Department of Geology and Geological Engineering 2006

B.S. Geological Engineering

B.S. Geology

M.S. Geology and Geological Engineering

Ph.D. Geology and Geological Engineering

M.S. Paleontology

Faculty and Staff

Chair

Maribeth Price

Geological Engineering

Arden D. Davis

Larry Stetler

William Roggenthen

Paleontology/Museum

James Martin

Gerald Grellet-Tinner

Darrin Pagnac

Carrie Herbel

Staff

Pam Fenner

Geology

Colin Paterson

Michael Terry

James Fox

Edward Duke (EMES)

Field Station Director

Nuri Uzunlar

Emeritus

Jack Redden

Perry Rahn

Alvis Lisenbee

News from the new Chair

I feel as though I've moved into the Chair's office at an exciting time in the history of the department and the School of Mines. The campus has reorganized from four colleges into two. Our department is formally within the College of Engineering, but we have several strong links to the College of Science and Letters through the Geology B.S. which is offered within that college, and the Museum of Geology. The campus conducted an external search to hire two deans, Dr. Duane Abata for Engineering and Dr. Duane Hrncir for Science and Letters, both of whom have family ties to geologists!

In addition, the South Dakota Legislature, the Board of Regents and the SDSMT President Charles Ruch have all strongly affirmed the school's role as a science and technology university and highlighted growth in research as a significant priority for the coming decade. Encouragement and support of research has never been higher in my 12 years at this institution. The school is also fostering a new emphasis on providing international opportunities for students. We have done this for years, of course, and have been asked to help lead the campus in this direction.

We are responding to these initiatives with exciting plans of our own. As the petroleum and minerals industries gather strength again we look to partner with them for new collaborations in research and education, and to prepare for a fresh onslaught of students interested in these careers. We plan to renovate our teaching laboratories, expand our ability to offer scholarships to the best students from all over the U.S., and establish several endowed chairs to expand our research capabilities and link us more firmly with industry and economic development. We're also in the planning process to build a world-class paleontology research facility on the front porch of the university to attract visitors and recruit students while supporting our international research program in paleontology. Your support is vital to these efforts.

Our faculty has been seeing change as well. We have said "Thank you" but fortunately not "Goodbye" to Dr. Alvis Lisenbee, who retired last spring but continues to grace our halls with his presence and work. Dr. Gale Bishop has retired and joined his wife and SDSMT alum Dr. Kata McCarville teaching in Fayette, Iowa. We have two new faculty this year, Dr. Michael Terry as our structural geologist, and Dr. Gerald Grellet-Tinner as a new vertebrate paleontologist. We also hired Dr. Nuri Uzunlar as the part-time director of the field station. Nuri has been helping run our field camps at Ranch A and in Turkey for several years and has big plans for expanding the field station offerings. And of course we say "Thank you" to Dr. Arden Davis, who served as the chair for the last four years. I'm now learning what a huge job that really is!

We are looking forward to the coming years. If you are in Rapid City, be sure to stop by the department and say hello.

All the best,
Maribeth Price

Roy E. Roadifer to receive Distinguished Alumni Award

At the December, 2006, commencement ceremony, **Roy E. Roadifer** (B.S. GEOE, 1954) will be honored by the School of Mines as a recipient of the prestigious **Distinguished Alumni Award**. Mr. Roadifer began his career with the U.S. Geological Survey while he was a student at SDSMT. After graduation, he began work with the Pegasus Division, Socony Vacuum Oil Company, at Casper, Wyoming. He then worked with Mobil Oil of Canada, Ltd., in Libya, North Africa. The several units that composed Mobil were consolidated into Mobil Corporation, and Mr. Roadifer's next assignment was in New Orleans, Louisiana. During the next seventeen years of his career, he worked in petroleum exploration in the Rocky Mountains, the Sahara Desert, and the United States Gulf Coast.

The first oil crisis of the early 1970s emphasized the importance of accurate evaluation of reserves and estimatioin of undiscovered hydrocarbon potential. In 1971, Mr. Roadifer worked with a team at Dallas, Texas, to evaluate the total hydrocarbon potential of North America. That hydrocarbon potential project led to basin and regional studies at Princeton, New Jersey, and subsequently Mr. Roadifer was appointed manager of Regional Geology for Mobil in Dallas, Texas. The basin analysis group ultimately evaluated the hydrocarbon potential of the entire world. In 1981, Mr. Roadifer accepted the position of Chief Geologist at Mobil's corporate headquarters in New York City. He retired in 1986 after an outstanding and productive career in the petroleum field.

News from Colin Paterson

Colin took sabbatical leave in the Spring 2006 semester, remaining in Rapid City for most of it, but traveling to New Zealand where he gave a presentation at the University of Otago on the "Application of Hyperspectral Remote Sensing and Spectroscopy to Mineral Exploration: Case Studies from Namibia". Discussions ensued on the possibility of applying the technology in the Otago Schist in the South Island.

While in Rapid City, he coordinated the presentation on proposed research in economic geology/petrology in the Homestake mine at the Homestake DUSEL conference in Lead in February. Subsequently, he solicited letters of interest from other researchers around the world, and through that and participation in the SEG conference on "Wealth Creation in the Minerals Industry" in Keystone (CO) formed an informal collaboration of 31 scientists from 17 institutions and 4 countries. He and other faculty hope to use the core archive and the future underground access to the Homestake mine to research controls on the origin of giant iron-formation-hosted gold deposits. Together with Alvis Lisenbee, Ed Duke, and James Fox, we worked on completion of a research program on Lithofacies Reinterpretation of Stratigraphy in the Homestake Mine, and Compilation of a Basement Tectonic Map of South Dakota funded by Barrick Gold Corporation. Two graduate students presented the results of their research to Barrick personnel in a meeting in Rapid City in October.

He continued as Director of the BHNSFS, directing 3 field camps until September when Dr Nuri Uzunlar took over. Colin enjoyed teaching 3 weeks of the geology field camp in Turkey during July-August, in spite of the heat. The baklava was wonderful!! Colin represents the department on the SDSM&T Faculty senate. He is also in charge of recruiting students for our degree programs. If you would like some information which you can pass on to prospective students (undergraduate or graduate), please contact him at Colin.Paterson@sdsmt.edu, or visit our department web page.

Colin continued to be involved in the Black Hills Science for Teachers (BLAHST) NSF-funded program with BHSU, offering workshops for teachers during the academic year and summer field workshops on "Geology of the Black Hills and Badlands". With Maribeth Price, he has been compiling a CD on a "Field Guide to the Geology of the Black Hills and Badlands" – a draft version was used in the BLAHST field workshop. With Janet Briggs (BHSU), he received funding for a proposal on Biology and Earth Science for Teachers (BEST) from the South Dakota Board of Regents. This grant involved 2 weeks of in-depth instruction (classroom and field) during the summer for 20 middle- and high-school teachers in western South Dakota to help them improve their instruction in science topics related to the South Dakota Science Standards.

News from Larry Stetler

I have been on sabbatical leave for the year 2006. It has been a tremendous experience to be afforded the opportunity to be away from teaching and having time to rebuild my research. Over the past year, I have been involved with an uranium impact study in Harding County, SD. Dozens of abandoned uranium mines have been exposed to wind, water, and physical processes since they were shut down in the late 1960s. Since that time, mine and uranium-bearing waste has moved off the mine sites onto surrounding private land. My work was focused on defining the portion that moved by air and by groundwater. Results of this study are online at www.cavehills.org. Over the next several years, we will be performing the same level of work in two additional areas in Harding County as well as the large surface mine sites in the southern Black Hills. I have also received a grant from the Pennington County Commissioners to prepare a landuse impact study for the Hermosa NW quadrangle south of Rapid City. As this land is developed, the Commissioners want to have information at their disposal to guide development in a responsible fashion. A MS graduate student in geological engineering has performed a geologic hazard evaluation and using data derived from soil borings, has prepared a factor of safety map for land slide susceptibility for the quad. Combined with the geology and water runoff patterns (completed in separate but related projects), the County will be able to make valid decisions about development as it moves south of Rapid City. Photo on left shows collecting a wind-blown dust sample using my portable wind tunnel. Thirty four wind samples were collected in 4 days in the North Cave Hills of Harding County, SD in the summer of 2006. Photo on right shows a Geoprobe drilling unit given as a gift to the university which has been used on my land-use and uranium projects, and I have much work lined up for it in the coming years.

News from Ed Duke

Through a $554,000 Major Research Instrumentation award from the National Science Foundation, the Mineral Industries Building has a new field-emission SEM, which is located in the Engineering and Mining Experiment Station. The new instrument is a Carl Zeiss Supra40VP variable-pressure field-emission SEM with a PGT energy-dispersive X-ray system and an HKL electron backscattered diffraction system. Resolution of 1 nm is achievable in high-vacuum mode. Additional capabilities include a STEM detector, Peltier-cooled stage (-30 C to +50 C), and a heating stage (+1200 C).

News from Jim Fox

On March 15, 2006 in Pierre, SD, the South Dakota Section of the American Institute of Professional Geologists (AIPG) presented Dr. James Fox (Professor of Geology and Geological Engineering at SDSM&T) with the 2006 "J.P. Gries Geologist of the Year Award". This award is presented annually by the South Dakota Section AIPG to a geologist who has done exemplary work in South Dakota. Dr. Fox's nominators, Christopher Pellowski and Dr. Kelli McCormick, wrote the following about Dr. Fox's recent work …"The work and legacy of Dr. J. Paul Gries continues today through the efforts of Dr. James Fox at the South Dakota School of Mines and Technology. During the fall of 2004, Dr. Fox created the J. P. Gries Geologic Resources and Mapping Laboratory in room 334 of the Mineral Industries building on the SDSM&T campus to act as a repository for the data collected and cataloged by Dr. Gries. Dr. Fox has spent many years constructing stratigraphic cross-sections across basins of interest to the Oil and Gas industry using electric logs. Dr. Fox is collaborating with the South Dakota Geological Survey on constructing nine west-east cross-sections across South Dakota. Dr. Fox has relied heavily on data in the J. P. Gries collection for lithological and geophysical logs of oil and gas and water wells… This published work will be central to gaining a better understanding of the subsurface geology of South Dakota as well as adding to the Governor's 2010 Oil and Gas Initiative. With these outstanding contributions, we believe it is only fitting that we recognize Dr. Fox as the 2006 J. Paul Gries 'Geologist of the Year'." Photos of the awards ceremony can be found at http://www.sdsmt.edu/space/sdaipg.htm

News from Gerald Grellet-Tinner

Gerald Grellet-Tinner joined the department this fall as Assistant Professor of paleontology. After receiving his PhD from UCLA, Gerald was Professor Visitante at the Museum of Sao Paulo. A leading expert on dinosaurs, Gerald has studied Cretaceous strata of Bauru and Franciscan basins of Brazil, and has recently published several papers dealing with dinosaur eggs and nesting behaviors.

In 2006, I was a Professor Visitante t the Museum of Sao Paulo under a FAPESP (Brazilian NSF) grant before coming to SDSMT. During this year, I had the opportunity to publish the following papers:

Grellet-Tinner, G., L. Chiappe, D. Bottjer, and M. Norell. 2006. Paleobiology of dinosaur eggs and nesting behaviors. Palaeogeography, Palaeoclimatology, Palaeoecology 232: 294-321.

Grellet-Tinner, G. 2006. Phylogenetic interpretation of eggs and eggshells: implications for oology and Paleognathae phylogeny. Alcheringa 30: 130-180.

Grellet-Tinner, G. 2006. The evolution of homeothermy in non-avian theropods: A new evidence for avian-like homeothermy in troodontids. Papeis Avulsos de Zoologia, Museu de Zoologia da Universidade de Sao Paulo, 46: 1-10 Grellet-Tinner, G., and P. J. Makovicky. 2006. A possible egg of the Theropod Deinonychus antirrhopus: Phylogenetic and biological implications. Canadian Journal of Earth Sciences, 43: 705-719.

Grellet-Tinner, G., Wroe, S., Thompson, M., B., , and Qiang, Ji. in Press. Pterosaurs buried their eggs. Historical Biology.

Higa,A., and Grellet-Tinner, G. Submitted. Pontoporia Blainvillie. Journal of Mammology.

Grellet-Tinner, G., and Zaher, H. Submitted. The titanosaurid dinosaurs from the Brazil. Papeis Avulsos de Zoologia, Museu de Zoologia da Universidade de Sao Paulo.

Also I was able to participate to SVPCA meeting in Paris to give a presentation and chair sessions.

After my departure from Brazil, my fieldwork has been somewhat limited in 2006 due to moving from Brazil to SD but plans are made for next summer to resume exploration and investigation the Late Cretaceous fauna in Southwest France, to pursue cooperative work in China, and recently to prospect the Mesozoic and Cenozoic exposures on Turkey with our colleague (Nuri) in the hope of having the traditional Field Station session associated with a vertebrate paleontology field experience.

News from Mike Terry

Mike joined the faculty this fall after working as Post-doctoral Fellow at Bayerisches Geoinstitut in Bayreuth, Germany. He earned a B.S. in geology from the University of Wisconsin, River Falls, an M.S. from the University of Akron, and a Ph.D. from the University of Massachusetts, Amherst. He loves field geology and investigates me tamorphism and deformation of rocks, using field observations obtained by geologic mapping, by laboratory analysis, by modeling, and by experimental observations, in order to understand processes at plate tectonic boundaries. Current field areas are in the Western Gneiss Region of Norway and the Precambrian core of the Black Hills Uplift

Advanced field class on Hat Mountain

in South Dakota. During the fall semester Mike taught petrology and advanced field geology and is preparing to teach classes in geotectonics and structural geology during the spring.

News from Jim Martin

Jim Martin was brought out of retirement (4 whole months) to serve as Paleontology Program Coordinator. One of his major duties is to aid in the SDSM capital campaign through the university Foundation. Two major building programs are envisioned on the School of Mines campus, and one concerns paleontology and geology. A new building is proposed to house the outstanding natural history library, including vertebrate fossils, invertebrate fossils, and mineralogy collections. An addition of the first Forensic Paleontology laboratory in the country that will allow "fingerprinting" of fossils is planned. The collection at the School of Mines is one of the most unique, largest, and best documented fossil collections in the country. However, the increased paleontology program, that is now the largest in the United States and a major component of the Department of Geology and Geological Engineering, requires much better laboratory and storage facilities than that afforded now in the basement of the Old Gym. The new repository will allow students and researchers access to specimens that have been stored away for years due to the lack of space. A 40,000 square foot facility costing over $7 million is needed to house the fossil library and to bring state-of-the-art laboratories and equipment for our students. We sincerely request financial aid in this important quest from all of you reading this newsletter. You are welcome to contact Jim at James.Martin@sdsmt.edu.

In addition, Jim has been busy with his Antarctic, Pacific Northwest, and South Dakota research. We continued our work at the Miocene and Pleistocene deposits in Oregon and Washington. Because the field expeditions have produced the best documented Ice Age collection in the Northwest, Jim was contacted to be part of a research team investigating the oldest undisputed Americans in North America. Remains of fossil mammals and birds were found with human feces that were dated and subjected to DNA analyses. Jim was tagged with the identification and interpretation of the animals associated with the human remains. He presented results at the Great Basin Anthropological Conference in Las Vegas where the announcement was made, and a scientific contribution is planned to be submitted in January.

The South Dakota research continues in the Late Cretaceous Pierre Shale, and Jim and Dave Parris, former paleo grad and director of the natural history bureau of the New Jersey State Museum, are editing a book concerning the revised stratigraphy, geochemistry, invertebrate paleontology, and vertebrate papers including mosasaurs, plesiosaurs, pterosaurs, turtles, diving birds, as well as terrestrial fossils. The book arose from symposia connected with the paleontology associated with the Lewis and Clark expedition. The book has been submitted, and we are waiting on pins and needles to find if the book will be accepted for publication.

The Antarctic work culminated this year in the announcement of a baby plesisaur that Jim Martin and Foster

Sawyer, who just completed his Ph.D. from our department, collected on Vega Island east of the Antarctic Peninsula. This specimen may be the best skeleton every collected from the southernmost continent and is one of only a few known baby plesiosaurs in the world. Less than ten babies/juveniles partial skeletons are known worldwide, and now three are in the fossil library at SDSM. Jim was invited by the National Science Foundation to announce the discovery at the National Press Club in Washington, DC, with his colleagues from Eastern Washington University and Argentina. An unveiling of the baby was accomplished on Dec. 13th at the Museum of Geology before the SD Board of Regents and many museum supporters. Jim, Foster Sawyer, and Wayne Thompson, Ph.D. student, were awarded Antarctic Service Medals for their efforts in Antarctica at the unveiling.

News from Arden Davis

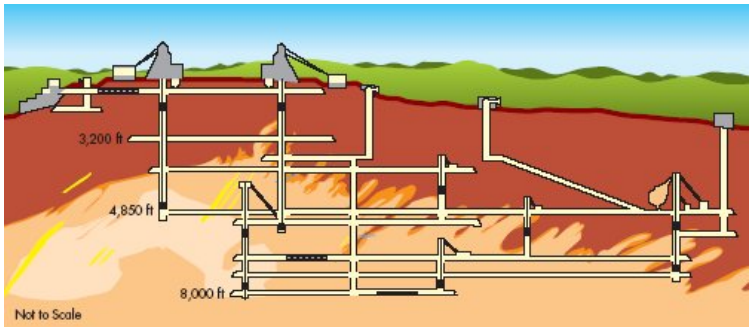
Dr. Arden Davis, along with several current and former faculty members at South Dakota Tech, has formed a research group to develop improved methods for removing arsenic from drinking water. The group is collaborating with Rohm and Haas, a Fortune 500 company, to compete for the Grainger Challenge Prize for Sustainability. The National Academy of Engineering (NAE) established the Grainger Challenge, a $1,000,000 prize for the design and creation of a simple and economical treatment system for arsenic-contaminated water that can be used in developing

countries. From an initial entry of more than 70 participants, the system developed by the SDSMT/Rohm and Haas team is one of the 15 technologies selected to compete in the final testing stage of the Grainger prize.

Dr. Davis and Dr. David Dixon (Chair, Chemical Engineering Department), along with Dr. Cathleen Webb (now at Western Kentucky University), are seeking a patent for their arsenic-removal process, which involves limestone. The School of Mines will own the patent. Dr. Terry Williamson (retired professor of business at SDSMT) is the CEO of their research and development company, HydroTech Engineering. Jenifer Sorensen, who is completing her Ph.D. at the School of Mines, also is a company member of HydroTech. Working with Rohm and Haas, the SDSMT team is helping develop a water-treatment system optimized for cost, indigenous materials, performance, ease of use, and non-hazardous disposal. The technology uses modified limestone as the media and is unique because it efficiently removes arsenic and several other metal contaminants using a locally available raw material. The resulting waste product can be safely recycled. Rohm and Haas recently completed field trials in China and India. "We successfully demonstrated our system's ability to remove arsenic from an average concentration of 180 ppb to below 5 ppb without pretreatment. The result was clear and pleasant tasting water. This was a vast improvement from the contaminated water that was being consumed by the local villagers. Moreover, the system was easy to use and socially acceptable," said Dr. Rajiv Banavali, the program director. Naturally occurring arsenic at excessive levels is a problem for drinking-water supplies in some parts of the U.S. and the world. In South Dakota, several public water supplies have shown elevated arsenic levels in wells in certain parts of the state such as the Rosebud Indian Reservation. Elevated arsenic levels also have been detected in drainage from abandoned mines in the Black Hills.

News from Darrin Pagnac – Haslem Postdoc in Paleontology

Darrin's research focuses on evolution and paleogeography of mammals from the medial Miocene, roughly 17-12 million years ago. Darrin will be conducting paleontological investigations throughout Miocene deposits in South Dakota, Nebraska, California, and Oregon. This past summer Darrin returned to classic vertebrate fossil localities in the Miocene Fort Randall Formation south of Chamberlain, SD. These localities have not been extensively worked since the 1960's. The Fort Randall Formation, and in particular the localities at South Bijou Hill, are well known for their extensive vertebrate faunas including type specimens of horses, mustelids (otters, weasels, badgers, etc) and pronghorn antelope. The localities were worked extensively by Morris Skinner of the American Museum of Natural History in the 1940's. Darrin was able to identify several new, productive fossil localities in addition to re-collecting the older ones. To date Darrin has identified numerous fossils ranging from catfish, frogs, lizards, turtles, horses, rhinos, antelope, beavers, and several other rodents. This research will provide invaluable insight into faunal change around 15 million years ago.



News from Bill Roggenthen

Major developments in the last few months in the drive to establish a deep underground science and engineering laboratory (DUSEL) at Lead, SD, have focused on the competition with the Henderson Mine in Colorado for the final designation as the site of the laboratory. This competition was helped greatly this year by the acquisition by South Dakota of surface buildings, surface facilities, and the underground in May, 2006. At the time of the submission of the Homestake Conceptual Design Report in June, 2006, it was announced that a private donation would be made by Mr. Denny Sanford, a South Dakota businessman, in the amount of $70 million dollars to support the Homestake initiative. The gift is divided between activities in the underground and on the surface. The funds include $50 million to support construction of space for experiments for science and engineering on the 4850 ft and 7400 ft levels and $20 million to build a science education center at the surface. Combined with previous state and federal appropriations, this brings the total available to the project to approximately $116 million. The downselect to Homestake at the candidate site, which is anticipated in the first half of 2007, could add as much as $15 million for design work for the final DUSEL configuration.

News from Field Station and Nuri Uzunlar (Director): We had very good summer with three full sessions in 2006. Students from 17 universities and colleges have participated in our camps. I taught at two of the camps, Ranch A and Turkey. Ranch A geology session had 18 and engineering session had 21 students. The camp in Turkey had 13 students from six universities and colleges. Under newly implemented expansion program, in 2007 the Field Station, will offer six different camps, short courses and field trips to Turkey and Colorado. For additional information, including upcoming **alumni trip to Turkey** call or write to director (605) 394 - 2494, or visit our website http://geologyfieldcamp.sdsmt.edu.

News from Turkey Camp by Alvis Lisenbee: In late July and August of 2006 the Department of Geology and Geological Engineering conducted the Third International Camp from the base at Taskesti, Turkey. Thirteen students from the University of North Dakota, the University of Tennessee, the University of Delaware, Valley State University (Utah), Harvard, and SDSMT attended. In addition to immersion into the Turkish culture in a town of 3000, water melon breaks on hot days, visits to carpet shops and museums, the participants shared the challenge of examining diverse geology resulting from island arc formation, continental collision, development of interior basins and disruption by major strike slip faults. The field station lies directly on a strand of the North Anatolian fault and Taskesti was destroyed by an earthquake in 1964. Not even a tremble has been felt during the field seasons there so far. Minor tummy problems have caused a few to think the earth was moving, however.

Dr. Nuri Uzunlar, the newly appointed director of the Black Hills Natural Sciences Field Station, lead the camp with assistance of four faculty members (Alvis Lisenbee, Colin Paterson, Maribeth Price and Larry Stetler) not all of whom were there for the entire camp period. Dr. Okan Tuysuz, Director of Eurasian Research Institute at Istanbul Technical University assisted for one week during the study of the North Anatolian fault: Dr. Gultekin Kavusan and a graduate student of Ankara University participated in the study of deformed Miocene lake deposits in the Cayirhan region northwest of the capitol city of Ankara. In this time of globalization, the field camp allows a view of a larger world to the students. In addition to the exciting geology, the camp offers a safe adventure in a Muslim country, one in which students have an opportunity to learn about others and share their views and their own country as well. We participated in a local festival in the mountains, danced at an outdoor wedding dinner, and ate lunch with the governor. When asked what other important things were involved with the camp, Dr. Uzunlar mentioned "two Sunday trips to the beach." Apparently the 21st century field camp is a little different.

News from Perry Rahn
I have been involved with Burns & McDonnell who are working for the City of Rapid City in order to development a water plan. Lately I have been involved in with local ranchers who oppose to a proposed large water pipeline project in the southern Black Hills.

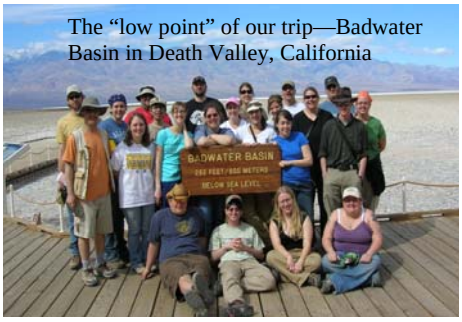
News from Student Organizations –
Society of Economic Geologists (SEG)
The student chapter of SEG currently has 36 members who are involved in monthly meetings, organization of the Friday Seminars, and outreach for schools. In May, Tom Loomis (GeoE 1981) led a group of about 20 to the Tip Top pegmatite mine SW of Custer, where he is mining for rare mineral specimens. Colin Paterson led a group of 6 students on the SEG trip to the Stillwater mine in southern Montana in November. The students were exposed to the challenges of grade control in the only mine in the US that is producing platinum group metals. The mine is probably the biggest employer of geologists in the USA with 27, and is frequently hiring graduates and interns. The current employment opportunities in the mining industry will hopefully encourage more students to pursue careers in exploration and mine geology – many companies are considering ways to help departments such as ours to prepare graduates as future employees. Industry support for university education is long overdue, and the time is right to provide that assistance.

Paleontology Club - Matt Weiler (president)
For people with a love in fossils, the Paleontology Club provides a wonderful organization that allows people to see all of the different sides the both Paleontology and Geology. To the regular attendees, Paleo Club as it is known, usually meets once every two weeks to discuss community out-reach, fund raising, field trips, and on-campus activities that pertain to the curriculum or the Museum of Geology. Throughout the year, the Paleontology Club schedules many activities, such as fundraisers to help support the club, outreach programs, as well as student presentations at the bi-weekly meetings. Over the past few years, the number activities that the club participates in has grown as the membership has grown resulting in a larger group of volunteers and fresh, new ideas. Both senior and graduate student members are required to give at least one presentation during the school year. Most of the students use this as a way to build their public speaking abilities, as well as practice presentations for Senior Research, Master's Thesis and PhD dissertation topics.

Spring Field Trip to Death Valley, CA
The intrepid geology explorers for spring break 2006 spent long hours in the vans to admire the wonder of the California desert and lots in between. Twenty-one students, led by faculty Maribeth Price and Nuri Uzunlar, left in the traditional spring snowstorm. We visited Goblin Valley National Monument and Capitol Reef National Park in Utah, tripped down the Grand Escalante Staircase to Zion National Park, and made our way to the stunning scenery and geology of Death Valley. We spend two days there exploring the sand dunes, a marble canyon, tremendous alluvial fans, the Devil's Golf Course, and of course

Badwater Basin, the lowest elevation in the continental United States at -282 feet. We're told that Death Valley receives only a couple inches of rain a year, but we are certain that all of it fell the night we were there! On our return trip we visited Long Valley Caldera at Mammoth Lakes California, drove endlessly across the Basin and Range, and viewed the caves at Great Basin National Park. Our trip was unfortunately cut short by an impending major snowstorm that caused us to skip Dinosaur National Monument and Flaming Gorge and run straight for home.

Matt Bowman and Lisa Ashe atop the hoodoos at Goblin Valley, Utah.



The "low point" of our trip—Badwater Basin in Death Valley, California

Coming soon with your help!

We have big plans for improving the ways we help students achieve their career dreams and become the scientists and engineers needed in today's global marketplace. We want to establish endowed chairs to strengthen our research, increase scholarships for recruiting top students, renovate our teaching facilities, and most exciting of all, build a new paleontology research center. Your contributions to the current SDSMT Capital Campaign can be earmarked for a specific use that you identify. Help us make things happen!

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