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Indiana University College of Arts & Sciences Alumni Association

HOOSIER GEOLOGIC RECORD

Alumni Newsletter of the Department of Geological Sciences



Photo by John Day

Winter 1996

HOOSIER GEOLOGIC RECORD

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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 yours.

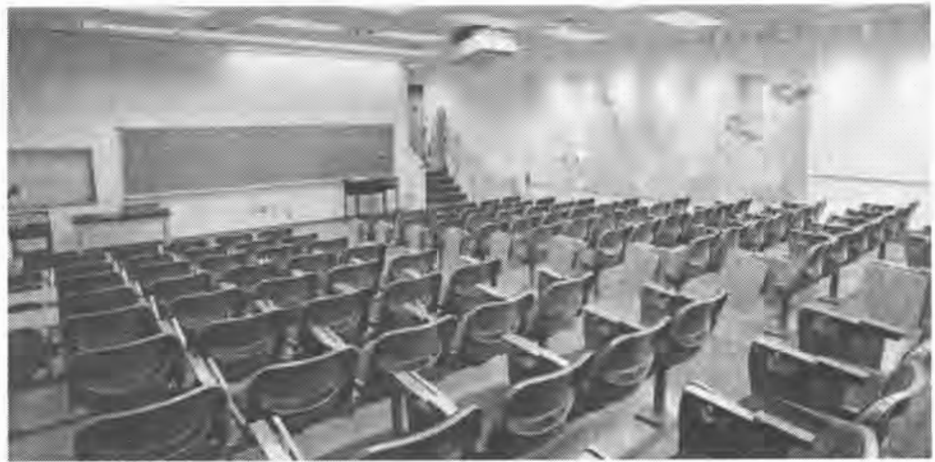
Chair's greeting

Busy faculty, 'home' improvement, cooperation keep department on the move

It's my pleasure to welcome you to this edition of the newsletter. In just a few words, I'll do my best to hit the high points of recent and forthcoming events.

Changes in the membership of the faculty have been, in comparison to previous years, enormous. Hard on the heels of Gary Lane's retirement last year, we are now getting accustomed to thinking of Don Hattin and Al Horowitz as emeriti (this is not very easy, since both are still very much in evidence), their retirements having taken effect this summer. Similarly, Vishnu Ranganathan will be leaving us at the end of the present academic year. When his further plans are settled, we'll let you know how to stay in touch.

On the positive side, we are enjoying the company of Claudia Johnson as a visiting assistant professor, and Randy Mackie will be joining us in January as a tenure-track assistant professor. Claudia, a paleobiologist/earth historian, is particularly interested in the development of reefs and reef communities over time. This fall, she has been teaching Life of the Past, the 100-level course developed by Gary Lane. Next spring, she will teach sedimentology and stratigraphy and participate with Mike Savarese in a special seminar dealing with the evolution of reef communities. Claudia earned her PhD at the University of Colorado and came to us from a postdoctoral appointment in the Earth-Systems-Science Center at Penn State. Randy Mackie will be transferring from a five-year postdoctoral appointment at MIT, where he too earned his PhD in geophysics. He is interested in electromagnetic techniques generally, having focused on magnetotelluric investigations of crust-mantle interactions in his thesis work and having used ground-penetrating radar and resistivity measurements while a postdoc. He also developed a course in environmental geophysics at MIT. At a recent conference, I happened to be joined at dinner by a recent MIT PhD now working as a postdoc in geodynamics with Chris Beaumont at Halifax. Randy's name came up and I was treated to a five-minute rave about the outstanding quality of his course and the questionable intelligence of whoever allowed him to get away from MIT. It



Geology Room 126 — new technology classroom/auditorium

all sounded very good to me!

The remodeling/redecoration of the lecture hall is complete, and the installation of the "technology" is staggering to completion. The room looks terrific (an aisle down the middle so that seats are more efficiently occupied and dual projection screens, one equipped with a high-resolution video projector driven by a Mac, or a Sun, or a PC, or even by a VCR) and, at this writing, almost everything works. It would never have happened without the seed money contributed by alumni.... We see it every day.... Students benefit enormously.... If you contributed, take this opportunity to feel pleased with yourself, being very confident of our gratitude.

The next success story concerns the

environmental science initiatives both on and off campus. Support from alumni has again played a key role, but my limited space requires that I merely mention that field courses supported by modern equipment are being developed in Bloomington and at the field station. The bachelor of science degree in environmental science will be going forward as a joint degree with the School of Public and Environmental Affairs. All points of contention have been removed, with the curriculum being almost precisely as we proposed. Neither side has out-manuevered the other and, wonder of wonders, cooperation has broken out. Our next edition will provide details and, perhaps, some even more startling news.

— John Hayes

Departmental news

Undergraduate major enrollment as of September 1995 numbered a total of 44 BS and BA students. Graduate enrollment during the academic year 1994-95 was 70, with 32 PhD candidates and 38 MS students. There were 25 research assistants, 10 graduate fellows, and 19 associate instructors among the graduate student body. Both undergraduate and graduate enrollments represent rather stable figures compared to last year.

The Geology Library continues to

grow in size and reputation and now has passed 102,000 volumes, 305,000 maps, and 26,000 microforms. The library allocation of \$103,000 is devoted entirely to serial subscriptions, although this past year a one-time allocation of \$5,000 was received for monographs. With minimal support for monographs, maps, and other formats, only gifts (including exchanges and federal/state documents) make continued growth in this part of the collection possible. Currently, there

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Departmental news

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are 58 data files on CD-ROM, including the GSA journals (*Bulletin, Geology, Data Repository, and GSA Today*) and GEOROM: *Geophysics* (v. 1-57).

A new undergraduate scholarship in honor of the late Robert R. Schrock, a most distinguished alumnus of the department, was established in 1994 with funding for two years. The **Shrock Tuition Scholarship** is a competitive award open to all declared majors with one year of residency remaining. Students are required to submit a research pro-

posal for evaluation. Selection criteria include the quality and scientific merit of a formal research proposal and overall academic merit. This scholarship in many ways reflects the increased visibility of undergraduate research being conducted within the department. The scope of undergraduate research projects covers a wide range of topics from paleontology to applied geophysics to metamorphic petrology.

During the past academic year, nine students participated in research projects, four at the Honors level. A shining example of the success of undergraduates involved in research during baccalaure-

ate study is the 1993 Brunton Award Recipient, **Rebecca Robinson**, who was awarded a National Science Foundation Predoctoral Fellowship. She was one of just 25 earth science recipients from more than 9,500 applicants.

The new interdisciplinary environmental science BS degree in the College of Arts and Sciences is taking shape. Degree requirements include a core composed of course work from the departments of biology, chemistry, computer science, geography, geological sciences, mathematics, and physics coupled with work in an advanced concentration area. Two new courses in geological sciences

Look who's talking: 1994-95 Colloquium Series

- Aug. 29, **Vishnu Ranganathan**, Indiana University: "Aspects of Thermohaline Groundwater Flow in Sedimentary Basins"
- Sept. 14, **Chris Potter**, U.S. Geological Survey: "The Regional Structural Configuration of the Cambrian Reelfoot-Rough Creek-Rome Rift System"
- Sept. 19, **Steven Fritz**, Purdue University: "Chemical Evolution of Groundwaters in Indiana's Glacial Aquifers"
- Sept. 26, **Erik Webb**, Sandia National Laboratories: "Mechanisms for Incorporating Sedimentary Information into Hydrogeological Models: Example — The Braided Channel Simulator (BCS-3D)"
- Oct. 3, **Jeffrey Daniels**, Ohio State University: "Use of Ground-Penetrating Radar for Shallow Investigations"
- Oct. 10, **Ralph Hunter**, U.S. Geological Survey: "Eolian Fine Structure" (Owen Award Address)
- Oct. 17, **Tomas Hirschmann**, Swissboring, Guatemala: "Geotechnical Engineering: Sealing the Foundation of the El Cajon Dam in Honduras"
- Oct. 31, **Thomas Anderson**, University of Illinois: "Chemistry of Sulfur in Marine Sediments"
- Nov. 7, **Matthew Mikulich**, Chevron Corp.: "Application of 3-D Seismic Technology to Reservoir Management"
- Nov. 17, **James Lowell**, Littleton, Colo.: "Structural Inversion: Occurrence, Mechanics, and Implications for Petroleum Exploration"
- Nov. 21, **Richard Gordon**, Northwestern University: "Mobile Belt in the Equatorial Indian Ocean: Intraplate Deformation or Diffuse Plate Boundary?"
- Nov. 28, **Andrei Korjenkovl**, Kyrgyz Institute of Seismology: "Surficial Effects of a Large Earthquake in the Tien Shan Mountains: The M=7.5 1992 Suusamy Earthquake, Kyrgyzstan"
- Dec. 7, **Chris Maples**, Kansas Geological Survey: "Processes and Patterns of Lagerstätten in the Late Paleozoic"
- Jan. 9, **Ben van der Pluijm**, University of Michigan: "Far-Field Stresses in the Eastern Midcontinent Region"
- Jan. 16, **Brian Keith** and **Todd Thompson**, Indiana Geological Survey: "Stromatolites in the Salem Grainstone Shoal Complexes: How Did Those Guys Get There Anyway?"
- Jan. 24, **Andy Barth**, IUPUI: "Reevaluation of Continental Growth by Exotic Terrane Accretion: An Example from the Proterozoic of California"
- Jan. 30, **Simon Brassell**, Indiana University: "Molecular Clues of Ancient Climates"
- Feb. 6, **Jeremy Dunning**, Indiana University: "What I Did on My Summer Vacation: Hanging Ten on the Wave of the Future"
- Feb. 13, **Terry Plank**, University of Kansas: "The Ins and Outs of Arc Volcanoes: Sediment Recycling at Subduction Zones"
- Feb. 20, **Paul Potter**, Rio Claro University, Brazil: "How Old Is a River? How Old Are South American Rivers?"
- Feb. 27, **Ron Hites**, Indiana University: "The Global Environment Behavior of Polychlorinated Biphenyls and Dioxins"
- Mar. 6, **Joan Gomberg**, USGS/CERI, Memphis, Tenn.: "Earthquake Induced Seismicity: Evidence from the Ms7.4 Landers Earthquake and the Geysers Geothermal Field, California"
- Mar. 7, **Neal Iverson**, University of Minnesota: "Flow Mechanism of Glaciers on Unlithified Beds"
- Mar. 9, **Tom Johnson**, University of California, Berkeley: "Isotope Ratios As Dynamic Tracers in Groundwater Systems"
- Mar. 20, **Chris Paola**, University of Minnesota: "Modeling the Filling of Sedimentary Basins"
- Mar. 22, **Harry Jol**, Simon Fraser University, British Columbia: "Ground Penetrating Radar (GPR): A New Approach to the Earth Sciences"
- Mar. 23, **George Sevastopulo**, Trinity College, Dublin, Ireland: "Understanding Waulsortian (Mississippian) Mudmounds—Contributions from Paleontology"
- Mar. 27, **Chris Neuzil**, U.S. Geological Survey: "Abnormal Pressures as Hydrodynamic Phenomena"
- Mar. 28, **Julia Morgan**, University of Washington: "Active Processes at Subduction Zones: The Interplay of Deformation and Dewatering in the Toe of the Nankai Accretionary Prism, Southeast Japan"
- Apr. 3, **Michael DeNiro**, University of California, Santa Barbara: "Every Dogma Has Its Day: Water Is Not the Sole Source of Hydrogen Plants Use to Synthesize Organic Compounds"
- Apr. 4, **Kenneth Clay**, AAPG Distinguished Lecturer, University of London, U.K.: "3-D Fault Systems"
- Apr. 5, **Bob Dalrymple**, Queens University: "From Systems Tracts to Rhythmites: Tide-Dominated Deltaic Sedimentation of the Papua New Guinea Foreland Basin"
- Apr. 7, **Johnny Waters**, West Georgia College: "Blastoids, Bryozoans, and Blinders — Thirty Years of Fun and Fieldwork with Alan Horowitz"
- Apr. 10, **Frank Press**, Carnegie Institution of Washington: "Patterns of Seismic Release in Southern California"
- Apr. 17, **Randy Mackie**, Massachusetts Institute of Technology: "3-D Electrical Resistivity Forward Modeling and Inversion with Applications to Environmental Geophysics"
- Apr. 24, **Geoffrey Eglinton**, University of Bristol, U.K.: "Dust"



Ralph Hunter received the Richard Owen Award in October 1994.



Chair John Hayes, left, presents Alan Horowitz with the Owen Award in the Elephant Room of the Geological Survey.

will be required within the core of this program: G220 Earth Materials and G329 Field Experience in Environmental Science. G220 will be a five-credit course that provides a one-semester encapsulation of mineralogy and petrology with particular emphasis on those aspects important to environmental science, such as clay mineralogy and soil development. G329 will be a five-credit course taught at the IU Geologic Field Station in Montana. This course will reflect the highly regarded G429 program in terms of its organization, educational philosophy, and unique teaching venue. The course content will consist of traditional geology, hydrology, surface processes, ecology, environmental chemistry, and meteorology.

During the past year, two graduates of the department who have distinguished themselves in either industry/government or academia have been awarded the Richard Owen Award. On Oct. 10, 1994, **Ralph Hunter**, BA'57, was presented this award. Ralph has been a geologist with the U.S. Geological Survey in Menlo Park, Calif., for many years and has become widely recognized as a leader in the field of sedimentology, having published 89 papers, many in the leading geological journals. He is perhaps the world expert on sedimentary structures in eolian deposits. Ralph has maintained contact with the department over the years and has recently been involved in research in Indiana on the Ste. Genevieve Limestone. A number of years ago, he helped lead one of the SOHIO field courses to Lake Michigan. Hunter presented his Owen Award address, titled "Eolian Fine Structure," to the Geology

Colloquium. We congratulate Ralph on an outstanding professional career. The second Owen Award presented was given to **Alan Horowitz**, PhD'57. Alan's distinguished career and contributions are chronicled in the "Faculty news" section on page 9. His Owen Award address to the Geology Colloquium on Sept. 18, 1995, was titled "100 Years of Bryozoan Studies in the Department of Geological Sciences," and was followed by the traditional Owen Award reception in the "Elephant Room" of the Geological Survey.

The search for a new environmental geoscientist culminated with the campus visits of five applicants. **Randall Mackie**, a research scientist in the Earth Resources Laboratory at M.I.T. was offered the position, accepted, and joins our faculty in January 1996. Mackie obtained his BS degree in geophysical engineering at the Colorado School of Mines in 1984 and his PhD at M.I.T. in 1991. His thesis dealt with three-dimensional magnetotelluric modeling and inversion with applications to the California Basin and Range Province. He plans to conduct research in diverse areas of electromagnetic geophysics while joining existing IU projects focused on deep crustal processes in central Asia and continuing his work on shallow geophysical investigations pertinent to environmental problems, including those at Superfund sites. Randy presently serves as co-chair of the research committee of the Environmental and Engineering Geophysical Society (SAGEEP).

The department also has been given permission to search for a tenure-track appointee in geobiology and paleontol-

ogy. This is particularly important with the retirement of three faculty in geobiology, namely **Don Hattin**, **Alan Horowitz**, and **Gary Lane**.

In the meantime, however, we have successfully attracted an outstanding one-year appointee, who came to us from the Earth-Systems Science Center at Penn State — **Claudia C. Johnson**. Her BA, MS, and PhD (1993) degrees all were

earned at the University of Colorado, where she studied under Erle Kauffman. Her dissertation dealt with the Cretaceous biogeography of the Caribbean region, and her longer-term goals are to analyze the interface between Cretaceous tropical and temperate systems in the Americas and to investigate the oceanographic/climatic history of Cenozoic reef systems in order to provide a temporal view of changes in tropical ecosystems. Her work thus far has yielded six publications, and she is presently co-editing a forthcoming G.S.A. publication, *The Evolution of Cretaceous Ocean/Climate Systems*.

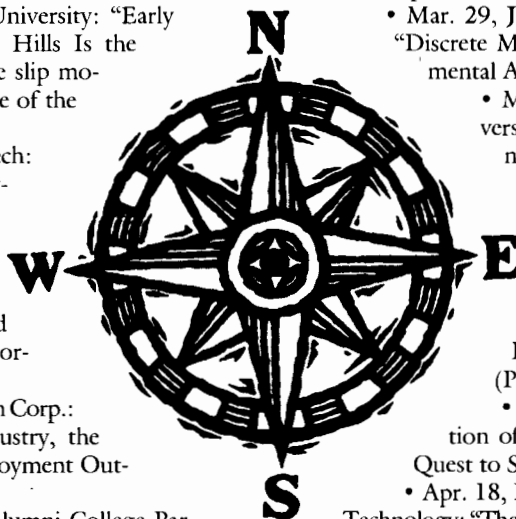
In May 1995, the department participated in the **National Science Olympiad** hosted by Indiana University Bloomington. Some 2,500 of the brightest and most motivated young science students in the nation along with some 500 adult teachers and coaches attended. Most science departments participated, and **Bruce Douglas** coordinated the activities in geological sciences. These included laboratory tours and demonstrations as well as judging of the earth science competition by faculty.

A major highlight of the academic year was the visit of **Frank Press**, president emeritus of the National Academy of Sciences, under the sponsorship of the University Patten Foundation for the week of April 8-15. Establishing himself as a premier geophysicist at Caltech and then M.I.T., he served on President Kennedy's Science Advisory Board, NASA's Lunar and Planetary Missions Board, and as a member of the U.S. delegation to the Nuclear Test Ban ne-

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Other seminars, brownbag talks, special presentations entertain, enlighten geology faculty, staff, students

- Sept. 7, **Alan Horowitz**, Indiana University: "Graphic Correlation"
- Sept. 14, **Kristen Hagstrom**, Indiana University: "The Relationship Between Siphuncle Size, Sutural Complexity, and Shell Geometry in Late Paleozoic and Mesozoic Ammonoids"
- Sept. 21, **Charles Zuppann**, Indiana Geological Survey: "The Oil Game"
- Sept. 26, **Erik Webb**, Sandia National Laboratories: "Decision Support Systems: The Integration of Regulatory Analysis, Information Systems, Site Conceptualization, Computational Tools and Site Characterization"
- Sept. 28, **N. Gary Lane**, Indiana University: "A Nature Walk through Monroe County"
- Sept. 29, **Michael Mound**, FLS Automation A/S, Copenhagen, Denmark: "Global Economics and Quality Control in Industrial Minerals Processing"
- Oct. 4, **Jeffrey Daniels**, Ohio State University: "Advances in Ground- Penetrating Radar"
- Oct. 5, **Mark Barnhill**, Indiana Geological Survey: "A Comprehensive Core Book of Pennsylvanian Rocks of the Illinois Basin: Its Construction and Its Applications"
- Oct. 12, **Nathan Way**, Indiana University: "Early Cretaceous Subsidence near the Black Hills Is the Result of: a) vertical tectonics, b) strike slip motion, c) horizontal compression, d) none of the above."
- Oct. 31, **J. David Frost**, Georgia Tech: "Geotechnical Earthquake Hazard Analysis: A GIS Approach"
- Nov. 1, **Thomas Anderson**, University of Illinois: "Ecology and Physical Environments in a "Jurassic Sea World": A Stable Isotopic Study of Carbon and Oxygen in Fossils of the Oxford Clay Formation, England"
- Nov. 8, **Matthew Mikulich**, Chevron Corp.: "An Update on the Oil and Gas Industry, the Business, the Technology, and an Employment Outlook"
- Nov. 9, **Richard Darling**, 1994 Alumni College Participant: "Alumni College 1994 — The Tom and Gary Show"
- Nov. 16, **Debra Dawson**, Indiana University: "Extraordinary High Temperature Metamorphic Rocks from California"
- Nov. 22, **Richard Gordon**, Northwestern University: "Crustal Kinematics from VLBI Geodesy and Possible Implications for Tectonics and Earthquake Hazards in the Western U.S."
- Nov. 30, **Andy Fisher**, Indiana Geological Survey and Indiana University: "Fluid Flow and Permeability-Effective Stress Relationships Within the Active Barbados Accretionary Complex"
- Dec. 7, **J. Robert Dodd** and **Michael Savarese**, Indiana University: "Australian Coral Reefs — Present and Past"
- Jan. 18, **Enrique Merino**, Indiana University: "The Self-Organizational Diagenetic Origin of the Cyclicity of Bedded and Banded Iron Formations"
- Jan. 19, **Yuri Trapeznikov**, Institute of High Temperature Physics (Russian Academy of Sciences): "Electromagnetic Investigations of the Earth's Crust in the Tien Shan Mountains, Central Asia"
- Jan. 25, **Alan Horowitz**, Indiana University: "The Linnaean Nomenclatural Heritage or Is It Heresy?"
- Feb. 14, **Terry Plank**, University of Kansas: "Nb Anomalies in Volcanic Arc Lavas: Insights from the Marianas"
- Feb. 15, **Rob Mellors**, Indiana University: "Rocks, Faults, and Camels: Geophysics and Pictures of Central Asia"
- Feb. 21, **Paul Potter**, Rio Claro University, Brazil: "Adventures of a Retiring American Sedimentologist in São Paulo, Brazil"
- Feb. 22, **Jeremy Dunning**, Indiana University: "What I Did on My Summer Vacation: Hanging Ten on the Wave of the Future"
- Mar. 1, **Volker Bruchert**, Indiana University: "Abundance and Isotopic Variation of Inorganic and Organic Sulfur in Pleistocene Sediments of Hole 893A, Santa Barbara Basin, California"
- Mar. 7, **Paul Bodin**, CERI/University of Memphis: "Seismic Geodesy: Northridge, California, Earthquake Effects and Small-Scale Differential Ground Motion"
- Mar. 8, **Neal Iverson**, University of Minnesota: "A General Mechanism of Sediment Entrainment by Glaciers"
- Mar. 10, **Tom Johnson**, University of California, Berkeley: "A Selenium Isotope Ratio Study in San Francisco Bay"
- Mar. 23, **Harry Jol**, Simon Fraser University, British Columbia: "Application of Geophysical Methods to Environmental and Geomorphic Problems"
- Mar. 29, **Julia Morgan**, University of Washington: "Discrete Mechanics of Granular Materials: Environmental Applications"
- Mar. 30, **Charles Vitaliano**, Indiana University: "Kamchatka and Some of Its Volcanoes"
- Apr. 5, **Bob Dalrymple**, Queens University, "Sequence Stratigraphy of Incised-Valley Estuarine Deposits: General Characteristics and Common Variants"
- Apr. 11, **Frank Press**, Carnegie Institution of Washington: "Can Scientists Provide Credible Advice in Washington?" (Patten Foundation Lecture)
- Apr. 13, **Frank Press**, Carnegie Institution of Washington: "Science, from Intellectual Quest to Social Contribution"
- Apr. 18, **Randy Mackie**, Massachusetts Institute of Technology: "The Lower Crust in California As Seen Through the Lens of Magnetotellurics"
- Apr. 19, **Lloyd Furer**, Indiana Geological Survey: "An Old Structural Model for the Northern Rockies Revived!! Old is Gold!! A Few Eyewitness Reports!"
- Apr. 28, **Terry Pavlis**, University of New Orleans: "Effects of Tertiary Ridge Subduction in the Southern Alaskan Forearc: High Temperature Metamorphism and Development of a Mid-Crustal Detachment Beneath a Major Dextral Fault System"
- June 17, **Roger Summons**, Australian Geological Survey: "The Anomalous ¹³C Contents of Tasmanian Tasmanite and Possible Modern Analogs from Antarctica"
- June 20, **Roger Summons**, Australian Geological Survey: "Geochemistry of Young (<60 Ma) and Old (>1400 Ma) Oil"
- June 23, **Langhorne Smith**, Virginia Polytechnic Institution and State University: "Controls on Upper Mississippian Carbonate to Mixed Carbonate-Clastic Strata of the Illinois Basin"
- July 24, **Kenneth Eriksson**, Virginia Polytechnic Institution and State University: "Crustal Growth, Surface Processes and Atmospheric Evolution of the Early Earth"
- July 24, **Brian Turner**, University of Durham, U.K.: "Origin of Massive Sandstones in Braided River Systems"



Departmental news

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gotiations in Geneva and Moscow. He served as presidential science adviser and director of the Office of Science and Technology Policy under President Kennedy. In 1980, he assumed the presidency of the National Academy of Sciences, where he served with distinction until 1993. Press has been the recipient of GSA's Arthur L. Day Medal, AGU's Bowie Medal, and 23 honorary degrees. Since 1994, he has been the Cecil and Ida Green Senior Fellow at the Carnegie Institution of Washington. During his visit to IU, he gave two formal Patten lectures on contemporary science, including such topics as science policy, the role of scientists, and their social contributions. He gave a colloquium address to the department titled "Patterns of Seismic Release in Southern California," which was followed by a reception hosted by the department and the Indiana Geological Survey. Press also attended lectures and participated in three freshman-level courses, three upper-level seminars, went on a local field trip, and had a total of four informal meetings with different groups (faculty, undergraduate and graduate students, and geophysics students). In addition, he had activities scheduled in the Department of Physics and the School of Public and Environmental Affairs. The visit by Press was especially productive and exciting.

A proposal by **Enrique Merino** to acquire computer hardware and assistance in devising spatial exercises for research and teaching in mineralogy and geochemistry has been funded by a grant of \$18,145 from the Student Technology Program. Enrique has been teaching our gateway course in mineralogy and earth materials (G221).

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. Gary asks that any of you who have recollections of your stay at the department or of faculty, students, staff, and special events, to send them to him. For years, there have been many fascinating and humorous stories about the likes of **Bill Thornbury**, **J.J. Galloway**, **Tom Perry**, **John Patton**, and others, but nothing appears to have been recorded in print. Gary also has discovered that in the early years there was no rule requiring the deposition of theses in the library. The earliest thesis in our collection appears to be that of J.J. Galloway in 1913. The next thesis did not appear until 1923, when several were

contributed. Presumably, our holdings are complete since that time. If any of our readers are aware of theses prior to 1923 (other than Galloway's), please let Gary know about them. The history project is an exciting one and is especially appropriate since IU celebrated its 175th anniversary during 1995.

Lane is just one of three new retirees who will be busy after stepping down from their formal careers with the university. The others are **Don Hattin** and **Alan Horowitz**. Their careers and distinguished contributions to the department and Indiana University are chronicled in a later section of this newsletter. Various activities were scheduled during the year to honor these outstanding geologists. In December 1994, a retirement luncheon was held in honor of Gary Lane, and, in March 1995, a distinguished colleague and friend of his, **George Sevastopulo**, of Trinity College, Dublin, Ireland, gave a colloquium to honor Gary's retirement. The address was titled "Understanding Waulsortian (Mississippian) Mounds — Contributions from Paleontology." Also to honor Gary and his love for nature, a ginkgo tree with an attached plaque, contributed by the local geological community, was planted in the University Arboretum, located between the main university library and Woodlawn Field (the site of old Memorial Stadium).

On April 7, **Alan Horowitz's** retirement was marked by a special colloquium, titled "Blastoids, Bryozoans, and Blinders — Thirty Years of Fun and Fieldwork with Alan Horowitz," presented by colleague and former student **Johnny Waters**, of West Georgia College. At a reception following, Alan was presented with gifts, including an impressive set of "blinders," his longtime trademark. In addition, \$1,100 was contributed to the Galloway-Perry Fund in his honor. Activities continued over the weekend with a TriCity Paleontology Conference also in his honor. Professionals and students from Bloomington, Cincinnati, and Columbus (Ohio), as well as adjacent areas, presented talks during morning and afternoon sessions on Saturday. This was followed by an informal dinner on Saturday evening and a Sunday field trip to fossiliferous Chesterian localities near French Lick and Sulfur.

A reception and dinner held for **Don Hattin** on Sept. 1 rounded out retirement events for the year. Colleagues, friends, past and present students, and family honored Don with many stories and recollections. Announcement of the successful launching of the **Don Hattin**

Special Field Course Fund highlighted the evening. This scholarship fund will be directed toward financially needy students taking special (noncore) field courses. More details on the fund can be found below under Don Hattin's contribution to *Faculty News*.

The second annual Bloomington alumni reception was held on April 24. Featuring an open house and the dedication of the new biogeochemical laboratories, the reception was hosted by professors **Simon Brassell**, **Lisa Pratt**, and **John Hayes**. A special guest for the opening of the new laboratories was retired Professor **Warren G. Meinschein**, who joined our faculty in 1966, served as chair from 1971 to 1973, and retired in 1985. Meinschein initiated the organic geochemistry program at IU and is recognized for his pioneering research in the preservation of hydrocarbons in the development of petroleum, the study of organic constituents of meteorites and lunar samples, and in the linking of carbon-isotopic geochemistry, microbial biogeochemistry, and organic geochemistry, a pathway of investigation still prominent at IU and increasingly employed worldwide. As part of the dedication program, **Geoffrey Eglinton**, professor emeritus of organic geochemistry at the University of Bristol, U.K., presented an address titled "Dust."

Contributions to the department through the Indiana University Foundation continue to enable us to move toward increased excellence in a time of otherwise diminishing resources. Major categories of expenditures for 1994 were

- The *Colloquium Series* was subsidized in the amount of \$3,700 to bring outside speakers to the department.

- Two *special courses* offered by Geological Survey staff to the department cost \$3,700.

- *Faculty support* for research, equipment, and travel, totaled \$9,800.

- In order to maximize our success in *faculty recruitment*, a net of \$4,300 was spent (after partial reimbursement by the College) for visits of the four finalists in a faculty position search.

- *Student support* for summer research grants and other activities, including travel to professional meetings reached \$7,200.

- A total of \$5,900 was spent (after partial reimbursement by the College and University Graduate School) for *graduate student recruitment* (flyers, brochures, and paid student visits).

- *Development expenses* for 1994 were \$2,300.

We are most grateful to our alumni and friends for making this possible. ■

Geologic Field Station update

Enrollments in the station's flagship course, G429, were 129 and 108 for the summers of 1994 and 1995, respectively. Our introductory course, G111-G112 had 14 students in 1994 and 13 in 1995.

Extensive planning and discussions as well as reconnaissance study of a number of new field sites and interaction with scientists in the Montana Bureau of Mines and Geology, the U.S. Forest Service, the Soil Conservation Service, and the Water Resources Division of the USGS resulted in the decision to offer a pilot version of "G429e" during summer 1995. Eleven students from Option II of the regular G429 offering were selected to participate in this special section, which included an emphasis on field study of surficial processes, hydrogeology, and environmental geology. These students followed the conventional G429 curriculum through the first three weeks before being split off to

do a set of newly introduced exercises under the direction of **Greg Olyphant** and his doctoral student, **Chris Carlson**. Included were studies of Cenozoic landform and basin deposits (two days), surface water in a mountain watershed (three days), and field investigation of abandoned mine sites (two days). Subsequent to this, a five-day final project integrated mapping of Paleozoic/Mesozoic bedrock structure and the unconsolidated Cenozoic basin-fill with detailed subsurface study of groundwater flow within the map area. Superfund sites in Anaconda and Butte were visited by the pilot group on the final day of the Northwest Montana (Glacier Park) trip.

The central element of the new environmental curriculum will be the development of a *Demonstration Watershed* in the Willow Creek drainage basin, which is located a short distance from the field station. Development of the model watershed will involve installation of snow, surface water, and meteorological monitoring instrumentation and drilling of two wells to permit the study of groundwater processes. A variety of geological framework investigations, such as field mapping of surface exposures, characterization of aquifers through analysis of drill cores, and application of geophysical techniques, will supplement data derived from long-term monitoring of surface water flow in our interpretations and modeling of the hydrologic regime

of the watershed. The demonstration watershed will form the basis for class exercises and graduate research projects for many years to come.

The local land owners, the Madison County Conservation District, the U.S. Forest Service, and the Soil Conservation Service have enthusiastically endorsed the demonstration watershed initiative. In addition, they invited Indiana University to co-sponsor a grant proposal to the state of Montana for the purchase and installation of snow and stream gauges in the Willow Creek drainage basin. Lee Suttner co-presented this proposal to a subcommittee of the Montana legislature in January 1995, and it was subsequently funded (see page 1).

Gary Hinton resigned as resident manager in April 1995. After nearly a decade of outstanding service to the field station and IU, Gary has taken a new job with Montana Railink. We owe a great deal of gratitude to Gary for his dedicated work over the years at the station, and we wish him outstanding success in his return to the railroad industry.

We are extremely pleased to announce that our new resident manager is **Grant Estey** of Whitehall, Mont. Grant was appointed in May 1995, from among some 50 applicants, many with outstanding credentials, and did an outstanding job as resident manager during this past summer. We look forward to having him with us in the years to come. ■

Hoosier Geologic Record

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

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Attention IUAA members!

The Indiana University Alumni Association is pleased to announce it will award thirteen \$1,000 scholarships in 1996 to full-time undergraduate students who are the children of IU Alumni Association members. The scholarship program, known as IU Alumni Association Scholars, is in its second year of providing support to IU students. Scholarships are awarded on the basis of financial need and academic achievement, as determined by the Office of Student Financial Assistance.

Funding for the scholarship program is made possible by revenue received from the IU Collegiate License Plate Program. In 1995, nearly 23,000 plates were sold, making the IU plate the most popular collegiate plate in Indiana.

For a scholarship application, please call or write IU Alumni Association Scholars, Fountain Square, Suite 219, P.O. Box 4822, Bloomington, IN 47402-4822; telephone (812) 855-0882 or (800) 824-3044. Applications must be returned by April 30, 1996. ■

Indiana Geological Survey update

The professional staff of the Indiana Geological Survey was enriched during the past year by the addition of two new geologists. **Henry Barwood** became head of the Mineral Resources Section and **Maria Mastalerz** joined the Energy Resources Section. Maria spent the previous four years doing research on organic petrology and geochemistry and teaching sedimentology and coal geology courses at the University of British Columbia, Vancouver. She graduated from Wroclaw University, Poland (MSc), and Silesian Technical University, Poland (PhD), and did research on Polish coal basins for nine years before going to Canada. Maria's husband, **Brian O'Donnell**, practices family medicine in Bloomington (new patients welcome!). Their daughter, **Katarzyna**, attends school locally.

The survey's extended family also experienced a new addition this year with the Oct. 13 birth of **Anna Branam**, daughter of Geochemistry Section geochemist **Tracy Branam**. Tracy's other daughter, **Lauren**, celebrated her third birthday in March.

Survey news from last year wasn't all good, though. Senior cartographic specialist **Kim Sowder** did not enjoy last July. During that month, her parents experienced a total of 13 arteries bypassed, three bonus heart catheterizations and two heart attacks in the span of 13 days. Then, 15 days later, her husband, **Mike**, had a catheterization to end the month in style (but no problems there!).

Haluk Cetin, in addition to his work on projects as a geologist with the Energy Resources Section, served as an instructor for three courses involving geographic information systems (GIS) and remote sensing. Haluk served as assistant professor with the IU School of Public and Environmental Affairs and as a part-time visiting assistant professor with the IU Department of Geological Sciences. Haluk was also involved in a special IU program that trained Indonesian scientists on GIS principles, concepts, and use.

Sam Frushour, Physical Facilities and Field Services Section head (and resident cave expert), was involved in several cave rescues during the past year.

Sam also conducted a leveling survey in Wyandotte Cave for the Department of Natural Resources Division of Forestry and others. Sam, who teaches scuba diving classes at the YMCA, also spent time this past year in Florida, Missouri, and Mexico, diving and photographing underwater caves and mines.

Two IGS geologists contributed to the sixth edition of SME's *Industrial Minerals and Rocks*. **Don Carr**, principal geologist, industrial minerals, is senior editor of the 1,200-page volume and co-author of a chapter on limestone and dolomite. **Nelson Shaffer**, Mineral Resources Section geologist, contributed a



chapter on biotechnical materials. Speaking of biotechnical materials, Nelson was invited by NASA to a conference on bacteria in crystals as part of their extraterrestrial life research. He went to Fairfax, Va., to present his research on biological inclusions to a handful of leading researchers. An outgrowth of this effort was the initiation of a theme session on biological inclusions for the national GSA meeting in New Orleans this past November.

Followers of the saga of **Nelson Shaffer** will be pleased to know that, among other things, he added to his huge stash of gorilla stuff, served as an officer in the national Friends of Mineralogy, attended several large mineral shows, worked on a book about minerals of Indiana, submitted a rough draft

of one of the world's oldest dissertations, was elected chair of the Indiana Academy of Science Research Grants Committee, and experienced the high school graduation of child three (child four will start high school next year).

Brian Keith, basin research coordinator, received the Honorary Membership Award from the Eastern Section of AAPG at its annual meeting in East Lansing, Mich., in September 1994. Brian also organized the Illinois Basin Energy and Mineral Resources Workshop, held in Evansville in September 1994. The workshop, sponsored by the Illinois Basin Consortium (IBC) and the USGS, included 41 oral and poster presentations made to 130 attendees.

A workshop on the Gas Potential of the New Albany Shale was held in Evansville on March 1. This workshop, organized by **Nancy Hasenmueller**, Environmental Section geologist, **John Comer**, Geochemistry Section head, and **Jeff Kirby**, education specialist, was sponsored by the IBC and the Gas Research Institute. The workshop, featuring 10 speakers and several poster presentations, was attended by nearly 200 registrants from 13 states. This workshop provided an overview of the organic lithofacies, organic carbon content, thermal maturity, and gas potential of the New Albany Shale. The reservoir characteristics and completion technology for productive

organic-rich Devonian shales in the Michigan and Appalachian Basins were also reviewed. Emphasis was placed on how proven technologies together with appropriate geologic and geochemical information can be used to explore for gas in the New Albany Shale.

Tony Fleming, Environmental Section geologist, conducted a short course on his study of the hydrogeology of Allen County, including instruction on use of the maps produced as part of that study. The course, aimed at the general public, was presented at Fort Wayne in January and was well attended by a wide variety of people, including county government officials and consultants.

Erik Kvale participated in an SEPM-sponsored transgressive systems tract meeting in Long Beach, Wash. ■

Faculty news

Three outstanding members of the faculty retired during the past year. The following tributes to our retirees were presented at the retirement reception, held on the Bloomington campus on April 12, 1995.

Donald E. Hattin

After 41 years of service to the Indiana University Department of Geological Sciences, with a single exception longer than any other faculty member in the history of the department, Donald E. Hattin is retiring. World-renowned stratigrapher, award-winning teacher, mentor of an immense number of graduate students, warm and outgoing colleague and friend, and loving husband and father are all phrases that describe this outstanding individual.

Don was born on Nov. 16, 1928, in Cohasset, Mass., and spent all of his precollege years in the neighboring town of Scituate, where he attended primary and secondary school. Don was one of four children brought up in a warm and happy household in which he received a strong indoctrination in the traditional American values. While in high school, he met Marjorie Elizabeth Macy, whom he married in 1950 and with whom he has shared his life ever since. Don and Marge have three children and three grandchildren.

Don began his college studies in 1946 at the University of Massachusetts, where he earned the BS degree in 1950. A childhood fascination with dinosaurs developed into a broader interest in the earth and led him to major in geology. After graduation, he and his bride headed west to the University of Kansas, where he studied stratigraphy and paleontology, first earning the MS degree (1952) under the direction of A.G. Fischer and John Imbrie, and then the PhD degree (1954) under the direction of Raymond C. Moore. All three of these geologists were or became giants in their fields. After completing his PhD degree, Don came to Indiana as an assistant professor. He taught for one year before being called to active duty as a lieutenant in the U.S. Air Force. Don returned to his faculty position at Indiana in 1957.

Don has authored or co-authored 71 papers and monographs and 48 abstracts ranging widely across the fields of stratigraphy, paleontology, sedimentology, and paleoecology. His work on the stratigraphy of rocks of Cretaceous age has been



Don Hattin, at South Park, Colo., in August 1949, is retiring this year.

recognized internationally as among the most innovative and significant research ever done on rocks of this period. His knowledge of chalk deposits around the world on Cretaceous strata has led him to be affectionately labeled "Dr. Chalk" by researchers in the field. His work has led to invitations to participate in conferences both in the United States and abroad, most recently in Denmark, where he presented the lead talk at an international conference on chalk deposits. He has held visiting professorships at the University of Texas at Arlington and the Ernst-Moritz-Arndt-Universität in Greifswald, Germany, and a distinguished visiting professorship at the University of Kansas. His research has been supported by grants from the National Science Foundation, the Petroleum Research Fund of the American Chemical Society, the Kansas and Indiana Geological Surveys, and the New Mexico Bureau of Mines and Mineral Resources.

Don is generally recognized as one of the most effective teachers in the university. He has received the College of Arts and Sciences Alumni Association Distinguished Teaching Award (1988), the Sigma Gamma Epsilon-Texaco Outstanding Teaching Award from the students in geology (1990), and the Graduate School Distinguished Teaching and Mentoring Award (1995). Recognition of his teaching has extended beyond the university with receipt of the Outstanding Educator Award from the Eastern

Section of the American Association of Petroleum Geologists (1993).

But perhaps the awards he values most are the informal ones he has received from geology students, who on three separate occasions named him "Screwball of the Year." Despite its name, this award actually reflects the affection and admiration the students feel for the recipient. Indeed, this award was originally created to honor Don Hattin, its first recipient.

Because of his excellent reputation both as a researcher and a teacher, Don has attracted many fine graduate students. A total of 29 students have completed master's degrees under his direction, and 13 students have received the PhD degree with Don as their adviser. Many of these students have gone on to prestigious, award-winning careers of their own. Practically every geology major at IU for the last 40 years has taken a course from Don, and very many remember Don's courses as among the best they have ever taken.

Don has not neglected the service component of his contribution to his university and profession. In spring 1955, he presented 13 live television programs on geology that were broadcast throughout southern Indiana. He has served on numerous professional committees and review boards, including the important North American Commission on Stratigraphic Nomenclature from 1987 to 1994.

Don is especially noted for his enthusiasm for geology and for whatever topic happens to capture his interest. A frequently told story about Don concerns one of the many field trips he led during his early years at IU. Because Don was discovering so many interesting things to share with the students, he was running behind schedule. Food and rest for the evening seemed trivial in comparison to the geology, so Don had the students park the cars so that their headlights would shine on the outcrop in the growing twilight! Yet, despite stories of long hours on the outcrop, Don's field trips are almost always fully subscribed with a waiting list.

Although Don will no longer be teaching, he will continue his active program of research at Indiana, including completion of numerous papers already in progress or planned. In addition to completing an autobiographical book about growing up in New England, Don plans

to write a biography of his wife's grandfather, W. Ferdinand Macy, who was a coastal landscape painter of the Hudson River School. Don and Marge have always traveled extensively and will continue to do so.

Thank you, Don, for 41 years of distinguished, dedicated, and enthusiastic service to our university. We rejoice in having you continue your research career with us and feel sorrow for the students who will no longer benefit from the infectious enthusiasm of your teaching.

—J. Robert Dodd

Alan S. Horowitz

After 31 years of service to Indiana University, Alan Stanley Horowitz, curator of paleontology and professor of geology, part time, is retiring. An internationally respected paleontologist, Alan is a leader in the study of Paleozoic fossils. He is also an always-concerned friend and counselor to his faculty colleagues and generations of paleontology graduate students in the Department of Geological Sciences.

Alan was born on June 12, 1930, in Ashland, Ky., the eldest of three children. His interest in geology was kindled at an early age when his father, a railroad weighmaster, brought home interesting rocks and minerals that he encountered on his job weighing freight that passed through the railroad yard. Alan attended public schools in Ashland before entering college at Washington and Lee University in Lexington, Va. Alan originally planned to be a trial lawyer, but decided to earn a degree in geology before entering law school. The law's loss was geology's gain when Alan then decided that he really was not the lawyer type, but that geology would make an admirable career. After receiving the BA degree in 1952 from Washington and Lee, Alan began his graduate studies at Ohio State University, specializing in paleontology. For his MS thesis, Alan prepared a geologic map of an area in northern Greenland, conducting his fieldwork in this strategically sensitive area under government security in the summer of 1953. After receiving his MS degree from Ohio State in 1954, Alan came to Indiana University to continue his work in paleontology under the direction of Thomas Perry, receiving the PhD degree in 1957.

Alan's first geological employment was as a research geologist with the Marathon Oil Co. at its research facility near Denver, Colo. At Marathon, Alan belonged to a team of outstanding geolo-



THE THREE MUSKETEERS! Alan Horowitz, from left, Don Hattin, and Gary Lane celebrate their retirements from the department.

gists at the forefront of new techniques for and approaches to studying carbonate rocks (limestones and dolostones). But Alan could not resist the temptation to return to his alma mater, Indiana University, to take the newly created position of curator of paleontology. This allowed Alan to resume his study of paleontology and to organize the extensive collections of fossils that had accumulated through the years in the IU Geology Department. Alan's contribution gradually expanded beyond his research and curatorial duties. He was increasingly asked to serve on graduate research committees and to help with the teaching of graduate courses. In 1980, this contribution was formalized with his appointment as research scientist and professor of geology, part time. In 1971–72, Alan was visiting professor at Aarhus University in Denmark.

In his long and illustrious career, Alan has authored or co-authored 53 papers, 57 abstracts, one field trip guidebook, five bulletins and monographs, and one book. His research has been supported by grants from the National Science Foundation and the Petroleum Research Fund of the American Chemical Society. He is an internationally recognized authority on Paleozoic fossils, particularly bryozoans (inconspicuous but very important fossils in many limestones in Indiana and around the world) and blastoids (an extinct group of stalked echinoderms). In addition to studying previously undescribed specimens of these and other groups, he has made a major contribution as a compiler of data from the published literature on various fossil groups. His work in data compilation has been especially useful to other paleontologists, who have frequently ex-

pressed their gratitude and admiration for Alan for this important service to the profession.

Alan has also been active in service to the Department of Geological Sciences and the university. For many years, he has served on the Bloomington Campus Library Committee. He has long been coordinator of the Wednesday noon brown bag seminar in the Department of Geological Sciences, an institution in the department.

Alan's love of books is well known by geology faculty and students, who can usually find him wearing his ever-present visor in the corner of his darkened office surrounded by shelves and stacks of books. He is also well known for his ardor and perseverance in collecting fossils in the field, where he can be found with his kneepads and with his blinders on his glasses to cut out any peripheral distractions. Faculty and students know that they can always go to Alan to discuss any problem — scientific, academic, or otherwise — and find a knowledgeable and sympathetic listener and adviser. Generations of geology graduate students have benefited from his counsel, whether or not his name appeared on the signature page of their dissertation.

In his middle years, Alan married Lillian Perry, the widow of his former colleague and mentor. Although they had no children of their own, Alan has been a loving father to the four Perry children (now with 12 grandchildren). Lillian passed away in 1992.

Although Alan is retiring, he will continue to have an office in the department and will continue his research and, undoubtedly, also his interaction with an

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Faculty news

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appreciative group of faculty and students.

—*J. Robert Dodd*

N. Gary Lane

Gary Lane's professional career has been hallmarked by quiet, purposeful dedication to the mentoring of students at all levels of academic endeavor, by scholarly research that has earned him rank amongst the world's most accomplished and widely known paleontologists, and by a sense of humor that has endeared him to students and faculty alike. His retirement will afford a much-deserved

opportunity to pursue even more vigorously a research effort that has led to global leadership in the study of fossil Crinoidea.

Gary was born in French Lick, Ind., on Feb. 19, 1930, the first child of Charles and Thelma Lane, but spent most of his youth in Sidell, Ill., where the family moved when he was just two years old. Gary's abiding love for nature and the out-of-doors was spawned by frequent visits to his grandfather's farm near French Lick, where the combination of animals to feed, spring and creek to explore, and forest to roam guided him subtly towards a career in science. By the age of 11, Gary had become involved in scouting, which stimulated the camping and hiking activities that were to become fixtures of his adult

lifestyle. By the time he finished college, Gary had already spent hundreds of nights under the stars.

In the fall of 1948, Gary entered Oberlin College with a view to majoring in chemistry, as well as playing some football. During his freshman year, Gary's roommate, Bert Driscoll, enrolled in a geology course to fulfill a science requirement. Gary read parts of Bert's textbook, found geology interesting, and declared geology as his major. So did Bert! Gary's senior year at Oberlin brought him into contact with a young new assistant professor, Harold Brooks, who steered Gary towards a career in paleontology and recommended graduate study with Raymond C. Moore at the University of Kansas.

In the fall of 1952, Gary entered the

Faculty research grants

• **A. BASU** (NASA), "Petrologic evolution of lunar and meteorite parent body regolith"

• **S. BRASSELL** (PACKARD FDN), "Molecular organic geochemical research studies of climatic variations over geological time"

• **S. BRASSELL** (UNOCAL), "Organic Geochemistry"

• **S. BRASSELL** (NSF), "Temporal variations in molecular records of sea surface temperatures and plankton productivity: assessment of high resolution signals in sediment trap particulates from the Gulf of California"

• **S. BRASSELL** (NATIONAL LEADING LABORATORIES OF CHINA), "Biogeochemical evidence of environmental and climatic change in the sedimentary record of Lake Gucheng Hu, Nanjing, China"

• **S. BRASSELL** (NSF), "Modernization of Biogeochemical Laboratories"

• **S. BRASSELL** (Petrobrás), "Cooperative agreement for research in biogeochemistry and petroleum geochemistry"

• **S. BRASSELL** (NOAA), "Development and calibration of paleoclimate proxies: a sediment trap study in Santa Barbara Basin"

• **J. BROPHY** (NSF), "A petrologic and ion-probe study of hornblende gabbro cumulates from Medicine Lake volcano: an evolution of competing mechanisms of calc-alkaline fractionation"

• **J. BROPHY** (TEXAS A&M), "Mineralogic and experimental studies of Leg 142 Igneous Rocks"

• **J. BROPHY** (NSF), "Acquisition of an Electron Microanalyzer"

• **J. R. DODD** (MARATHON OIL), "Architectural elements, composition and diagenesis of the shoal facies of the Salem Limestone, south central Indiana"

• **J. R. DODD** (IU, RUGS/DEPT. OF GEOL. SCIENCES), "Research award for field work in South Australia on the Lower Cambrian fossil reefs"

• **B. DOUGLAS** (NSF), "Environmental Weakening of Geologic Material"

• **B. DOUGLAS** (NSF), "The Role of Fabric and Crystal Chemistry in Subcritical Fracture Propagation"

• **J. DUNNING** (NSF), "Chemical Weakening in Geological Materials"

• **A. FISHER** (US NAVY), "Characterization of physical hydrogeology of Pennsylvanian formations at Rockeye and other Solid Waste Management Units at Naval Surface Warfare Center, Crane"

• **A. FISHER** (NSF), "Fine-scale hydrogeology and geochemistry of the areas of active venting in Middle Valley, a sedimented rift on the northern Juan de Fuca Ridge"

• **A. FISHER** (NSF), "Determination of Barbados accretionary prism hydrogeologic characteristics at sealed ODP boreholes"

• **A. FISHER** (NSF), "Upper ocean paleotemperatures: direct measurement using geothermal instrumentation"

• **A. FISHER** (USSSP), "Multi-scale investigations of hydrogeological properties: Barbados accretionary complex"

• **A. FISHER** (ONR), "Ocean crustal hydrogeology: the influence of bathymetry, sediment thickness, and permeability structure on off-axis energy and mass fluxes"

• **M. HAMBURGER** (USGS), "Multidisciplinary Study of Geodynamics in an Active Collisional Orogen, Soviet Central Asia"

• **M. HAMBURGER** (NSF), "Analysis of Seismic Data from Pinatubo Volcano, Philippines"

• **M. HAMBURGER** (NASA), "Appli-

cation of Global Positioning System Measurements to Continental Collision in the Pamir-Tien Shan Region, Soviet Central Asia"

• **M. HAMBURGER** (IRIS), "Seismic Array Studies in Eurasia"

• **M. HAMBURGER** (NSF), "Multidisciplinary study of Intracontinental Mountain Building in the Tien Shan of Kyrgyzstan and Kazakhstan"

• **J. HAYES** (NASA), "Isotopic Biogeochemistry"

• **J. HAYES** (DOE), "Isotopic studies of the biogeochemical cycle of carbon relationships between pCO₂ and the abundance of ¹³C in sedimentary organic matter"

• **J. HAYES** (UNIV.CALIF.-DAVIS), "Midwestern Regional Center of the National Institute for Global Environmental Change: isotopic studies of the biogeochemical cycle of carbon: relationship between pCO₂ and the abundance of ¹³C in sedimentary organic matter"

• **J. HAYES** (NSF), "Maintenance of pre-industrial atmospheric pCO₂ levels: recalibration of a carbon isotopic paleobarometer and pCO₂ mapping of the late Quaternary global ocean"

• **J. HAYES** (Petrobrás), "Cooperative Agreement for Research in Biogeochemistry and Petroleum Geochemistry"

• **J. HAYES** (NASA), "Training Grant, Fellowship for Graduate Student Training - Kristen Leckrone"

• **J. HAYES** (Petrobrás), "Tuition and fee support for Eugenio Santos Neto"

• **J. HAYES** (NSF), "Modernization of Biogeochemical Laboratories"

• **J. HAYES** (NSF), "Factors controlling the abundance of ¹³C in algal and sedimentary biomarkers from the Amundsen and Bellinghausen Seas, Antarctica"

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graduate program at Kansas, where he became a protégé of Raymond C. Moore, dean of American paleontologists and founder of the celebrated *Treatise on Invertebrate Paleontology*. Under "R.C.'s" direction, Gary completed a superb master's thesis, which was published as *Bulletin 130*, Part 3, of the Kansas Geological Survey. Gary continued graduate studies at Kansas, but before completing the dissertation, he received a Fulbright scholarship for study at the University of Tasmania. There he engaged in study of Permian Age invertebrate fossils in glacially influenced marine sediments — a subject on which almost no prior work had been done.

After an absence of nearly a year, Gary resumed his dissertation research under Moore's direction. Because R.C. was a

leading student of fossil crinoids, his and Gary's association had the fortunate effect of propelling Gary to the front line of crinoidal research, beginning with his dissertation on systematics, evolution, and classificatory revision of Family *Batocrinidae*. Later, Gary was to become author of major sections of the three-volume Crinoidea portion of the *Treatise on Invertebrate Paleontology*.

In the fall of 1958, Gary joined the faculty of U.C.L.A. as assistant professor of geology. Christmas break found him back in Lawrence, where he married Mary (Rooney), his wife of 36 years. Later, they would have three children, Charles, Susan, and Anne. As he rose through the ranks to full professorship, Gary mentored numerous graduate students and authored a long string of re-

search articles that are concerned mainly with fossil crinoids of the Great Basin.

While at U.C.L.A., Gary made arrangements for study of the well-known Berkeley collection of beautifully preserved crinoids from the famous Crawfordville, Ind., site. Later, while on sabbatical leave, Gary worked that site for nearly a year as part of a project to unravel the depositional history of this most remarkable assemblage of fossils. This work helped to re-establish Gary's ties to the Midwest and kindled a strong interest in the rich crinoidal beds that abound in our region. When a paleontological position opened at IU in 1973, Gary was successfully attracted to the Department of Geology. He wasted no time in establishing one of the pre-

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Faculty research grants

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• **N. KROTHER** (WESTINGHOUSE), "Hydrochemical Field Research and Spectrofluorophotometer Analysis for Dye Tracing Studies"

• **N. KROTHER** (WESTINGHOUSE), "The Geology and Hydrogeology of the Neal's Landfill Area"

• **N. KROTHER** (WESTINGHOUSE), "Hydrogeologic Testing in the Upper Mississippian Carbonates, Neal's Landfill Area"

• **N. KROTHER** (US ARMY CORPS OF ENGINEERS), "Chemical and Geological Reconnaissance to Provide Aquifer Data for the Development and Verification of Chemical and Physical Models of Groundwater Flow Beneath the Naval Weapons Support Center, Crane, Indiana"

• **N.G. LANE** (NSF), "Paleobiogeography of Late Devonian and Carboniferous echinoderms from the Peoples Republic of China"

• **N.G. LANE** (NSF), "Echinoderm rebound and diversification after the Late Devonian extinction evidence from Asian Carboniferous and Eurasian famennian echinoderm faunas"

• **N.G. LANE** (IU, RUGS), "Paleobiology of Late Devonian fossil Crinoids in Eurasia"

• **E. MERINO** (NSF), "Origin of agate textures"

• **G. OLYPHANT** (USGS/NOAA), "Contemporary and historical eolian sand transport in a coastal dune environment, South Shore, Lake Michigan, Indiana"

• **G. OLYPHANT** (IDEM/EPA), "Chemistry and Movement of Septic Tank Absorption Field Effluent in the Dunes Area, Lake and Porter Counties, Indiana"

• **G. OLYPHANT** (USGS), "Analysis of the Potential Geomorphic Response of the

Wabash River to Neotectonic Deformation along the Wabash Valley Fault System"

• **G. OLYPHANT** (NATIONAL PARK SERVICE), "Seed Funding for Monitoring Hydrogeologic Conditions in Wetland Watersheds of the Indiana Dunes National Lakeshore"

• **G. PAVLIS** (USGS), "Multidisciplinary study of geodynamics in an active collisional orogen, Soviet Central Asia"

• **G. PAVLIS** (AFOSR), "Broadband signal enhancement of seismic array data: application to long-period surface waves and high-frequency wavefields"

• **G. PAVLIS** (IRIS), "Seismic Array Studies in Eurasia"

• **G. PAVLIS** (USGS), "Collaborative research (S.E. Missouri State Univ., Indiana University, Indiana Geological Survey): A comprehensive geophysical investigation to assess seismic hazards in the Wabash Valley Seismic Zone: A case study of the New Harmony Fault"

• **L. PRATT** (NSF), "Cooperative study of Cretaceous Black Shales in the Benue Trough, Nigeria"

• **L. PRATT** (DOE), "Isotopic studies of the biogeochemical cycle of carbon relationships between pCO₂ and the abundance of ¹³C in sedimentary organic matter"

• **L. PRATT** (NSF), "Biogeochemistry of lipid biomarkers in modern and fossil bivalve shells"

• **L. PRATT** (NSF), "A Stratigraphic and Geochemical Transect across northern South America for assessment of paleoceanographic events in the Caribbean gateway during the middle Cretaceous"

• **L. PRATT** (NSF), "Molecular and isotopic composition of lipids in bivalve shells: records of biosynthetic origins and paleoenvironmental change"

• **L. PRATT** (NSF), "Modernization of Biogeochemical Laboratories"

• **L. PRATT** (MOBIL), "Award for Research"

• **E. RIPLEY** (NSF), "Metal sources and mechanisms of enrichment for Cu-Ni-PGE mineralization in Fe-Ti-rich gabbroic rocks, Duluth Complex, Minnesota"

• **E. RIPLEY** (IU FACULTY FELLOW-SHIP), "Experimental studies of copper solubility in mafic magmas"

• **E. RIPLEY** (GRASSMANN FOUNDATION), "Purchase of vacuum and manometer systems for stable isotope sample preparation, Indiana University"

• **A. RUDMAN** (CHEVRON), "Earth Science Cash Gift"

• **A. RUDMAN** (USGS/NEHRP), "Assessment of Seismic Hazards in the Wabash Valley"

• **A. RUDMAN** (VASTAR), "Seismic and Potential Field Studies in the Mid-Continent"

• **M. SAVARESE** (AMERICAN CHEMICAL SOCIETY), "Paleobiological and Paleoenvironmental context of coralomorph-bearing Lower Cambrian reefs, South Australia"

• **M. SAVARESE** (IU HOWARD HUGHES UNDERGRADUATE INITIATIVE), "Course Development Proposal for Natural History of Coral Reefs"

• **L. SUTTNER** (NSF), "Chronostratigraphic Analysis of Alluvial Facies and Associated Unconformities in the Lakota Megasequence of the Central Cordilleran Foreland Basin."

• **R. WINTSCH** (NSF), "Thermochronology and thermobarometry in lithotectonic zones in eastern New England"

Faculty news

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mier programs for research on fossil Crinoidea. Students who received training under Gary's direction are now themselves among the best-known paleontologists in the nation.

Shortly before leaving U.C.L.A., Gary and colleague Clarence Hall had undertaken study of flowering plants with the hope of developing an undergraduate course on the natural history of southern California. Because of the move to IU, the course has been taught instead in southern Indiana, first under the auspices of the Collins Living Learning Center, and then of the Honors Division. The course, now part of the Lane legend, entails weekend camping trips, fieldwork on biology and geology, song singing around the evening campfires, and open-air preparation of Chinese-style meals in a gigantic wok, of which Gary is an acknowledged master!

In 1984, Gary was invited to chair the Department of Geology, a task that he carried out with a remarkable display of patience, firmness, and administrative skill. These qualities rested on wide experience with students, faculty, and staff here and at other institutions both in the United States and abroad.

In 1987, Gary relinquished the geology chair and returned to the full-time program of teaching and research that he loves so much. Most recently, in 1991 and 1993, Gary and two of his former doctoral students mounted paleontological expeditions to the most remote areas of western China and also to southern China to research richly fossiliferous crinoidal strata of Xingiang-Uigur Autonomous Region and Guangxi provinces. Yet a third expedition took place during the summer of 1995, testifying to the unreduced vigor with which Gary is initiating his retirement years.

Many honors have been accorded Gary for his outstanding scholarship and selfless dedication to science. Gary was elected president of the prestigious Paleontological Society for 1977-78. In the spring of 1995, he was presented the Raymond C. Moore Medal of the Paleontological Society and thus recognized as one of the foremost paleontologists of our time.

Faculty and staff members in the Department of Geological Sciences are greatly indebted to Gary and extend sincerest thanks for the contributions he has made to our program. Through his own work and that of the students he has so ably mentored, Gary's influence on our science will continue far into the

future. We look forward to the pleasure of his continuing presence in the research laboratories, and to the wise counsel of this quintessential man of science.

— Donald E. Hattin

In other news:

Abhijit Basu continues with his research on the petrologic evolution of the lunar regolith with support from NASA, using JSC-Houston Laboratories frequently. In September 1994, he was a week-long guest of the Italian Geological Society and the Italian Society for Mineralogy and Petrology, delivering a keynote address at their joint meeting. He also traveled to Brazil to present a paper at the quadrennial meeting of the International Association of Sedimentologists. He is rotating out after five years of chairing the Developing Countries' Libraries Committee of SEPM and re-charting it to the Friendship Programs Committee. He, however, continues to be an associate editor for the *Journal of Sedimentary Geology*, and, in January 1996, he will assume the responsibility of science editor for the books published by the Geological Society of America.

Basu raised money to help establish a Professorship in India Studies at IU and will not be shy in asking geology alumni for generous gifts, especially over a single malt!

Bob Dodd and **Mike Savarese** did field work during summer 1994 in the Flinders Range of South Australia studying lower Cambrian coral and archaeocyathid-bearing reefs. This is of particular interest because these are the oldest corals that have been described. They are attempting to learn how reefs are constructed in terms of energy sources and cycling, as well as determining if archaeocyathids had photosynthetic algae in their tissues as do modern corals. After looking at the fossil reefs they spent three days on the Great Barrier Reef on Heron Island. Joann and Bob Dodd then traveled north into the tropical part of Australia to vacation around Cairns.

Jeremy Dunning has co-authored, with Professor Philip Brown, University of Wisconsin, the first geologic textbook (and perhaps the first science textbook) on compact disc-read only memory. *In-Terra-Active* is published by West Publishing Co. and is an interactive geology text on CD-ROM that presents a multimedia approach — text, sound, film, and animation — that allows students to learn about a variety of rocks and geologic reactions and then test their knowledge. Among the features is a section

wherein students can plot the effects of three global trends over time — global warming, energy and resources, and waste management. As an example, starting from the year 1900, users can see the contemporary state of garbage — how much waste was produced at the time and where people put it. They can select what to do about the problem in the future — whether to limit development, change behavior or defer action. Each choice changes the future in terms of protecting the environment relative to economic growth and development.

One feature will print out a student's activities during a given session as a way of measuring what they're doing and what they're learning while at the same time letting the students set their own learning rates. This past spring, Jeremy taught an honors section of course G103 using this interactive text and, in the fall, he and **Gary Pavlis** co-taught a larger section of this offering open to all students.

Don Hattin's retirement has been marked by the establishment of an endowment through the IU Foundation. Interest generated by the **Don Hattin Special Field Course Fund** will be used to help financially needy undergraduate and graduate geology majors at IU Bloomington to participate in special (noncore) field courses such as G420 Regional Geology Field Trip, G575 Geology of Tropical Marine Environments, and G341 Natural History of Coral Reefs. Anyone who wishes to contribute to this endowment may do so by sending a check (made out to the IU Foundation and designated for this fund) to Sarah Burton, Department of Geological Sciences, Indiana University, Bloomington, IN 47405. G341 will be cross-listed as L341 in biology. The first year will be a three-week class, with the first week taught in Bloomington and the last two on-site in Bermuda at the Bermuda Biological Station for Research.

Alan Horowitz has retired after 31 years as curator of paleontology. A symposium and field trip was hosted by the department in his honor on April 7-9, 1995, and several alumni and colleagues gave presentations including a keynote address by **Johnny Waters**, MA'76, PhD'78, and research reports by **Bob Anstey**, MA'67, PhD'70, **Bill Ausich**, MA'76, PhD'78, **Bob Dodd**, **Mike Savarese**, and **Johnny Waters**. Additional reports were given by students from Ohio State, the University of Cincinnati, and IU on work currently in progress. Other alumni attending that weekend included **Gary Anderson**, MAT'67, MA'69, PhD'71, from St.

Cloud State, **Jim Stratton**, MAT'67, MA'72, PhD'75, from Eastern Illinois University, and **Larry Knox**, BA'65, MA'71, PhD'74, from Tennessee Tech. Alan also was honored as the recipient of the department's 1994-95 Owen Award for distinguished alumni.

In February 1994, Alan gave a presentation, co-authored with Joe Pachut of IUPUI, at the International Bryozoology Association conference in Wellington, New Zealand. He also attended part of the postconference field trip to South Island. IU alumnus **Roger Cuffey**, BA'61, MA'65, PhD'66, from Penn State, also attended. Alan expects to be busy in retirement finishing various ongoing paleontological studies.

Gary Lane has formally retired, but remains active on several fronts. His retirement luncheon on Dec. 9, 1994, was

a roaring success with about 90 people attending, including six of his former PhD students, as well as Clarence Hall from U.C.L.A. He left May 22 for his third stint of field work in China, returning on June 17. Former students **Johnny Waters**, MA'76, PhD'78, and **Chris Maples**, MS'85, PhD'85, joined him. Several of Gary's U.C.L.A. PhD students including John Grimmer, Al Larson, and Gary Webster, visited in late June for a retirement campout. Gary made a museum trip to England this past September/October to study type Devonian crinoids in conjunction with the Chinese work. He also stopped in Ireland to visit George Sevastopulo and family.

Gary is slowly putting together a history of the IU Department of Geology. By the end of the past spring semester,

he had completed text up to about 1920. He would be most pleased to hear from any alumni who want to relate interesting or amusing stories about present or former faculty, especially stories that illustrate their personalities, their foibles, or other characteristics.

Enrique Merino traveled in May 1995 to Townsville, Australia, to deliver a keynote paper with Daniel Nahon (Marseille) on the dynamics of laterization at the 17th International Geochemical Exploration Symposium. While contradicting the fashionable current thinking on this matter, Enrique found time to snorkel on the Great Barrier Reef. On their return from Australia, Merino and Nahon also presented their laterite story to the Goldschmidt Conference at Penn State. Postdoc **Yutian Wang** continues to work on aspects of laterization with Enrique. Ex-graduate student **Yifeng Wang**, PhD'93, after a couple of years at Georgia Tech, is taking a job at Sandia Labs in Albuquerque, where, in addition to new work, he will continue working with Rick Murray (Boston University), Caroline Isaacs (USGS Menlo Park), and Enrique on the origin of the cyclicity of bedded cherts and banded iron formations.

Haydn Murray remains busy in retirement. In May 1995, he taught a course on industrial minerals at the University of the South in Bahia Blanca, Argentina, where **Eduardo Dominguez**, who was a postdoc with Haydn at IU in 1988-89, is the chair of the Department of Geology. Recent members of the industrial minerals group who once worked in Haydn's lab include **Jun Yuan**, PhD'95, who is employed in research and development with English China Clay/America in Sandersville, Ga.; **Xuijia Weng**, MS'95, working at Evans Clay Co. in McIntyre, Ga.; **Jason McCuiston**, BS'93, employed by Spinks Clay Co. in Paris, Tenn.; and **Clayton Millard**, MS'95, working for the Indiana Geological Survey.

On the personal side, Murray is busy with several clay mineral projects in China, Brazil, and Argentina. He is a trustee of the AGI Foundation, the GSA Foundation, and the SME Foundation. He also is on the board of directors of Oil-Dri Corp. of America, a large mining and processing company producing absorbent clays. He serves as a trustee of the Union Foundation and the E.J. Grassmann Trust, both of which were established by the former owner of Georgia Kaolin Co., where Haydn was employed for 16 years. Haydn will remain president of the International Clay Min-

(continued on page 14)

Department of Geological Sciences faculty & staff

Professors: Abhijit Basu, Simon Brassell, James Brophy, J. Robert Dodd, Jeremy Dunning, Michael Hamburger, John Hayes (chair), Norman Hester, Noel Krothe, Randy Mackie, Enrique Merino, Greg Olyphant, Lawrence Onesti, Gary Pavlis, Lisa Pratt, Vishnu Ranganathan, Edward Ripley, Albert Rudman, Michael Saverese, Lee Suttner, David Towell, Robert Wintsch

Visiting Professors: Colin C. Harvey, Claudia Johnson

Part-Time Professors: Donald Carr (Survey), Gordon Fraser (Survey), Henk Haitjema (SPEA), Brian Keith (Survey), Peter Ortoleva (Chemistry), Carl Rexroad (Survey), Jeff White (SPEA)

Professors Emeritus: Robert Blakely, John Droste, Donald Hattin, Alan Horowitz, N. Gary Lane, Judson Mead, Haydn Murray, Robert Shaver, Charles Vitaliano

Research Scientists: Michael Dorais, Bruce Douglas, Andy Fisher, Arndt Schimmelmann

Postdoctoral Fellows: Takashi Hasegawa, Hanan Madhi, Andrew McTaggart, Susumu Sakata, Liwen Yin, Michael J. Zaleha

Librarian: Lois Heiser

Library Staff: Dennis Scoville (Technical Assistant), Linda Stewart (Circulation/Reserves)

Staff: Sarah Burton (Administrative Assistant, Chair's Office), Patty Byrum (Administrative Secretary, Chair's Office), Lorie Canada (Faculty Secretary, Fourth Floor), John Day (Photographic Specialist), Ruth Droppo (Research Secretary, Biogeochemistry), Grant Estey (Resident Manager, Field Station, Montana), Candace Franz (Research Secretary, Clay Mineralogy, First Floor), Jon Fong (Technician, Biogeochemical Labs), Mark Gilstrap (Chemist, Analytical Chem Lab Manager), Mary Iverson (Student Records), Kari Lancaster (Cartographic Specialist), Anne Leinenbach (Faculty Secretary, Fifth Floor), Julie Primack (Technician, Biogeochemical Labs), Debbie Pryor (Senior Secretary, Business Office), Jean Reese (Research Secretary, Third Floor), Kim Schulte (Secretary, Geologic Field Station), Brian Snow (Computer Systems Manager), Kim Sowder (Cartographic/Photographic Specialist), Terry Stigall (Electronics Technician), Steve Studley (Manager, Mass Spec. Lab.), Jim Tolen (Senior Cartographic Specialist)

Faculty news

(continued from page 13)

erals Association (AIPEA) until 1997. Juanita and Haydn attended the Euroclay meeting in August 1995 in Belgium, where the AIPEA Council met. Nevertheless, Haydn says that he does manage to find some time to fish, hunt, and play a little golf.

Jessica Elzea-Kogel, MS'87, PhD'90, is employed in the research and development laboratory of Thiele Kaolin Co. in Sandersville, Ga. Jessica had her second child, a boy, in January 1995.

Ed Ripley has had several visitors in his laboratory during the past year including Cheon-Young Park, a visiting researcher from Chosun University in Kangju, South Korea, and Penny Morton, of the University of Minnesota, Duluth. Park is studying contamination of soils in Korea possibly produced as a result of mining activity. Morton spent two weeks in Ed's lab doing oxygen isotopic analyses of rocks from the Longear Ti deposit, Duluth Complex. Ed is continuing collaborative work with Sang Ho Moon (tin deposits in Korea), Raul Lira (greisens in the Achala Batholith, Argentina), Chris Chalokwu (oxygen isotopes in the Freetown Layered Complex, Sierra Leone), Mike Leshner and Bill Stone (oxygen and hydrogen isotopic studies of amphiboles in komatiites of the Abitibi district), Jim Miller (petrogenesis of the Duluth Complex), and Steve Hauck and Mark Severson (apatite-ilmenite [nelsonite] rocks in the Duluth Complex).

On the personal side, Ed and Kathleen's son, Eric, has been recruited to play soccer for IU.

A recent doctoral student in Ed's lab, **Insung Lee**, PhD'94, has now assumed full responsibility as director of the Stable Isotope Laboratory, Korea Basic Science Center. In addition to a variety of service projects, Insung is doing research on talc deposits in Korea and working on improvement of the extraction and conversion of water from amphiboles for hydrogen isotopic analysis.

Al Rudman is working on two grants involving the Wabash Valley. One is a USGS grant with **Gary Pavlis** and **Michael Hamburger** to assess seismic hazards in the Wabash Valley Seismic Zone and the other is a VASTAR (Arco)-funded project with **John Rupp** to relate seismic and potential field data to the tectonics of the Wabash Valley. Graduate student **Matt Cohn** is studying the fracture patterns associated with karst terranes in Monroe County, using field measurements at exposed sites and

electrical resistivity measurements. Results may be applicable to contaminant movement in landfills. **Glenn Bear** is in the final year of his PhD research with a focus on the tectonics of the Wabash Valley Seismic Zone. He is utilizing large potential field data sets and (some) proprietary seismic lines in the area.

Bob Shaver remains busy in retirement. He recently finished a three-year stint as an associate editor of the Geological Society of America *Bulletin*. During August 1994, he assisted as a volunteer subsidiary instructor at the Alumni College at the Geologic Field Station in Montana. Returning home was initially a treat for Bob and Sue as they stopped off to visit the Beartooth Mountains. However, breakdown of the IU van they were bringing back to Bloomington resulted in an extra day of travel and "considerable expenditure of neurotic energy." In April 1995, Bob accepted an invitation from the local Elder Hostel Group, which meets at Clifty Falls State Park, Madison, to conduct a one-week course there on "Fossil Life and the Dynamic Earth As Its Basis." Bob has continued his research into his family genealogy with plans for a third published book, this one probably to be the last and smallest.

Lee Suttner was a recipient of an Outstanding Educator Award from the Eastern Section of the American Association of Petroleum Geologists at its September 1994 meeting. He was specifically cited for his outstanding contributions in the classroom and the field at the graduate and undergraduate levels through teaching, administration, and research in sedimentary geology.

Lee continues his studies of the factors that controlled the spatial and temporal migration of major fluvial systems in the Western Interior foreland basin. Currently, two PhD students, **Nathan Way** and **Craig Rankin**, are major contributors to this project through their field and subsurface studies in the Black Hills and Powder River Basin region. **Lloyd Furer** (Indiana Geological Survey) is primarily responsible for coordination of the subsurface aspects of the study. Michael Zaleha, a recent PhD student of John Bridge at SUNY Binghamton has joined the group this year in a post-doctoral position. Michael is modeling paleohydraulic parameters of the river systems in order to detect how these parameters were affected by subtle intrabasinal tectonism. An important summary of the group's work appeared last spring in SEPM Special Publication 52.

Lee's twin daughters, Lisa and Lori,

and son Jim, all have completed their undergraduate degrees at IU and reside in Bloomington. Daughter Jennifer and son-in-law Chris, also both IU alumni, reside with their four-year old son, Daniel, in Kalamazoo, Mich. Ginny Suttner began her 10th year as principal of St. Charles School this past fall.

Dave Towell completed his latest term on the Bloomington Faculty Council, where he served as secretary and as a member of the Agenda Committee. He also chaired the Bloomington Campus Student Affairs Committee and co-chaired the equivalent committee at the university level. The Bloomington committee, working with the dean of students office, student government, and various school administrators drafted a revision of the *Code of Student Ethics*, which will be presented to the Bloomington and University Faculty councils this year. Dave will remain on the Bloomington Committee as a noncouncil member.

Dave and Lindsay are proud grandparents of a second granddaughter, Abigail, born in January 1995 to Garrett and Cheri Towell. Son Brian is now working in Denver, Colo., for GeoGraphix Inc. as a geologist, support specialist. He married Sydney Cooley of Muncie, Ind. at Red Rocks, Chapel in Morrison, Colo., on Aug. 5, 1995. Finally, after 31 years of eligibility for the award, Dave was voted the 1994 recipient of the department's Screwball of the Year Award. It just goes to show that if you never give up, just keep trying, you might eventually achieve your ultimate goal in life.

Charles and Dorothy Vitaliano were among the eight Americans who participated in midsummer 1994 in a two-week seminar on the volcanoes of Kamchatka. The seminar was organized by East-West Discovery, an Hawaii-based group, which, along with appropriate Russian institutions, is promoting various tours to Siberia. The Russian contingent, bringing this seminar to a total of 15 or so, was mainly from the Institute of Volcanology in Petropavlovsk. After a couple of days in Petropavlovsk, the group flew by helicopter to Karymskiy Volcano, where they camped in the caldera for five nights and then flew to Geyser Valley for a day trip before returning to Karymskiy. The next day, it was off to Ksudach Volcano, a complex of five calderas for four more nights, and finally back to Petropavlovsk for visits and lectures at the institute. Many spectacular volcanoes were seen and photographed from the air during the several flights. ■

Awards & grants

Undergraduate

- Senior Faculty Awards
Priya Ganguli, Terre Haute
Margaret Streepey, Georgetown
- N. Gary Lane Award (beginning major)
Terry Arcuri, Bloomington
- Minority Achiever's Program Scholarship
Amanda Hopkins, Valparaiso
- Chevron Geophysics Scholarship
David Wilson, Losantville
- Honors Division Undergraduate Research Award
Margaret Streepey, Georgetown
- Shrock Scholarship
Priya Ganguli, Terre Haute
- Junior Professional Development Award (society membership and journal)
Melissa Buciak, Palos Heights, Ill.
- William Tarr Award (Sigma Gamma Epsilon)
David Wilson, Losantville
- Outstanding Student Paper Award at Northeastern Section GSA Meeting
Margaret Streepey, Georgetown

Field Station Scholarships (IU students)

- Charles Deiss Field Station Scholarship
Amber Pickett, Fishers
- Field Station Scholarships
Jen-chieh Hsieh, Taipei, Taiwan, R.O.C.
Katrina Nell, Bronx, New York, N.Y.
Richard Stotts, Danbury, Conn.

Graduate

- Estwing Award and Outstanding Academic Achievement
Lindsey Leighton, Lee, Mass.
- Department of Geological Sciences Outstanding Academic Achievement Award
Christopher Dintaman, Bloomington
- Outstanding Associate Instructor
Craig Rankin, Avella, Pa.
- College of Arts and Sciences Graduate Fellowship
Scott Dreher, Champaign, Ill.
- Chevron Oil Company Fellowship in Geophysics
Alex Krueger, Clinton, Mich.
- Shell Oil Company Fellowship
Christopher Amato, Queens, New York, N.Y.
- Geochemistry Fellowships

- Joseph Dzvonic, McKeesport, Pa.
- Anthony Lopez, Greenfield
- Grassman Fellowship
Jason McCuiston, Springfield, Ohio
- Oil Dri Fellowship
Jean Hemzacek Laukant, Villa Park, Ill.
- Federal Government of Brazil Scholarship
Ana Maria Carmo, Salvador, Brazil
- Federal Government of Colombia Scholarship
Germann Mora, Bogota, Colombia
- Petrobrás Fellowship
Eugenio Santosneto, Rio de Janeiro, Brazil
- BP Exploration Minority Fellowship Award
Anthony Lopez, Greenfield
- NASA Global Change Fellowship
Kristen Leckrone, Cincinnati, Ohio
- John B. Patton Awards
Nadeem Ahmad, Multan, Pakistan
Glenn Bear, Fostoria, Ohio
Matthew Cohn, Chicago, Ill.
Lindsey Leighton, Lee, Mass.
Lisa Rhoades, Evansville
- Vastor Research Grant
Glenn Bear, Fostoria, Ohio
- GSA Grant-in-Aid of Research Awards
Christopher Amato, Queens, New York, N.Y.
Volker Bruchert, Burgkirchen, Germany
Kristen Hagstrom, Southington, Conn.
Kristen Leckrone, Cincinnati, Ohio
Matthew Warner, Columbus, Ohio
- Sigma Xi Grant-in-Aid of Research Awards
Christopher Amato, Queens, New York, N.Y.
Donna Surge, Deer Park, N.Y.
- Outstanding Student Paper Award at North Central Section GSA Meeting
Christopher Gellasch, Sterling Heights, Mich.
- AAPG Merit Award
Donna Surge, Deer Park, N.Y.
- Sigma Xi Initiates
Christopher Carlson, Evanston, Ill.
Kristen Hagstrom, Southington, Conn.
Jean Hemzacek Laukant, Villa Park, Ill.
David Millen, Bloomington
Richard Stotts, Danbury, Conn.
Ruiliang Wang, Kuming, Yunnan Province, P. R. China

Degrees awarded

Bachelor of Arts

- Clair, Deborah; Indianapolis (5/95)
- Finta, David L.; South Bend (5/94)
- Hopkins, Amanda; Valparaiso (5/95)
- Lagenour, Christopher; French Lick (8/94)
- Meiss, Stacey; Fort Wayne (8/94)
- Williamson, Brad L.; Nashville (5/94)
- Wright, Andrea; Bloomington (8/94)

Bachelor of Science

- Becker, Jennifer L.; Bloomington (5/94)
- Bonafair, Tim M.; Batesville (5/94)
- Burton, J. Wesley; Bloomington (5/95)
- Callis, Joseph; Madison (8/94)
- Chertkoff, Darren; Bloomington (5/95)
- Elkington, Claire; West Chicago, Ill. (8/94)
- Ellis, David; Bloomfield (5/95)
- Fisher, Joseph; Warsaw (12/94)
- Flesher, Christopher; Hammond (5/95)
- Ganguli, Priya; Terre Haute (5/95), Honors, Thesis: "High Pressure Sanidine⁴⁰Ar/³⁹Ar Results from Mesozoic Rhyolite Dikes near Lake Gaston, N.C. and Va."
- Ingle, Stephanie; Indianapolis (12/94)
- Kline, Randy; Kendallville (8/94)
- Klug, Jennifer; Richland, Mich. (8/94)
- Pahmeier, Ann; Westphalia (5/95)
- Schmoll, Aaron; Porter (8/94)
- Streepey, Margaret; Georgetown (5/95)
- Strength, Dana A.; Valparaiso (5/94), Honors with Distinction, Thesis: "Concentrations of Major Elements in Limestone/Marlstone Couplets as an Indicator of Cretaceous Environmental Conditions in the Sergipe-Algoas Basin, Brazil"
- Szpakowski, Scott A.; Portage (5/94)
- Vonderhaar, Eric; Evansville (12/94)

Master of Science

- Ahmad, Nadeem; Multan, Pakistan (8/94), "Sedimentologic Evolution and Three-Dimensional Facies Architecture of the Salem Limestone, Illinois Basin"
- Austin, Amanda; Cincinnati, Ohio (8/94), "A Hydrogeochemical Study of the Illionis Central Groundwater Basin,"

(continued on page 16)

Staff news

Candace Franz is one of the newer members of the geological sciences support staff. She works for Professor Emeritus Haydn Murray in the clay mineralogy research area. She arrived in Bloomington with her husband, Burvee, who is a graduate student in the department's hydrogeology program, in August 1994, following their honeymoon trip to Costa Rica. She is completing a master's degree in fine arts, which she began at Ohio University, and is looking forward to taking classes at Indiana University. Candace enjoys studying art and traveling and hopes to visit the great museums of the world.

Grant Estey assumed the duties of resident manager of the Geologic Field Station in Montana on May 8, 1995. Grant is past co-owner of Eagle's Perch

Custom Building and Design Co. of Whitehall, Mont. Previously, he served in the U.S. Navy (1972-1976), including two tours in Vietnam aboard the U.S.S. *Meyerkord*. Grant also attended the University of Alaska. His wife, Lisa



(Brozovich), worked as a teenager in the field station kitchen. Grant and Lisa have two delightful children, Andrew (3) and Haylee (1). The Estey family was a big hit with students, faculty, and staff this past summer!

Patty Byrum celebrated 11 years in the department last February. She has been working as the administrative secretary in the chair's of-

fice for the past four years. Her position includes the title Scheduling Officer for the department, and she helps to direct the work involved in setting the class schedules for each semester, including the summer sessions. She is responsible for the payroll, and so is considered a very important person in the department!

Patty's family is nearly grown, and this past March she became the proud grandmother of Katie Lynette Byrum, daughter of Brian and Gina Byrum. Brian graduated in May from Indiana State University and began his high school teaching career this fall. Patty's older daughter, Carla, was married this past May at a ceremony in Martinsville. Younger daughter, Kim, is a senior at Martinsville High School. ■

Student news

(continued from page 15)

Monroe County, Indiana" (research paper)

- Boyd, Julie; Kingwood, Texas (6/95), "Polymetamorphism of the Bronson Hill Terrane: A 100-m.y. Age Gradient in $^{40}\text{Ar}/^{39}\text{Ar}$ Hornblende Ages"
- Davis, Cara L.; Honolulu, Hawaii (2/95), "Geochemical and Carbon-Isotopic Stratigraphy of Cretaceous Marine Sediments in a Core from the Maracaibo Basin, Western Venezuela"
- Dull, Kathleen A.; Huntington (9/94), "A Gravity Investigation of the North Boulder Basin, Southwest Montana"
- Gellasch, Christopher; Sterling Heights, Mich. (11/94), "Stratigraphy and Parasequence Analysis of the Dakota Formation-Graneros Shale Transition (Upper Cretaceous), Central Kansas"
- Lewis, Jennifer J.; Landisville, Penn. (2/95), "Tectonic History of the Wabash Valley Fault Zone Using Seismic Reflection and Stress Regime Data"
- Millard, Clayton; Geneseo, N.Y. (4/95), "Characterization of a Posey County Clay for Use As a Compacted Clay Liner"
- Monk, S. Mark; Middletown, Md. (8/95), "Distribution and Characterization of Organic Matter in Sediments of the Santa Monica Basin, Offshore, California"
- O'Malley, Patrick; Montevideo, Minn.

(12/94), "The Influence of Subtle Tectonic Movement along Basement Rooted Lineaments on Deposition of the Lakota Formation, Northeastern Wyoming"

- Payne, Dorothy F.; Berkeley, Calif. (5/95), "The Effect of Reaction-Transport-Mechanical Processes on the Spatial and Temporal Evolution of Diagenetic Phenomena in Sedimentary Basins: A Test of the CIRFB Code"
- Way, Nathan J.; Bloomington (5/94), "Correlations of the Upper Jurassic-Lower Cretaceous Nonmarine and Transitional Rocks in the Northern Rocky Mountain Foreland" (research paper)
- Weng, Xuijia; Nanjing, Jiangsu Province, P.R. China (8/95), "Mineralogy, Morphology, Geochemistry, and Selected Physical Properties of the Twiggs Clay in the Georgia Kaolin District."
- Ziegler, Barbara J. (Grehl); Nanuet, N.Y. (8/95), "Application of Fluid Transport Design Theory to Sponge Functional Morphology"

Doctorate

- Bennett, Steven W.; Cedar Falls, Iowa (12/94), "Eolian Processes in a Coastal Dune Environment, Indiana Dunes National Lakeshore"
- Chen, Yueting; Jilan, P. R. China (11/94), "CIRF.A: A General Coupled Reaction-Transport Model and Simulator"
- Guthrie, John M.; Madison (11/94), "Organic Geochemistry and Carbon Isotopic Compositions of Strata in the Upper Ordovician Maquoketa Group and

Oils in Ordovician Reservoirs from the Illinois Basin"

- Iqbal, Mohammed Z.; Dhaka, Bangladesh (8/94), "A Study of the Infiltration Processes Responsible for Contamination of Groundwater by Fertilizer-Derived Nitrate and Other Chemical Compounds in the Karst Aquifer of Orange and Washington Counties, Indiana"
- Lakey, Barbara L.; Ashland, Ohio (5/95), "Identifying Subsurface Storage Compartments Contributing to Karst Spring Discharge Through the Use of Major-Ion Chemistry and Oxygen and Deuterium Isotopes in the Upper Lost River Drainage Basin, South-Central Indiana"
- McDonald, Susan K.; Freedom (10/94), "Subcritical Fracture Propagation and Its Application to Compound Earthquakes"
- Mellors, Robert J.; North Royalton, Ohio (5/95), "Two Studies in Central Asian Seismology: A Teleseismic Study of the Pamir/Hindu Kush Seismic Zone and Analysis of Data from the Kyrgyzstan Broadband Seismic Network"
- Ramos, Emmanuel G.; Quezon City, Philippines (5/95), "Seismicity and Magmatic Intrusion Processes at Pinatubo Volcano, Philippines"
- Yuan, Jun; Zhejiang, P. R. China (5/95), "Clay Mineralogy and Its Influence on Industrial Uses of Some Kaolin Clay Deposits from South China and Eastern Washington-Idaho, U.S.A." ■

Advisory board update

The advisory board of the department met in Bloomington on Feb. 24-25, 1995. **George Nevers** was installed as president and **Malcolm Boyce** as vice president. New members of the board for 1994-95 are **Michael Cowen**, **Helen McCammon**, **Glenn Thompson**, **Jerome Thornburg**, and **Kenneth Vance**. Other members of the board are **Stanley Anderson**, **Robert Blakely**, **Robert Boyer**, **Marcia Engle**, **Richard Gibson**, **Michael Graham**, **Stephan Graham**, **Richard McCammon**, **Judson Mead**, **Ann Marie Petricca**, **Frank Pruett**, **Christopher Smith**, **Thomas Straw**, **Daniel Sullivan**, **Daniel Tudor**, and **Steven Young**.

The chair's report on the status of the department was presented by **John Hayes**. He noted that enrollments in our classes showed an increase of 42 percent in the ratio of credit hours to teaching full-time equivalent (rising from 225 to 320 over the previous year). This should help considerably our teaching productivity as measured by the College of Arts and Sciences. In a second important matter, John presented a progress report on the new interdepartmental program in environmental sciences. It now has been essentially developed and is being advertised to incoming students. Finally, he reported on the architectural plans for lecture hall renovation, which was subsequently completed during summer and fall 1995.

A report on undergraduate affairs was contributed by **Bruce Douglas**, chair of the Undergraduate Studies Committee. **Bob Wintsch**, chair of the Graduate Studies Committee authored a companion report and **Lee Suttner**, director of the Geologic Field Station, and **Lois Heiser**, librarian, submitted reports on activities under their direction.

Individual standing committees of the advisory board reported on their activities during the past year and on plans for the future. The Educational Planning Committee, chaired by **Steve Young**, organized and helped sponsor a forum titled "Employment Oppor-

New member profile

Michael T. Cowen received his BS degree in 1957 and MA degree in 1958, both from Indiana University. He has spent a long and successful career as a petroleum geologist and producer and lives in Grand Rapids, Mich. Michael is especially interested in the current and future plans for the Geologic Field Station and has many good memories of the three summers he spent there with now-retired Professor Wayne Lowell. Michael and his wife, Helyn, have four children, Elizabeth Topp, Timothy Cowen, Kathleen Czworka, and Annerarie Cowen.

tunities in the Geosciences: How to Get There (and Stay There) from Here." The format of the forum, held on the day before the board meeting, consisted of brief presentations by five members of the advisory board followed by a question and answer session and then more informal discussion over pizza. The forum was intended to allow experienced

professionals the opportunity to pass on impressions, insights, and information to the next generation of geoscientists.

The Development Committee, chaired by **Stan Anderson**, arranged two alumni socials, one in Houston and the other in San Francisco. The major effort of the committee was with the 1994 Campaign for Equipment for Environmental Geosciences at Indiana University. Contributions, matching contributions, and pledges from alumni surpassed \$25,800. These funds are being used to help procure monitoring instrumentation, field equipment, and computers necessary to launch the new environmental geosciences program. Other funding sources have been and will be added to keep the program viable. **Dan Tudor**, **George Nevers**, and **Stan Anderson** planned and coordinated this second formal fundraising attempt by the advisory board. Other board members and alumni participated, and we thank each and every one for their efforts in making this campaign successful to the benefit of the department and its students.

As usual, an informal highlight of the two-day session was the annual Friday evening potluck dinner with faculty, their spouses, and friends, held again at the University Club in the Indiana Memorial Union. ■



Attending the 1995 meeting of the IU Department of Geological Sciences Alumni Board are, from left, front row, Sarah Burton, Steve Graham, Bob Boyer, Susan Green, Glenn Thompson, Robert Blakely, and Steve Young; back row, Ken Vance, Jud Mead, Michael Cowen, George Nevers, Dan Sullivan, Stan Anderson, Frank Pruett, Mike Graham, Tom Straw, Dick Gibson, Dan Tudor, Jerry Thornburg, Lee Suttner, Mal Boyce, and John Hayes.

Alumni news

Malcolm W. Boyce, MA'56, retired on Aug. 1, 1994, as exploration vice president for Chevron Overseas Petroleum Inc. after a 38-year career. At the time of Mal's retirement, he was responsible for overseeing COPPs international exploration activities, which include operations in Angola, Congo, Nigeria, and Papua New Guinea, among others. In 1971, he was named manager of Chevron's North Sea exploration activities, based in Holland. During his tenure as manager, several oil fields were discovered and developed, including the giant Ninian Field in the British North Sea. Mal and his wife, Sylvia, live in Lafayette, Calif., and have two sons.

John Boyer, BS'86, is a geologist with STS Consultants of Salt Lake City, where he has been involved with projects concerned with both engineering and environmental geology. John was recently accepted as a member of the American Institute of Professional Geologists.

Denise (Teeter) Chew, BA'80, has become president of Enviro-Equipment Inc., a corporation that rents specialized environmental monitoring equipment to geologists and engineers. Denise and **Brian Chew**, BA'80, live in Pineville, N.C. Brian is a senior hydrogeologist and environmental manager for Law Engineering Inc.

Nancy (Paredes) Ellenberger, BS'84, is currently employed with the Defense Mapping Agency in Washington, D.C., and is married to Mark Ellenberger, an analyst with the Department of Defense. They enjoy life in Eldersburg, Md., with their two daughters.

Alan Laferriere, MS'81, PhD'87, continues in his position as a senior exploration geophysicist with Exxon Exploration Co. Al is currently carrying out work with the Trinidad Group.

J. David Lazor, MA'68, PhD'71, continues to work oil and gas prospects, and his wife, Barbara, is still working at the Houston Museum of Fine Arts. Dave led a group of geologists and friends on a nine-day rafting/hiking trip through the Grand Canyon in summer 1994 and plans a 6-1/2-day trip at the end of May 1996. Daughter Jennifer is studying at the College of Wooster and son Michael is living in the Houston area.

Alice (Nightengale) Luhan, BS'90, is environmental coordinator for Total Petroleum Inc., Denver, Colo. Alice

manages and initiates remediation of all environmental issues for the retail stores. In August 1994, she married geographer David Luhan, who works for D.P. Associates at the Rocky Mountain Arsenal. They make their home at 4761 Yates Court, Broomfield, Colo.

Richard B. McCammon, PhD'59, was presented with the Krumbein Medal, the highest award given by the International Association of Mathematical Geology, at the 1994 fall meeting held at Mont Tremblant, Quebec. He also has recently received the U.S. Geological Survey Meritorious Service Award, the second highest honor from the U.S. Department of Interior. This award is given for significant contributions to the earth sciences and to management and administration of the scientific programs of the

USGS and to recognize the many outstanding accomplishments and dedication of its employees. Dick's recognition was for his fundamental scientific contributions and leadership in the field of quantitative mineral resources assessment. He developed the quantitative methodology for the National Uranium Resource Evaluation Program, a national effort to evaluate domestic undiscovered uranium resources. Dick and his wife, Helen, and two children, Catherine and Ian, live in Bethesda, Md.

Dennis J. McGrath, MA'84, is Indiana state director of the Nature Conservancy, a private, nonprofit organization that acquires land to preserve important natural areas. Dennis also is chair of the Indiana Heritage Trust, which has similar purposes and utilizes funds from

APB: Missing persons

Mail has been returned recently for the following people. If you have information regarding the whereabouts of anyone on this list, please drop us a line.

Acker, John R.
Applegate, Terry Allen
Atchley, H. Clay
Babij, Peter O.
Baciu, Nick
Balogh, David Russell
Barrett, Harvey Benton
Beckman, Richard John
Betz, Charles H.
Bian, Liang Qiao
Blevins, Owen Martin
Blumenthal, David Alan
Canepa, Alfred P.
Conner, Garre Alan
Crevello, Robert Charles
Crites, William Henry
Eikenberry, Stephen Edward
Falls, David Michael
Finta, David Louis
Fituri, Hussein Saleh
Forbes, Dorothy
Frederick, Daniel Lee
Freed, Richard Alan
Gan, Tjiang Liong
Gibboney, Melissa Jane
Golden, James Edward
Guerrettaz, John Anthony

Hays, Ruth Rohrer
Hinchman, Walter Jerry
Holsten, Jeffrey Neal
Jackson, James Milton
Jameson, Jeremy
Kellams, Peter Hill
Kerr, Timothy
King, Norman Ralph
Kleschen, Mary Zeita
Kordesh, Kathleen Marie
Kuhn, Bradford Dean, III
Lee, Howard William
Mansfield, Thomas Doyle
Martin, Herman L.
Meisenhelder, David Michael
Miller, Michael Hallenbeck
Myers, Sally Ann
Nelson, Marc Edward
Nelson, Warren Lee
Newton, David Anthony
Reardon, Morgan Leonard
Rusk, Mark E.
Scott, Andrew Robert
Silvers, Eric Richard
Smith, Bruce Carlton
Spangler, Michael Alan
Stephens, Ann Kovalchik
Stover, Jack Wendell
Valko, Kurt William
Vance, Linda Marie
Warner, Stephen Charles
Webb, Myron Dale
White, Dianne Lynn
Wilson, James Clay



DO YOU REMEMBER? This stratigraphy field trip to Arkansas, Oklahoma, Kansas, and Missouri was led by Professor Don Hattin over spring break in 1958. From left: Gordon Pirie, Craig Hatfield, Tom Straw, John Heckard, Roger Cuffey, 1st unidentified person (Do you recognize him?), Jack Connelly, John Utgaard, Ron Byers, 2nd unidentified person (Do you recognize him?), Mike Mound, and Ben Richard.

Indiana's environmental license plates.

John C. Mackey, BA'74, is president of Mackey-Tanner Petroleum Inc., which drills and produces oil and gas properties in the Illinois Basin. He and his wife, Christina, and four children, Jennifer (18), Joseph (15), Cynthia (13), and Elizabeth (7), live in Bloomington.

Michael McLane, MA'68, PhD'72, of P.T. Geoservices, Jakarta and Bandung, Indonesia, is the author of a new book, *Sedimentology* (Oxford University Press), a comprehensive overview of this field.

Christopher Maples, MS'85, PhD'85, was awarded the 1994 Schuchert Medal of the Paleontological Society. This honor is presented annually to the most distinguished paleontologist under the age of 40.

D. Brad Markisohn, MS'88, works for Boehringer Mannheim Corp., Indianapolis. His wife, Deborah (Ballee) Markisohn, BA'88, MA'92, has coordinated the illustrations for the *Encyclopedia of Indianapolis*, published by the Indiana University Press, November 1994. Deborah also authored approximately 75 articles in this volume. She and Brad are the parents of Hannah, born in June 1994.

Diane Matt, BA'73, headed the Corporate Outreach Committee for the Book and Author Dinner, the largest fundraiser by Kappa Kappa Gamma's Denver Alumnae Association. The affair raised \$25,000 for Craig Hospital's Harry Hahn Scholarship Fund, and the sorority's national headquarters recently recognized it as one of the top events of the organization. Diane's husband, Carl Norbeck, was the host for author Nevada Barr.

Marvin Miller, MA'65, was recognized in the March/April 1995 issue of *Montana Magazine* among a group of 25 people whom the magazine believes have made Montana a better place to live during the past quarter century. Marv, a hydrogeologist with the Bureau of Mines and Geology at Montana Tech, teamed with two soils scientists, Hayden Ferguson, of Montana State University, and Paul Brown, of the USDA Agricultural Research Service, to study saline seeps that by the late 1960s had rendered about 200,000 acres of the best dryland farm land in Montana sterile from salt deposits from emerging groundwater — and at an alarming rate of about 10 percent per year. Through their research, approximately 50,000 acres of saline seeps have been reclaimed, and reclamation is continuing. Experts from other prairie states and countries such as Canada and Australia have employed the Montana model, and changes have now been made in how agriculture is practiced on the Northern Plains. Their work has also helped to preserve Montana's water quality.

Doug Montgomery, BS'82, has relocated to his home town of Seymour, where he operates Montgomery Environmental Inc. Doug and his wife, Martha, have purchased a historic home that belonged to Doug's great grandfather, and they reside there with their two boys, David and Sam.

George T. Moore, BS'48, MA'54, PhD'56, retired from Chevron Research in 1992 after 34 years in the petroleum industry. He maintains an office at Chevron in California, but presently is adjunct professor in the Department of Geosciences at Penn State. His research

includes studies using general circulation models to simulate paleoclimates in the Late Jurassic and Early Silurian. He also is using an ocean model to study Early Silurian oceanic circulation and upwelling to resolve the conditions that contributed to the deposition of extensive, organic-rich, graptolitic black shales. He's also using paleoclimatic simulations of the Late Triassic, Late Jurassic, and Late Cretaceous to develop an understanding of dinosaur paleoecology. George has developed two short courses, one for presentation at Penn State and the other with Eric Barron for SEPM.

Arthur N. Palmer, MA'65, PhD'69, received the Kirk Bryan Award of the Division of Quaternary Geology of the Geological Society of America at the 1994 annual GSA meeting in Seattle. Art was specifically honored for his 1991 paper published in the *GSA Bulletin*, "Origin and Morphology of Limestone Caves." This paper was the first in the 36-year history of the award to be concerned with caves or karst. It was also so relevant to groundwater hydrology that several persons nominated it for GSA's Meinzer Award. In 1980, Art established the Water Resources Program at State University of New York at Oneonta. Last year, he was named Distinguished Teaching Professor.

Melissa Perucca, MS'88, continues her work with the Defense Mapping Agency in St. Louis, Mo. She is currently on a 12- to 15-month assignment near London, where she is helping to train British specialists to use new mapping equipment that she helped develop.

Thomas G. Plymate, BS'76, MA'78, is associate professor of geology at South-

(continued on page 20)

Alumni news

(continued from page 19)

west Missouri State University, Springfield. Since leaving IU, Tom has served in temporary positions as instructor of geology at Ball State University, St. Francis College (Fort Wayne), and Southwest Missouri State University. In 1986, Tom received his doctorate in metamorphic petrology/mineral physics/solid earth geophysics from the University of Minnesota.

Mark Schult, PhD'94, has a teaching position with the University of Maryland Overseas Program. He will be teaching armed service personnel in Japan, China, and elsewhere in the Far East.

Jayne Sieverding, MA'81, has been transferred to a Western Division Exploration staff position with Chevron USA Production Co. Jane is responsible for many aspects of process improvement efforts involving such areas as business/budgetary planning, coordination of training for division geologists and geophysicists, and special project management. Jane and her husband, Peter, who also is employed by Chevron have a daughter, Johanna, born in April 1993.

Larry Skelton, BA'60, is manager and geologist in charge of the Kansas Geological Survey Well Library in Wichita, Kan. Larry, who participated in the IU R.O.T.C. program, pursued an Air Force career from 1960 to 1981, retiring at the rank of lieutenant colonel. His duty stations included bases in Florida, California, Greenland, Texas, the Philippines, Massachusetts, Thailand, Vietnam, and Mississippi. In 1977, he earned an MBA from Trinity University, San Antonio, Texas, and after returning to the geologic profession earned an MS in 1991 from Wichita State University. In addition to his managerial duties at the Well Sample Library, Larry teaches part time at Cowley County Community College, lectures on geology to local groups, leads field trips, and maps the geology of Cowley County. He and his wife, Mary, have two sons, Harold and John, both of whom are married and live in Wichita.

Phyllis (Scudder) Snow, MA'58, works as a geologist / hydrogeologist for the Flathead National Forest, Kalispell, Mont. Phyllis received her PhD from the University of Montana in 1974. With a BS degree in music from IU, she and her husband, Don, who has a master's from the Eastman School of Music, play in the local Flathead Valley Community Band and Glacier Orchestra. He plays the bass and trombone and she plays the violin, flute, and piano.

Thomas H. Specht, MS'85, lives in

Gaithersburg, Md. Both he and his wife work in the Washington, D.C., area. Tom works in the Pentagon for the Defense Intelligence Agency. The Spechts have a son, David (3).

Cece (Armstrong) Sponable, BS'88, and her husband **Dennis**, MS'89, have relocated to Denver, Colo., where she has taken a supervisory position with the Retail Environmental Department of Diamond Shamrock Oil Co. She and her group are charged with making all policy decisions in this newly formed part of the company.

Steven M. Stanford, BS'85, was employed upon graduation from IU by Atec Associates Inc., an environmental consulting and geotechnical engineering firm. He spent a two-year stint with Baker/TSA Inc. from 1989 to 1991, receiving his CPG designation in 1990. He then returned to Atec and was promoted to associate vice president and division manager in 1992. He undertook graduate studies at Purdue University in the Department of Earth and Atmospheric Sciences in 1994, specializing in hydrogeology/aqueous geochemistry while remaining part time at Atec. Steven and his wife, Sandra, live in Crown Point.

S. Ross Taylor, PhD'54, was awarded the G.K. Gilbert Award of the Division of Planetary Sciences of the Geological Society of America at the 1994 annual meeting of the society. Previously, Ross received the Bowen Award from the Volcanology, Geochemistry, and Petrology Section of the American Geophysical Union and the Goldschmidt Medal from the Geochemical Society. He is a Fellow of the Australian Academy of Science and a foreign associate of the U.S. National Academy of Sciences. He continues to work at the Australian National University at Canberra with frequent trips abroad.

Brian P. Towell, BS'91, was hired in July 1995 as a geologist, support specialist for GeoGraphix Inc., Denver, Colo. Brian married Sydney Cooley, of Muncie, in August 1995, and they now live near Golden, Colo.

Yifeng Wang, PhD'93, accepted a position with Sandia Laboratories, Albuquerque, N.M., in June 1995.

Victoria L. Warren, BA'92, MS'85, is employed as a senior hydrogeologist by Andrews Environmental Engineering, whose corporate headquarters are in Springfield, Ill. Formerly, Vicki was a senior hydrogeologist with Emcon, but when that company closed its Indianapolis office, she, together with three other former Emcon employees, established an Indianapolis office for the Andrews

firm. Her work primarily involves evaluation and remediation of problems related to solid waste disposal.

William J. Wayne, BA'43, MA'50, PhD'52, and his wife, Naomi, spent six weeks during the summer of 1994 on a cruise from Newark, N.J., to Buenos Aires, Argentina, and returned aboard the M/V *Americana*. Bill gave a total of 13 lectures on geology and Latin America (and the Caribbean) on the round trip. During the past year, he completed a report for a National Geographic grant and used a six-month Fulbright research award to inventory landslides in the Province of Salta, Argentina. He provided a map and report to the governor of the province, taught a short course in urban geology (in Spanish) at the National University of Jujuy, and returned to the University of Nebraska, Lincoln, in early May. ■

Alumni receptions

Alumni socials were held in the Houston and San Francisco areas during 1994. Alumni socials are held to promote alumni fellowship, to inform alumni about the Department of Geological Sciences, and to have alumni meet visitors from the IUB campus.

The Houston social on Sept. 21, 1994, was hosted by advisory board members **Stan Anderson** and **George Nevers**. Approximately 54 alumni, spouses, and friends attended, including other advisory board members **Steve Young** and **Marcia Engle**. **John Hayes**, **Lee Suttner**, and **Susan Green** attended from Bloomington.

Advisory board member **Malcom Boyce** and his wife, Sylvia, hosted the San Francisco event at their home. Twenty people attended, including advisory board member **Stephan Graham**. **John Hayes** attended from the Bloomington campus and visited with the group about the department's present and future status.

Alumni receptions at two national meetings were sponsored by the department and the College of Arts and Sciences Alumni Association. Nearly 30 people attended the event, held at the AAPG meeting in Denver on June 13, and in Seattle on Oct. 24, about 75 people stopped by to visit and catch up on events of interest.

1994 Donors

Many thanks to those who have contributed to the IU Department of Geologic Sciences!

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(continued on page 22)

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*Peggy Wang was inadvertently left off the 1993 donor list. She is a donor for both 1993 and 1994.

Report on 1994 fund-raising

Geology Classroom Technology Campaign

Total Contributions: \$28,155

This campaign was initiated and led by substantial gifts from members of the advisory board in late 1993. The purpose of this fund-raising effort was to secure funds to purchase electronic equipment to update the teaching facilities in the large lecture room in Geology 126. Not only was the campaign successful, but also, because of the number of contributions, the department received an additional \$57,000 in funding through a proposal submitted to the Student Technology Fund. With these combined funds, we were able to convince the university to commit to updating the physical facility itself. Beginning with the fall 1995 semester, we have a classroom that has been repainted, is newly carpeted, and has new student seats. There is accessibility for handicapped students and lecturers who may use this classroom. New electronic equipment has been installed and is being used. The small amount of work to finish this project is scheduled for completion over holiday breaks late in the semester. We are grateful for the support of our alumni and friends whose contributions have made this outstanding new classroom facility possible!

Geology Environmental Geoscience Campaign

Total Contributions to date: \$26,825

The advisory board members again provided the leadership gifts for this campaign, initiated in December 1994. The success of the campaign, made possible by the generosity of our alumni and friends, was instrumental in securing \$27,000 in additional funds from the state of Montana to establish a model demonstration watershed in the vicinity of the Geologic Field Station, which will integrate research and teaching in the general area of hydrogeology and environmental geoscience. A \$15,000 award from the Research and University Graduate School was received by the department and field station for the field station project. A coalition has been developed among the university, the state of Montana, and the local water users in Madison County for the study of the Willow Creek watershed near Pony, Mont.

Geology Student Telethon Campaign

Pledges/Commitments: \$5,170

\$895 (potential from matching programs)

Our own geology students volunteered their time in late March 1995 to conduct our first telethon. We are the only department on campus whose students have undertaken such a fund-raising project. They are to be commended for their efforts and we especially appreciate their dedication and commitment to the department. Alumni who have not chosen to contribute in the past or who have not been approached in the past few years were contacted. We were gratified by the response from many of you. Advisory board member Dick Gibson has promised to match up to \$5,000 in contributions collected through this campaign.



We hope that you will consider making a donation to the Department of Geological Sciences. Please make your check payable, with the one exception noted below, to the IU FOUNDATION.

You may specify that your donation go to any of the various funds that are maintained by the IU Foundation for the Department of Geological Sciences. You may specify particular funds: Geological Sciences (general unrestricted); Ralph E. Esarey (geological research in Indiana); Galloway/Perry (research/educational needs of graduate students in paleontology, stratigraphy and paleoecology); Don Hattin Special Field Course (scholarships for special [noncore] field courses); Judson Mead Field Station (student/faculty support at the field station); Applied Clay Mineralogy Professorship (being established by Haydn Murray); John B. Patton (research on geology in Indiana); William Thornbury (student research in physical geology, with preference for geomorphology and glacial geology); Cumings/Malott (to encourage superior work by staff/students in geological sciences); Charles Deiss (to support scholarships to the field station); Arch McPheeter's Student Loan (short-term, no-interest loans to geology majors); Excellence in Geology (undergraduate scholarships, graduate research, summer field training); and the Geologic Field Station Maintenance Fund (improvements to physical facilities). Contributions also can be made to the Geology Library Fund, payable to *Indiana University*, in memory of John Patton.

Alumni Service Form

Your IU Alumni Association invites you to communicate with us, with IU, and with your fellow alumni by using this Alumni Service Form to keep up your membership in the association, to upgrade your file with Alumni Records, and to send in a class note to this publication. Please use this form to join or renew your membership in the IUAA, as well as to keep in touch with your department or school and to provide us with your change of address. For more information about membership, alumni programs, or activities, call (800) 824-3044.

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(husband and wife)**

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* Recent Graduates—you are eligible for this special annual rate if your **first** IU degree was received within the last three years!

Say hello to your classmates...

You don't have to be a member to pass along the latest about yourself. Let your former classmates learn what you're doing now. We'll publish your class note in the *Hoosier Geologic Record* newsletter. (Please fill in as much of the following information as you wish. Its purpose is to keep IU's alumni records accurate and up to date.)

IU degree/date(s) _____ Publication carrying this insert _____ Date _____

Name _____ Last name while at IU _____

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Spouse name _____ Last name at IU _____ IU degree/date(s) _____

Your news: _____

Take a look — this is what we're all about:



INDIANA ALUMNI Magazine

Six times a year the INDIANA ALUMNI Magazine brings IU to your doorstep. Nowhere else will you find chronicled in such detail the achievements and commitment to excellence that define your alma mater.

School and Campus Alumni Associations

Each IU campus houses an alumni association office to serve the alumni of that campus. In addition, there are 26 constituent societies for graduates of the schools and departments throughout the university. Alumni publications for these groups keep you in touch with your department or school, former teachers and classmates, and current activities in your profession.

Alumni Clubs

The IU alumni club network includes more than 80 clubs around the world, giving alumni opportunities to socialize and interact with fellow Hoosiers. Clubs also conduct community service programs, raise scholarship funds, and assist in recruiting students for IU.

Mini University

Co-sponsored by the IUAA and the School of Continuing Studies and held on the Bloomington campus each summer, Mini U offers a diverse curriculum of more than 100 classes taught by IU faculty. With no tests to take and no supplies to buy, many alumni find themselves returning year after year to this fun event.



Membership Directories

Every five years, the IUAA publishes a comprehensive directory of all members, with listings indexed by name, profession, geographic location, and graduating class. Directories are sold only to members of the association.

Priority Points

Membership in the alumni association is one of only 10 ways to receive priority consideration for IU athletics tickets.

Class Reunions

The IUAA sponsors class reunions during Homecoming Weekend and Cream and Crimson Weekend. Reunions bring alumni together to reminisce and make new and lasting memories for the future.

Hoosiers for Higher Education

H.H.E. is a grass-roots effort to raise public and legislative awareness about the impact of higher education on the well-being of our state.

Plus many other alumni-pleasing programs

Some of these are the catalog of alumni association merchandise, SKILLSearch Job Placement Service discounts, Student Alumni Council, two alumni family camps, and the popular and educational Hoosiers Travel Program.

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Alumni Publications
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Geological sciences seniors, graduate students, faculty, staff — 1994

FRONT ROW: Nadeem Ahmad, Huitang Zhou, Glenn Bear, Katrina Nell, Craig Rankin, Rodney Ward, Amber Pickett, Jean Reese, Norman Hester, Enrique Merino, Charles Vitaliano, Volker Bruchert, Debbie Pryor, Carla Whittington, Yutian Wang, Emmanuel Ramos, Ana Maria Carmo, Edward Ripley, Terry Stigall

SECOND ROW: Gary Lane, Chris Flesher, David Millen, Lisa Rhoades, Sujoy Ghose, Sam Hostettler, Lorie Bear, James Brophy, Lee Suttner, Debbie Dawson, Grahame Logan, Kristen Leckrone, Brian Snow, Robert Dodd, Kim Schulte, Lorie Canada

THIRD ROW: Eugenio Santosneto, Alan Horowitz, Albert Rudman, Chris Amato, Karl Leonard, Andy Fisher, Robert Mellors, Bruce Douglas, Donna Surge, Jason McCuision, Joseph Dzvoniik, Patty Byrum, Sarah Burton, Burvee Franz, Nelson Shaffer, Mark Gilstrap

FOURTH ROW: Chris Carlson, John Droste, Donald Hattin, Nathan Way, Michael Savarese, Ruth Droppo, Robert Wintsch, Elizabeth Russell, Colin Harvey, Abhijit Basu, Matthew Cohn, Jeremy Dunning

FIFTH ROW: unidentified person, Ruiliang Wang, Chris Dintaman, Alex Krueger, Simon Brassell, John Hayes, Judson Mead, David Towell, Noel Krothe, Haydn Murray, Robert Shaver

SIXTH ROW: Matthew Paige, Karan Keith, Lawrence Onesti, Eric Feuerstein


BACK ROW: Tony Lopez, Till Angermann, Nelson Daniel, John Hohman, Arndt Schimmelmann, Neill Vaughan, Fred Clayton, David Ellis, Stanley Radzevicius, Smiriy Repin, Richard Stotts, Wesley Burton, Scott Dreher

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