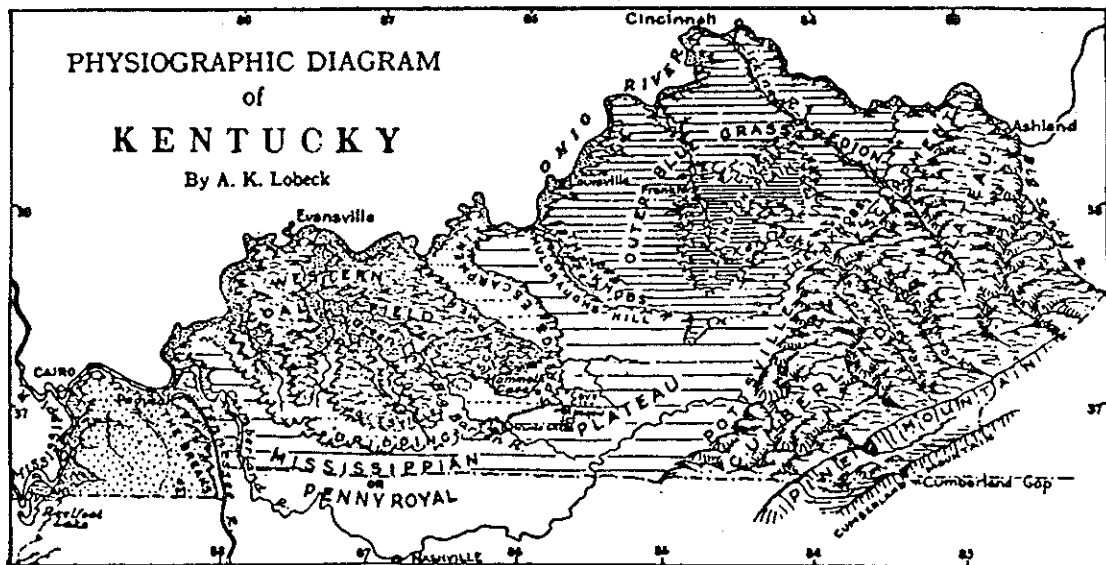


ROUND UP 2000



Department of Geological
Sciences
University of Kentucky

DIRECTORY

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LETTER FROM THE CHAIRMAN

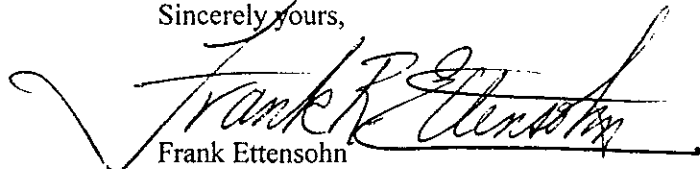
Dear Friends of the Department,

Once again, it is good to greet you on behalf of the Department; it has been a busy and challenging, but productive, year. Much of the year was spent in preparing for and undergoing our five-year review. We were very pleased with the review because we believe that it accurately reflects recent attempts to improve the quality of our education and research programs and to develop a common sense of purpose. The review noted as positive: our revised curricula, a new sense of collegiality, record gains in research productivity, a strong adjunct faculty, growing interactions with the Kentucky Geological Survey and Center for Applied Energy Research, our strong baseline geology program, and thinking "outside the traditional mode" in developing new research areas and hiring strategies. However, they also noted two challenges: the small size of our regular faculty and our lack of research infrastructure. In addition, late last year we learned that our degree productivity (and that of all other geology departments in the State) did not meet goals set by the State Council on Postsecondary Education (CPE). Of course, some of these are very serious challenges if we are "to grow" the Department, because, as the review pointed out, we are doing about all that can be expected with current resources. Nonetheless, challenges always provide special opportunities for positive development. For example, at present we are in the running for an infrastructural improvement grant in excess of one million dollars, and as a result of the CPE pronouncement, by the next year we hope to institute a new BA degree to help attract students interested in geological applications to government, law, policy, and education. We have also helped to develop a new State Consortium of Geoscience Departments, which we believe will boost collaboration and enable us to deal more effectively with overlapping resource and teaching issues in the State.

In all of this, the University and College are helping. The University will provide major support to renovate our outdated teaching facilities, while the College has provided us yearly budgetary add-ons, permission to hire new, cutting-edge faculty in a timely fashion, and generous start-up funds for them. In fact, last year we made one hire, and two searches are currently underway. College resources, however, are also limited, and it has been difficult to get the University to recognize our unique requirements as a field science. As a result, we have continuing needs for replacement vehicles and for student support on those special long-distance field trips where much of geologic learning really occurs. There are many ways you can help us in terms of advocacy and financial support, and I want to ask you to look inside at page 2 to see how important alumni(ae) and emeritus support was in developing two new student-research support funds.

I wish to thank you for that support and what it shows about your commitment to continue on as a part of our team, working toward our common goal of a better Department.

Sincerely yours,



Frank Ettensohn
Professor and Chair

A Letter from Henry Morgan, New Chair of the Advisory Board

Many of you may remember that about ten years ago there was some real concern about the viability of the Department of Geological Sciences (DGS) in the University. Fortunately, the advocacy of our alumni, among others, dispelled these concerns, and this has not been an issue since. Of course, many of us have not forgotten about that, and it just goes to show how important alumni action can be. However, at present the Department is facing another challenge from a "new kid on the block."

This "new kid," the Council for Postsecondary Education (CPE), is setting standards for departments across the State that appear to me to be unrealistic. If a department does not graduate more than 12 undergraduates in any one year, then that department is deemed "nonproductive." Nothing is said about the quality of the education of said graduates, just the quantity. My concern is that this could be a serious threat to quality education in geology, and at present no geology department in this State is meeting the graduation requirements set by the CPE. Perhaps there is some need to educate the CPE on realistic standards.

For about a year, I have been attempting to help the Department of Geological Science. I started by talking with the chairman, Dr. Frank Etensohn, about what could be done to assist the DGS in becoming more visible, more effective and better appreciated in the University. I gave Dr. Etensohn a list of my observations and he proceeded to work on some of the suggestions. One of the suggestions was that the faculty needs to be more visible at various professional meetings in the State. Dr. Etensohn and I also met with the Dean and discussed several of my observations and some of Dr. Etensohn's needs. Although the Dean was very receptive and favorable toward ideas about improving the Department, it soon became apparent that his resources were also limited, and that he would not be able to do all that he wished he could in the immediate future. I am, however, encouraged by the approval for new faculty searches.

In August, through the efforts of the Department and Dr. Jim Cobb, Kentucky State Geologist, the Coalition of Kentucky Geoscience Departments was established and met for the first time. Members from most of the geology departments in Kentucky were in attendance, and I look forward to greater attendance from all departments in the future. I think that attendance is important, because university professors should communicate and cooperate with one another so that their programs may be mutually enhanced and improved, and so that through their efforts, administrators will recognize that geology is an important part of natural science. It is my opinion that we must all network in order to be effective. Working within this coalition will build cooperation and hopefully encourage students to stay in Kentucky and find the opportunities they need in the State rather than going to out-of-state schools.

As a result of the coalition, Dr. Alan Fryar of UK DGS has taken on a project involving distance learning whereby departments around the State will cooperate and share their various talents and programs through the Internet and/or with video tapes. Dr. Etensohn is planning a cooperative field camp that may be shared among all DGS's around the State. They will share faculty as well as students and some field experiences may be held in locations other than the traditional Colorado location. This idea has a lot of potential and should be helpful to all Kentucky geoscience departments.

The UK DGS has also worked with the Kentucky Geological Survey to create an internship program for geology students from across the Commonwealth. An eight-week course was set up by the DGS so the interns could receive UK college credit for their experience. The students interned at the Kentucky Geological Survey. Dr. Jim Cobb, State Geologist and Adjunct Professor in the Department, served as the instructor for the course. Six students took part in the program, which could become a recruiting tool for geology graduate students as well as a positive connection between geology programs in the State.

The UK DGS received its five-year review and it was generally favorable, and although it indicated a need for additional support of the Department, it did not indicate where that support should come from in a time of limited University resources. It went so far as to say that faculty should be doing more research and less teaching and that adjunct faculty could be used to help accomplish this. However, in another paragraph it indicated that continued use of adjunct faculty was not a good way to build a strong department in the long term. I was a little astounded at the lack of understanding by some in the University about the importance of geology. I am very concerned that the University may be neglecting a very important part of the science formula. Every decision made in the world of science involves and requires some understanding of geology. Any decision made without using the geological factors, will be off target by a measurable amount.

The University has stated that it wishes to become a "Top-Twenty Research Institution," but I wonder how in the world they expect to accomplish this goal without a strong program in geological science. Every natural resource, every natural disaster, and the basic understanding of everything on and in the earth is geologic and must be studied using geologic principals, until we understand, not how to control nature, but how to survive with it.

I am now concerned about alumni participation in and advocacy for the DGS. Having attended most advisory board meetings for several years, it has been obvious that fewer and fewer board members and graduates have been attending. During the last two or three years, only one or two showed and the former board chairman has resigned. Dr. Etensohn has now asked me to serve as chair of the Advisory Board and to write a letter to you soliciting your support in whatever way possible. The above is strictly my opinion, and no one else should be "blamed" for my opinions in this letter. However, I do wish all of you would respond and let me know your thoughts. In this time of limited University resources, I am concerned that if we alumni do not speak up for and support the Department, as well as the importance of our discipline, those resources will go elsewhere. I don't have to tell you how important geology is in our everyday life and decisions.

Henry M. Morgan

ANNOUNCEMENTS

E-MAIL ADDRESSES

The alumni directory now includes e-mail addresses. Please send yours if it is not in the directory.

CO-OP PROGRAM

The co-op program (matching students with summer and/or part-time jobs) needs help to identify available jobs, and the requirements for staffing them. A similar search for qualified and interested students is underway in the department. Contacts for the program are:

for the Advisory Board
Stephen B. Sullivan
1508 Cherokee Rd..
Louisville, KY 40205
Telephone 502-587-2641

for the Department
To be appointed
101 Stone Building
Lexington, KY 40506-0053
Telephone: 606-257-3758

If you know of a job opportunity (or a possibility of one), please contact Steve or the Department. We hope to provide some meaningful work experience for our students, and to provide employers with some enthusiastic young geoscientists as temporary workers. The potential for mutual recognition of future full-time opportunities is also present.

DEPARTMENT NEWS

GEOLOGICAL SCIENCES ALUMNI WEEKEND AT UK

2000 Alumni Weekend

The 2000 McFarlan Lecture, "Ordovician K-bentonites in North America and the Argentine Precordillera: Can they help in paleogeographic reconstruction?" was given by Dr. Warren Huff, Department of Geology, the University of Cincinnati. The weekend program included a field trip on Friday afternoon: Mississippian stratigraphy and paleontology

at the new Big Hill Road cut south of Berea led by Frank Etensohn. The annual picnic was held at Waveland on Friday evening.

Dr. Alan Fryar organized the annual Geological Sciences Alumni Symposium program that included the following presentations:

The Bessemer transverse zone in the Alabama Appalachians, Margaret C. Brewer, Graduate Student, Department of Geological Sciences.

Quaternary deformation along the northwest-southeast oriented Wolf Island Fault in southeastern Missouri, G. Steve McDowell, Graduate Student, Department of Geological Sciences.

Snow-cover dynamics and one-dimensional energy balance of a snow cover in the Schaninsland (Black Forest, Germany), Stefan W. Vogel, Graduate Student, Department of Geological Sciences.

Oxygen-isotope analysis of carbonates, silicates, and oxides in carbonatites: Constraints on crystallization temperatures in carbonatite magmas, Elizabeth A. Haynes, Graduate Student, Department of Geological Sciences.

Susidence history of the Rome Trough, Tina M. White, Graduate Student, Department of Geological Sciences.

This year's program again combined our annual Department Awards Program with our annual Alumni Banquet. Thanks to contributions from alumni, students were able to attend the banquet at a discounted rate. The major student awards are listed on pages 10-11 in the *Round Up*. As always, some less-than-serious, but traditional, awards provided lighter, humorous moments.

The next Alumni Weekend has been set for April 20-22, 2001. Mark your calendars.

2001 Alumni Weekend and Hudnall Symposium

The 2001 Alumni Weekend is scheduled for Friday, April 20, through Sunday, April 22. This year's program will coincide with the Hudnall Symposium on tectonics in honor of Professor Nick Rast's pending retirement. The weekend will start on Friday with a field trip across the spectacular Carboniferous section of eastern Kentucky and Pine Mountain. The symposium, which we anticipate will include 25 talks, will take place Saturday and Sunday in the W.T. Young Library auditorium. Professor

John Dewey of Oxford University will present the Brown-McFarlan Lecture as the keynote address Saturday morning. The Department's spring banquet (renamed the Rast Fest for the occasion) will be held in the University of Kentucky Faculty Club on Saturday evening, with Professor Jim Skehan of Boston College as master of ceremonies. We have invited members of the campus community and 37 distinguished scientists from western Europe and North America, several of whom (from as far away as Ireland and England) have already indicated their intent to participate. More information will be mailed to you (and posted on the Department's Web site—www.uky.edu/ArtsSciences/Geology) in the next couple of months. Please join us!

SECOND ANNUAL NATIONAL EARTH SCIENCE WEEK, GEOLOGICAL SCIENCES OPEN HOUSE

On October 11, the Department held the second annual Geological Sciences Open House in recognition of National Earth Science Week. We estimate that attendance was at least 250, mostly grade school and middle school kids and their parents. Activities were supervised mostly by our undergraduate and graduate students and included: the "rock pile" where kids can start a rock collection using samples we collected various field trips; minerals under the microscope; a fluorescent mineral display; geophysics demonstration including a home-built seismograph; groundwater displays using "ant farm" type models; tours of the Hudnall Fossil and Mineral Museum; tours of the paleontology labs; and the world renowned display of Frank Ettensohn's dinosaur paraphernalia, a truly "must see" exhibit. We received many compliments from the parents of children attending the open house. They were particularly impressed with the job our undergraduate and graduate students did as hosts. I think we all learned that these types of events are a lot of work, but well worth the effort because of the visibility for the department and the experience for our students.

BROWN-MCFARLAN FUND ENDOWED

Many of you have probably had research or travel support from the McFarlan Fund during your undergraduate or graduate careers in the Department. This fund has been supported solely ever since its inception by alumni contributions and, in some years, we have had many contributions and, in other years, only a few. So the kind of support we have been able to provide students has varied from year to year.

Now I am very pleased to announce that Emeritus Professor Bill Brown and his wife, Blessing, have endowed this fund with a \$10,000 donation. This endowment will produce about \$500 per year and help to put the McFarlan Fund on a "more even keel."

As the average award for student research is about \$400, we will continue to need your support to see the maximum number of students can be supported each year.

In honor of the Browns' contribution and to honor Dr. Brown's long-time collaboration and friendship with "Dr. Mac," we thought that it would be appropriate to change the name to the Brown-McFarlan Fund, and this is the way we will refer to it hereafter. We greatly appreciate the Browns' generosity.

THE JOHN FERM GRADUATE STUDENT FUND

As many of you are probably aware, John Ferm passed away about a year ago. In order to honor John and his many contributions to research and teaching, his wife, as well as some of his former students and friends, began collecting contributions to begin an endowed fund to support field-related, graduate student research. Because we thought that it might be possible to get the contributions matched from the Kentucky Research Challenge Trust Fund (RCTF), the Department also began to actively solicit contributions from its many alumni. Early last year, we believed that the minimum amount for a match would be \$25,000. However, by last August, we learned that the amount would be \$50,000. This seemed almost unachievable but, to date, we have collected nearly \$42,000, and there are still matching funds left in the RCTF. So if any of you have not contributed and would like to, your contribution could help put us over the \$50,000 minimum, and double the endowment amount to \$100,000. Whichever way it goes, we appreciate your contributions and so will many students in years to come!

RON STREET RETIRES

Dr. Ron Street, who has been with the Department since 1977, retired at the end of the academic year. Ron and his students have been responsible for the development and buildup of our seismology research.

As a result of Ron's work, the State has a seismic network and is one of the best equipped departments in the country. Over the years, Ron has brought into the Department much research funding and has

produced many well-trained seismologists. He was also instrumental in developing a very productive, collaborative research program with the Kentucky Geological Survey. Because we were not able to find an immediate replacement for Ron, he has agreed to stay on for the coming year in a post-retirement appointment to help run and maintain the network and continue ongoing research projects.

SHELLEY KENNER HIRED

While seeking a replacement for Dr. Ron Street, we were fortunate to invite Dr. Shelley Kenner, then completing her doctoral studies at Stanford, for an interview. Although Shelley is a theoretical seismologist, we were so impressed with her research on the New Madrid seismic zone and her potential, that we inquired about the possibility of hiring her in addition to Ron Street's replacement to strengthen our seismology program even further. The Dean was very gracious and we were able to extend an offer to Shelley, which she accepted. She is currently on a leave of absence doing a post-doc at Cal Tech. She will join us in August, 2001.

TWO FACULTY SEARCHES ONGOING

Currently we are searching for an applied seismologist and an environmental geochemist capable of building a program around a stable-isotope ratio mass spectrometer. Sue Rimmer is chairing the search committee for the seismologist and Dave Moecher is chairing the search committee for the geochemist.

JIM MCHUGH RETIRES

After twelve years of work as our thin-section technician, Jim retired last October. Although Jim made all of our thin sections, he also helped with vehicle maintenance, equipment inventory, Department displays, and lab specimens for our introductory labs. His will be a tough position to replace.

ALUMNI NEWS

Zulfiqar Ahmad, Ph.D 1992

I am teaching as Assistant Professor in the Department of Earth Sciences, Quaidi-i-Azam University Islamabad and providing consultancy services to industries on a

part-time basis. I was on leave from August, 1997, to August, 1998, and worked as hydrogeological specialist for a rural water supply and sanitation project sponsored by Asian Development Bank, Pakistan. I have now resumed my job again in the University.

Jon B. Armstrong, B.S. 1990, M.S. 1992

Emily and I moved to Nashville, Tennessee, in February 2000 with our two bullmastiffs, Loose Lucy and Sunshine Daydream. I am now working for BP's Midwest Environmental Services as the Portfolio Manager of the Nashville Region which includes projects in Tennessee, Kentucky, and Indiana.

Brian Baker, B.S. 1982, M.S. 1992

I have now been with the Kentucky State Government for 13 years. I am approaching 10 years with the Department of Environmental Protection. For the last year, I have been working only on the Paducah Gaseous Diffusion Plant in western Kentucky. The plant enriches uranium for nuclear fuel and has some rather significant environmental issues. I am primarily working on the groundwater and soil contamination. One of my major projects has been to evaluate innovative assessment and remediation technologies. I continue to enjoy traveling, backpacking, and, on occasion cave exploring.

Dennis R. Bell, Jr., B.S. 1984

I am a senior geologist with Skelly and Loy, Inc. in Harrisburg, Pennsylvania. I am in charge of completion of rescue confirmation and property valuation studies for both coal and non-coal deposits.

F.M. Bodycomb, B.S. 1956

I am a consultant with Industrial Minerals doing ore evaluation, product development, and research.

James C. Bolton, M.S. 1985

Photographing imbricate shell structures along flanks of oyster banks in between Barrier Islands. Pay is not great but oysters are good!

William Patrick Conyers, B.S 1951, M.S. 1957

Retired with Mobil Oil Corporation Houston, Texas. Staff Development Geologist. Presently Adjunct Faculty at North Harris College District, Houston, Texas, in Math/Science.

Dennis Coskren, M.S. 1972, Ph.D. 1983

My three new minerals from Alum Cave Bluff should be published by the time the *Round Up* appears

[coskrenite-(Ce), levinsonite-(Y), and zugshunstite-(Ce)]. Two other probable new minerals have also been found there. My study of the locality will have appeared as well, in *Mineralogical Record*. I'm beginning to lead geology field trips here in Maryland, where the Piedmont has wonderfully complicated geology.

Joseph Cupp, B.S. 1992, M.S. 1994

I am currently working as a contract professional for BP Amoco in Knoxville, Tennessee. I manage the environmental restoration and liability management at each of the BP and Amoco service stations, truck stops, and bulk terminals in Knoxville, Chattanooga, and Memphis, Tennessee. The biggest change in my life since the last *Round Up* is the addition of my son, Adam Clay. He was born on January 26, 1999, and he has quickly moved through the ranks to become the undisputed head of our household.

Phillip A. Davis, Ph.D. 1977

After two years of trying private industry, I decided government research was better. So, I went back to the U.S.G.S.

W. Patrick Diamond, B.S. 1969, M.S. 1972

Since the abolishment of the U.S. Bureau of Mines in 1996, my coalbed methane research for mine safety has continued at NIOSH. The only significant change has been my recent acceptance of another management position (Section Chief -Explosion prevention Research), something I vowed never to do again (too much paper work and not enough research). Like about half of our staff of 300 people in Pittsburgh, I will be eligible for retirement in about 5 years, so I guess I can survive being a supervisor that long.

Edward S. Earle, B.S.

I have retired.

Tim Elam, M.S. 1978

After reading my write-up submitted to the 1999 *Round Up*, I must admit there have been few major changes in my life or in my wife's life. In general, that's good. I am still working as a development geologist for Chevron in Bakersfield, California. I work closely with engineers to extract 12⁰ API heavy oil from Pleistocene Reservoirs in the San Joaquin Valley. Our team is responsible for producing 11,000 barrels of oil per day. Our oil is concentrated in synclines and we rely on steam as our method to

mobilize heavy crude oil. Gravity drainage is the drive mechanism. I am still highly involved with local educational efforts: The Buena Vista Museum of Natural History (Vice President), and the Bakersfield City School District. Check our museum website at www.sharktoothhill.com. We recently sold my parents' home in Ashland, Kentucky, where I grew up. They now live in Lexington at a health-care facility. So, Lexington will now be my home away from Bakerfield. I had a good visit with Dr. Etensohn in March, 2000. Best wishes to faculty, alumni, students, and other friends of the Department of Geological Sciences.

Steven F. Elder, B.S. 1984

Retail mergers and acquisitions for Clark Material Handling Company.

Christopher Elvrum, M.S. 1994

In summer of 1999, I moved back to Minnesota and started work as a water supply planner with the Metropolitan Council. This is a regional planning agency which, among other things, plans for future use of water resources in the Twin City metropolitan area. I conduct water demand forecasting, review water plans, and conduct groundwater modeling.

Jurgen Faupel, 1968-69

Our terrific and sometimes terrifying Nigerian assignment with ESSO E.S.P. Nigeria in Lagos ends September 1, 2000. We will repatriate to Germany where my home company will send me on early retirement January 31, 2001. At least the "merger" has hit me at the end of my career. Looking back, I would not hesitate to recommend a work life with the oil industry. We have fond memories of all the places we have been to, particularly of the friendly folds in Nigeria.

Elliot Preston Graim, B.S. 1984

Owns and operates two book stores, one in Prestonsburg, Kentucky, and one in Pikeville, Kentucky.

Robert J. Gibson, B.S. 1931

Play golf regularly. Belong to three bridge groups, each meeting monthly, oil painting, active investor in stocks and bonds.

John N. Holeman, B.S. 1947

My retirement is delightful, wintering in Florida, summers in Maryland suburb of Washington, DC,

and the month of August for the past 17 years in San Francisco, California. I keep active with ballroom dancing, bridge, gardening and cruises. I have many wonderful friends in all three locations.

Charles M. (Max) Jacobs, B.S. 1960, M.S. 1961

I am still actively involved in developing drilling prospects as a petroleum geologist. I am thrilled to see the oil industry becoming more active again. I still follow the Wildcats with great enthusiasm and am looking forward to the NCAA tournament.

Kevin Kohles, M.S. 1985

After 15 years, I decided to leave Texas and the oil business. We moved here to Cary, North Carolina (near Raleigh, Durham, Chapel Hill) in June. I joined a start-up company called Trading Edge which has an internet-based trading system for institutional bond investors. Ben and Jenna enter fifth and second grade this fall.

Jack B. Llewellyn, B.S. 1995

Retired from IBM and living in Lexington, Kentucky. Geo-pick has rusted, Coddington 10x busted! Still enjoy Vienna sausage and crackers on a Saturday afternoon. Happy memories of mapping the "gnarly Brannon" with Dr. Mac., while searching for the elusive elephant-foot fossil (*Brachiospongia digitata*).

Kathy & Phil Manger, M.S. 1981

Kathy and I are doing fine, as are our three kids (ages 12, 9, and 6). We celebrated our 20th anniversary in August. We tied the knot in the middle of our two-year stay in Lexington, Kentucky. Kathy continues to work as a geologist at the small Boston-based firm called the Cadmus Group. She does work mostly for EPA and DOE. She's active in AAPG also. I've been building information systems for DOD clients for the last 15 years. It's not rocks but it pays the mortgage!

Rudi Markl, B.S. 1961

At the end of 1999 I retired from my position as a marine geologist-geophysicist with the Naval Oceanographic Office at Stennis Space Center, Mississippi.

As a student (1955-1960), I was not really excited about geology until I was first exposed to the concepts of continental drift and paleomagnetism/polar wander. After graduating, I served two years in the Navy. In 1961, with \$4 left and sleeping in my

car in Houston, I got my first job with a doodle-bugging company in Wichita Falls, Texas.

Fortuitously, I was given a book of short stories that included an article on the origin of the ice ages, by Maurice Ewing and William Donn of Lamont Geological Observatory. I was so impressed that I wrote to Lamont and got a job. It wasn't long before I finally knew what I wanted to do in geology; submarine geology! And I was being paid to sail the seven seas on research ships! During my seventeen years doing research at (now) Lamont-Doherty Earth Observatory of Columbia University, I also got my M.A. and Ph.D. Later, I spent three years as an exploration geologist with Amerada Hess International (in Manhattan); two awful years as a consultant (unemployed) and fifteen years at the Naval Oceanographic Office. Lamont was the high point. It didn't pay well, but how exciting to be at the hub of study of continental margins and ocean basins and the development of the plate tectonic paradigm—the most exciting time in the history of geological science! Although we plan to move back to my house in Rye, New York, we will be based in New Orleans for the next year or so. We are currently on a two-month driving-camping trip around the West and plan to do a similar trip in Europe next year.

John S. Martin, B.S. 1985

After working in the oil fields of western Kentucky for only one year after graduation, I have become a high school science teacher (biology/earth science) at Central Hardin High School in Elizabethtown, Kentucky.

Gregory K. Maynor, B.S. 1981, M.S. 1984

I recently returned to the Bluegrass state and am working as a project manager/senior geologist for CDM, Inc. in Louisville. CDM, Inc. provides environmental and engineering services for various commercial and private industry clients.

Rob McDowell

I have been quite busy. I'm in the Water Resources Management Program at the Georgia EPD. I handle agricultural groundwater permitting statewide. Luckily, it's not as bureaucratic as it seems, as I am helping craft new groundwater use policies and a five-year study of the lower Flint River Basin. I also teach two nights a week at either Georgia Perimeter College or Georgia State. In October, I lead field trips around Georgia for a continuing ed class at Emory.

Phil M. Miles, B.S. 1938, M.S. 1940

Retired. Golf, computer, and investments keep me plenty busy.

John E. McNulty, Jr., B.S. 1988

I own a large internet-based business. I represent about 1500+/- manufacturers in about eight cities. I still practice environmental geology on a contractual basis.

Tim A. Moore, M.S. 1986, Ph.D. 1990

For the last three years I've been living in New Zealand working for CRL Energy. Currently I manage the consulting business and Christchurch operations. We do energy and geotechnical consulting but also have several large government grants for research. It's all pretty neat stuff but the real reason I'm here is the great hiking, biking, and kayaking!...and the incredibly fit women!

Michael E. Morris, B.S. 1989

Working as a senior geologist for Shield Environmental Associates, Inc., in Lexington, Kentucky. Shield is a full service environmental consulting firm.

Paul J. Muthig, M.S. 1982

President of Earth Management Systems, Inc.

Terence G. O'Hare, B.S. 1980

I have been working in Dallas, Texas, as an independent petroleum geologist for the past fourteen years. Most of my projects are located in Texas. I was married to Renee O'Hare in 1992 and we have three children ages 5, 3, 1. Life is very busy!

Alma Hale Paty, M.S. 1984

I am still running my business, A capital Resource, with three clients. Projects range from writing a book, *Minerals—Foundations of Society*, to be published by AGI in the fall, to writing museum reviews for Geotimes and science articles for *Science Scope*. Working on developing a grades 5-8 teachers 'guide on Illinois coal and a teachers' guide on climate change.

J. Hunt Perkins

Still in the oil and gas business in Lexington and am president of Petro-Hunt, Inc., Pegasus Energy Resources Corp., and Renovated Energy Resources, Inc.

Herman H. Rieke, B.S. 1959

I have completed my tenure of 6 ½ years as Head of the Petroleum Engineering Department at the University of Louisiana at Lafayette. The university has a new name; a change from USL. I will now be involved with the university's new energy center. There will be more information on my role next year. This past summer, I spent a month in France and paid a visit to the Graduate Petroleum Engineering Education Division at the Institut Francais du Petrole in Paris. Their main thrust in education is to develop a more thorough integration of geology, geophysics, and geochemistry into their engineering curriculum programs. In addition, I participated at the end of July, in the Fifth Colloquium on Petroleum Engineering Education in Breckenridge, Colorado. One of the outcomes was that industry is not happy with state, institutional, and academic constraints on undergraduate "cutting-edge" instruction. The issues revolve around credit hours for graduation. Many BORs have mandated that engineering colleges produce engineers within four years (124 to 132 semester credit hours). In petroleum engineering programs this created a gradual reduction from our programs having 139 to 150 semester credit hours. Industry opinion is that most students are not well prepared even before the reduction. They want undergraduate students taking additional courses in management, geosciences, and economics. There was also discussion on making the MS degree the first professional degree in petroleum engineering. Some European universities have made such a change.

Doug Rucker, B.S. 1983

My wife and I moved to northern Kentucky in the spring of 1999. I am currently employed with SRW Environmental Services, Inc., in Milford, Ohio. I am involved in all phases of various environmental projects.

Tom Schick, B.S. 1994

The new year has brought many change to our family. After 5 ½ years with my employer, I decided it was time to move onward and upward. I am now employed as a staff geologist by a civil engineering firm in Maryland. I am pursuing my professional license and thinking about going back for a Masters degree in civil engineering.

Linda Schramm, B.S. 1978

I am an acupuncturist in Annadale, Virginia.

Robert E. Schuster, B.S. 1960

Retired in August, 1990, from Corning Glass Works after 31 years of service. Retired as a Senior Associate with specialization in optical and ophthalmic glass melting at the Harrodsburg, Kentucky, plant. Since retirement I have spent time enjoying life with my wife, Nancy, our eight children and 14 grandchildren, traveling, golfing, and working on a never-ending "Honey-do-list."

Charles Tabor, B.S. 1990

I moved from Boulder, Colorado, to Grand Junction, Colorado. I am now working for Roy F. Weston, Inc. Most of our work is within the UMTRA (uranium mill tailings remedial action) program, and we also have a few DOE sites outside of UM TRA. Our focus at the UMTRA sites is remediation of U, V, NO₃, NH₃SO₄, etc. plumes in GW. Also working to apply new remediation technology to a chlorinated solvents site in Florida.

Dan F. Travis, B.S. 1957

Retired from U.S. Steel Coal Mining Division as chief engineer 13 years ago. Started own outplacement consulting business. Sold that business in 1999. Trying to retire again but am having so much fun cannot find time to retire.

Roger Ward, B.S. 1986

Owner and president of An-Tek, Inc. of Evansville, Indiana. I am a Registered Professional Geologist in Tennessee and a Certified Hazardous Materials Manager. I perform several functions with the company, which include: Occupational Workplace air monitoring for employee hazardous substance exposure assessments, Indoor Air Quality Inspections air monitoring and hazard control consulting, Environmental/Property Assessments, Environmental and Occupational Health Compliance Training, etc.

Tom Webb, B.S. 1983

I currently am the Environmental Compliance Coordinator for the city of Lexington, Kentucky. This position was created recently to assist the Lexington-Fayette Urban County Government to comply with environmental regulations and to be environmentally proactive. I'm still happily married to Lynnell and have a two year old son named Matthew. My sole hobby these days is keeping up with our boy.

Thomas C. Webster, M.S. 1982

Senior Hydrologist, U.S. Army Topographic Engineering Center, Alexandria, Virginia. Recently completed hydrologic studies in Africa, Middle East, Europe, Central America, and South America in support of Nation Building Programs and Department of Defense deployments.

Jack C. Wilhoit II, B.S. 1999

Upon graduation, I took a job with the Department for Environmental Protection in the Division of Water. After completing a nine-month appointment, I took a job with the Louisville Water Company as the Wellhead Protection Program Coordinator. I developed a groundwater flow model for the water company. Since then, I have returned to school. I am currently at the University of South Florida getting a Masters in costal geology with Dr. Richard Davis.

Todd Zuiderhoek, B.S. 1986

After eight years (1992-2000) in Lexington, Kentucky, working for general construction, metal fabricating, and environmental firms, I got an opportunity to work for a large federal prime contractor (Earth Tech, Inc.) near my hometown of Middletown, Ohio. We moved in December, 1999.

IN MEMORIAM

This year the department received word of the passing of the following alumni and friends. We are saddened by the loss of these friends, and we extend our sincere sympathy to their families.

Noel W. Engel

John C. Ferm, November 16, 1999

Morris Farber

Phil Miles, November, 2000

William V. Naylor, December 14, 1994

Robert A. Paasch, December 7, 1997

Orville Phelps

Thomas G. Roberts, June 22, 2000

Harry Settle

Daisy M. Vice, December, 1997

Mearl M. Vice, August, 1999

Thomas G. Roberts, Jr.—June 22, 2000

Thomas Glasdir Roberts, Jr., Ph.D., 81, passed away peacefully on June 22, 2000, at the Lexington Center for Health and Rehabilitation. Dr. Roberts died from Alzheimer's Disease. He was born in Clintonville, WI, August 3, 1918. He graduated from Oshkosh High School in 1936 with honors. He attended Oshkosh State Teacher's College, 1937. He

received a Ph.D. in geology from the University of Wisconsin-Madison in 1940. He was a geologist with the Shell Oil Co. from 1941-46 based in Tulsa, OK. He was an instructor at the University of Kansas in geology, 1946-47. In 1947 he was a Special Fellow at Columbia University, New York City, New York, and received a Ph.D. in geology. From 1949-55 he was a geologist with the U.S. Geological Survey, residing in Alaska for three years, one year in Colorado, and one year in New Mexico. In 1955 he took a six-month trip around the world. In 1956 he joined the professional staff of the University of Kentucky, Department of Geology, where he served as assistant professor and later associate professor of geology until his retirement from that position in 1986. Dr. Roberts also served 7 ½ months on a Fulbright Aid lectureship in 1941 at Universidad Central at Quito, Ecuador. Dr. Roberts possessed a lifelong love of travel. He traveled to China, the Soviet Union, and Australia, in addition to his trips around the world and his residences abroad. He enjoyed many objects that he collected in his lifetime of travel. He had a passion for gardening, and erected a greenhouse at his home in Lexington. He was also an accomplished oil painter. Dr. Roberts greatly enjoyed the state of laughter, and took delight in his own laughter. He took pleasure in an occasional alcoholic beverage, which he termed a "transfusion." He was a card-carrying member of the Hemlock Society and described himself as a "devout atheist." Dr. Roberts was especially proud of his Welsh heritage. His middle name, "Glasdir," means blue lake in the Welsh language. His paternal grandfather, Edward Griffith Roberts, was born in Ffynnongrowe, Wales, in 1864. Edward Roberts became a Methodist minister who emigrated to Bangor, PA, in 1891 to preach in the Welsh language at a Methodist Church there. Edward Roberts and his wife then moved to Wisconsin where he was a Methodist minister preaching in English at Nikimi, Green Lake, Almond, Waukau, Marshall, Manawa, and Juneau, Wisconsin, among other Wisconsin locations. Dr. Roberts was preceded in death by his parents, Ina Irene Crockett Roberts in 1959 and Thomas Glasdir Roberts Sr. in 1927. He was also preceded in death by his brothers, Llewellyn George Roberts in 1965 and Edward John Roberts, 1976. He is survived by the children of his brothers and grandnieces and grandnephews. He is also survived by other relatives throughout the United States. By prearrangement, Dr. Roberts willed his physical remains to the University of Kentucky to be used for medical research. At his specific direction there will be no funeral or memorial service. If desired,

memorials in his memory may be made to the Department of Geological Sciences of the University of Kentucky.

--*Lexington Herald-Leader*, Sept. 27, 2000

STUDENT NEWS

1999-2000 DEGREES AWARDED

BACHELOR OF SCIENCE

M. Justin Biliter
 Benjamin Cichanowicz
 Michael Cleary
 John Cook
 Alexander Harper
 Todd Milici
 Mark A. Tyra
 Tina White
 Dena Wunsch

MASTER OF SCIENCE

Seth Berman, 2000 M.S., An integrated high-resolution P-and SH-wave seismic reflection investigation of neotectonic deformation of Sikeston Ridge in the New Madrid seismic zone.
 Advisor: Ronald L. Street

Elizabeth A. Haynes, 2000 M.S., Oxygen isotope composition of carbonates, silicates, and oxides in carbonatites: Constraints on crystallization temperatures of carbonatite magmas.
 Advisor: David P. Moecher

Shane R. Schmidt, 2000 M.S., "Reef" occurrence and sequence stratigraphy, Upper Ordovician Bardstown Member, Drakes Formation, north central Kentucky.
 Advisor: Frank R. Ettensohn

Christofer J. Sweat, 2000 M.S., The role of organic carbon in natural attenuation of a trichloroethene-contaminated aquifer system, Paducah, Kentucky.
 Advisor: Alan E. Fryar

Matthew Vest, 2000 M.S., Characterization of a subsurface, gas-producing Mississippian sandstone in southern Whitely County, Kentucky and northern Campbell County, Tennessee.
 Advisor: Frank R. Ettensohn

DOCTOR OF PHILOSOPHY

Mark A. Kulp, 2000 Ph.D., Holocene stratigraphy, history, and subsidence: Mississippi River delta region, north-central Gulf of Mexico.

Advisors: William A. Thomas and Paul D. Howell

Sunil Mehta, 2000 Ph.D., Investigation of the source of regional salinization of the Ogallala aquifer, Southern High Plains, Texas, U.S.A.

Advisors: Alan Fryar and William A. Thomas

GRADUATE STUDENT RESEARCH

German Bayona (B.S., Columbia—Bogota; M.S., New Mexico State), Ph.D. dissertation: Controls on Middle to Late Ordovician (Taconian) synorogenic deposition in the southeasternmost part of the North American craton (Laurentia). Supported by National Science Foundation, Petroleum Research Fund, and UK Dissertation Enhancement Award. Advisor: William A. Thomas

Christopher Berg (B.S., Cincinnati)
M.S. thesis: Effect of deformation on oxygen isotopic systematics in polymetamorphic rocks.
Advisor: David Moecher

Margaret C. Brewer (B.S., Hunter; M.S., Kentucky)
Ph.D. dissertation: The Bessemer transverse zone in Alabama, structure and stratigraphy.
Supported by USGS EDMAP.
Advisor: William A. Thomas

Brian S. Cook, (B.S., North Carolina, Chapel Hill)
M.S. thesis: Lateral compression within a lateral ramp in the Pell City thrust fault, Appalachian Thrust Belt, Alabama. Supported by U.S. Geological Survey EDMAP
Advisor: William A. Thomas

W. Brent Garry (B.S., William & Mary)
M.S. thesis: Raiders of the Lost Mushwad: Geologic mapping of the Ashville 7.5-minute quadrangle, Appalachian Thrust Belt, Alabama. Supported by U.S. Geological Survey EDMAP
Advisor: William A. Thomas

E. Lee Gatterdam (B.S., Furman)
M.S. thesis: Reactions of trichloroethene with pyrite.
Advisor: Alan E. Fryar

Helen (Lisa) Jewell (B.S., Georgia)
M.S. thesis: Cane Run Bed, Lexington Limestone: Possible Seismite.

Advisor: Frank R. Etensohn

Walter Johnson (B.S., Louisville)
M.S. thesis: Stratigraphy of the Ste. Genevieve-Girken contact in western Kentucky.

Advisors: Frank R. Etensohn and Nicholas Rast

Steven Juszczuk (B.S., Queens; M.S., Texas Christian)
Ph.D. dissertation: How do the late Paleozoic structures within the Southern Oklahoma aulacogen relate to the late Paleozoic structures of the Ouachita-Marathon orogenic belt? Supported by the Southeastern Section of the Geological Society of America research grant.

Advisor: William A. Thomas

Julie Kasl (B.A., Depauw)
M.S. thesis: Origin of the Devil's Hollow Member, Lexington Limestone.

Advisor: Frank R. Etensohn

Danita LaSage (B.S., Eastern Kentucky; M.S., Alaska—Anchorage)
Ph.D. dissertation: Natural attenuation along a first-order stream receiving contaminated ground-water discharge.

Advisors: Alan E. Fryar and Susan M. Rimmer

Charles Mason (B.S., Morehead, M.S., George Washington)
Ph.D. dissertation: Ammonite biostratigraphy of the Lower-Middle Mississippian Borden Formation.
Advisor: Frank R. Etensohn

J. Todd McFarland (B.S., Kentucky)
M.S. thesis: Sediment fluxes through a karst-conduit system in the Inner Bluegrass.
Advisor: Alan E. Fryar

Alexander Stewart (B.S., Cincinnati)
M.S. thesis: Seismite horizons in the Tanglewood Buildup, Lexington, Limestone.
Advisor: Frank R. Etensohn

Susannah Taha (B.S., Illinois State)
M.S. thesis: Stratigraphy along the northern margin of the Tanglewood Build Up, Lexington Limestone.
Advisor: Frank R. Etensohn

Karen Exton Thompson: (B.S., Eastern New Mexico)

M.S. thesis: Ground-water flow in the Ledbetter Creek watershed, Calloway County, Kentucky.

Advisor: Alan E. Fryar

Steven B. Wood (B.S., Kentucky)

M.S. thesis: Ground motion analysis of the near-surface sediments under the Memphis, Tennessee metropolitan area.

Advisor: Ron L. Street

NEW GRADUATE STUDENTS

Matthew Massey, B.S. Tennessee

Todd McFarland, B.S. Kentucky

Alexander Stewart, B.S. Cincinnati

Susannah Taha, B.S. Illinois State

TEACHING ASSISTANTS

Chris Berg

Archana Chowdhury

Brian Cook

Brent Garry

Lee Gatterdam

Julie Kasl

Danita LaSage

Matthew Massey

Todd McFarland

Alexander Stewart

Susannah Taha

Karen Thompson

Tina White

RESEARCH ASSISTANTS AND FELLOWS

German Bayona

Gary S. McDowell

Steven Wood

STUDENT AWARDS

National Geological Society of America Research Grant

Chris Berg

Graduate School Dissertation Enhancement Award

German Bayona

Graduate School Research Grants

Brent Garry

Julie Kasl

Danita LaSage

Susie Taha

Karen Thompson

Brown-McFarlan Fund

German Bayona

Seth Berman

Margaret Brewer

Brent Garry

Elizabeth Haynes

Steven Jusczyk

Steve McDowell

Susie Taha

Stefan Vogel

Steve Wood

Pirtle Fellowship

Chris Berg

Julie Kasl

Danita LaSage

Tarr Award (Sigma Gamma Epsilon) - outstanding graduating senior

Mark Tyra

Pirtle Award - outstanding junior showing promise in geology

Andrea Holbrook

Student Internships

Tanaporn Sakulpitakphon—U.K. Center for Applied Energy Research

TA of the Year

Elizabeth Haynes

UK Undergraduate Research & Creativity Grant

Andrea Holbrook

STUDENT PRESENTATIONS

Thomas, W. A., and Bayona, G., Three-dimensional palinspastic restoration of the Anniston transverse zone in the Appalachian thrust belt in Alabama: Geological Society of America Annual Meeting, Denver, Colorado, October, 1999.

Brewer, M. C., and Thomas, W. A., The Bessemer transverse zone in the Appalachian thrust belt, Alabama: Geological Society of America Annual Meeting, Denver, Colorado, October, 1999.

Garland, N.B. and Ettensohn, F.R., Origin of a Middle Ordovician edrioasteroid firmground, central Kentucky. Geological Society of America Annual Meeting, Denver, Colorado, October, 1999.

Haynes, E.A. and Moecher, D.P., Oxygen isotope analysis of carbonates, silicates, and oxides in carbonatites: Constraints on crystallization temperature and cooling rate. Geological Society of America Annual Meeting, Denver, Colorado, October, 1999, and Carbonatites Workshop on Genesis and Mineralization, St. Etienne, France, February, 2000.

Kulp, M.A. and Howell P.D. Subsidence patterns in the Upper Quaternary of the Mississippi Delta region. AAPG Annual Meeting, New Orleans, Louisiana, April, 2000.

Jusczuk, S. J., Thomas, W. A., and Arbenz, J. K., Structural geology of the Ouachita Mountains re-examined: Geological Society of America Annual Meeting, Denver, Colorado, October, 1999.

Mehta, S., Fryar, A., and Morin, P.H., Modeling regional salinization of the Ogallala Aquifer, southern High Plains, Texas. Geological Society of America Annual Meeting, Denver, Colorado, October, 1999.

FACULTY NEWS

Frank R. Ettensohn

Much of the first part of last year was spent helping to prepare for the Department's five-year review, and then I was called upon to complete the final months of Dr. Fern's two courses when he unexpectedly passed away in the Fall semester.

In the Spring, I finished off my grant for middle-school teacher professional development by completing a three-module TV series for the Kentucky Educational Television called the "Lay of the Land in Kentucky," and late in the Spring I filmed another TV program for *Kentucky Afield* called "Kentucky's Ancient Environments." It will air in the late Fall.

Two graduate students, Matt Vest and Shane Schmidt, finished their master's theses, and another student, Lisa Jewell, will probably finish early next semester. Two new students, Alex Stewart and Susie Taha, came into the program this fall, and along with Julie Kasl, will be working on various aspects of the Lexington Limestone, in a long-term project to understand its depositional history. Moreover, Nick Rast and I are still working on the editing of a GSA

Special Paper on seismites, which should be ready for submittal by January, 2001.

Finally, we had a very successful trip to the Bahamian island of San Salvador last March to study carbonate depositional environments and marine ecology as modern analogues to our carbonates here in Kentucky. Thirty people, mostly from U.K., went on the trip, but we also had students from Eastern State University and Morehead State University, and our administrative associate and her husband, accompanied us. If any alumni(ae) would like to accompany us on one of our biennial trips to the Bahamas, you are always welcome to come along.

Alan E. Fryar

As I enter the valley of tenure review, several research projects are coming to fruition. My first manuscript on work at the Paducah Gaseous Diffusion Plant (PGDP) was published in *Ground Water Monitoring and Remediation* in August 2000. With Eric Wallin, my first M.S. student, I documented that movement of contaminated ground water toward the Ohio River is short-circuited by seepage to Little Bayou Creek in the West Kentucky Wildlife Management Area. Our findings were profiled on the front page of *The (Louisville) Courier-Journal* on Sunday, December 26, 1999, and carried state-wide by the Associated Press the next day. On September 1, 2000, Chris Sweat defended his thesis on sorption of trichloroethene (TCE) to PGDP-area soils and sediments. TCE, the primary ground-water contaminant at PGDP, is a chlorinated solvent that was widely used as a degreaser before being identified as a suspected carcinogen. Chris is now in a hazardous-materials unit of the Lexington Fire Department. Three current students (Danita LaSage, Lee Gatterdam, and Andrea Holbrook [an honors geology major]) are continuing investigations of ground-water/stream interactions and TCE fate. Danita and I have found that TCE fluxes to Little Bayou Creek fluctuate seasonally with ground-water discharge and that TCE probably volatilizes from the creek downstream of contaminated springs. Lee is examining whether TCE is reduced by reacting with pyrite from Cretaceous sediments like those beneath PGDP. Andrea is characterizing sediment from the bed of Little Bayou Creek in preparation for further sorption experiments.

Two M.S. students and I are conducting field studies elsewhere in Kentucky, even as my work in Texas is riding into the sunset. Karen Exton Thompson and I are working with aquatic biologists

at Murray State University (MSU) to study the Ledbetter Creek watershed along the western side of Kentucky Lake. Seasonal manipulation of reservoir levels by the Tennessee Valley Authority perturbs ground-water flow (and may affect nutrient fluxes) in the creek's flood plain. Todd McFarland, a new student, will be working with me in a study of sediment fluxes through a karst-conduit system in the Inner Bluegrass. Sunil Mehta completed his Ph.D. on salinization of the Ogallala aquifer in the northern Texas Panhandle and is now working on the Yucca Mountain project for Duke Engineering (a subcontractor to the U.S. Department of Energy). Our finding that salinization results from ground-water circulation through Permian evaporites is summarized in papers in *Applied Geochemistry* (July 2000) and *Journal of Hydrology* (in press). My study of denitrification during recharge to the Ogallala aquifer was published in *Journal of Contaminant Hydrology* in January 2000, and a related study of chemical evolution during recharge to and flow within the Ogallala aquifer is in review.

I continue to teach courses in environmental geology and hydrogeology and help to run the departmental seminar series. Thanks to the effort of several colleagues, our large lecture hall (200 Funkhouser) is now equipped with a VCR, computer, and several projectors, so I can show videos and information from the World Wide Web during my GLY 110 classes. For the first time, I included a weekend field trip as part of my GLY 585 (Hydrogeology) class. We used MSU's biological station on Kentucky Lake (nicely equipped with cabins) as a base camp. We viewed cleanup sites at PGDP from outside the fence, gaged stream flow along Little Bayou Creek, and measured ground-water levels, spring flow, and water temperatures in the Ledbetter Creek watershed. Because Kentucky Lake had begun to rise, we had to use a pontoon boat to access piezometers in the middle of the embayment, and several hardy students jumped into the water to help. It was a little less exotic than the Bahamas trip, but we had a great time.

We have a diverse set of seminar speakers again this year. Seminars are usually in 102 Mining and Minerals at 4 PM on Thursday—see our website for more details (www.uky.edu/ArtsSciences/Geology).

Kevin Henke

Dr. Kevin R. Henke is teaching low-temperature aqueous geochemistry, environmental geology, and teaching methods in geology during the Fall semester.

The geochemistry class includes a diverse group of graduate and undergraduate students from geological sciences, chemistry, chemical engineering, elementary education and soil science. In the spring, he will teach mineralogy, natural resources and teaching methods. In addition, Dr. Henke is involved with personnel in the Department of Chemistry to develop and evaluate chemical precipitates for removing mercury and other toxic metals from natural waters, including acid mine drainage. He also has other interests in geochemistry, including trace metal sulfides in carbonate hardgrounds.

Paul D. Howell

Hooray! This year I celebrate a turning point as the bulk of my research interest in the subsidence of the Mississippi Delta moved south to the University of New Orleans. Mark Kulp, who has been working with me for several years on this project, successfully finished his Ph.D. program, and is launching his own research agenda as a Research Professor at UNO. This is a great opportunity for Mark; he has already received a significant research grant of his own to further his research and he finds himself in the thick of the controversy over appropriations for a huge project to try to "save" the Louisiana coastline from erosion. We still have a few odds and ends and manuscripts to work on together, but Mark is handling the lion's share of the work from now on.

My own research focus is shifting more from sedimentary basin analysis toward geoscience pedagogy and development of teaching materials. I am beginning work on development of a web-based textbook for geology, and on tools for assessing the impact of electronic educational media on student learning. This is a tough project -- How do you set up a control group to NOT use the fun new media? How do you assess how much they really use it? How best to assess whether learning has taken place, and how much learning? And what is the future of electronic media delivery (CD? DVD? WWW? Wireless? Direct transcranial induction?) [Note to self: Do not plan any direct transcranial induction experiments before clearing things with the Human Subjects board.] This should be fun...

Shelley Kenner

In the last year, problems regarding intraplate seismicity and, in particular, the New Madrid Seismic Zone (located in the south-central United States) have been fairly hot topics within the earthquake hazards

community. With this in mind, I have worked primarily on the formulation of a possible mechanical mechanism for the generation of repeated intraplate earthquakes using finite element numerical techniques. Such a quantitative earthquake model is necessary for the interpretation of geophysical and geological observations in intraplate regions, especially the interpretation of geodetic data with regards to strain accumulation. The model, which I developed with Paul Segall of Stanford University, incorporates a lower crustal weak zone beneath a zone of intraplate seismicity. Thermal perturbations or changes in the regional stress field can trigger transient deformation in this weak zone. This, in turn, loads the overlying seismogenic crust. We find that this process can generate a series of large earthquakes of the type seen in the New Madrid Seismic Zone. Our preliminary results were published in the journal, *Science* in September (v. 289, pp. 2329-2332). I was also invited to give not one but two talks on the subject at the spring American Geophysical Union meeting in June in Washington, D.C. We plan on continuing the development of these models during the coming year. Currently, I am on a year-long leave of absence at the California Institute of Technology. At Caltech, I am working on a number of problems, all of which involve time-dependent deformation of the earth's crust and upper mantle. One such problem is the evolution of regional stress with time in response to the occurrence of repeated large earthquakes on a particular fault. This is interesting because, depending on the viscosity of the lower crust and upper mantle, the assumed background stress level may influence our interpretation of geodetically observed postseismic deformation rates. Other problems which I hope to investigate during my stay at Caltech include time-dependent deformation in Iceland following rift intrusions and the large-scale tectonic evolution of southern California. In both instances, I hope to gain a better understanding of the nature of deformation in the lower crust and upper mantle in these regions.

David P. Moecher

The end of Spring term, 2000, found me guiding 20 of UK's best and brightest geology students around New England, eastern New York and northern New Jersey. The highlights of the trip were two mine tours. The first tour took us to Zinc Corp. of America's Pierrepont mine (Balmat area) where John Johnson (UK alum from the 1960s) gave us a tour of the underground zinc operation. The second tour was

of the former Zn operation at Sterling, NJ (in the Franklin Furnace area), where one of our current undergraduates worked in the 1970s. We collected spectacular ore samples at both localities and collected fluorescent minerals at Sterling. It was a great experience for our students to see these types of operations. Other highlights include the Taconic Slate Belt, Catskill and Triassic Red Beds, "snowball" garnets in the Gassetts Schist, the Palisades Sill, and the American Museum of Natural History in New York City. We became local celebrities in the area of Waterbury, CT. One of the local newspapers published a story about our field trip after seeing us in several places around town banging on rocks and distracting drivers. They were rather impressed that we would come all the way from Kentucky to look at some schists and gneisses!

On the graduate student front, Elizabeth Haynes completed her M.S. degree (on time!) and now works for the Geological Society of America in Boulder. Chris Berg spent a rainy week in New England collecting samples of the Littleton and Moretown formations for his thesis research. He then spent a couple of weeks at the University of New Mexico doing laser heating stable oxygen isotope analysis of metamorphic minerals in the Littleton Fm. to evaluate the extent of oxygen isotope equilibrium. Matt Massey, a recent University of Tennessee graduate, started this fall. He will work on aspects of southern Blue Ridge petrology and tectonics.

Last year I stated I needed a break. Well, that's going to happen. I will be on sabbatical in the Spring, 2001, term visiting James Cook University in Queensland, Australia, to work with their structure/metamorphic group. It should be an exciting semester. Check this space next fall for all the exciting details about the trip.

Kieran O'Hara

I continue as Director of Graduate Studies and report that our graduate program is vibrant and growing in size and quality. The new graduate curriculum has finally been approved by the Graduate Council and it should be on the books for next Fall. The new curriculum is more focused in key areas and is more flexible than the old one. It should revitalize our graduate course offerings and hopefully give a clearer identity to our program.

On the research front, I continue my studies of frictional melting in the crust. During the past year a new geothermometer was developed that allows the depth of frictional melting in the crust to be

estimated. This geothermometer has applications to understanding the depth of earthquakes in the crust. Preliminary results were presented at a recent Penrose conference in London. NSF has recently recommended funding to test this geothermometer on natural samples and next semester a new research assistant, Ravi Kanda, will work on this project. This Fall I am teaching two courses- advanced structural geology (GLY 624) and principles of physical geology (GLY 220).

Nicholas Rast

The 1999-2000 academic year has been to Dr. Rast a year of travel. In October, 1999, he went to the GSA Annual Meeting in Denver, Colorado. In January, 2000, he was invited and took part in the annual meeting of the Geological Survey of Norway, prepared on the occasion of retirement of his first graduate student—Dr. B.A. Sturt. It is unfortunate to report that Dr. Sturt passed away in September, 2000, having been afflicted by a sudden heart attack. In July, 2000, Dr. Rast was invited and participated in international meeting of Basement Tectonics group in La Correñia, Spain. Finally in September, 2000, Dr. Rast was invited and participated in the GSA Penrose Conference in Edinburgh, Scotland. In a sense, all these journeys represented the culmination of Dr. Rast's scientific activity, prior to retirement.

Sue Rimmer

After spending seven years as the Associate Dean for the College of Arts and Sciences, I returned to "active duty" on August 1, 2000. I am delighted to be back in the Department full-time, and I am enjoying getting back into my research, recruiting students again, and thinking about what I'll be teaching in the future. The past seven years were wonderful ones. I certainly learned a lot about how the University works, and I hope that insight will serve the Department well in the years to come.

A lot has happened in that time. I hear good news about my former students. Chris Toles, who completed his Ph.D. in 1995, went on to do a post-doc with the USDA in Louisiana, another at Northeastern University, and is now employed in R&D with the Cabot Corporation in Massachusetts. Penny Padgett, who completed her M.S. degree in 1997, is employed as a coal geologist at Black Beauty Coal Company in Evansville, Indiana. On the home front, my son James graduated from UK with a degree in Animal Sciences and is now in his third year of veterinary school at Auburn. Meanwhile, I had the good fortune (and

good sense) to marry Steve Hurst and we now have a wonderful, very energetic 2-year old boy named Evan. Life is grand.

My research is taking new twists. While I continue to work in coals, I have long had an interest in dispersed organics, and in particular in the Devonian shales of Kentucky. I have recently been awarded a National Science Foundation grant to look at stable carbon isotopic signatures for organic components in the Devonian shale. This is a new line of research for me, and I am really excited about the potential. More on that next year.

William A. Thomas

How did I spend my year?, or flashes of memory. This was the second year of my two-year term as Treasurer of the American Geological Institute, and following that, I became Chair of the Finance Committee of AGI for a two-year term. The highlight was the Executive Committee meeting in Jackson Hole, where Dave Love led a field trip along the Teton front. I also chaired a meeting with AGI's investment advisors in Houston, sort of on the fringe of my expertise.

At the International Symposium on Andean Geodynamics in Göttingen, Germany, I presented the results of some of our (with my colleague Ricardo Astini) research on the collision history of the Argentine Precordillera with Gondwana, roughly at the same time as the Taconic orogeny in the Appalachians. In Germany and discussing the Andes, most of the presentations were in English, but one in Spanish discussed some of our work in Argentina; interesting to hear my work in Argentina mentioned in a talk in Spanish at a meeting in Germany.

The GSA meeting in Denver provided a special opportunity for our research. Along with three Ph.D. students, German Bayona, Maggie Brewer, and Steve Juszczuk, we presented posters on three-dimensional reconstruction of thrust-belt structures in the Appalachians and Ouachitas. Three UK posters (with prominent UK logos) in a row constituted a "Kentucky corner" at our session. In addition, I reported on the results of our study (with Tim Denison and Ricardo Astini) of strontium isotopes in Cambrian evaporites in Alabama and northwestern Argentina.

Several short sessions in the field in Alabama were primarily concerned with dissertation/thesis research of Maggie Brewer, German Bayona, and Brent Garry. We also worked with Ed Osborne of the Alabama Geological Survey. This work continues to

focus on thrust-belt geology, geometry of lateral ramps, and the tectonic framework of the Taconic foreland clastic wedge.

I continue to serve on the panel for the EDMAP program of USGS. That program supports geologic mapping by graduate students. UK students have been participating since the inception of the program, and next year Brent Garry and Brian Cook will be mapping with EDMAP support.

At the meeting in Charleston of the Southeastern Section of GSA, I was invited to organize and chair a symposium to review "100 years of Appalachian geology" as a millennial celebration. I also enjoyed contributing a paper to that symposium.

Congressional Visits Day organized by AGI in April provided an opportunity to talk with members of the Kentucky delegation on Capitol Hill about funding for science and science education. We had interesting conversations with Representative Fletcher and Senator Bunning, as well as with staff in the offices of Senator McConnell and Representative Rogers.

GeoCanada 2000 (combined meeting of several Canadian geoscience societies) included a symposium in honor of Ray Price, former Director of the Geological Survey of Canada. I was pleased to be able to present a paper on some specific thrust-belt structures of a type that Ray and I have discussed many times.

In June, I went to Argentina to finish field work in the Precordillera under the terms of a grant from the National Science Foundation. I was particularly pleased to be able to take along Ph.D. student German Bayona. This work in Argentina focused on the Ordovician synorogenic clastic wedge, which will be a useful comparison for German's dissertation on the Taconic clastic wedge in the southern Appalachians. The Precordillera is a desert, and we had anticipated no rain. It didn't rain, but it did snow.

Twenty centimeters of snow on a saguaro is quite a sight!

During the academic year I taught graduate courses in tectonics and sedimentation, stratigraphy, and geologic controls on groundwater. In addition to serving as advisor to three Ph.D. and two M.S. students, I serve on the committees of seven other graduate students. Busy, but interesting and challenging.

Slawek Tulaczyk

The academic year 1999-2000 was very eventful. I was joined by a group of lively new students. My

work still revolved around several external research contracts, mostly from the NSF. Together with one of my students, Marion, I started constructing a numerical model of ice-stream behavior that we intend to use in a long term to explore the possible scenarios for the near-future evolution of the West Antarctic ice sheet. Another of my students, Stefan, performed a sequence of laboratory tests investigating the physical controls on the rates of glacial erosion. Meanwhile, Chuming was busy looking into the provenance of subglacial sediment samples from West Antarctica to check what kind of geologic provinces may underlie the km-thick ice sheet there. Archana worked on the issue of grain breakage and rounding in subglacial environments. We had also one regional project going, investigating the possibility of getting paleoenvironmental data from speleothems. On the teaching front, I have offered several courses during the last academic year. The sequences started with an advanced graduate course in Quantitative Analysis and Modeling of Surface Processes in the Fall and continued with Quaternary and Surficial Geology as well as Geomorphology in the Spring.

ADJUNCT FACULTY.

Donald Chesnut

Donald Chesnut is a geologist with the Kentucky Geological Survey. He has done graduate work in stratigraphy, paleontology and basin analysis. He has worked at the Kentucky Geological Survey since 1979 where he worked on coal stratigraphy and coal resources. He was Section Head of the Coal and Minerals Section from 1993 to 2000. His major research interests are Carboniferous geology and paleontology. He was President of the Kentucky Society of Professional Geologists in 1998 and has been President of a project to develop the Kentucky Museum of Natural History since 1990. He is a member of 17 professional societies and is a registered professional geologist. He has more than 150 publications on Carboniferous and coal geology.

James Drahovzal

Due to reorganization at the Kentucky Geological Survey (KGS), I am now providing research leadership to the Energy and Minerals Section. The section combines oil, natural gas, coal, and mineral research and service. We were recently informed of the awarding of a three-year research contract from the U.S. Department of Energy for studies in carbon dioxide sequestration. This is a cooperative research project with the Kansas, Illinois, Indiana and Ohio

geological surveys for a study entitled, "Midcontinent Interactive Digital Carbon Atlas and Relational Database (MIDCARB)." In the study we will identify oil and gas fields, coal beds, black shales, mines, and saline aquifers that could serve as carbon dioxide sinks for major stationary sources of anthropomorphic carbon dioxide in the Midwest. The two-year Rome Trough Consortium project will be completed at the end of 2000. In that study we are examining the geology and natural-gas potential of this Cambrian graben in eastern Kentucky and parts of Ohio and West Virginia. Graduate student, Tina White, has just begun her M.S. thesis work on the fault kinematics of this feature in eastern Kentucky.

Personally, I continue to conduct research on the Cambrian and Precambrian rift basins of the eastern Midcontinent and the mapping of Precambrian basement. In addition to the defining the Hoosier thrust belt last year, we have now recognized a late thrusting event that cuts the Hoosier structures and uplifts the Louisville block during the Neoproterozoic. Definition of the late thrusting event was presented at the Fall 2000 Eastern Section AAPG meeting in London, Ontario.

As an adjunct associate professor in the Department, I taught a seminar on southern Illinois Basin neotectonics with Ron Street. During the year, I participated on the committees of four M.S. and four Ph.D. candidates, chairing the committee for one of the M.S. candidates. Their research topics include goniatite biostratigraphy, high-resolution seismic reflection studies, geologic mapping, structural geology, and stratigraphy. Tina White, a second-year Master's candidate, conducted research at the KGS this summer on Rome Trough. During the year, three of the Department's undergraduate students and three of its graduate students have held student appointments with the Energy and Minerals Section at KGS. I continue to work on the Coosa Deformed Belt project in the Alabama Appalachians with Dr. William Thomas.

Becky, my wife, and I continue to enjoy living in the Bluegrass and being a part of Department activities.

Uschi M. Graham

During the past years my primary work is directed at advancements in nano-engineering of new materials. The work is performed at the Center for Applied Energy Research in cooperation with Argonne National Lab and the US Department of Energy. Many of the materials have significance in

geological settings including nano-clays, nano-micas and titanium oxides as well as iron oxyhydroxides. I am investigating the growth and reaction mechanisms, dislocations in structurally distinct phases and polycrystalline materials.

The design and synthesis of materials with nanometer dimensions (1-10 nm) are subjects of intense current research, especially in the fields of chemical and bio-engineering, but need also be applied to the area of geochemistry. Additional work using nano-clays and iron oxy-hydroxide crystals is aimed at the field of mineral kinetics (reactions taking place during diagenesis and maturation in sedimentary basins or hydrothermal mineralization involving active spreading zones).

The design of hybrids or nanocomposites with intercalation of layered solids is work I participate in with the automotive and polymer industries. This type of nano-particle research involves the formation and structural enhancements of hybrids where either two or several nanoparticles are interlaced in a polymer matrix. In collaboration with the Center for Catalysis at UK and also industrial support several studies are focused on controlling nanoparticle growth through substrate design. It is envisioned that metallocene, single site catalysts, could be incorporated into the interlayer spacing in nanoclays. The chemically functionalized templates are incorporated into structural polymeric materials to help tailor properties such as the molecular architecture, density and crystallinity of the polymer matrix while the nanoclay particles improve the mechanical, thermal and flame-retardant properties with additions of only minute amounts of nanosized clay platelets.

The nanocomposites represent a radical alternative to conventional macroscopic composites. Markedly improved mechanical and physical properties are observed. Improved strength, fire and flame resistance and also gas permeabilities of nano-hybrid materials may in fact also be important to protect, preserve, and reshape our way of thinking about geochemical processes.

Other areas of my research involve fuel cells with emphasis on hydrogen production and storage. I am actively involved in the World Fuel Cell Council and European Fuel Cell Forum (Switzerland). I also serve on the National Hydrogen Association. At the Center for Applied Energy Research I have been involved in the organizational aspects of the International Coal Ash Utilization Symposium, a forum that addresses research and technology in the field of coal combustion by-products.

James Hower

Much of our research continues to be on the petrographic and chemical properties of fly ash. We have investigated mercury and arsenic capture in fly ash and studied the impact of co-combustion of tires on fly ash petrology and chemistry. An undergraduate student, Tanaporn Sakulpitakphon, is in her second year at the laboratory. I am continuing to edit *International Journal of Coal Geology*. The Center for Applied Energy Research is continuing in a transition period following the August, 1999, death of our former director, Frank Derbyshire. Burt Davis has assumed the role of interim director until a new director is hired.

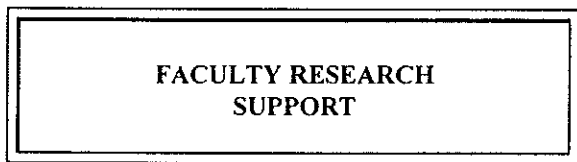
EMERITUS FACULTY

W.H. Dennen

Nothing of great moment to report except that I have successfully lived through eight decades and still have my hair and general good health. The high point of the year was visiting Oaxaca, Mexico, at fiesta time with my daughter and her family. A small earthquake did not spoil the event. My only geoactivity has been the annual dog and pony show at a nearby state park where I join with two other local geologists to enlighten the local populace. We do a background presentation one evening and have field walkabout around a granite quarry a week later.

Bruce Moore

I have continued to fly my airborne fracture detection system in the USA and Australia with ongoing success in mineral and oil and gas exploration. Am currently working on XRF geochemistry of the fracture leakage. I have just finished a three-year survey for gold in Nevada and am currently working on oil and gas in Michigan and the Illinois basins. Recently had a brief visit with the Dennens in Rockport, Massachusetts, and both are well. Bill is as sharp as ever. We are currently living about eight months a year in Lexington, Kentucky, and the remainder in Australia and Hawaii.



Kentucky Council on Post-Secondary Education
Teacher professional development in the earth and

space sciences for core-content assessment in high school science, central Kentucky.

Frank R. Effensohn

Kentucky Council on Post-Secondary Education

A Kentucky-wide environmental approach to middle school professional development in the sciences, central Kentucky.

Frank R. Effensohn

Kentucky Department for Environmental Protection.

Laboratory investigations of abiotic attenuation of trichloroethene by soils and sediments

Alan Fryar

Kentucky Department for Environmental Protection

Natural attenuation of TCE and Tc-99 during seepage to and flow within Little Bayou Creek

Alan Fryar

Kentucky Department for Environmental Protection

Laboratory investigations of abiotic attenuation of trichloroethene by soils and sediments.

Alan Fryar

Kentucky DOE/EPSCoR

Reservoir-watershed linkages: The effects of water level management on hydrology and water quality in hydro-electric reservoirs (Murray State University).

Alan Fryar

UK Special Summer Faculty Research Fellowship, Office of the Vice President for Research and Graduate Studies

Modeling of chemical evolution during ground-water recharge and flow, Southern High Plains, Texas.

Alan E. Fryar

National Science Foundation, Petrology and Geochemistry

Oxygen isotope systematics in polymetamorphic rocks: The effects of multiple periods of deformation and mineral growth

David Moecher

National Science Foundation

POWRE: $\Delta^{13}C$ Heterogeneity in Devonian-Mississippian Marine Shales: Integration of Density-Gradient Centrifugation (DGC) and Organic

Petrography into Isotopic Studies
Sue Rimmer

U.S. Geological Survey
Dynamic site periods in the northern Mississippi Embayment area of western Kentucky and southeastern Missouri.
Ron L. Street

U.S. Geological Survey
Shear-wave velocities of the post-Paleozoic sediments in the Memphis, Tennessee, Metropolitan area.
Ron L. Street

U.S. Geological Survey
High-resolution P- and SH-wave seismic reflection investigations of the Reelfoot and Kentucky Bend Scarps in the New Madrid Seismic Zone.
Ron L. Street

National Science Foundation
The Argentine Precordillera, when and how was it transferred from Laurentia to Gondwana?
William A. Thomas

Petroleum Research Fund of the American Chemical Society
Chemistry and kinematics of lateral ramps in thrust belts: Keys to translation direction and three-dimensional balancing.
William A. Thomas

U.S. Geological Survey, EDMAP
Geological mapping in the Appalachian thrust belt in Alabama.
William A. Thomas

U.S. Geological Survey EDMAP
Geologic mapping in the Bessemer transverse zone, Appalachian thrust belt, Alabama.
William A. Thomas

Center for Computational Sciences, University of Kentucky
Is the Ross ice Shelf disintegrating?
Slawek Tulaczyk

Kentucky Water Resources Research Institute
Paleoenvironmental and paleoclimatic records in spring tuffa from Kentucky.
Slawek Tulaczyk

National Science Foundation, Antarctic Glaciology Program (subcontract for the NSF Project)
A finite-element model of basal water generated by melting an ice-sheet model.
Slawek Tulaczyk

National Science Foundation
Control of ice-till interactions on evolution and stability of ice streams and ice sheets.
Slawek Tulaczyk with D.R. MacAyeal of U. of Chicago as co-PI.

National Science Foundation Geology and Paleontology Program
Subglacial deforming beds as erosive and sedimentary agents: and experimental study of particle comminution and rock erosion.
Slawek Tulaczyk

**REPRESENTATIVE
PUBLICATIONS**

This list provides examples of faculty and student publications; a complete list is available on request.

Faculty - Bold
Students and former students – italics

Stark, T.J., Rowley, S.H., Steffensen, C.K., Bergman, Steven, **Drahovzal, J.A.**, Bear, G.W., and Schultz, Louis, 2000, The English Basin, Kentucky: a seismic study of the relationship between a Proterozoic basin and subsequent Paleozoic structure and strata, Houston Geological Society Bulletin, v. 2, no. 6, February 2000, p. 27.

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Ettensohn, F.R., *Rast, N.R.*, and *Kulp, M.A.*, 2000, Locating possible epicentral areas for paleoearthquakes, Middle Ordovician Lexington Limestone, central Kentucky: Geological Society of America Programs with Abstracts, v. 32, p. 215.

Fryar, A.E., *Macko, S.A.*, *Mullican, W.F.*, III,

Romanak, K.D., and Bennett, P.C., 2000, Nitrate reduction during ground-water recharge, Southern High Plains, Texas: *Journal of Contaminant Hydrology*, v. 40, p. 335–363.

Fryar, A.E., Wallin, E.J., and Brown, D.L., 2000, Spatial and temporal variability in seepage between a contaminated aquifer and tributaries to the Ohio River: *Ground Water Monitoring and Remediation*, v. 20, no. 3, p. 129–146.

Li, T.X., Ban, H., Hower, J.C., Stencel, J.M., and Saito, K., 1999, Dry triboelectrostatic separation of mineral particles: a potential application in space exploration: *Journal of Electrostatics*, v. 47, p. 133–142.

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Martin, E. and Howell, P.D., 1999, Active inquiry, web-based oceanography exercises: Geological Society of America, Abstracts with Programs, Denver, Colorado.

Howell, P.D., 1999, Teaching science by example: a simple vision: Geological Society of America, Abstracts with Programs, Denver, Colorado.

Hower, J.C., Thomas, G.A., and Palmer, J., Impact of the Conversion to Low-NO_x 1999, Combustion on Ash Characteristics in a Utility Boiler Burning Western US Coal: *Fuel Processing Technology*, v. 61, p. 175–195.

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- Astini, R. A., and Thomas, W. A., 1999,** Origin and evolution of the Precordillera terrane of western Argentina: A drifted Laurentian orphan: *Geological Society of America Special Paper* 336, p. 1-20.
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Temprano de la Precordillera argentina: El registro mas antiguo de Sudamerica: Revista de la Asociacion Geologia Argentina, v. 55, p. 111-120.

**DEPARTMENTAL SEMINARS
1999-2000**

Pound Gap: Its significance, correlations, and sequence stratigraphic implications. Stephen Greb, Kentucky Geological Survey, and Frank Etensohn, Department of Geological Sciences.

Processes regulating the fate of chlorophenols in wetland soils. Elisa D'Angelo, Department of Agronomy.

Measuring effectiveness of geology departments with ASBOG licensing examinations. John Phillely, Morehead State University

Perspectives on the Kentucky Water Resources Research Institute. Bob Volk, Kentucky Water Resources Research Institute.

Climate change and glacial changes: Northern and southern views. Tom Lowell, University of Cincinnati.

A new approach for using total coliform testing for watershed management. Gail Brion, Department of Civil Engineering, University of Kentucky.

Mass-balance reconstruction of a modern vertisol: implications for interpreting the geochemistry and burial alteration of paleo-vertisols. Steven Driese, University of Tennessee.

Geoscientists in the public policy arena: A view from Capitol Hill. David Wunsch, Kentucky Geological Survey..

Association of Engineering Geologists Richard H. Jahns Distinguished Lecture

Environmental cleanup: basic engineering geology is still important. Mavis Kent, Oregon Department of Environmental Quality.

Coalbed methane, a new energy resource in Kentucky. Donald Chesnut, KY Geological Survey.

Deregulation in the natural gas industry. Judy Cooper, Columbia Gas of Kentucky

Sedimentary Geology (GLY 450G) class presentations: Pound Gap virtual field trip. Coordinated by Paul Howell, Department of Geological Sciences.

Birdsall-Dreiss Lecture

Contamination of Woburn Wells G & H. What the experts said at trial, what we know now. E. Scott Bair, Ohio State University.

Discontinuities and denitrification: Observations on nitrate reduction at boundary layers. Mark Coyne, Agronomy, University of Kentucky.

Dinosaur growth and metabolism. Jack Horner, Museum of the Rockies, Montana State University.

Mineralogical Society of America Distinguished Lecturer

Mineral-environment interfacial processes: How the solid Earth talks to the hydrosphere, atmosphere, and biosphere. Michael F. Hochella, Jr., Virginia Polytechnic Institute.

Nuclear and mining wastes: A scientific and societal look at lessons we have (and haven't) learned. Michael F. Hochella, Jr., Virginia Polytechnic Institute.

Surviving the ASBOG exam. William Andrews, Kentucky Geological Survey; Karen Exton, Department of Geological Sciences, University of Kentucky; Nicholas Sirek, Marcum Environmental.

High resolution imaging of crustal structure using seismic waveforms. Lupei Zhu, University of Southern California.

Determining earthquake focal mechanism and depth with broadband seismic network. Lupei Zhu, University of Southern California

Recent studies of eastern Tennessee Seismic Zone and probabilistic approaches to design earthquake selection. Martin Chapman, Virginia Polytechnic Institute.

Incorporating ground motion duration into seismic

hazard analysis. Martin Chapman, Virginia Polytechnic Institute.

Paleontological Society Distinguished Lecture

Uintacrinus: A riddle wrapped within an enigma. David Meyer, University of Cincinnati.

Microearthquake clustering and temporal variations of fault zone properties in the New Madrid Seismic Zone. Jiakang Xie, Columbia University.

Probing continental lithosphere and source properties with high-frequency seismic waves. Jiakang Xie, Columbia University.

Going critical: The dynamical evolution of earthquake fault systems. Steven Jaumé, University of Queensland, Australia.

Local site response in seismograms from far away earthquakes. Steven Jaumé, University of Queensland, Australia.

Subducted rocks: How do they get back to the surface? An example from southwest Japan. Robert Wintsch, Indiana University.

Time-dependent deformation following the 1906 San Francisco earthquake: The role of postseismic relaxation processes in lower crust. Shelley Kenner, Stanford University.

A model for generation of intraplate earthquake sequences: Application to the New Madrid Seismic Zone, U.S.A. Shelley Kenner, Stanford University.

The role of organically modified clays in emerging nanocomposite technologies. Uschi Graham, Center for Applied Energy Research, University of Kentucky.

Processes regulating the fate of chlorophenols in wetland soil. Elisa D'Angelo, Department of Agronomy, University of Kentucky.

McFarlan Lecture

Ordovician K-bentonites in North America and the Argentine Precordillera: Can they help in paleogeographic reconstruction? Warren Huff, University of Cincinnati.

Karst aquifers—what are they like, and how do we

deal with them? Ralph Ewers, Eastern Kentucky University.

Tephrostratigraphy and tephrochronology as applied to human evolution research—perspectives from research in the Middle Awash Valley, Ethiopia. William Hart, Miami University.

DEPARTMENTAL FUNDS

Several important Departmental funds continue to be supported by contributions from alumni and friends of the Department. The special uses of these funds are as follows:

The John C. Ferm Memorial Graduate Student Fund

-a new fund in honor of John C. Ferm to support graduate student research

The GEOFund

(endowed by contributions: will be used when endowment reaches \$100,000. The current status is \$18,804.79)

-a recent endowed fund to provide long-term Departmental needs

Brown-McFarlan Fund

- student research grants; student prepares proposal including itemized budget
- student travel to professional meetings to present papers
- McFarlan Lecture (annual seminar)

Geology Development Fund

- enhancement of departmental programs in teaching and research through improvement of equipment and facilities

Geology Support Fund

- support of the departmental seminar program
- equipment for enhancement of instruction
- support for initiation of special programs

Geology Museum Fund

- operation of the Hudnall Geological Sciences Museum

Glenn Rice Memorial Fund

- undergraduate research grants, to support senior theses

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(endowed by James S. Hudnall)

- scholarships for participation in the summer field course

Pirtle Scholarship Fund

(endowed by George W. Pirtle)

- undergraduate scholarship for outstanding junior (\$1,000 per year)
- graduate fellowship (approximately \$2,000 per year as summer stipend plus tuition)

Chevron Fellowship

- graduate fellowship

Chevron Support Fund

- support for student research
- equipment for instruction and/or research

Wallace W. Hagan Scholarship Fund

(endowed by contributions; the current amount is \$14,718.32)

- undergraduate scholarship, for a student in field-oriented geology

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