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HOOSIER GEOLOGIC RECORD

2013-14

Indiana University College of Arts and Sciences Alumni Association

HOOSIER GEOLOGIC RECORD

Alumni Newsmagazine of the Department of Geological Sciences
2013-2014

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HOOSIER GEOLOGIC RECORD

This magazine is published by the Indiana University Alumni Association, in cooperation with the Department of Geological Sciences and the College of Arts and Sciences Alumni Association, to encourage alumni interest in and support for Indiana University. For activities and membership information, call (800) 824-3044 or send e-mail to iualumni@indiana.edu.

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Welcome from the Chair

Major Advancement of Research and Sustained Excellence in Teaching: A Vision for the 21st Century Department of Geological Sciences, Indiana University

A Brief History of the Geological Sciences at Indiana University

From the arrival of Richard Owen, son of New Harmony founder Robert Owen, in 1864, geology at IU has been taught with a practical emphasis using what Owen called "education through the eye". Now 150 years later, we continue to teach theory combined with practice. Nearly all of our undergraduate classes include a laboratory section in which students make observations, take measurements, record data, and develop interpretations. Our faculty lead 8-10 field trips each semester enabling our students to experience both ancient rocks and the modern geological processes that govern them. Between the junior and senior year, we immerse our students in the physically rugged and intellectually challenging environment of Indiana University's Judson Mead Geologic Field Station (IUGFS) in Montana. The IUGFS course has been taught every year since 1949. Over the past five years, a total of 380 students drawn from 110 colleges and universities have completed the IUGFS summer course. Combined excellence in theory and practice is the core of undergraduate teaching, graduate training, and faculty research at IU's Department of Geological Sciences.

The limestone-clad Geology building on 10th Street was completed in 1962, centering the Department's laboratories, classrooms, and offices in a single location that served the needs of faculty and students forty years. With increasing demand for advanced analytical facilities and high-resolution measurements in the 1990's, Geological Sciences was a campus leader in advocating for the Multidisciplinary Science Building II (MSB-II) just across the street from the Geology Building. When MSB-II was completed in 2009, the biogeochemical, the analytical chemistry, and stable isotope research facilities graduated into world-class research space. The 4th floor of MSB-II houses numerous instruments and experimental apparatuses for organic geochemical and hydrochemical research as well as a cleanroom for preparation of geological samples for measurement of metal isotope ratios. The expanded laboratory facilities in MSB-II were key ingredients in recent successful proposals for highly competitive awards from NSF and NASA, including a multi-collector inductively coupled plasma mass spectrometer and two stable-isotope mass spectrometers. In addition to new major instruments, the Department has an electron microprobe, a scanning electron microscope, two X-ray diffraction units, two ion chromatographs, an atomic absorption spectrophotometer, three isotope mass spectrometers, a piston-cylinder pressure apparatus and numerous field meters and data-logging devices. Students in geophysics have access to data from IRIS, which is the most advanced seismic network for monitoring of Earth's dynamic movements, because members of our faculty were among the visionary founding members of this university consortium sponsored by NSF. These facilities, combined with the field resources at the IUGFS, our internationally ranked paleontological research collection, our extensive stratigraphic collection, and our experimental flume labs provide our students and faculty with opportunities to connect the latest advances in technology to the study of geological processes and events from earliest Earth history to the present day, from our home planet to the farthest reaches of the solar system, from fundamental theory to economic practice.

Critical Centers of Activity in Our Department

1 Global Climate and Environment

Global climate and environment are one of the most rapidly expanding areas in geosciences. Research in these areas seeks to understand the character and dynamics of Earth's habitable zone, especially the complex interactions of its biosphere, hydrosphere, atmosphere, and geosphere coupled with human-induced perturbations of these natural systems. It embraces studies of Earth's climate and its connections operating on multiple spatial and temporal scales with the hydrologic and biogeochemical cycles that are influenced by pervasive surficial processes. Knowledge of these systems, especially their drivers and sensitivities to change, is integral to informed use of energy, mineral, water, and land resources and the environmental consequences of human activities. Advances in understanding permit decipherment of paleoclimates and ancient environments through the preservation in the rock record of key parameters that have been verified using evidence from contemporary settings. Current directions include the critical zone that lies at the interface of natural and anthropogenic worlds, complemented by establishing new bridges between different sub-disciplines of the geosciences with a common focus, such as the role of fluids and controls on the movement of dissolved and suspended materials. The future societal emphasis on resources and climate is assured, which heightens the crucial need for further development of our understanding of the dynamics of present-day Earth processes at the surface, augmented by an understanding of past environments, because these insights represent the key to our and Earth's future.

Geological Sciences at Indiana University possesses research expertise that encompasses these domains through studies incorporating observations, analyses, experiments, and modeling that have achieved critical insights of these geologic and biogeochemical pathways and processes ranging from the molecular level exploring chemical reactions, to local- and regional-scale projects examining water and sediment budgets, and ultimately to global dynamics determining atmospheric composition or oceanic temperature.

Our hydrogeology and environmental science (Zhu, Olyphant, Wasylenki), atmospheric science (Barthelmie, Pryor, Kirkpatrick), and biogeochemistry faculty (Brassell, Pratt, Elswick, Sauer, Schimmelmann) give us key strengths in this area, supplemented by our faculty in sedimentary geology (Edmonds, Fosdick, Schieber), geobiology (Johnson, Polly, Njau), and clay mineralogy (Bish). Furthermore, we are making two new hires that round out our atmospheric sciences program. Geological Sciences is poised to be a key player in IU's new Integrated Program in the Environment.

Doug Edmonds
Julie Fosdick
Juergen Schieber

focus: SEDIMENTARY GEOLOGY

Oblique aerial photograph of the Goose River and its delta located in Happy Valley-Goose Bay, Labrador (top panel). Close up view of the Goose River delta show the trapezoidal sand bars that make-up the delta topset (bottom panel). The Goose River and its delta are experiencing ~ 1.5 cm/yr of glacial isostatic rebound, making this a superb location to study the effects of relative sea-level fall on coastal depositional systems. This project is funded by a National Science Foundation grant (OCE 1061380) awarded to Doug Edmonds. Doug joined the IU faculty in 2012 and studies the sedimentology, stratigraphy, and geomorphology of depositional systems. For more information on his research see http://geology.indiana.edu/edmonds/sedSystems/index.html

Doug Edmonds

My research addresses the interactions between crustal deformation, exhumation, and basin evolution in orogenic settings. I am particularly interested in understanding the thermotectonic history of mountain belts during their growth and denudation as recorded in the sedimentary record. In my studies, I draw upon numerous field–based, analytical, and modeling tools that include low–temperature thermochronology, geochronology, basin analysis, structural geology, and numerical modeling. Our ability to understand these processes and evaluate causal relationships hinges on having robust timing constraints. In this regard, my research uses geo–thermochronology as a means to quantify the timing and rates of erosion and sedimentation during orogenesis. Renovations for the new Basin Analysis & Thermochronology Laboratory are underway!

Julie Fosdick

focus:
GEOBIOLOGY/GEOANTHROPOLOGY

Claudia Johnson
Jackson Njau
David Polly

Claudia Johnson continues to investigate the evolutionary paleoecology of reef ecosystems in the Caribbean region. Recently, however, she jumped into modern reefs (literally!) to observe and analyze biological processes of coral recruitment onto empty ecospace. The purpose was to determine ecological successions that developed in the zone of the once-dominant, but now decimated, Acropora palmata to ascertain modern analogs for the Cretaceous. This research continues with students from geological sciences and the School of Public Health's underwater science group. A research trip to Olduvai Gorge in Summer 2013 yielded a surprising number of Plio-Pleistocene freshwater bivalves unidentified and undescribed for the area. Stay tuned for updates! M.S. student Glenn Simonelli's research on a Pennsylvanian marginal marine ecosystem will be published in the Indiana Geological Survey's Occasional Paper Series in 2013. Glenn completed his M.S. in Geological Sciences simultaneous with his doctorate in Science Education.

"Teaching Dinosaurs and Their Relatives to non-science majors continues to bring intellectual enjoyment and challenges as lecture presentations are updated with the latest research on the phylogeny of the big beasts and their ecological relationships. A CITL Writing Program Grant was awarded for the 300-level Natural History of Coral Reefs course to develop and analyze methodology for incorporating writing into the undergraduate science classroom. As can be imagined, students wrote, and I read a LOT of papers during the semester. The course draws students from various disciplines across campus, and is a prerequisite for enrollment in summer session, academic diving and research courses offered in the Caribbean."

Service revolves around graduate education and program development for the College, and undergraduate curriculum assessment for the department. Our new, College-sponsored Center for Biological Research Collections that incorporates IU paleontology, zooarchaeology and herbarium collections holds great promise for further movement of specimens toward research goals, as 3D scanned images and digital data will be available for researchers in the near future. Undergraduates continue to volunteer to work with these valuable pieces of Earth's history.

Claudia Johnson

Excavating a partial skeleton of an extinct hippo species (Hippopotamus gorgops) from two million years old deposits at Olduvai Gorge site in Tanzania. The site, which is situated on the southern part of the East African Rift System has yielded abundant early human and animal fossils and stone artifacts preserved in well-dated Pleistocene stratigraphic sequence. Njau's research focuses on the paleoecological context of hominid evolution. He investigates the history of changing landscapes of the ancient Olduvai basin through taphonomic, paleontological and archaeological analyses.

Jackson Njau

2 *Origin and Evolution of Life*

The National Research Council (NRC) recently highlighted new challenges related to the Origin and Evolution of Life. Among the challenges identified as most pertinent are how biological systems adapt to physical and geochemical conditions during and after transitions in Earth systems, and how biodiversity adapts to greenhouse worlds. The construction of an explanatory narrative of the interactions of Earth's climate, environment, and evolving life was urged. This year the National Science Foundation instituted a new Earth-Life transitions track within the Sedimentary Geology and Paleobiology program to help meet these challenges.

Our strengths leave us poised to address this NSF-prioritized area. Polly's research on vertebrate paleontology focuses on changing climates and geographies in Earth history. His work includes quantitative traitbased studies of community responses to environmental change, geometric morphometric analysis of evolution and morphology, phylogenetics, biogeography, and speciation. Johnson's research on Caribbean reef ecosystems investigates evolutionary processes in the tropics with a focus on biotic replacements of one group by another, an analysis of the rates, magnitudes and processes of the replacements, and in assessing our future reef ecosystem as we move toward a greenhouse state of ocean-climate conditions. Njau's research investigates the origin of humans during the late Cenozoic to the recent time. His work includes investigation on the role of environmental change and ecological pressures to the evolution of early hominins, making use of the unparalleled resource of Olduvai Gorge in the East African Rift Valley, one of the hotspots of human origins. National Academy member Dr. David Dilcher (paleobotany), Twenhofel and R.C. Moore Medal Awardee Dr. Erle G. Kauffman, and Dr. James A. Hopson (biology and anatomy of extinct reptiles and mammals) add prominence and prestige to our activities in evolution. Research in sedimentary geology (Edmonds, Schieber, Fosdick) and geochemistry (Pratt, Schimmelmann, Brassell, Sauer, Elswick), mineralogy (Bish, Brophy, Wintsch) greatly the kinds of questions we can address.

Our collective expertise, combined with the 550 million years' worth of empirical evidence housed in the IU Paleontology Collection and our association with organic, stable isotope, and molecular geochemists place us clearly in the forefront of departments across the nation in the field of Origin and Evolution of Life.

3 Solid Earth Dynamics

In the field of solid Earth geodynamics, we are at the forefront in a new observational revolution—one that takes advantage of great technical breakthroughs in geophysics, petrology, and structural geology—to observe characteristics of Earth structure and dynamics at scales that have never before been possible. The ultimate goal of these studies is a unified physical and chemical theory that can explain both the evolution and deformation of our dynamic planet. This necessarily requires the combined efforts of geophysicists, structural geologists, igneous and metamorphic petrologists, mineralogists and geochemists.

The greatest advances in the near future will undoubtedly rely on those interdisciplinary studies that can integrate observational (i.e., field and analytical data collection and interpretation), theoretical (including analytical and numerical modeling) and experimental work.

Our current faculty strengths emphasize observational aspects of geophysics, petrology, and structural geology (Hamburger, Pavlis and Johnson in seismology, Wintsch, Brophy and Bish in mineralogy/petrology, Wintsch, Johnson, and Douglas in structural geology). The addition of recent faculty hires in sedimentary geology offers the opportunity to link these deep Earth processes with those affecting Earth's surface and its resources and hazards.

This interdisciplinary effort could be strengthened both by the addition of disciplinary expertise in emerging observational areas of geophysics, structure, and petrology (e.g., geochronology, neotectonics, remote sensing, or fluid inclusion geochemistry), as well as new experimental and theoretical approaches that could bridge the traditional gap between geophysics/structure and mineralogy/petrology/ geochemistry. Such areas might include high-performance computing, theoretical or experimental fluid dynamics, theoretical or experimental mineral physics and/or rock mechanics. Addition of strengths in this academic theme offers wide-ranging applications to critical areas of ap lied geoscience, ranging from economic geology and energy resources to environmental geology and hazard mitigation.

Michael Hamburger
Kaj Johnson
Gary Pavlis

focus:
GEOPHYSICS

Seismophotos

On Friday, March 11th, 2011 at 14:45 local time, residents of Japan's Honshu Island experienced the most powerful earthquake in Japan's history, the magnitude 9.0 Tohoku earthquake, which resulted in a massive tsunami and the deaths of over 15,000 people. This devastating natural disaster not only demonstrated the power of Earth's natural processes, but the effect it had both on the thousands of people who would disappear and those who remained. This brief moment in Earth's history has had a lasting effect for the people of Japan, whose landscape has been forever changed.

Photographer Osamu James Nakagawa returned to his native Japan in the aftermath of the "3.11 disaster" and collected striking images of damage incurred by the earthquake and tsunami. Nakagawa turned his camera to the sea, a place where tragedy now found itself embedded in the silent landscape marred with debris, a bridge between life an death. In these images, his intention was not to merely document the devastation but to contemplate the lives of those who vanished on that day in March. However, he found himself unsure of what to do with the photographs he had taken.

Here Nakagawa began his collaboration with geophysicist Michael Hamburger. Photography is a medium that records information and data, producing visual representations of the world around us. The study of earth science creates visual data as well. The goal of this collaboration was to create work that transcended just the presentation of information but became a fully realized artistic endeavor.

As part of this unique collaboration between artist and earth scientist, Michael Hamburger modified the photographs using a number of traditional recording techniques that have been used by seismologists for over a century: smoke-paper and ink-pen recording of current seismic activity on rotating seismograph drums. They also experimented with the manual tracing of specialized engineering recordings from "strong-motion seismographs" positioned close to the location of the photographic images. These techniques produced a new medium, "seismophotos": images that bring together photographic and seismological impressions of dynamic Earth activity. These combined images produce a mysterious, evocative, and sometimes powerful impression of the impacts of Earth activity on human agency and the ways in which we strive to understand and respond to them.

In October, 2013 this installation was part of the Themester exhibition at the Grunwald (Fine Arts) Gallery called "Imag(in)ing Science", bringing together scientists and artists in creative collaboration. There were participants from Biology, Psychology, Medical Sciences, Informatics, Geological Sciences, and Fine Arts.

focus:
ASTROBIOLOGY/BIOGEOCHEMISTRY

Simon Brassell
Lisa Pratt
Peter Sauer
Arndt Schimmelmann
Jeff White

Shallow-Borehole Array for Measuring Greenland Emission of Trace Gases as an Analogue for Methane on Mars (GETGAMM)

Astrobiology Science and Technology for Exploring Planets (ASTEP) Program

On Earth, methane (CH_4) emissions are predominantly derived from thermal cracking of ancient organic matter in the deep subsurface or from microbial methanogenic metabolism in low-salinity aquatic environments such as wetlands and lakes. Detailed study of CH_4 cycling in thermokarst lakes on the ice-free margin of Greenland provides an insightful analog for habitable environments on Mars during climatic intervals when seasonally ice-covered lakes can be expected to form in craters and thermokarst depressions.

The GETGAMM project focuses on seven small lakes (<1 km^2) arrayed over a distance of about 6 km along a narrow valley that is visible on satellite images as a lineament extending from the Russell Glacier to the Søndre Strømfjord in southwestern Greenland. Bedrock at the study site is densely fractured and uplifted on the northern side of the valley reflecting oblique strike-slip on a major fault system with depressions resulting from pull-apart extension. The lake-filled depressions are surrounded by complexly deformed Archaean felsic gneisses interlayered with garnetiferous mafic gneisses, pegmatite lenses, and rare pyroxenites. Given short distance between lakes at the study site, it was anticipated that the physical parameters, microbial ecologies, and methane concentrations would be similar but it is now clear that the lakes have individual distinctive geochemical and microbial signatures. Based on a two-week shoreline campaign in summer 2011, one-week ice-coring campaigns in winter 2012 and 2013, and four-week inflatable-boat and bedrock-drilling campaigns in summer 2012 and 2013, water and sediment samples show marked differences among the lakes in proportions of major ions, pH, conductivity, and CH_4 concentrations.

The GETGAMM project is a collaborative field campaign involving scientists from Indiana University, Princeton University, Honeybee Robotics, Goddard Space Flight Center, and the Jet Propulsion Laboratory. Each group provides a field team, advanced instrumentation, and gas-sampling equipment for two to three weeks of closely coordinated measurements on lake water, lake sediment, soil gas, and atmospheric air in western Greenland during July and August. The Indiana team returns to the study site in March/April to auger and collect samples through the water column at three lakes under ice-covered conditions. Honeybee Robotics drills bedrock boreholes using perforated drill stems that allow repeat sampling of gas in fracture zones bordering the lakes at the study site.

Lisa Pratt, Jeff White

Lisa Pratt and her research group study the chemical signatures associated with life and the metabolic processes used by microbes deep below the Earth's surface and the sulfur cycles important to them.

4 *Mars as an Earth-like Planet*

Mars is a terrestrial planet that is (or has been), in many ways similar to Earth. Mars has had an atmosphere for most of its history, it possessed a geomagnetic field in the past, and it has experienced significant volcanism throughout its history. Plate tectonics was never significant on Mars, in tremendous contrast to the situation on Earth.

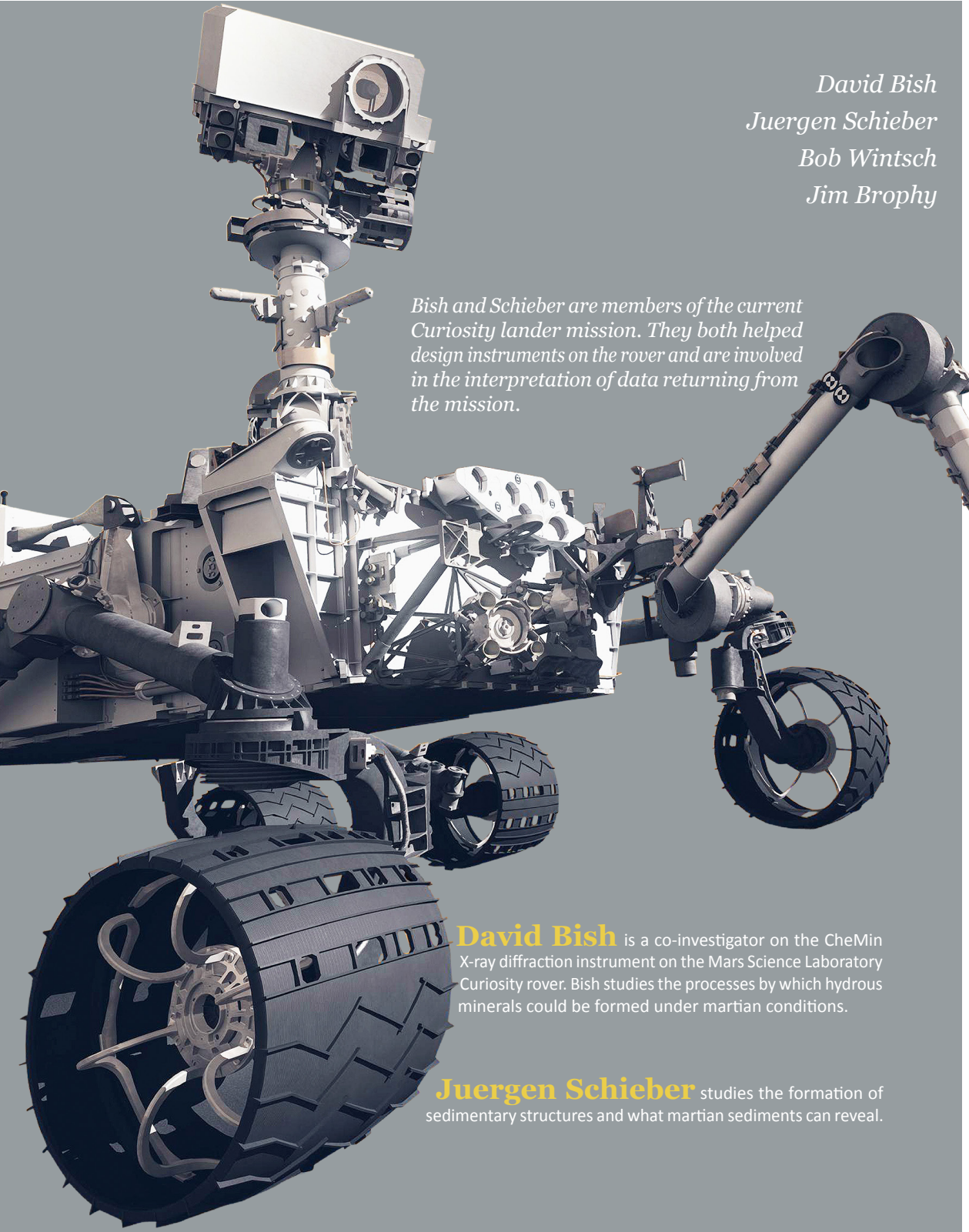
The history of water on Mars is an important focus of research. Alteration minerals on the martian surface suggest the past presence of water, but the timing and mechanism of their formation of these minerals are not constrained. The issue of water is closely tied to the question of whether there was or is life on Mars.

The similarities and differences provide intriguing insights into processes that have shaped the Earth. Was the martian surface altered and shaped in its first billion years, to leave a largely quiescent surface for the remaining 3.5 billion years? Were surface conditions different in the deep past? Has life evolved independently on Mars, and if so is it based on the same metabolic processes we observe on Earth or different ones constrained by the unique chemistry and history of the Red Planet?

Several members of our faculty are engaged in planetary research programs. Pratt and her research group study the chemical signatures associated with life and the metabolic processes used by microbes deep below the Earth's surface and the sulfur cycles important to them. Bish studies the processes by which hydrous minerals could be formed under martian conditions. Schieber studies the formation of sedimentary structures and what martian sediments can reveal. Basu studies the processes and mineral products of Earth, moon, Mars, and meteorites.

Of special note, Pratt directs the NASA Astrobiology Lead Team, and Bish and Schieber are members of the current Curiosity lander mission. Bish and Schieber both helped design instruments on the rover and are involved in the interpretation of data returning from the mission.

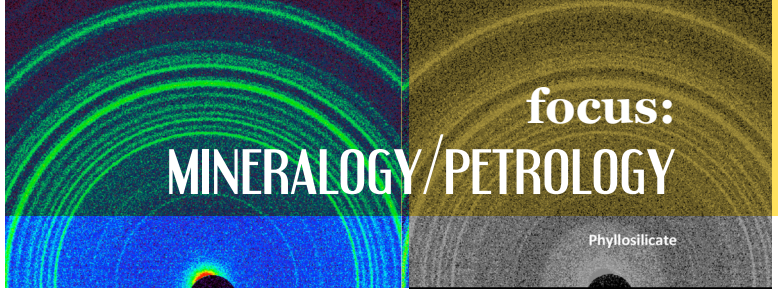
David Bish
Juergen Schieber
Bob Wintsch
Jim Brophy



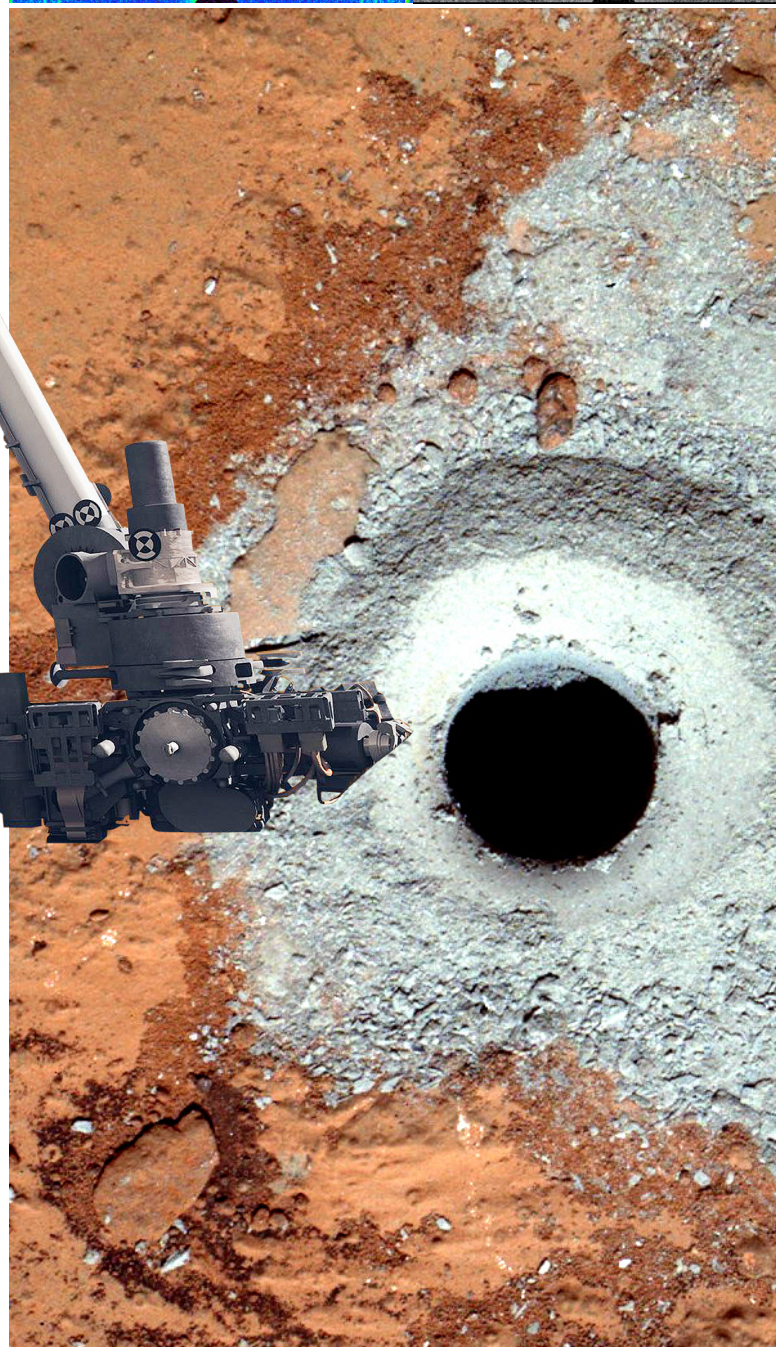
Bish and Schieber are members of the current Curiosity lander mission. They both helped design instruments on the rover and are involved in the interpretation of data returning from the mission.

David Bish is a co-investigator on the CheMin X-ray diffraction instrument on the Mars Science Laboratory Curiosity rover. Bish studies the processes by which hydrous minerals could be formed under martian conditions.

Juergen Schieber studies the formation of sedimentary structures and what martian sediments can reveal.



focus: MINERALOGY/PETROLOGY



focus: ATMOSPHERIC SCIENCE

Sara C. Pryor
Rebecca Barthelmie
Cody Kirkpatrick

In 2013 the Atmospheric Science Program became fully integrated into Geological Sciences. For undergraduates, we offer a B.A. and a B.Sc. in Geological Sciences – Atmospheric Science (http://geology.indiana.edu/education/bs-atmos.html) and for graduate students we offer a M.Sc. (http://geology.indiana.edu/education/ms-geology_atmos.html) and a Ph.D. in Geological Sciences – Atmospheric Science (http://geology.indiana.edu/education/phd-geology_atmos.html).

There is a full range of 16 atmospheric science courses that are open to all students starting with a 100 level Introduction to Atmospheric Science for undergraduates through advanced and graduate courses in climate change, air pollution, hydrometeorology, instrumentation, synoptic and dynamic meteorology, and energy science. For a full list of courses see: http://geology.indiana.edu/courses/index.html.

(Top LR); Craig Smith (Post Doctoral Fellow with Dr. Barthelmie), Raghu Krishna (PhD candidate from ASU), John Wang (PhD student with Dr. Barthelmie), Sara C. Pryor, Rebecca Barthelmie on ield experiment in a wind farm in northern Indiana. The instrument behind the crew is a Doppler scanning lidar.

Left: Sara C. Pryor and Instrument technician Steve Scott deploying instrumentation at a field site in Colorado as part of the BEACHON ("Bio-hydro-atmosphere interactions of Energy, Aerosols, Carbon, H2O, Organics & Nitrogen") experiment.

Right: Up, up and away - the new improved and updated Atmospheric Science Program in Geological Sciences. (The white dots are snowflakes.)

5 *Energy, Resources and Sustainability*

Finding new ways to exploit energy has reached a critical point in the 21st Century, as has the need to exploit them in a sustainable manner. The need for resources, whether they are energy, mineral, water, or soil, will never end, so how do we optimize to reduce negative impacts?

Addressing these questions from the perspective of Geological Sciences requires field measurements, experimental laboratory research, and numerical models (including Earth-System models). With these tools Rebecca Barthelmie and Sara C. Pryor investigate boundary-layer and wind power meteorology, including intercomparison of methods for wind and turbulence profiling, measurements of vertical wind shear, wind veer and turbulence applied to load estimation in large wind farms, quantifying power losses due to wakes in large wind farms, climate change impacts on the renewable energy sector, and application of the WRF model for wind resource and short-term forecasting.

We are addressing the challenges facing humanity: Are there innovative new ways to conceptualize sustainability? Are there new ways to locate and harness resources? We have expertise in a range of topics within energy and resources. Schieber is a leader in shale gas exploitation; the Indiana Geological Survey has expertise in coal and carbon capture and storage; Pryor and Barthelmie in renewables, especially wind turbine and wind farm design; Olyphant, Edmonds and Zhu in water resources; Riply and Li in mineral resources; and Fosdick in the geology of petroleum basins. This diverse, close-knit group of researchers gives us collective expertise in climate-atmosphere-surface interactions with the solid earth. We also have expertise in remote sensing, which is a potential unifying theme around which we can develop unique remote sensing platforms and methods of data analysis focused on the themes of energy, resources and sustainability. The fact that high performance computing is essentially unlimited at Indiana University offers us the competitive possibility to focus more on needs and opportunities in an experimental forum.

6 *Leadership in Field Geoscience*

Our department has long maintained a strong commitment to field-based geoscience investigations and education to achieve a fundamental improvement in our understanding the Earth. This is manifested most forthrightly through the Judson Mead Geologic Field Station and its long tradition of field education and research, but also through the equally long-lived tradition of field excursions, both local, regional, and international that take place multiple times each year. This commitment permeates down to the level of our introductory courses for non-majors that provide field experiences for the students in these courses.

The primary challenge to this philosophy is the increase in the dependence on remote- and instrument -based observations coupled with computational modeling and visualization that have the tendency to minimize the importance of primary observations that come through direct field based observations. Rather than view the rise of this digital component of the geosciences as a competitor to field research, we have chosen to find the means to integrate this into our field-based education and research efforts.

Again, a prime example may be found in the Field Station, which has just completed a new classroom and geotechnology center that will allow for integration of field observations with a wide array of laboratory and digital technology. We are now in a position to couple the renowned geological setting of the Field Station with an ever-widening array of instruments, technologies, and subdisciplines within the geosciences that will expand both the number of faculty members, graduate students, and undergraduate students who integrate a field component into their research or educational components.

With the expansion of our faculty we are able to add a strong international component to field opportunities associated with the Stone Age Institute and the ongoing efforts in the Olduvai Gorge and an association with the National Natural History Museum, Arusha, Tanzania.

focus:
JUDSON MEAD GEOLOGIC FIELD STATION

With the ever-looming increases in the expenses in field-based endeavors, we are looking to continue to expand our efforts with the goal of further establishing ourselves as the premier field-based geoscience department. We are looking for ways to increase the level of technological components that can be integrated with our field efforts, the number of participants who take part in these experiences, and the field localities that are included in our scope of projects and courses. Finally, we are committed to increasing our level of service and outreach to both the professional community and the general public.

This is taking place through the use of the Field Station for professional short courses being taught by the AAPG and individual companies (e.g. ConocoPhilips) and through offering field experiences for high-school students and their teachers. We are also using our associations with university research consortium such as IRIS and UNAVCO as resources for both equipment and expertise to provide to our students at both the undergraduate and graduate level.

focus:
G188 COURSE FIELD TRIP

Volcanoes of the Eastern Sierra Nevada: Geology and Natural History of the Long Valley Caldera

Goals: This course is a two-week long field-oriented short course that will introduce a group of 14 to 18 undergraduate students to the geology and natural history of the eastern Sierra Nevada mountain chain of eastern California. The course will focus on the geological processes and natural history of one of the most geologically and biologically dynamic parts of the continent, as well as the natural hazards and environmental issues facing a unique and environmentally sensitive area of the western U.S. The students will be asked to address the following types of questions:

- What kinds of observational information can be used to understand the evolution of a mountain belt? How do scientists gather such information in the field? How do laboratory or computer analyses contribute to these studies?
- How have global and regional processes (i.e., plate tectonics) contributed to the evolutionary history of western North America?
- How do geologic processes (volcanism, river erosion, glaciation) contribute to evolution of landscape?
- What is the interaction between abiotic (geologic, climatic) processes and the evolution of ecosystems in the Sierra Nevada?
- How has human use of the landscape been affected by geological processes?
- What are the natural hazards associated with an active volcanic belt? How can these hazards be mitigated?
- What are current environmental issues (land-use, energy policy, environmental remediation) specific to the region and how do they relate to geological processes?

The field area. The Sierra Nevada mountain chain spans much of the length of California and marks a major physiographic boundary between the Central Valley of California and the Basin and Range province of Nevada and Utah. The mountain belt is marked by a chain of recently active volcanoes, including the site of one of the great geological cataclysms on our planet-the eruption of the Bishop Tuff and the collapse of Long Valley caldera. The site is recognized as a 'type area' for studying volcanic phenomena, with world-class exposures of an extraordinary variety of glacial, volcanic, and structural assemblages and landforms. Unique ecosystems (alpine meadows and forests, high deserts, alkaline lakes) and cultural heritage (indigenous peoples history, early mining and exploration history) and complex environmental issues (development issues, water use, environmental contamination) offer a wonderfully rich mixture of possible learning experiences.

Faculty. The course is taught by Michael Hamburger, Professor of Geological Sciences, and John Rupp, Indiana Geological Survey, along with an Associate Instructor from the Department of Geological Sciences. Hamburger is an expert on earthquakes, volcanoes, and plate boundary processes. He has conducted field investigations in central Asia, the southwest Pacific, and active volcanoes in the Philippines. At IU, he teaches the popular TOPICS course "Earthquakes and Volcanoes". Rupp is an expert on energy resources, mineral development, and energy policy. The class includes significant contributions from a number of other specialists from Indiana University, the National Park Service, the University of California, Santa Barbara, the U.S. Geological Survey, and the U.S. Forest Service.

7 *Geosciences Library: Transitioning to Electronic Access*

The Geosciences Library, located on the 6th Floor of the Geology Building at IU Bloomington, has evolved a great deal since 1871 when the University acquired the collection of David Dale Owen. The Library has tried to increase user space for small group study yet retain quiet individual research space.

Some of the significant activities during the past few years include:

1. Merger with the Geography and Map Library when it closed December 2009. [Maps moved to Wells but the services and print collections merged with Geology to become the Geosciences Library.] The Geosciences Library retains "geologic" maps plus topo sheets for Indiana and Montana.

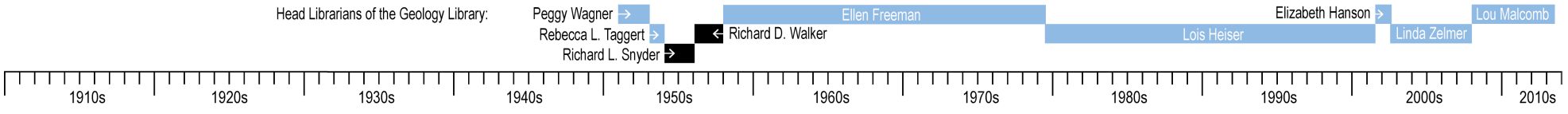
2. Journal subscriptions, except for about 20 titles, now received online with many of the print archives transferred to the University's Auxiliary Library Facility.

3. Increased services through computer workstations to ArcGIS and other applications.

4. Students and faculty have access to electronic resources 24/7 from home or office or laptop including GeoRef, Geoscience World, and extensive journal archives.

5. IUB Dissertations from the earliest times are being digitized by Proquest. Currently we only have online access since 1995.

Visit the Geosciences website at: http://www.libraries.iub.edu/geosci



focus:
CAREERS AND FUNDING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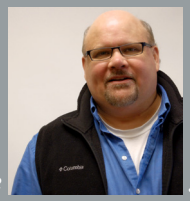
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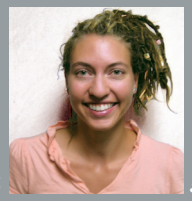
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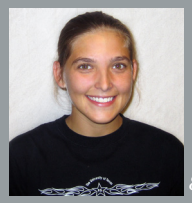
1 Humberto Carvajal (PhD 2013) full-time job accepted with Core Lab
2 Austin Hodge (MS 2013) full-time job accepted with Chevron
3 Greg Nelson (PhD 2013) full-time job accepted with Chevron
4 Will Simmons (MS 2013) full-time job accepted with Chevron
5 Kim Shoemaker (MS 2012) full-time job accepted with Schlumberger
6 Sarah Spencer (MS 2013) full-time job accepted with Chevron
7 Rob Waddle (PhD 2013) full-time job accepted with Chevron
8 Michelle Lawing (PhD 2013) tenure-track position with Texas A&M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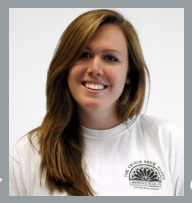
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Careers and Outcomes

Our best undergraduates are sought by the top graduate programs in the U.S. We place 3 or 4 students per year in the most highly competitive programs and about 10 additional students in moderately competitive programs. Our MS students are recruited by the top Ph.D. programs in the US. Conversely, we are able to draw students from top programs into both our MS and PhD programs. Our graduate students are annually recruited by two major and several mid-sized oil companies. Service companies also conduct on-campus interviews each year. During the 2012-2013 academic year, 9 of our students accepted full-time industry positions and 8 students accept internships with petroleum companies.

Research Productivity and Competitive Grants

Research productivity in the Department is strong. Unlike many of our peers, we have not only maintained our presence across the full range of geological sciences, but have recently expanded into atmospheric sciences. We conduct research in fields ranging from paleontology to clay mineralogy, from sedimentology to atmospheric sciences, from environmental geology to industrial exploration. We have an excellent record of research publications. Perhaps one of the best tangible indicators of our broad success in these areas is our grant income, which has brought $23 million into the department in support of research. Most of these awards come from the US National Science Foundation (NSF), grants that are extremely competitive to win. Most NSF programs fund fewer than 10-15% of applications, yet we have won 125 grants in the last decade. On average these awards bring in about $1.25 million to our Department.

8 *Responding to Changing Demands for Geological Science Training*

Across the U.S, numbers of majors in the geological sciences have been rapidly rising. Enrollment in our 100-level undergraduate classes shows the same strong trend at IU. Recently, however, we have seen a decrease in the proportion of women taking the field course in Montana and this shift is observed in national gender patterns. Enrollment in our classes for geology majors turned upward sharply in 2007. From 2007 to 2012, the number of majors in our 300-level classes climbed from about 7 to 27. Based on enrollment in this year's 200-level classes, we anticipate more than 30 students in our 300-level classes next year. This is an exhilarating development but leaves us with serious logistical challenges for delivering laboratory sections and running field trips.

We do not have dedicated classrooms that can accommodate more than 25 students and we compete with other departments for the use of two university-controlled lecture halls that hold 72 and 105 students. We are negotiating with the College to renovate space on the 5th floor for a modern lecture room that can accommodate 40 students.

At the 100-level, we are currently teaching about 1100 students each year and we believe there is potential for increasing this number in response to new general education requirements.

In anticipation of faculty retirements and evolving student demand, we are diversifying our 100-level curriculum while keeping class size at fewer than 110 students in each lecture section. Student demand for Earthquakes and Volcanoes, Dinosaurs and Their Relatives, and Oceans and Our Global Environment now exceeds demand for traditional courses in physical and historical geology. Scheduling our portfolio of 100-level courses is a challenge. Our three newly renovated laboratory classrooms rooms on the 2nd floor of the Geology Building are being utilized every hour of the day and evening from Monday through Thursday. On Fridays and weekends, the teaching labs are used for graduate classes and outreach activities such as Science Olympiad competitions and science education for home-schooled children.

9 Geoscience Staff

Staff members work in a variety of occupations to enhance the presence and function of the Department on campus.

- Ed Bitner: Building Manager for MSBII.
- Pam Christenberry: Contracts and Grants Accounting Associate, responsible for budgets and financial management relating to federal and non-federal grants.
- Ruth Droppo: Graphic Arts, designing and developing web, digital, and printed materials for promotion, meeting, or classroom use.
- Kristie Flanders: Building Assistant for MSBII.
- Donna Hackney: Administrative and Fiscal Officer, overseeing all financial transactions and supervising clerical staff.
- John Hettle: Administrative Secretary, the department scheduling officer, payroll, correspondence, and calendars.
- Mary Iverson: Graduate Secretary, managing all graduate admissions and student records, including appointments and scholarships.
- Erica Kendall: Purchasing representative, managing travel, purchasing, and many of the day-to-day details.
- Karla Lewis: IU Geologic Field Station Accounting Associate and Alumni Development coordinator.
- Tim Ryder: Information Technology manager, and John Walker, IT assistant.
- Terry Stigall: Geophysics Electronics Technician, provides geophysics equipment and field support.
- Mark Toensing: IU Geologic Field Station Resident Manager.
- Ben Underwood: Laboratory Manager for the SIRF lab in MSBII.

focus:

THE MARY IVERSON GRADUATE FELLOWSHIP

In our fast-paced world, the presence of a knowledgeable and caring staff member is an extraordinary departmental resource. Mary Iverson has taken the time and made the extra effort to solve complex problems related to the course enrollment and financial support of our graduate students for nearly 50 years. Her reassuring demeanor and unpretentious manner provided a sense of well-being and comfort to any student experiencing a crisis.

On her retirement in December 2013, Geological Sciences at Indiana University celebrates Mary Iverson's extraordinary impact on the department with the establishment of the Mary Iverson Graduate Fellowship. We have a goal of raising $150,000 to support graduate fellowships for students who are pursuing an M.S. or Ph.D. in Geological Sciences and need an additional semester of support to finish writing their thesis or dissertation.

If you would like to contribute to the Mary Iverson Graduate Fellowship in Geological Science (Account number 37AS17301), you may do so by sending your check to the Indiana University Foundation, P O Box 500, Bloomington, IN 47402. Please write the name of the account or the account number in the note section of your check.

Or, you may navigate to the IUF online donation page and simply enter the account name (Mary Iverson Graduate Fellowship in Geological Science) or account number (37AS17301) on this page, make a gift by credit card, and the gift administration folks will get it directed to the right fund.

focus:
BENEFACTORS 2011-2013

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Thomas Zeller and Mary Rothert
Evan R. Zeller

focus: BENEFACTORS 2011-2013

10 *Development Activities and Status of Foundation Accounts*

A substantial endowment (about $8.5 million) from our alumni enables our department us to provide top-up awards of $1000 per year for every graduate student holding a teaching assistantship. The endowments funds additionally provide five first-year recruiting fellowships ($15-18k) and summer research funds for travel and laboratory expenses related to thesis and dissertation projects ($0.5-2.5k).

We raised more than $3 million dollars in a successful endowment campaign entitled “Excellence in Field Geoscience” that were matched by College dollars for construction and maintenance of new buildings and for instruments to enhance the IUGFS.

Although the Excellence campaign tapped donors who had no prior record of giving to Indiana University, many faithful Departmental donors redirected gifts to the fieldstation campaign. Consequently, our primary unrestricted endowment account has dropped from $540k in 2007 to less than $50k in 2013. We use this account to provide the top-up salaries of teaching assistants and summer research funds for graduate students. We also use this account to maintain and service our instruments. During the past year, the department spent about $47K for replacement of instruments and specimens used in undergraduate and graduate teaching. The College provided $21.5K and the Department endowment provided $25.5K for these critical instructional needs. Furthermore, the College provided about $44K and the Department provided about $22.7K for field trips over the past year.

It appears that we no longer have a sustainable endowment for replacement of major instruments like microscopes and we will not be able to support summer research and meeting travel for graduate students next year. Revenue from our principal-protected foundation accounts will allow us to sustain the recruiting fellowships and the $1,000 top-up awards for teaching assistants for some years to come.

DEPARTMENT OF GEOLOGICAL SCIENCES 50/25/10 YEARS AGO

1963

The 1963 issue of the Geology Department Newsletter announced the death of Jesse James Galloway, long-time faculty member and the first Ph.D. recipient of the department in 1913. J. J. had a long, illustrious career as one of the foremost experts in the world in the study of fossil foraminifera and later in his career stromatoporoids.

The 1963 issue also announced the establishment of the Deiss Memorial Fund to support scholarships to the I.U. Geological Field Station. The first recipients of these scholarships were Edward Berg and Gerald Johnson. Charles Deiss was chairman of the Geology Department from 1945 to 1959. The department underwent a period of rapid expansion under his chairmanship.

The faculty lounge, the Owen Memorial Room, was dedicated in 1963. Funding for furnishing the room came from Kenneth Owen, a consulting geologist living in Houston, Texas. He was a descendent of the famous Owen family of New Harmony. The room was "furnished and personally decorated as a faculty lounge and departmental reception room" by the Owen family. It was decorated in an early American theme as would be found in a better home in New Harmony in the early 1800's.

The 1963 newsletter announced the addition of Allen Agnew to the geology faculty to establish a new program in hydrogeology. Paul Potter also joined the faculty that year.

1988

The 1988 HGR noted the addition of Vishnu Ranganathan and Bruce Douglas to the geology faculty and a note on the retirement of Professor Bob Shaver at the end of 1987. Also included was an obituary for long-time department chair and state geologist John Patton, who died on September 19, 1988. The department established the Patton Library Fund to honor John. Contributions to the fund were to be used to purchase books as opposed to serials.

Several student awards were listed including Sam Nieman, senior faculty award; Ross Vandrey, junior award; Signe Wurstner and Robert Pruett, outstanding AI awards. Mark Brown was honored as an outstanding graduate student with the Estwing award. A Graduate School Alumni Association award went to William Swanson.

Several faculty members also received special recognition. Lee Suttner received the Neil Minor award from the National Association of Geology Teachers, the highest honor given by NAGT. Don Hattin received an IU Alumni Association teaching award and John Droste received an outstanding teaching award from the School of Continuing Studies. Jim Brophy was the first recipient of an award from the Bloomington chapter of SGE in recognition of excellence and commitment to education.

A concern emphasized in this issue was a library budget that was not increasing as fast as the cost of journals. Most of the budget was used for journal subscriptions leaving little to purchase monographs. Tough decisions were being made on cancelling subscriptions to lesser-used journals.

The limestone benches that still stand in the lobby were dedicated this year. The Geological Survey announced construction of a new sample preparation facility northwest of the geology building.

The 40th anniversary of the field station was celebrated. The newsletter included a note about the early days of the station when it was led by Charles Deiss and Charles Vitaliano.

2003

This issue of HGR includes a tribute to David Towell, previous editor of the HGR, who expanded the departmental newsletter from a few photocopied pages to the "Newsmagazine" it later became.

Student award winners in 2003 included Aaron Wood, Faculty Scholarship (senior) award; J. Brian Balta, Junior Award and Deiss Award; Eric Cercone, N. Gary Lane Beginning Geologist Award; Rachel I. Walker, Estwing Award; Erik Boice and Russell F. House, Outstanding AI Awards; and Ernest Johnson, Departmental Citizenship Award.

After a period of inactivity the local (Rho) chapter of SGE reactivated and sponsored a number of activities including the third annual DOGS Daze. Officers included Sarah Pietraszek-Mattner, president; Aaron Wood, vice president; Sonya Hernandez, secretary-treasurer; and John Johnston, corresponding secretary.

John Bubb was the 2002 recipient of the Richard Owen Award.

Juergen Schieber and David Bish were introduced as new faculty members.

The John Barratt Patton Conference Room (affectionately know as the elephant room) was dedicated.

Dick Gibson was resident manager of the Judson Mead Geological Field Station as well as webmaster for the departmental website.

Professor Erle Kauffman celebrated his retirement on May 18.

Ken Dehart joined the department as our computer systems manager.

Erle G. Kauffman

I wish you all well, happiness, and success with your varied endeavors! I hope you have all had as successful a year as mine.

In research I've had a banner year: papers published (Kauffman, E.G. & Sawdo, J.K. 2013: Mosasaur predation on a nautiloid from the Maastrichtian Pierre Shale, Central Colorado, Western Interior Basin, United States. Lethaia, Vol. 46, pp. 180–187) and have the following papers approved or submitted for publication: Kauffman, E.G. in press, including my "opus grande", a study of a paleoecotone in Huerfano Park Region, South-Central Colorado. An ecotone is a paleobiogeographic region where two faunal provinces overlap. 623 Ms. pp. 47 pls. submitted to the Paleontologic Research Institute for publication in Bulletins of American Paleontology.

Kauffman, E.G., Imlay, R.W., and Laudon, T. Dominant Jurassic Mollusca from the Lassiter and Orville Coasts, South Antarctica. Submitted to Palaeontology. 110 manuscript pp., 10 pls., 15 figs.

I've got a lot more planned. I have hooked up with a colleague to study the Cenomanian-Turonian boundary (clams, of course) from two separate systematic points of view.

I am also co-authoring a book with my wife (Dr. Claudia C. Johnson) on the Ecology of the Rocky Mountains. This will be a picture book, utilizing approximately 100 of my best color photographs (blown up to page size) of the landscape changing ecology, and mountains. We will do, from the pictures, vegetative zonation from the streamside to the highest peak, and mention the animal life characteristic of each zone.

I've had a good year in addition to research (my "favorite hobby"), hiking, watching good TV, and tooling around the country with my wife, Claudia. She has been to the Caribbean and Central Africa (Mary Leakey's camp). I, being lame from the massive stroke, stayed home, kept the home fires burning and the bears away, and got a lot of research done. I couldn't wait until her return, and a bright new day.

I, and Claudia, wish you well and hope you are enjoying life.

EMERITI/NOTES

Lee Suttner

Termination of my Department responsibilities for fund raising and development, alumni relationships, and teaching at the Geologic Field Station has freed up my retirement time to pursue experiences on my bucket list. A recent highlight was leading, along with my wife, Ginny, a group of Department and Field Station alumni -- Susie Vuke, Mark Leonard, Tom Fertal, Brian Towell, Mike Hayes, Joel Degenstein, and Bill Schafer, on a boat trip down the Missouri River and hike into Mann Gulch in the Gates of the Mountains area northeast of Helena Montana. On August 5, 1949, exactly 64 years prior to the day we visited Mann Gulch, a wildfire overran 16 firefighters on the north slope of the Gulch. Only three survived. The others were unable to win a race to get over the ridge that would have insured their survival and perished in the flames of the fire racing upslope behind them, pushed by westerly winds blowing up from the Missouri River. Memorials on the hillside mark the exact location where each of the firefighter's bodies was recovered. The tragedy was the subject of Norman Maclean's 1992 award-winning book, "Young Men and Fire." Ever since reading the book I had been eager to make what became a most emotional and spiritual hike up the ridge to reflect at each of the memorials, and to honor with my thoughts those who sacrificed their lives in service to our country. To be able to do so with alumni of the Department and Field Station was a most memorable and wonderful experience.

Enrique Merino

When I retired I had already started work on dolomitization dynamics with À. Canals (Barcelona), on the genesis of Precambrian banded iron formations with first author and former student Yifeng Wang, and on the joint genesis of terra rossa/bauxite and karst with then-current student Amlan Banerjee. I didn't know what would happen to those three projects. By now, I'm happy to report, all three have yielded major contributions, published between 2008 and 2012, which propose new models that question geochemical conventional wisdom. The basic new insight is that it is essential to integrate petrographic evidence with quantitative modeling. (Geochemists have not done that.) Invitations to explain the new view have come from Wisconsin (to see the Roundtree terra rossa there), from Barcelona (to give a set of invited lectures on geochemical dynamics), and from Israel (to help understand how the unusual case of self-metamorphism at Hatrurim took place). Independently, my wife and I have travelled to Madrid for her to direct IU's year-abroad program in 2007-2008; to Egypt 3 years ago to visit our son Miguel, who spent 3 ½ years there, including the Tahrir Square revolution of Jan. 2011; to Turkey 2 years ago, where we visited Ephesus, Samos (Pythagoras's birthplace), Istanbul, Capadoccia, and, by boat, several coves of the southern coast; to Cuba last year, where we heard terrific music; to give papers at meetings in Pisa, San Francisco, and Avignon; and to Spain yearly. We'll see how long this goes on.

Don Hattin

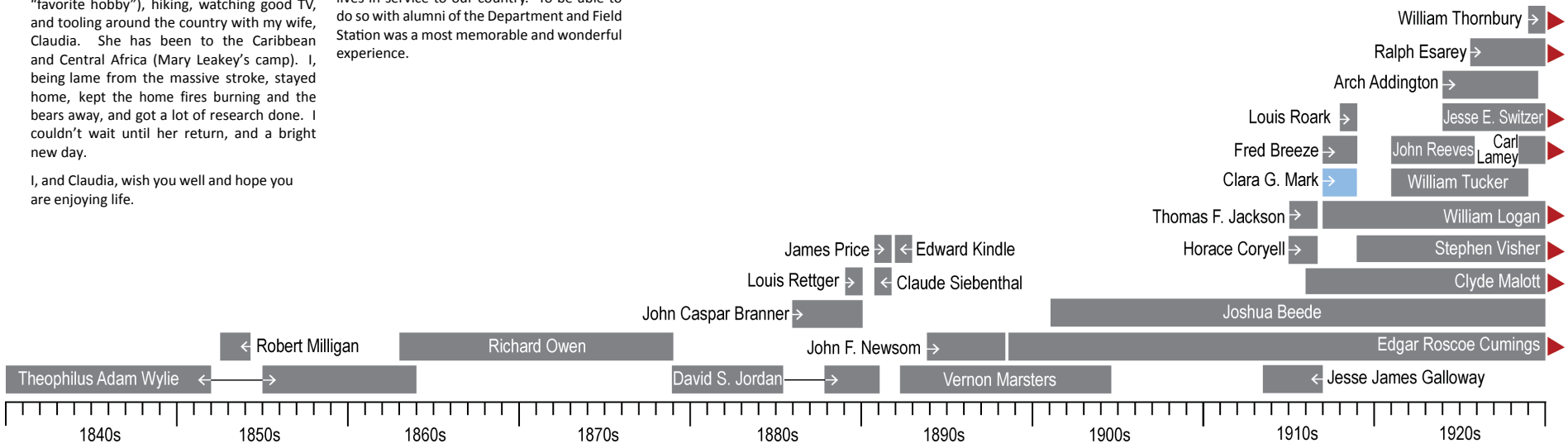
In the 1960's, Margie and Don Hattin accompanied Prof. Tom Perry and his Wife, Lillian, to Houston for the annual G.S.A. meeting. Tom was driving. On the return trip we stopped at an Arkansas motel for an overnight stay. At the front desk Don booked a double-bedded room for $10.00. Tom, who was very careful with his monetary expenditures, was told that his and Lillian's room would cost $12.00. Tom complained that Don + Margies room was only $10.00, and the manager explained that Tom's room had two double beds, hence the additional cost. Tom adamantly objected, stating that he and Lillian needed only one bed, and promised not to use the other. The manager relented and Tom paid a $10.00 rate.

The next morning, when we prepared to leave, Tom spoke not a word, and was obviously seething about something. We had planned to drive for one hour before stopping for breakfast, which we did. For the entire hour Tom was completely silent. When we stopped to eat, as Tom stormed into the restaurant, we asked Lillian the reason for Tom's behavior. She said that on the previous night they had noticed, between the two beds a device labeled "Magic Fingers". After some discussion Tom assented to spending 25¢ to try out the Magic Fingers. He had watched angrily as the other bed commenced to jiggle, and was so distraught at the loss of his 25¢ he had lain awake all through the night!

Bob Dodd

With much help from Don Hattin and A. Basu, I continue to organize the Friday morning geology faculty coffee. Although no longer involved in teaching or geological research, I try to keep current with developments in the field. I spend a considerable amount of time as a volunteer at the Monroe County History Center where I am especially involved in writing the history of the many small communities that once existed in the county. I have written articles for the center newsletter about the effect of geology on the history of Monroe County. I help with documentation and restoration of cemeteries within the county. For exercise I run, bike, walk, and hike, albeit at a slower pace and for shorter distances than formerly. We also have our rose garden, but the growing trees make it too shady to be as nice as it once was. Birding continues to be a serious hobby with frequent visits to local bird "hot spots". Since the last HGR Joann and I have traveled to Thailand, Laos, Cambodia, and Viet Nam and I have gone on a hiking trip in Switzerland. We have also traveled extensively in the U.S., most recently to Pasadena, California to attend the graduation and wedding of our oldest granddaughter.

FACULTY/TIMELINE 1840-1930



1930-2013

Seth A.Young
David Walter Millen
Erika Elswick
Bruce Douglas
Edward M. Ripley
Enrique Merino
Julie Fosdick
Mark Reshkin
Noel Krothe
Laura Wasylenki
Allan F. Schneider
David L. Dilcher
Erle Kauffman
David L. Dilcher
John M. Hayes
Adam V. Maltese
Lee J. Suttner
P. David Polly
J. Robert Dodd
Douglas Edmonds
Yaron Sternberg
Jack Sunderman
Roy Christoffersen
Cody Kirkpatrick
Warren Meinschein
Todd Thompson
Sara C. Pryor
Lawrence F. Rooney
Albert I. Rudman
Rebecca Barthelmie
Thomas Hendrix
Brian D. Keith
Robert Shaver
Simon C. Brassell
Gottfried Guennel
John Droste
Randall Mackie
Jackson Njau
Haydn H. Murray
Richard Powell
Haydn H. Murray
Brad Ritts
Thomas Perry
N. Gary Lane
Claudia C. Johnson
Frank Kottlowski
Wayne Lowell
Robert P. Wintsch
Judson Mead
Michael Savarese
Chris Maples
Mary Parke
William Thornbury
Robert V. Ruhe
Vishnu Ranganathan
Kaj Johnson
Ralph Esarey
Jasminko Karanjac
Michael W. Hamburger
Wallace Buckley
George Ericksen
Harry Wheeler
David Towell
Mark Person
Jesse E. Switzer
Brian Mason
Ian McGregor
Allen Agnew
Walter Schwarzacher
Greg A. Olyphant
Carl Lamey
Edward Ullman
Charles Deiss
Allan M. Gutstadt
Charles Wier
John Fish
Larry Onesti
David Bish
John Rose
Chauncy Harris
John Patton
Lisa M. Pratt
William Logan
Eugene Callaghan
Roy Deane
Carl Beck
Cornelius Klein, Jr.
Norman Hester
Chen Zhu
Stephen Visher
Paul Proctor
Allan Wilson
Paul E. Potter
Yves Pelletier
Jeremy Dunning
Clyde Malott
Carlton Leith
Henry H. Gray
Robert Blakeley
James G. Brophy
Robert Bates
Charles Vitaliano
Gary L. Pavlis
Edgar Roscoe Cumings
George Faust
Heinrich Neumann
George Maxey
Stanley Davis
Abhijit Basu
Jesse James Galloway
Donald Hattin
Juergen Schieber
1930s
1940s
1950s
1960s
1970s
1980s
1990s
2000s
2010s

ALUMNI NEWS 2012-13

Amlan Banjeree

I arrived in Bloomington "a haven of blooms" in Fall, 2003 for doctoral study in Geology and spent five and half wonderful and constructive years there. The thriving IU community, graduate students and the Professors of my Department made me almost forget that I was 8000 miles away from home.

After defending my thesis, I left Bloomington with Soma, my wife, in December, 2008, for postdoctoral assignment in the New Mexico Institute of Mining and Technology (NMT), Socorro. To us Socorro made a poor first impression, when compared with Bloomington, but we quickly came to appreciate its ethnic culture, nature, adobe colors, clear skies, and lively cultural life. It was different and unique. We stayed in Socorro for two years. Soma volunteered in the Socorro Public Library and I toiled in Prof. Mark A. Person's Lab trying to understand the plumbing mechanisms of modern geothermal and paleo-hydrothermal ore systems in Nevada.

After spending approximately eight years in the United States divided between Bloomington and Socorro, we returned to India in 2011, 28th Feb. After a brief stint (June 2011 - Jan 2012) at the Indian Institute of Science (IISc) at Bangalore, I joined the Indian Statistical Institute (ISI), Kolkata, as a Visiting Assistant Professor. Bangalore is the capital of the state of Karnataka and is situated on the Deccan Plateau. The climate there is awesome but the traffic, at peak hours, is horrible. I did fieldwork in Southern Granulite Terrain (SGT) collecting samples for thin sections, fluid inclusions and EPMA analysis. Kolkata, where we are now, was the capital of India till 1911 during the rule of the British. Kolkata has been called the "cultural capital of India" but you will also have to tolerate pollution, weather, and long afternoon siesta hours.

At the ISI I am very busy teaching undergraduate classes and trying to improve my understanding of regional- and local-scale fluid–flow and fluid–rock interaction using the combination of numerical modeling, petrographic and geochemical analysis, and field data collection that I learned from my Gurus Professors Merino and Person. Soma is pursuing her B.Ed in special education from Jadavpur University/Indian Institute of Cerebral Palsy.

Chris Osburn

(BA 1995) Chris earned his PhD in Environmental Science from Lehigh University in 2000. He then worked for eight years as a Research Chemist in the Marine Biogeochemistry section at the US Naval Research Laboratory in Washington, DC. Since 2008, Chris has been an Assistant Professor of Marine Biogeochemistry in the Department of Marine, Earth, and Atmospheric Sciences at North Carolina State University. Current research involves using optical and chemical properties of organic matter to study carbon cycling in rivers, estuaries, and the coastal ocean. Current field sites include rivers and estuaries in eastern NC and streams in the lowland tropical rainforest of Costa Rica (at the La Selva Biological Station). Chris continues to work with stable isotopes as chemical tracers of biogeochemistry in aquatic ecosystems, using techniques he first learned as an undergraduate in Lisa Pratt's lab.

Bob Blakely

Bob and Rose Blakely moved from Bloomington to Baton Rouge, Louisiana, in May, 2010 in order to be near their only child, daughter Linda, and her husband. Rose and Bob say they are in reasonable health for persons aged 92. They still have their car and do a little driving around the big city, but most of the time we stay in our air-conditioned apartment, reading, eating and sleeping.

Steve Benham

I been teaching sedimentary geology, paleontology, and oceanography at Pacific Lutheran University for 32 years and will be retiring the end of this academic year. I was on the faculty at William and Mary 1975 - 1979. Before that I was at Ball State University (1973-1975). My research interests include studying fossils from the Olympic Peninsula in Washington State, especially those found in cold seep deposits. My hobby interests are woodworking, clocks, and full size stationary steam engines. My wife Lois supports me in my woodworking and clock hobbies. My roses are doing well, especially since they are growing in partial sun.

Irene Arango

Ph.D 2006, works at Chevron Energy Technology Company as a Geochemist.

Wilfrido Solano–Acosta

Ph.D 2007, works at Chevron Energy Technology Company as a Petrophysicist.

Ed Ripley's former students' whereabouts:

Jomaah Alawi - Professor at King Saud University

In Sung Lee - Professor at Seoul National University

Young-Rok Park - Professor at Kangwon University

Iskandar Taib - Professor at University of Malaysia

Joyashish Thakurta - Professor at University of Western Michigan

Marty Yates - Director of Microprobe Lab, University of Maine

Jeffrey Mariga - Chevron, New Orleans

Arindam Sarkar - Tata Iron Company, India and Quebec

Brian Butler - ABB Environmental

B.V. Rao - EG and R Environmental Services

Curtis Williams - Ph. D. student Arizona State University

Mat Dunlop - Ph.D. student University of Wyoming

Dusty Nicol - President, European Uranium Resources LTD.

Xin Ding - Berkeley Geochronology Lab

Tracy Branam - Indiana Geological Survey

Manas Singhe - Ph.D. student University of Western Australia

Kellie Donoghue - Ph. D. student Indiana University

Elise Porter - Attorney at Law, Health Care, Columbus Ohio

IN MEMORY: AL RUDMAN

Al Rudman was born in New York on November 14, 1928, the son of Hungarian immigrant parents Sandor and Rose Rudnyanszky. He grew up in Chicago, graduating from St. Philip High School in 1945. At age 16 he enrolled in Indiana University, majoring in journalism. After one year he enlisted in the U.S. Army at the age of 17 and served 14 months in Italy. Al was honorably discharged in 1947, receiving the Army of Occupation and World War II Victory Medals. He returned to Indiana University in 1948 and majored in Geological Sciences. While a student, Al married Bertina Blauch and in the following years they had three children, Philip (now deceased), David and Lynn (Newton).

He received his B.S. (1952) and M.S. (1954) degrees, specializing in Geophysics. After graduation he accepted a position with Carter Oil Company (now Exxon) working in oil exploration for three years in the southern states. He then returned to Bloomington and worked as a geophysicist with the Indiana Geological Survey from 1957 to 1965. While working with the Survey he received his Ph.D. degree in 1963. In 1965 he accepted a faculty position with the Indiana Department of Geological Sciences. Al was a faculty member for 33 years and was highly regarded as a teacher and researcher in the field of applied geophysics. He published over 70 papers and abstracts and directed theses of numerous graduate students.

Even after retirement as Emeritus Professor of Geophysics in 1998, he taught occasional courses, served on graduate thesis committees and regularly attended geophysics seminars.

After retirement his last years were happily spent at Indiana University events, playing bridge, tennis, jogging, visiting his family and travelling with his longtime partner Joan Lauer. Of special importance to Al were frequent visits with his grandchildren. Al's friends remember him as energetic with a sense of humor and an enthusiasm for life.

He is survived by his sister Jo Stockwell of Florida, his son David of Boulder, CO, his daughter Lynn Newton of Santa Barbara, CA, his partner of 25 years, Joan Lauer and his five grandchildren Andrea, Peter and Sam Rudman and Daniel and Benjamin Newton.

Al asked that contributions be made to the Albert J. Rudman Geophysical Fund through the Indiana University Foundation (account number P37AS17129, PO Box 500, Bloomington, IN 47402) or to the Amyloidosis Research Project through the Indiana University Foundation - Indianapolis (account number 032MPAT059, PO Box 660245, Indianapolis, IN 46266).

It is with great sadness that we share the news of the death of our friend and colleague Al Rudman, following complications from a heart condition.

Al died peacefully at home early in the morning of September 21, 2013 with his partner Joan Lauer by his side. He was a beloved teacher, mentor, colleague, friend, and enthusiastic and devoted member of our community – as a student, research scientist (with the Indiana Geological Survey), faculty member, and emeritus professor – for nearly 60 years.

The memorial service for Al Rudman was held on Sunday, November 3the IMU. The event was a celebration of Al's life and academic career, and included a few formal remembrances followed by a reception. Al will be deeply missed by all of us in the Department of Geological Sciences.