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Indiana University College of Arts & Sciences Alumni Association

HOOSIER GEOLOGIC RECORD

Alumni Newsmagazine of the Department of Geological Sciences



John Day

Summer 2005

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Editor's note: We urge alumni and friends to send us prints, photos, or slides that would interest our readers. Please be sure to provide a complete caption and label the material with your name and address so that it can be returned. We can't promise to include all submissions, but we can promise to return them.

HOOSIER GEOLOGIC RECORD

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 THE COLLEGE

Punctuated equilibrium marks department's evolution

This year, we celebrate the final fruition of the generous contributions and incessant work of many alumni for over a decade to establish various endowments. The last few years have been incredibly successful years in the history of our department. Not only have our continuing faculty produced much and been honored with many accolades, but between 2001 and 2005 we have been able to attract and add six new faculty members.

All of this has been possible as a direct consequence of the campaigns run by the members of our Advisory Board beginning in 1996. The campaign has resulted in the hiring of Mark Person in 2001 as the Malcolm and Sylvia Boyce Chair in Hydrogeology, of David Bish in 2003 as the Haydn Murray Chair in Applied Clay Mineralogy, of Bradley Ritts in 2005 as the Robert R. Shrock Professor in Sedimentary Geology, and of Kaj Johnson in 2005 as the Judson Mead Professor of Applied and Exploration Geophysics (Kaj will begin his residency in fall 2005 and will assume formal faculty responsibilities in fall 2006). In addition, Jürgen Schieber and Chen Zhu joined our faculty in 2003 as associate professors in lines left open through retirements and left unfilled for a few years. The whole faculty has been inspired by the new hires and the annual seed money for research, which is drawn from the interests of the endowments. In 2004, our external grants nearly tripled over the steady average of the previous few years.

Please read about multifarious activities and achievements of our faculty, new and old, in Faculty News on page 11. I refrain from taking the thunder away from individual write-ups, but I would like to highlight at least two. Haydn Murray brought a crowning glory to the department again by being inducted into the National Academy of Engineers (the only one from Indiana University in its 177-year history) and in receiving an honorary degree from Indiana University, the highest honor that any university can bestow on an individual. And, Professor David Bish and Professor Jürgen Schieber have been selected by NASA to help design two separate instruments of a total of only eight in the Mars Science Laboratory, a Lander, to be launched in 2009.

Accountability is a word that is often bandied around in the media and in political circles as a cliché. Accountability, however, is actually a social responsibility. The time has come for us to account to the alumni and all donors. This I do with great



Abhijit Basu

pleasure and not as a matter of formal duty. I describe below a few of the main expenses that we have been able to incur for advancing our department and supporting our students as the donors have wished.

Three graduate fellowships are now funded routinely from endowments in the names of Galloway-Perry-Horowitz, Dan Tudor, and Bill Thornbury. The College of Arts and Sciences provides tuition waivers to the recipients, enabling us to stretch the value of the fellowships. This year we will also add money to a gift from Chevron-Texaco to award two additional fellowships. Not only do fellowships free up time for students to conduct more intensive research, they also allow us to compete with other schools in attracting qualified graduate students.

This summer we instituted, on a trial basis, summer fellowships for graduate students without other summer support to stay on campus and conduct research. This is in addition to grants-in-aid of research that students receive from alumni gifts to supplement costs that are not commonly covered by extramural grants. We have also instituted cash awards for students who publish peer-reviewed papers in standard journals before graduation. This incentive should go far and make us far more visible in the professional world than before. And, we continue to recognize excellence of our students in the form of awards and scholarships. Many of these go to those attending our time-honored G429 at the Indiana University Judson

Mead Geologic Field Station. But in addition, recent major gifts from Bill and Janet Cordua and one from the family of Maynard and Winnie Collier underwrite two sizeable undergraduate scholarships.

A few years ago students started an entirely student-driven event to showcase their research in the form of oral and poster presentations in spring. This has now expanded to include presentations by students from other Indiana schools, such as Purdue, IUPUI, and other campuses. Judging is done by faculty from several campuses, geologists from the Indiana Geological Survey, and most graciously by alumni who fly in from distant locations such as Houston and New Orleans. The awards ceremony is the most-anticipated time of the day, and all winners greatly appreciate the cash awards from gifts by well-wishers.

Support from the College for student travel is dwindling fast. It is only because we have the support from our well-wishers that we can afford all-important field trips for our majors and graduate students. Professor Robert Wintsch, for example, has started to lead extended field trips that are not required for any course but that enhance students' understanding of how the earth works. This year, he led 10 students to Canada and Maine to study the tectonics of the northeastern coast of North America. We are providing scholarships to three students who intend to major in geology and are taking a field course with Professor Michael Hamburger in the Sierra Mountains in California. We continue to partially defray the cost of student travel to national and international meetings where they present papers. We are particularly delighted that our students travel abroad, especially to Europe and open new frontiers. With globalization and the internationalization of employment, such experience becomes invaluable for our graduates.

For several years we have been routinely supplementing faculty research from the interest of endowment funds. These have included direct expense for fieldwork, laboratory analyses, purchase of equipment, and travel to meetings on a limited basis. Such support has proven indispensable as seed money for new research and in attracting extramural support.

Our colloquium series in which we invite experts from other institutions to come and visit with students and faculty is nearly fully funded from gifts. Two of these colloquia are very dear to us. One is the lecture delivered by the winner of the Owen Award,

(continued on page 3)

Around the Department

Brad Ritts named Shrock Professor of Sedimentary Geology

Brad Ritts joined the department this summer as the new Robert Shrock Professor of Sedimentary Geology. He comes to IU after six years on the faculty of Utah State University in Logan, Utah; before that, he worked for Chevron Overseas Petroleum in San Ramon, Calif., as a new-ventures exploration geologist.

Ritts received a PhD from Stanford, where he worked on the sedimentary and petroleum geology of the Tarim and Qaidam basins in China with his adviser and IU alumnus Steve Graham. Ritts received a BS from the University of Rochester, where he did a senior thesis under another IU alumnus, Pete DeCelles. He received an MS from MIT.

Ritts's research interests, which have been formally recognized with a presti-

gious NSF Career Award, are in tectonics and sedimentation and petroleum systems analysis. Most of his research is currently in China. He has multiple students working on the structural, sedimentary, and paleoclimatic evolution of the northeastern Tibetan Plateau in an effort to understand how Cenozoic collision and convergence between India and Eurasia was accommodated in the interior of the continent, how the Tibetan Plateau formed, and how its uplift changed the paleoclimate, paleogeography, and paleoecology of the region.

Another line of research in China focuses on the genetic mechanisms of the giant, nonmarine sedimentary basins that characterize the Mesozoic-Cenozoic of the country (and much of central Asia) and feedbacks between basin formation and

intraplate tectonics.

In addition to the China research, Ritts is starting a new project on basin analysis and petroleum geology of the eastern Sea of Okhotsk and western Kamchatka peninsula in the Russian far east. He'll complete his first field season there this year. Research in petroleum systems is primarily on nonmarine basins and ranges from reservoir characterization and modeling to oil-source rock correlation studies. This petroleum-related research has recently included studies of offshore Angola, the western United States, China, and Russia.

In his spare time, Ritts enjoys mountain biking, skiing, and playing with stray dogs. He's looking forward to getting established in his new Brown County home.

Geophysics group expands collaborative projects and outreach

It's been a busy year for the geophysics group. Gary Pavlis, graduate student Tammy Baldwin, and geophysics technician Terry Stigall have taken the lead on a major seismology field experiment in Venezuela, including nearly 100 permanent and temporary seismic stations, both on land and in the Caribbean sea floor.

Pavlis and graduate student Chenliang Fan are involved in a collaborative project with Art Weglein to explore new methods of seismic imaging. And Pavlis and Michael Hamburger have continued their collaboration on Indiana earthquakes, along with graduate student Kevin Eagar, who is completing his master's thesis on microearthquakes in the Wabash Valley seismic zone. Eagar will be going on to Arizona State for a PhD this fall.

Graduate student Gerald Galgana has recently defended his thesis, "Kinematics of an Active Plate Boundary: Insights on the Tectonics of Luzon, Philippines, Using Terrain, Focal Mechanisms, and GPS Observations." Galgana will be entering the PhD program here at IU this fall.

Pavlis and Hamburger have continued their high-profile science outreach program, the Indiana PEPP Earthquake Science program, which involves about 20 schools around the state in research-quality seismic monitoring research. Three of the PEPP teachers, Michael Kelley from Harrison High School in Evansville, Ewa

Shannon of Crown Point, and Bill Combs of Crawfordsville, spent a month working with Hamburger and Pavlis this summer, and they presented their results at a special symposium at the American Geophysical Union in San Francisco.

Hamburger and Pavlis have been heavily involved in the growth of NSF's landmark "EarthScope" program, a continental-scale geodynamic observation experiment, the largest ever mounted by NSF's Earth Science directorate.

Along with colleagues from University of Stony Brook and the UNAVCO Consortium, Hamburger has received NSF funding for the Jules Verne Voyager, a suite of map tools for researchers and educators

interested in geodynamic research. The maps recently received rave reviews in *Science* magazine. Check out the map tool at www.jules.unavco.org.

Hamburger continues a collaborative teaching effort with John Rupp, bringing a small group of first- and second-year students to explore the volcanoes of the eastern Sierra Nevada. The class made the cover story on the university's new *Teaching and Learning* magazine — and you can see an online version at www.indiana.edu/~tandlpub/.

Beginning in fall 2005, Hamburger will be taking on a new administrative role, working as associate dean in the Office of the Dean of Faculties.

Hamburger leads campus response to last winter's Indian Ocean tsunami

Michael Hamburger took the lead in organizing a campus response to the tragic earthquake and tsunami that shook the Indian Ocean on Dec. 26 of last year. With support from the IU chancellor, the dean of the faculties, and the College of Arts and Sciences, he and faculty and student colleagues organized a campuswide event, "Indian Ocean Tsunami and Humanitarian Response: A Campus-Community Forum," early in the spring semester. With the efforts of a dozen or more student organizations, the event helped raise thousands of dollars in tsunami relief. One of the outgrowths of the forum was a "Learning from Disaster" seminar series, which follows up on the lessons from the tsunami disaster and will culminate in an anniversary event late in the fall semester.

Multidisciplinary grant funds management, use of fossil collections

The fossil collections in the Department of Geological Sciences are among the best of all universities in the nation. However, since the passing of Alan Horowitz, curator in paleontology, the collections have lacked the tender-loving care that Horowitz bestowed upon them. Fortunately, the department will benefit from a IU Multidisciplinary Ventures Fund Grant to apply advances in database management to the very old and historically significant collections and to test the newly developed Paleontological Spatial and Temporal Tool application. The grant funds a proposal submitted by Claudia Johnson and Erika Elswick in the Department of Geological Sciences and Mehmet Dalkilic of the School of Informatics. The multidisciplinary research is designed to create a means for paleontologists to effectively manage, use, and datamine the large collections of specimens in the fifth-floor laboratories.



Chair's welcome

(continued from page 1)

with which we honor a graduate of this department (please see the story featuring Dr. Priscilla Nelson, our first alumna to receive this award, on this page). The other is the Daniel Tudor Commemorative Lecture, which was set up in the loving memory of one of the department's most supportive alumni. Please attend either or both of these lectures at your convenience.

Perhaps it is appropriate to end with a request for something that deserves your attention. As funds for higher education shrink, the College is finding it difficult to continue to support the Judson Mead Geologic Field Station in Montana. We would appreciate your thoughts and ideas on a strategy for approaching industry about the creation of a corporate consortium to underwrite a \$2 million endowment that would make the field station self-sufficient.

I come from an ethnic and cultural stock known for its emotional, if not sentimental, disposition. Writing the abbreviated accountability statement above has made me so gratefully happy that my eyes are moist (I confess). "Thank you" are two words that cannot describe how each in the department feels about the generosity of all well-wishers who make our day, everyday.

Kaj Johnson steps in as Mead Professor

The third time is the charm. After two unsuccessful searches for a new faculty member to fill the Judson Mead Endowed Professorship in geophysics, we are happy to announce that Kaj Johnson has accepted our offer to fill the position. He will be on board this fall as a visiting scientist conducting research and will take on teaching responsibilities as an assistant professor in fall 2006.

Johnson currently holds a postdoctoral appointment at UC Berkeley, after having received his doctoral and master's degrees from Stanford and Purdue, respectively. Johnson's research so far has focused on understanding mechanisms of faulting and their geodynamic consequences from a geophysicist's perspective.

While at Indiana, we expect him to bridge the highly applied petroleum exploration group with such diverse faculty as Mark Person and Brad Ritts on one hand, with our current geophysicists on the other. He will, incidentally, begin his teaching with a new course on applied and exploration geophysics. Johnson is very well positioned to bring an exciting, new applied geodynamic focus to the geophysics group.

Richard Owen Award goes to Priscilla Nelson

The Department of Geological Sciences presented the 2004 Owen Award to Priscilla Nelson. Nelson is director of the Civil and Mechanical Systems Division in the Directorate for Engineering at NSF. Nelson received a BS from the University of Rochester, an MS in geology from Indiana University in 1976, and a second MS in structural engineering from the University of Oklahoma in 1979. The PhD in geotechnical engineering was awarded to Nelson by Cornell University in 1983.

Nelson had 13 years of teaching experience at the University of Texas, Austin, from 1983 to 1996. She authored more than 100 technical and scientific publications. In 1997, then-President Clinton appointed Nelson to the Nuclear Waste Technical Review board.

Nelson was selected by a unanimous vote of the Owen Award Committee and departmental faculty because of her outstanding contributions to geology and her meritorious service to both government and academic institutions.



Department of Geological Sciences chair Abhijit Basu presents the 2004 Richard Owen Award to Priscilla Nelson, MS'76, of the National Science Foundation.



Visit us on the Web at www.indiana.edu/~geosci. Also, visit the Judson Mead Geologic Field Station at www.indiana.edu/~iugfs and the Indiana Geological Survey at www.igs.indiana.edu.

All points north: G420 field trip leads students to Canada

Robert Wintsch led a G420 field trip again this year. Ten students, including sophomore, juniors, seniors, and graduate students, participated in a Canadian tectonic experience. The trip started briefly in the Grenville province granulites in upstate New York and went on through eastern Quebec, crossed New Brunswick, and into Nova Scotia. The group also attended the Geological Association of Canada and Mineralogical Association of Canada annual meeting in Halifax, where all got a taste of the excitement of Canadian geology and geologists.

The trip began in the Thetford Mines area, where most sections of the ophiolites were examined. Pillow lavas, sheeted dikes, banded gabbros with bedded chromite layers, and dunites and pyroxenites were



Examining chromite and serpentine veins near Thetford Mines, Quebec



Undertaking educational outreach with future geologists on migmatitic rocks on the beach of Long Island Sound are, from left, Mary Scanlan, Kat Hoffman, Martina Morandi, Valerie Feller, Aaron Satkoski, Caitlin Roth (seated), Jeff Bowman, Cory McWilliams, Greg Bratton, and Alicia Rosales. Other cherubs are seated.

observed. The group was actually able to stand on some mantle rocks, foliated in the ductile state while the rocks were behaving as mantle. Alain Tremblay of the University of Quebec was kind enough to lead this part of the trip, on which he also had students from his mapping class.

Cees van Staal then joined the trip and showed the group through more of the Humber zone and also the volcanics, metasediments, oxide and sulfide deposits, and blue schists of the Gander zone's Bathurst Mining Camp in New Brunswick. From there, it was off to Nova Scotia's Maguma terrane, where they saw gold-bearing arsenide deposits in saddle reefs and intrusive relationships with North America's largest pluton, the South Mountain Batholith

After the GACMAC conference, all participated in a formal GACMAC trip through the Avalon and Gander zones of the Antigonish and Cobequid Highlands (Nova Scotia), and the Fundy shores of St. John, New Brunswick, led by Canadian geologists Brendan Murphy, Georgia Pe-Piper, and Sandra Barr. Here, igneous crystallization processes, metamorphic mylonites, and Ordovician, Devonian, Carboniferous, and Triassic angular unconformities were studied. What a tectonically busy place the "merry-times" have been! The trip ended with a visit to very high-grade migmatites on Long Island Sound, where some educational outreach was practiced with the locals (see photo). Overall, this was one of the most successful G420 trips, and students and faculty heartily thank the donors to the department for helping to make this trip possible.



Learning about asbestos



Studying axial plane cleavage are, from left, Mary Scanlan, Alicia Rosales, Greg Bratton, Valerie Feller, Jeff Bowman, Cory McWilliams, Aaron Satkoski, and Kat Hoffman.

Dipping Late Mississippian carbonates, close associates of our own rocks in Indiana



Fording Fundy Bay at low tide

Lunching on pillow basalts



Mars mission a go for IU duo

Indiana University scientists David Bish and Juergen Schieber will work on teams creating separate instruments for NASA's next Mars rover mission, set for 2009–10.

The space agency announced teams Tuesday that will design and build the eight instruments to operate on the rover, called the Mars Science Laboratory. It is the follow-up mission to the twin rovers, Spirit and Opportunity, which continue to explore the Martian surface nearly a year after their successful deployment.

"It's amazing. We have two people from IU helping build separate instruments," Bish said from his office Wednesday afternoon. "We just found out this morning that our team had won (with its proposal), and I was very gratified to learn my IU colleague Juergen Schieber is also involved in a different capacity. I think we're all kind of pinching ourselves, making sure this is really happening. I began working with this team around 1990 with this exact sort of goal in mind, so it's truly a thrill."

Bish, the Haydn Murray Chair of Applied Clay Mineralogy at IU's geology department, is working to design and build an X-ray diffraction device small enough to be successfully carried and operated by the rover. It would supply definitive data to identify minerals on the Martian surface.

"We have a lot of information derived from satellite imagery, which tells us something about the chemistry of the surface, but isn't definitive for identifying minerals," Bish said. "And a lot of people have been interested for a very long time, for very good reasons, about the exact mineral composition. Our problem was that an X-ray diffractometer we use here in a laboratory is equivalent in size to about two normally sized kitchen refrigerators, weighing well over 1,000 pounds. The latest version is one that could be held in one strong hand. We can take it out into the field now, with a power-source battery in a backpack, and run it off a laptop computer."

Bish said his team — including colleagues from Los Alamos National Laboratory, NASA's Ames Research Center and NASA's Jet Propulsion Laboratory — will need to reduce the instrument's size to that of "a Coke can" in time for the mission. The planned rover, likely to be twice as long and three times heavier than the rovers currently on Mars, also should feature a wide-angle camera developed in part by IU associate professor Schieber.

The microscopic camera created by sedimentologist Schieber and Ken Edgett of Malin Space Science Systems of San Diego, Calif., figures to provide images of soil, rocks, and ice with unprecedented high resolution.

NASA notes the mission should provide capacity to search for organic evidence of life on Mars, either past or present.

"It's very exciting," Bish said. "And everybody was very encouraged by the success of the rovers still operating on the surface as we speak. They're like energizer bunnies. Power generation was supposed to decline within a year, due to dust on the solar panels, but hasn't to the degree thought. They just keep going and going. Hopefully, our mission will enjoy similar success."

This article by Andrew Graham appeared in the Dec. 16, 2004, Bloomington Herald-Times and is reprinted with permission. Graham can be reached at 331-4346 or by e-mail at agraham@heraldt.com.



IU a hot spot for Mars research

David Bish and Juergen Schieber, named Tuesday on teams to build separate instruments for a planned 2009 NASA Mars Mission, aren't the only scientists at Indiana University with an interest in Mars. Several IU Bloomington faculty and staff members are doing Mars-related work.

- In 2003, NASA made Bloomington the center of the Indiana-Princeton-Tennessee Astrobiology Institute, directed by IUB Geological Sciences Professor Lisa Pratt. Other IUB members of IPTAI are geologist Edward Ripley, artist Ruth Droppo and University Information Technology Services staff members Douglas Pearson and Michael Jasiak.

- Distinguished Professor of Chemistry Gary Hieftje is helping Pratt develop a life-sensing probe that the scientists plan to test-deploy in the Arctic in 2005. Some version of the probe could be used in a future Mars mission, perhaps dropped into one of Mars's icy poles from an orbiting satellite.

- Carl Bauer, the Clyde Culbertson Professor of Biology, is collaborating with Pratt on "life in extreme environments" research in Oregon. Bauer was also a member of Arizona State University's astrobiology institute from 1997 to 2002.

- Abhijit Basu, chair of the IUB geological sciences department, is a petrologist and sedimentologist who has studied both the moon and Mars. Basu is particularly interested in the geological processes that are likely to have pushed silt, dirt, and mud around the Martian surface.

- Additionally, in 2003, Associate Professor of Geological Sciences Schieber co-authored a paper in the journal *Geology* that suggested the meteorite ALH84001, which crashed in Antarctica but is presumed to have originated on Mars, probably does not contain a fossil of Martian life, as some scientists and life-on-Mars enthusiasts had hoped. Bish also presented his work on X-ray diffractometers to members of the European Space Agency in summer 2004.

— *This article is reprinted with permission from the Dec. 16, 2004, Bloomington Herald-Times. The source for the original article is David Bricker, IU Research & Creative Activity, vol. XXVII, no. 1, fall 2004.*

Lectures and Presentations

Colloquium Series 2004–05

- Aug. 30, **Brian Keith**, Indiana Geological Survey, “Why is there so much Limestone Around Here? — Regional Context for the Geology of Indiana”
- Sept. 13, **David B. Finkelstein**, Indiana University, “Fire and Climate: An Example from the Geological Record and Implications for the Modern”
- Sept. 20, **Steve Guggenheim**, University of Illinois at Chicago, “Clay and Gas Hydrate: Potential Effects relating to Climate, Change, Energy, and Hazards”
- Sept. 24, **Kevin Bohacs**, ExxonMobil, “Slime, Sand, and Shells: Lacustrine Hydrocarbon Play Elements Within a Continental-environment Phase Stability Framework”
- Sept. 27, **Richard Lahann**, Lahann Geoservices, “Compaction, Clay Diagenesis, and Excess Fluid Pressure”
- Oct. 4, **Gary Pavlis**, Indiana University, “Direct Imaging with Broadband Seismic Arrays: New Eyes for Looking into the Earth”
- Oct. 18, **Priscilla P. Nelson**, National Science Foundation, “Rooted in Geosciences — Underground and Infrastructure: Science, Engineering, and Shakespeare”
- Nov. 1, **Chusi Li**, Indiana University, “The Fascinating Stories of Overlooked Mineral Textures: Yours to Discover”
- Nov. 15, **Lisa Pratt**, Indiana University, “If We Encounter Life on Mars, Will We Recognize It?”
- Jan. 24, **Victor Bense**, Indiana University, “The Hydraulic Properties of Faults: Faults as Seals, Faults as Channels”
- Jan. 31, **Liliana Lefticariu**, Indiana University, “Gypsum-anhydrite Transition: A Source of Water During Diagenesis?”
- Feb. 7, **N. Ross Hill**, ChevronTexaco “Seismic Imaging of Complex Geological Structures”
- Feb. 21, **Michael Hamburger**, Indiana University, “Deconstructing Catastrophe: Understanding the Causes and Consequences of the Great Sumatra Earthquake and Tsunami of Dec. 26, 2004”

- Feb. 28, **D. Jeffrey Over**, State University of New York College at Geneseo, “Upper Devonian Mass Extinction and the Frasnian-Famennian Boundary in Eastern North America”
- March 7, **Yifeng Wang**, Sandia National Laboratory, “Geochemical Processes of Solar Systems — Lunar Formation to Death of the Dinosaurs”
- March 21, **Ben Rostron**, University of Alberta, “The IEA Weyburn CO₂ Sequestration Project, Saskatchewan, Canada: Current Status”
- March 28, **Tom Ahrens**, California Institute of Technology, “Collisional Processes of Solar Systems — Lunar Formation to Death of the Dinosaurs”
- April 4, **Grant Garven**, Johns Hopkins University, “Hot Fluids, Sea Floor Hydrogeology, and Formation of the World’s Largest Zinc Deposit at Red Dog, Alaska”
- April 18, **Caleb Schiff**, Indiana University, “Width and Oxygen Composition of Tree Rings as Proxy for Recent Southern Indiana Climate”
- April 25, **Shelly D. Kelly**, Argonne National Laboratory, “Biogeochemical Processes Affecting Uranium in Calcium Carbonate Systems — Atomic-scale Interactions Related to Macroscopic Properties”

Other presentations

- Oct. 6, **Colin C. Harvey**, Geothermal Minerals, Groundwater, and Geomicrobiology Research, “Current Research at the New Zealand Institute of Geological and Nuclear Sciences”
- Oct. 26, **Janice Bishop**, NASA/SETI, “The Surface of Mars: What We Know, and

Learn about lectures in advance — via e-mail!

Would you like to learn about colloquia and other lectures before they happen rather than a year later in the *Hoosier Geologic Record*? Perhaps you live in or near Bloomington and would like to attend our lectures on occasion. Send your e-mail address to tpmiles@indiana.edu, and tell us that you would like to be put on our “This Week in Geological Sciences” mailing list.

How We Are Learning More

- Nov. 29, **David Pace and Joan Middelendorf**, Indiana University, “Decoding Geology: Helping Students to Think as Geologists”
- Dec. 6, **Geology Faculty**, Indiana University, “Breaking the Bottlenecks: Enhancing Student Learning in Introductory Geology Classes”
- Jan. 27, **Ralph Milliken**, Brown University, “Ice-rich Deposits and Climate Change: Evidence for Recent Glacial Periods on Mars”
- Feb. 3, **Brandy Anglen**, Indiana University, “A Summer of Geological Research in the McMurdo Dry Valleys of Antarctica”
- Feb. 7, **N. Ross Hill**, ChevronTexaco, “Gaussian Beam Methods in Seismic Imaging”
- Feb. 24, **J. Robert Dodd**, Indiana University, “Rhinos, Rifts, and Rocks of Tanzania — A Geological Travelog”
- March 8, **Yifeng Wang**, Sandia National Laboratory, “Evaluation of Microbial Activity in Deep Geological Nuclear-Waste Repositories”
- March 21, **Ben Rostron**, University of Alberta, “Geochemistry of Deep Formation Waters in the Williston Basin: New Insights from Isotope and Bromine Data”
- March 29, **Tom Ahrens**, California Institute of Technology, “Shock Compression of Solid and Molten Minerals and the Nature and Evolution of the Earth’s Interior”
- April 22, **Mainak Mookherjee**, University of Michigan, “High-pressure Behavior of Hydrous Phases”



Department of Geological Sciences chair Abhijit Basu, right, presents a certificate of appreciation to Fred Hilterman for his presentation of the 2004 annual lecture in geophysics in memory of Daniel Tudor.

Geologic Field Station Update

Change of guard at the Geologic Field Station

Another era has ended in our beloved and world-renowned Judson Mead Geologic Field Station. After a full decade of holding the helm, Jim Brophy is stepping down from the director's position to return to full-time research and teaching on campus. During these years, Brophy has astutely managed our field program in the face of budget cuts and a national down-trend in enrollment. He has traveled to different schools for recruitment, assigned faculty responsibilities intelligently, and has taken on additional teaching responsibilities on campus. He came to know all ranchers in the area, and they knew him. Times have changed much. When Judson Mead was the director, all ranchers rode horses; now, many drive cattle on motorized four-wheeled mountain bikes. Brophy has seen this change around him. We will sorely miss him but know that his love for the field station will bring him back.

So, how are we coping with this momentous change? We have formed a three-person committee to run the field station until a long-term director is identified and appointed. The committee will consist of

Edward Ripley and Bruce Douglas, who are longtime faculty of the field station. They will be principally responsible for all activities related directly to the academic program, including preparing for the courses in Bloomington. The department chair will chair the committee and will be principally responsible for all that is done from Bloomington during the academic year. This will include recruiting and dissemination of information about the field station, budget management, fund raising, and overseeing

curricular matters as our methods of data gathering evolve. The field station administration will continue to report to the dean of the College of Arts and Sciences and not to the chair.

The legacy of Vitaliano-Lowell-Mead-Suttner-Brophy is not easy to maintain by just one person. Brophy was perhaps the last of the Mohicans to shoulder responsibilities that are now distributed to three. We are grateful to all five, but more immediately to Jim Brophy. Thank you, Jim.

In memoriam

Word was received shortly before the *Hoosier Geologic Record* went to press that Anthony "Gene" Hinton died on Aug. 10. Hinton was resident manager of the Geologic Field Station in Montana for more than 20 years. He is fondly remembered by scores of students, faculty, staff, and their families for the immeasurable ways in which he made their lives at the field station better.

Hinton's death was preceded by the death of his wife, Lois, on Aug. 4 and the death of her 102-year-old mother, Peg Dutton, on Aug. 3. Peg was the spouse of the late Herb Dutton, who was resident manager of the field station in the 1950s and early '60s.

Looking back: *Hoosier Geologic Record* nostalgia unveiled

What was happening in the department nine, 24, and 50 years ago? One way to find out is to search in the archives of past issues of the *Hoosier Geologic*



Record or its predecessor newsletter. By the way, the reason for the nine and 24 years ago is that apparently the *HGR* was not published 10 and 25 years ago.

Nine Years Ago: 1996

- John Hayes was department chair in 1996. This issue of the *HGR* included articles paying tribute to three faculty retirees during the previous year: Don Hattin, Alan Horowitz, and Gary Lane.

- "Charles [Professor Emeritus] and Dorothy Vitaliano were among eight Americans who participated in midsummer 1994 in a two-week seminar on the volcanoes of Kamchatka."

- "Dave Towell completed his latest term on the Bloomington Faculty Council,

where he served as secretary and as a member of the Agenda Committee."

- "Patty Byrum celebrated 11 years at the department last February." [Patty still works in the department as administrative secretary in the chair's office.]

- "George Nevers was installed as president and Malcolm Boyer as vice president [of the advisory board]."

- "The Geology Library continues to grow in size and reputation and now has passed 102,000 volumes, 305,000 maps, and 26,000 microforms."

- "Gary Lane is undertaking the writing of a history of the department. There is a wealth of unpublished materials in the University Archives, which he has begun to assemble."

24 Years Ago: 1981

- Haydn Murray was department chair, and in his note to alumni and friends, he cited the need for more financial support. "We need additional industrial fellowship support and increased alumni contributions to the Geology Department Fund in the

IU Foundation. Our budget is not keeping up with inflation. ..." [That plea could still apply today.]

- "Lee Suttner has been elected vice president of the National Association of Geology Teachers."

- "Dr. George White, retired chairman of the Geology Department of the University of Illinois, has donated an extensive collection of reprints on glaciology and history of geology to the IU Geology Department."

- "Last Oct. 30-31, 19 high-school earth-science teachers and 15 students participated in a high-school earth-science conference sponsored by the Geology Department."

- "[Kase] Klein wins Screwball award!"

- "During the fall semester of 1980, Professor Giani Lombardi of the University of Rome was a visiting professor in the Geology Department. Professor Lombardi taught a course in igneous petrology during his stay in Bloomington."

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Indiana Geological Survey Update

IGS continues leadership in Indiana and beyond

This overview of the activities of the Indiana Geological Survey highlights just a few of the many projects and programs taking place in “the other side of the building.” Visit the IGS Web site at <http://igs.indiana.edu> for more information or to contact staff members.

IGS Exposition 2005

The Indiana Geological Survey hosted a daylong exposition in the Indiana State House on Feb. 17. Through a series of displays and computer demonstrations occupying the entire north atrium of the State House, staff of the IGS demonstrated how their directed research and information and educational outreach activities benefit the quality of life and economic development of Indiana.

Approximately 300 state legislators, state agency heads, and business leaders were invited for an opportunity to meet and discuss with IGS staff how this institution serves the citizens, businesses, and government agencies throughout the state. Among the notables to attend were Gov. Mitch Daniels and the new commissioner of IDEM, Tom Easterly.



IGS coal geologist Maria Mastalerz, left, and director John Steinmetz, center, welcome Gov. Mitch Daniels to the IGS Expo.

HASTI

The IGS again was a strong presence at the 35th annual convention of the Hoosier Association of Science Teachers Inc. at the Indiana Convention Center in Indianapolis Feb. 2-4.

IGS staff conducted three workshops and hosted a booth with a large offering of earth-science instructional materials. The booth provided more than 2,000 Indiana science teachers with the opportunity to obtain Indiana-specific earth-science instructional resources and to learn about Indiana geology from experts.

International forum on industrial minerals

Nelson Shaffer served as the general chair for the 40th International Forum on the Geology of Industrial Minerals, May 2-7, 2004, hosted by the Indiana Geological Survey. Many IGS staff members participated as presenters and field-trip leaders and helped to organize the meeting.

IGS hosts Ground Water Conference

The Indiana Geological Survey hosted the 29th Annual Midwest Ground Water Conference in the fall of 2004. Hydrogeologist Sally Letsinger organized the event with the help of IGS staff.

IGS continues GIS leadership in Indiana

The Indiana Geological Survey co-hosted, along with the Indiana Geographic Information Council, another very successful Indiana GIS conference this year. The conference was held at Union Station in downtown Indianapolis on March 9-10. More than 360 attendees chose from eight concurrent sessions and more than

80 workshops and topic sessions. Indiana Lt. Gov. Becky Skillman, special guest speaker, reiterated the importance of GIS to Indiana's state agencies, local governments, universities, businesses, and homeland security, and spoke on how the new 2005 orthophotography of the state would provide a high-quality, high-resolution base map of Indiana with many unforeseen business opportunities.

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Lt. Gov. Becky Skillman



Geologists from over the world attended the International Forum on the Geology of Industrial Minerals, held at IU and hosted by the Indiana Geological Survey.

Survey update

(continued from page 9)

The IGS, along with Indiana University, will co-host the 2005 Midwest Arc User Group conference Oct. 5–7, in Bloomington, Ind. The conference brings together GIS software users from 14 Midwestern states to share information about innovative uses of geographic information systems.

The IGS received a Special Achievement in Geographic Information Systems Award at the 25th Annual ESRI International User Conference in July. The award is an acknowledgement of our GIS activities, particularly “A GIS Atlas for Indiana,” which is available on the Web.

“A GIS Atlas for Indiana” and its associated tutorial received the 2005 GIS Achievement Award in the category of State and Federal Government from the Indiana Geographic Information Council at the 2005 meeting of the Indiana GIS Initiative.



IGS geochemist advises NRC

Tracy Branam gave a presentation to the National Research Council Committee on Mine Placement of Coal Combustion By-Products and led them on a field trip to a Midwestern mine in March. The title of Branam’s oral presentation was “Summary of Hydrologic and Geochemical Studies at the Midwestern Reclamation Site in Pike County, Indiana.” The NRC committee was formed in response to a request from Congress that the National Academies conduct a study to examine the health, safety, and environmental risks associated with using coal-combustion wastes for reclamation in active and abandoned coal mines.



IGS maps more of state

The STATEMAP Project continues to fund IGS mapping efforts. This year’s award will fund geological mapping of two sub-projects: 1) Glacial Geology of the Muncie Area, and 2) Bedrock and Unconsolidated Geology of the Monroe County Area. The scientists involved from the Environmental Geology and the Coal and Industrial Minerals sections include: Steve Brown, Marni Dickson, Walter Hasenmueller, Christina James, Brian Keith, Jennifer Olejnik, Robin Rupp, and Todd Thompson. The IGS also received notice of an additional grant for the USGS-funded Central Great Lakes Geologic Mapping Coalition. These funds will provide further support for Kevin Spindler’s hydrogeologic modeling research.

Geology in state parks

IGS staffers Barbara Hill, Kimberiy Sowder, and Licia Weber collaborated with staff from Indiana’s State Park system to create several outside displays. The signage they created at Lincoln State Park

explains how coal is formed and gives a historical look at the small coal mine that is located at the park. On Earth Day 2005, Lincoln State Park celebrated the opening of a new trail and display about the strip coal mining that took place there and the subsequent restoration of Weber Lake to a vital environment for wildlife.

Kudos!

Wilfrido Solano-Acosta received this year’s Patton Award, presented by the Indiana Geological Survey and the Department of Geological Sciences, for his proposal titled “Micro-Fracture Patterns of Indiana Coals: Effects of Rank and Tectonic Setting upon Cleat Formation, and Implications for Coalbed Methane Recovery.” The award is presented annually in memory of John B. Patton, former director of the Indiana Geological Survey and head of the Department of Geological Sciences. It is presented to a graduate student undertaking geological research in Indiana. The award of \$1,000 will be used by Solano-Acosta to further his doctoral research.

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Brian Keith, left, presents the annual Patton Award to Wilfrido Solano-Acosta.



New coal mining displays at Lincoln State Park

Abhijit Basu is breaking out from his long-standing moon research into Mars and Earth. Mihaela Glamoclija, a postdoctoral fellow from Belgrade (Serbia) with an Italian PhD, and Basu are comparing geological processes and their products in the moon, Mars, and Earth over the last 4.5 billion years. Basu and Sarbani Patranabis Deb, a visiting fellow from India, are investigating the tectonic implications of the petrology of newly discovered late Proterozoic volcanoclastic sandstones containing primary igneous garnets in a purportedly rift tectonosome. Basu continues to teach his favorite introductory course on meteorites and planets and will teach a Hutton Honors College seminar titled Theory of the Earth. He is still editing books for the Geological Society of America and serving as the chair of the Department of Geological Sciences.

Since joining the faculty as the inaugural Haydn Murray Professor of Applied Clay Mineralogy, **David Bish** has been extraordinarily productive in teaching, research, and national professional activities. Soon after his arrival, he introduced new graduate-level courses in zeolite mineralogy and X-ray diffraction, the latter of which uses the new automated powder diffraction instruments he played a pivotal role in obtaining. He also teaches the clay-mineral-

ogy course that has been part of the department's curriculum for many decades.

As a product of his collaboration since 1991 with scientists at the Los Alamos National Laboratory and the NASA Ames Laboratory, Bish has participated in the design and construction of a miniaturized X-ray diffraction/X-ray fluorescence instrument for planetary exploration. Field-testing of the instrument in Death Valley was successful, leading to the inclusion of the instrument on the payload of the next major mission to Mars (see story on page 6). Also related to his interests in Mars exploration has been Bish's investigation of possible mineral hosts for Martian water, using both experimental and modeling approaches. Data he and his students are collecting will be important in deciphering where water might be contained on the Martian surface and how it might evolve or sorb in day-night cycles. The data also will help to predict the types of hydration and dehydration effects that might be induced when placing samples into the 2009 Mars Science Laboratory. Also closely collaborating with Bish on a variety of studies of Mars mineralogy are scientists from University of Cologne, University of Napoli, the Hebrew University, Southern Illinois and Brown universities, and the University of Florida. To facilitate this collaboration, Bish

spent two months as a visiting scientist at the DLR German Space Agency in Berlin. He continues to work with Haydn Murray on studies of clay minerals under high shear rates to investigate the behavior of clay suspensions under the most demanding of technical applications.

Bish holds the prestigious position of president of the International Natural Zeolite Association. Together, all of his professional activities are leaving little time for him to find new jukeboxes for his collection, but his basement diner is taking shape nicely.

Jim Brophy continues to carry a heavy teaching load at both the 100 and 200 levels. Prior to leaving for Montana for his last year as director of the Judson Mead Geologic Field Station, he will be spending three weeks in Greece with Christine Shriner and Matt Campbell to carry on with the Greek Bronze Age geoarchaeology work, which is now funded by NEH. In August, Brophy will be one of about 30 petrologists in the world invited to a special research conference to honor the retirement of Ian Carmichael from Berkeley. The conference is to be held at Camp Davis, the field station for the University of Michigan, located about 30 miles south of Jackson, Wyo., giving him a first-hand comparative look at their field facility. Brophy also continues to review and evaluate petrologic data collected at Yucca Mountain, the proposed site for nuclear-waste disposal.

Bruce Douglas continues to be involved in a number of ongoing projects with a primary focus on developing an understanding of various deformation mechanisms that are active in the brittle and ductile portions of the lithosphere. A number of field studies are centered in the Western Cordillera. One field study in southwestern Montana is investigating the movement history of a set of faults that have been repeatedly reactivated since Precambrian time. These faults cut both Archean basement, Paleozoic, and Mesozoic cover rocks within the Tobacco Root Mountains and are partially responsible for the development of Tertiary extensional basins in the region. A second, new field study involves the development of similar extensional basins in the Warner Valley region of south-central Oregon. This region has a unique hydrologic regime in which the geometry of the faults and associated fracture sets (classic half-graben geometries with well-developed accommo-

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Survey update

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Agnieszka Drobnik and **Maria Mastalerz** were awarded the Best Poster Award for the World of Coal Ash symposium in Lexington, Ky. The poster was titled "Associations of Mercury in Indiana Coal and Fly Ash; Insights from Sequential Extraction Technique." The international symposium was attended by about 600 scientists and policy-makers.

Rachel Walker successfully defended her dissertation and graduated with a PhD from the Department of Geological Sciences. The title of her dissertation was "Insights into the Coking Behavior of Southern Indiana Coals: Bulk and Individual Maceral Chemistries." Walker has moved on to a job with a commercial coal petrology lab, after being with the Indiana Geological Survey for six years.

Erik Kvale presented an invited talk at the prestigious Goldschmidt Lecture at the Norwegian Geological Survey in Trond-

heim, Norway. The title of his talk was "Tides and Their Implications for Sedimentation Rates, Paleoclimates, Tectonics, and the Human Reproductive Cycle." In presenting the lecture, Kvale joined a long line of international geoscientists who have helped in keeping with Victor Goldschmidt's reputation for communicating geoscientific ideas.

Maria Mastalerz received the Organic Petrology Award at the International Committee for Coal and Organic Petrology meeting last fall in Budapest. This is the first Organic Petrology Award, given "in recognition of outstanding contributions to organic petrology and leadership in promoting the development and applying innovative methodologies to the study of coal." In Mastalerz's receiving the award, the Indiana Geological Survey's reputation as an internationally recognized institute of geological research was notably advanced.

John Rupp is the new assistant director of research, a newly created position.

Faculty notes

(continued from page 11)

dation zones) provide the primary groundwater flow paths. Douglas is working with graduate student Mikki Osterloo (presently completing an internship at Los Alamos National Labs) to use remote sensing techniques to map the tectonic and hydrologic features within an otherwise featureless volcanic bedrock geology.

Douglas is also investigating the rheological properties of the South American lithosphere above a 1,000-kilometer transect of the Chile Trench that includes the Chile Rise triple junction. Studies involve direct observations involving petrographic, geochemical, and rheologic characteristics of mantle xenoliths. Douglas is working with graduate student Allison Moore to use these direct observations as constraints for a finite element model of the coupling and mantle flow forces involved in this subduction zone.

In addition to the research and departmental teaching, Douglas is handling two administrative positions. He is the director of the bachelor of science in environmental science degree program (offered jointly between the College of Arts and Sciences and the School of Public and Environmental Affairs), and he also is the associate director for academics for the Judson Mead Geologic Field Station of Indiana University.

With the department's reduced number of paleontology faculty, **Claudia Johnson** has been the sole provider of courses in paleobiology, teaching a 100-level course on dinosaurs and 500-level courses in paleoecology and paleobiogeography. In addition, she teaches the required course for undergraduate majors in sedimentology and stratigraphy. With generous support from alumni and friends of the department, she has been able to offer four field trips in the latter course.

Johnson is near completion of her NSF-funded project on Oligocene reefs from Puerto Rico. On this study she has been collaborating with Wilson Rameriz of the University of Puerto Rico in section measurement, sample analysis for depositional environment interpretation, and strontium isotope age determinations. She has a number of papers in preparation and in press on a variety of topics related to her research interests on bivalves, Cretaceous warm climates, and oceanographic and climatic fluctuations. Johnson also gave an invited lecture in the Fossil Reef Symposium at the GSA North-Central Section meeting in St. Louis. From 2000 to 2004, she was a Paleontological Society Distinguished Lecturer. In the past year, she was honored with selection as a fellow of the Faculty Learn-

Trees honor Shaver and Horowitz

You may recall that last year's *HGR* included a note announcing our hope of dedicating two ginkgo trees ("living fossils") near the Geology Building to the memory of former IU faculty members Robert Shaver and Alan Horowitz. Thanks to generous contributions from alumni and colleagues, this hope has become a reality. The trees are growing near another ginkgo tree that was previously dedicated in honor of Gary Lane on the occasion of his retirement. Thus, three ginkgo trees across 10th Street from the Geology Building honor these three renowned IU paleontologists. The trees are relatively small now, but we hope they will grow into giants like the scientists they commemorate.

ing Community, which has had significant impact on her ability to communicate results of her research to undergraduates, and has been appointed a senior fellow of the Informatics Research Institute at Indiana University.

Research Scientist **Chusi Li** continues to do a superb job of supervising the electron probe lab, while at the same time assisting in teaching and collaborating with faculty and scientists from outside Indiana University on a vibrant program of research. He is responsible for teaching the operation of the electron probe and assisting students and faculty on their use of the instrument. He has been a co-principal investigator on successful NSF proposals for funding of a variety of other instruments making up the department's first-class analytical facilities.

Funding from NSF supports Li's extensive research on the origin and exploration of Ni-Cu_PGE ore deposits worldwide. Scientists from the American Museum of Natural History in New York and from South Korea and Canada are working with him on this comprehensive study. Last year, Li co-taught at Hong Kong University in China with Ed Ripley a short course on the geology and genesis of magmatic ore deposits.

Enrique Merino continues research on geochemical phenomena such as dolomitization, weathering, and ore genesis. These and others are metasomatic phenomena, whose characteristic spatial expressions such as crystalline replacement textures and zonations can best be understood by taking direct account of their dynamic, or non-equilibrium, nature. Some of this approach has filtered into the geochemistry course Merino teaches for upper-division and graduate students and into invited lectures given last year at Nice, Florence, Aix-en-Provence, Barcelona, Illinois at Chicago, the Jet Propulsion Lab, and the Idaho Goldschmidt Conference.

Greg Olyphant continues his longtime teaching responsibilities in geomorphology and surface water hydrology. In addition, he has recently teamed with Sally Letsinger of the Indiana Geological Survey and associate instructor Adam Davis in creating

a special offering from the joint survey/department's Center for Geospatial Data Analysis on GIS and GPS applications to geology with special emphasis on the geology and hydrogeology of the Griffy Lake Research and Teaching Preserve on the north side of Bloomington.

Olyphant's environmental and ground-and-surface-water research ranges across a broad spectrum. Included are studies of *E. coli*-induced beach closures at the Indiana Dunes State Park and the efficacy of a constructed wetland on reducing the *E. coli* concentrations, the modeling of 3-D variably saturated groundwater flow in glacial aquifers, and nitrate loading of shallow water-table aquifers under agricultural fields receiving fertilizers and manure. Olyphant also is collaborating with Byron Stone of the USGS on studies of the hydrology of glacial terrains, Keith Clay of the IU Department of Biology on abiotic effects of the brood X cicada emergence, and Sally Letsinger of the Indiana Geological Survey on watershed assessment and remediation planning.

With continued population growth, the world is running out of freshwater. This has led some hydrologists, including Indiana University's **Mark Person**, to study unconventional freshwater supplies in offshore settings. As part of an NSF grant to study the Pleistocene Hydrogeology of the Atlantic Continental Shelf, Person drilled a 100-meter bore hole on Nantucket Island in August 2005 to sample unusually fresh pore fluids from pro-glacial lake deposits. The study seeks to understand why large volumes of freshwater were emplaced within shallow confined aquifers as far as 100 kilometers offshore New England and New Jersey during the Pleistocene. Person was accompanied by Andee Marksammer, a new graduate student from Wesleyan College who joined Person's lab this year. Marksammer assisted Person in drilling a 100-meter well to analyze the isotopic composition of pore fluids trapped within 18,000-year-old proglacial lake sediments. Marksammer will also be assisting Person in developing 3-D data sets for a new high-performance groundwater flow model

Person has developed with help from David Dahlstrom and Peng Wang at IU's University Information Technology Services. This groundwater flow and solute transport model will explore the role that Pleistocene sea-level fluctuations and ice sheet meltwaters have had in recharging continental-shelf aquifers during the last two million years. Person is also working with a group of Dutch scientists to submit a proposal to the International Ocean Drilling Program to drill six wells off Martha's Vineyard in water depths between 20 to 100 meters during the summer of 2007.

In January 2005, Person traveled to Berlin to participate in the 95th Dahlem workshop, titled "The Dynamics of Fault Zones." Dahlem Conferences, funded by the German Science Foundation, were es-

tablished in 1974 to promote cooperation between international researchers and to set the agenda for research funding within the European Union. Their goal is to identify areas in which new, interdisciplinary approaches need to be developed in order to resolve controversial issues. A book based on the findings of the conference is due out in 2007 from MIT press. Person, with a group of co-authors, will be contributing a chapter to this book, focusing on the role of fluids in earthquake dynamics.

Person was awarded a grant from the Swiss Herbetta Foundation for Natural Sciences to present a short course on groundwater and geology processes. As part of his three-week visit to the University of Lausanne in December 2005, he will collaborate with students and faculty from the Institute of Mineralogy and Petrology on hydrologic problems associated with contact and regional metamorphism.

Person's first doctoral student at Indiana University, Linda Zhang, will be graduating this June. Zhang was recently awarded the prestigious Turner Postdoctoral Fellowship from the University of Michigan and will travel to Ann Arbor, Mich., in August to begin work with professors Clara Castro and Lynn Walter on geochemical and noble gas studies of groundwaters in sedimentary basins. Zhang was also awarded the Estwing Hammer Prize from the Department of Geological Sciences for outstanding academic achievement this year.

In August 2004, Person welcomed a new Dutch postdoctoral fellow to Indiana University, Victor Bense. Bense and Person will be working on fault permeability issues during the next two years. Bense replaces Person's former postdoc, Yongli Gao, who left IU in July 2004 to accept a tenure-track faculty position at East Tennessee State University in Johnson City.

In addition to continuing to teach his popular 400-level course in economic geology and co-teaching with Lisa Pratt isotopic geochemistry, Ed Ripley resurrected and completely revised the senior-level optical mineralogy course, which has not been offered for at least a decade. The new version of this course has an expanded treatment of petrology, including study of a sequence of rocks from the area around the Judson Mead Geologic Field Station in Montana.

Major research funding from NSF, ORNL, NASA, and the China Research Grants Council permits Ripley to pursue a topically and geographically diverse array of studies. Among them are stable isotope examinations of the Voisey's Bay Cu-Ni-Co deposit in Labrador, Canada; Cu-Ni sulfide deposits on Duke Island, Alaska; and the Jinchuan Ni-Cu deposit in western China. He is also studying the petrogenetic controls on the Fe-Ti-V oxide deposits associated with the Permian Emeishan flood basaltic magmatism in southwest China and

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Nostalgia

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50 Years Ago: 1955

- Charles Deiss was chair in 1955. This newsletter included photos of those faculty attending the AAPG meetings in New York City and of the Indiana Geological Survey staff. Many of the people in those 50-year-old photos are still with us, including Lou Miller, Charlie Miller, Haydn Murray, Dan Sullivan, Maurice Biggs, Bob Blakely, Bill Moran, Charles Weir, Stan Keller, and Mary-Beth Fox.

- Graduate assistants in 1955 included Bruce Bohor, Malcolm Boyce, James Koenig, Victor Koskinen, Richard Larson, George Moore, Rosalia Rey, and Lawrence Rooney. Research assistants were Wayne Fowler, James Noel, Irwin Parrish, Paul Raymond, and Charles Reynolds. Fellows were Jack Harrison, Alan Horowitz, and Joseph St. Jean.

- Alan Wilson, senior lecturer in petrology at the University of Western Australia, was a visiting professor while Charles Vitaliano was on sabbatical leave in New Zealand.

- The department was involved with producing an educational movie titled *The State Beneath Us*. "[The movie] ... tells the work of the Indiana Geological Survey and presents a general review of the geology of Indiana. [It] is nearly completed after a year of work. The picture is in color and sound and runs approximately 20 minutes." [Do you suppose a copy of that movie still exists?]

- "The summer field camp was held from June 21 to Aug. 13, 1954. Twenty-six students were enrolled in the course." Four of the students were from other colleges. Staff were Wayne Lowell and Ralph Esary, with Larry Rooney as a graduate assistant.

Department of Geological Sciences faculty, staff

Professors: Abhijit Basu (chair), David Bish, Simon Brassell, James Brophy, Jeremy Dunning, Michael Hamburger, Claudia Johnson, Enrique Merino, Gregory Olyphant, Mark Person, Gary Pavlis, Lisa Pratt, Edward Ripley, Bradley Ritts, Juergen Schieber, Robert Wintsch

Part-time professors: Henk Haitjema (SPEA), Brian Keith (survey), Peter Ortoleva (chemistry), Carl Rexroad (survey), Jeffrey White (SPEA), David Krinsley, Richard Lahann, Sally Letsinger (survey)

Research scientists: Bruce Douglas, Erika Elswick, Kaj Johnson, Chusi Li, Peter Sauer, Arndt Schimmelmann, Christine Shriner

Visiting research scientists and postdoctoral fellows: Victor Bense, Sarbani Patranabis Deb, David Finkelstein, Mihaela Glamoclija, Hiromi Konishi, Richard Lahann, Liliana Leticariu, Craig Moore

Emeriti faculty: Robert Blakely, J. Robert Dodd, John Droste, Donald Hattin, Norman Hester, Erle Kauffman, Noel Krothe, N. Gary Lane, Judson Mead, Hadyn H. Murray, Albert Rudman, Lee J. Suttner, David Towell

Staff: Patty Byrum, administrative secretary; Ken DeHart, computer systems manager; Ruth Droppo, senior office services assistant; Laura Gano, fiscal officer; Cindy Hale, administrative secretary, Geological Field Station; Mary Iverson, student records; Tricia P. Miles, grant monitor/administrative support; DeAnn Reinhart, grant monitor/administrative support; Heather Steele, receptionist/purchasing representative; Terry Stigall, geophysics electronics technician; Steve Studley, manager, mass spectrometry lab

Library: Linda Zellmer, librarian; Linda Stewart, circulation/reserves; Barbara Cox, technical services

Faculty notes

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is co-investigator with Oak Ridge National Lab scientists on a project investigating hydrogen production from naturally occurring iron silicates. Ripley and Lisa Pratt share a nearly \$5 million grant with four other universities and three government labs; the grant funds the Indiana–Princeton–Tennessee Astrobiology Initiative for detection of biosustainable energy and nutrient cycles in the deep subsurface of Earth and Mars.

Ripley's research-related travel has been extensive. He continues fieldwork in Alaska and has given short courses and invited lectures at Laurentian University in Sudbury, the University of Hong Kong and Lanzhou University in China, and at the American Museum of Natural History in New York.

Juergen Schieber is, as he puts it, "bloody busy" on a number of fronts. He and graduate student Remus Lazor organized and led the Great Lakes Section-SEPM field conference in southern Indiana and north-central Kentucky in fall 2004. The conference focused on mud-rocks and was well attended, with more than 60 participants from as far away as Louisiana. The field guide for the conference can be obtained from the Indiana Geological Survey, where it is Open File Study 04-05, titled "Devonian Black Shales of the Eastern U.S.: New Insights into Sedimentology and Stratigraphy from the Subsurface and Outcrops in the Illinois and Appalachian Basins."

This year, Schieber will co-convene a two-day SEPM Research Symposium on mudstone geology for the 2005 AAPG/SEPM meeting in Calgary.

Schieber continues as a member of the editorial board of *Geology* and is also on the team for the 2009 Mars Science Laboratory (see story on page 6). The group will assist in imaging (they hope) lots of sedimentary rocks and will be involved with day-to-day planning/designing of rover operations while it is operating on Mars (i.e., basically, preparing the next day's mission and commands in response to the previous day's findings). Much closer to home, with major support from NSF, Schieber has completed the flume in the basement of the Geology Building and it is now set up for the first series of experiments on the transport of fine-grained sediment. First results of the experiments will be presented at the AAPG/SEPM meeting in Calgary. The Filed Emission SEM — for which Schieber played a major role in securing funding and which is critical to his study of mudrocks — is now fully equipped and functional. The first publication with images taken on



Honored for their years of service to Indiana University are, from left, Patty Byrum (20 years), Ken DeHart (25 years), and Mary Iverson (40 years). Thank you!

the machine is in press. The new SEM gives the department state-of-the-art instrumentation combining EDS, EBSD, Color-CL, and ESEM capabilities on a single machine. Because of the very expensive maintenance contract, scientists from outside the department are encouraged to use the instrument at a modest hourly rate.

Arndt Schimmelmann accepted an invitation to participate in a 10-day research cruise to the Santa Monica and Santa Barbara basins aboard the *R/V New Horizon* last June. The cruise was organized and led by David Valentine of the University of California, Santa Barbara, and Alex Sessions from Caltech. Schimmelmann advised on the collection of sediment samples. Follow-up collaboration is under way with Sessions. Last fall, Schimmelmann spent nearly two weeks in the Department of Earth Sciences, Zhejiang University, Mangzhou, China, where he lectured on hydrogen isotopes in organic fossil material. This is leading to collaboration on a study of stable isotopes in marine sediments from the South China Sea. Locally, Schimmelmann is responsible for teaching and organizing the geology merit-badge program for the Boy Scouts of America Troop 170.

Bob Wintsch has been busy, as usual. His fall G111 class was cancelled, but he did teach his 500-level metamorphic petrology course, including a field trip. In summer 2004, he led the G420 field trip across

the northern New England Appalachians, having guest leaders in the Adirondacks, Vermont, coastal Maine, and Boston. This spring semester, he taught 18 students in the 200-level petrology course, an enrollment the department hopes to see increase, since it is a pathway course for majors. Wintsch just returned from the latest G420 field trip to the Canadian "Merrytimes" (see story on pages 4–5). In between teaching and running field trips, Wintsch serves as undergraduate student adviser and undergraduate curriculum reviser.

Wintsch's collaboration with several geologists and geochronologists of the USGS continues to be strong. His students continue to work on projects that include 40/39 argon dating. Wintsch's latest paper (including John Aleinikoff's U-Pb dating of titanite) just came out in a "Truth and Beauty in Metamorphism" issue of the *Canadian Mineralogist*. He is about to begin an NSF-sponsored, three-year collaboration with Mike Dorais to try to sort out which terrane arrived in New England when and how the crust was thickened.

Wintsch was pleased to be invited to the present several talks this year. In July, Bob Hatcher invited him to the 17th International Basement Tectonic Conference, "4-D Framework of Continental Crust — Integrating Crustal Processes Through Time." In August, Wintsch gave a talk titled "Sources of Fluids and Controls on

Mineral Growth and Dissolution in Fault Zones” at the Gordon Research Conference on Rock Deformation. He followed this up in October with more talks on related subjects at the University of Illinois at Chicago and at Texas A&M University.

The department’s newest faculty member, **Chen Zhu**, hit the teaching ground running, with the introduction of a new 500-level course on geochemical modeling that had a whopping inaugural enrollment of 14 students. The course introduces students to both batch-type geochemical models and mass-transport processes in environmental and geological systems. Zhu also teaches half of the 400-level course on principles of hydrogeology and has assisted in teaching of the introductory geochemistry course.

Zhu’s external research funding supports a number of major projects and two post-doctoral students who are working with him on these projects. The projects include study of silicate reaction kinetics in Arizona and New Mexico aquifers, high-resolution characterization and biogeochemical modeling of uranium and technetium reaction pathways, and experimental studies of mineral dissolution kinetics. He also has funding to do exploratory research on simulation of CO₂-H₂O-brine-mineral interactions. Collaborating with him on these investigations are scientists from Johns Hopkins, the universities of Oklahoma and Minnesota, Oxford University, the Universite Paul Sabatier, the Swiss Federal Institute of Technology, Los Alamos National Lab, and the USGS and EPA. He has been doing fieldwork in the Black Mesa area of Arizona and recently returned from participating in successful field biosimulation experiments at the Oak Ridge National Laboratory. In the past year, Zhu also gave invited lectures in Switzerland and Spain, taught a short course on geochemical modeling at the University of Witwatersrand in South Africa, and was named a visiting collaborative research fellow at the Institute for Study of the Earth’s Interior at Okayama University in Japan.

Emeritus faculty notes

Rosanna and **Bob Blakely** have moved from their home of 42 years in Bloomington’s Park Ridge to the Meadowood Retirement Community. Bob seldom gets into the department now but stays busy with committees at Meadowood and with helping other residents with computer problems. He also teaches computer classes at Bloomington’s Adult Community Center and IU’s Emeriti House.

Bob and Rosanna have a daughter who lives with her husband in Baton Rouge, La., and a grandson in Atlanta. Last Christ-

mas, they visited a granddaughter and her husband in Tomball, Texas, a northern suburb of Houston. There Bob and Rosanna enjoyed Christmas with three great-grandchildren. The timing was good, as a 22-inch record-breaking snowstorm roared into Bloomington the day after they had left for Texas.

Every month, Bob gets together with a lunch bunch including Maurice Biggs, Allan Gutstadt, Judson Mead, Albert Rudman, and Kenny Vance. They discuss advances in geophysics, world events, and their aches, pains, and doctor appointments. From time to time, Bob has lunch with Tom Zeller, who now works at IU’s Computing Center.

The Blakelys recently drove the length of the Mississippi River from its source in Minnesota to the end of the delta in Louisiana, taking 35 mm slides along the way. They took the journey in three segments of about two weeks each. As they have done in the past, they show these slides to groups in Bloomington. That trip worked so well that they are now touring the Ohio River and have about half the length recorded.

One can usually find **Bob Dodd** in the Geology Building on Friday mornings when he helps to organize the weekly geology faculty coffee. Bob occasionally teaches a graduate seminar in carbonate petrology, and this spring, he taught a non-credit, continuing-education course titled Geology for Travelers.

Bob and his wife, Joann, travel extensively. Their most recent foreign trip took them to Tanzania and to the Cape Town region of South Africa. They enjoy sharing their adventures with others with slide shows, from time to time giving brown-bag seminars at the department. Bob and Joann are active in volunteer work at their church and with the local Red Cross chapter. They spend many hours sorting books and records in preparation for the annual used-book sale to benefit the organization. Bob keeps active with running, biking, hiking, growing roses, and birding. Bob is editor of the newsletter for the local Audubon Society chapter. He recently completed the Louisville mini-marathon for something like the 20th time. He and retired physics professor Archie Hendry also recently completed hiking the Knobstone Trail, a 43-mile trail through the wooded hills of southern Indiana.

Often, the first person to come to the office in the Petroleum Section of the Indiana Geological Survey is **John Droste**. His first task is to start brewing the coffee, and he then begins work on his latest project with the thousands of well logs in the IGS files. The survey recently received a collection of well logs from a company that closed

its regional office. John is going through these logs and saving (and marking) logs that are not currently in the survey files. About a year ago, John completed a long-term project of selecting type logs for wells throughout the state. These are especially good and helpful logs that are being digitized and put on the IGS Web site. John has also been studying the Pennsylvanian portion of many well logs. This portion of the log is complex and has not previously been adequately studied.

When John’s eyes begin to tire in the late morning, he goes home, where he and his wife, Mary, are involved in many projects. They are both active in church work, and John retains his interest in the local Boy Scout program. John says he does not go fishing as much as he used to because his knees will not take long periods of sitting in the boat.

Don Hattin has completed work on a biography of wife Marge’s grandfather, and the book has been published by AuthorHouse of Bloomington, Ind. Titled *W. Ferdinand Macy (1852–1901): Painter of New England Landscapes — A Chronicle of His Life, Family, and Artistic Legacy*, the work documents 254 of Macy’s paintings, of which 48 are catalogued as extant. Family archives, newspaper microfilms, courthouse records, library collections, curators, antiques dealers, and relatives are among the many sources of information upon which the book is based. The book is available hardbound, soft cover, and online.

In October 2004, Don and Marge journeyed to southwestern Arkansas, where Don carried out fieldwork on fossils of the Upper Cretaceous. Don continues his activities for the Indiana Railway Museum, where he works on steam-locomotive restoration and serves occasionally as a conductor on the 20-mile round-trip train trips. He is a board member of the Indiana Society of Mayflower Descendants and is chair of the Scholarship Committee for the society.

At 73, **Erle Kauffman** is enjoying retirement and has increased his productivity (more papers, coffee with friends, time to walk around campus at least two miles daily, time to go fishing and hiking in both Indiana and the Rocky Mountain states, more time to relax, etc.). He says it’s wonderful. After having won many major honors during his pre-retirement years, Erle thought he was through receiving honors. However, he was recently awarded a honorary double doctorate by the University of Gottingen, which has the oldest geology department in Europe. Erle says, “I love my research. I come in most days, and I am truly excited about my ‘work.’”

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Haydn Murray awarded honorary doctorate at IU Commencement

Haydn Murray was honored with an honorary doctoral degree at the 2004 Commencement ceremony. The following was taken from the Commencement program.

"About two months ago, I saw him leave the Geology Building at about 8 a.m. with a heavy-ended pick-axe on his shoulder. That day he was going to the field to collect some samples — at the age of 80!" writes Abhijit Basu, Herman B Wells Professor and chair of the Department of Geological Sciences, about his colleague Professor Emeritus Haydn Herbert Murray.

Those who have known Murray in the course of his 50-year association with Indiana University will not be surprised by this anecdote. He is considered one of the world's foremost authorities on applied clay mineralogy, and his accomplishments are legendary internationally.

"In the field of clay mineralogy, he has no peer," says Donald E. Hattin, professor emeritus of geology at IU Bloomington. For more than 50 years, Murray has conducted research and published extensively on the geology, properties, and application of minerals, particularly clay and coal.

"His research has successfully aimed at understanding the fundamental aspects of minerals and then applying these findings to innovative and valuable uses," says long-time colleague William F. Moll. "He coupled his understanding of crystal imperfections and disorder in kaolinite to the flow properties, which led to much-improved coatings of paper. His studies of surface acidity of minerals have led to expanded use

of minerals in polymers. His geochemical work has led to understanding the origins of many important mineral deposits, including bentonite, kaolin, and palygorskite, as well as others."

His expertise in mineral exploration, mining, and processing has made Murray a much sought-after consultant; he has worked in 15 countries on five continents. Murray has held professional posts in the International Clay Minerals Association, the Society of Mining Engineers Foundation, and the American Geological Institute of Professional Geologists, as well as many others.

His numerous professional awards reflect the span of his influence in the field of geology: membership in the Czech National Clay Group, 2000; an honorary doctorate from the Universidad Nacional del Sur, Argentina, 2001; and a Lifetime Achievement Award from the Professional Geologists of Indiana, 2005. He was recently inducted into the National Academy of Engineers, for "important contributions to engineering theory and practice." He is the only IU faculty member ever to have received this honor.

Murray's contributions at IU have been equally illustrious. He received the Distinguished Service Award in 1992, and in 1993, the Thomas Hart Benton Mural Medallion for distinguished service. For many years of service as faculty representative to the Big Ten Conference and the NCAA, he was awarded the 1994 Orwig Medal for Distinguished Service to IU Athletics.

Murray first came to IU in 1951 as an assistant professor of geology. He quickly took

on the goal of establishing a clay-minerals research laboratory for the Indiana Geological Survey. He also taught and mentored the university's first generation of graduate students in the field of clay mineralogy.

After leaving IU in 1957 to pursue a highly successful career in industrial mineralogy, he returned in 1973 as geology department chair, initiating what was to become a decade of outstanding personal accomplishment and academic leadership. Murray's success in securing several crucial faculty positions stimulated research productivity and helped to advance the department's national reputation. "Despite administrative demands," Hattin says, "Haydn developed a world-class clay-minerals research program, attracted large numbers of graduate students, taught a variety of upper-level courses, and published a remarkable number of research papers."

Murray retired from IU in 1994, but he remains an active contributor to research in his field and a visible presence in his department. Two years before his retirement, he successfully funded and established a new departmental Chair in Applied Clay Mineralogy. In addition, many IU doctoral students in the clay-minerals field have been sustained by Grassman Fellowships, created by Murray in association with the Grassman Trust.

"I consider Professor Haydn Murray to be a model for faculty colleagues," say IU President Emeritus John W. Ryan. "[He is] a university citizen who has exhibited the highest qualities of integrity, loyalty, scholarship, and dedication to students."

Faculty notes

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Erle is leader of a team trying to determine why inoceramid bivalves got so large under such terrible living conditions during Santonian (Cretaceous) time. Erle is co-leader with his wife, Claudia Johnson, of a team conducting research on biostratigraphy of the Rudists (Bivalvia) in the Caribbean Province. He is completing a study of mosasaurs (aquatic reptiles) and their secondary prey (ammonites). He is also studying rapid speciation among bivalves at the time of their first appearance in the fossil record and is attempting to determine what controls the rate of evolution. In addition, he is working with co-authors on a study to determine the bivalve and ammonite sequences in the Jurassic of Antarctica. He has nearly completed a study of the Mesozoic stratigraphy and paleontology of Huerfano Park, southern Colorado, result-

ing in a 300-plus-page monograph to be published by the Paleontological Research Institute. Erle has been busy, and in the future, he will continue to be active in the research that he loves so much.

Noel Krothe opened his own consulting company with his son Jason, BS'00, who earned an MS degree in hydrogeology from the University of Texas/Austin. Noel reports that he is really enjoying this partnership, as it gives him a chance to interact with his son on a daily basis. He is still active in research and hopes to be on the PhD committee for Francesca Zucco at the University of Rome. Francesca was Noel's last graduate student. When he has time, Noel's hobbies include golf and fishing. He writes, "Last August, Jason and Joseph and I joined Brant Howard, BA'77, MA'82, for two days of fishing and whitewater boating on the Colorado River, a truly great experience." This August, they are planning a fishing trip to Ennis, Mont.

Gary Lane regularly comes to the department, where he has been helping curate the fossil collections and other samples. At home he enjoys working in the garden and lawn. We look forward to the appearance of surplus vegetables in the department during the summer months. He has had some health problems in recent years but reports that he is doing well with chemotherapy treatments. Gary and his wife, Mary, are regular participants in a physical conditioning program at the local YMCA.

With his wife, Jane, Jud Mead spends his summers in central New Hampshire on Lake Winnepesaukee at the cottage, which they have owned for more than 50 years. Jud frequently comes to department to attend colloquia. He serves as a life honorary member on the Geology Department Advisory Board. Jane attends University Women's Club and Bloomington Garden Club events. Jud and Jane live in a "geological" neigh-

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Faculty notes

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borhood, near the Towells and the Brophys.

The last few years have been filled with honors for **Haydn Murray**. In 2003, he was elected to the National Academy of Engineering. In May 2004, he was awarded an honorary doctor of science degree from Indiana University. Then in November he received the 2004 Alumni Achievement Award from the Department of Geology at the University of Illinois. Haydn is still active in research on applied clay mineralogy and has presented papers at three professional conferences in the last year. He continues his consulting for clay companies in the United States, Brazil, China, and Canada, which keeps him very busy. He plan to complete a book titled "Applied Clay Mineralogy" by the end of 2005.

Juanita and Haydn spend winters in a condo in Bonita Springs, Fla., on a golf course. They recently moved to a condo in Bloomington after selling their house in Inverness Farms where they had lived for many years. Haydn says, "No more yard to mow, leaves to rake, nor pool to maintain."

Al Rudman regularly comes to the department, where he participates in geophysics seminars, is on several master's and doctoral committees, and fills in with teaching when Gary Pavlis or Mike Hamburger are not available. A long-term research project of his involves using synthetic seismograms to understand observed differences between velocities measured by CVL versus measurements from uphole shots.

Al continues to pretend he jogs (15 minutes per mile) while Joan Lauer runs. Al talks Joan into playing duplicate bridge. Visits with the kids, David and Lynn, and the five grandchildren are always a part of their yearly plans. This summer, Al and Joan hope to take a hiking tour in England.

Al admits to his first-ever auto accident — and he wasn't even in the car! While babysitting grandkids in Boulder, he left their van in neutral and watched (in shock) as it rolled into a garbage can. Al says, "Please, no e-mails asking how much a replacement door costs (#\$@#!#!)."

Since retiring, **Lee Suttner** has been involved with fund-raising and development activities for the department and for the Geological Society of America and Desert Research Institute Foundations. He also has developed and has been teaching a one-day workshop on leadership and management skills for academic administrators. His last sabbatical leave permitted him to visit with a number of department chairs here at IU and at other universities to learn more about what does and what does not work in academic administration. Lee has prepared a manual

that is used in the workshop. In addition, he has been trying to learn more about the "real world" of geology through some modest hands-on oil and gas exploration in Nevada.

Lee and his wife, Ginny, have enjoyed far more travel than was possible before they retired, the highlight being a nearly two-week trip to Italy last spring. Their

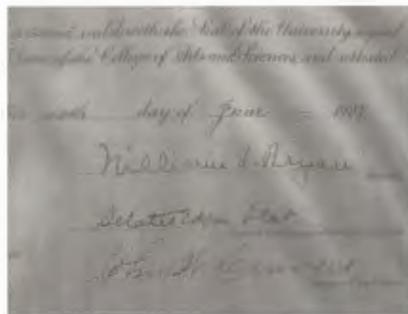
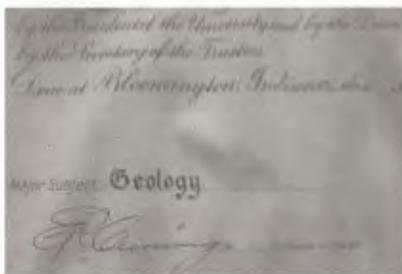
domestic travels over the last few months have been to New England and New York, several trips to Florida, a vacation trip to New Mexico for the balloon festival and to enjoy the fall foliage, and, of course, visits to the central and northern Rocky Mountain states. The New England trip gave Lee

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Nick's — A restaurant in Georgia!

During a March 2005 visit to Covington, Ga., Marge and Don Hattin accompanied Steve Henderson, MA'74, and his wife, Kitty, to a rural eatery called "Nick's — The Indiana Place."

In this establishment, the dining room walls are adorned with dozens of IU posters featuring past achievements of the IU basketball team! Blades of the ceiling fans are decorated with IU decals, bearing witness to the fact that Nick was an ardent IU fan (get it?). A 1927 IU diploma adorning a wall above the cash register bears the name "Gladys Helena Brackmier." Amazingly, she earned a BS degree in geology! She is one of our first, if not *the* first, woman to earn a degree in that subject at IU. Signatures on the diploma include that of her adviser, E.R. Cumings (he coined the terms "bioherm" and "biostrome") and of then-president William Lowe Bryan. Nick was no relation to Brackmier — the framed sheepskin was donated by a patron. Imagine. All of this in rural Georgia, miles from the nearest town!



Don and Marge Hattin join Steve Henderson in visiting the "other" Nick's restaurant, in Covington, Ga. On view at the restaurant is the copy of Gladys Brackmier's diploma, which was awarded in 1927.

Faculty Research Grants (January 2003 through December 2004)

- Basu, A. (NASA) — “Petrologic Evolution of Lunar and Meteorite Parent Body Regolith”
- Bish, D. (NASA) — “Experimental Determination of Low-Temperature, Low-Pressure Thermodynamic and Crystallographic Properties of Potential Marian Hydrous Minerals”
- Hamburger, M. (Inc Res Inst Seismol) — USESM Program Center
- Hamburger, M. (NSF) — Collaborative Research: “Map Tools for EarthScope Science and Education”
- Hamburger, M. (Purdue University) — “Analysis of Seismic Hazard Assessments for Indiana”
- Li, C. (NSF) — “Olivine Geochemistry and Stable Isotope Studies of the Giant Jinchuan Ni-Cu Sulfide Deposit, Western China: Investigation of Ore Genesis in a Magma Conduit”
- Pavlis, G. (NSF) — Collaborative Research: “Imaging Earth Structure with Elastic Waves by Application of the Inverse Scattering Series”
- Pavlis, G. (NSF) — “Crust-Mantle Interactions During Continental Growth and High-Pressure Rock Exhumation at an Oblique Arc-Continent Collision Zone”
- Pavlis, G. (NSF) — Collaborative Research: “St. Elias Erosion/Tectonics Project (STEEP)”
- Pavlis, G. (USGS) — “Structure and Seismicity of the Wabash Valley Seismic Zone”
- Pavlis, G. (NSF) — Collaborative Research: “Imaging Earth Structure with Elastic Waves by Application of the Inverse Scattering Series”
- Pavlis, G. (NSF) — Collaborative Research: “Crust-Mantle Interactions During Continental Growth and High-Pressure Rock Exhumation at an Oblique Arc-Continent Collision Zone: SE Caribbean Margin”
- Person, M. (LANL) — “Determination of Effective Hydrogeological Parameters Using Jurassic Tank Experimental Stratigraphy”
- Person, M. (USGS) — “Hypothermal Fluid Flow and Ore Formation in Great Basin, Nevada”
- Person, M. (NSF) — Collaborative Research: Pleistocene Hydrogeology of the Atlantic Continental Shelf”
- Person, M. (USGS) — “Hydrothermal Fluid Flow and Ore Formation in Great Basin, Nevada”
- Pratt, L. (NASA) — “IPTAI Proposal for Detection of Biosustainable Energy and Nutrient Cycling in the Deep Subsurface of Earth and Mars”
- Ripley, E. (NSF) — “Mineralogic and Isotopic Studies of Cu-Ni Sulfide Mineralization Associated with the Duke Island Ultramafic Complex, Southeastern Alaska”
- Ripley, E. (NSF) — “Technical Support for Stable Isotopic Research Facility (SIRF) at Indiana University”
- Ripley, E. (Oak Ridge Natl Lab) — “Hydrogen Production from Naturally Occurring Iron Silicates”
- Schieber, J. (NSF) — “Acquisition of a New Environmental SEM (ESEM) Optimized for Advanced Microcharacterization of Samples (EDS, EBSD, CL)”
- Schieber, J. (NSF) — “Experimental Mudstone Sedimentology: An Attempt at Reverse Engineering of Natural Processes”
- Schimmelmann, A. (DOE) — “Significance of Isotopically Labile Organic Hydrogen in the Thermal maturation of Source Rocks”
- Shriner, C. (NEH) — “An Explanation for Emergent Complex Society at the Sites of Lerna and Kolonna, Greece”
- Shriner, C. (INST AEGEAN PRE-HISTO) — “The Application of the Integrated Petrologic Approach to the Study of Aeginetan Ware Technology, Production and Exchange”
- Zhu, C. (LANL) — “Silicate Reaction Kinetics in a Major Aquifer in New Mexico”
- Zhu, C. (DOE) — “High-resolution Mineralogical Characterization and Biogeochemical Modeling of Uranium Reduction Pathways at the NABIR Field-Research Center”
- Zhu, C. (UNIV OF PITTSBURGH) — “Exploratory Research on Simulation of CO₂-Brine-Mineral Interactions”
- Zhu, C. (NSF) — Collaborative Research: “Silicate Reactions Kinetics in a Major Groundwater Aquifer”
- Zhu, C. (LANL) — “Silicate Reaction Kinetics in a Major Aquifer in New Mexico”
- Zhu, C. (DOE) — “A Novel Approach to Experimental Studies of Mineral Dissolution Kinetics”

Faculty notes

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and Ginny their first opportunity to see a Red Sox game in Fenway Park. Little did he know at the time that he would attend a Red Sox game later in the fall in St. Louis — the final game of the World Series.

Lee has returned to the Judson Mead Geologic Field Station in Montana for the past several summers to teach geology in the field to two different high-school groups from the Atlanta area. Lee says, what a delight it has been to return to the same field areas I have such wonderful memories of working in while teaching in G429. Lee says he is having more success in improving his ability to grow flowers than in improving his golf game, but both activi-

ties, coupled with a lot of reading, continue to give him great pleasure as hobbies.

Dave Towell has remained quite active even after receiving the shocking news in September 2002 that he had advanced, inoperable, lung cancer. Entering a clinical trial at the IU Medical Center in October 2002 involving standard chemo drugs accompanied by the trial drug angiostatin, he had a phenomenal response, such that he had approximately a 95-percent reduction in tumor sizes. He continued taking angiostatin alone for an additional 15 months. Following another set of different infusions, he had gone seven months without any treatment as of May 2005. With a small amount of tumor growth, he entered another clinical trial in May 2005.

Meanwhile, quality of life has not been

affected for Dave and Lindsay. They continue to travel extensively both with and without their fifth-wheel trailer. The year 2003 included trips to Florida (twice), Tennessee (twice), South Carolina, California, Michigan, Montana, and New York. In 2004 it was Colorado, Nevada, Florida (twice), California, Louisiana, New York, Michigan, Montana, and Tennessee. Trips to Colorado, Puerto Rico, and Florida started off 2005. Dave and Lindsay are happy and thankful that they have been able to continue to travel.

Dave's response to his cancer treatment and his positive attitude throughout the ordeal have been truly amazing. We all wish Dave and Lindsay many more years of happy retirement.

— Lee Suttner

Student News



↓ Student Research Day 2005: Colin Harvey, PhD'80, right, with graduate student Mirela Dumitrescu

↔ Student Research Day 2005: Abhijit Basu and Mary Scanlan discuss Antonio Buono's work on the moon.



Student Research Day 2004: Jayne Sieverding, MS'81, a member of the department's advisory board, judges Remus Lazar's poster presentation.



Student Research Day 2005: Undergraduate Christina Miller points out critical data and interpretations to Mary Scanlan.



Student Research Day 2004: Judging of an oral presentation



Student Research Day 2004: Erle Kauffman, right, listens attentively to Remus Lazar's discussion of sequence stratigraphy of mid-continent shales.

Alumni Notebook

Before 1970

Jack Conley, BS'56, MA'61, "retired" in 1998 following a 40-plus-year career in the petroleum industry. In the petroleum industry, he has served many organizations in capacities including those of geologist, chief geologist, operator, consultant, manager of petroleum operations, and president. In the latter roles, he was president of Professional Petroleum Exploration Inc., of Denver, Colo., from 1964 to 1971, and president from 1971 to the present time of Conley & Associates Inc., of Whittier, Calif. Conley's domestic work has been carried out in 17 states and one Canadian province, embracing the Appalachians, Midwest, Rocky Mountains states, and California, and has entailed the drilling of hundreds of wells. His two companies have drilled, discovered, produced, and sold oil and gas in Ohio, West Virginia, Montana, Colorado, Tennessee, Oklahoma, New York, and Alberta, Canada. From 1987 to

1990, Conley & Associates was under contract to the Philippine government, arranging financing and carrying out drilling projects in the Central Luzon Basin. From 1991 to 1993, as president of Enim Oil Co., Ltd., Jakarta, Indonesia, Conley managed all affairs of the company, ranging from supervision of all professional personnel, to oil and gas production and transmission, permitting and regulatory compliance, health and safety concerns, and company relations with vendors, banks, and several levels of government. This work was carried out in the Harimau Field, South Sumatra. Conley was on site for both the Philippine and Sumatra projects.

Conley and his wife, Rosemary, live in Bloomington, where he continues his professional life as an associate broker with REMAX.

Don Wirth, BS'59, is retired from the Bureau of Land Management but retains a seat on the board of the Montana Bureau of Mines and Geology. He gives occasional geology

lectures to lay people, and again this year will help conduct a trip to the Oregon coast for a class of eighth-graders.

Wirth is an avid traveler, skier, canocist and camper, and he remains a very active volunteer in building trails, cutting and planting thousands of trees, and building benches and shelters along trails on public lands.

Ken Bork, MA'64, PhD'67, retired from the Department of Geology and Geography at Denison University in May 2003, after 38 years of teaching and publishing. Since then, he has been elected secretary general of the International Commission on the History of Geological Sciences for a 2004–08 term. During the 2004 International Geological Congress in Florence, Bork participated in a northern Italy field excursion conducted by Italian members of INHIGEO, and during the summer of 2005, he will attend INHIGEO meetings in Prague, Czech Republic. Bork is also currently on the editorial board of the Geological Society of America's "Rock Star" committee, which oversees publication of the "Rock Star" articles in *GSA Today*.

Larry Woodfork, BS'64, MA'65, former director and state geologist of the West Virginia Geological Survey, is currently an adjunct professor of geology at West Virginia University and at Marshall University. Woodfork is a licensed professional geologist, certified petroleum geologist, certified professional geologist, and consulting geologist who serves on the board of directors of several research and educational foundations. In 2004, he was again appointed a member of the U.S. delegation (eight members) to the 32nd International Geological Congress — International Union of Geological Sciences Council. The IUGS Council has appointed Woodfork to be senior adviser to the

IUGS for the International Year of Planet Earth (2006) and to serve as a member of its newly authorized Commission in Fossil Fuels.

Don Kissling, PhD'67, still lives in Berthoud, Colo., where he continues his consulting practice, Jackalope Geological. During the past few years, Kissling has been involved primarily with regional evaluation of Middle Devonian formations of the Williston Basin. At present, he is occupied with archiving descriptions of 900 Ordovician and Devonian cores. He is also summarizing several years of research on eight reefs of the Florida reef tract that was carried out mainly in the 1960s and 1970s, and he is writing a biography of his father and of his own early years. Kissling is a trout fisherman and camper.

Kissling's wife, Kinga, is office manager for a group medical practice. His oldest child, Katharine, and her family live near Binghamton, N.Y., where she teaches second grade and special education. His second daughter, Rebecca, has completed her postdoctoral work and is now assistant professor of organic chemistry at SUNY Binghamton. The Kisslings' son, Thomas, plans to start college in fall 2005, with a major in forestry. Their daughter, Hannah, is a high-school junior and is a top cadet in junior Army ROTC.

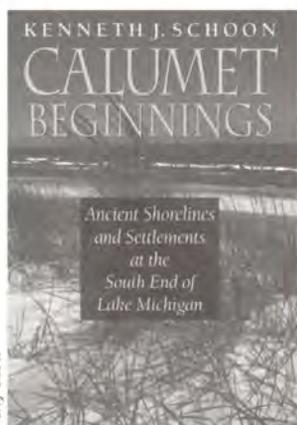
Bob Schwartz, MA'68, PhD'72, is now in his 26th year of teaching at Allegheny College following an earlier eight years of work at a federal coastal research facility. His current research entails study of coastal storm processes and longshore bar evolution along the Lake Michigan shoreline, Tertiary facies of the Madison-Gallatin intermontane basin, Montana, and Kootenai tidal facies in the Great Falls region of Montana.

Schwartz's passion is still whitewater kayaking in the

Schoon publishes book

Kenneth Schoon, BA'68, MS'72, a professor in the School of Education at IU Northwest, is author of the book *Calumet Beginnings: Ancient Shorelines and Settlements at the South End of Lake Michigan*, which was published by IU Press in October 2003. The book relates the early human history of the area to geological forces that created landscapes of the region. "The book is solid scholarship but is designed for a wide non-technical audience."

In addition to his geologic training, Schoon has earned an MS in secondary education from IU and a PhD in curriculum and instruction from Loyola University in Chicago. He has served the School of Education as associate dean. Schoon lives in Munster, Ind.



Pennsylvania/West Virginia region. He and his wife, Marie, live in the country and have three children — two daughters, 13 and 15, and a son, 17.

Chuck Siemers (now known as **Chuck Blay**), MA'68, PhD'71, is coauthor with his son, Robert Siemers, of an updated edition of their book *Kauai's Geologic History*, published in 2004. The book is profusely illustrated with color images, photographs, charts, cross sections, and maps — and embraces the entire Hawaiian and Emperor volcanic chain, with particular emphasis on the physical features of Kauai. The father-son team leads guided nature tours on Kauai and other islands within the state.

1970s

Steve Henderson, BS'70, MA'74, led students from Oxford College, Ga., on a trip to Scotland in June 2004. Henderson's course, titled *Geology and Culture in Scotland*, included fieldwork around Edinburgh and in the islands of Skye, Lewis, and Harris. In March 2005, he co-lead a field trip to Ecuador, where the emphasis was on change in de-

veloping societies. Henderson's research interest centers on the geology of Civil War battlefields, and he is author of a paper on geology of the battle of Chickamanga that is included in the 2004 book *Studies in Military Geography and Geology*, published by Kluwer Academic Publishers, the Netherlands. The paper was presented originally at an International Conference on Military Geology and Geography held at West Point in June 2003.

Stephen G. Wells is 2005 vice president-elect of the Geological Society of America

Stephen G. Wells, BS'71, has been elected as the 2005 vice president of the Geological Society of America and will assume the presidency of the society in the following year. GSA, with more than 18,000 members in more than 85 countries, is the premier professional society for the geosciences and its members from academic and applied professions. Wells has been a member of the society for more than 30 years, during which time he has chaired a number of its committees and been a member of several of its editorial boards. He was also an elected councilor from 2000 to 2003.

Wells, a resident of Reno, Nev., currently is president of the Desert Research Institute, the environmental research arm of the University and Community College System of Nevada. DRI conducts cutting-edge research in land, air, and water quality across Nevada, the United States, and on every continent. The institute has more than 500 employees on its two main campuses in Las Vegas and Reno. It generates more than \$45 million in total annual revenue.

Dave Brumbaugh, MA'72, PhD'73, is on 2004–05 sabbatical leave from Northern Arizona University, where he is currently studying microearthquakes (more than 60) associated with a magnitude 4.6 tremor southwest of Winslow. He is author of a soon-to-be published article on Grand Canyon Earthquakes that will appear in the *Bulletin of the Seismological Society of America*.

Brumbaugh is also busy

with field mapping of a major northern Arizona normal fault, a manuscript that summarizes his thoughts on compressional structures in extensional environments, and maintaining and upgrading the northern Arizona seismic network. He continues work on faulting and earthquakes in Turkey and reports that his book *Earth-*

quakes: Science and Society is doing well. He shares with Don Hattin a love of steam locomotives and sees them in action at Williams, Ariz., during the summer months. **Greg Wahlman**, BA'72, MA'74, has been employed by Amoco (now BP Amoco) for 25 years; until the merger, he worked as paleontologist (there were 85 Amoco paleontologists before the merger) on projects involving Paleozoic foraminifera. During the past couple of years, Wahlman has worked on "carbonate red-strat and petrographic projects in the Aordovician of Oklahoma; the Devonian, Pennsylvanian, and Permian of the Permian Basin region; and the Jurassic-Cretaceous of Mexico."

He has also done short consulting jobs in the Devonian of western Canada, Carboniferous of Alaska, Carboniferous-Permian in Russia, and Miocene of Indonesia.

Wahlman reports that the vice president of his group is sister of Johnny Waters, MA'75, PhD'78.

Michael Ed Hohn, MA'75, PhD'76, is geologist in the West Virginia Geological Survey and adjunct professor in the Department of Geology and Geography at the University of West Virginia. In addition to his professional duties, Hohn is an expert model-railroader and has earned the distinction of Master Model Railroader from the National Model Railroad Association. Prior to receiving

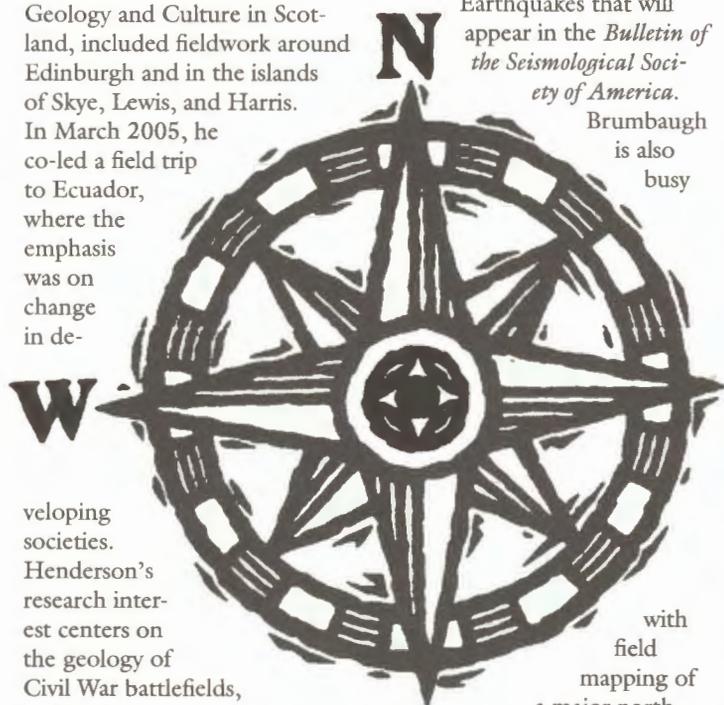
this award, Hohn had earned, among others, achievement certificates in Master Builder-Cars, Master Builder-Structures, and Master Builder-Scenery.

Barry Kues, PhD'75, is nearing completion of 31 years in the University of New Mexico Department of Geology, during several of which he served as chair. Kues comments that "time flies when you're having fun." He continues study of Paleozoic and Cretaceous invertebrate faunas of the Southwest and is working on a long paper that documents the history of geologic studies in New Mexico — "a fascinating project," in his words.

Behtaz Compani-Tabrizi, BS'76, MA'82, has worked in Houston since leaving IU. His first position was with Pennzoil E & P until Devon Energy bought the Oil & Gas part of Pennzoil in 1999. Since then, Devon has made other acquisitions and is now the largest independent oil company in North America. Compani has been "pretty successful finding O & G for the last 23 years, and still at it." Compani reports that two other IU graduates, Steve Smith and Jim Ten Eyck, also work for Devon.

Cal James, PhD'77, is working for the Ohio EPA and is working on a book about military trials of citizens — including one of his ancestors — during the Civil War. He has made two trips to Tennessee to give talks to historical societies.

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Alumni notebook

(continued from page 21)

His wife, Elise Porter, MA'79, PhD'83, works for the Ohio attorney general's office. She is also a Girl Scout leader, Tai Chi participant, and cyclist. Their daughter, Abby, 13, enjoys art and math and is a fast-pitch softball player.

Dave Bottjer, PhD'78, was principal organizer and master of ceremonies for a recent University of Southern California gathering to honor National Academy of Science member Al Fischer and his wife, Winnie. More than 60 friends, colleagues, and students were in attendance, and many who could not attend sent letters of appreciation and thanks.

Bottjer currently is president of the Paleontological Society and is editor in chief of the

journal *Palaeogeography, Palaeoclimatology, and Palaeoecology*.

1980s

Dusty Nicol, MA'80, was promoted to executive vice president and director of Exploration for Queenstake Resources.

Jayne Sieverding, MA'81, is now business development manager for ChevronTexaco's Energy Technology Co., located in Houston. She manages efforts to market ChevronTexaco's technologies and capabilities for acquiring access to new business growth opportunities around the world. However, she says that her more important and time-consuming job is that of Mom, raising her two kids, Johanna, 12, and Eric, 9, with her husband, Peter.

Brooke P. Clements, BS'82, writes, "I live in Vancouver, Canada, with my wife, Juanita,

and son, Jeffrey. I am vice president, exploration, for Ashton Mining of Canada, a company searching the wilds of Canada for diamonds." He can be reached at jbcllements@zoolink.com.

Victoria Warren, BA'82, MS'85, MS'87, is corporate manager of the Hydrogeology Group for Allied Waste Industries, a non-hazardous solid-waste management company representing the second-largest market share in the United States. As manager, she is responsible for environmental compliance and permitting issues for 166 active landfills and more than 100 closed landfills across the United States and Puerto Rico. Additionally, in 2004, Warren assumed management of the Superfund Group for Allied Waste. In this role, she is responsible for risk and liability management for more than 250 CERCLA sites where Allied Waste is a participant.

Bill Nellist, MS'86, reports that during summer 2004, he and his wife, Catherine, traveled to China to bring to America their newly adopted daughter, Fiona. En route to Nanchang, in Jiangxi Province, the Nellists visited Beijing, where they enjoyed seeing the Forbidden City, Tiananmen Square, and the Great Wall. Their final Chinese destination was Guangzhou, where final documents and a physician's appointment were arranged. By Christmas of 2004, Fiona was walking, running, and beginning to talk — English, of course.

Nellist is an avid gardener, adding more soil and plants to their backyard garden. Work at the National Imagery and Mapping Agency continues, but he can't talk about that!

Signe Wurstner, BS'86, MS'89, senior research scientist at the Pacific Northwest National Laboratory, received the prestigious Women of Achievement award from that institution. In April 2004, she was thus recognized for professional accomplishments, personal accomplishments, and community service.

Jessica Elzea-Kogel, MS'87, PhD'90, has accepted a posi-

tion with IMERYS in Sandersville, Ga., where she is responsible for supervising research and development on precipitation of calcium carbonate for use as a pigment in the manufacture of paper.

Robert Pruett, MS'88, PhD'93, has been promoted to technical director of IMERYS in Sandersville, Ga. His duties entail supervision of research and development on kaolin and calcium carbonate. In 2004, Pruett was chair of the Industrial Minerals Division of the Society for Mining, Metallurgy, and Exploration.

M. Ross Vandrey, BS'89, geologist with Enterprise Oil, has been transferred from Aberdeen, Scotland, to Stavanger, Norway. Despite long hours with the company, Vandrey finds time to coach his son's (Nicholas) basketball team and help with Boy Scouts. His wife, Gemini, has joined a biking club and also co-leads their other son's (Damon) Cub Scout Den.

1990s

Penny (Alano) Meighen, BA'90, BS'93, completed an MS in coal petrology at the University of Kentucky in 1997. From July 1998 to October 2004, she served as senior underground geologist with Black Beauty Coal Co. of Evansville, Ind. Meighen began doctoral work in engineering at the University of West Virginia, but she plans transfer to Indiana University to earn a teaching certificate. She is a member of the Women's Mining Coalition, a Washington, D.C., lobbying group, and in 2004 was elected to be president of the Indiana Coal Mining Institute for 2005. Meighen's husband, Mike, is an engineer.

Christopher Carlson, MS 91, PhD 00, recently accepted a newly created position as the national program leader for groundwater for the U.S. Forest Service in Washington, D.C. The Forest Service has been working to establish a groundwater program for several years to complement the programs in geology, mining,



fisheries, surface water, etc., as they have faced more states implementing TMDLs under the Clean Water Act for streams dominated by baseflow, to systematically address applications to develop high-capacity wells on National Forest Lands, to better assess the impacts of coal bed methane production on forests, and to better regulate mining on the forests. His responsibilities will include fleshing out the program, convincing the 10 regions and the dozens of forests and grasslands that groundwater is important to the management of the lands and resources entrusted to the USFS, and providing technical assistance where needed.

Lisa (Rhoades) Goggin, MS'91, PhD'99, is now working in Houston. Her Chev-

ronTexaco deepwater Gulf of Mexico team was moved from New Orleans to Texas in August 2004. Shortly after the move, Goggin requested a transfer to ETC (Chevron's Exploration Technology Co.), and she now works as a "consultant expert" within the company. She is currently assisting with projects in Angola, Nigeria, and the Gulf of Mexico. Goggin is specializing in deepwater (turbidite) deposition and sequence stratigraphy and is one of five corporate "experts" who works with HIREs resistivity log data to describe deepwater deposits. She hasn't had to go overseas yet, and future trips will be for a short duration only.

John Holbrook, PhD'92, has left the geology department at Southeast Missouri State

University and is now professor of geology at the University of Texas at Arlington. In his new position, he will have the opportunity to complete research projects delayed by heavy teaching loads, and also the possibility of mentoring PhD students. He and his wife, Camila, have an 8-year-old son, Zane.

Yifeng Wang, PhD'93, presented two lectures in the IU Department of Geological Sciences this year. For the past 10 years, he has been a geochemist at the Sandia National Laboratory in New Mexico. While visiting the department, he was able to further interact with his PhD adviser, Enrique Merino, who commented on the unusual pleasure it has been for him to have had as a student someone who is now teaching

him (Merino) much more than he ever taught the student.

Maj. Christopher Gellasch, MS'94, has been stationed, until recently, at Grafenwoehr, Germany, where he is commander of the 71st Medical Detachment, but he and his command will be assigned to duty in Afghanistan in April 2005. Gellasch is author of a paper, "Groundwater: Past, Present, and Future Uses in Military Operations," which appeared in the volume *Studies in Military Geology and Geography*, published by Kluwer Academic Publishers, the Netherlands, in 2004. Gellasch and his wife, Amy, are proud parents of a baby son, Brian Christopher, who was born early in December 2004.

(continued on page 24)

IU Department of Geological Sciences Advisory Board



Members of the Department of Geological Sciences Advisory Board 2004 are, from left, front: Laura Gano, Frank D. Pruett, Abhijit Basu, Robert F. Blakely, Glenn B. Hieshima, and Jayne L. Sieverding; back: Robert G. Jones, Tom Herbert, John Steinmetz, John N. Bubb, Michael C. Mound, Mark S. Leonard, Kenneth D. Ridgway, Derek G. Fullerton, and Kenneth R. Vance.

Alumni notebook

(continued from page 23)

Nate Way, MS'94, PhD'98, and his wife, **Cara Davis**, MS'95, PhD'98, are proud parents of a 6-month-old (as of April 2005) daughter, Jasmine Elizabeth. While Davis was on maternity leave, she was made supervisor of her ExxonMobil team. Way, also with ExxonMobil, has been working on a unique team that performs "uncertainty analysis." He is studying the geology of oil fields around the globe in an effort to quantify "impact of uncertainty in new fields to guide development decisions."

Way and Davis continue work on their property on the big island, Hawaii, where construction of a home is in the planning stages.

Huitang Zhou, PhD'96, is president and CEO of Mintech International, a company that is based in Bloomington, Ind. Mintech mines, processes, and sells attapulgite. The Mintech plant is situated in Mingquang, Anhui, China. Mintech also processes muscovite in China for export to the United States

and to Asian countries, including Korea, Japan, Taiwan, and Malaysia, and exports both attapulgite and mica to Australia.

Sujoy Ghose, PhD'97, is a research geophysicist with GX Technology in Houston.

Bill Elliott, MS'98, PhD'02, has received a large NSF grant to buy new laboratory equipment for the geology department at Southern Oregon University. Elliot reports that their small department (three faculty members) has 60 undergraduate majors and that recruitment is fueled by scheduling interviews with top students in each lower-level class. His wife, Sarah, now works half time for International Programs at SOU and also teaches one course in the evenings each term. The Elliots have bought a home within a 20-minute drive of campus. Their yard features many roses and a "giant" sequoia tree! Their daughter, Abigail, is walking, talking, and dancing to music.

Katrina Gobetz, MS'98, received a PhD in vertebrate paleontology from the University of Kansas in August 2004. During summer 2004, she par-

ticipated in the Paleontological Survey of Santa Fe National Forest, based in Cuba Ranger District, N.M. During the fall and winter of 2004-05, Gobetz served as adjunct curator at the New Mexico Museum of Natural History and Science in Albuquerque. She has recently accepted a tenure-track position in the biology department at James Madison University, where she will teach human anatomy and set up a new research laboratory.

Alex J. Krueger, MS'98, a geophysicist for Schlumberger, works on geophysical software development. He lives in Houston.

2000s

Brian C. Howard, BS'00, BA'02, is the managing editor of *E/The Environmental Magazine*. A member of the Appalachian Mountain Club, he spends his free time snowboarding, hiking, camping, mountain biking, canoeing, and kayaking. He lives in Norwalk, Conn., and can be reached at socialpyramid@hotmail.com.

Christian Poppeliers, PhD'01, has been assistant

professor in the Department of Physics at Angelo State University, Angelo, Texas, since fall 2004.

James Van Alstine, MS'02, reports: "After finishing my master's degree, I headed south to Houston to work at Schlumberger in their technology group, Schlumberger Information Solutions. My background has always been in geology, but since joining Schlumberger, I've been masquerading as a geophysicist, supporting and teaching clients on how to use the geophysical applications. I have had the opportunity to work onsite with several of the oil companies here in Houston, as well as travel abroad to teach in places such as Mexico City and Trinidad/Tobago. It's definitely been keeping me busy."

Beth A. Bartel, MS'02, is a geodetic engineer with the UN-IVCO Consortium and is completing her second season "on the ice" in Antarctica. She has completed a number of major research field efforts, including installation and operation of a geophysical monitoring system for Mount Erebus. She lives in Redmond, Wash.

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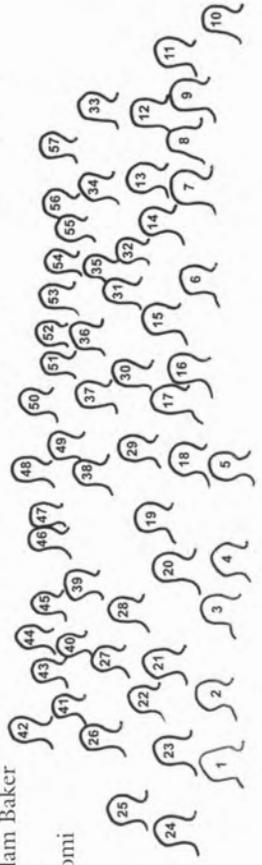
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11. Chusi Li 12. Mirela Dumitrescu 13. Irene Arango 14. Peng Lu 15. Joyashish Thakurta 16. Mark Person 17. Christine Shriner 18. Christine Shriver 19. Al Rudman 20. Stephany Puchalski 21. Ken Dehart 22. Alison Moore 23. Ye Zhang 24. Patty Byrum 25. J. Robert Dodd 26. Adam Baker
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43. Rachel Walker 44. James Boswell 45. Lee Suttner 46. Matthew Campbell 47. Claudia Johnson
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