

Department of Geology

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



Faculty Make Scientific Advances in 2001

In 2001, department faculty were involved in a wide range of research projects, from understanding the significance of groundwater age near the Earth's surface to investigating the nature of anisotropy in the Earth's core. Here are a few examples of what researchers have been up to.

Recent work by Professor Craig Bethke and Assistant Professor Thomas Johnson shows that groundwater in aquifers is generally older than one might expect, if one were to estimate age based only on the velocity of flow. These findings have important implications in situations where hydrogeologists use radiometric methods to estimate the sustainable yield of a water supply, or to predict the rate at which a contaminant will migrate through the ground.

Groundwater tends to flow through aquifers that are constrained by layers of

less permeable rock called aquitards. Hydrologists commonly figure that a groundwater's age reflects the time it takes to migrate along the aquifer. But water molecules don't see an aquifer as a pipe. Some water mixes between the aquitards and aquifers, and the water in aquitards is generally very old.

Bethke and Johnson have shown that the effect of aquitards on the age of groundwater depends only upon the ratio of water mass in aquitards to that in aquifers, not on the mixing rate. At low mixing rates, very old water is supplied to the aquifer, but the water in the aquitard remains old. At high mixing rates, less-old water is supplied to the aquifer, because younger water is moving into the aquitard. While mixing increases the age of water in aquifers, it also has the counter-balancing effect of decreasing the age in aquitards. The two effects exactly cancel.

Another faculty member, Assistant Professor Xiaodong Song, has collected new evidence that may solve a long-standing mystery of the Earth's inner core. The data offers new support for a layered inner core model, with an isotropic upper inner core overlying an anisotropic lower inner core. Song and Professor Don Helmberger of Caltech proposed this layered inner core model in 1998. For a decade, researchers have observed that seismic waves traversing the solid inner core along a north-south path have a much smaller amplitude and a more complex waveform than those waves that travel east-west. Song suggests that the layered inner core structure is the cause. Because the anisotropy in the lower inner core is aligned in the north-south direction, seismic waves traveling this path speed up and spread out, resulting in smaller amplitudes and com-

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Jackson Studies Earth's Interior

When the three intrepid explorers in Jules Verne's science-fiction classic, *Journey to the Center of the Earth*, set off on their adventure, they carried crow-bars, pick axes, ropes and hatchets. In the absence of being able to take such a trip, geologists instead focus on the behavior of various minerals at the Earth's interior under different conditions of temperature and pressure. Graduate student Jennifer Jackson, B.S. '99, for example, has been focusing on orthoenstatite, an orthopyroxene, since it is believed to be abundant in the crust and upper mantle. Jackson is investigating the elastic properties of orthoenstatite at high temperature. Her high-temperature experiments were conducted using the department's Brillouin spectroscopy lab with a high-temperature furnace. Jackson was able to make measurements of temperature dependence on elasticity up to 800° C, the highest temperature achieved for such studies.

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Sun Honored

Graduate student Xinlei Sun won an Outstanding Student Paper Award for her presentation at the 2001 fall meeting of the Tectonophysics section of the American Geophysical Union. Sun is working with Assistant Professor Xiaodong Song to understand the structure of the Earth's core. Sun used seismic wave data and looked in particular at subtracting out possible effects of the lowermost mantle structure to get a clearer picture of the structure of the core.



Our "Year in Review"

Welcome to our "Year in Review" for 2001. This was a busy year for the Department in a variety of ways. The pace of research activity in the Department has been picking up—in fact, the amount of external grant money received by faculty tripled in 2001, as compared with 2000! Such research funds are used primarily to support graduate student research assistants, post-doctoral associates, and their projects—they keep the climate active. As described on page 1, departmental research projects have yielded exciting new results. We've also been maintaining our high level of teaching, with literally thousands of students taking our classes every year. Several of our staff are routinely listed on the "list of teachers rated excellent by their students." And, our new course in Natural Hazards has been catching on.

The Department's facilities have also been undergoing renovation year by year. In the past few years, we've redone the mineralogy/petrology teaching laboratory, transformed an old lab into a new classroom with built-in computer technology, and spruced up a number of hallways and offices. New laboratories in mass-spectrometry and experimental petrology have been constructed. And this year, we have been building a new geomicrobiology research facility, complete with incubator rooms and cold rooms. The Department continues in its efforts to hire new faculty. We've been searching in the areas of surficial geology, geobiology/low-temperature geochemistry, and mineral science. Hopefully, we'll have some new faces to introduce next year. All this helps to keep the Department at the forefront of teaching and research.

Generous support of alumni and friends of the Department have continued to bolster our optimism for the future. This year, we are very pleased to acknowledge the incredibly generous support of Ed and Alison Franklin, who have made a large six-figure bequest to the Department's endowment, as part of our GeoScience 2005 endowment campaign. This gift will help the Department to continue to grow by providing a recurring source of funds for obtaining teaching and research resources. The Franklins have already established themselves as major benefactors of the Department by endowing our field camp scholarship fund, which already has helped immensely in making the cost of field camp attainable by our students. The GeoScience 2005 campaign is well on its way towards reaching its \$3 million goal.

2001, of course, has also had its down side. The tragedies of September 11 stunned the Department. As in most institutions, the shock led to a very somber time. In the immediate aftermath, we cancelled some classes, but faculty and teaching assistants did their best to make sure that students were able to keep up with their work, and deal with the emotions of the day. The Department was also saddened to hear of the deaths of three popular emeritus faculty. The economic downturn that has taken hold in recent months has also had an impact, in that the University's budget has decreased significantly, a stunning change of affairs considering the sizable increases that we have seen in recent years. But, the structure of the University remains sound, and we anticipate that our long-term prospects remain positive.

I hope you enjoy reading about the goings-on in the Geology Department today, as well as hearing about what former members of the Department are up to. All the best for the coming year!

—Stephen Marshak

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Department Head: Stephen Marshak (smarshak@uiuc.edu)

Administrative Secretary: Barb Elmore (b-elmore@uiuc.edu)

Editor: Deb Aronson (debaronson@nasw.org)

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Jack C. Threet Receives Alumni Achievement Award

Jack C. Threet, B.S. '51, has received the 2002 Department of Geology Alumni Achievement Award. Threet devoted his entire 36-year career to Shell Oil Company. He entered the oil business at a time of great expansion and became a key player in Shell's search for and production of oil and gas, rising in 26 years from junior stratigrapher to vice president and head of exploration, which was widely recognized as the industry's premier exploration outfit.

"The Department is proud to have played a role in starting Jack Threet into his prominent career in geology," says Steve Marshak, professor and head of the department.

Threet became interested in geology after his older brother, Dick, got his master's degree in geology from the University of Illinois. Threet became particularly interested in fossils, which led him to the late Professor Harold Scott's door.

"Harold Scott was a fine professor," says Threet. "I really looked to him as a mentor."

In the spring of 1951, Threet, newly married to Katy Hall of Tolono, began work on his master's degree with Scott. But later that year Threet took what was supposed to be a summer job with Shell. That summer position blossomed to full-time employment and he rose quickly through the managerial ranks, from district to division to area exploration manager at several locations, then upward to general manager and vice president. He never did go back for his master's degree.

"I have no regrets," says Threet. "Shell convinced me that time on the job was more important."



In the course of his career, Threet moved his family (which soon included daughters Linda and Judy) more than 30 times, living everywhere from Australia to Canada, Holland to North Africa, and New York City to Los Angeles. His last assignment was in

Houston, where for 10 years until his retirement in 1987, he was vice president and head of exploration.

In the course of these assignments he led Shell Oil Co. in the discovery of major oil and gas fields, the most notable of which were in the deep water Gulf of Mexico—where for many years Shell held world water-depth drilling records—the northwest shelf of Australia, onshore Syria, and offshore Malaysia,

Cameroon and Brazil.

During his long career, Threet served actively in various professional organizations. He is a member of the American Association of Petroleum Geologists, and chair of the board of the AAPG Foundation. He was a member and direc-

tor of the National Ocean Industries Association and was vice chair of the Offshore Technology Conference for several years. He has served on special committees of the National Academy of Sciences and the National Science Foundation. Threet also is on the board of trustees of the American Geological Institute Foundation, where he chairs a committee to raise \$2 million for K-12 education in earth science.

Ten years ago, Threet renewed his interest in the Geology Department at the University of Illinois and became an active member of the GeoThrust committee, co-chairing a small group which four years ago raised \$300,000 for the Texas-Louisiana graduate fellowship endowment fund. Last year, Threet and his brother Dick established the Jack C. and Richard L. Threet endowed professorship in sedimentary geology in honor of Harold Scott.

"I have really fond memories of my time at Illinois," says Threet. "In addition to Professor Scott, I remember so many other professors, like Dr. White and Dr. Henderson, who inspired me, as well as my brief period in graduate school with Haydn Murray and John Shelton."

Threet has come a long way from his humble beginnings and is an inspiration himself to many. He has been listed in the Who's Who in America for the last 12 years and is very active in his community, both in Houston and in Pagosa Springs, Colo., where he and Katy spend their summers.

"I readily credit whatever success I've had to my wife, Katy, of 51 years, my family, friends and professional colleagues, my solid education in the basics at the University of Illinois, my faith in God and lots of good luck along the way."

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Faculty Make Scientific Advances in 2001

(continued from page 1)

plicated waveforms. Based on this new data, it appears that the anisotropy in the lower inner core is much higher than previously believed, about 8 percent rather than the 2 or 3 previously suggested.

In other work concerning the Earth's interior, Professor Jay Bass and Research Scientist Stanislav Sinogeikin, Ph.D. '99, have obtained the first elasticity measurements of the very high-pressure phase of olivine (the spinel phase) at high pressures and high temperatures. This enables them to determine how fast seismic waves travel through this mineral in the transition zone between the upper and lower mantle of the Earth. Their results strongly suggest that the composition of the transition zone is not the same as that of the upper mantle.

Back on the Earth's surface, Professor Dan Blake's Antarctic research continued with another field season at Seymour Island. Antarctic weather unfortunately was bad this year, and much time was spent in tents. However, important collections were made and ongoing research is documenting significant changes in molluscan faunas and faunal structures correlated with Cenozoic global cooling. Results have implications for current concerns on global warming. Blake also finished papers on the late Paleozoic-Mesozoic transition in starfish evolution. Extinction events eliminated Paleozoic-type starfish, and groups very different from those of the Paleozoic evolved. Interestingly, life habits do not appear to have changed significantly through the crisis. Blake has now turned his attention to Early Devonian and more ancient intervals in starfish evolution.

Professor Steve Marshak, work-

ing with Post-Doc Alan Whittington and two Brazilian colleagues, conducted fieldwork in the remote highlands of eastern Brazil during the past two summers. They have discovered that the mountain range which formed between Brazil and Africa at the end of the Precambrian, as Gondwana assembled, effectively collapsed under its own weight during the final stages of orogeny. This process, known as "extensional collapse," has been observed in younger mountain ranges, such as the Himalayas. Collapse of the Brazilian example produced new fabrics in the rocks of the orogen, and decompression accompanying collapse probably triggered crustal melting, which produced large quantities of granitic magma.

Professor Wang-Ping Chen, and graduate students Michael Brudzinski, Tai-Lin (Ellen) Tseng, and Zhaohui Yang, continue to investigate the interaction between subducted lithosphere, the transition zone of the mantle, and deep earthquakes. Chen's interests have also taken him to the other side of the planet, where his project Hi-CLIMB, an international effort to understand the lithospheric deformation of the Himalayas and Tibet, is in full swing. Hi-CLIMB is complemented by a collaborative project between Honn Kao (Ph.D. '93) and Chen to study the nascent Taiwan orogen. Closer to home, adjunct Professor John McBride, graduate student Amanda Duchek, and Chen also have been working on seismic-reflection profiles across the Cottage Grove fault system of southern Illinois.

Faculty Serve Many "Extra-Curricular" Roles

Since the summer of 2001, Craig Bethke has served as a "subject matter expert" in geochemistry and hydrogeology on the Department of Energy (DOE) peer panel. This panel is writing the report to Congress about the technical suitability of the Yucca Mountain site. Since the DOE has shifted its focus from using geologic barriers to keep the spent waste from migrating from the site, it is now looking at the feasibility of man-made containers that would not fail within 10,000 years. In order to determine possible causes of corrosion to the "engineered barrier," panel members needed to learn about the chemistry of the local groundwater, which Bethke provided. "The fun part was that, while they learned a little geochemistry, I learned a lot of corrosion chemistry," says Bethke.

During the fall of 2001 Dan Blake served as acting director of Spurlock Museum while director Douglas Brewer was on leave. During that semester he worked with the other museum staff to prepare the museum for its official opening in September, 2002. Because the building had just been completed, Blake's role included overseeing the calibration of the building's cooling system and other basic tasks. Blake also helped direct the fabrication of exhibit cases and other items related to the building's mission.

Jay Bass has been named as Center for Advanced Study (CAS) associate for fall semester 2002 and Bruce Fouke has been named CAS fellow for the same semester. The Center brings together scholars from diverse disciplines and backgrounds, encouraging and rewarding excellence in all areas of academic inquiry. Fellows and associates are temporary appointments and are selected in an annual competition.



Lura Joseph is New Geology Librarian

The next time a department member is having trouble finding information, they can turn to the new geology librarian, Lura Joseph, for help. Joseph, who became the librarian on August 1, is both a librarian and a geologist—in this regard, she follows in the footsteps of Harriet Wallace (see related article on page 8). Joseph served as the physical sciences librarian at North Dakota State



University for six years before coming to Champaign-Urbana.

Joseph has been a great addition to the department, says Steve Marshak, professor and department head. "Lura has been wonderfully interactive with the faculty in making us aware of opportunities to improve the collection, and she is an excellent resource for locating research and teaching materials available on the web."

Part of the reason that Joseph understands the research needs of geology faculty and students is that before she became a librarian, she spent many years as a geologist herself. After receiving her bachelor's in anthropology at the University of Oklahoma and her master's in geology from the same place, she worked in the petroleum industry for 15 years. Because of the fluctuations in that industry, she got a master's degree in psychology (at University of Central Oklahoma) while working full time. In the course of working toward that degree, Joseph realized that what she really liked was working with information, so she headed for a library degree (MLIS) at the University of Oklahoma.

"I like to be a helpful person, to link people up with the information that they need, whether those information sources are texts or other people," says Joseph. "I love geology and I love finding information." Information retrieval is a kind of a science, says Joseph. It takes two kinds of logic, one looking for forests and the other looking for trees. What makes being a geology librarian so fulfilling is having a love of and interest in both geology and information retrieval, says Joseph. Joseph would not be nearly as satisfied in her work if she worked in the business or law libraries, for example.

Joseph particularly likes stepping in to help with complicated questions. "Academic librarians really don't fit the librarian stereotype," says Joseph. "We are really information specialists. Geology blends over into so many disciplines," says Joseph. "Having that geology background helps me figure out where to go for information."

As part of her information specialist role, Joseph has worked extensively on the geology library web site to expand links to various research tools. Within the library site, Joseph has created a link titled "Geoscience Information Resources on the Internet," which lists links to everything from "Afghanistan Geology" to "Volcanology" and "Weather."

Joseph sees three major projects for the coming year: preparing to shift material to various storage facilities; helping to migrate to a new system-wide on-line catalog; and determining how to make her shrinking budget dollars stretch as far as possible.

Michael Sczerba Joins Department

Michael Sczerba, clerical assistant, has the kind of behind-the-scenes responsibilities that are easy to take for granted but that are critical to a smoothly functioning department. He sorts mail; hands out and keeps track of department keys; organizes, keeps track of and orders supplies; produces many exams for professors; makes and mails posters publicizing visiting speakers, especially for the weekly colloquium series; makes travel arrangements for colloquium speakers; and "most critical of all," he orders pizza and cookies for the weekly colloquium.

Outside the halls of the Natural History Building, Sczerba juggles even more activities. He is on track to finish his dissertation in music composition with an ethnomusicology minor spring 2002, he has hosted a weekly *Music of India* program on WEFT Radio for the last 12 years, and he is an avid hiker. Sczerba's dissertation focuses on the work of composer Stefan Wolpe (1902-1972). He also has composed jazz and what he calls "contributive new music" works for several ensembles. Several of his works have been published.



Michael Sczerba hikes with stepdaughter Robin in Forest Glen

Ann Long Joins Department in Permanent Position



Ann Long has been promoted from visiting to permanent teaching specialist in the department. Long, who has been at the department since 1999, supervises undergraduate labs in some of the larger lecture courses. From 1987 until she came to Urbana-Champaign, Long held a teaching position at Colchester Institute in England.

Long brings a combination of geology and teaching expertise to the department. She received a B.S. from the University of Reading in geography, which included geology courses in geomorphology and hydrology as well as planning, surveying and cartography. She also earned a post-graduate certificate of education in geography and in 1981 she received a master's degree in education.

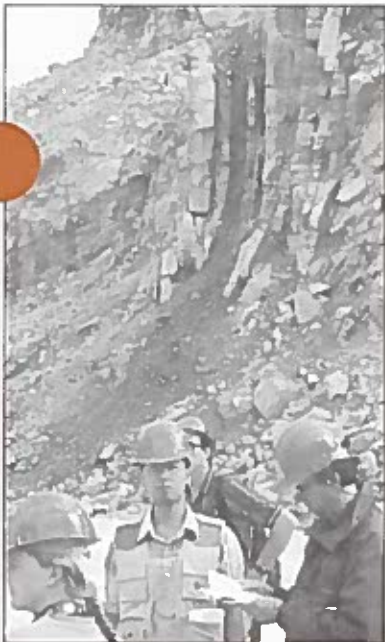
Long also has done research on the vegetation and geomorphology of moraines of the Okstindan Glacier in northern Norway.

Long moved to Champaign-Urbana with her husband, Stephen, a professor at the University of Illinois, who does research on the impact of rising ozone and carbon dioxide levels in the atmosphere on plant productivity.

Field Trip

Since 1993, the department has held an annual fall field trip to several interesting sites within Illinois and Indiana. The field trip, organized and led by Steve Altaner since 1996, typically includes one bedrock and one glacial stop. In 2001 the group went to Thornton Quarry near Chicago and Indiana Dunes

National Lakeshore. This year, the trip was particularly memorable since it included pouring rain, lightning and thunder at Thornton Quarry. Typically 30-35 people participate. In addition to undergraduates, graduate students and faculty, ISGS geologists often join the trip. The previous year, Altaner took the group to Kentland Quarry, a meteorite impact site in western Indiana; and Kickapoo State Park. Other trips have included Starved Rock State Park and the National Coal Museum in southern Illinois, and Cagle's Mill Spillway, Turkey Run State Park and Montezuma, all in Indiana.



Steve Altaner and other members of the field trip at Thornton Quarry

Revised Course is a Big Hit

Enrollment in **Geology 118** has doubled and many other interested students had to be turned away, thanks to some fine tuning by Steve Altaner. Originally called *Earth and the Environment*, the course had a stagnant enrollment between 50-60 for about 10 years.

"I never could understand why it didn't take off. Natural disasters are extremely relevant to people and society, and they're interesting," says Altaner. In an effort to boost interest, Altaner revised the course and re-titled it *Natural Disasters*. The course is now more focused on natural disasters and includes meteorological factors like floods, severe weather and astronomical factors like meteorite impacts.

Natural Disasters is targeted for non-majors fulfilling a general education/science requirement, and represents another effort by members of the department to introduce non-majors to geologic principles. In addition, students majoring in Earth and Environmental Sciences, which is a sub-major within Geology, take the course.

"The class has been a lot of fun, nobody is asleep, there are lots of questions and the attendance rate is much higher than in Geology 100" (the other introductory course Altaner teaches), says Altaner.

Altaner has been able to use the University's computer-linked classrooms to add visual images to the class. For example, in his discussion of meteor impacts, he can show an animation of a meteorite impact. To illustrate the speed that a meteorite travels, in terms students would understand, Altaner points out it would take a meteorite nine seconds to travel from Champaign to Chicago. This elicits some oohs and aahs. He uses a lot of humor, including cartoons, to encourage participation, and gently pokes fun at himself to encourage students to feel comfortable participating and asking questions. In addition to conventional teaching tools like video and overhead projection, Altaner makes use of an overhead microscope in the lecture hall, which enables him to show geologic samples to the whole class without having to pass them around the room.

Altaner talks to the students about the scientific principles behind each disaster: its causes, possible locations, frequency, ability to predict and how to mitigate damage and death. He also discusses case histories, trying to use examples relevant to Illinois when possible.

Enrollment in the course will continue to grow, as the class will move into a larger lecture hall next year. The natural hazards course is one of several appealing general education courses offered by the Department. Together, they introduce over 3,500 students per year—10% of the University's student body—to the wonders of the Earth.

Oil Industry Recruits Successfully at Illinois

Although geology graduates work in an ever-broadening range of fields, the traditional fields of oil and gas continue to attract many students. Over the last few years, several oil companies have successfully recruited many Illinois geology graduates.

In 2001 alone, four students were hired by oil companies: Richard Wachtman, M.S. '01, is working for ExxonMobil in Houston; Anthony Gibson, M.S. '01, is working for Mervin Oil Co. in Ulny, Ill.; Serena Lee, M.S. '01, is working for Schlumberger in Houston; and Hugo Gonzalez, B.S. '01, is working for Schlumberger in Rock Springs, Wyo.

Schlumberger has clearly been finding Illinois to be a fruitful recruiting ground. Judd Tudor, '00, Andrew Collins, '99, Megan Potter, '99, and Bruce Miller, B.S. '94, M.S. '95 also work for Schlumberger. Miller is now based in Norway, while the others are in the United States.



New Geomicrobiology Laboratory Under Construction in NHB

A new state-of-the-art geomicrobiology lab is being built in the basement of the Natural History Building. Construction began in November and will be completed by the summer of 2002. The new laboratory will include not only micro-drilling apparatus and other typical geology equipment, but also gel electrophoresis stations, "PCR" machines (PCR stands for "polymerase chain reaction," a way to amplify gene sequences in order to study them), and autoclave sterilizers, equipment that is normally found in a microbiology laboratory. These facilities will enable researchers in the Department of Geology to undertake analytical methods, such as polymerase chain reaction amplification of ¹⁶S rRNA, to map the distribution and composition of microbial communities and understand their interactions with geologic processes.

One of the prime users of the new facility will be Bruce Fouke, assistant professor of geology. Fouke conducts work that integrates molecular microbiology with sedimentary geology and hydrogeology. For example, one of Fouke's current projects investigates whether study of ancient microbes found entombed in ancient limestone deposits can yield information about ancient environmental conditions.

Fouke's work, and other work to be carried out in the lab, is part of an exciting new field, known as geobiology. Geobiologists study the interplay between biological and geological processes that have shaped the Earth and all its life forms. By examining this interplay, geobiologists address questions concerning the origin and evolution of life, the way in which environmental conditions influence life, and the way in which life influences environmental conditions. The field has many practical applications as well, mainly in the area of environmental geology, for microbes play an important role in digesting contaminants.

2001 Departmental Banquet—An Elegant Affair

The 2001 Geology Department banquet was held April 27, in the Colonial Room at the Illini Union. About 100 people attended. After dinner, Professor Bruce Fouke presented a slide show of the Geology 315/415 field trip to Curaçao. Then, Professor and Department Head Steve Marshak presented awards.

Sharon Mosher, B.S. '73, Ph.D. '78, received the alumni achievement award. Steve Marshak cited Mosher for her research contributions in structural geology and tectonics (see 2000 Year in Review for related story) and her national service role as past president of the Geological Society of America (see story p. 8).

In addition to the alumni achievement award, numerous student awards also were presented:

Adam Gibbons, Brandon Haist and Andrew Parrish each received a Franklin Field Camp Scholarship. The scholarship fund, created by Ed Franklin, enables the department to provide partial financial support to students attending summer field camp.

Parrish also received the Estwing Award—a classic Estwing rock pick—that is donated by the Estwing Company to an outstanding undergraduate student.

Frances Skomurski received a Brunton compass as the Outstanding Senior Award.

Kurt Burmeister, Michael Fortwengler and Alex Glass received the Morris M. and Ada B. Leighton Award. This award, established by Brud Leighton, B.S. '47, was established to honor his parents and supports student research in geology.

Alex Glass and Chris Mah received the Norman Sohl Memorial Award in Paleontology. The Sohl award was established to honor the late Norman F. Sohl, B.S. '49, M.S. '51, Ph.D. '54. Sohl was chief of paleontology at the USGS and was a leading authority on Cretaceous gastropods and biostratigraphy.

Jennifer Jackson was named Outstanding Woman Graduate Student. She received a cash award. The award was established by an anonymous donor in order to encourage women to pursue studies in geology.

Two students were named outstanding teaching assistants. Dave Beedy received the award for the Spring 2000 semester and Alex Glass received the award for the Fall 2000 semester.

Students scramble over formations during a recent Geology 415 field trip to west Texas and southern New Mexico.

Field Trip



ALAN WHITTINGTON

Illinois Alumni in Top Positions of GSA

Illinois alumni have been very well represented in the leadership of GSA in the last several years. In 2001 **Sharon Mosher, B.S. '73, Ph.D. '78**, was president, **Dave Stevenson, Ph.D. '65**, was acting executive director and **Suzanne Mahlburg Kay, B.S. '69, M.S. '72**, served on the GSA council. In addition, **Brud Leighton, B.S. '47**, served as president of the Board of Trustees of the GSA Foundation (a separate and independent entity).

"It gave me great pride to notice such a good representation of Illinois alumni at those levels at the GSA meeting in Boston last November," said Leighton. "It pleased me to see participation in the society, which is one of the leading scientific societies for the profession."

GSA was founded in 1888 by James Hall, James D. Dana and Alexander Winchell in New York. As a descendent of the American Association for the Advancement of Sciences, GSA is the first enduring society for the geosciences in America. It has been headquartered in Boulder, Colorado, since 1968. GSA has more than 16,000 members worldwide.

Mosher's term as president ended in December, and Leighton, who had served as foundation president of the board for four years, and Stevenson stepped down from their respective positions. Kay continues to serve on the GSA council.

Harriet Wallace, Geologist and Librarian

Harriet Wallace, librarian emerita, served in the Geology Library in the 1960s and 70s. Wallace received her bachelor's degree in geology from Northwestern in 1936 and a master's degree in teaching from Columbia University's Teachers College. In spite of Wallace's outstanding teaching credentials, teaching jobs were hard to find.

Eventually Wallace managed to get a position at the mining division of Allied Chemical and Dye Company. While in that position she attended the first GSA meeting held after World War II.

At first, Wallace worked at a private consulting company that advised mining companies about various mineral deposits in Illinois. Wallace did literature searches for the owner, and wrote research papers for him. The company eventually was closed down and Wallace decided she'd like to become a librarian.

"I really liked doing literature searches—this was before computers!" says Wallace. "I didn't want to clerk in a dime store, so I went to library school. I thought any job in a library would be better than that."

Wallace got her master's in library and information science from the University of Illinois in 1962 and was immediately hired as the geology librarian.

"I hadn't thought about working full time," says Wallace, "but with all my background it would have been stupid not to take the job. So I came over and went to work."

While many aspects of librarianship haven't changed over the years, there are some differences. For example, Wallace remembers having lots of money to spend, in part because the Geology Library, having recently split from the Geography



Library, was considered a new library unit.

"We had lots of money, we spent it as fast as we could," Wallace says.

The library also had a separate budget for rare geology books. Of course, the biggest difference was computers, which were first used in the

Geology Library in 1978, just before Wallace retired. In Wallace's day, records were all kept on index cards. Indexes were bound every year, which meant to do a thorough search on a single topic, one had to go to that subject in every issue of each bound index. The position of librarian, both in Wallace's day and today, is a tenure-track position, so librarians are expected to publish papers in their professional journals.

During her tenure, Wallace worked to get topographic and geological maps transferred from the main library to the Geology Library. Previously, the Geology Library had no maps.

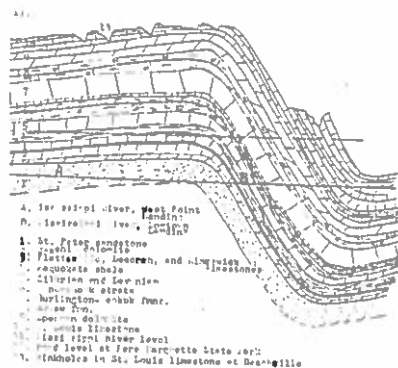
In 1965 Wallace also was a founding member of the Geoscience Information Society (GIS), a national organization which facilitates the exchange of information in the geosciences through cooperation among scientists, librarians, editors, cartographers, educators, and information professionals. GIS is still in existence and is a member society of the AGI.

Wallace retired as full professor in 1979. "I had a very satisfying, and fulfilling career," says Wallace. Wallace continues to live in the Champaign-Urbana area and still occasionally visits the Department. She generously donates funds to the Department to help women who wish to pursue careers in geology.

GEOLOGY 415 — Then and Now

Geology 415, the Department's graduate-level field course, has been in existence for more than 50 years. During this time it has undergone some dramatic changes, but it still serves the goal of allowing students to synthesize their geologic knowledge to create a geologic image of a region. In recent years, there are three versions of the course, all run jointly with Geology 315, allowing both undergraduates and graduates to benefit from the experience. Jim Kirkpatrick runs the course in west Texas and southern New Mexico, Steve Marshak takes the group to Arizona and southern California, and Bruce Fouke teaches on islands in the southern Caribbean. In the 1940s, '50s and '60s, on the other hand, the course entailed many weekends of driving in four-van caravans throughout Wisconsin, Indiana and the western edges of Missouri. For many years, Professor Harold Wanless, a distinguished sedimentary geologist, ran the course, and trained the students well.

"What did I learn?" says Bill Soderman, M.S. '60, Ph.D. '62, of Geology 415. "It was the most comprehensive way to assimilate the recent and ancient elements of what makes the Midcontinent what it is today. There's just an enormous variety of rock types, depositional environments and structural situations visible within a day's drive of campus. We could see it, and argue



A sample drawing from Bill Soderman's Geology 415 notebook.

about it. I also learned a lot about Harold Wanless, and how observant and patient he was. The field trips were kind of a slide show of the things Wanless learned and observed and deciphered throughout his many years of fieldwork and teaching at Illinois.

"And the camaraderie between students and staff during the trips just made it feel even more like Illinois was a great place to be. Geology 415 was one of the high points of my education."

Soderman's notes from the trip fill a book over 100 pages long. The pages include detailed stratigraphic columns, cross-sections, and outcrop sketches, as well as carefully worded rock descriptions. By covering a broad region in the course, it was possible for students like Soderman to see regional correlations and patterns.

Regardless of the decade that it was taught, Geology 415 was a course worth remembering.

Where Are They Now?



Pat Lane

Those who were in the Geology Department in the 1980s and 90s might be wondering whatever happened to Pat Lane and Murle Edwards, staff members who played a key role in everyone's inter-

actions with the Department and University. Well, both are enjoying their retirement and using their time to travel extensively.

Pat and her husband Eddie, have taken many long trips in their motor home. Last summer they traveled the AL-CAN (Alaska-Canada) Highway.

Along the way they passed through Sheridan, Wyoming, a place many geologists have fond memories of because the Department's field camp used to be headquartered there. That trip was "proof that two people really could live in a 25-foot motor home on a long trip and still be compatible," says Lane. The Lanes continue to use Champaign as a base, in part because Eddie now works part time for the Engineering Continuing Education program.

Murle, who served in the department as chief clerk from 1977-1998, has also traveled extensively since her retirement. Many of her driving trips have been undertaken because she is national chair of the historic landmarks and memorials committee of the National Society Daughters of the American Colonists. That committee works to

place markings and plaques at places of historical significance throughout the United States. During these trips and many others,

Murle has enjoyed many of the breathtaking geological formations of the country, and has indulged her interest in history and geography. "A special thrill to me was my trip to Point

Barrow, Alaska, north of the Arctic Circle," says Murle. "I continue to use my residence in southeast Urbana as my home base." She sends her "best personal regards to all."



Murle Edwards

Geology Entrepreneurs Make Champaign-Urbana Home Base

We tend to think of geology-based entrepreneurs as living in Houston or Denver, but two major success stories prove this assumption wrong. Some entrepreneurs have remained in town and have found the local environment to be supportive of their efforts. For example, two companies founded in Champaign-Urbana by geology department alumni, while vastly different, are both thriving. *Applied Pavement Technology*, co-founded by **Margaret (Maggie) Broten, B.S. '85**, grew 60 percent last year alone, and *Isotech Laboratories*, founded by **Dennis Coleman, Ph.D. '76**, grew 30-40 percent in the last year in both sales and staff.

Applied Pavement Technology, or APTech, was founded by Broten, Kathryn (Katie) Zimmerman and David Peshkin in 1995. It is one of fewer than a dozen companies worldwide that specializes in pavement engineering. Pavement engineering pertains to both highway and airport pavements and involves evaluation, design, pavement management, training and research.

Broten, who is a vice president and principal, received a joint degree in geology and civil engineering, as well as a master's in civil engineering. She has worked in the field of airport pavement management most of her career.

"Pavement engineering is a very stable field," Broten notes. "Although just now airports are funneling more of their money into security, safe pavements are critical both to highways and airports."

While Broten's day-to-day responsibilities (which include about 12 days of

travel per month) don't always rely on her geology background, that program did provide a "wonderful balance" to her civil engineering program.

"Engineering involved big classes, very tense students and a focus on numbers and equations," says Broten. "Geology involved smaller groups, I felt that I knew everyone, and some of the classes involved extensive writing. The communication skills I learned through geology have been very helpful in communicating what our company does and in actually getting contracts."



Maggie Broten

Although the company has moved to larger quarters, its headquarters have always been—and always will be—based in Champaign-Urbana. Zimmerman, president of the company, has strong personal ties to Champaign-Urbana. Peshkin, vice-president and principal, grew up in Champaign-Urbana and his late father was on the University faculty. Both Zimmerman and Peshkin have civil engineering degrees from the University of Illinois. The multimillion dollar company has 30 employees (many of them University of Illinois graduates) and has branch offices in Downers Grove, Ill., Burlington, Vt., and Reno, Nev.

"You'd be surprised how many employees choose to work in this office," says Broten. "Champaign-Urbana is a nice community."

Broten also notes that she and others at the company benefit from their relationship with the university and the abili-

ty to use its outstanding library facilities.

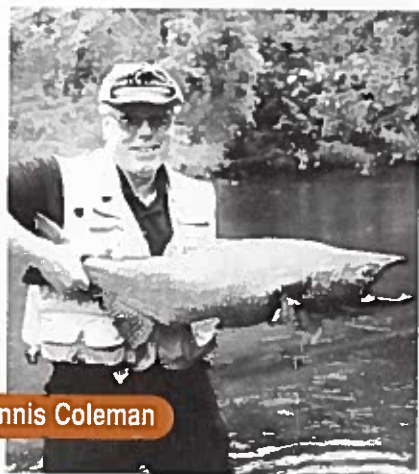
Coleman's company, *Isotech*, grew out of the Ph.D. research he did at the University of Illinois with Tom Anderson, now professor emeritus. His thesis included using isotopic analysis to identify natural gas that had leaked from underground gas storage fields. Coleman found that natural gas has an isotopic "fingerprint" not unlike a DNA fingerprint. The isotopic composition of methane, for example, can tell whether the gas was thermogenic or microbial, which can help determine whether it is naturally occurring or has leaked from an underground storage area.

That work led to several consulting contracts, particularly with gas companies. Because Coleman was a full-time employee of the ISGS, he could only consult with companies outside Illinois. By the early 1980s, the demand for his services demonstrated the need for a commercial laboratory, so he and three colleagues bought equipment and set up an independent lab, which they named *Isotech Laboratories*.

Isotech very quickly established itself for the quality of its data. By 1991, the group had enough steady work that they could hire full-time staff. Coleman has worked full time at *Isotech* since 1995, when he took early retirement after 25 years at the ISGS. Today there are 19 people on the payroll, including three of the original founders. The fourth founder opted to remain at the ISGS.

Until recently about one third of the company's business was with oil companies, one third was gas companies and one third was environmental. Now the major oil companies make up more than half *Isotech's* business. The company had over \$1.6 million in sales in 2001.

Isotech also was recently in the news for an innovative packaging sys-



Dennis Coleman

tem. Much of the company's business requires sending and receiving highly flammable mud-gas samples. The company developed a long, thin metal pipe, dubbed IsoTube, that made it easier to collect samples, and was reusable and less expensive. Previously, 10,000 gas samples (about the number Isotech analyzes per year) generated 10,550 pounds of waste. With the IsoTube™ system, the same number of samples generates 675 pounds of waste. Isotech recently was one of 17 Illinois companies that received the Governor's Pollution Prevention Award.

Coleman is happy to be based in Champaign, although the avid outdoorsman loves being in the mountains. Overhead cost in Champaign-Urbana is low and, like Broten, Coleman values the good association he has with both the university, as well as the ISGS in his case. While it has been difficult to recruit people to Urbana-Champaign, he has been able to hire many good chemists and other scientists from University of Illinois graduates.

"The quality of the people is a significant factor for staying here," says Coleman.

GeoScience 2005—Well on Its Way!

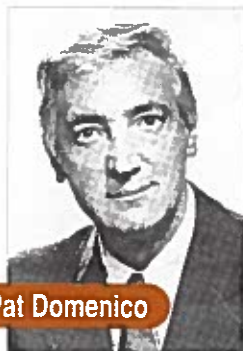
Last year, the Department initiated a five-year, \$3 million endowment campaign, because increasing our endowment is essential if we are to maintain our prominence as a teaching and research institution in geoscience. We're pleased to announce that the campaign has gotten off to a great start! We have received several lead gifts so far, and would like to highlight a few of these. Ed and Alison Franklin have endowed the Franklin field-camp fund, and have made a bequest for the Franklin Geology Development Fund. Eric and Kathy Johnson have endowed the W.H. Johnson Professorship of Surficial Geology, Jack and Richard Threet are endowing the Threet Professorship of Sedimentary Geology in honor of Harold Scott, Bill Soderman is endowing the Bluestem Graduate Fellowship, Brud Leighton is substantially increasing the funding of the endowment for the Morris and Ada Leighton Research Fund, Jim Baroffio has established the endowment for the Wanless Fund for graduate-student support, and Joyce Johnson has endowed the W.H. Johnson field fund. We are also pleased to announce that funds donated by friends of Norman Sohl a number of years ago have grown sufficiently to endow the Sohl Endowment to support graduate-student research in paleontology. In the fall of 2001, Steve Marshak and Bruce Fouke traveled to Houston to meet and visit with alumni. During that visit Fouke gave a talk to alumni on the future of geomicrobiology, a growing field. We wish to thank our benefactors profoundly, and encourage all alumni and friends of the Department to participate in building our future through GeoScience 2005.

Ed and Alison Franklin Make Major Bequest

Ed and Alison Franklin have made a bequest of \$800,000 to the Department of Geology as part of the GeoScience 2005 campaign. The Franklin Endowment, when established, will provide funds to support the teaching and research goals of the Department. This gift is on top of their already amazingly generous donation of \$200,000 to support our field camp. The Franklins are truly friends of the Department, par excellence! Ed Franklin received his B.S. in 1956.

Illinois Faculty are Authoring Books

In recent years, faculty in the Department of Geology have directed some of their efforts into writing books or chapters in books. For example, Craig Bethke published *Geochemical Reaction Modeling, Concepts and Applications* with Oxford University Press. Jim Kirkpatrick wrote the chapter on Nuclear Magnetic Resonance Spectroscopy for the *Handbook of Analytical Techniques in Concrete Science and Technology*, and Jay Bass wrote the chapter on Elasticity of Minerals, Glasses, and Melts for the *Handbook of Physical Constants*. Steve Marshak's introductory geology textbook, *Earth: Portrait of a Planet*, published by W.W. Norton, appeared in 2001. This is Marshak's third textbook. He's working on second editions of the other two (*Basic Methods of Structural Geology*, published by Prentice-Hall, and *Earth Structure, an Introduction to Structural Geology and Tectonics*, published by McGraw-Hill).



Pat Domenico

Pat Domenico, a faculty member from 1967-1982, died August 1, 2001, near his summer home in Montana. Domenico joined the Department shortly after

completing his doctorate at the University of Nevada in 1967. In 1982 he moved to Texas A&M University, where he became the David B. Harris Professor of Geology. He retired in 1988. Domenico received numerous awards, including the GSA's O.E. Meinzer Hydrogeology Award; the Basic Research Award of the U.S. National for Rock Mechanics; the Excellence in Science and Engineering Award from the Association of Ground Water Scientists

and Engineers; and the Distinguished Teaching Award College of Geosciences at Texas A&M University. President George H. Bush appointed Domenico to the U.S. Nuclear Waste Technical Review Board.

Domenico contributed basic research in areas of consolidation resource optimization and mass and energy transport. His work was inventive, provocative, eclectic and often pioneering. It commonly featured the elegant application of analytical mathematics to explore physical and chemical processes. Domenico was the author of two major textbooks: *Concepts and Models in Groundwater Hydrology* and *Physical and Chemical Hydrogeology*. He participated actively at GSA's annual meetings and in numerous Penrose Conferences, he served as the Birdsall Distinguished Lecturer and contributed to the *Decade of North American Geology* series.

Domenico served in the Navy and enjoyed hunting and fishing. As a professor, he helped educate many outstanding students who went on to be leaders in their various fields.

"Pat had very high standards," says Tom Anderson, professor emeritus. "But he didn't have a stuffy academician's demeanor. He used to tell me, 'Teaching sure beats working for a living!'"

Those who know Pat well will miss his keen sense of humor and wry observations on the state of our science and humanity. Through the years he helped to shape the direction of modern hydrogeology. Many individuals were touched in a personal and special way by Pat's life and career.

Based on an article by F.W. Schwartz, Ph.D. '72, that appeared in The Hydrologist, newsletter of the hydrogeology division of GSA



Dave Anderson

Dave Anderson, professor emeritus, died June 29, 2001. He was 63 and had been suffering from Alzheimer's disease. Anderson, a native of Australia, was

professor of geology at the University from 1967 until he retired in 1996. He was department head from 1983-1988. As department head, Anderson hired several of the faculty who are still in the Department today. As a teacher, he taught courses in petrology, thermodynamics, structural geology, field geology, and introductory geology.

Anderson came to Illinois after completing a post-doctoral position with James B. Thompson at Harvard University. He was an expert in nonequilibrium thermodynamics as applied to metamorphic rocks. Anderson mentored

many students, both undergraduate and graduate, and played a major role in steering students into successful careers. Sue Mahlberg-Kay, B.S. '69, M.S. '72, professor of geology at Cornell University, credits Anderson with instilling in her an excitement for geology.

Sharon Mosher, B.S. '73, Ph.D. '78, Scott Professor of Geological Sciences at the University of Texas, Austin, and former President of the Geological Society of America, says, "Dave's understanding of diffusion and the effects of nonequilibrium thermodynamics was way ahead of his time. He instilled in his students a deep appreciation for geologic processes, and the insights we learned from him have been invaluable. He, more than anyone else, is the person who inspired me to continue for a Ph.D., and to return to the U. of I."

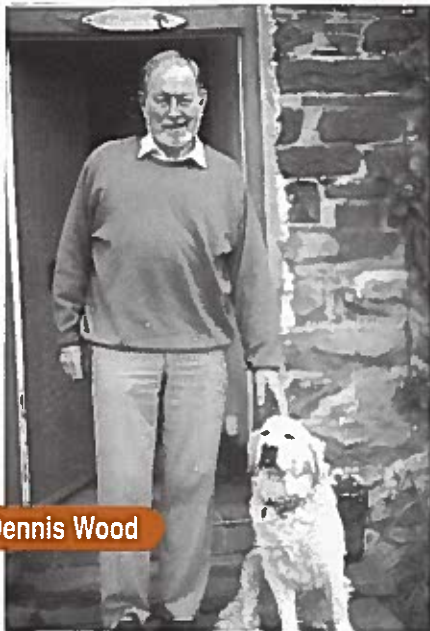
Chuck Simonds, M.S. '69, Ph.D. '71, remembers gathering for long discussion sessions in Anderson's office in the basement of the Natural History Building or the cafeteria in the Illini Union.

"Dave was a risk taker and passed that instinct to his students," says Simonds.

Anderson also had a reputation for excellence in field work, and was an instructor at the University of Illinois Summer Field camp in Sheridan, Wyo., during the summers of 1967, 1968 and 1970. During the summer of 1972, Anderson taught at the University of Illinois field camp in northern Scotland.

As anyone who has participated in field work knows, sometimes these trips don't always go as smoothly as they could. Professor Wang-Ping Chen remembers co-leading a structural geology field trip with Anderson in the early 1980s. The group, including 54 students, went to the upper peninsula of Michigan in late September. They were greeted with snow and sleet at their campsite. The next morning Anderson and Chen realized four students were missing and they combed the campsite. They almost tripped on a heap of canvas on the

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Dennis Wood

Dennis Wood, a well-known and highly respected geologist from North Wales died on April 20, 2001. Wood was a professor at the University of Illinois from 1967-1980.

At Illinois, Wood carried out insightful research into the process of slaty cleavage formation, the development of strain in rock, and issues of global tectonics. He also collaborated with Fred Donath, professor of geology, whose laboratory-based experiments in rock mechanics perfectly complemented Dennis' enthusiasm and flair in the field. Together with Wood's eloquent classroom lectures and epic field courses, this provided a heady cocktail that inspired a generation of Illinois students. Many students inspired by Wood now occupy senior positions around the world—in industry as well as in academia.

In 1980 Wood returned to Britain as Chief Scientist with Robertson Research and remained there until 1990. In 1993, he served as chair of the Earth Science Committee for NERC (Britain's equivalent for NSF). In the last few years, Wood was extensively involved in geological conservation, becoming Chair of the Gwynedd and Môn RIGS Group, where he exercised his many talents in

conserving, recording and developing sites for use by the general public, researchers and schools. Such was Woods' ability to convey enthusiasm for his subject, that he was in huge demand with academic audiences and amateur groups alike.

Throughout his career, Wood's interests bridged both industry and academia. While working in industry, for example, he accepted an Honorary Chair at the University of Wales, taught for a period at Aberystwyth and lectured at Bangor. He was an inspiring teacher who loved working with students, especially in the field, and was unstinting with his time and energy.

"I think it's true to say he brought a breath of fresh air to the department in the late sixties," says Alex Maltman, M.S. '71, Ph.D. '73. "He had charisma and brought inspiration to many. He made geology FUN."

Wood's interests ranged well beyond geology. He was an accomplished organizer and held passions for cricket, rugby, and genealogy. He also loved parties both at home and in the field. According to Maltman, "The parties at his house were legendary. Even Francis Crick, the DNA Nobel laureate, attended one."

In 1970, Wood began teaching a summer field course in the United Kingdom. These trips also became legendary, mostly for the geology, and partly for their raucous good fun—they attracted students from all over the United States. Logistics on these trips, however, did not always go as planned. On the first trip, Wood's little red MG sports car became submerged by the incoming tide as the party visited a tidal island. But all in all, the trips were a wonderful geological experience and provided outstanding training, founded on Wood's great breadth and depth of geological knowledge.

At his funeral, in Bangor, North Wales, one of the eulogists remarked that no one could pretend that Dennis was a saint. But no one could deny that

he was a great teacher in his day, an inspiration to many.

"I know practicing geologists who today readily acknowledge that their having followed that profession was due to one man, the cultivated yet wild Englishman who sadly died at his adopted home in Wales last year," says Maltman.

Sharon Mosher, B.S. '73, Ph.D. '78, and recipient of the 2001 Distinguished Alumni award, says, "Dennis taught me far more than academics; he taught me how to be a professional, everything from how to supervise students to how to present my research to the larger scientific community. He was a major influence on my early career; he was a true mentor."

Wood died of a heart attack on stage while accepting applause for a public lecture. In recognition of Wood's achievements, the Welsh RIGS movement is planning to place a plaque at his favorite field site, Rhoscolyn, in Anglesey.

Anderson

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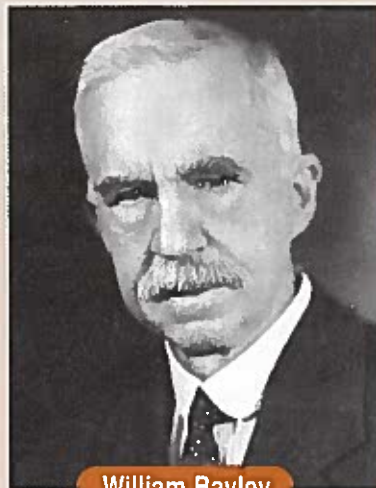
ground. "Some irresponsible people left the extra tents here," said Dave as he bent to pick the tent up. Then Dave burst into laughter—there were four warm bodies, still sound asleep, under what was a collapsed tent soaked with freezing rain.

Professor Steve Marshak remembers going to Scotland with Anderson to field check the thesis work of two graduate students. Together, they rented a small dinghy with an outboard motor and traversed a stormy loch. Then they climbed a small mountain called the Stack of Glencoul, in the pouring rain. "At the top, Dave gave me a superb tour of a classic exposure of deformed worm burrows. I still remember him, radiating delight in a geologic discovery, despite the rain," says Marshak.

At the Turn of the (20th) Century— Research and Graduate Education Become the Focus

At the turn of the 20th century, the president of the University of Illinois was Andrew Sloan Draper, and the head of the Department of Geology (a unit which included geography) was Charles Wesley Rolfe. The climate of the University, in those days, did not support research. In fact, according to W. Solberg's (2000) history of the University, Draper "disparaged disinterested research and made no significant contribution to its development on campus." This was epitomized by Draper's assigning Rolfe the duty of domesticating campus squirrels. Thus, when Draper quit in 1904 and returned to public school administration, it had to be good news for the Geology Department. Edmund J. James became President of the University in 1905.

James immediately began upgrading faculty in "weak" departments, such as geology. Rolfe remained as head (and also served as a consultant to the State Geological Survey in clay investigations), but was joined by William Shirley Bayley and Rufus Matthew Bagg. Both of these geologists held Ph.D. degrees from Johns Hopkins University. A Yale doctoral candidate, Thomas Edmund Savage, also joined the Department. Thus, a 19th-century department of one professor, devoted almost entirely to undergraduate instruction, suddenly became a 20th-century department of four professors, with interests in research and graduate education. The list of graduate degree recipients began to increase steadily—between 1905 and 1919, 15 master's



William Bayley



Eliot Blackwelder

UNIVERSITY OF ILLINOIS ARCHIVES

BIOGRAPHICAL MEMOIRS OF THE NATIONAL ACADEMY OF SCIENCES

degrees and two doctorates were granted in fields such as stratigraphy, economic geology, Quaternary geology, paleontology, and petroleum geology.

Before coming to Illinois, Bayley had taught at Colby College for 16 years, and since 1887 had an affiliation with the United States Geological Survey. Bayley was author or co-author of 63 publications, as well as a three textbooks (*Elementary Crystallography, 1910*; *Minerals and Rocks, 1915*; and *Descriptive Mineralogy, 1916*). He worked primarily on the geology of iron ore deposits, particularly in Minnesota and Michigan, but late in his career, he also studied kaolin deposits in North Carolina, presaging later specialization in the Department of Geology.

T. E. Savage, appointed as an assistant professor in 1906 and, concurrently, as a "geologist" in the Illinois State Geological Survey, came to Illinois from Leander Clark College in Toledo, Iowa. He was also assistant state geologist of Iowa from 1904 to 1907. Savage continued graduate study as he began teaching at Illinois, and finished a doctorate at Yale in 1909. Between 1910 and 1919, Savage, under the auspices of the ISGS,

did quadrangle mapping and stratigraphic reports. Savage remained with the Department of Geology and the Survey until his retirement in 1934.

Rufus Bagg came to Illinois as an instructor after having held positions at Colorado College and the

New Mexico School of Mines. He also spent a year as "Honorary Mineralogist" in charge of an exhibit of sulfide minerals at the Paris Exposition in 1900. Bagg published extensively on fossil and living foraminifera and in economic geology and mineralogy. He left Illinois in 1911 to join the faculty of Lawrence College in Appleton, Wisconsin. When Bagg left, John Lyon Rich came to Illinois as an instructor. While he was at Illinois, 1911 through 1918, he published more than twenty papers in a wide diversity of geological fields. His experimental study of the physical properties of ice was a 'first' in its field, but Rich is remembered mostly as a stratigrapher-sedimentologist and petroleum geologist. After leaving Illinois, Rich went on to national fame as professor at the University of Cincinnati.

The World War I era also saw the hiring of Francis M. Van Tuyl, who joined the Department of Geology briefly, as an instructor from 1914 - 1917. Tuyl completed his doctorate at Columbia University in 1915, and during the summer of 1916 he was a member of the University of Illinois Hudson Bay Exploring Expedition led by Savage.



In 1917 he left for the Colorado School of Mines.

When Rolfe retired in 1916, Elliot Blackwelder succeeded to the headship. Blackwelder only stayed at Illinois for three years, for he resigned in 1919 to join the faculty at Stanford. Blackwelder was a very prominent geologist at a national level, as recognized by his appointment to the National Academy of Sciences, the presidency of the Geological Society of America (1940), and the presidency of the Seismological Society (1947).

In addition to senior staff, Illinois' Department of Geology in the early 20th century hired a number of junior staff members—as many as four in any given year. University records list 20 “assistants” in the Department between 1906 and 1919. One of these assistants eventually received a graduate degree from the Department, but most appear to have been at Illinois for teaching purposes only.

At the time of Blackwelder's departure in 1919, as the world recovered from World War I, all of the professors in the Department had their Ph.D.s, even though some had been hired while still working on their doctorates. In addition, all of these faculty had gained their doctorates at universities other than Illinois, reflecting President James and Dean Kinley's prescription for reforming

the University, and all were active in research, publishing in national journals. The Department was actively granting graduate degrees. The Department's first Ph.D. went to Merle Louis Nebel in 1917, for his study of the contact metamorphism in the iron-bearing rocks next to the Duluth gabbro in Minnesota. Nebel was appointed as a professor of geology in West Virginia University, but sadly died in 1918. Our second doctorate, granted in 1919, went to Clarence Samuel Ross, whose 1919 dissertation also was a study of contact metamorphism near Duluth. Ross went on to a long and distinguished career in the U. S. Geological Survey.

The Geology Department entered the “roaring 20's” as a vital, active teaching and research program, already boasting prominent alumni, and already contributing new information on a variety of geologic issues.

References

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- Solberg, Winton U., 2000, University of Illinois, 1894-1904, The Shaping of the University, University of Illinois Press, Urbana and Chicago, 415 p.
- Annual Report of the Trustees of the University of Illinois; University of Illinois Annual Register.
- Files for Bayley, Rolfe, Savage, held by the Department of Geology in the University of Illinois Archives.

Degrees Conferred in 2001

Bachelor of Science Degrees

January

David Cecil Lampe

May

David Andrew Fike
Sean Paul Fisher-Rohde
Kristin Ann Gazdziak
Hugo Gonzalez
Erin E. Gutierrez
Kristen M. Hasenjager
Stacey Day Kocian
Bryan J. Luman
Jill Erin Pine
Frances Nakai-Skomurski
Anna Lee Sutton
Laura Elizabeth Swan

August

Tyler Patrick Jones
Erik Nicholas Schultz

December

Adam Robert Gibbons
Brandon Craig Haist

Master of Science Degrees

May

Joseph Matthew Schoen (teaching of earth science degree)

Anthony Charles Gibson, *Three-dimensional Geometries and Porosity Trends of Subsurface Ooid Shoal Hydrocarbon Reservoirs in the Mississippian Ste. Genevieve Formation of the Illinois Basin, USA* (Bruce Fouke)

Serena Lee, *Physical and Chemical Controls on Carbonate Precipitation in Surficial Hot Springs and Subterranean Cold Springs* (Bruce Fouke)

Richard J. Wachtman, *Sedimentology, Stratigraphy, and ⁸⁷Sr/⁸⁶Sr Geochemistry of KT Ejecta Deposited in Central Belize 485 KM from the Chicxulub Crater* (Bruce Fouke)

Aubrey Lea Zerkle, *Microbial and Environmental Influences on Black Band Disease in Scleractinian Corals of Curacao, N.A.* (Bruce Fouke)

October

Matthew Carlton Fredrick Wander, *Development and Implementation of An Isotopic Model for Quantifying Groundwater Denitrification* (Thomas Johnson)

Doctor of Philosophy Degrees

December

Xiaoqiang Hou, *Structure and Dynamics of Layered Double Hydroxides* (R. James Kirkpatrick)

Flash from the past: It's 1972 and Dan Blake is lecturing to students at the Badlands.

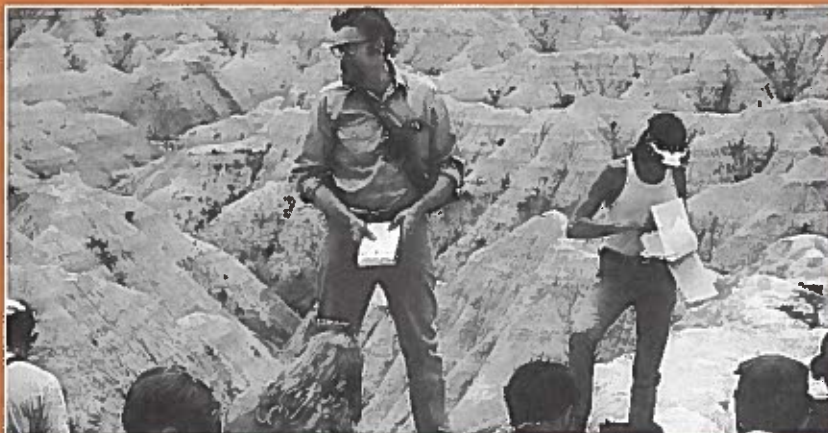


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Obituaries

Editor's Note: Although Paul Shaffer died in 2000, we were unable to include a complete obituary in the 2000 issue of the newsletter. The following is a more complete description of his life and achievements.



Paul Shaffer died November, 2000, at his home in Maryville, Ohio. He was 90 years old. Shaffer, a professor of geology from 1947 until 1968, was an expert in glacial geology and geomorphol-

ogy. His research focused on a series of glacial deposits in Iowa and Illinois. Most notably, he demonstrated conclusively that an early Wisconsin ice sheet advanced much further west than formerly supposed, and dated the time of this advance. Shaffer also wrote a book on rocks and minerals for laymen, published by Simon & Schuster. It was the preeminent book in the field and gained him a national reputation.

Shaffer received his bachelor's degree from the college of Wooster in 1935, his master's and doctorate from The Ohio State University in 1937 and 1945, respectively. Prior to coming to the University of Illinois, Shaffer was chair of the geology department at Ohio Wesleyan and served as chief geologist at Ranney Water Collector Corporation. His success in developing huge underground water supplies essential for wartime use was well known at the time in the profession.

Shaffer met George White, later department head and professor at Illinois, when they were both at The Ohio State University. Shaffer was there as a student and White was on sabbatical from the University of New Hampshire. When White came to the University of Illinois, he brought Shaffer with him.

White described Shaffer as, "utterly and absolutely honest, both intellectually and personally. This deep sense of integrity is not flaunted, but it is always present. People like to work with him and for him, he is generous in giving credit to his associates for successful performance of joint operations."

In addition to his academic and administrative duties at the University, which included serving as associate provost and acting department head, Shaffer cared deeply and was very involved in undergraduate education. In addition, he was an active member of the Association of Geology Teachers. He served as vice president of that organization from 1946-47 and president from 1951-52.

Shaffer was a natural organizer, of both people and space and his skills were on demand by many organizations. He was selected to organize and lead a group of six U.S. teachers on a trip to Nigeria in 1962 at that country's request. Also in the 1960s he was asked to help NSF organize an interagency program in international science education, focused primarily in India. His services also were used by the National Association of State Universities and Land Grant Colleges, where he served as director of the International Programs office. In 1964 Shaffer received the Orton Award from The Ohio State University. This award honors a distinguished geology alumnus.

In 1968, Shaffer resigned from the University to pursue international science education full time.

W.A. (Bill) Meneley, Ph.D. '64, died in 2000. Dr. Meneley was born in Saskatchewan, Canada, in 1933. He earned his bachelor's degree in geological engineering and master's degree in geology from the University of Saskatchewan. He worked at the Research Council of Alberta as a groundwater hydrologist before enrolling at the University of Illinois for a Ph.D. in geology. Following his doctorate, Meneley joined the Saskatchewan Research Council where he was in charge of the groundwater hydrology program. In 1976 he established W.A. Meneley Consultants Ltd. He

retired in 1991. "Bill will be remembered for his clarity of thought and expression, his unabated interest in science, and his love for the application of science to engineering practice," writes his colleague, Earl A. Christiansen, Ph. D. '59.

(This information contributed by Philip Sandberg, faculty member from 1965 to 1995)

Yang Baoxing, a postdoctoral research associate in the Department of Geology from 1983-85 died July 14 of cancer. Dr. Yang worked with Professor George Klein during her time at the University. Dr. Yang was on the faculty of the Chengdu College of Geology (now known as the Chengdu Institute of Technology) from 1960-2001. She served as host for the summer lecture visits from professors Tom Anderson in 1987, Philip Sandberg in 1988 and Dan Blake in 1989.

In addition to being a successful geologist she was a talented dancer and singer, especially in her youth. She was a charming, good-humored individual given to animated conversation and strong championing of her geological views, backed up by extensive experience in the field and laboratory. Her work in sedimentary geology was very broad temporally, lithologically and geographically, ranging from the extreme northwest of China to the South China Sea. She worked in sedimentary geology and hydrocarbon reservoir geology in many part of China, including Tarim basin, Xinjiang Province, and the Changqing gas field (the largest gas field in China).

"Thinking about Baoxing evokes vivid memories of our times with her in China, including a trip by train across the loess plains of northern China from Beijing to Xian, where we saw the Terracotta Army," writes Philip Sandberg, now dean of the College of Natural Sciences at Dakota State University. "Those of us who had the good fortune to know Baoxing will miss her greatly."



Class News

1930s

Last July Willis (Bill) M. Decker, B.S. '39, spent a week with 17 of his family at the Gulf Shore of Alabama, and in October he attended the sixth reunion of VPB 23 (a Navy Patrol Bomber Squadron). Bill retired from the Navy as commander in 1945, spent 39 years with Cities Service Oil Co., and five years as Vice President of Exploration with Jet Oil Co. in Tulsa, Oklahoma.

1950s

Haydn H. Murray, B.S. '48, M.S. '50, Ph.D. '51, attended the 12th International Clay Conference last August in Bahía Blanca (on the Argentine coast in Buenos Aires Province). At the opening ceremonies he was presented with an Honorary Doctorate from the Universidad Nacional Del Sur. "I knew about this about a month before the conference, but I didn't tell my wife or my 10 former students who were in attendance, so it was a very great surprise to them when this was presented," writes Haydn, who is emeritus professor at Indiana University Department of Geological Sciences. The Haydn Chair in Applied Clay Mineralogy has been endowed at Indiana University. Haydn writes that they hope to have the position filled by September of 2002.



Haydn Murray (center) accepts honorary doctorate from Dr. Edgardo Gülichal, vice chair of the Universidad Del Sur. On the right is Dr. Eduardo Domínguez, general chair of the 12th International Clay Conference and chair of the geology department at the Universidad Del Sur.

Robert N. Grinnell, B.S. '51, M.S. '52, writes that he and his wife are still dividing their time between the Texas Hill country and Jackson Hole, while trying to keep up with 12 grandchildren.

Robert E. Fox, M.S. '53, has received the Distinguished Lifetime Achievement Award from the American Institute of Professional Geologists. The award recognizes Fox's decades of international pioneering oil exploration, production and consulting. In 1960 Fox surveyed and recommended the Libyan concession area. The area proved to be the largest oil field in Africa. Fox also contributed to the discovery and development of the first offshore gas field in the Netherlands. He received an Honorary Doctor of Science degree from the University of Edinburgh, Scotland, for his contributions to the international oil industry. Fox is now president of TERM Energy, Oil and Gas Corporation, which operates primarily in West Virginia. He is based in Lexington, Kentucky.

Hal Rasmussen and John D. Shafer, both 1954 graduates, had not seen each other for 44 years until they met up at the Department of Geology homecoming celebration (that kicked off the Geoscience 2005 campaign) in October 2000 (see cover story in Geoscience 2000 newsletter). Rasmussen lives in Acme, Mich., and Shafer lives in Olney, Ill. Both are still active in business. They are trying to track down a classmate, Ron Mink, who worked for 30 years in South America.

Milton Langer, B.S. '53, M.S. '55, writes to say he was saddened by the death of Professor Paul Shaffer (see obituary in this issue). "Paul Shaffer was my first geology professor in 1949 (physical geology 101) and he served as my master's

thesis advisor... I found him to be a very understanding, excellent, dedicated and always supportive person." Langer retired in 1992 after more than 30 years of teaching geological and various physical science courses at 10 different colleges, mainly at the junior college level. At the very beginning of his career he worked for five years in the oil fields. Langer also served as a colonel in the Army Reserves, from which he retired in 1995. Since retiring, Mr. Langer, who lives in Morton Grove, Ill., has been involved in politics and many community activities, including the local historical society and the forest preservation society. "With my current activities, I do not understand how I ever had time to be employed." Both of Langer's sons live in Oklahoma: Erich is an environmental ecologist and Marcus is a high school teacher of history and English.

1960s

Karl R. (Dick) Krauss, B.S. '62, is semi-retired, co-principal at DiMa-Med Corporation. Krauss wonders, "Do you still have a summer course in Sheridan, Wyo.? I attended summer of 1960. Norb Cygan was one of the instructors. We also had classes with Dr. White, Dr. Hay and Dr. Henderson. I believe Hilt Johnson ran that camp, or perhaps several labs I was in..."
Editor's note: The Department still runs a summer geology field camp, but it's now based in Park City, Utah. See story in the 1999 Year in Review newsletter, page 12.

Chris Heath, M.S. '63, Ph.D. '65, is running for vice president of AAPG. He is an independent researcher, having spent his career with Caltex and Amoco and later as an honorary professor at the University of British Columbia, Canada. Heath, a native of England, has been a member of AAPG since 1966. He received the AAPG Distinguished Service Award in 1992 and the Certificate of Merit in 1997.



Douglas Anderson (left) and David Miller at the Kingdome site the morning before the implosion.

Douglas A. Anderson, B.S. '69, is a senior consultant with Schnabel Engineering Associates, Inc., where he is a demolition expert. He has been working on blast vibration and fragmentation since 1980. His most enormous project so far has been to help demolish Seattle's Kingdome. The Kingdome's roof was the world's largest thin-shell concrete dome structure. Now that it no longer exists, the largest unsupported roof is the University of Illinois' Assembly Hall. Although there was enormous concern about the impact on neighboring structures as the Kingdome fell, the demolition was very successful. Final result: only five broken windows and a lot of dust. The resulting rubble pile was expected (and required by contract) to be less than 70 feet and it ended up being only 23 feet high. Anderson likes to work on predictive models for vibration and fragmentation for "those projects that are a bit out of the ordinary," he writes.

John Steinmetz, B.S. '69, M.S. '75, was elected treasurer for the Association of American State Geologists. He is state geologist and director of the Indiana Geological Survey in Bloomington, Ind.

1980s

Scott R. Krueger, M.S. '85, lives with his wife, Kimberly, in Sugar Land, Tex. Scott is Senior Geologist for Duncan Oil, Inc. in Houston.

Stephen E. Laubach, Ph.D. '86, senior research scientist at the Bureau of

Economic Geology, University of Texas, Austin, is serving in the AAPG Education Department Visiting Geologists Program (VGP). The goal of the VGP is to provide better communication among students, faculty, university administrators and geology professionals. Laubach's talk is titled *Targeting Natural Fractures: Opportunities for the Domestic Petroleum Industry*. Laubach also is an instructor for AAPG's Fractured Reservoir Characterization and Modeling School.

1990s

M. Scott Wilkerson, Ph.D. '91, and his wife Beth, are the proud parents of Benjamin Scott Wilkerson, who was born November 16, 2001. Benjamin has a big brother, Zachary, who is four. Wilkerson just received tenure and promotion to associate professor at DePauw University, and will become chair of their Department of Geology in the Fall. He also recently published an article on fold-thrust belts that was the cover story of the AAPG Bulletin, and is editing an upcoming special issue of the Journal of Structural Geology. Wilkerson also is an adjunct professor in our Department of Geology.

Sharon (Horstman) Qi, B.A. '89, M.S. '93, stopped by the University in December. She was in town to teach a short course for the USGS office in Urbana. Sharon works at the USGS in Denver, primarily with GIS data. She commutes from Fort Collins, where her husband is an engineer with Hewlett-Packard. Sharon and her husband have two children and enjoy the mountain views.

Melinda Legg Ylagan, M.S. '94 and Robert Ylagan, Ph.D. '96, announce the birth of their son, Renan Robert Ylagan. He arrived January 4, 2001. They recently moved to Rochester, New York.

Eric Holdener, M.S. '91, Ph.D. '97, is the proud father of Chase Alexander Holdener, who was born on August 9, 2001, in Mount Vernon, Ohio. Eric writes that "Chase is cute and (so far) very well-

behaved. Mother (Judy) and baby are both doing well. I am just amazed."

Steve Schimrich, 93-98, and his wife Jennifer are the proud parents of twins: Lucas Michael and Emily Joanne, born on February 5, 2001. Steve teaches geology at a community college in the Hudson Valley of New York.

2000s

David Fike, B.S. '01, is spending the academic year 2001-02 at the Scott Polar Research Institute at Cambridge's Churchill College. Fike is in Cambridge on a prestigious Winston Churchill Foundation Award. These scholarships, which provide tuition, fees, living expenses and travel, support 10 students per year for graduate study in engineering, math and science. Students are chosen from 57 universities and colleges nationwide.

Fike's goal is to join in the search for life on Mars. The polar regions are the most similar Earth environments to the surface of Mars. Fike, who triple majored in geology, engineering physics and astronomy, studied microbial populations in Yellowstone's hot springs for his undergraduate thesis. Fike spent the summer of 2001 at the NASA Ames Astrobiology Academy, which accepts 12 students each year to work on research projects and learn about NASA.

Faculty

George D. Klein, emeritus professor, was elected by the Houston Geological Society to the House of Delegates of the AAPG. The House of Delegates is the governing legislative council of the AAPG. Dr. Klein's consulting company, SED-STRAT Geoscience Consultants, Inc., is thriving.

Mike Hanke, visiting professor 1998-2000, and his wife have a new addition to their family: Madeline Anne was born June 5, 2001. "Madeline has a full head of dark brown hair and is so beautiful and sweet that we can hardly contain ourselves," writes Mike.

HONOR ROLL OF DONORS FOR 2001



The following is a list of friends and alumni of the Department of Geology who have donated to the department during the calendar year 2001.

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Debbie E. Baldwin
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 Craig M. Bethke (Professor)
 Daniel B. Blake (Professor)
 Chu-Yung Chen (Associate Professor)
 Wang-Ping Chen (Professor)
 Bruce W. Fouke (Assistant Professor)
 Albert T. Hsui (Professor)
 Thomas M. Johnson (Assistant Professor)
 R. James Kirkpatrick (Professor and Executive Associate Dean)
 Craig C. Lundstrom (Assistant Professor)
 Stephen Marshak (Professor and Head)
 Xiaodong Song (Assistant Professor)

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Feng-Sheng Hu (Assistant Professor)

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 Barb Elmore (Administrative Secretary)
 Eddie Lane (Electronics Engineering Assistant)
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Peter Berger	Peter Malecki
Michael Brudzinski	Jungho Park
Kurtis Burmeister	George Roadcap
Dylan Canavan	Joseph Schoen
Scott Clark	Eric Sikora
Amanda Duchek	Xinlei Sun
Andre Ellis	Anna Sutton
Michael Fortwengler	Jian Tian
Anthony Gibson	Tai-Lin Tseng
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Michael Harrison	Jianwei Wang
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Jennifer Jackson	Blaine Watson
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Matthew Kirk	Xiaoxia Xu
James Klaus	Zhaohui Yang
Dmitry Lakshtanov	Aubrey Zerkle
Chuntao Liang	Juanzuo Zhou

COURSES TAUGHT IN 2001

Geol 100 -	Planet Earth
Geol 101 -	Introduction to Physical Geology
Geol 104 -	Geology of the National Parks and Monuments
Geol 107 -	Physical Geology
Geol 108 -	Historical Geology
Geol 110 -	Exploring Planet Earth in the Field
Geol 116 -	Geology of the Planets
Geol 117 -	The Oceans
Geol 118 -	Natural Disasters
Geol 143 -	History of Life
Geol 233 -	Earth Materials and the Environment
Geol 250 -	Geology for Engineers
Geol 280 -	Environmental Geology
Geol 311 -	Structural Geology and Tectonics
Geol 317 -	Geologic Field Methods, Western United States (Field Camp)
Geol 320 -	Introduction to Paleontology
Geol 332 -	Mineralogy and Mineral Optics
Geol 336 -	Petrology and Petrography
Geol 340 -	Sedimentology and Stratigraphy
Geol 350 -	Introduction to Geophysics
Geol 351 -	Geophysical Methods for Geology, Engineering, and Environmental Sciences
Geol 355 -	Introduction to Groundwater
Geol 360 -	Geochemistry
Geol 381 -	Modeling Earth and Environmental Systems
Geol 397A -	Introduction to Field Methods
Geol 397B -	Introduction to Seismology
Geol 401 -	Physical Geochemistry
Geol 431 -	Structural Mineralogy
Geol 455 -	Hydrogeology
Geol 459 -	Isotope Hydrogeology
Geol 491 -	Graduate Student Seminar
Geol 493I2 -	Special Problems in Paleontology
Geol 493K4 -	Center of the Earth
Geol 493K7 -	Earth's Interior
Geol 493J1 -	Analytical Geochemistry

Father of Marine Geology

Francis Parker Shepard (1897-1985) was featured in the December 2001 issue of *GSA Today* in the "Rock Stars" section. Shepard, who taught at the University of Illinois from 1922-46, is considered the father of marine geology. While at the University of Illinois, Shepard advised two of the leading marine geologists from the United States, Kenneth O. Emery, B.S. '35, M.S. '39, Ph.D. '41, and Robert S. Dietz, A.B. '37, M.S. '39, Ph.D. '41.



American Chemical Society Petroleum Research

A Time Series Process Model of Carbonate Diagenesis and Microbial Genetic Preservation in Hot Spring Travertine, Yellowstone National Park, Wyoming, and Gardiner, Montana.
Principal Investigator: Bruce Fouke

Development of Selenium Isotope Ratios as Indicators of Sedimentary Paleo-Environments.
Principal Investigator: Thomas Johnson

Origin, Architecture, & Thermal State of the Lackawanna Syncline, Pennsylvania.
Principal Investigator: Stephen Marshak

Department of Energy

Computational & Spectroscopic Investigations of Water-Carbon Dioxide Fluids & Surface Sorption Processes.
Principal Investigator: R. James Kirkpatrick

Federal Highway Administration

Predicting Aggregate Reaction Based on Chemistry and Nanostructure of Alkali-Silica Gels.
Principal Investigators: Leslie J. Struble and R. James Kirkpatrick

Illinois Council On Food And Agriculture Research

Estimation of Denitrification Rates in the Shallow Groundwater Flow Systems of Big Ditch Watershed, Illinois—Isotope Assessment.
Principal Investigator: Thomas Johnson

Institute Of Geophysics And Planetary Physics, Los Alamos

Timescales of Crustal Level Differentiation: U-Series Measurements and Geophysical Monitoring at Arenal Volcano, Costa Rica.
Principal Investigator: Craig Lundstrom

NASA

Core Angular Momentum and the International Earth Rotation Service Coordination Center / Sub-Centers Activity for Monitoring Global Geophysical Fluids.
Principal Investigator: Xiaodong Song

National Science Foundation

Polyamorphism and Structural Transitions During Glass Formation.
Principal Investigators: John Kieffer and Jay Bass

Development of Laser Heating for Sound Velocity Measurements at High P & T.
Principal Investigator: Jay Bass

Sound Velocities & Elastic Moduli of Minerals Mantle Pressures and Temperatures with Laser Heating.
Principal Investigator: Jay Bass

Workshop on Phase Transitions and Mantle Discontinuities.
Principal Investigator: Jay Bass

CSEDI: Collaborative Research: Composition and Seismic Structure of the Mantle Transition Zone.
Principal Investigator: Jay Bass

Global Climate Change & The Evolutionary Ecology of Antarctic Mollusks in the Late Eocene.
Principal Investigator: Daniel B. Blake

The Asteroid (Echinodermata) Trichasteropsis from the Triassic of Germany: Its Taxonomy, Phylogeny, and Paleoeologic Significance.
Principal Investigator: Daniel B. Blake

A Seismic Study of the Mantle Transition Zone and Subducted Lithosphere.
Principal Investigator: Wang-Ping Chen

Seismic Reflection Profiles in Southern Illinois (funded through the Mid-America Earthquake Research Center).
Principal Investigators: John McBride, Stephen Marshak, and Wang-Ping Chen

A Seismic Study of the Taiwan Orogen.
Principal Investigator: Wang-Ping Chen

Collaborative Research: Lithospheric-Scale Dynamics of Active Mountain Building Along the Himalayan-Tibetan Collision Zone.
Principal Investigator: Wang-Ping Chen

Proximal Carbonate Ejecta and Breccias from the Cretaceous-Tertiary Chicxulub Impact: Ballistic Sedimentation and Brecciation, ⁸⁷Sr/⁸⁶Sr Chronology and Diagenetic Alteration.
Principal Investigator: Bruce Fouke

Development of Cr Stable Isotopes for Cr Transport Studies and Other Geoscience Application.
Principal Investigator: Thomas Johnson

Collaborative Research: Field Investigation of Se Oxyanion Reduction & Se Sources in Wetlands: Application of Se Isotopes.
Principal Investigator: Thomas Johnson

Measuring Trace Element Partition Coefficients Between Minerals and Basaltic Melt.
Principal Investigator: Craig Lundstrom

Windows into MORB Petrogenesis: Measuring U-Series Disequilibria in MORB from Transforms.
Principal Investigator: Craig Lundstrom

Observational Constraints on Melt-Rock Reactions During Melting of the Upper Mantle.
Principal Investigator: Craig Lundstrom

Tectonics of the Araçuaí/Ribeira Orogenic Tongue of Southeastern Brazil and its Significance to the Assembly of West Gondwana.
Principal Investigator: Stephen Marshak

Structure and Dynamics of Earth's Core and Lowermost Mantle.
Principal Investigator: Xiaodong Song

Constraining the Structure and Rotation of the Inner Core.
Principal Investigator: Xiaodong Song

Office of Naval Research

The Role of Shipyard Pollutants in Structuring Coral Reef Microbial Communities: Monitoring Environmental Change and the Potential Causes of Coral Disease.
Principal Investigator: Bruce Fouke

State of Illinois Board of Higher Education

Evolution of the Martian Surface—A Cooperative Learning Module for General Education in Science.
Principal Investigator: Albert Hsui

University of Illinois Research Board

X-Ray Diffraction on Minerals of the Earth's Interior.
Principal Investigator: Jay Bass

Seed Money for Research Initiative in Aquifer Microbiology.
Principal Investigator: Craig M. Bethke

Airbrasive Unit for Paleontological Research.
Principal Investigator: Daniel B. Blake

Geology of Precambrian Fault Systems in Southern Norway: A Pilot Study.
Principal Investigator: Stephen Marshak

Structure of Crust and Mantle beneath China From the New Chinese Broadband Digital Seismic Network.
Principal Investigator: Xiaodong Song

Geothrust Members for 2001

J. William Soderman—Chair
M.S. '60, Ph.D. '62

James R. Baroffio, Ph.D. '64

David K. Beach, B.S. '73

Marion "Pat" Bickford, M.S. '58,
Ph.D. '60

Lester W. Clutter, B.S. '48, M.S. '51

Norbert E. Cygan, B.S. '54, M.S. '56,
Ph.D. '62

Edwin H. Franklin, B.S. '56

John R. Garino, B.S. '57

James W. Granath, B.S. '71, M.S. '73

Morris (Brud) W. Leighton, B.S. '47

Patricia Santogrossi, B.S. '74, M.S. '77

Jack C. Threet, A.B. '51

LIST OF PUBLICATIONS FOR 2001

- Kalinichev, A., Wang, J., Kirkpatrick, R. J., and Cygan, R. T., 2001, Molecular dynamics simulation of layered double hydroxides, in Cummings, ed., *Foundations of Molecular Modeling and Simulations: AIChE Symposium Series No. 325*, 97: 251-255.
- Kelley, D.S., Karson, J.A., Blackman, D.K., Früh-Green, G., Gee, J., Butterfield, D.A., Lilley, M.D., Olson, E.J., Schrenk, M.O., Roe, K., Lebon, G., Rizzigno, P., Cann, J., John, B., Ross, D.K., Hurst, S.D., and Sasagawa, G., 2001 (July 12 issue), An off-axis hydrothermal vent field near the Mid-Atlantic Ridge at 30° N: *Nature*, 412: 145-149.
- Marshak, S., 2001, *Earth: Portrait of a Planet*. W.W. Norton & Co., New York, 745 pp.
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*This publication was inadvertently left off last year's list.



Spring 2001

- Jan. 19 Michael Wyession, Washington University**
Investigating (deep) North American mantle structure with a broadband seismic array
- Feb. 9 Steve Ingebritsen, USGS, 2000-2001 Birdsall-Dreiss Lecture**
Land subsidence in the United States
- Feb. 16 Joseph DiPietro, University of Southern Indiana**
Geology and metamorphism of the Indian plate hinterland in Pakistan and tectonics of India-Kohistan collision, NW Himalaya
- Feb. 23 Stephen Haslotis, Indiana State**
The invertebrate invasion and evolution of Mesozoic soil ecosystems—The antiquity of soil engineers and their innovations
- Mar. 9 Arild Andresen, University of Oslo**
Syn- or post-collisional orogenic collapse in the East Greenland Caledonides?
- Mar. 30 Mary Elliot, Lamont-Doherty Earth Observatory**
Millennial-scale climate oscillations during the last glacial, links between Northern Hemisphere ice sheet instabilities and the Dansgaard-Oeschger cycles
- Apr. 6 Charles Onasch, Bowling Green University**
Paleozoic seismicity in the eastern Midcontinent: Evidence from the sedimentary record
- Apr. 13 Bruce Rittman, Northwestern University**
Adaptation of anaerobic communities to chlorinated aromatics
- Apr. 20 Daniel Hausermann, Argonne National Laboratory**
HPCAT at the Advanced Photon Source: A new national facility for high-pressure research
- Apr. 27 Sharon Mosher, University of Texas, Austin; University of Illinois Distinguished Alumni Award Lecture**
Death of a spreading ridge: transition of the Pacific-Australian plate boundary from a divergent to transform margin along the Macquarie Ridge Complex

Fall 2001

- Sept. 7 Katrina Edwards, Woods Hole Oceanographic Institution**
Microbial rock and mineral transformations: Implications for carbon cycling
- Sept. 14 Sam Panno, ISGS**
Late Pleistocene and Holocene climatic effects on speleogenesis in southern Illinois based on the age of redeposited glacial sediment in Fogelpole Cave
- Sept. 21 Robert Nowack, Purdue University**
Imaging of seismic attributes with application to the 3-D tomography experiment at Mt. Vesuvius, Italy
- Sept. 28 Diane McKnight, University of Colorado**
Humic substances as electron acceptor: An important feedback in aquatic ecosystems
- Oct. 5 Andre Pugin, ISGS**
Imaging glacial basins in 2-D and 3-D using water- and land-based shallow seismic reflection examples from the Alps, Canada, and Illinois
- Oct. 12 Ho-Kwang (David) Mao, Geophysical Laboratory, Carnegie Institute of Washington**
New windows on the Earth's deep interior
- Oct. 19 Alexis Templeton, Stanford University**
X-Ray spectroscopy investigations of bacteria-mineral-metal interactions
- Oct. 26 Lupei Zhu, St. Louis University**
Raising the Tibetan plateau
- Nov. 2 Jean-Francois Gaillard, Northwestern University**
Heavy metal blues: Chemical speciation in contaminated sediments
- Nov. 9 Pat Bickford, Syracuse University**
Are the Paleoproterozoic rocks of central Colorado accreted arcs or melt products of rifted older crust?: Implications for the southward growth of Laurentia between 1.8 and 1.6 Ga
- Nov. 30 Jim Walker, Northern Illinois University**
HFSE depletions in central Nicaragua
- Dec. 7 Guillaume Fiquet, University of Paris VI**
High-pressure synchrotron measurements and composition of the deep Earth

Jackson

(continued from Page 1)

Jackson, in collaboration with Professor Jay Bass and Research Scientist Stas Sinogeikin (Ph.D., '99), and graduate students Dima Lakshatnov and James Palko, also has looked at volume changes that orthoenstatite undergoes at high temperatures. Jackson notes that previous studies of thermal expansivity have been inconclusive since values ranged widely. The team did thermal expansion measurements at the Cornell High Energy Synchrotron Source (Cornell University). Jackson presented the high-temperature elasticity and thermal expansion measurements at the 2001 AGU meeting in San Francisco. Her findings have implications for understanding the chemistry of the upper mantle.

In another project, Jackson is collaborating with researchers at the Advanced Photon Source of Argonne National Laboratory in Chicago, to investigate a new technique, called nuclear resonance inelastic X-ray scattering (NRIXS) to measure the density of states of an iron-bearing magnesium-silicate perovskite (perovskite is perhaps the dominant mineral phase in the Earth's lower mantle) at lower mantle pressures. Findings from this study may have major implications for understanding the chemistry of the Earth's lower mantle.



Let's Keep in Touch

Please take a few minutes to let us and your classmates know what you've been doing. Send your news to the Department of Geology, 245 Natural History Building, 1301 West Green Street, Urbana, Illinois 61801; fax 217-244-4996; e-mail geology@uiuc.edu

Name

Address (indicate if changed)

City State Zip

Home phone

E-mail

Degrees from Illinois (with year)

Notes



You're invited

Alumni are invited to a tour of Dinosaur Ridge and barbecue on October 27, 2002, which will be held in conjunction with the GSA meeting in Denver. The tour is scheduled to begin at 1:30 p.m. and the barbecue at 4 p.m. Look for a postcard in July with more details.



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Department of Geology
University of Illinois at Urbana-Champaign
245 Natural History Building
1301 W. Green St.
Urbana, IL 61801

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