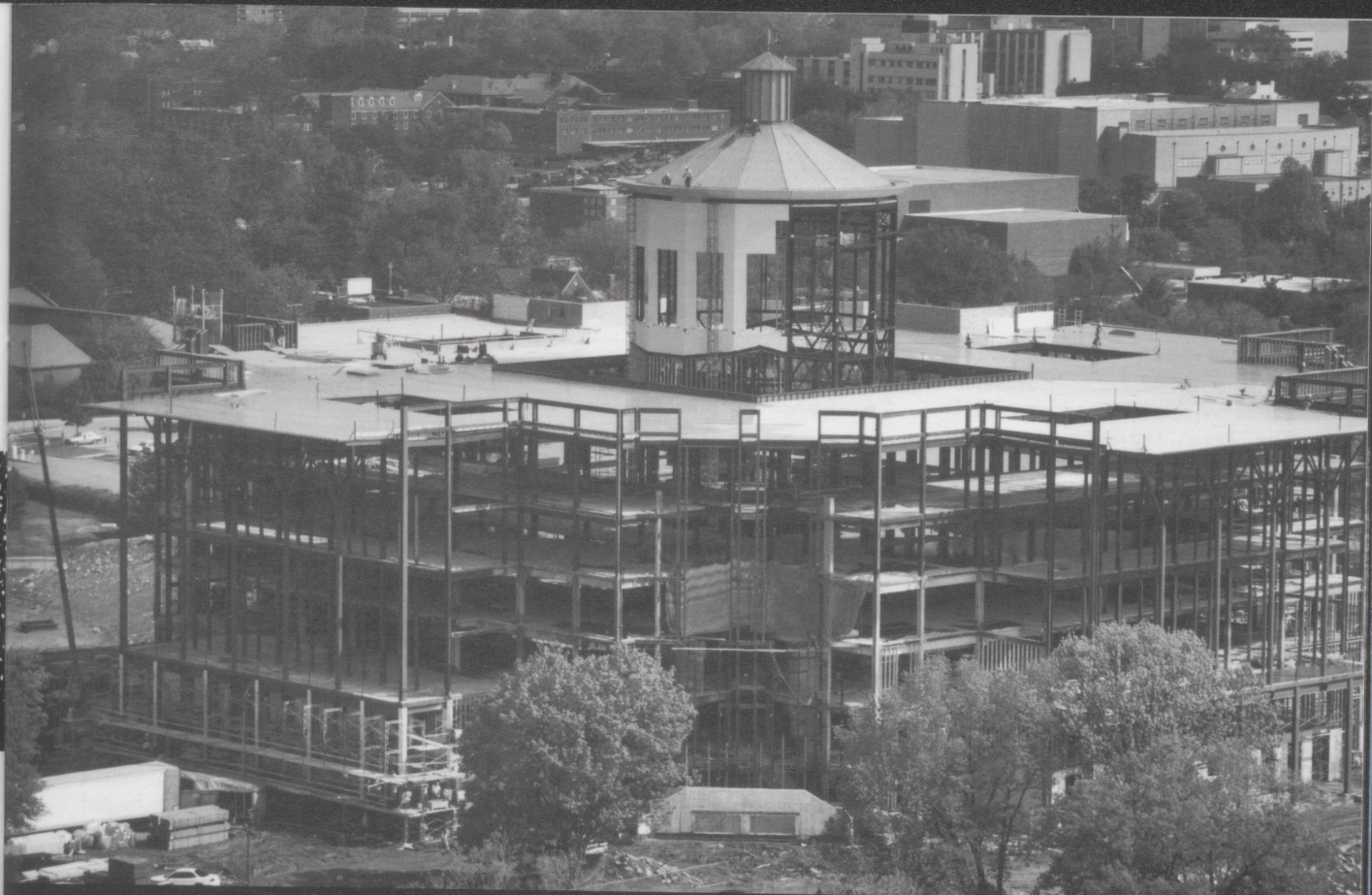
"It's true that Zeljko started as my student, but very quickly he developed into a collaborator," Elitzur explains. "Almost immediately, in fact. And that was what was unique about him—that he made that transition from student to a true researcher in a very, very short time."

So what's the difference between a student and a researcher?

"When you are a student," Elitzur says, you are given a problem to solve, and you know that problem has a solution. When you do research, original research, you have to figure out the problem; you have to define it. What are the properties that can help identify and define the problem? That's the center of what research is about. Zeljko just made that jump in an amazingly short period of time." ■

"Systematizing the properties of infrared radiation tells us the nature of the star behind the dust as well as the nature of the dust itself."

Moshe Elitzur



KENTUCKY'S LIBRARY

Gusts of spring air play freely through the

OF THE FUTURE

steel skeleton
rising five stories into the air.

The outlines of the building's 351,350 square
feet now in place, it's already easy to see
that the William T. Young
Library is all about space.

And it's clearly an understatement to say that UK Libraries Director Paul Willis looks forward to the completion of the new library. "Space is needed for books, journals, periodicals, computers, and library users," Willis says. "Right

CONTINUED ON PAGE 30

now we've got a lot of collections stored because we simply don't have room for them," he says. The squeeze on stack space is so great, in fact, that the library has been forced to store part of its collection in a limestone quarry in Wilmore, Kentucky." The new library, he says, will house 1.2 million books, 28,000 sets of periodicals and other materials.

Library users are also having a hard time finding room. Willis says, "If you come to the library at night, you can't get a seat after a certain time." There is also shortage of meeting and reading rooms, computer workspaces, and study carrels.

Finding the necessary books you need is another difficulty in the King Library. This challenge is complicated

WRITTEN BY
TODD D. JOHNSON
PHOTOS BY LEE THOMAS



PAUL WILLIS VISUALIZES THE NEW LIBRARY AS "A GATEWAY TO INFORMATION" FOR THE ENTIRE COMMONWEALTH OF KENTUCKY.

and then have the project funded by the state, the way any university would," says Willis. The private donations came through.

William T. Young, a Lexington horse breeder, civic leader and UK graduate, donated \$5 million to the project, the largest cash gift an alumnus has given to UK. Citizens of the Lexington community, the state, faculty and staff of the university, and elsewhere contributed \$21 million. And the National Alumni Association has backed the project by selling bonds. With the community solidly behind the project, ground was broken in December 1995.

In planning the library, Willis also found ways to save money by cutting

In the current library, the squeeze on stack space is so great that the library has been forced to store part of its collection in a limestone quarry in Wilmore, Kentucky.

by the fact that books are catalogued in two different systems—the Dewey Decimal and the Library of Congress. "We changed to the Library of Congress system in the mid 1970s," says Willis. "We didn't have the funds to convert or reclassify the books listed under Dewey then, but we'll be doing this as part of the move to the new building." Another problem now, Willis says, is the location of books. "We've got books in three buildings, on 16 or 17 different levels," Willis says.

He knew that if the library hoped to

continue to meet the needs of the community, it would have to solve its space and utility problems. The library clearly needed to expand; and in 1991, the University of Kentucky, private businesses, citizens, students, and others, joined together in an effort to build a new library. According to Willis, the project gained a wide spectrum of support.

"When we started with the new library we had hoped to raise some private money

waste and inefficiencies. "A new building that's designed based on how it will be used will be less expensive to staff and a lot more efficient for people to use," he says. By having fewer service points within the library and centralizing its staff members, Willis explains, the system will run much smoother.

In the summer of 1997, the doors of the William T. Young Library will open. "I

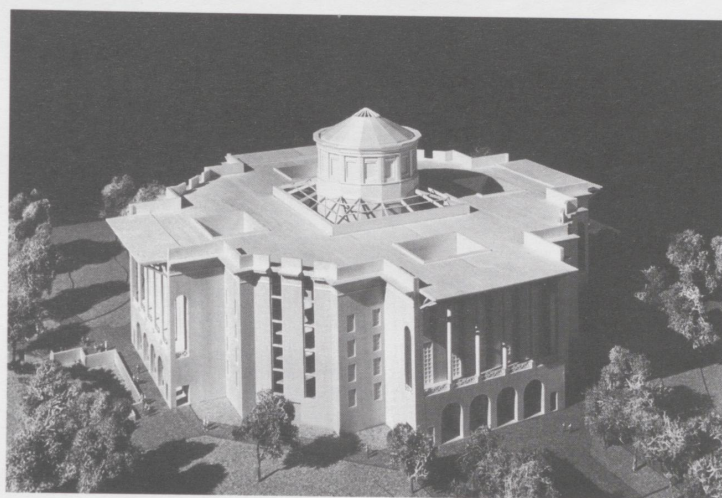
think it's hard for us to realize just what the new building is going to do for the university and the state. There aren't enough places on campus where you can go to study or to work individually or collaboratively. I think this library will provide a very inviting academic environment," Willis says.

Because there has been "from-the-ground-up planning," the new library will be a lot more user-friendly, he says. "In the new building, all the bound journals will be on one floor and the books will be on two floors," Willis explains.

Besides more space and better organization, the William T. Young library will use a compact shelving system to use its space more efficiently. "We'll be using electric-motorized shelving, which will allow us to store about twice the amount of material in the same square footage as standard shelving," Willis explains.

He foresees the library becoming a nice blend of the traditional and modern library. "A gateway to information" for the entire Commonwealth of Kentucky is what he would like to see the library become. Willis says, "The task for the library be-

THE DOORS OF THE WILLIAM T. YOUNG LIBRARY WILL OPEN IN THE SUMMER OF 1997.



comes coordinating and providing easy-access to our print sources and sources that are in a digital format."

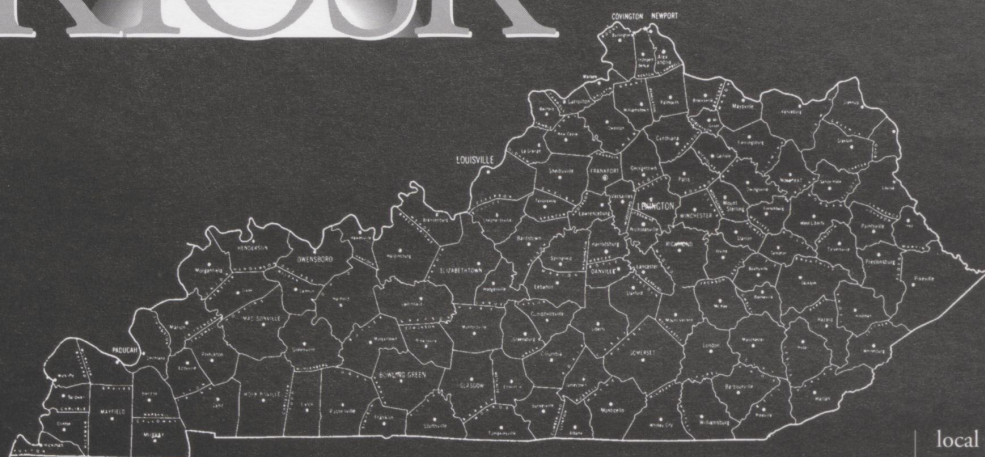
Using digital formats makes wide-reaching services a reality. Willis is excited about this type of globalization: "It's very easy to connect to the UK library remotely. Currently, a lot of people already do that, and

with this technology the tobacco farmer in the most rural part of the state can have access to the same information an agricultural specialist in tobacco or blue mold might have sitting here in Lexington." This type of remote access would not only help the tobacco farmer plug into the UK library's home page, but would also help students at Kentucky colleges and schools, and private business people throughout the state who wish to take advantage of the library's resources. "It will be a patron-oriented library," Willis says.

As more beams rise and walls begin appearing in the William T. Young Library in the months ahead, it will be interesting to watch spaces fill with computers, books and people. "In this information age, the William T. Young Library will create space for future success in University of Kentucky research and education, and for everyone else in the state as well," Willis says. ☐

William T. Young, a Lexington horse breeder, civic leader and UK graduate, donated \$5 million to the new library project, the largest cash gift an alumnus has given to UK.

KIOSK



ATLAS OF KENTUCKY NEARING COMPLETION

OK, so you think you know Kentucky. Well, did you know that

- Kentucky is within 600 miles—or one long day's drive—of two-thirds of the nation's population?
- Of the nearly 300,000 employees in Kentucky manufacturing jobs, over 50,000 (one in six) work in foreign-owned plants?
- Kentucky's electricity costs are among the lowest in the nation; only Washington and Idaho have lower costs?

These and thousands of other facts, statistics and tidbits of information will be included in the new *Atlas Of Kentucky*, to be published by University Press of Kentucky in late 1997.

Richard Ulack, chair of the UK geography department and editor-in-chief of the *Atlas*, heads a 25-member statewide team that has been working on the project for the past three years, a project that he says is long overdue.

"A state atlas was published in the late 1970s, but we thought a new one was needed," Ulack says. "The material was very dated." He says that never before in the state's history has so much changed so quickly in education, business, manufacturing, and tourism, creating the need for an updated atlas.

The atlas will include standard topics such as population, natural resources, social and economic characteristics, and the physical environment. Other topics, such as recreation and tourism, the agricultural landscape and politics are included because of their importance to an understanding of Kentucky.

"We've added quite a bit to the standard atlas template," Ulack says, "because of what is unique about Kentucky."

When the full-color 275-to-300-page atlas is published, Ulack says it will be

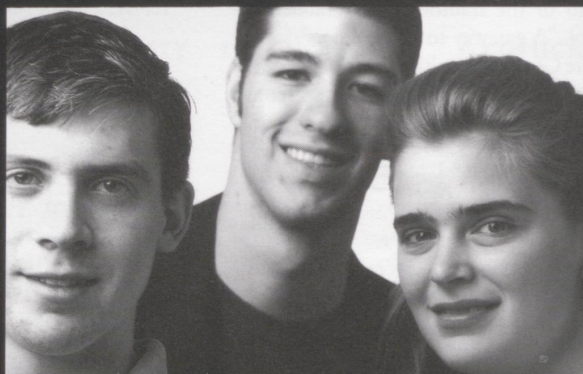
available in book form and also in an interactive form on CD-ROM. It will contain about 750 maps and graphs and around 120 photographs. One new feature of the atlas is that it will be possible to update it since there will be a CD-ROM version.

Ulack says the finished atlas will be useful not only to schools and libraries, but also to developers, state and

local governments, and those working to attract businesses to the state.

"It's important for the department of geography to be involved in this type of work," Ulack says. "It's part of the job and good for the state and university." Funding for the project has come from the state, private donors, universities and donors to the Thomas D. Clark Foundation of the University Press.

—Kathy Reding



Several of the articles in this section of *ODYSSEY* were written by students in UK's Department of Journalism. From left to right, Matt Felice, from Lexington; Jeff Vinson, from Versailles, Kentucky; and Kathy Reding, from Howardstown, Kentucky. Not pictured is Beth McKenzie, a Cynthiana, Kentucky, native.

ON THE CASE OF DOMESTIC VIOLENCE

William J. Vanarthos is a radiologist at the UK Medical Center. He is also a detective of sorts.

"It's possible, by a close examination of X-rays, to detect the results of domestic violence," Vanarthos says. "But you have to train yourself to know what to look for."

From late 1993 through 1995, Vanarthos and his co-researcher, Richard Coleman, also a radiologist at the Medical Center, compiled radiological examples and statistics of child, spouse and elderly abuse. Through their research, the two have inter-related statistics documenting the widespread occurrence of domestic violence with key points observed on X-rays indicative of abuse.

Vanarthos says the purpose of this research is to increase awareness among emergency room clinicians, other doctors, and the general public about specific characteristics of an injury that may be indicative of domestic violence. Vanarthos says a knowledge of clues indicating abuse is important to doctors, especially those in outlying areas or without formal training in radiology.

American Medical Association statistics show two million cases of child abuse

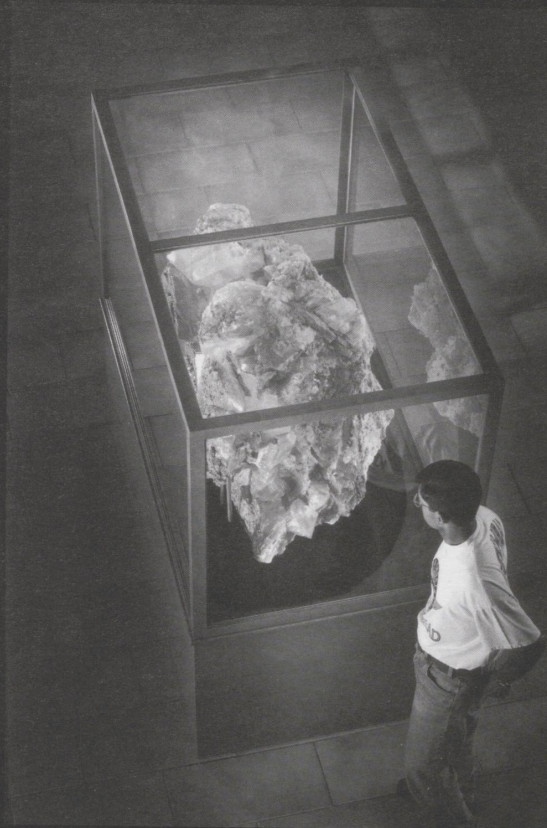
injury annually and 1,000 deaths from these injuries. Up to 10 percent of emergency room trauma cases in children under five years of age are non-accidental. Vanarthos says the numbers of cases in Kentucky is "proportionally similar" to the number nationally.

AMA statistics show factors such as premature birth, family stress, a child who cries often, and a family history of abuse increase a child's risk of being abused; and radiological details can indicate such abuse. Fractures to the arms and legs caused by twisting indicate abuse as do posterior rib fractures and those to the back base of the skull because such fractures are unlikely to occur as a result of a typical accident.

National statistics also show that from two to four million women nationally per year are assaulted by their spouses or boyfriends. Of women whose cases are identified medically, 75 percent will go on to suffer repeated abuse. Kentucky rates are similar.

"Radiologists are aware of various kinds of abuse because it is part of their training," Vanarthos says. "Knowing what to look for would obviously be of use to general clinicians."

—Kathy Reding



A ROCK FOR THE AGES

Beneath Lexington, Nicholasville, and central Kentucky, is a large geologic structure called the Lexington Dome. Along this dome are faults and fractures, where small cave systems can form. It was along one of these small caves that a rock for the ages was found.

"The Lexington Dome is important because the earth's hydrothermal fluids migrate here, creating various concentrations of mineralization along faults and fractures," according to Warren H. Anderson of the Kentucky Geological Survey at the University of Kentucky. It's also an area geologists from all over the nation have explored in the search for mineral deposits such as lead, zinc and barite.

Mining operator Sam Van of the Lexington Quarry Company has been working in central Kentucky's majestic underground for 35 years, so he and his crew weren't all that

CONTINUED ON PAGE 34

surprised when, in a routine limestone excavation, they came across wet rock which Van knew would probably lead to a mineral-filled cavity. But what waited inside behind masses of rock turned out to be something quite out of the ordinary.

What Van found this time was one of the largest caves ever discovered near Catnip Hill—about 75 feet long, 50 feet high, and between one and six feet wide—lined with transparent and well-defined crystal formations of record sizes growing right out of the walls. He immediately called Anderson at UK, with whom he'd worked before. "We operated a zinc mine here for a few years, from 1981 to 1987, and he was a mineral expert over at the Survey," said Van. "We've been friends for a long time."

Anderson was happy to hear what Van had found. "I was excited to see such rare crystals," Anderson says. "I wanted to recover it so that a piece of the commonwealth's beauty could be preserved and displayed."

At the site one section of the gypsum deposit stood out to Anderson as an ideal specimen for removal because of its large, interlocking crystals. The quarry company agreed to remove the piece and donate it to the Geological Survey.

The specimen, measuring approximately six feet wide and three feet around, is the largest selenite gypsum crys-

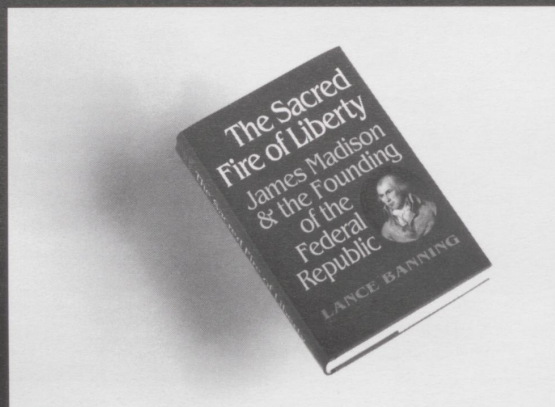
tal ever recovered intact from a Kentucky mine, and "probably one of the biggest in the United States," says Anderson.

As important as the discovery itself was the care with which the rock had to be removed. Selenite gypsum is an exceptionally soft mineral that can easily be scratched with a fingernail. The miners had to break the section loose with drills and then roll it onto a forklift pallet, taking precautions not to damage the crystals. While they did protect the crystal faces, several of the interlocking crystals were broken off.

Anderson then transported the rock to the Mining and Mineral Resources Building where he restored the interlocking crystals, as if assembling a three-dimensional puzzle, which, he admits, was a fairly complicated task.

This geological find is currently displayed in the foyer of the Mining and Mineral Resources Building. "What it exhibits," says Anderson, "is a piece of nature's art."

—by Matt Felice



SORTING OUT THE AMERICAN PAST

Lance Banning has had a pretty good time of it lately. First, his book, *The Sacred Fire of Liberty: James Madison and the Founding of the Federal Republic*, was published by Cornell University Press. The reviews were terrific: Evan Cornog of the *New York Times* Sunday Book Review called Banning's book "brilliant and original." Then about six months ago, Banning, a UK professor of history, found out his book had been nominated for a Pulitzer Prize. In early April, Banning became Kentucky's first finalist for a Pulitzer Prize in history.

His primary purpose in writing this book was to clarify "Madison's founding vision," Banning says. "I would define this term as a set of thoughts, beliefs and revolutionary principles which modern political scientists and historians often discredit as inconsistent with Madison's defense of federalism," says Banning, who began work on the book in 1978.

Besides challenging that notion, Banning also challenges the means by which many researchers have arrived at their conclusions about America's founding.

Especially in the field of political science, he says, there is a tendency to define Madisonian thought around Federalist Paper No. 10, in which Madison criticizes popular government as "factious" and the public councils as tending toward "instability, injustice and confusion."

Where other researchers typically have applied modern theory to their study of the founding, Banning thought it might be more appropriate to apply a full study of the founding itself to the various modern theories about it, perhaps refuting and correcting some popular misconceptions.

Banning's intent was to construct a clear understanding of

Madison's thinking by going straight to the source, focusing heavily on the preserved writings, speeches and correspondences of the period in order to put the modern arguments into perspective.

To most of us, historical research may bring to mind images of a researcher obsessively digging through stacks of yellowed letters and fragile papers in an underground warehouse. But for Banning that kind of work had already been done. Archivists had made available "letter-press editions" of Madison's work, which Banning explains are "meticulously edited and exact printings of documents that were, of course, originally hand-written."

There are currently 20 volumes of Madison's speeches and correspondences available in letter-press form, covering

everything up to the election of 1800. Later Madisonian documents, including those from his tenure as president, are available in older editions.

"The modern papers are already authenticated," Banning explains. "The publishers trace the 'provenance' of these documents to determine how they came to survive in their present form."

Banning says the job of the historian is to take the authenticated information and use it. "Most people think that what historians do is go out to archives and dig up things that have never been published," Banning says. "Most of history is not a memorizing discipline, it's not a matter of going out and digging up more information; it's a matter of finding patterns

and bringing meaning to information that's pretty readily available."

Banning didn't go into the project bent on revising everything that's ever been written about Madison and his founding principles. Much of what is already known about Madison was reaffirmed and even strengthened by Banning's research, particularly regarding Madison's crucial role in both the drafting and the ratification of the Constitution and his principle authorship of the Bill of Rights, as well as his insistence on seeing it added to the Constitution.

—by Matt Felice

OLD DISEASES MAKING A COMEBACK

Tuberculosis—isn't that something that Great Aunt Gertie died of? Although tuberculosis and other older, infectious diseases haven't been making headlines with the frightening regularity of, say, AIDS, these diseases have still not been conquered. In fact, health authorities are now saying that established and curable diseases are doing far more harm, especially among the world's poor, than new ones. Their strength, particularly in the U.S., is growing rather than diminishing despite "wonder drugs" that once promised to eradicate them.

"If we would have been able to cure them that well, they'd be gone by now," says Reginald Finger, director for the division of epidemiology in Frankfort, Kentucky.

Within the last month, for example, several new cases of tuberculosis have been diagnosed in Kentucky. Antibiotics that have wiped out infections in the past are no longer effective. It seems that the public's dependence on, and faith in, antibiotics, is part of the problem.

Finger says that the excessive use of antibiotics has enabled bacteria to go through chemical changes, leaving them immune to the drugs that once killed them.

UK MEDICAL SCHOOL IN U.S. NEWS' TOP 10

A national news magazine again has ranked the University of Kentucky College of Medicine as one of the top 10 primary-care medical schools in the country. UK is ranked 10th on the annual list compiled by *U.S. News & World Report*. It was the sixth consecutive year that the College of Medicine was ranked in the top 10.

UK officials say they are pleased to have top-10 status.

"This national recognition by our peers acknowledges the emphasis the College of Medicine places on balancing its three academic missions of education, research and patient care," says Emery A. Wilson, the medical school dean.

The primary-care category includes 62 medical schools that had a high percentage of graduates enter primary care. The schools were then ranked based on student selectivity, faculty resources, reputation and other measures.

The best primary-care medical schools as ranked by *U.S. News & World Report*:

1. University of Washington
2. University of Massachusetts at Worcester
3. Oregon Health Sciences University
3. (tie) University of New Mexico
5. University of California at San Francisco
6. University of Missouri
7. Southern Illinois at Springfield
8. University of Iowa
9. Michigan State University
10. University of Kentucky

CONTINUED ON
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"There is this perception that antibiotics are perfect. It's kind of a knee-jerk reaction—you get sick, then you go to the doctor for antibiotics," Finger says. "People need to just realize not to demand antibiotics every time they're sick."

Sam Turco, a biochemist at UK, agrees, and he isn't surprised to see some of these diseases resurfacing.

"People aren't aware of the possibility that you can get sick, take antibiotics, and they won't work," Turco says. "Organisms are becoming resistant to the drugs. When that happens, you go to stronger drugs, and that means more side effects."

Diseases such as tuberculosis are making a big comeback because so many drugs are being prescribed, Turco says. But he is quick to add that cycle can be broken.

"What the public should do is insist upon more research into infectious diseases," he says. In addition, Turco says, the public needs to be more insistent on education—including vaccinations and hygiene—and surveillance of outbreaks of infectious diseases world-wide.

"People travel around a lot more than they used to," Turco says. "We have to keep track of where new diseases are popping up." Currently, the Centers for Disease Control sends teams of researchers and doctors whenever and wherever outbreaks of infectious diseases are reported.

"They don't get the headlines and don't get the attention and research they should be getting," Turco says. "Everyone has heard of the American Cancer Society. When was the last time you heard about an association for infectious diseases other than AIDS?"

But research costs money, and money is a big problem, Turco says. Unless the pharmaceutical companies see a profit, the research is left up to the federal government.

Chances are slim that a widespread outbreak of TB will occur, but the possibility does exist, Turco says. "We've got to be ready. If we let our guard down, that's when we'll be in trouble."

—Beth McKenzie

NEW HEAD OF TOBACCO RESEARCH INSTITUTE BRINGS GENETIC ENGINEERING EXPERTISE

H. Maelor Davies took the reins of the Kentucky Tobacco and Health Research Institute last February, replacing John Diana, who served as THRI director since 1988. Davies comes to the institute after nearly 14 years with Calgene Inc., a Davis, California-based firm that was an early innovator of genetic engineering in agricultural products.

Among the products his research developed at Calgene was a genetic altering of canola seeds to produce lauric acid, a component in soaps and de-

tergents usually obtained from coconuts. The altered canola plants are currently in commercial production at farms in Georgia.

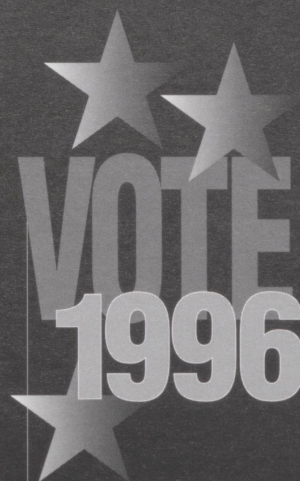
Diana said Davies' expertise in genetic engineering of plants makes him a perfect fit for the institute, which has shifted its research emphasis from health issues to plant modification for new applications of the crop.

Davies expressed optimism about bringing genetic engineering techniques into tobacco research. "Tobacco is about the easiest plant to do

this kind of genetic engineering," he says, noting experiments that already have altered the plant to produce medical compounds, sweeteners, enzymes and pharmaceutical products.

But while research on the plants will be important, the institute also will have a role in identifying the marketability of new tobacco products. "The major thing this institute has to do is expose those opportunities," Davies says.

—Dan Adkins,
UK Public Relations



GETTING OUT THE VOTE

In January 1995, Kentucky enacted the National Voter Registration Act, commonly known as the Motor-Voter law. In addition, Kentucky was ranked as one of the top 10 states in the nation for new voter registration. In 1995 alone, Kentucky registered 198,290 new voters.

As a tool for registration, the Motor-Voter law has increased the number of registered voters. Now comes the challenge—actually getting people out to vote. According to the Kentucky Secretary of State's office, 177,982 new voters had registered prior to the November 1995 general election. Of those registered, only 24 percent made it to the polls.

Penny Miller, assistant professor of political science and director of undergraduate studies at UK, says there are a number of reasons for voter apathy.

"There's a lot of general distrust and cynicism," Miller says, adding that scandals such as Boprot

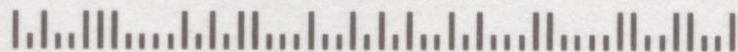
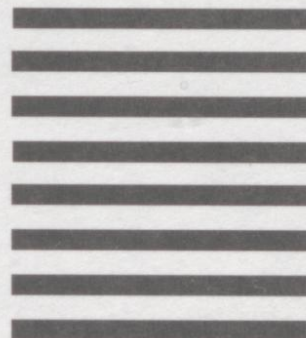


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help to fuel the fires of voter disillusionment.

As this year's primary and general election draw near, however, Miller says several factors could lead to higher turnout. "I think we're going to see a lot more transportation to the polls," she says. "That's been found to be extremely effective."

Miller says she thinks there will be more direct mail appeals, phone calls to voters registered within the parties, and educational materials in the form of public-interest ads—all in an effort to boost the number of voters on Election Day.

With the resurgence of political parties, she says, she looks for both parties to be more active. "In the last election," she says, "the Democratic Party had an effective state-centered organization for the first time in

two decades, and the Republican Party had headquarters in all 120 counties for the first time in its history."

Kentucky voters' interest in the candidates—and the election—will affect more than just Kentucky. The state is seen as a bellwether state, Miller says, explaining that how Kentucky votes is usually how the nation votes in presidential elections.

So *will* more Kentuckians go to the polls? Miller thinks so.

"We generally have a high turnout in presidential elections, and the various contests going on will bring people out," she says. "By having competitive congressional, presidential and state legislative elections, it's going to be quite a battleground."

—Beth McKenzie



William Ehmann says that because he is "retired" now, he works only about "30 hours a week" in his office in the chemistry-physics building.

UK CHEMISTRY PROFESSOR EMERITUS WINS NATIONAL AWARDS

Professor Emeritus William D. Ehmann, of the UK chemistry department, recently received two prestigious awards, one of them named after him.

Ehmann was informed in April that he was the first recipient of the William D. Ehmann Award, which will be presented to him in June in Reno, Nevada, by the American Nuclear Society. In addition, Ehmann was recently given the 1996 American Chemical Society Award for Nuclear Chemistry. This award consists of \$3,000 and travel expenses to the national ACS meeting in New Orleans. Ehmann was selected for this prestigious award for his contributions to the practice of neutron activation analysis. His work in improving nuclear methods of elemental analysis has been applied to research in geochemistry, meteorites, lunar chemistry and medicine.

"Winning these awards means a great deal to me because these are national awards given by organizations that represent my profession," Ehmann says. Most recently, Ehmann, who says that because he has "retired" is working only 20 to 30 hours a week in his campus office, has been focusing his research on the relationship between brain trace element imbalances and diseases such as amyotrophic lateral sclerosis (ALS), Alzheimer's disease and Pick's disease (a progressive deterioration of the brain).

In 1969, Ehmann's research group at UK was selected by NASA to analyze the first returned lunar samples collected during the Apollo 11 mission. The group subsequently analyzed samples from all the Apollo lunar missions and also those from several Russian lunar missions.

"Without question, the most exciting highlight of my career has been as part of this group to study the returned lunar samples," says Ehmann. "My work with Bill Markesbery at Sanders-Brown is equally exciting and probably the most significant of my career." Ehmann and Markesbery are currently looking at mercury levels in the brains of patients who have died from Alzheimer's disease.

Ehmann received his bachelor's and master's degrees in chemistry from the University of Wisconsin, Madison, and a doctoral degree in radiochemistry from the Carnegie Institute of Technology (now Carnegie Mellon University). He has received many awards, including the 1982 Distinguished Scientist in Kentucky Award from the Kentucky Academy of Science, and UK's 1987 Sturgill Award for his contributions to graduate education.

Ehmann has authored more than 200 articles and has co-authored a 1991 textbook, *Radiochemistry and Nuclear Methods of Analysis*, that is widely used today in introductory radiochemistry courses. He joined the chemistry department faculty at UK in 1958.

TAKING ASPIRIN TO HEART

UK's part in a national study to gauge the effectiveness of using aspirin combined with other drugs to treat heart attack patients has produced important preliminary data. The study is currently under way at the UK Hospital, one of 200 hospitals participating nationwide, and is focused on determining the efficacy and safety of hirudin, an experimental new anti-coagulant. Hirudin was discovered in the saliva of leeches; it is now produced in pure form in the laboratory using genetic engineering technology.

"There are good preliminary data to suggest that hirudin is more effective in preventing blood-clot formations," says John Gurley, director of interventional cardiology at UK.

During heart attacks the mechanism of obstruction of the artery that causes the heart attack is blood-clot formation, Gurley explains. He says that doctors worldwide treat patients who have had heart attacks by injecting blood-clot dissolving agents into the vein intravenously. "If they can be injected within the first few hours, these blood-clot dissolving agents are very effective," Gurley says.

But simply dissolving the clot is not enough. The dissolving agent is used in conjunction with other medications that inhibit the formation of new clots.

Currently, heparin is the blood-clotting inhibitor of choice; however, there is speculation among the medical community that hirudin may be better. "It's clear that there are better alternatives," Gurley says. "Preliminary data indicate that hirudin is superior in that it makes new clot formation less likely and it also makes dissolution of the existing clot occur more rapidly. This has the potential to be a legitimate breakthrough in heart attack treatment."

Gurley says that it's anyone's guess as to when this drug will enter the market. "It could be as little as two years," Gurley says. "But we've got to look at the safety data. We want to make sure that the drug is not only more effective but also safe. More efficacy can't be balanced out by greater risk."

One risk, though relatively small (on the order of a couple percent) is that of bleeding. Gurley says that when the risk is so small, thousands of patients must be studied to gauge the risk's overall magnitude.

UK's study is scheduled to conclude this summer. About 30 or 40 volunteer patients will have been given either aspirin with a placebo, aspirin with heparin or aspirin with hirudin.

Gurley says that heart attack treatments have improved greatly in a short amount of time. In the 1940s, for example, the fatality rate for heart attacks was 30 percent. "Now, with very early treatment (within the first hour of a heart attack), the fatality rate can be as low as one percent," he says.

—Jeff Vinson

UK AMONG TOP 10 PUBLIC UNIVERSITIES IN NATIONAL MERIT SCHOLARS

The University of Kentucky is ranked among the top 10 public universities in the country in the number of freshman National Merit Scholars enrolled in the fall 1994 semester.

This is the third consecutive year UK has been ranked in the top 10 for that category.

UK's 77 National Merit Scholars place the university eighth in the nation among public institutions in the number of new merit scholars, and 20th among all colleges and universities in the U.S.

The National Merit Scholarship rankings for incoming freshmen also shows that UK:

- Ranks second among benchmark institutions.
- Is second in the Southeastern Conference, up from 3rd last year.
- Enrolled more new National Merit Scholars in the 1995 freshmen class than all other public and private institutions in Kentucky combined.

"I am delighted that these outstanding students, who have many college opportunities, are choosing the University of Kentucky," says Charles T. Wethington Jr., UK president. "I am proud that UK is attracting such high-caliber students."

"This ranking reemphasizes in the minds of outstanding students that UK is a place to live and learn with other outstanding students," says Joseph L. Fink III, director of admissions. "They can be assured that dialogue in the classroom will be stimulating and challenging because of the level of students enrolling."

To qualify as National Merit Scholars, students must score in the top 98th percentile of the Preliminary Scholastic Aptitude Test, which they take in their junior year of high school. Students also must confirm their PSAT performance on a national administration of the SAT, provide a self-description of personal characteristics and accomplishments and seek recommendations from teachers and principals.

—Kathy Johnson, UK Public Relations

THE FARMING GAMBLE: WILL IT PAY OFF?

Here's what Matt Gaffney can tell you about his business: no matter how hard he works or how excellent his product is, he could easily lose money. A drought one year and a flood the next could wipe him out. In addition, it seems certain that he will always have to have a second job to support his business. Yet every year Matt, 34, plunks down \$7,200 toward owning a 155-acre farm in central Kentucky.

What is wrong with this man? Is he crazy?

Actually, Matt could be pretty smart, says UK economist Jerry Skees. "It's not just the question of cash flow. Farmers like Matt might have to struggle and not make a very good income, but 20 or 30 years from now they may be sitting on a farm that is worth quite a bit of money." So buying a farm and trying to make a go of it, Skees says, may be an excellent investment.

Farmers today face different pressures than they did even 10 years ago, says UK sociologist Lorraine Garkovich, who discussed the "coping strategies" of Kentucky farmers in a 1988 *ODYSSEY* article titled "Making a Go of It on the Farm." These pressures include environmental regulations, the phasing out of government subsidies under the Freedom to Farm Act, and the ever-increasing subdivisions nudging up against the farmer's fence.

"Urban neighbors don't often like the sights, sounds, or smells that go along with a farm," says Garkovich, co-author of *Harvest of Hope: Family Farming/Farming Families*. But, she explains, with these new pressures have come several technological innovations that can help farmers. A Geo-Positioning Information Satellite, for example, can be used to help them map their land to monitor the levels of fertilizers, lime and nitrogen in the soil, so they know exactly what and where to add. If applying the chemicals more strategically adds two cents to a bushel of corn, that can be a lot, she says, given the farmer's small profit margin.

Specialization may be the key to successful farming, Skees says. "My advice would be to develop specialized kinds of products, like Laura's Lean Beef, based in Winchester, Kentucky."

Equally important as specialized products is risk management, Skees says, which can be very challenging. Technology can help manage risk in terms of getting the product produced, he says, but the farmer still has to deal with the weather, the price risk, and changes in macroeconomics and international markets.

How can farmers lessen those risks? One way is to look at futures markets and lock in the price for their products, Skees says.

"Instead of saying, 'OK, I'm going to raise these cows or plant this corn or soy beans or vegetables and just wait and see what the price

Garkovich says. In doing research for her book, she found more home-based businesses popping up on the farm, ranging from doll-making to accounting to bed-and-breakfast enterprises.

Having that off-farm job may be tough but it has advantages. One big advantage is access to affordable health insurance, which Garkovich says could cost a farm family independently \$400 to \$600 a month. Years ago when the health-care system was different, a farmer could make payments on a doctor's bill or hospital bill out of his yearly harvest, but no more, Garkovich says.

Matt, who is a self-employed freight courier, hopes he doesn't always have to have that off-farm job like his parents did. With the help of his father, he's getting through the two to three months of the calving season for his 80 head of cattle.

But even with being forced to take a second job, the continual struggle with nature and the uncertainty of prices, the spirit of the farmer still hasn't been broken, Garkovich says. "Farmers are the most incredibly self-motivated group I've ever encountered." She adds that when she interviewed 80 farm families for her book and listened to them tell of their struggles, the question that came to her mind was: Why would anyone want to do this? The farm families' answer: If you have to ask the question, you wouldn't understand the answer.

"There are always going to be farm families and there are always going to be young people out there willing to take the risk, willing to give it everything they've got," Garkovich says. If you can lose 40 cents to 70 cents a pound on beef you take to market, if that happened in another business, any other business person would say "I'm getting out," she says. Matt doesn't think for a minute that he'll fail as a farmer. Instead, he believes that one day his \$70,000 farm will be worth \$250,000, maybe \$500,000. "It's my 401K plan," he says.

"It's that hope, that faith that things can get better that keeps farmers trying," Garkovich says. "That's why they'll always be there." ■



LORRAINE GARKOVICH: "FARMERS ARE THE MOST INCREDIBLY SELF-MOTIVATED GROUP I'VE EVER ENCOUNTERED."

is when I take the product to market, you can find a market and lock in the price. It's important to do some research, and if you find a price you can make money on, lock it in."

And finding a futures market for farm products may not be difficult. "There are market systems on the Internet where farmers can find customers and lock in prices," says Skees, adding that there are also exchanges in Chicago where farmers can lock in prices for their cattle through a futures market.

Another form of risk management is to take a second job off the farm or to diversify and create another type of business that can be done at home on the farm. "Especially in Kentucky where farm operations are relatively small, there just aren't sufficient resources to sustain a family on a farm income,"

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PARTING SHOTS

“Computers in the future may weigh no more than 1.5 tons.”

—Popular Mechanics, forecasting the relentless march of science, 1949.

“There is no reason anyone would want a computer in their home.”

—Ken Olson, president, chairman and founder of Digital Equipment Corp., 1977.

“If I had thought about it, I wouldn't have done the experiment. The literature was full of examples that said you can't do this.”

—Spencer Silver on the work that led to the unique adhesives for 3-M “Post-It” Notepads.

“This ‘telephone’ has too many shortcomings to be seriously considered as a means of communication. The device is inherently of no value to us.”

—Western Union internal memo, 1876.

“I think there is a world market for maybe five computers.”

—Thomas Watson, chairman of IBM, 1943.

“I have traveled the length and breadth of this country and talked with the best people, and I can assure you that data processing is a fad that won't last out the year.”

—The editor in charge of business books for Prentice Hall, 1957.

“640K ought to be enough for anybody.”

—Bill Gates, 1981.

“But what . . . is it good for?”

—Engineer at the Advanced Computing Systems Division of IBM, 1968, commenting on the microchip.

“The concept is interesting and well-formed, but in order to earn better than a ‘C,’ the idea must be feasible.”

—A Yale University management professor in response to Fred Smith's paper proposing reliable overnight delivery service. (Smith went on to found Federal Express Corp.)

“The wireless music box has no imaginable commercial value. Who would pay for a message sent to nobody in particular?”

—David Sarnoff's associates in response to his urgings for investment in the radio in the 1920s.

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