

ROUND UP

1994

Department of Geological Sciences
University of Kentucky

LETTER FROM THE CHAIRMAN

The plan for department development has itself been in development for more than a year, but we now have a plan. All educational programs in the department will continue to address the fundamentals of the geosciences, and in addition, we will expand our program in applied geosciences, especially in the area of environmental applications. At the graduate level, our emphasis on fundamental geosciences is concentrated in the rather broad field of tectonics. When our graduate program in applied geosciences is fully developed, we will cover the areas of environmental geochemistry, hydrogeology, geophysics, and engineering geology. Our faculty in tectonics is well established, and we have a fully operational program of graduate instruction and research. To expand our program in applied geosciences, our established program in geophysics is moving toward more environmental applications while maintaining research in seismicity, and we must add faculty and expand or initiate other lines of graduate instruction and research. Priorities for faculty recruiting are, in order of anticipated additions, environmental geochemistry, hydrogeology, and engineering geology. We obtained authorization last year to recruit in geochemistry and hydrogeology. After vigorous searches in both fields, we identified some truly outstanding candidates. Unfortunately, we were not able to come to agreement on all terms or to achieve a suitable match of interests. Although neither of these positions was filled last year, they remain our top priority, and we are recruiting again this year. Learning from last year's experience, we anticipate filling both positions this year. The department is fully committed to these programs, and a strong student interest in applied geosciences is evident. While our rate of progress in establishing the applied program is somewhat frustrating, we are doing the best we can with what is available, and we are looking to a better future.

We apologize for some delay in getting the Round Up out this year. This is the year for our 5-year program review and self-study, and that activity consumed the time that is usually devoted to getting the Round Up ready to print. This issue does reflect the past year, and so it reports activities as of August 15, 1994.

"Why don't you include more alumni news in the Round Up?" That is the most frequent response to this annual publication. The answer is, we include all we have. This publication is for the alumni, so send us your news, or news about other alumni. Thanks, we're looking forward to a bigger issue next year!

Bill Thomas

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* Joint with Agronomy

ANNOUNCEMENTS

GEOLOGICAL SCIENCES ALUMNI WEEK-END AT UK

Our 1995 Alumni Week-End in Geological Sciences is scheduled for April 21, 22, and 23, 1995. We expect to have some good news about faculty recruiting, facility renovations, the co-op program, and other things as well. The program will include a field trip, picnic, symposium, banquet, and open house. Registration materials will be mailed separately, early in 1995.

CO-OP PROGRAM

The co-op program (matching students with summer and/or part-time jobs) is ready to become fully operational this year. We need 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
4610 Deepwood Ct.
Louisville, KY 40241
Telephone

for the Department—

John C. Ferm
101 Slone Building
Lexington, KY 40506-0053
Telephone: 606-257-1087

If you know of a job opportunity (or a possibility of one), please contact either Steve or John. 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

1994 ALUMNI WEEK-END

Those who signed in for the 1994 Annual Alumni Week-End included:

Bob Baird	Jeff Adams
John L. Mars	Donald K. Lumm
Frank H. Walker	Lois Campbell
James A. Warren, Sr.	Lois Rhodes
Paul Howell	Larry Rhodes
Ormon Shewmaker	Steve Sullivan
Frank R. Ettensohn	Martin C. Noger
David Moecher	Carolyn Thomas
Kieran O'Hara	Chris Smith
Debra A. Smith	Earl J. Johnson
Mary Sue Johnson	Edward Harris
Angela M. Moore	James "Dave" Wilson
Lyle A. Sendlin	Harry Whitman
Joe Anderson	Shelley Minns
Anne Childress	David Wunsch
Bill Thomas	Jeffrey L. Hall
William Jay Sims	W.C. MacQuown
Brian Whiting	W. R. Brown
Mark Warrell	Stephen R. Gearheart
Sue Rimmer	Kieran O'Hara
Pat Anderson	Michael E. Graham
David A. Jackson	Doug Gouzie
Henry Morgan	John Caudill
Joe Allen	Nicholas Sirek
Mark E. Gormley	James Zimmer
Ann Watson	Wallace W. Hagan
Edmund Nosow	Rachel Thomas

The program began with a field trip led by graduate students, Mark Kulp, Angela Moore, and Chris Elvrum. The topic of the trip, *Groundwater in Woodford County and Stratigraphy of the Inner Bluegrass*, set the stage for the next day's symposium. Following the field trip, a picnic at the Camahan House combined Alumni Week-End and a regular department picnic.

Our annual Geological Sciences Alumni Symposium addressed the topic, *"Environmental Issues in Kentucky."* The program included, *LUST in the 90's or How is Kentucky Dealing with Leaking Underground Storage Tanks?* by Lyle Sendlein, Professor, Department of

Geological Sciences, and Director, Kentucky Water Resources Research Institute;

Current Status of NORM (Naturally Occurring Radioactive Materials) Appraisal in Kentucky,

by Terry Hamilton-Smith, Kentucky Geological Survey;

Effects of Coal-Ash Disposal on Groundwater Systems at Three Sites in Kentucky

by Shelley Minns (a 1993 U.K. Ph.D.), Kentucky Geological Survey; and

Landfills, Geology, and County Government,

by Mark Gormley, former County Attorney, Woodford County, Kentucky, and chairman of the department's Advisory Board.

Social functions included a banquet at U.K.'s Boone Faculty Center, following which, Bill Thomas reported on the current state of the Department of Geological Sciences, and an open house in Stone Building on Sunday.

LANDFILLS COLLOQUIUM

The Department of Geological Sciences, with the assistance of the Kentucky Geological Survey, hosted a 1-day colloquium to address "Landfills and their impact on groundwater in Kentucky." The program, organized by Ron Street and Bruce Moore emphasized issues surrounding solid waste management and the success of the Kentucky Waste Management Act of 1991. The colloquium was sponsored by the College of Arts and Sciences and was held on March 3, 1994. Speakers included Dr. John Kiefer, *Assistant State Geologist*; Ms. Vicki Pettus, *Division of Waste Management, Department of Environmental Protection*; Dr. Bill Murphy, *Department of Agricultural Engineering, UK*; Mr. Doug Robinson, *Office of Technology*; Dr. Richard Warner, *Department of Agricultural Engineering, UK*; Mr. J.R. Williamson, *Scott County Solid Waste Coordinator*; Dr. Lyle Sendlein, *Director, Kentucky Water Resources Institute*; and Mr. Tom Fitzgerald, *Director, Kentucky Resources Council*.

HONORED ALUMNI

L. Neil Plummer, B.S. 1967, M.S. 1969

Received the O.E. Meinzer Award for 1993. The O.E. Meinzer Award is the highest annual recognition

presented by the Hydrogeology Division of the Geological Society of America.

Franco Urbani, M.S. 1992, Ph.D. 1975

For the book, "Geothermics in Venezuela," received an award as the best research work published by the Faculty of Engineering at the Universidad Central of Venezuela for 1993.

ALUMNI NEWS

Phillip R. Adams, B.S. 1986

Recently completed the U.S. Army's Petroleum Officer's course at Ft. Lee, Virginia (May, 1993) and is now in Germany as an 92F - Quartermaster Petroleum Officer. Just returned from Naples, Italy, where I did petroleum plans for the support of peace keeping forces going into Bosnia-Herzegovina (assuming a peace agreement is ever signed).

Zulfigar Ahmad, Ph.D. 1992

Teaching hydrogeology and groundwater geophysics to graduate students at Quaid-i-Azam University, Islamabad, Pakistan. In addition, I am doing private consulting in groundwater hydrogeology and conducting research in the relevant fields. I have been nominated for a post-doctoral fellowship in the United Kingdom which will commence in September, 1994.

Ronald E. Alexander, B.S. 1976

Employed as Kentucky/South Indiana Branch Operations Manager for Reynolds, Inc., a water supply service contractor. Primary activities of the company include turnkey capabilities in groundwater investigation, exploration, well installation, and equipment supply/service. Primary target market is industrial and municipal users. Completed all work and received M.B.A. from Webster University, St. Louis, Missouri, in March, 1994.

Mark K. Alex, M.S. 1987

Presently working for ATEC Associates, Inc. in Cincinnati as an environmental consultant. I've been with ATEC for three years. I was married in 1988

and presently have three children; five years, three years, and six months old.

Michael L. Ammerman, B.S. 1970, M.S. 1976

Working as a geophysicist for Mitchell Energy in north Texas. Projects include computer mapping, three-dimensional interpretation and shear wave technology evaluation.

Allan G. Axon, M.S. 1987, Ph.D. 1992

Allan is employed at the Ohio Geological Survey, where he has been working on coal resource investigations funded by the USGS. OGS has quite a central Kentucky group, two U.K. graduates and three E.K.U. graduates. Amy is working for Ohio EPA in the Emergency Response Unit where she is an enforcement coordinator.

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

Since 1987, living in Frankfort and employed by Kentucky state government. My first four years were spent as a geologist in the Department of Surface Mining, and for the last three and a quarter years, I have been employed as a groundwater hydrogeologist in the Department for Environmental Protection. I am currently working on approximately 30 of the 100 or so hazardous waste facilities throughout the state.

Roger E. Baker, B.S. 1968

Working for the Internal Revenue Service as an expert witness in geology and mineral valuation.

David Baynard, M.S. 1983

Energy analyst with the federal government. Recently returned from a three-year overseas assignment in Chang Mai, Thailand. Challenged constantly by my energetic twins, Mary and James, born March 20, 1992.

Blankenship, James G., B.S. 1958

With Seagull Energy E&P INC. in Houston. Probable '95 retiree!

Fred M. Bodycomb, B.S. 1956

Industrial mineral consulting. Geology, product development, marketing, R & D.

Charles Wm. Boggs, B.S. 1960

Retired salesman; currently owns and operates a registered cattle farm raising full-blood and purebred Simmental. I recently started my own company, C-B Sales, as well as being a sales manager and wholesale distributor for Conklin Products, specializing in roof coatings and driveway sealings. My wife and I travel

a good deal and we are the grandparents of four. We enjoy cattle shows, and working with the Lions International Association. My wife, Jonelle, PHT (putting hubby thru) degree from Kentucky Dames, is currently Deputy Property Assessor for Rutherford County.

Robert B. Boies, B.S.M.E. 1947

Owner of Butler Management Consultants, engineering consultation and geologic consultation, established 1952. Presently working on structural and surficial geology, subsurface water, E.P.A. impact studies, design and report preparation for wastewater treatment, and small water systems in Texas and Mexico.

James C. Bolton, M.S. 1985

Owner of Concord Environmental Services in Knoxville, Tennessee. I received a Ph.D. in 1992 from the University of Tennessee. I am currently serving on the Advisory Board of the Department of Geological Sciences, University of Kentucky.

Donald Brice, M.S. 1985

Currently a consulting ground-water geologist with 3D/Environmental Services in Cincinnati, Ohio. Responsible for evaluating hydrologic conditions and modifications for wetland restoration and creation; preparing environmental assessment and environmental impact statements per NEPA requirements; and hazardous waste site evaluation, characterization, and remediation.

George Brint Camp, B.S. 1977

Production superintendent for Equitable Resources Exploration. Responsible for 3,500 wells in Kentucky (29% of Kentucky's oil production and 34% of Kentucky's gas production); 750 wells in Virginia; and 1,000+ in West Virginia, Pennsylvania, and New York.

Michael T. Currie

Promoted to the grade of Staff Geophysicist last November. At the same time, I was assigned to the senior geophysical position for the appraisal/development phase of the Foinaven field, which will be the first development in the United Kingdom's West of Shetlands area. It is exciting to be involved in the very early opening of what promises to be a major producing province of the future. I will probably remain in Aberdeen through 1995. After that, who knows?

Nancye Dawers, B.S. 1984

Since 1990, I have been a Ph.D. student at Columbia University. I have been working primarily on the development of brittle fault zones.

Joyce Price Dawson, B.S. 1975

Currently a full-time teaching assistant and clinical instructor at Pittsburg State University. I'm getting an M.S. in nursing.

Karen P. Fitzmaurice, M.S. 1989

Hydrogeologist; currently working for Rust Environment and Infrastructure in Naperville, Illinois. I do a wide variety of environmental investigation, including landfill siting and remedial cleanups.

Farough S. Fockharpour, B.S. 1987

With Kentucky Natural Resources and Environmental Protection Cabinet, Superfund Branch, overseeing remedial plans. I am also attending E.K.U. pursuing an M.S. degree in hydrogeology. Mary and I have one son named Kayvan.

Robert W. Flynn, B.S. 1983

President and principal geologist of Flynn Environmental Services and Consulting, Inc. The firm provides geotechnical, environmental, and petroleum consulting to industrial, commercial, and governmental groups. The scope of these services includes project management, environmental audits and site assessments, subsurface geotechnical investigations, hydrogeologic investigations, underground and aboveground storage tank analysis, hazardous and solid waste management, remediation and reserve analysis, and underground injection control permitting.

Donald S. Fullerton, B.S. 1958, M.S. 1961

Consultant providing geologic services, technical and supervisory experience directed toward coal, mineral exploration and development, domestically and internationally.

Thomas Griswold, M.S. 1970, Ph.D. 1978

Now at Brighton in Frankfort, Kentucky, as the vice president in charge of all environmental activities. We are doing underground-storage-tank work, groundwater monitoring, and property assessments, etc., as well as environmental impact statements and coal permitting. Brighton has been in business since 1952. My grandson is three years old and my step daughter will be married in July, 1994. My wife, Rebecca Meacham, and I are active practical pistol shooters, and I am still teaching and studying Kempo.

Amy Haak, M.S. 1991

Project Manager at Dake & Associates, Inc., an environmental consulting company in Davenport, Iowa.

Todd Haverkost, B.S. 1989

Currently working for the consulting firm Environmental and Safety Designs based in Memphis, Tennessee. Recently EnSafe opened a branch office in Charleston, South Carolina, where I relocated to help manage day-to-day operations. I am serving in the capacity of project geologist for an RCRA facility investigation being conducted at the closing Charleston Naval Shipyard.

Michael D. Hines, B.S. Geology 1982

After ten years of combat engineering in the Army's Corps of Engineers, I've returned to the Bluegrass. Completed M.S. in Project and Systems Management in 1993 at Golden Gate University, San Francisco, California. Currently working in the operations end of a major packaging distributor in Louisville. Hope to turn to environmental assessment and project remediation before the next century.

D. Andy Hissan, B.S. 1986

Working for NASA as a design engineer. Most of my projects involve advanced propulsion systems.

David W. Howard, B.S. 1985

Currently a partner in a consulting firm, working mostly with mining regulatory agencies. I am married with a four-year old daughter.

Erik Jenkins, B.S. 1991

Working for Groundwater Technology an environmental firm. I started with the company one month after graduation. I transferred from the Lexington office to the Raleigh, North Carolina, office two years ago.

Mark A. Jordan, B.S. 1985

Currently president of Jordan Service Company. The company is an environmental engineering company serving the petroleum and petrochemical industries throughout the United States.

Julie Ross Kemper, B.S. 1981

Geologist with Mining Consulting Services.

Alfred Lacazett, B.S. 1979, M.S. 1986

Working for the Exploration and Production Technology Department of Texaco (EPTD is Texaco's

research lab). I work on problems related to natural rock fracture and fractured reservoir exploration/exploitation.

Lavon W. Lewis, B.S. 1959, M.S. 1961

Independent consulting engineering geologist in southern California. Recent work includes geologic investigation of fire burned sites in Laguna Beach and sites damaged in the January, 1994, Northridge earthquake.

Rudi G. Markl, B.S. 1961

After doing my Ph.D. and 17 years of deep-ocean geophysical research at Lamont-Doherty Geological Observatory, I was in the oil business briefly with Amerada Hess in New York City, but was a casualty of the crash in 1983. After two years as a consultant, I joined the Naval Oceanographic Office, located at Stennis Space Center in Mississippi (about 50 miles from New Orleans). I generally serve as chief scientist on one of our research ships for a month or two every year. In 1992 and 1993, it was in the East China and Yellow Seas, studying the sediments, stratigraphy, and acoustic propagation. I also found time to explore Hawaii enroute home. I recently took a vacation to the reef/islands of Belize and went to Guatemala by bus, to the the Mayan ruins at Tikal. I am restoring a 1956 Ford Crown Victoria and a 1956 Austin-Healey, enjoy Cajun music/dancing, the many music festivals--and Mardi Gras. I support wildlife preservation efforts (remember "extinction is forever").

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

With Miles and Wells, Geological Consultants, Lexington, Kentucky. Primarily oil and gas well and property evaluations, reserve estimates, and cash flows.

Tim Miller, M.S. 1984

Working for the East Fairfield Coal Company on the exploration and development of deep mine coal and limestone reserves. We are opening our second deep mine this summer and are working with the U.S. Bureau of Mines to detect old works using a variety of seismic methods.

P. Greg Mudd, B.S. 1984, M.S. 1993

Between rounds of golf, I am actively employed as a hydrogeologist with a national environmental consulting firm (Environmental Science and Engineering).

Toni Jost Nicholson, M.S. 1983

Working for the U. S. Army Corps of Engineers since 1984. I am an environmental hydrogeologist and working on various UST, RCRA, and CERCLA clean-up projects in Georgia, North Carolina, and South Carolina.

Wendell H. Overcash, B.S. 1977, J.D. 1980

Shift in job responsibilities from civil enforcement of surface mining laws to civil enforcement of water, air, and waste laws. Registered Professional Geologist #339.

Robert A. Paasch, B.S. 1951

Retired October 1, 1991, from Westinghouse Hanford, Operations and Engineering, contractor for the Hanford site which is operated by the U.S. Department of Energy.

Alma Hale Paty, M.S. 1984

Director of Public Lands and Minerals Policy at the American Mining Congress, now in my fifth year at AMC. Just spent a wonderful January in Argentina, hiking on blue glaciers in Patagonia and swimming in a pool at the base of the Sguozu Waterfalls in the subtropics of Argentina. Fabulous country! Slated to become Chairman of the D.C. section of AIME in July.

Ben Ploch, B.S. 1942

Prospecting for New Albany gas in Indiana, Illinois basin, and Antrim gas in south rim of Michigan basin.

Rodney Polly, B.S. 1984

After graduating, I worked for Walnut Grove Engineering in Lexington as a geologist until 1988. In June of 1988, I was hired by the Department for Environmental Protection, Division of Waste Management where I am an Environmental Engineer Technologist Senior (higher paying title!!). My main duties involve remediating hazardous waste spills which have impacted soils, surface water, and groundwater media.

Jim Poteet, B.S. 1985

Delivery driver for United Parcel Service in Lexington, married with two children, a boy and a girl.

Jim Prosser, M.S. 1991

Working for Dahl & Associates, an environmental consulting company in Davenport, Iowa, since August, 1992.

Larry R. Rhodes, B.S., 1963

President of Rhodes and Associates, Inc., which was established in 1971. We are geologists, engineers, and drillers, providing geotechnical, environmental, drilling, laboratory testing, and construction monitoring service.

David M. Richers, M.S. 1976, Ph.D. 1980

Principal scientist with Westinghouse Savannah River Company in Aiken, South Carolina. I am currently working on site characterization of the SRS utilizing remote sensing and surface geochemical methods.

Herman H. Rieke, B.S. 1959

Just completed a five-year contract with the Saudi Arabian Ministry of Petroleum and Minerals. As a senior technical advisor to the Directorate General of Mineral Resources in Jeddah, I was responsible for evaluation, review, and publication of all DGMR Technical Reports dealing with mineral and energy resources in western Saudi Arabia. Focus was on geohazards, gold exploration, general geology, and confidential exploration projects. I am finishing the second volume on *Carbonate Reservoir Characterization* along with two co-editors (E.V. Chilingarian and S.S. Mazullo); publisher is Elsevier of the Netherlands. Additionally, I am doing consulting and serving as an expert witness in civil cases.

Paul Douglas Rucker, B.S. 1983

Site geologist for Chem-Nuclear Systems, Inc. at the Barnwell Low-Level Radioactive Waste Disposal Site in Barnwell, South Carolina.

Vanessa Santos, B.S. 1980, M.S. 1982

Just completed a four-year assignment in Egypt for BHP Minerals International, a large Australian mining, steel, and petroleum company. I was chief geologist for exploration of potash in the Gulf of Suez and Red Sea. I will transfer to Cape Town, South Africa, where the company has an offshore diamond concession.

Darrell Sebastian, B.S. 1984

Letter carrier with United States Postal Service.

Sam H. Stith, B.S. 1937

My wife Rossie, died December 31, 1993, after a long illness. We had been married 55 years and she would have been 85 on January 15, 1994. I will be doing some family visiting this summer. [Editor's note: Mr. Stith visited the department during the summer. I am sorry to report that we have learned

that Mr. Stith passed away on August 10, 1994.]

Stephen B. Sullivan, B.S. 1979, M.S. 1983

In 1989, myself and a few others formed SCA Environmental Technology, Inc. which is a Louisville based environmental consulting firm. Over the past year, I have had the pleasure to serve on the Advisory Board for the department and I encourage any who read this to give your thoughts and support to the department.

Harvey C. Sunderman, B.S. 1946, M.S. 1947

Retired from the University of Cincinnati after 33 years of teaching geology and optical crystallography.

George R. Thomas, B.S. 1950

George suffers from Huntington's Chorea since 1979 and has been hospitalized at Veteran's Administration Hospital since June, 1992. He does enjoy cards and company for short visits.

Charles Tribble, B.S. 1950

Retired in 1982 from thirty years of public school teaching. Have lived on and operated a farm for thirty years.

Franco Urbani, M.S. 1992, Ph.D. 1975

Nominated for a new period (1993-1996) as Director of the School of Geology, Mines, and Geophysics at the Universidad Central of Venezuela.

James H. Vance, B.S. 1975

Spent 15 years working in international oil and gas exploration and lived abroad for the last five years of that time. I returned to the U.S. to pursue an alternative career and am presently living in Richmond, Virginia. I have established a management consulting company specializing in international business, joint venture management, and capability consulting.

George Brian Wyatt, M.S. 1991

In the fall of 1993, opened my firm, GeoSurv and have since been active in geologic consulting and land surveying, predominantly environmental in nature. I have also spent a fair amount of time involved in genealogical research of Wyatt families in Kentucky and Virginia, and I tentatively plan on getting married in the spring of 1995.

GSA MEETING

The 1993 annual meeting of the Geological Society of America was held in Boston. Those who

signed "the book" included:

F.R. Ettensohn
Doug Gouzie
John Holbrook
Brent Owens
William T. Schick

Tim Tharp
William A. Thomas
Rachel Thomas
John Thraikill
Brian Whiting

AAPG MEETING

At the 1994 meeting in Denver, of the American Association of Petroleum Geologists, "the book" was signed by:

Don Haney
George T. Hine
John Holbrook
Jim Hower
Gary W. Jacobs

J.O. Lewis
Ron Mackey
W. C. MacQuown
Edward Peck
Bill Thomas

IN MEMORIAM

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

Frank E. Brown
James E. Crosby
Samuel Rossington Magruder, December 24, 1993
Sam H. Stith, August 10, 1994
John Allen Stokley, September 27, 1994
Robert N. Welch, October 16, 1993

FACULTY NEWS

Frank Ettensohn

This summer we were unable to offer field camp because of the lack of students needing the course, but as a result, next summer should prove to be a much bigger year than normal in that regard. Anyway, the free summer was a much appreciated and needed rest, and I was able to do a few things that I would not have been able to otherwise. One of those things was done with Nick Rast. Together, we submitted two proposals, one to NSF and the other to Petroleum Research Fund, to study the effects of seismicity on epicontinental sedimentation. If you have ever looked closely at the Ordovician rocks

around Lexington, they are filled with seismites, and it has become very evident to us that seismicity on the many faults in the area has influenced sedimentation, an aspect which really has not been dealt with in any sort of detail before. During the summer, I was also able to finish final editing with John Dennison on our symposium volume, the results of an earlier SEPM symposium on eustatic and tectonic cyclicity. The symposium papers will appear as Volume 4, "Tectonic and Eustatic Controls on Sedimentary Cycles," of the relatively new series *SEPM Concepts in Sedimentology and Paleontology*, which we are expecting to see "any day now." My contribution in this volume deals with major unconformities and large-scale cyclicity in the Appalachian basin. The summer also saw the acceptance and final editing of a GSA Special Paper with former student Jack Pashin. The special paper reevaluates the Bedford-Berea sequence relative to foreland-basin sedimentation and tectonics and will change substantially older deltaic notions of the Bedford-Berea sequence; it is the direct result of Jack's earlier dissertation on the same subject. Finally, I was also able to participate in an invited symposium on black shales early this summer at the annual AAPG meeting in Denver; this will also result in a paper. I also found time to take up soccer this summer and actually played on an adult team; it's a game I dearly love, but one I'm not very good at (I'm what they called a dangerous player, and you can take the word "dangerous" literally). So the summer without field camp proved to be very productive and enjoyable, and I was even able to make it back to Colorado — if only for a week.

During the spring of 1994 I was also able to participate in two invited symposia at the Annual North-Central Regional GSA Meeting in Kalamazoo, Michigan, one on taphonomy and the other on the Devonian history of the mid-Continent, and co-convened a symposium on the geology of Gunnison County, Colorado, at the Annual Rocky Mountain Regional GSA Meeting in Durango, Colorado. Also, "any day now" a field guide which was the product of last year's Geological Society of Kentucky annual field trip should appear. I worked on the guide with Todd Hendricks, Josh Stark, and Steve Greb, and it will update current knowledge on the Devonian stratigraphy, paleontology, and structure of the Falls of the Ohio area in Kentucky and Indiana.

Some of you may remember "old-time" graduate students Todd Hendricks and Steve Barnett. Well, both are finally very close to finishing, while one of our newer students Mark Kulp will finish his thesis on the Brannon Member of the Lexington Limestone

this fall. Mark has turned up many interesting findings relative to Brannon sedimentation and regional structure and is now considering applying the same approach to the remainder of the Lexington Limestone as a Ph.D. project.

You may also remember from the last *Roundup* of my interest in pre-college education in the earth sciences. I have continued my ongoing work with elementary students in the Lexington area, but it has become apparent that most pre-college education in the earth sciences in Kentucky is lacking or "pretty bad." Hence, I and several others both on and off campus have begun grant writing to see if we can obtain some grant support for teacher enhancement in the earth sciences. After talking with NSF program officers, it looks like it's going to be an uphill battle to get any money at all for what we want to do, but we will proceed to try.

J.C. Ferm

This was a busy year for John. In addition to regular teaching duties and dissertation supervision, (Yuejin Liu has finished his Ph.D. and is now employed by BHP-Utah International in Herndon, Virginia) he undertook a revision of courses in elementary geology in the community college system. In this project, emphasis was placed on observations that students could make in the immediate vicinity of their homes or the college campus. There was some success but it was hard to draw the instructors away from standard work books and texts.

Another major project was leading a short course for geologists from the ARCO International Oil and Gas Company in eastern Kentucky. In cooperation with Jerry Weisenfluh of the Kentucky Geological Survey, John led a group of geologists from ARCO's North Sea section to some of the splendid road cuts in eastern Kentucky that illustrated some of the characteristics of sandstone reservoirs known only in the subsurface in the North Sea.

During the summer of 1994, he worked with former student, Joan Esterle now at Australia CSIRO, in the Bowen basin of eastern Queensland. The problem here was roof falls in underground coal mines, and John was able to apply his knowledge gained in similar work in the Appalachian and Rocky Mountain coal fields.

Paul Howell

This year seems busier than the last for me, if that's possible. I have settled nicely into my new office (first question of each student who enters:

"How many people do you share this with?") and the lounge in the front of it is becoming a hangout for many of the new undergraduate majors after they pass through my Historical Geology course. We have great enrollments in our introductory courses this semester and are well into a significant restructuring of the Physical Geology lab courses. I accumulated nearly 150,000 cm³ of graded tests and papers my first year, weighing in at close to 100 kg.

New this year is my active involvement in launching an interdisciplinary Environmental Studies Minor program in the College of Arts and Sciences. The program emphasizes an interdisciplinary approach to environmental problems from the outset, with a team-taught introductory course and course offerings covering both science-technical and socio-cultural aspects of the environment and humans in it. I am currently co-teaching the first course in the program, an *Introduction to Environmental Studies*, with Dr. Rich Schein from Geography and with considerable assistance from Jennifer Thompson as T.A. Truly an interdisciplinary effort, we are spending several weeks on each of several broad case studies to demonstrate that both scientific and socio-cultural aspects of environmental problems must be considered if solutions are to be developed. This program promises to be a nice showcase for the burgeoning environmental aspect of our department in the future.

I travel to Seattle soon for the Annual GSA meeting where I'll present a talk/demonstration of the "P-Wave Dance." Educators elsewhere have used this "Human Slinky" model before, but I can now successfully demonstrate P-, S-, Love and Rayleigh waves including such niceties as absence of shear wave propagation in liquids and the effect of rock density on P-wave velocity. A side trip to Mt. St. Helens will be my first, and my Environmental Geology students are demanding a slide show upon my return, despite our having finished the volcanic hazards section weeks ago.

David P. Moecher

With the departure of Dr. Neel Chatterjee (Neel is now the permanent microprobe lab manager at MIT—he oversees the operation of two (!) probes) I have become not only the director of the microprobe lab, but also chief technician, trainer, and baby sitter. It takes considerably more of my time, but has forced me to get back in the lab and get to know my instrument. I am very pleased with the quality and quantity of data coming out the lab. I am furiously finishing a project analyzing minerals in schists from

southern New England, in order to deduce the tectonic history of rocks metamorphosed in the Alleghanian orogeny. Other current users include: Prof. Kieran O'Hara, who is working on constraining compositional changes in micas and feldspars during mylonitization; Chris Toles (graduate student working with Prof. Sue Rimmer) who is using the X-ray mapping capabilities of the probe to document the extent of formation of activated carbons in coal fragments; Professor Warren Huff of the University of Cincinnati is analyzing glass inclusions in quartz grains from Ordovician K-bentonites, using the glass compositions as a stratigraphic tool; and, Professor Jafar Hadezadeh of the University of Louisville is analyzing calcite-filled microfractures in Paleozoic carbonates from the Valley and Ridge to constrain syntectonic fluid flow.

Eric Anderson is making excellent progress on his master's thesis research on the origin of carbonatite-like rocks from the Grenville Province of Ontario, Canada. These rocks are responsible for skarn formation and base metal/REE mineralization in a zone approximately 150 km long in southern Ontario. Eric completed electron microprobe and O and C isotope analyses of calcite from approx. 40 samples of carbonatite and "pseudo-carbonatite", and will report the results of his research this fall (he *should* be finished by May). Eric and I also made a 2700 mi. field trip through parts of Ontario, Quebec, New York, and Massachusetts this past August, collecting samples for his and my research projects.

Claudia Cook has also come aboard as a grad student in petrology at UK. She received her B.S. from Vanderbilt, and will be working on the REE and Sm/Nd isotope systematics of the carbonatites discussed above. I look forward to working with Claudia and learning about REE geochemistry.

Bruce R. Moore

Ongoing research is continuing with the development and application of a new low altitude airborne method of microfracture detection in rocks through soil and vegetation cover and the application of the method to mineral and hydrocarbon exploration and coalbed methane extraction.

Have been active in gold exploration in Nevada, petroleum exploration in Canada and Australia and diamond exploration in Zimbabwe and South Africa.

Kieran O'Hara

Looking back, the past year for me was an even mix of teaching and research, together with some

Graduate School administrative work. The effort to restructure and consolidate our graduate program course offerings also took up some time. Both the undergraduate physical geology and field methods courses which I taught in the Fall had large enrollments, making the small graduate course in advanced structural geology a welcome change in the Spring.

I continue my research interests in fluid-rock interaction using a variety of theoretical and analytical approaches. I have applied percolation theory, which is a fairly recently developed statistical description of fluid flow in porous media, to model fluid flow in actively deforming rocks. An important result of this project, which is published in the current issue of *Geology*, is that some fluid-rock systems become "self-organized", that is they spontaneously tend toward a fixed steady state condition. The model may explain why fluid-rock systems commonly display a fractal geometry. I returned to the University of Lausanne, Switzerland, to collect additional oxygen isotope data during the past summer. This project, which is funded by NSF and related to fluid-rock interaction in shear zones, is yielding very interesting data. During the coming semester I hope to collect additional data on the departmental microprobe facility here at UK.

I am currently experimenting with introducing live satellite images of the earth into our introductory geology courses as a way of bringing the "big picture" into the class room. I hope to make some progress on this project over the next couple of semesters if time permits.

Nicholas Rast

This year Nicholas Rast, after completing his term as the Chairman of the Program Committee of GSA, retired from his administrative duties with the Geological Society of America and concentrated on teaching and research as a dual task of pressing the frontiers of geological sciences.

The paper on the Cincinnati arch, promised last year, is in the process of being published in the *Northeastern Geology*. In addition, research in collaboration with Dr. J. W. Skehan progressed and resulted in several papers that are being published or reviewed. A new line of research, that first began in the eighties has led to a progressive collaboration with Dr. F. R. Ettensohn, is the recognition of seismite-paleoseismic disturbances—in Ordovician limestones of the Bluegrass. It is hoped that in a near future this research would be expanded and lead to a new understanding of sedimentary structures that in the

past have been called simply "ball and pillow."

I was very glad to have been invited to attend and contribute to a special symposium arranged in honor of the retirement of Dr. Harold Williams of the Memorial University of Newfoundland, Canada. Dr. Williams is one of the leading Appalachian geologists with very extensive contributions in stratigraphy and tectonics. The meeting involved both presentation of papers and field trips. Some 70 persons from Canada, the USA, the United Kingdom, France, and Scandinavia and various other countries attended this exciting occasion, which promoted geological discourse, the understanding of field relationships, the exchange of diverse views, and the spread of the international friendship. The University of Kentucky was fortunate to have been represented by two geoscientists - Dr. W. A. Thomas and N. Rast. Miscellaneous extensive scientific publications, editorship of books and translations, and discussions.

Lyle V. A. Sendlein

This past year has been another productive year. My administrative duties include directing the Kentucky Water Resources Research Institute (KWRI). I taught a graduate-level course, Groundwater Evaluation, Planning and Policy, and as part of my KWRI duties, I was responsible for five courses in the Environmental Systems Program, a graduate-level series of courses leading to a certificate in Environmental Systems. I also directed the research for 11 graduate students, 10 M.S. and one Ph.D. in hydrogeology.

My research program is a joint effort with James Dinger in the Kentucky Geological Survey. Together, we have four funded projects including one study of groundwater movement in the Eastern Kentucky Coal Field, two projects related to the impact of agricultural chemicals on groundwater in several regions in Kentucky, and a study of the impact of coal ash disposal on groundwater. Both Jim and I have directed the research for the graduate students involved with these projects, as well as the professional staff hired as part of these projects.

Another year has passed and several students have finished their work and have moved on to professional careers. All are working on topics of interest to me and listing their thesis topics may be a nice summary of our work.

Krista Gremes (M.S.) characterized the geomorphic features of a portion of Woodford County where UK has a research farm. Her study showed that the use of air photos for measuring the occurrence of sinkholes improved the number from 12

(topograph maps) to 79 (found by use of air photos). She also related the orientation of the long dimension of the sinkholes to fracture trends, as well as the lineation of sinkholes.

Stephen Hampson (M.S.) studied the movement of agricultural chemicals from the surface to the groundwater in an immature karst setting in Bourbon County. He showed that the pesticides are short lived and only occur in the epi-karst zone and that they do not migrate to the deeper groundwater. Shallow springs which are probably related to the epi-karst are affected. He also documented the occurrence of nitrate-nitrogen. There appears to be a relationship between application of fertilizer and occurrence in the very shallow groundwater.

Jeff Snell (M.S.) also studied the movement of agricultural chemicals from the surface to the groundwater in fine-grained sediments in Hopkins and Daviess Counties. He also showed that the occurrences of pesticides and nitrates are related to the application of these chemicals and that they are a very shallow groundwater problem.

Joseph Cupp (M.S.) studied a very mature karst area in Logan County. He worked out the paleo-drainage and related it to the groundwater surface as recorded in wells and karst features. The study basin was drained by a major spring and had a very well developed karst topography for the lower half of the basin with the upper portion of the basin devoid of sinkholes. He was able to show that this was related to the occurrence of a shale phase of the Mississippian limestone that formed the bedrock in the basin.

My administrative activities as Director of the Kentucky Water Resources Research Institute include the development of the a new group of individuals to assist the Kentucky Natural Resources and Environmental Protection Cabinet in the technical oversight of federal facilities in Kentucky. This has required the hiring of approximately twenty professionals including hydrogeologists, chemists, chemical engineers, biologists, environmental engineers, and civil engineers. Some of the hydrogeologists are my former students who went off to work but applied for these jobs when they became available. Todd Fickel (M.S., 1990) and Dan Moore (M.S., 1991) are working on different aspects of the project, Dan on computer related problems and Todd on the groundwater movement and contamination at the DOE Paducah plant. This is an exciting project because we are also getting faculty members and staff members from the Departments of Chemical Engineering, Civil Engineering, Preventive Medicine and Environmental Health, Geological Sciences, and

the Kentucky Geological Survey. We have used some of these funds to leverage a Hydrogeologist faculty position for the Department.

A very demanding project continuing from last year for which I am the team leader is the setting of cleanup standards for petroleum underground storage tanks in Kentucky. This project includes faculty members and researchers from Biological Sciences, Civil Engineering, Preventive Medicine and Environmental Health, Toxicology, Law, Chemistry, and the Kentucky Geological Survey at UK and a Public Health faculty member from Western Kentucky University and an Agricultural Engineer from Murray State University. We are very close to producing a final report that will spell out our recommendations for not only standards of petroleum products that can be left in the ground but also risk-based procedures for cleaning up leaking underground storage tank sites. Portions of the report have been adopted in emergency regulations of the Department of Environmental Protection of Kentucky.

This will be my last year as a full time member of the faculty because I plan to spend half of my time in Florida starting in August of 1995. The other half of my time is up for grabs.

Ron Street

It has been a somewhat good year for the geophysics program. Four of the graduate students have managed to graduate, we were fairly successful in our efforts to get research grants, we obtained the first set of strong-motion records from a vertical accelerometer array in North America outside of southern California, and have had a lot fun with poison ivy, ticks, and, chiggers. We have continued to improve our data acquisition and processing capabilities in the areas of shallow seismic and conventional seismology, by upgrading the existing field systems and by the purchase of new computers.

As I indicated in last year's *Roundup*, we have moved the program towards shallow seismic. Since then we have become involved with the geotechnical group in the Department of Civil Engineering, and are integrating our shallow seismic with geotechnical results in western Kentucky for the purpose of site characterization. Our primary tool remains SH-wave reflection, but due to the energy source we are limited in the depth of penetration to which we can work. Hopefully we will be successful in obtaining the funds to get a much improved shear wave energy source in the near future. Our goal is to get a shear wave vibrator which, like many other "high tech" tools of only a few years ago, have come way down

in cost as a result of new developments in the technology.

Obtaining ongoing funding for the lab continues to be a major headache. With the help of the Kentucky Geological Survey, Kentucky Division of Disasters and Emergency Services, and the Kentucky Finance Cabinet, we have been able to keep the lab running. Currently we are operating 11 seismic stations, seven strong-motion stations, and have two exploration seismographs and three digital accelerometers for field use. In the lab, we have started the process of upgrading to 586 PC's.

Bill Thomas

Much of my news each year centers on the graduate students who are working with me, and this year is no different. Thesis and dissertation research continues to focus on basement faults and/or thrust belts. Jim Montgomery completed and defended his M.S. thesis on the cause of curvature of the Wyoming thrust belt adjacent to the Teton basement uplift. Joe Allen completed and defended his Ph.D. dissertation on reactivation history of basement faults in the Sawatch Range in central Colorado, and Joe has joined the faculty of Alice Lloyd College in Pippa Passes, Kentucky. Jay Sims did field work for his M.S. thesis on the northeast boundary of the Uncompahgre uplift; he mapped the pre-Mesozoic structures from east of Gunnison to north of Crested Butte. As is my regular practice, I visited Jay in the field to look at the most interesting observations. This included a trip into Ecchers Gulch, and then from the bottom of the gulch up to the top of the high ridge of Entrada Sandstone that Dr. Mac called "The Razorback" (steeper than a hogback!). We hiked out through the "saddle" past the "hot spring" to Cement Creek. I had made the climb from Ecchers Gulch up to the Razorback once before, during the summer of 1954. An amazing set of geological phenomena during the past forty years have conspired to make that slope a lot steeper and higher than it was, and the air seems to have even less oxygen than it did. Meanwhile back in Lexington, Lyle Mars has reached the concluding stages of his Ph.D. dissertation research on applications of sequence stratigraphy to subsurface data from the Black Warrior basin. My joint work with Brian Whiting on three-dimensional subsidence analysis of the Black Warrior basin has received a big boost through a new grant from the National Science Foundation. Our preliminary results have been published during the past year.

Several professional meetings this year provided opportunities to talk with old friends, participate in

the regular alumni meetings (and meet some more UK alumni), participate in field trips, etc. The highlight in that regard was a Geological Association of Canada Nuna Conference in honor of Hank Williams who is retiring from Memorial University of Newfoundland. The meeting was in Grand Falls, Newfoundland, and included a three-day field trip in north-central Newfoundland. I have enjoyed a long working relationship with Hank Williams, who was one of the first to pick up on my interpretations of the shapes of rifted continental margins as a control of the shapes of thrust belts. It was a special honor to be invited to present a paper at that conference.

Perhaps the most unusual event of the year was to be quoted in *Reader's Digest*. The quote was nearly what I had said about the sequence and age of ancient rifts in the central part of the North American continent, especially around the New Madrid area. From the response I've had, I would have to guess that more people read *Reader's Digest* than read the geological journals in which I normally publish.

Brian Whiting

Since I arrived here in August, 1992, Bill Thomas and I have been working together on the tectonics, subsidence, and stratigraphy of the Black Warrior foreland basin. One of my areas of expertise lies in the field of geophysical modeling, and we have been working toward compiling and entering a digital database of approximately 2,750 wells from the basin. A large part of my efforts in the past two years have been directed toward acquiring, setting up, and maintaining a computer mapping lab, which features a full set of Landmark-Zycor mapping software, among other "goodies." In the past year, we have done some preliminary work on the relative roles of the Ouachita and Appalachian thrust belts in engendering subsidence in the Black Warrior foreland basin. Bill and I have a few other manuscripts in preparation that relate to the Black Warrior basin. I have also continued to think about and work on projects related to my dissertation topic, which focused on the subsidence and stratigraphy of the west Indian continental margin. As I write this, I am preparing a manuscript that relates the Middle Miocene transition from carbonate to siliciclastic deposition to paleoclimatic and paleoceanographic factors.

The next academic year promises to be busy. I am about to attend a week-long Summer School for Global Change Research at NASA's Jet Propulsion Lab in Pasadena, California. I hope that this school will provide me with interesting new insights into the

important question of the role of climate change in the stratigraphic record. This Fall semester, I look forward to teaching a section of Introductory Geology as well as a section of the Field Methods course. In January, 1995, I will begin working on the three-dimensional controls of subsidence in the Black Warrior basin, under the sponsorship of a National Science Foundation grant. In March and April of next year I will be a shipboard science participant in Ocean Drilling Program Leg 160, which will study the incipient continent-continent collision off the southern margin of Cyprus.

ADJUNCT FACULTY

James A. Drahovzal

This is the beginning of my sixth year at the Kentucky Geological Survey (KGS) where I am heading up the Petroleum and Stratigraphy Section (P&S). Our program is one of petroleum and regional geologic research as well as service to the oil and gas industry of the State.

I am continuing my KGS studies of the rift basins of the region using reflection seismic data in interpreting the geology of the Cambrian and Proterozoic as part of the Illinois Basin Consortium and the P&S program. This year I completed a top-of-basement map for eastern Kentucky based on available well-record, reflection-seismic, and gravity data. A preliminary basement map of the Rough creek Graben of western Kentucky is still in progress as we continue to search out and receive additional reflection seismic data.

In the Department of Geological Sciences, I continue to serve on student thesis committees. This past year, I served on three Ph.D. and two M.S. committees. I continue as a member of Zhenming Wang's (geophysics), John C. Mars' (stratigraphy) and Jennifer Thompson's (organic geochemistry) Ph.D. committees. Ali Ahmed Al-Yazdi received his M.S. degree this year in seismic reflection studies, and I continue as a member of Richard T. Hendrick's (paleontology and stratigraphy) M.S. committee.

As part of KGS's four-year, DOE-sponsored Appalachian Gas Atlas research project, I continued to employ two of the Department's undergraduate students this year, Chris Martin and Kevin Wentz worked during the school year, and Chris continued through the summer and into the fall. Kevin joined the Water Section at the Survey this spring. In addition, I hired Jonathan Hoyle last spring, and he continued to work through this summer.

The KGS recently received a gift from Sam Bowers of Portage, Indiana, designated for subsurface geology of western Kentucky. The gift will support Ed Woolery, Ph.D. candidate in the geophysics program, as a half-time research assistant at KGS. Ed will be assisting us in looking at the basement relationships of the Rough Creek graben and the East Continent rift basin, together with the deep stratigraphy of both provinces.

As time permits, Bill Thomas and I continue our cooperative research project on the geology of the thrust-faulted and folded Appalachians of Alabama.

Jim Hower

I have continued to work with coal combustion by-products over the past year. Most of the coal petrology and geochemistry studies are confined to the continuation of work initiated several years ago with KGS and USGS geologists. I did have the opportunity to travel to Nova Scotia in the summer of 1994 and spend a few days collecting coals at Joggins. As I write this I have one more week as president of the Society for Organic Petrology and then I take over as the chairman of the Geological Society of America Coal Geology Division.

EMERITUS FACULTY

William R. (Bill) Brown

Retirement has meant much more activity around the home, including doing things put off for many years and reading books I don't have to read. Blessing and I are grateful for having been blessed with good health. I still play tennis once or twice a week (now mostly doubles) and fun-practice other days; I also bike some. I do catch some geology departmental activities, like seminars. We have traveled quite a bit (Florida to Colorado, California, and Alaska, Australia, New Zealand, Fiji, Canadian Rockies, Switzerland, Caribbean islands). April of this year we went to mainland Greece and Greek islands and barely into Turkey. This is a most interesting region historically. Geologically, the widespread marble and other carbonates of the region are marked testimony to the former presence of the great Tethys seaway. Yes, I still look at rocks.

Lois Campbell

The highlight of this last year for me was a trip in late spring to the Southwest. I met friends in Las

Vegas and we headed to the Grand Canyon. I had been to the South Rim several times, but this year it was to the North Rim where we spent several days and then dropped down (from 9,000 to 6,000 feet) to Kanab, Utah. That served as a base while we explored a bit of southern Utah and southeastern Nevada. Oh yes, there were other geologists in the party.

Back here in Lexington, I have been busy as a board member of the local chapter of the League of Women Voters. I also plug away from time to time at my retirement project: combining geology and archaeology in a study of the economic geology of bronze age civilizations in Egypt and southwest Asia.

William Dennen

My news this year is non-geological. My wife Charlotte died in hospice care at home and in peace on May 18, 1994, after a more than two-year valiant fight against a recurrence of breast cancer. I married my teen-age sweetheart on September 24, 1994.

W.C. (Bill) MacQuown

Last year was a very sad year for me. My wife Vivian died in August, 1993, after a long illness. This year my first granddaughter was born and has been a great joy to me.

Except for my annual public service talk on the Geology of the Kentucky River aboard the Shakertown stern-wheeler, my geological activity was limited to attendance at the national AAPG meeting in Denver last June. I served as an SEPM poster judge for a session on sequence stratigraphy with its own new jargon. Several of my "old students," including George Hine (1950) and Ron Mackey (1949) were there. J.O. (Jim) Lewis, who was chairman invited me to attend and I was glad to see many of you there.

Charles A. Ratté

Judy and I send our very best to all of the faculty, staff, and students, and friends who remember our intrusion into your midst during the 1991-1992 and 1993-1994 academic years. We most certainly enjoyed a pleasant and fun experience in Kentucky, and miss you all. See! Something rubbed off.

After a year and a half, we are pretty well settled back in Vermont. We spent the first year renovating our home and now have a nice guest room with private bath. So give us a visit.

Our spare time has been occupied with golf (we

have not improved a bit), fishing, swimming, bike riding, and cross-country skiing. We plan to spend two months (February and March, 1995) in South Carolina and hope to return to Vermont via Kentucky for a short visit.

I am teaming-up with a geologist/ photographer friend writing a photo-essay type Geology of Vermont. This will be written for a non-geologist audience. Also doing a little consulting work. Judy is busy designing and sewing some fuzzy velvet prototype toy animals using scraps from our daughter Mechile's fabric design business. These activities seem to keep us out of too much trouble.

1992-1993 DEGREES AWARDED

BACHELOR OF SCIENCE

Sara D. Baxter
Ernie A. Ellison
Jeffrey L. Ginn
Donald S. Prater
David T. Scates

Michael M. Steen
William Thomas Schick
Ernest E. Thacker
Kevin J. Wente

MASTER OF SCIENCE

Ali A. Al-Yazdi, 1994, M.S., Paleozoic bedrock depth investigation in the Jackson Purchase region of western Kentucky using the P-wave seismic reflection technique for the purpose of regional 1-D site effects estimation.
Advisor: Ron L. Street

Brian K. Baker, 1992, M.S., An hydrogeologic investigation of the Cobhill Quadrangle, Kentucky; and An investigation of the environmental aspects of coal processing refuse fills in eastern Kentucky.
Advisor: Lyle V.A. Sendlein

Bell, Michelle R., 1993, M.S., The relation of the martic line to the Chilhowee group and the Marburg Schist in central York county, Pennsylvania.
Advisor: Nicholas Rast

Cupp, Joseph D., 1994, M.S., Geomorphic analysis

as a predictive tool in determining ground water flow patterns in the Mississippian plateau region of Kentucky.

Advisor: Lyle V.A. Sendlein

Gremos, D. Krista, 1993, M.S., Use of aerial photos, maps, and field reconnaissance to determine the geomorphology and geological control of a karst terrain in the inner bluegrass region, Kentucky.

Advisor: Lyle V.A. Sendlein

Hampson, Steven K., 1994, M.S., The impact of agricultural practices on epikarstic ground water quality in the inner bluegrass of Kentucky.
Advisor: Lyle V.A. Sendlein

Montgomery, James M. Jr., 1993, M.S., The origin of structural curvature in the northern part of the Wyoming-Idaho thrust belt, Wyoming-Idaho.
Advisor: William A. Thomas

G. Todd Mullins, 1993, M.S., Seismic investigations post-paleozoic faults on the Tiptonville Dome, northwestern Tennessee.
Advisor: Ron L. Street

Snell, Jeffrey D., 1994, M.S., The impact of agricultural chemicals on groundwater in lacustrine sediments at representative sites within the western coal field region, Kentucky.
Advisor: Lyle V.A. Sendlein

Vogler, Patrick D., 1994, M.S., Depositional model of the Pond Creek Seam, eastern Kentucky, based on detailed megascopic and microscopic analysis.
Advisor: Susan M. Rimmer

DOCTOR OF PHILOSOPHY

Allen, Joseph L., 1994, Ph.D., Stratigraphic variations, fault rocks, and tectonics associated with brittle reactivation of the Homestake shear zone, central Colorado.
Advisor: William A. Thomas

Bayan, M.R., 1993, Ph.D., Illite "crystallinity" and vitrinite reflectance in the central Appalachian Carboniferous strata.
Advisor: Nicholas Rast

GRADUATE STUDENT RESEARCH

Liane B. Alessi (B.S., Arizona)

M.S. thesis: Mineralogical and chemical composition of brecciated clay-carbonate sequences associated with No. 13 coal, western Kentucky: Implications for origin.

Advisor: Sue M. Rimmer

Eric Anderson, (B.S. Virginia Tech)

M.S. thesis: Chemical and isotopic constraints on the origin of carbonatite-like rocks, Grenville Province, Ontario.

Supported by National Science Foundation

Advisor: David P. Moecher

Steve F. Barnett (B.A., Covenant; M.S., Loma Linda)

Ph.D. dissertation: Nature, origin, and age of the Portwood Member of the New Albany Shale in central Kentucky.

Advisor: Frank R. Ettensohn

Denny J. Cantrell (B.S., Kentucky)

M.S. thesis: Organic maturation of the Devonian black shales in eastern Kentucky.

Advisor: Sue M. Rimmer

James F. Coble (M.S., East Carolina)

Ph.D. dissertation: Migmatitic development in the Ocoee Supergroup in western North Carolina.

Advisor: Nicholas Rast

Tony L. Cooley (B.S., Washington [St. Louis])

Ph.D. dissertation: Characterization of the macropore system and water movement through soils and soil/rock interface over a shallow karst conduit system.

Advisor: Lyle V.A. Sendlein

Garland R. Dever (B.S., Notre Dame; M.S., Kentucky)

Ph.D. dissertation: Syntectonic sedimentation in Mississippian carbonates near the Irvine-Paint Creek fault system in the Rome trough, east-central Kentucky.

Advisor: Frank R. Ettensohn

Thereseann Dowdy, (B.S. Kentucky)

M.S. thesis: Application of a GIS to a hydrogeologic study of the Inner Bluegrass Karst Region in Scott County, Kentucky.

Advisor: Lyle V.A. Sendlein

Alan Gentry, (B.S. Louisville)

M.S. thesis: Application of RISK PRO to USG sites in Kentucky.

Advisor: Lyle V.A. Sendlein

Peter J. Goodman (B.S., Iowa; M.S., Temple)

Ph.D. dissertation: Numerical models of basin analysis in the autochthonous Appalachian basin in Kentucky, Cumberland Plateau region.

Supported by Chevron.

Advisor: Nicholas Rast

Richard T. Hendricks (B.S., Louisville)

M.S. thesis: Paleontology and paleoenvironments in the Laurel Dolostone, west-central Kentucky.

Advisor: Frank R. Ettensohn

Michael W. Hiatt (B.S., Middle Tennessee)

M.S. thesis: Characterization of groundwater flow and quality of Big Springs, Rutherford County, Tennessee.

Advisor: Lyle V.A. Sendlein

Brian Higgins, (B.S., Morehead)

M.S. thesis: Site responses due to seismic loading in Henderson, Kentucky.

Advisor: Ron L. Street

Daryl Hines, (B.S., Kentucky)

M.S. thesis: Hydrogeologic investigation at an industrial site of Scott County, Kentucky.

Advisor: Lyle V.A. Sendlein

Peter Idstein, (B.S., Eastern Illinois University; M.S., Eastern Kentucky University)

Ph.D. dissertation: Investigation of current and alternative groundwater sampling methods for contaminants moving in a karst flow system.

Advisor: Ralph Ewers (Eastern Kentucky University)

Scott Johansen, (B.S., Kentucky)

M.S. thesis: The Carboniferous limestone in southeastern Kentucky.

Advisor: John C. Fern

Mark Kulp (B.S., Juanita College)

M.S. thesis: Paleoenvironmental/stratigraphic analysis of the Brannon member of the Lexington limestone.

Advisor: Frank R. Ettensohn

Dennis G. Lewellen (B.S., Oregon State; M.S., Eastern Washington)

Ph.D. dissertation: Control of sedimentation by contemporaneous structure, Pocahontas Formation, Buchanan County, Virginia.

Advisor: John C. Ferm

Donald Lumm (B.S., Illinois; M.S., Vanderbilt)

Ph.D. dissertation: Re-examination of the Pennsylvanian-Mississippian unconformity in southern Illinois.

Advisor: John C. Ferm

John C. Mars (B.S., M.S., Alabama)

Ph.D. dissertation: Facies architecture and evolution of sandstones in the Parkwood Formation in the Black Warrior basin.

Supported by ARCO.

Advisor: William A. Thomas

James A. McHugh (B.S., Kentucky)

M.S. thesis: Geology of the Chilhowee Mountain and vicinity, southeastern Tennessee.

Advisor: Nicholas Rast

Angela Moore (B.S., Edinboro [Pennsylvania])

M.S. thesis: Physical and chemical characterizations of the ground water flow system in the Inner Bluegrass karst region.

Supported by Presidential Fellowship and Quality Achievement Award

Advisor: James S. Dinger

Brian Panetta, (B.S., South Carolina)

M.S. thesis: Relationship between microfractures and Devonian black shale gas production in Martin County, Kentucky.

Advisor: Bruce Moore

Roger J. Paulson (B.S., Wisconsin-Plattville)

M.S. reports: Revision of input and output for Prickett, Naymik, and Lonnquist random walk solute transport modeling program; and Contaminant hydrogeology of a site in Jefferson County, Kentucky.

Advisor: John Thrailkill

William J. Sims, (B.S. Arkansas-Little Rock)

M.S. thesis: Northeast boundary of the Ancestral Uncompahgre uplift, Gunnison County, Colorado.

Supported by Petroleum Research Fund, Pirtle Fellowship, Chevron.

Advisor: William A. Thomas

Nicholas Sirek, (B.S., Kentucky)

M.S. thesis: Distribution, abundance, and predictability of fractures (joints) in relation to the flow of groundwater in the Eastern Kentucky Coal Field.

Supported by Kentucky Geological Survey

Advisor: William A. Thomas

Yalan Tang (B.S., Shanxi; M.S., Beijing)

Ph.D. dissertation: Coal petrology, mineralogy, and geochemistry of the Fire Clay coal bed, southeastern Kentucky.

Supported by Medlin Award (Geological Society of America).

Advisor: Sue M. Rimmer

Jennifer A. Thompson (B.S., Smith)

Ph.D. dissertation: Organic facies in the Devonian shales, central Kentucky.

Supported by Center for Applied Energy Research.

Advisor: Sue M. Rimmer

Christopher Toles (B.S., Eastern Illinois; M.S., Missouri-Columbia)

Ph.D. dissertation: Carbon synthesis for coal and maceral concentrates: Petrographic and *in-situ* FTIR studies.

Supported by Kentucky/Department of Energy EPSCoR Program.

Advisor: Sue M. Rimmer

Zhengping Wang (B.S., Wuhan; M.S., Beijing)

Ph.D. dissertation: Comparison of macroscopic and microscopic coal lithotypes.

Advisor: John C. Ferm

Zhenming Wang (B.S., Peking; M.S., Kentucky)

Ph.D. dissertation: Source characteristics of earthquakes in the New Madrid seismic zone.

Supported by Martin Marietta Energy Systems, Inc.

Advisor: Ron L. Street

Mark Warrell, (B.S. Kentucky)

M.S. thesis: Determination of the origin of groundwater in a fly ash landfill in northern Kentucky.

Advisor: Lyle V.A. Sendlein

Anna E. Watson (B.S., Kentucky)

M.S. thesis: Stratigraphy and depositional environments of the Pennington Formation, southeastern Kentucky.

Advisor: Frank R. Ettensohn

Edward Woolery, (B.S., Eastern Kentucky; M.S. Kentucky)

Ph.D. dissertation: Near-surface structural investigation and seismic hazard analysis of the Northern Mississippi Embayment.

Supported by U.S. Geological Survey

Advisor: Ron L. Street

Yunhe Zhang, (B.S., Huainan Mining Institute; M.S., China University of Mining and Technology)

M.S. thesis: A comparative study of fluorescence characteristics of alginite and sporinite in the Devonian shales and the Fireclay coal, eastern Kentucky.

Advisor: Sue M. Rimmer

NEW GRADUATE STUDENTS

Penny Alano (B.S., Indiana University)

Margaret Brewer (B.S., Hunter College, CUNY)

Claudia Cook (B.S., Vanderbilt University)

Steven Juszczuk (B.S., Queens College, CUNY; M.S., Texas Christian University)

Ronald Neihaus (B.S., Louisiana Tech University)

TEACHING ASSISTANTS

Penny Alano

Eric Anderson

Margaret Brewer

Daryl Hines

Peter Idstein

Steven Juszczuk

Mark Kulp

Ron Neihaus

Brian Panetta

Jennifer Thompson

Christopher Toles

Zhengping Wang

Mark Warrell

Yunhe Zhang

RESEARCH ASSISTANTS AND FELLOWS

Eric Anderson, National Science Foundation

Claudia A. Cook, U.K. Women's Fellowship

John C. Mars, ARCO, Chevron Fellowship

William J. Sims, Petroleum Research Fund

Nicholas S. Sirek, Kentucky Geological Survey

Christopher Toles, Kentucky EPSCOR Traineeship

Zhenming Wang, Martin Marietta Energy Systems, Inc.

Edward W. Woolery, U.S. Geological Survey

STUDENT AWARDS

Sigma Xi Grant-in-Aid of Research

Eric Anderson

Postdoctoral appointment, Geological Survey of Canada (one of only four Americans selected)

Jay Harris

Research Assistanship, Computation Sciences

Zhenming Wang

Pirle Graduate Fellowships

William J. Sims

Nicholas S. Sirek

Jennifer A. Thompson

McFarlan Fund, Research

Eric D. Anderson

Mark A. Kulp

John C. Mars

William J. Sims

Jennifer Thompson

McFarlan Fund, Travel

Joseph Allen

William J. Sims

Christopher A. Toles

Dan Vogler

Tarr Award (Sigma Gamma Epsilon) - outstanding graduating senior

William T. Schick

Pirtle Award - outstanding junior showing promise in geology

Christopher Sweat

STUDENT PRESENTATIONS

James B. Harris

A shallow seismic investigation of quarterly deformation on the Lake County uplift, Central New Madrid Seismic Zone.

South Central Section, Geological Society of America, Little Rock Arkansas, March, 1994.

William J. Sims

Regional variations in quartz deformation mechanisms, Eastern Ouachita Mountains, Arkansas.

South Central Section, Geological Society of America, Little Rock Arkansas, March, 1994.

FACULTY RESEARCH SUPPORT

National Science Foundation:

Chemical changes in mylonites as a function of the deformation behavior of the major rock-forming minerals.

Kieran O'Hara and David P. Moecher

Kentucky Department of Transportation:

Seismic hazard evaluation for western Kentucky.
Ron Street

Electric Power Research Institute:

Groundwater movement in a dry ash landfill and prediction of leachate movement.

James Dinger and Lyle V.A. Sendlein

U.S. Department of Agriculture:

Agricultural BMPs and surface water-groundwater interaction in karst terrane.

James Dinger and Lyle V.A. Sendlein

U.S. Department of Energy:

High volume-high value usage of dry gas desulfurization (FGD) by-products in underground mines.

James Dinger and Lyle V.A. Sendlein

U.S. Geological Survey:

A comprehensive geotechnical and seismic investigation of site effects at representative strong-motion stations in the New Madrid Seismic Zone.

Ron L. Street

Martin Marietta Energy Systems:

Far-field ground motions study of engineering interest at the Paducah Gaseous Diffusion Plant.

Ron L. Street

U.S. Geological Survey:

Investigation of structural deformation in the Lake County Uplift area of Missouri and Kentucky using high resolution SH-wave seismic reflection.

Jay Harris and Ron L. Street

Petroleum Research Fund of American Chemical Society

Causes of reactivation of intracratonic basement faults.

William A. Thomas

National Science Foundation

Subsidence history of a foreland basin within a thrust-belt recess: The need for a three-dimensional approach.

William A. Thomas and Brian M. Whiting

PUBLICATIONS

UK faculty

UK student or former student

James Dinger, Adjunct Faculty

Keagy, Dwayne M., Dinger, James S., Fogle, Alex W., and Sendlein, Lyle V.A., 1994, Interim Report On The Effect Of Pesticides, Nitrate, And Bacteria On Ground-Water Quality In A Karst Terrian--The Inner Blue Grass Region, Woodford, County, Kentucky: Kentucky Geological Survey, OF-93-04, 46 p.

Keagy, Dwayne M., Dinger, James S., Hampson, Steven K., and Sendlein, Lyle V.A., 1994, Interim Report On The Effect Of Fractures On The Quantity Of Ground Water And The Occurrence Of

Pesticides And Nutrients In the Epikarst Of The Inner Blue Grass Region, Bourbon County, Kentucky: Kentucky Geological Survey, OF-93-05, 27 p.

Thereseann C. Dowdy, Graduate Student

Dowdy, Therese C.; Hines, Daryl; Sendlein, Lyle V. A., 1994, Using GIS to Study the Inner Bluegrass Karst Region in Scott County, Kentucky [abs]: Geological Society of America, Abstracts with Program, 1994.

James Drahovzal, Adjunct Faculty

Baars, D. L., Thomas, W. A., Drahovzal, J. A., and Gerhard, L. C., in press, Preliminary investigations of basement tectonic fabric of the conterminous USA: Basement Tectonics.

Drahovzal, J.A., 1994, Basin-floor fan complexes in Cambrian rift basins of Kentucky [abs.]: American Association of Petroleum Geologists 1994 Annual Convention, Denver, Colorado, Official Program, v. 3, p. 139.

Drahovzal, J.A., 1994, The structure, stratigraphy, and future hydrocarbon potential of the Rome Trough in Kentucky [abs.]: Program and Abstracts of the Twenty-Fifth Annual Appalachian Petroleum Geology Symposium, West Virginia Geologic and Economic Survey, Morgantown, West Virginia, I.C. White Memorial Fund Publication 6, p. 33-38.

Drahovzal, J.A., and Wickerstrom, L.H., 1993, The East Continent Rift Basin [abs.]: American Association of Petroleum Geologists, Hedberg Research Conference on Basement and Basin of Eastern North America, University of Michigan, Ann Arbor, Michigan, 2p.

Frank R. Ettensohn, Professor

Bayan, M.R., and Ettensohn, F.R., 1993, Supergene alteration of substrates below Devonian-Mississippian oil and gas shales: Origin and significance: Abstracts, 1993 Eastern Oil Shale Symposium: U.K. Institute for Mining and Minerals Research, p. 63.

Bayan, M.R., and Ettensohn, F.R., 1994, Supergene alteration of substrates below Devonian-Mississippian oil and gas shales: Origin and

significance, in Proceedings, 1993 Eastern Oil Shale Symposium: University of Kentucky Institute for Mining and Minerals Research, Lexington, p. 376-380.

Ettensohn, F.R., 1993, Using Late Devonian-Mississippian black-shale stratigraphy to infer pycnocline position and the likely predominance of tectonic or eustatic influence thereon: Geological Society of America Abstracts with Programs, v. 25, p. A-339.

Ettensohn, F.R., 1994, Flexural interpretation of Mississippian stratigraphy in the Black Warrior basin: Geological Society of America Abstracts with Programs, v. 26, p. 12.

Ettensohn, F.R., 1994, Global and regional controls on origin and burial of organic matter in Devonian-Mississippian black shales of North America: Official Program, 1994 AAPG Annual Convention, p. 146-147.

Ettensohn, F.R., 1994, Stream diversion, glaciation, and origin of the Lower Narrows, Cement Creek, Gunnison County, Colorado: Geological Society of America Abstracts with Programs, v. 26, p. 12.

Ettensohn, F.R., in press, Tectonic control on formation and cyclicity of major Appalachian unconformities and associated stratigraphic sequences, in Dennison, J.M., and Ettensohn, F.R., eds., Tectonic and eustatic controls on sedimentary cycles: SEPM Concepts in Sedimentology and Paleontology, v. 4, p. 217-242.

Ettensohn, F.R., in press, Development and potential of core-logging manuals: Geotechnical Testing Journal.

Ettensohn, F.R., in press, Marine, organic-rich, dark-shale deposition on North American parts of Pangea, Carboniferous to Jurassic: Effects of supercontinent organization, in Beauchamp, B., Embry, A.F., and Glass, D., eds., Carboniferous to Jurassic Pangea: A global view of environments and resources: Canadian Society of Petroleum Geology Memoir 17.

Ettensohn, F.R., Barnett, S.F., and Norby, R.D., 1994, Late-Middle to Late Devonian (Givetian-Famennian) tectonic and stratigraphic history of central Kentucky: Geological Society of America Abstracts with Programs, v. 26, p. 14-15.

Ettensohn, F.R., and Pashin, J.C., 1993, Mississippian stratigraphy of the Black Warrior basin and adjacent parts of the Appalachian basin: Evidence for flexural interaction between two foreland basins, *in* Pashin, J.C., ed., New perspectives on the Mississippian System of Alabama, Guidebook for the 30th Annual Field Trip: Alabama Geological Society, Tuscaloosa, p. 29-40.

Hendricks, R.T., Ettensohn, F.R., Stark, T.J., and Greb, S.F., in press, Geology of the Devonian strata of the Falls of the Ohio Area, Kentucky-Indiana: Stratigraphy, sedimentology, paleontology, structure, and diagenesis, Field Guide, Annual Field Conference of the Geological Society of Kentucky: Kentucky Geological Survey, Series XI, 29p.

Mason, C.E., and Ettensohn, F.R., 1994, Taphonomic and paleoenvironmental inferences from a cephalopod shell-bank occurrence, Mississippian Slade Formation, northeastern Kentucky: Geological Society of America Abstracts with Programs, v. 26, p. 53.

Pashin, J.C., and Ettensohn, F.R., in press, Reevaluation of the Bedford-Berea Sequence in Ohio and adjacent states: Forced regression in a foreland basin: Geological Society of America Special Paper 298.

John C. Ferm, Professor

Esterle, J.S. and Ferm, J.C., 1994, spatial variability in modern tropical peat deposits from Sarawak, Malaysia and Sumatra, Indonesia: analogues for coal, *Int. Jour. Coal Geology* v. 26, pp. 1-41.

Esterle, J.S., Ferm, J.C., Mallett, C.W., and Liu, Y., 1994, Reconnaissance investigation for further sedimentological characterization of overburden in the Gregory-Crinum Mines; Division of Exploration and Mining, CSIRO, Kenmore, Queensland, Australia.

Ferm, J.C., Weisenfluh, G.A., Jordan, D., and Christopher, R., 1994, Carboniferous sedimentary patterns in the Pocahontas Basin, eastern Kentucky: ARCO Int. Oil and Gas Co., 200 p.

Peter Goodman, Graduate Student

Rast, N., and Goodmann, P. T., 1994 ; Tectonic and sedimentary consequences of Late Proterozoic and Early and Mid-Paleozoic overthrusting in Kentucky and adjacent states: *Northeastern Geology*, v. 16, p. 163 - 172.

Daryl Hines, Graduate Student

Dowdy, Therese C.; Hines, Daryl; Sendlein, Lyle V. A., 1994, Using GIS to Study the Inner Bluegrass Karst Region in Scott County, Kentucky [abs]: Geological Society of America, Abstracts with Program, 1994.

James Hower, Adjunct Faculty

Hower, J.C., Levine, J.R., Skehan, J.W., S.J., Daniels, E.J., Lewis, S.E., Davis, A., Gray, R.J., and Altaner, S.P., 1993, Appalachian anthracites: Organic Geochemistry, v. 20, p. 619-642.

Hower, J.C., and Robl, T.L., 1993, Production of coal-combustion by-products in Kentucky: Trends and prospects: *Journal of Coal Quality*, v. 12, p. 24-29.

Eble, C.F., Hower, J.C., and Andrews, W.M., Jr., Paleocology of the Fire Clay coal bed in a portion of the Eastern Kentucky coal field: *Palaeogeography, Palaeoclimatology, Palaeoecology*, v. 106, p. 287-305.

Hower, J.C., Eble, C.F., and Rathbone, R.F., Petrology and palynology of the No. 5 Block coal bed, northeastern Kentucky: *International Journal of Coal Geology*, v. 25, p. 171-193.

Hower, J.C., Graham, U.M., and Eble, C.F., High-sulfur coals in the Eastern Kentucky coal field, in A.P. Schultz and E.K. Rader, eds., *Studies in Eastern Energy and the Environment: Virginia Division of Mineral Resources, Publication 132*, p. 1-6.

Hower, J.C., and Wild, G.D., Petrology of Jurassic (Kimmeridgian) coals, Atlantic continental slope, New Jersey, in A.P. Schultz and E.K. Rader, eds., *Studies in Eastern Energy and the Environment: Virginia Division of Mineral Resources, Publication 132*, p. 11-15.

Hower, J.C., Taulbee, D.N., Rimmer, S.M., and

Morrell, L.G., Petrographic and geochemical anatomy of lithotypes from the Blue Gem coal bed, southeastern Kentucky: *Energy & Fuels*, v. 8, p. 719-728.

Hower, J.C., Helfrich, C.T., and Williams, D.A., Palynologic and petrographic cycles in the McLeansboro Group, western Kentucky: *Int. Journal of Coal Geology*, v. 26, p. 117-132.

Andrews, W.M., Jr., Hower, J.C., and Hiett, J.K., Investigations of the Fire Clay coal bed, southeastern Kentucky, in the vicinity of sandstone washouts: *Int. Journal of Coal Geology*, v. 26, p. 95-115.

Hower, J.C., Hiett, J.K., Wild, G.D., and Eble, C.F., Coal resources, production, and quality in the Eastern Kentucky coal field: Perspectives on the future of steam coal production: *Nonrenewable Resources*, v. 3, p. 216-236.

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Hower, J.C., and Wild, G.D., Petrology of Jurassic (Kimmeridgian) coals, Atlantic continental shelf, New Jersey (abs): *American Association of Petroleum Geologists Bulletin*, v. 77, p. 1470.

Hower, J.C., Graham, U.M., and Eble, C.F., High-sulfur coals in the Eastern Kentucky coal field (abs.): *American Association of Petroleum Geologists Bulletin*, v. 77, p. 1469.

Hower, J.C., Robertson, J.D., Graham, U.M., Thomas, G.A., Wong, A.S., Characterization of Kentucky coal-combustion by-products: compositional variations based on sulfur content of feed coal. Pittsburgh Coal Conference Proceedings, 10th, Sept. 20-24, 1993, p. 1022-1025.

Hower, J.C., Lewis, S.E., and Bayan, M.R., Central Appalachian coal metamorphism: *Geological Society of America Abstracts with Programs*, v. 25, p. A-30.

Andrews, W.M., Jr., Sirek, N.S., Warrell, M.J., Baxter, S.D., Fenn, J.C., and Hower, J.C., Quality variations in the Taylor coal bed, Johnson and Martin counties, Kentucky: *Geological Society of America Abstracts with Programs*, v. 25, p. A-139.

Eble, C.F., Calder, J.H., and Hower, J.C., A palynologic, petrographic and geochemical comparison of the Manchester coal bed (Central Appalachian Basin, USA) and the No. 3 coal bed (Cumberland Basin, Nova Scotia): *Geological Society of America Abstracts with Programs*, v. 25, p. A-139.

Hower, J.C., Anderson, K.B., Mackay, G., Lemos de Sousa, M.J., Pinheiro, H., and Flores, D., Inter-laboratory comparisons of petrography of liquefaction residues from three Argonne premium coals: The Society for Organic Petrology, Tenth annual meeting, Abstracts and program, v. 10, p. 41.

Graham, U.M., Hower, J.C., Rathbone, R.F., and Spears, M.M., Pyrolysis processing characteristics of Kentucky cannel coals: The Society for Organic Petrology, Tenth annual meeting, Abstracts and program, v. 10, p. 4-6.

Kuehn, K.W., Hower, J.C., Wild, G.D., and Parekh, B.K., Efficacy of oil agglomeration for beneficiation of ultrafine and micronized coals: The Society for Organic Petrology, Tenth annual meeting, Abstracts and program, v. 10, p. 65-66.

Stout, S.A., and Hower, J.C., Introduction: Collected papers from the ninth annual meeting of the Society for Organic Petrology, Organic Geochemistry, v. 20, no. 6, p. v.

Hower, J.C., Summary of results of the 1992 survey of the coal-combustion by-products in Kentucky: Comparison of by-products from low and high sulfur coals: 1993 Kentucky fly ash and scrubber sludge utilization workshop, Nov. 3-4, 1993, Lexington, KY.

Graham, U.M., and Hower, J.C., Mineralogy and petrology of coal combustion by-products at Kentucky generating stations burning southern Illinois Basin coal: in Y.P. Chugh and G.A. Beasley, editors, *Management of high sulfur coal combustion residues: Issues and practices*, Springfield, IL, April 5-7, 1994, p. 80-90.

Hower, J.C., Taulbee, D.N., Rimmer, S.M., and Morrell, L.G., Petrographic and geochemical anatomy of lithotypes from the Blue Gem coal bed, southeastern Kentucky: *American Chemical Society, Fuel Chemistry Division*, v. 39, p. 491-494.

Robertson, J.D., Wong, A.S., and Hower, J.C., Fluorine in coal and coal by-products: *American*

Chemical Society, Fuel Chemistry Division, v. 39, p. 500-503.

Hower, J.C., Rathbone, R.F., and Wild, G.D., Observations on the use of vitrinite maximum reflectance versus vitrinite random reflectance for high volatile bituminous coals: American Association of Petroleum Geologists 1994 Annual Convention, Official Program, v. 3, p. 175-176.

Lafferty, C.J., and Hower, J.C., Organic Sulphur in Coal, by Robert M. Davidson, IEA Coal Research 60, 1993: Organic Geochemistry, v. 21, p. 559.

Hower, J.C., Clifford, D.S., Eady, J.D., Thomas, G.A., and Wild, G.D., Petrography and chemistry of fly ash from the Shawnee power station, Kentucky: Pittsburgh Coal Conference, p. 1160-1165.

Bellucci, J., Graham, U.M., Hower, J.C., and Robl, T.L., Synthetic aggregates prepared from flue gas desulfurization by-products using various binder materials: Pittsburgh Coal Conference, p. 1123-1128.

David P. Moecher, Assistant Professor

Moecher, D.P., Wintsch, R.P., 1994. Deformation induced reconstitution and resetting of mineral equilibria in polymetamorphic gneisses: tectonic and metamorphic implications. *Journal Metamorphic Geology* 12, 523-538.

Moecher, D.P., Valley, J.W., Essene, E.J., 1994. The carbon isotopic composition of the deep crust: evidence from scapolite-bearing granulites and xenoliths. *Geochimica et Cosmochimica Acta* 58, 959-967.

Moecher, D.P., 1994. The extent and conditions of late Paleozoic metamorphic reconstitution in south-central New England: Evidence from sheared rocks around the Willimantic and Pelham domes. *Geological Society of America Abstracts with Program*, 26, in press.

Moecher D.P., Prater, D.S., 1994. Mineralogy of a garnet-spinel websterite xenolith from the Elliott Co. (KY) kimberlite: implications for the lower crust below the Appalachian Basin. *Geological Society of America Abstracts with Program*, 26, 45.

Sharp, Z.D., Moecher, D.P., 1994. Oxygen isotope variations in a porphyroclastic meta-anorthosite:

diffusion effects and "false" isotherms. *American Mineralogist* 79, in press.

Bruce R. Moore, Associate Professor

Moore, B.R., 1993, Microfracture analysis of rocks in relation to detection of toxic waste seepage. Abstract and paper in Proc. Inst. Remote Sensing meeting, Maui, Hawaii, 1993.

Moore, B.R., 1994, Microfracture detection to assist hydrocarbons seepage exploration in mature petroleum basins, abstract in proc. E.R.I.M. meeting, San Antonio, Texas.

Carl Peterson, Graduate Student

Conrad, Philip G., Sendlein, Lyle V.A., Petersen, Carl, 1994, Impact Of Nonpoint-Source Pollution On Aquifers And Surface Water In Hickman County, Jackson Purchase Region, Kentucky Geological Survey, Open File Report.

Nicholas Rast, Hudnall Professor

Rast, N., and Skehan, J. W., 1993, Avalonian (Pan-African) mylonitic deformation west of Boston: *Geological Society of America Abstr. with Programs*, v. 25 (6) p. 422.

Rast, N., and Skehan, J. W., and Grimes, S. W., 1993, Highlights of Proterozoic geology of Boston, in Cheney, J. T., and Hepburn, J. C. eds., *Fieldtrip Guidebook for the Northeastern United States*, 1993 Boston GSA, v. 2, p. S1 - S16.

Rast, N., 1994, Tectonic elements of the Avalon terrane in north-eastern North America: *Geological Society of America Abstr. with Programs*, v. 26, p. 67 - 68.

Rast, N., and Skehan, J. W., 1994, Late Proterozoic Precambrian development of Gondwana: *Geological Association of Canada, Nuna conference abstr.*, p. 24.

Rast, N., and Goodmann, P. T., 1994, Tectonic and sedimentary consequences of Late Proterozoic and Early and Mid-Paleozoic overthrusting in Kentucky and adjacent states: *Northeastern Geology*, v. 16, p. 163 - 172.

Rast, N., and Skehan, J. W., 1994, Avalonian (Pan-

African) mylonitic deformation west of Boston:
Journal of Geodynamics ((in press).

Rast, N., and Skehan, J. W., 1994, Late Neoproterozoic development of Gondwana (in review), Geological Association of Canada.

Skehan, J. W., and Rast, N., 1994, Late Proterozoic tectonic events in the Avalon terrane including the Cadomian and Pan-African: Geological Association of Canada, Nuna conference abstr., p. 25 - 26.

Skehan, J. W., and Rast, N., 1994, Late Proterozoic tectonic events in the Avalon terrane including the Cadomian and Pan-African, (in review), Geological Association of Canada.

Rast, N., 1994, Tectonic elements of the Avalon terrane in the North Eastern North America, (in review), Geological Society of America.

Charles A. Ratté, Retired

Baskerville, C.A., Lee, F.T., and Ratté, C.A., 1993, Landslide hazards in Vermont: U.S. Geological Bulletin 2043.

Lyle V.A. Sendlein, Professor

Keagy, Dwayne M., Dinger, James S., Fogle, Alex W., and Sendlein, Lyle V.A., 1994, Interim Report On The Effect Of Pesticides, Nitrate, And Bacteria On Ground-Water Quality In A Karst Terrian--The Inner Blue Grass Region, Woodford, County, Kentucky: Kentucky Geological Survey, OF-93-04, 46 p.

Keagy, Dwayne M., Dinger, James S., Hampson, Steven K., and Sendlein, Lyle V.A., 1994, Interim Report On The Effect Of Fractures On The Quantity Of Ground Water And The Occurrence Of Pesticides And Nutrients In the Epikarst Of The Inner Blue Grass Region, Bourbon County, Kentucky: Kentucky Geological Survey, OF-93-05, 27 p.

Minns, Shelley A., Sendlein, Lyle V.A., Shergill, Birinder S., and Dinger, James S., 1994, Effects of coal-ash disposal on ground-water quality at three sites in Kentucky, [abs]: Proceedings, Effects of Human-Induced Changes on Hydrologic Systems, American Water Resources Association 1994 Annual

Sumer Symposium, Jackson Hole, Wyoming, June 26-29, 1994, p. 863.

Sendlein, Lyle V. A., Snell, Jeffrey D., 1993, Agricultural Non-Point Source Pollution In The Western Coal Field Region of Kentucky, [abs.]: Geological Society of America Abstracts with Program.

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DEPARTMENTAL SEMINARS 1993-1994

Long-term effects of intracratonic basement faults - William A. Thomas, Department of Geological

Sciences.

Introduction to the Pirtle Geological Sciences Library - Mary Spencer, University of Kentucky.

Trilobites hunting and eating worms—evidence from the Bisher Formation (Silurian, 420 million years ago), Lewis County, Kentucky - Daniel J. Phelps, Kentucky Paleontological Society.

Groundwater flow—an analysis of assumptions - Ralph O. Ewers, Eastern Kentucky University.

Paleozoic sea level curves (Eustasy) - Stephen L. Schuten

The Grenville front in Kentucky - Nicholas Rast, Department of Geological Sciences.

Seismic investigations of post-Paleozoic faults - Todd Mullins, Department of Geological Sciences.

Styles of subsidence in the Michigan basin - Paul Howell, Department of Geological Sciences.

Comments on the hydrogeology of the karst of Kentucky - Lyle Sendlein, Department of Geological Sciences.

Exploration problems in Australia - Bruce Moore, Department of Geological Sciences.

A river ran through it: the source of deep fluids in the western Blue Ridge province - Kieran O'Hara, Department of Geological Sciences.

Microscopes, microprobes, and isotopes: modern metamorphic petrology and the evolution of mountain belts - David Moecher, Department of Geological Sciences.

Bedrock depth investigations in the Jackson Purchase, Kentucky area, using P-wave analysis - Ali Al-Yazdi, Department of Geological Sciences.

Stratigraphic variations and fault rocks within a multiply reactivated basement fault zone - Joe L. Allen, Department of Geological Sciences.

Objectives, equipment, and methods in non-point source pollution investigation in western Kentucky - Carl Peterson, Department of Geological Sciences.

The organization and structure of the Geological

Society of America and other geological societies - Nicholas Rast, Department of Geological Sciences.

A brief history of our universe including powers of ten - Suketu Bhavsar, University of Kentucky.

New interpretations of the Lexington limestone - Frank Etnensohn, Department of Geological Sciences.

Geographical information systems - R. E. Sargeant and G.W. Weisenfluh, Kentucky Geological Survey.

Sillurian Disaerobic Environments - Charles Mason, Morehead State University.

Stable Isotopes in the earth's near-surface systems: fractionation and isotope exchange kinetics - Steve Fortier, Institut für Mineralogie, Petrologie, und Geochemie, Universität Tübingen.

The effects of organic molecules on mass transport in low temperature fluid rock systems - Jeremy Fein, Department of Earth and Planetary Science, McGill University.

Orientation of tectonic stresses in central Kentucky during Upper Devonian/Lower Mississippian times - J.E. Grover, University of Cincinnati.

Anisotropy in solids - M. Cavagnero, University of Kentucky.

Geomorphic analysis as a predictive tool determining groundwater flow in a Mississippian age karst region - Joseph D. Cupp, Department of Geological Sciences.

Characterization of shallow groundwater in a limestone terrain in an agricultural setting - Steve K. Hampson, Department of Geological Sciences.

Geology and public policy with respect to resource estimates - James C. Cobb, Kentucky Geologic Survey.

The role of subsidence and compaction in stratigraphy - Peter Goodman, Department of Geological Sciences.

Flexural and stratigraphic development of the Black Warrior foreland basin - Brian M. Whiting, Department of Geological Sciences.

Landslides in Kentucky - David Allen, University of Kentucky.

Heavy metals between the sheets: an electron's view of metal sorption by layer-silicates - Eugene Ilton, Department of Geological Sciences, Lehigh University.

Annual McFarlan Lecture: Sequence stratigraphy on the North American craton - L.L. Sloss, Northwestern University.

Relationship of fracture traces and sinkholes to stratigraphy and groundwater occurrence - Chris Elvrum, Department of Geological Sciences.

Physical and chemical investigation of a karst aquifer in Woodford County, Kentucky - Angela Moore, Department of Geological Sciences.

Modeling groundwater and surface water interactions - Sherry Mitchell-Bruker, Department of Geological Sciences, Indiana University.

An informal seminar and discussion. Answering hydrogeologic questions with groundwater models - Sherry Mitchell-Bruker, Department of Geological Sciences, Indiana University.

A geostatistical anatomy of buried valley aquifers - Robert W. Ritzi, Jr., Department of Geological Sciences, Wright State University.

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