

SOUTH DAKOTA



SCHOOL OF MINES
& TECHNOLOGY

Newsletter from the
**Dept of Geology
and Geological
Engineering**
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Faculty in Geology and Geological Engineering – November 2007

Back row (l to r) –, Bill Roggenthen, Nuri Uzunlar, Mike Terry, Jim Martin; Perry Rahn (emeritus), Ed Duke, Larry Stetler

Front row (l to r) – Maribeth Price (chair), Jack Redden (emeritus), Colin Paterson, Arden Davis, Jim Fox

Absent: Gerald Grellet-Tinner, Alvis Lisenbee (emeritus)

This Newsletter

This year, because of a shortage of funds, we are producing the newsletter as an electronic version only. Those alumni with emails will be notified that it is on the web page (<http://geology.sdsmt.edu>). Hopefully, we will be able to send out a print version next year.

From the Chair - Dr Maribeth Price

Greetings alumni!

I can't believe it is newsletter time again already. The year has just flown by! It has been an exciting year with many changes. The campus is beginning to feel the impacts of new admission standards for SDSMT and dynamic marketing efforts by the admissions office. The effects are positive overall for us. New geology majors have increased, especially in paleontology, and geological engineering is holding its own. We continue to plan our recruiting efforts to keep our numbers strong, and of course the high prices in the oil and mineral industries is helping, as are the scholarship gifts provided by you alumni. We really appreciate your contributions to helping students study geosciences and engineering.

Dr. Jim Fox has announced his plans to retire at the end of the spring semester. He is an outstanding teacher of stratigraphy, sedimentology, invertebrate paleontology, and a number of popular electives on national parks and oceanography, as well as doing work for the oil patch and the South Dakota Geological Survey. He plans to stay active in the department as Professor Emeritus, fortunately, and we look forward to this new phase in his career, and wish him all the best. We intend to hire a new faculty member in sedimentation to continue Dr. Fox's fine legacy.

The Sanford Underground Science and Engineering Lab (DUSEL) at the old Homestake Gold Mine, has been approved by NSF, and plans are in motion to reopen the mine and begin building the lab. **Dr. William Roggenthen** has been working overtime as Co-Principal Investigator with the Homestake proposal team to bring this lab to South Dakota and deserves to be commended for his role in bringing such an exciting opportunity that will involve various members of the department. However, he will be working full-time on this effort, and we will be looking for a new faculty member to take on his teaching duties for the next two years.

Other initiatives are moving ahead also. **Dr. Jim Martin** has been working with the Foundation staff on plans for the new Paleontology Research Center (see photo later in this document). I have been sitting in on meetings with the architects and the new building plan is beautiful and functional. Fundraising efforts continue in order to turn this dream into a reality, both to build the walls and to furnish the laboratories for the new center.

The Black Hills Natural Sciences Field station continues to grow under its new Director hired last year, **Dr. Nuri Uzunlar**. The engineering field camp will be offered in Turkey this year for the first time, along with a Turkey field paleontology camp taught by **Dr. Gerald Grellet-Tinner**. We are also offering a new environmental field course in India taught by Dr. P.V. Sundareshwar of Atmospheric Sciences.

All in all it has been an exciting year with more interesting things to come. From the chair's perspective our focus remains on keeping our student population strong and expanding research opportunities and funding for our graduate students.

From the Faculty

Dr. Jim Fox has completed a project that began in 2003, in collaboration with South Dakota State Geological Survey geologists Kelli McCormick and Tom Haggar. One hundred and seventeen of the deepest geophysical wells drilled in strategic locations in South Dakota were studied, formation tops were identified and verified for consistency, and were correlated throughout the state. A network of fourteen subsurface well-log cross sections will soon be published (see citation below). These maps will be central to gaining a better understanding of the subsurface geology of South Dakota, as well as adding important data to Governor Round's 2010 Oil and Gas Initiative. Dr. Fox thanks the family of Dr. John C. Mickelson for supporting this work through the John C. Mickelson Faculty Fellowship which he received from 2003 through 2006. Fox, J.E., McCormick, K.A., and Haggar, T.N., **in press**, Cross Sections Showing Geophysical Logs of Phanerozoic Rocks in South Dakota: South Dakota State Geological Survey Oil and Gas Investigation 2, Plates 1-16.

Dr. Fox has published one single authored paper, and one co-authored paper with J. E. Martin in Geological Society of America Special Paper 427, *Geology and Paleontology of the Late Cretaceous Marine Deposits of the Dakotas*, edited by James E. Martin and David C. Parris. The citations are as follows:

Fox, J.E., 2007, Mollusks from the late Campanian DeGrey Member of the Pierre Shale, *in* Martin, J.E. and Parris, D.C. (eds.) *Geology and Paleontology of the Late Cretaceous Marine Deposits of the Dakotas*: Geological Society of America, Special Paper 427.

Martin, James E., and Fox, J.E., 2007 *in press*, Stomach contents of *Globidens*, a shell-crushing mosasaur (Squamata), from the Late Cretaceous Pierre Shale, Big Bend area of the Missouri River, central South Dakota, *in* Martin, J.E. and Parris, D.C. (eds.) *Geology and Paleontology of the Late Cretaceous Marine Deposits of the Dakotas*: Geological Society of America, Special Paper 427.

Dr. Perry Rahn

2006, (with Charles Michael Ray and Michael W. Rahn), The last glacier in the Bighorns: *The Professional Geologist*, Vol. 43, No. 2, p. 43-46.

2006, Nitrate in Rapid City's water supply: Western South Dakota Hydrology Conference, Rapid City, South Dakota, p. 15.

2006, Ethanol is not the answer: *AEG News*, Vol. 49, No. 2, p. 15-16.

2006, (with Jeffrey T. Rahn), Eclipse of the inner Satellite of Jupiter: *Proceedings*, South Dakota Academy of Science, Vol. 85, p. 21-29.

2007, (with Donald Teets), The fastest discovery in history: *Popular Astronomy*, Vol. 54, No. 3, p. 7-9.

2007, Future water supplies for Rapid City: Western South Dakota Hydrology Conference, Rapid City, South Dakota, p. 10.

2007, When a forensic mineralogist is wrong: (Abs.) Geological Society of America Annual meeting, Denver, November.

Dr. Larry Stetler returned from a 1-year sabbatical in January 2007. While on sabbatical leave, I worked on offsite impacts from abandoned uranium mines located in Harding County, northwest South Dakota. This is an EPA-funded, US Forest Service-directed project that ultimately will comprise 3 phases. Phase 1 has been completed and the final report can be found at <http://uranium.sdsmt.edu>. I am currently working on phases 2 and 3 with a target completion date of December 31, 2008.

I have recently completed a land use development study along Highway 79 south of Rapid City, funded by the Pennington County Commissioners. Results will be used by the County Planning office to direct development in a 65 square mile area. The final model is run on ArcMap and incorporates 10 separate layers to assess potential impacts from development. Both of the above projects resulted in an MS thesis in geological engineering, and both were presented at the 50th Annual AEG Meeting last September in Los Angeles.

I am also involved in a large project funded by a line-item earmark in the 2007 federal budget. The study is focused on establishing links between atmospheric dust and human health. My part of the project centers around setting up, running, and analyzing data from 2 state-of-the-art C14 Beta Attenuation PM₁₀ samplers I have installed on the Cheyenne River and Pine Ridge Indian Reservations.

Currently I have 3 journal manuscripts in review or in press that describe various aspects of my research. Three additional manuscripts are being prepared and will be submitted for publication early in 2008. During 2007 four research proposals were submitted totaling \$785,000 having received to date \$400,000 and am expecting the balance in the near future. One of these proposals was submitted to NSF and will enable us to instrument the Ross shaft and other access points underground at the Homestake DUSEL site to measure the water reduction in the mine and perform analysis that will lead to the 1st characterization of the Precambrian aquifer in the Black Hills. This work will be completed with Arden Davis and Rohit Salve, a hydrogeologist from Lawrence Berkeley Laboratory in California.

My teaching load remains heavy with 3 courses per semester. I also teach our engineering geology field camp in the Black Hills and in summer 2008, will offer for the 1st time an engineering geology field camp in Turkey.

Lastly, during the last year I took ownership of an older (1993) Geoprobe mounted in the rear of a van. This tool is being used to collect subsurface soil samples for several research projects and will also be utilized for course work. The Geoprobe was donated, along with supporting equipment and tools, by RESPEC, Inc. of Rapid City.



SDSM&T Geoprobe collecting soil samples in Harding County

Dr. Arden Davis - During the past year, I've taught graduate courses in ground-water modeling and ground-water geochemistry, as well as undergraduate courses in ground water and engineering design. Five Ph.D. students have completed their dissertations recently in ground water: Scott Miller, Kay Rogerson, Foster Sawyer, Douglas Hayes, and Jenifer Sorensen. Four M.S. students also completed their degrees: Blake Jones, Reko Hargrave, Joshua Valder, and Crystal Hocking. It's great to see these graduates continuing in productive careers – some of them in the Rapid City area with companies such as RESPEC. Best wishes also to our recent bachelor's graduates.

My research projects include removal of arsenic from drinking water and encasing the waste product in concrete. That collaboration includes Dr. David Dixon (chemical engineering) and Dr. M.R. Hansen (civil engineering). Other projects include ground-water work in the Rapid City area, involving 1:24,000 quadrangles that are being mapped to show the vulnerability of the Madison aquifer. A graduate student, Elizabeth Francisco, also is completing work on the vulnerability of the Inyan Kara aquifer in the Blackhawk quadrangle.

Dr. Ed Duke continues to multitask as Professor of Geology, Director of the Engineering and Mining Experiment Station (EMES), and Director of the South Dakota Space Grant Consortium and South Dakota NASA EPSCoR Program. Ed is assisted in administering the NASA programs by Tom Durkin (M.S., Geol 86).

The Space Grant program received new funds this year in the amount of \$410,000; of that amount, \$131,000 went to student stipends (30 students at SDSM&T and 10 students at other state institutions). Six students were supported to conduct internships at NASA centers or aerospace industries.

The NASA EPSCoR Program received \$1,625,000 in new funds this year. Two major research grants will start three-year projects. One, at SDSM&T, will develop new carbon fibers and composite materials for aerospace applications. The other, at SDSU, will use remote sensing to monitor landcover dynamics and hydrometeorology in the upper Great Plains.

Dr. Mike Terry spent the spring semester teaching structural geology and tectonics courses, and also participated in the spring field trip to Hawaii. During the summer he had the opportunity to teach at field geology at Ranch A. The remainder of the summer was spent in Germany completing work on deformation-diffusion research and traveling to Turkey to explore the possibility of developing new projects on high-pressure rocks and to teach for a short period at the field camp. During the fall, he taught advanced structural geology and petrology. He also received a grant of \$42,144 from Capella Resources Ltd. to support graduate student Lindsay Chasten. Over the course of the year several collaborative research projects were completed resulting in the following papers:

- McEnroe, S. A., Robinson, P., Langenhorst, F., Frandsen, C., **Terry, M.P.**, and Boffa-Ballaran, T., 2007, Magnetization of exsolution intergrowths of hematite and ilmenite: Mineral chemistry, phase relations, and magnetic properties of hemo-ilmenite ores with micron- to nanometer-scale lamellae from Allard Lake, Quebec, *Jour. Geophys. Res.*, 112, B10103, doi:10.1029/2007JB004973.
- Hollocher, K.T., Robinson, Peter, **Terry, M.P.**, and Walsh, Emily, 2007, Application of major- and trace-element geochemistry to refine U-Pb zircon, and Sm/Nd or Lu/Hf garnet sampling targets for geochronology of HP and UHP eclogites, Western Gneiss Region, Norway, *American Mineralogist*
- Hollocher, K.T., Robinson, P., Walsh, E. and **Terry, M.P.**, 2007, Geochemistry of metamorphosed mafic dikes in Neoproterozoic quartzite in gneiss: a key to correlations and paleotectonic settings of the Sætra (Sårv) and Risberget (Tännås) Nappes. *American Jour. of Science*, 307, 901-958.

Dr. James Martin - The year 2007 has been very busy for the paleontology department and Jim Martin. Major steps were taken during 2007 to make the dream of a new paleontology facility a reality. With the leadership of Dr. Charles Ruch (President) and Dr. Duane Hrcir (Dean, College of Science and Letters), architects have been hired, and plans of the facility have been produced. Soon, we will know if we have the majority of the funds secured, and if so, ground-breaking is planned for 2008. We hope to raise an additional \$3 million to outfit the building and for additional needed space. Please contact James.Martin@sdsmt.edu if you have ideas for fund-raising. In the meantime, the paleontology laboratory moved into temporary quarters in a new modular laboratory that was built just east of the Old Gym. The Old Gym basement was deemed unsafe for students, so new facilities are much needed.



Rendering of proposed Paleontology building, viewed looking south

Another major project was also completed during 2007. Geological Society of America Special Paper 427, edited by Jim Martin and Dave Parris, New Jersey State Museum, was published. Entitled, "Geology and Paleontology of the Late Cretaceous Marine Deposits of the Dakotas," the volume contains eighteen chapters of which ten include Jim as an author. Subjects include revision of the nomenclature of the Pierre Shale, bentonite correlation of the lower Pierre, paleoenvironments based upon Rare Earth Element analyses, invertebrates from the Pierre by Jim Fox, a new species of clam-crushing mosasaur and analysis of its stomach contents also with Jim Fox, biostratigraphy of fishes from the Pierre Shale, survey of the sea turtles of the Pierre, a new plesiosaur from the Black Hills area, comparison of stomach stones in plesiosaurs, using Rare Earth Elements to fingerprint the first reptile described from the American West, descriptions of the largest mosasaurs from South Dakota, review of the flying reptiles of the Pierre, and a new species of Cretaceous diving bird. Overall, the book represents the culmination of 15 years of research along the Missouri River by the Museum of Geology in collaboration with the New Jersey State Museum.

In addition, numerous interviews and programs were completed concerning Jim's research. He was the subject of National Public Radio, Science Friday, interview concerning a baby plesiosaur collected in Antarctica, a television program for Oregon Public Broadcasting concerning a horse from Oregon, an interview for Smithsonian Magazine, an opening of a

new display through the Adams Museum in Deadwood, and an interview for a Japanese television program concerning the mammals of the Badlands. Numerous presentations were made to the public, including the SDSM&T Foundation Board and Board of Regents Career Service Council, as well as corporations and foundations to raise funds for the new paleontology center.

Jim also oversaw eight grants and contracts from the Badlands National Park, Bureau of Reclamation, and the Bureau of Land Management. One contract concerns the recovery and analysis of an Ice Age horse that is among the last horses before the extinction at the end of the Pleistocene. Horses were reintroduced by the Spanish, and we hope that DNA analyses will indicate genetic relationships of this nearly complete horse skeleton. In addition, Jim oversaw the Pig Dig in Badlands National Park, as well as a paleontological survey of the Angostura Reservoir in the southern Black Hills.

In addition to the book, Jim published three other peer-reviewed papers and four additional abstracts were presented at various national meetings.

Dr. Colin Paterson has been coordinating the development and presentation of a new course for all entering students majoring in science at SDSM&T. IS 110 Explorations is designed to excite incoming freshmen in science careers, using a multi-disciplinary approach. Each year, a theme is chosen; for Fall 2007, it was "climate change". Visiting speakers included Dr Walt Robinson from the NSF Climate Change program in Washington, DC, local meteorologist, Chris Orr, as well as faculty in the College of Science and Letters at SDSM&T. An international trip was considered for spring or summer 2008 to visit an area relevant to the theme – Canadian Rockies, Kilimanjaro, or Greenland – but we settled on Glacier National Park (MT) for August 2008. I am still involved with the Homestake underground lab, and hoping to get research underway on aspects of the Homestake iron-formation gold deposit. In March, we hosted a 3-day workshop for 15 geologists from SDSM&T, SD Geological Survey, USGS (Denver), Geoscience Australia, and Kent State University, with the intent of collaborating on Homestake research. My graduate students are completing theses and dissertations on ore deposits in the Black Hills, Nevada, and Namibia. The **Society of Economic Geologists student chapter** has been active in field trips and outreach to schools, and is preparing a new edition of the Homestake gold mine rock and ore suite as a fund-raising activity: \$65 for student version in a plastic display container, or \$175 in a crafted wooden display container (18" x 12") with lid. View at <http://seg.sdsmt.edu> or email me if interested (colin.paterson@sdsmt.edu). Papers presented this year at the Denver meeting:

Duke, E.F., and Paterson, C.J., 2007, Hyperspectral Remote Sensing and Field Spectral Analysis of the Stratigraphy, Structure, and Metamorphism of Cupriferous Volcanogenic Massive Sulfide Occurrences near Gorob, Damara Orogen, West-Central Namibia: *Geol. Soc. America Abstracts with Programs* Vol. 39, No. 6.

Uzunlar, N., Lisenbee, A.L., and Paterson, C.J., 2007, The Black Hills Natural Sciences Field Station (SDSM&T): Field geology and geological engineering program in the 21st century: *Geol. Soc. America Abstracts with Programs* Vol. 39, No. 6.

Dr. Darrin Pagnac (Haslem Postdoctoral Fellow) - The past year has been an extremely busy one. I've expanded my current research interests, expanded into new areas, and submitted numerous papers and proposals for grants.

In August I returned with several paleontology students to the Fort Randall Fm (Miocene) at Bijou Hill near Alliance, SD. Despite high humidity, fierce thunderstorms, and assault by innumerable mosquitoes, the trip was a great success. Several students received an intense and educational introduction to field paleontology and geology. Several notable fossil finds added to the ever growing faunal list at these quarries. Of note are a talon from a very large eagle, the site's first complete zapodid (jumping mouse) jaw, and a chunk of tooth enamel which represents one of the oldest occurrences of a proboscidean ("mastodon") in the Great Plains.

I have expanded my research focus to include collaborative research with Dr. Jim Martin and Dr. Doreena Patrick on geochemical analyses. Together, we have submitted over \$700,000 in NSF grant proposals to study the use of Rare Earth Element signatures in stratigraphic correlation and fossil provenance in the Miocene Barstow Fm of California and the Cretaceous Niobrara Fm and Pierre Group of the Great Plains. This line of research will have dramatic implications on correlation of stratigraphic layers based on their geochemical signatures.

Work will continue over the next year on other avenues as well. I will begin collaborative efforts with individuals from Agate Fossil Beds in Nebraska to allow Master's research to be conducted on the site. I will also continue collaboration with Jim Martin on Miocene faunas from the Pacific Northwest.

Homestake Deep Underground Science and Engineering Laboratory (DUSEL)– Continuing Progress

In July, 2007, the site of the former Homestake Mine was designated as the selected site for an underground science and engineering laboratory in the United States. This designation does not provide any guarantees that the National Science Foundation will provide funds to fully develop the underground lab. However, it is a very positive step toward the goal of a large, extremely capable laboratory that will support long-lived experiments in particle physics, geosciences, engineering, and geomicrobiology. Experiments being considered in the geosciences and geoengineering include studies of fracture flow, identification of microbial communities living in high temperature environments, and rock mechanics studies associated with large excavations at great depths. Work is currently progressing toward the safe re-entry of underground and reestablishing the pumping of the water resulting from the normal inflow. Successful re-entry and control of the water will allow experiments to begin prior to the development of the larger, federally-funded laboratory resulting in earlier results from the experimental program. This early phase is known as the Sanford Laboratory at Homestake in honor of Mr. Sanford and his generous donation in support of science in South Dakota.

News from Nuri Uzunlar and the Field Station:

Nuri joined the department as an Associate Professor and Director of Black Hills Natural Sciences Field Station on September 1st, 2006. The BHNSFS has been growing since Alvis and Nuri introduced the International Geology Field Camp on North Anatolian Fault in Turkey, with seven students in summer of 2004. As the Director, Nuri established an Advisory Board to oversee the activities of the Field Station. Last summer 79 students from 23 colleges attended our six different camps. The BHNSFS now offers camps in three locations in the USA, Turkey and India. In 2007, the BHNSFS presented 13 scholarships (total \$4200) to field camp students.

New ventures in 2007 were a Geology Youth Camp for high school students and Environmental Geology Field Camp for engineers and scientists. As the Director of BHNSFS, with help and guidance from Dr. Alvis Lisenbee and the Advisory Board, we plan to build a field station in the Black Hills. Anyone who has an interest in this effort which will on behalf of BHNSFS serve earth sciences and geological engineering for many years to come should contact Nuri.

Geological Engineering Field Camp at Ranch A, led by Larry Stetler and assisted by Zbigniew Hladysz, had 17 students from University of Mississippi, University of North Dakota Virginia Tech and SDSM&T. TAs for the engineering camp were Levi Allbaugh and Gregory Kipp, both graduate students. **Geology Field Camp at Ranch A** had 14 students from LaSalle University, Rocky Mt. College, University of North Dakota, Syracuse University, Minot State College, Bridgewater State University, Appalachian State University and SDSM&T. The camp

was taught by Colin Paterson and Michael Terry from SDSM&T. Randy Moses a graduate student and Becci Rowe a senior in geology were the TAs. **Environmental Field Camp** was taught by Arden Davis and was attended by five students from Harvard, Washington University-St. Louis and State University of New York, Fredonia

In addition to teaching a week of both camps at Ranch A, Nuri taught **Youth Geology Field Camp** with help of Angel Corcoran, an undergraduate student. Fifteen campers from five states participated, some traveling from as far away as Minneapolis, Kansas



City and Chicago.

In late June Nuri left for Turkey to teach two five week camps from our Taskesti base camp. The field station lies directly on a strand of the North Anatolian fault and Taskesti was destroyed by an earthquake in 1964. Nuri and Earl Hoskins, alumnus of SDSM&T, from Texas A&M offered a camp to 12 petroleum engineers from Texas A&M University - Qatar campus.

In late July, Alvis arrived in

Taskesti to teach the **Fourth International Geology Field Camp** in Turkey. Alvis Lisenbee, Colin Paterson, Mike Terry (not all were present for the entire camp period) and I taught geology session which was attended by 14 students from Harvard, University of Akron (Ohio), University of Washington-Pullman, University of Rochester (New York), Portland State University (Oregon), Central Michigan University, Southern Methodist University (Texas), University of Arizona, Eastern Michigan University, University of South Dakota and SDSM&T.

In addition to summer camps, Nuri has been active in departmental committees and the department's graduate and undergraduate recruiting efforts. Nuri attended Geol. Soc. America and SME annual meetings in Denver, to host a booth on behalf of the BHNSFS and the department in 2006 and 2007.

For additional information about upcoming field station activities visit <http://geologyfieldcamp.sdsmt.edu>, call (605) 394-2494 or write to the director, nuri.uzunlar@sdsmt.edu



Spring Field Trip 2007: Hawaii

The Geology and Geological Engineering Spring Field Trip went to Hawaii this year. Leaving in blustery March and arriving on balmy Oahu offered a respite from the wintry South Dakota weather that was complemented by the "hot" geology of the volcanics of the Hawaiian Islands. We flew into Honolulu and spent the next day and a half in the southeastern part of Oahu, and then moved on to Kauai. Just to make sure that we did not lose our endurance of cold temperatures, we spent a very cold night in the highlands very close to the "wettest spot on Earth" although we were fortunate in that it did not rain that particular day. The hiking was great and the pronounced degree of erosion on the island guaranteed that we were able to see good sections of the volcanic stratigraphy.

Moving on to the big island of Hawaii, we visited the sites of two different types of alternative energy generation, including the geothermal generating plant south of Hilo. The trip culminated with an afternoon into evening hike to the active lava flows on the eastern flank of Kilauea. The glowing orange lava was impressive in the daytime but spectacular after dark. It was well worth the hike over some extremely rough fresh lava terrain to get to the flows. Our flight out of Kona on the big island was uneventful and when we returned to South Dakota, it was springtime.



The basaltic lava flows on Kilauea at night – students are behind the flow

Grellet-Tinner Brings Cultures Together - Dr. Gerald Grellet-Tinner, assistant professor of paleontology, has been on the School of Mines campus for just over a year, and the impact he has already made is far reaching, touching other cultures, both locally and abroad.

This past year, Grellet-Tinner spent time at the Standing Rock Sioux Reservation. The approximate 2.3 million acre reservation, located in northern central South Dakota and straddling the North Dakota border, is a haven for fossil hunters. Grellet-Tinner has worked tenaciously with Standing Rock Reservation officials along with officials from the Bureau of Indian Affairs (BIA) in order to earn the School of Mines exclusive rights to dig fossils on thousands of acres of land on the reservation. Two grants from the Tribe and BIA were solicited and received to help students to pursue research on tribal land.

The advantages of this exclusive arrangement are reciprocal for both parties. The School of Mines will benefit by being able to promote the endless research possibilities available on the Standing Rock Reservation to recruit geology and paleontology masters and doctoral students. The Standing Rock Reservation will benefit as well by fostering the early exposure of paleontology and related fields in Native American students. Grellet-Tinner was even invited to speak on the reservation earlier this fall regarding paleontology resources.

In addition to the relationship he has nurtured at Standing Rock, Grellet-Tinner has also been invited to provide assistance to the reservation. The breadth of his knowledge has led to his recruitment to assist the Homeland Security office (ICE) crack down on the illegal trade of fossils on both national and international levels. After a very large illegal shipment of dinosaur fossils, including eggs, from China was seized, Grellet-Tinner was asked to serve as a witness and to investigate and evaluate the eggs. He played an important part in the successful criminal prosecution that followed. Because of his expertise, Grellet-Tinner was also invited to attend a conference organized by various federal agencies at the University of Pennsylvania this past September about the problem of illicit trade of fossils. Following this conference, he met in Los Angeles with a Chinese delegation to pave the road for US/Chinese bilateral agreements on antiquity trades.

In addition to Grellet-Tinner's work on the Standing Rock Reservation, he was also been busy on the international paleontological scene. He spent time in France this past summer visiting several fossil rich areas. This work was made possible by a School of Mines grant and support from the Centre National de la Recherche Scientifique (CNRS), translated to the National Center for Scientific Research, the largest governmental research organization in France and the equivalent of the United States' National Science Foundation (NSF).

Grellet-Tinner worked with two fellow colleagues, first at a site in Cruzy, a town located in southern France. The researchers exposed a 600-pound block that when flipped over revealed many dinosaur eggs. At the second fossil-rich site in Cognac, Grellet-Tinner worked with a post-doctoral student who implemented a new methodology to include micro fossils in the paleobiology picture. Grellet-Tinner intends to bring some of the students he worked with at these sites to the School of Mines for doctoral work and post doctoral research. He also hopes that School of Mines students will reciprocate by taking advantage of the opportunity to study and research in France.

This year, Grellet-Tinner, applied and received a BIA and a tribal grant, the John C. Mickelson Professorship Award, the CNRS Professorship Summer Grant, and the Nelson Grant. He is presently working on an NSF grant to revise a group of Mesozoic birds (*hesperornis*).

So far he has published a paper in **Historical Biology** on Pterosaurs, another on the taxonomic identification of the Megaloolithid egg and eggshells from the Cretaceous Bauru Basin (Minas Gerais, Brazil) in **Papeis Avulsos de Zoologia**, submitted and accepted a manuscript on the First Embryo of a Ceratopsian Dinosaur in **Naturwissenschaften** and lastly submitted with his wife a research on *Pontoporia blainvillei* (dolphin) in **Mammalian Species Special Account**.



Gerald Grellet-Tinner (left) in Cognac with his French colleague and students

From the Archives, including spelling errors: Faculty and staff in 1982



GEOLOGICAL ENGINEERING. First Row: Willaird Roberts, Dr. Jim Martin, Dr. William Roggenthen, Marilyn Lundquist - Secr., Dr. Alvis Lisenbee - Department Head, Dr. James Papike, Dr. Jack Redden. Second Row: Dr. Jim Fox, Dr. John Mikelson, Dr. Philip Bjork, Dr. Paul Gries, Dr. Nancy Scofield.