

The Redbeds

*The Annual Newsletter of the
Department of Geological Sciences
Rutgers, The State University of NJ*

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**Geology Museum Open House, Saturday January 25, 2003 (See back page)
Geology Department and Alumni party, Log Cabin, Fri. 25 April, 2003 4:30-10:00
50th Anniversary of the Graduate School, NB Oct. 25, 2003: Geological Sciences will participate**

Welcome to the Redbeds 2003

The Redbeds is the Annual Newsletter of the Department of Geological Sciences, Rutgers, The State University of New Jersey. The *Redbeds* was reincarnated by then Chair (now Dean) Michael Carr six years ago and has since grown into a detailed report on research activities, students, awards, funding, and comings and goings in our department. Sent to over 700 alumni, the *Redbeds* is our primary means of informing alumni, friends, and colleagues of our most recent accomplishments. Please contact us and tell about your recent activities!

Right. Fluorescent minerals in the new Anne and Milton Hershorn Geology Museum exhibit.



New fluorescent mineral exhibit opens at Rutgers Geology Museum

Contributed by Bill Haduch, Rutgers University Media Relations

The new Anne and Milton Hershorn Fluorescent Mineral Exhibit at the Rutgers Geology Museum was dedicated on September 16, 2002 during a ceremony and reception attended by Rutgers President Francis L. Lawrence, geologists, mineralogists and Hershorn family and friends. The exhibit opened to the public on September 16. The fluorescent minerals, most of which are from New Jersey, are part of the 6,000-specimen lifetime mineral collection of Milton Hershorn, who donated his collection to the museum last year, shortly before both he and his wife, Anne, passed away. The spectacular exhibit is designed to display and explain fluorescence in minerals, a phenomenon in which specimens emit vivid colors of visible light when they are exposed to ultraviolet rays. The permanent exhibit, which replaces a smaller fluorescent mineral display, uses modern presentation technology while complementing the museum's Victorian sense of place and gaslight architecture.

"My father was as dedicated to education as he was to fluorescent minerals. We are most pleased that my father's collection will continue to intrigue students through their beauty as art objects and through the scientific stories they tell," said Mark Hershorn, son of the collector and member of the Rutgers Board of Overseers. Milton Hershorn's own interest in minerals began with an educational outreach program at the Brooklyn Children's

Museum in the 1930s. Last year, he expressed his hope that his collection at the Rutgers Geology Museum would inspire interest in minerals among current and future generations.

"Minerals and fossils have a unique ability to capture the imagination and drive intellectual curiosity," said R. William Selden, museum curator. Selden explained that fluorescence in minerals occurs when ultraviolet light waves, invisible to the human eye, are absorbed by a mineral's atoms, and then emitted back to the viewer in multiple steps. The steps may include visible light, and if a step includes just one wavelength of visible light, the viewer will perceive the result as vivid color. The minerals in the Hershorn exhibit emit mostly brilliant red and green.

In its 131-year history, the Rutgers Geology Museum has provided the public with direct and personal contact with scientists through tours, publications, educational outreach, open houses and the Museum Friends' Lecture Series. It is located at 85 Somerset St., New Brunswick, in Geology Hall on the historic Old Queen's quadrangle of Rutgers, The State University of New Jersey. Hours are Mon. 1 to 4 p.m. and Tues. through Fri. 9 a.m. to noon. For more information, visit the museum's web site <http://www.rci.rutgers.edu/~geolweb/museum.html>.

Rutgers Team Cruises the North Atlantic

Contributed by Greg Mountain and Lesley Patrick

Greg Mountain and Jim Wright, along with Prof. Pat Manley (Middlebury College) led a 41-day cruise aboard the *R/V Knorr* this past August. They were joined by grad students Ryan Earley, Sam Henderson and Lesley Patrick plus students from Middlebury and Lamont-Doherty Earth Observatory/Columbia in a project designed to understand the history and impact of deep-sea circulation on the seafloor. They focused on the Gardar and Eirik sediment drifts, two large deposits south of Iceland and Greenland, respectively, that contain long and detailed records of fluctuations in thermohaline circulation.

Never ones to miss a chance to mix work and pleasure, the team met up in Iceland with alum Amy Clifton (Ph.D., 2000) who provided a whirlwind tour of neovolcanism along the Reykjanes Peninsula. Amy is currently at the Nordic Volcanological Institute following her passion of working out the highly complex (but as she showed us, exquisitely exposed) story of how oceanic crust is formed. Thank you Amy!

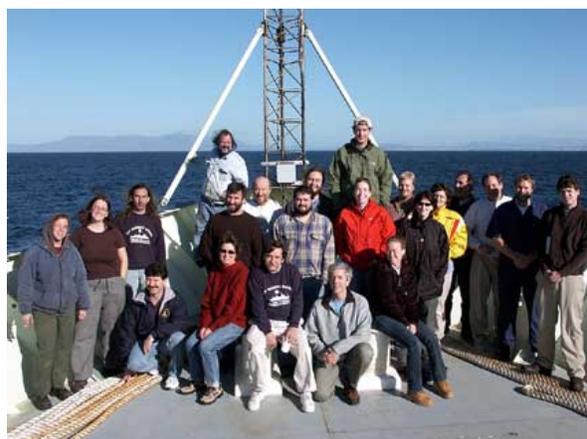


Above, The team on, make that in, land in the central rift.

The cruise began and ended in Reykjavik, Iceland under strikingly blue skies. The in-between skies were a lot less blue, but striking nonetheless. The stormy North Atlantic caused the ship to spend a few hours pitching and rolling in 30-foot swells and storm force winds or dodging icebergs in thick blankets of fog. These conditions brought productivity to a near halt and time was spent playing ping-pong, cribbage, video games, juggling, Rubik's Cube, crosswords, watching movies, reading, writing emails, and telling exaggerated stories. Despite the need to heave-to (or just heave) and wait on weather for several of our allotted days, all hands and equipment came through in great shape, eager to go to sea again (or so they say). We learned first-hand why we had the thrill of discovery in surveying

parts of the ocean rarely visited by oceanographic research vessels.

Despite the relaxed nature and good cheer among the crew, when the ping-pong was over we had serious and hard work to perform. We collected continuous swath-bathymetry, side-scan sonar, and shallow-penetration 3.5 kHz echosounder data from the Knorr's hull-mounted systems, and where needed, deployed Lamont's high-resolution 48-channel seismic reflection gear for images that will one day form the basis of drilling by the Integrated Ocean Drilling Program. We also collected 34 gravity and jumbo piston cores. We came well prepared to do a lot of data processing at sea. With expert assistance from Dr. Bill Haxby (LDEO), we had spectacular images of current-induced bedforms well before the end of the cruise. Ryan and Greg put their heads together and figured out how to prepare brute stacks of the MCS data, for the first time using software obtained through a grant to Rutgers from Landmark Graphics; as a result, we left the ship with hard copies of 48-channel profiles for the entire cruise. Finally, with equipment brought from Middlebury, we were able to measure sonic velocity and magnetic susceptibility on each of our un-split cores, and along with strategic sampling, Jim was able to provide first-pass age models for many of the cores as we went along, and guide the selection of subsequent coring efforts for the length of the cruise. The cores are temporarily stored at LDEO, and will be transferred to Rutgers when a refrigerated trailer is set up on the Busch campus in early 2003. These and ancillary data will be keeping Greg and Jim busy for the next couple of years, as well as provide material for thesis research for Ryan and Sam. Stay tuned as progress unfolds.



Above, The team at sea on the *R/V Knorr*

Drilling at Millville, NJ a Study of Water Resources and Sequences

Contributed by Pete Sugarman (NJGS/Rutgers) and Ken Miller

The Coastal Plain Drilling Project continued in May-June 2002 with drilling at Millville, NJ. This continuously cored and logged 1500 ft borehole targeted Upper Cretaceous sequences and Cretaceous-Tertiary aquifers. Millville is the first of three sites planned that complement existing Cretaceous sections drilled at Ancora (1998) and Bass River (1996). Millville was chosen primarily to sample important

aquifers and the New Jersey Geological Survey (NJGS) paid for all drilling costs for this hydrostratigraphic test borehole. In addition to defining the stratigraphic distribution of aquifer sands in this rapidly developing, water strapped Cumberland County location, pore squeezing studies by Z. Szabo (USGS Water Resources Divisions, W. Trenton) and B. Lettini (RU Graduate Student) will provide an understanding of the effects of

confining units on water quality. Because the Upper Cretaceous section thins along strike toward Millville, only 439.6 ft of Cretaceous strata were recovered. Addition drilling is planned to recover thicker, more complete Upper Cretaceous sections. The NJGS will fund drilling midway between Ancora and Bass River at Batsto, NJ in 2004 that should recover 660 ft of Upper Cretaceous. This site should prove excellent for documenting marine Upper Cretaceous sequences as part of a dip transect from Ancora through Bass River. NSF drilling has also been proposed for Manasquan, NJ for Fall 2003, which will provide a direct tie to offshore seismic profiles collected in 2002 by G. Mountain (Rutgers), N. Christie-Blick (LDEO), S. Pekar (LDEO, former RU graduate student), and C. McHugh (Queens).



Above. USGS drilling rig at Millville, NJ June 2002

New Structural Modeling Laboratory

Contributed by Mark Baum

2002 witnessed the inauguration of the Geology Department's experimental structural modeling laboratory. The structure group designed the Rutgers apparatus to simulate multi-phase deformation, ranging from strike slip to oblique slip to normal and reverse slip. Scaled experimental modeling began in the summer of 2002, after a year of design and fabrication of a state-of-the-art modeling apparatus. In the fall of 2002, ExxonMobil Corporation, after considering the proposals of several universities, selected the Rutgers' Geology Department as the recipient of its modeling apparatus and laboratory equipment. Together, the Rutgers and ExxonMobil machines provide the Rutgers' Geology Department with the ability to experimentally simulate a great variety of structural styles, more than any other university in the United States.

The structure group at Rutgers is currently studying the geometry and development of oblique-inversion structures. The project is supported by a Petroleum Research Fund grant awarded to Martha Withjack and Roy Schlische. Inversion structures are hybrid structures in that they are the product of two episodes of deformation - oblique extension followed by oblique shortening. With two-phase deformation, the pre-existing extensional fabric significantly influences the final structural geometries produced during shortening. The results of this modeling study apply to locations in

eastern North America, the North Sea, the Norwegian Sea, southeast Asia, and Australia.

Below: Dr. Martha Withjack (c), discussing modeling results with graduate students Bill Bradfield (l) & Jennifer Elder Brady (r).



Exploration of Hudson Canyon

Contributed by Peter Rona and Kyle Kingman



Above. Scientific team of the Hudson Canyon Exploration cruise with Peter Rona and Kyle Kingman third and fourth from the left.

Hudson Canyon is the largest submarine canyon off North America and lies in the backyard of one of the largest urban areas in the world, the New York-New Jersey metropolitan region. Yet Hudson Canyon and the surrounding deep portion of the continental margin is a seafloor wilderness that is largely unexplored. Peter Rona, Professor of Marine Geology and Geophysics at Rutgers, served as chief scientist on a multi-institutional cruise to map the Hudson Canyon region with the flagship of the National Oceanic and Atmospheric Administration (NOAA) fleet, the NOAA R/V *Ron Brown* in September 2002. The seagoing team comprised scientists and students from the U.S. Geological Survey, the State University of New York at Stony Brook, and a Rutgers undergraduate geology major, Kyle Kingman. The investigation is supported by a grant from NOAA's new Office of Ocean Exploration. The cruise used a high-resolution multibeam bathymetric system to make the first coherent map of the entire portion of the

continental margin centered on Hudson Canyon from the upper continental slope (500 meters water depth) more than 100 miles seaward to the middle of the continental rise (depth 3500 meters). They found evidence for massive submarine landslides in the form of large apparently displaced blocks of strata. They also collected water samples, to follow up earlier indications of venting of methane gas from the seafloor found in the previous year in their dive series with the submersible ALVIN (reported in Redbeds volume 6, January 2002). The cruise attained its goals in spite of being rocked by northeaster storms at the beginning and Hurricane Gustav near the end. Rona reports on the website <http://oceanexplorer.noaa.gov/explorations/02hudson/welcome.html>, "We feel privileged to have captured the grandeur of Hudson Canyon using the ship's state-of-the-art echo-sounding system. Moving seaward over 100 miles we see walls towering a half-mile high where the canyon traverses the continental slope, transforming to meandering channels across the upper continental rise

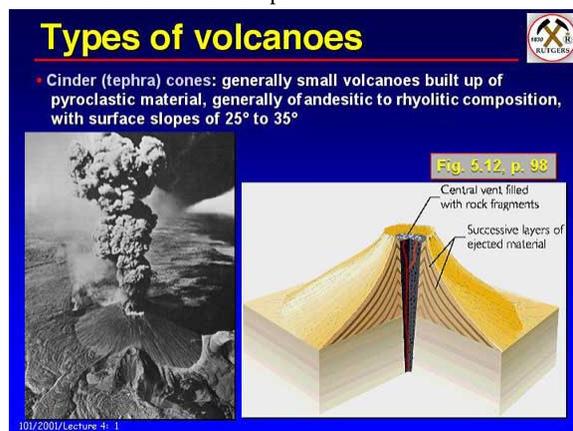
and then to a deep gorge that continues into the deep ocean basin. We also imaged huge blocks of sedimentary rocks, some as high as the Empire State Building, lying at the base of the continental slope where they had come to rest after landsliding down the slope. We are in process of preparing maps using the data that we collected. We are analyzing our water samples and other data for evidence of venting of the natural gas methane from the seafloor around Hudson Canyon." The exploration so far has shown that the Hudson Canyon traverses a region of great natural beauty, of potential energy resources, and of environmental hazards in the form of submarine landslides that could potentially disrupt the hub of trans-Atlantic electro-fiber optic communications cables that traverse the region. The team plans to continue exploration of the Hudson Canyon region to build a base of knowledge and understanding that will help to ensure a future for this region that will benefit of our nation.

High-Tech Teaching

Contributed by Roy W. Schlische

Over the past few years, our faculty have increasingly incorporated technology into their undergraduate and graduate courses. The majority of our 100- and 200-level courses now use PowerPoint as the primary method to help convey information to our students. Many upper-level undergraduate courses and some graduate courses also now use this technology. The main advantage of PowerPoint is that it allows us to integrate the following into one seamless presentation: line drawings and photos from the textbook; scans of photos from our own collections; text bullets; and animations and video clips. PowerPoint's powerful animation features allow us to highlight critical features of line drawings or photographs and to introduce small pieces of text at discrete times. These advantages more than outweigh the substantial time required to convert our traditional lectures into PowerPoint presentations.

departmental website. For my section of Introductory Geology, detailed lecture outlines, supplemental figures, review questions, homework exercises, and answers are available as downloadable PDF files at <http://www.rci.rutgers.edu/~geolweb/introrows.html>. For the Structural Geology class, my teaching slides are available at <http://www.rci.rutgers.edu/~schlisch/structureslides/slides.html>. Many of the images show both the original photo and an interpretive line drawing superimposed on the original. Although I continue to show these slides in class, students may review the images at their convenience. Several exam questions are based on the slides. I have also prepared web essays on the geology of New Jersey, the breakup of Pangea, and the geology of the Newark basin, available at <http://www.rci.rutgers.edu/~geolweb/103web/103home.htm>



We also increasingly use the World Wide Web to convey information to our students and to aid in teaching. Outlines of most courses are available on the

We also continue to use computers in our upper-level courses. Students in Structural Geology and Geologic Field Methods use the program StereoNet to plot strike and dip data they have collected. Students in Geologic Field Methods draft a geologic map using the drawing program Canvas and use the plotting program Surface to construct topographic maps of spatial data they collected using an Electronic Total Station. Students in Structural Geology study the 3D geometry of a salt structure using Kingdom Suite seismic-interpretation software.

High-tech teaching requires not only an investment of faculty time but capital. The Rutgers University Instructional Computing Initiative has generously provided funds for several PC and Mac laptop computers and two portable video projectors for doing PowerPoint presentations and three PC workstations for interpreting seismic-reflection data. Seismic Microtechnology has donated the Kingdom Suite software used for seismic interpretation.

Research in Central America by Rutgers Geologists

Contributed by Michael Carr

In July of 2002, I was immersed in a spring-fed hot tub on the flank of Rincon de la Vieja volcano when one of my long sought goals flew in. A flock of toucans, at least two species and about six individuals, raucously

joined us at the hot spring, looking for a handout. In contrast to so many earlier trips, we were actually relaxing at a resort in mid-afternoon, having completed our field work for that day. Louise Bolge (who was not

buying a hammock at that time), Kathy Milidakis, Brent Turrin and I were led to this wonderful retreat by our Costa Rican friends, Guillermo Alvarado and his field assistant Francisco. We were completing a two week sampling trip that included many rich experiences: watching Arenal erupt, while lolling in the pool of the Hotel San Bosco in a light evening rain; playing in the mud to collect the tephra stratigraphy of Arenal; dining in some isolated Costa Rican country restaurants; watching Brent try to climb a slippery hill in a vehicle whose 4-wheel drive was really only two; spectacular views at Irazu; at the Rio Toro canyon; at the windmill farm; the World Cup at dawn and on and on. Several common themes of past decades were missing: flat tires, muffler repairs, hammer repairs, bureaucratic delays, and sickness. We collected many more samples than I had planned because we were an enthusiastic bunch, working hard and enjoying each other's company. Our purpose was to collect the older parts of the largest Costa Rican volcanoes, to determine how old the present volcanoes are and thereby estimate a reasonable volcanic flux rate. Lab work awaits us now that the Ar/Ar mass spectrometer is ready to use.

Costa Rica is a delight for field work in part because it is civilized and peaceful. Much of the rest of Central America has suffered terribly from war, natural disasters (earthquakes, Hurricane Mitch) and ensuing instability. The long-running Rutgers work in Central America has

carefully selected research sites on the basis of stability as well as science. All the various ideas we gave to NSF to fund our research were not as important as the continuity of effort and the comprehensive sweep of our sampling and analysis. We discovered that Central America is a great place to study the subduction process because Nicaragua is the global maximum in the recycling of several subduction tracers (Ba/La, $^{10}\text{Be}/^9\text{Be}$, etc). Moving NW and SE from Nicaragua the subduction signals become much weaker and even nearly disappear in central Costa Rica. This huge variation over a short distance helped get Central America selected as a NSF Margins special focus area. That is the good news. The even better news is that now we have world-class competition seeking Margins support for Central American research.

Leaving Costa Rica we had one final adventure. The eco-sensitive Costa Ricans have a new law preventing tourists from taking away the patrimony of Costa Rica. This is quite reasonable for Mayan artifacts and orchids etc. However, Continental Airlines was confiscating sea shells from tourists and were about to claim our samples! Fortunately, we had given talks the previous day at the University of Costa Rica and I had exchanged business cards as usual. I used these to convince the confiscators that we were legit and our samples were not the "patrimony" of Costa Rica.

EREUPT Biocomplexity

Contributed by Paul Falkowski

Although phytoplankton are microscopic, single-celled organisms that drift with the currents, they have made major contributions to the geology and geochemistry of Earth. Their fossil remains form petroleum and methane deposits that literally fuel the industrial world. Carbonate and siliceous deposits from fossil phytoplankton form massive geological formations and sedimentary matrices. Despite their geological and ecological importance, little is known about the origin and evolution of phytoplankton. In an effort to elucidate the evolutionary history of modern phytoplankton, NSF has funded a five-year basic research program at Rutgers. The EREUPT program (Evolution and Radiation of EUcaryotic Phytoplankton Taxa) is an interdisciplinary effort that combines efforts of geologists and geochemists, molecular biologists, algal physiologists, and theoretical ecologists. In its second year of funding,

EREUPT has garnered both national and international attention, and has served as a major training ground at Rutgers for both graduate students and post-doctoral fellows. The efforts have focused on the evolution of calcareous nannoplankton (primarily coccolithophorids), diatoms, and dinoflagellates. All of three groups appear to have originated in the mid to late Triassic and rose to ecological prominence in the late Mesozoic. The sedimentary record of these groups is being carefully analyzed by a new generation of micropaleontologists and geochemists, whose efforts are essential to understanding the paleoecology of the oceans when dinosaurs roamed the continents. The program has attracted broad interest outside of Rutgers, and is expected to have long lasting academic and educational impact

Department News

Contributed by Ken Miller

2002 was a difficult year for the U.S. economy, state budgets, and funding of higher education. Due to the severe budget crisis, Governor McGreevey cut the state-funded University budget 5% for the 2001-2002 fiscal year; these cuts were made much more difficult because they were announced more than half way through the fiscal year! The 5% cut was extended to the 2002-2003 budget year. This has virtually shutdown faculty hiring and the FAS Chairs have been lobbying Vice President Seneca to restore a minimum of faculty hiring. The early retirement plan has exacerbated the faculty and staff situation further, severely impacting our department as our long-term secretary, Delores "Dee" Daley retired July 1. The turmoil was compounded by the resignation of President Lawrence and a long, frustrating search for his replacement raising daily headlines in the Home Snooze and Tribune. While these somber words of gloom sound like chicken little with the skies of Piscataway falling

on our heads, I am actually happy to report that the department has weathered these storms remarkably well and is happy, growing, and physically expanding.

Dee Daley has retired and we will miss her, but we welcome Johanny Zabala as our new Department Administrator and Jovani Reaves as our Secretarial Assistant III, replacing Dee. Johanny comes to us from the Chemistry Department and she and is a wonderful addition. Charlotte Holland left the department July 1 as her position was reclassified. After a difficult May-September with the Chair answering the phones (hence the delayed alumni thank-you letters and other response lapses), FAS improved our staff support by providing two 12-month positions that we filled with the two "Jo's."

Bob Sheridan has officially retired January 1, 2003, but will continue on as a Professor Emeritus. If the

productivity of Professor Emeritus Dick Olsson is an example, Bob will continue to add an extremely valuable presence to our department.

We are delighted to add a Seismologist to our faculty, Dr. Vadim Levin (see biography below). Vadim brings a new dimension to our department; though on 100% soft money, he will begin to teach this spring. We hope to keep him here with us for a long time.

Rutgers Geological Sciences has been very well represented globally with the following 2002 field programs: northern North Atlantic *Knorr* cruise (Mountain and Wright; see article above), a New York Bight *Endeavor* cruise (Mountain and LDEO colleagues), a Hudson Canyon cruise (Rona, see above), NJ onshore drilling (Miller, Sugarman, Browning, see above), African field studies (Ashley, Swisher), the mid-east (Feibel), Spanish Lower Cretaceous sections (post docs van de Schootbrugge, Bailey and grad student Patrick), Sicilian Triassic sections (Kent), Central America (Carr and grad students), and Nova Scotian rift basins studies (Schlische, Withjack and grad students Bradfield, Elder Brady, and Granger). 2003 field programs include an Indonesia cruise (Rosenthal), a northwest Atlantic cruise (Rosenthal), sedimentological research in the East African Rift valley, focusing on the continental Plio-Pleistocene records of lakes and wetlands in Kenya (Ashley), Nova Scotian rift basins studies (Schlische, Withjack, and grad students Baum, Bradfield, and Elder Brady), and drilling a 1500-ft borehole at Manasquan, NJ targeting the "PRM" aquifer and Cretaceous sequences (Miller, Sugarman, Browning, see above).

We are shoehorning Vadim Levin into temporary quarters until renovations can be completed to Room 339, turning it into an improved 24-person classroom, a faculty office, and space for 4 graduate students. Wright labs is currently undergoing other major renovations. A hallway and my old storage lab were modified into a new seismic processing and interpretation lab for Martha Withjack and Greg Mountain, who joined us in January 2002 (see last issue of *Redbeds*). HVAC and other improvements are being made to the three wings of Wright-Rieman labs, to the tune of 5 m\$. We will obtain better heating, cooling, ventilation, in addition to new carpeting. The storage room in the back of Room 231 is being merged with Peter Rona's office to provide space for 4 graduate students. Peter will share Bob Sheridan's office while at Busch. Jim Wright, Greg Mountain, and I are adding a 20-ft "reefer" (refrigerator for you

landlubbers) for core storage outside of the "Green Building" (aka the Geological Science Lab Building). We are buying a new Xerox machine that will be moved into the old "Duplicating Room" as we eye the Faculty-Student lounge as the final frontier for space in Wright labs.

Our graduate program continues to grow in full-time students. We now have 18 full-time students supported as TAs (8), Fellows (3), and GAs (7). I am happy to report that the number and quality of our applicant pool continues to grow despite the general reduction in graduate applications nationally.

Our major program has us concerned, though it may be a case of small population dynamics. Since the collapse of the major bubble in 1981, we have typically maintained 30 majors as a standing stock. According to the most recent listing, we are down to 20 majors. My reading on this is that we are looking at a transient drop. For example, we saw a big drop in major course enrollments last spring that has rebounded. So don't worry (yet). We are aggressively recruiting in 101 and 102 for majors. We have expanded our efforts at the introductory level, and now teach 11 sections of Introductory Geology I (460:101). As a result we increased the number of undergraduates taught in 2002 by >33%.

We have prospered during difficult times, but must continue to expand our faculty, graduate program, and majors program over the next few years. We currently have 19 tenure-track/tenured faculty and 27 Ph.D. faculty including full time (14), shared (5), hard money research (2), annuals (2), soft money research (2) and Emeritus (2). We are seeking to split a full time hydrogeologist with Environmental Sciences and to hire in the fields of Geophysics and perhaps Geochemistry. Our greatest challenge is the Raritan River that splits our faculty into two groups, with 5 faculty members on Cook/Douglass and 22 on Busch. We seek closer physical ties to the Institute of Marine and Coastal Sciences at Cook and the Department of Anthropology at Douglass and to develop interactions with the Department of Environmental Sciences. However, we cannot vacate Busch and move to Cook/Douglass without adequate scientific facilities. Thus, until prospects of a new building arise, we will continue to improve and use every square inch of space available to us at Busch. I look forward to our meeting and surmounting the challenges of 2003 and beyond.

Comings and Goings

Dr. Vadim Levin joined the department as an Assistant Research Professor in September 2002. Vadim received his first taste of geology as a high school student, when he spent two months digging exploration trenches in arid steppes of the northeastern Kazakhstan. He switched to geophysics immediately afterwards, earning a degree in exploration seismology from the Moscow Oil and Gas Academy in 1988. A depressed state of the oil industry in the US at the time precipitated yet another vocation switch, to earthquake seismology. As a Research Assistant at the Lamont-Doherty Geological Observatory, Vadim worked on the seismic monitoring of the Aleutian Islands. He subsequently did his graduate work at Columbia University, receiving a Ph.D. in Seismology in 1996. Vadim's specialty is the use of seismological methods for the studies of the crustal and upper mantle structure. His research involves studies in stable continental



regions where geologic record reflects events of a distant past (New England Appalachians, the Arabian shield, Ural Mountains), as well as active regions where things happen now, and volcanoes are large (Iceland, Hawaii, Kamchatka peninsula). Whenever possible, Vadim collects his own seismic data. Over the last decade, he was involved in seismometric field campaigns on the Aleutian islands, in the northeastern US, in Iceland, and on the Kamchatka peninsula. Starting in 2003, Vadim will participate in a multidisciplinary study of the Apennines by operating an array of seismographs straddling the northern part of the Italian peninsula.

Dr. Yongliang Xiong left us for a job in aqueous geochemistry at Sandia National Laboratories. **Dr. Bosmat Cohen** has replaced him as a post-doc.

Dr. Luca Lanci has left us for a permanent position in Italy. He is planning to return annually to work with Dennis Kent on various projects.

Dr. Harold C. Connolly Jr. earned his B.S., M.S., and Ph.D. all within Geological Sciences from Rutgers University, New Brunswick campus. Harold had long had a passion for geology and originally wanted to become a paleontologist. As a senior he worked on an honors project under the direction of Dr. Roger Hewins constraining the origins of chondrules through experimental petrology. That experience convinced him that exploring the origins of the solar system through meteorites was the path for him. As a Ph.D. student Harold was a member of the Antarctic Search for Meteorites (ANMET) and had a fellowship from NASA funding his research. Upon completion of his Ph.D., Harold joined the research faculty at California Institute of Technology, as a postdoctoral scholar in geochemistry. There he diversified his research interests, concentrating on analytical investigations on primitive planetary materials, chondrites, under the guidance of Drs. Burnett and

Wasserburg. During his years at Caltech he was awarded the Antarctic Service Medal by the U. S. Congress through the Department of Navy for his services to his country in Antarctica. In September of 2001 Harold joined the faculty as assistant professor in the City University of New York (CUNY) system, the graduate faculty of our department, and the research staff of the Department of Earth and Planetary Sciences, American Museum of Natural History. Harold teaches introductory earth science and astronomy. He has published in the fields of geochemistry, cosmochemistry, meteoritics/planetary materials, astrophysics and planetary science. His research goals are to investigate the origins of solar system during its earliest stages through an interdisciplinary approach that builds bridges between the above fields and uses different techniques through numerous collaborations to solve problems.



Current Graduate Students

Mark Baum, F, Ph.D., Structure
 Louise Bolge, F, Ph.D., Petrology
 Joseph Boesenberg, P, Ph.D., Meteoritics
 William B. Bradfield, F, M.S., Structure
 Claire Condie, P, M.S., Volcanology
 Ryan Earley, F, M.S., Geophysics
 Jennifer Elder Brady, F, M.S., Structure
 Amber Granger, F, M.S., Structure
 Samuel S. Henderson, F., M.S., Paleocan.
 Lois Johnson, P, Ph.D., Petrology
 Alicia Kahn, F, M.S., Paleocanography
 Andrew Kulpecz, F, M.S., Stratigraphy
 Brian P. Lettini, F, M.S., Geochemistry
 Fara Lindsay, F, M.S., Geochemistry
 Cynthia Liutkus, F, Ph.D., Sedimentology
 Katherine I. Milidakis, F, M.S., Volcanology
 Lindsay McHenry, F, Ph.D., Quaternary Studies

Svetlana Misintseva, F, M.S., Stratigraphy
 Godwin Mollé, F, M.S., Quaternary Studies
 Donald Monteverde, P, Ph.D., Stratigraphy
 Lesley N. Patrick, F, M.S., Paleocan.
 Rebecca Rodgers, F, M.S., Petrology/Geochem.
 Eric Roman, P, Ph.D., Hydrogeology
 Bill Savarese, P, M.S., Petrology
 Michael E. Serfes, P, Ph.D., Geochem./Hydro.

F = Full time; P = part time

2002 Graduate Degrees

Mark Baum, M.S., Structure
 Bosmat Cohen, Ph.D., Meteoritics
 Benjamin Cramer, Ph.D., Stratigraphy
 George E. Fox, Ph.D., Meteoritics
 John Hernandez, M.S., Stratigraphy
 Jane Uptegrove, M.S., Seismic stratigraphy

External Funding

The following lists only new awards in 2002

Professor **Claude Herzberg** received an NSF-EAR grant for *Petrology and Mineral Chemistry of Crust & Mantle Fragments in an Archean Ophiolite from the North China Craton*

Dean **Michael Carr**, Professor **Mark Feigenson**, and Associate Professor **Carl Swisher** received a grant from NSF-EAR *Determination of Volcanic Flux Rates and Application to Understanding Regional Geochemical Trends and Element Mass Balances in Central America*.

Professors **Martha Withjack** and **Roy Schliche** received grants from ConocoPhillips to use seismic data to study a salt structure from the Middle East and from Norsk Hydro to study the continent-ocean boundary of offshore Nova Scotia.

Professor **Mark Feigenson**, Dean **Michael Carr**, and Chair **Kenneth Miller** were awarded funds for a new TIMS mass spectrometer by NSF Instrumentation.

Professor **Paul Falkowski** and Assistant Professor **James Wright** were awarded funds for a new gas mass spectrometer by NSF.

Professor **Greg Mountain** has secured a 3-yr Grant from Landmark allowing the Department to use this Unix-based package for research and teaching.

Professor **Roger Hewins** received a renewal grant from NASA for *Transient heating in the solar accretion disk*.

Research Professor **Marie-Pierre Aubry** and Distinguished Visiting Professor **Bill Berggren** are the recipients of a grant from the National Geographic Society to

fund coring of the Paleocene/Eocene boundary stratotype in Egypt.

Professor **Gail Ashley** received a supplement for EAR-0224788 and an new EAR grant with Newark Geology Assistant Professor V. Hover.

Professor **Peter Rona** and post doc **Karen Bemis** received a grant from NSFA *General Purpose Tool for Acoustic Remote Sensing and Mapping of Hydrothermal Flow* and from NOAA for *Exploration of Hudson Canyon*.

NSF funded Associate Professor Craig Feibel for five years for *Environmental Dynamics and the Evolution of Human Adaptability*.

Kudos

Undergraduate major and current graduate student **Amber Granger** was awarded the 2002 Vinton Gwinn prize by the Department and a travel grant from Douglas College to present her senior honors thesis at GSA Denver.

Undergraduate major **Kyle E. Kingman** was named a Rutgers Undergraduate Research Fellow for his project *Cenozoic Record and Controls of Slope Stability on the New Jersey Continental Margin*

Graduate students **Donald Monteverde** and **Cynthia Liutkus** were awarded Special Study Opportunity and Pre-Dissertation Awards by the Graduate School (April, 2002)

Graduate student **Lindsay McHenry** was awarded a prestigious Bevier fellowship by the Graduate School and grant from GSA for her dissertation research

Graduate student **John Hernandez** received an award from the Cushman Foundation for Foraminiferal Research (Dept. of Paleobiology, Natural Museum of Natural History) for his research project *Miocene (8-12 Ma) sea-level changes at Bethany Beach, DE*.

Graduate student **Mark Baum** was a summer intern with Unocal in Houston.

Research Professor **Gregory S. Mountain** was elected to the JOI/USSAC Board, which is responsible for the overall long-term scientific direction and continuity of the Ocean Drilling Program.

Research Scientist **Jerry Delaney** was elected as a Fellow of the Meteoritical Society. Only 1% of the membership can be elected in a two-year period.

Research Professor **Vadim Levin** was appointed to the Board of Governors of IRIS, a university research consortium dedicated to exploring the Earth's interior through the collection and distribution of seismographic data.

Research Associate **Miriam "Mimi" Katz** was the 2002 recipient of GSA's Doris M. Curtis Memorial Fund for Women in Science Award, for Ph.D. research with significant impact in the Geosciences. She was also elected President-Elect of NAMS, the North American Micropaleontological Section of SEPM.

Craig Feibel was promoted to Associate Professor with tenure.

Professor (II) **Paul Falkowski** ranks as the 4th highest principal investigator for largest single awards at Rutgers.

Professor **Gail M. Ashley** was named Association of Women Geoscientist Outstanding Educator Award at the GSA meeting in Denver. She was also appointed to the River Basin and Coastal Systems Planning Group, Oceans Studies Board, National Research Council and the NSF Geosciences Directorate Advisory Committee.

Professor (II) **Dennis Kent** was ranked as the 9th most cited author in the geosciences by The Greatest Research on Earth, Geosciences Research: Most-Cited Authors in Geosciences, 1991-2001, by Christopher King, Editor, ScienceWatch, 12(6), 1,2, Nov./Dec. 2001. He was also elected as Vice Chair of the Joint Oceanographic Institutions Board of Governors.

Professor **Martha O. Withjack** is currently chairperson of GSA's Structural Geology and Tectonics Division, which is GSA's largest division.

Alumni News

Please send alumni news to Ken Miller kgm@rci.rutgers.edu

Amy Clifton (Ph.D., 2000) reports "I was just putting a link to the RU website on my own homepage and so browsed through to read Redbeds, and I figured it would be good to send you my news. I'm now in the last month of my NSF postdoc, but will not be leaving Iceland. I've received a three-year research grant from the Icelandic Research Council to continue and expand on the work I've been doing at Nordvulk. I'm also receiving additional funding from a European Union project called RETINA, which is studying the coupling between volcanoes, earthquakes and landslides in Iceland, the Azores and the French Alps. It's all very exciting work and I'm extremely happy to be a part of it. My intention is to settle permanently in Iceland. There's just so much to do here, no one else is really doing what I'm doing so I have found a niche, and the pace of life is more to my liking...not so competitive people are actually encouraged to take vacations, maternity leave, etc....much more human. Maybe that's why they have the second highest longevity in the world here in Iceland. Congratulations on the wonderful growth of the department. It's more than doubled in size since I was there such a short time ago. Amazing! Hope all continues well....

and if you ever have reason to come to Iceland.... you know where to find me."

Beth A. Christensen (BS 1988, MS 1992) is now an Assistant Professor, Department of Geology, Georgia State University, Atlanta, GA

Lev Kaufman reports "After graduating Rutgers (RC '98) I worked as a Hydrogeologist for Leggett, Brashear's & Graham in Northern NJ for 2 years. I returned to Rutgers to study Computer Science after getting interested by work I did with groundwater modeling and GIS. I am graduating (again) with a second BS from Rutgers in comp sci and I am starting Grad School (at Rutgers again) this Fall. I will be a Computer Science Grad student and TA for the same."

Chris Townsley reports "I graduated in '99 with Jaime Whitlock. I worked as a project geologist/task manager for one year with an environmental consulting co. and then switched to GIS with the same company. Now I have switched careers again but still have an interest in geology and enjoy following the progress and success of the old team. I am doing financial planning now and I think I have found

something I was born to do. I got married last year to a woman I met the first day of college and things have been going very well."

John Anton reports "I am a RU Geology graduate (BA 1985) that subsequently attended Temple U. for graduate work in geology (emphasis on geochemistry and paleontology). I work as an environmental consultant, adjunct professor at Brookdale Community College, and professional dinosaur paleontologists."

Bob Goldstein (RU 66) reports "Enjoyed the 2001 Redbeds and was glad to see a few comments from my old oil industry mentor, Ernie Horton, who showed me the ropes in the early 1970's when I first started my professional career."

I met **Damian O'Grady** at the retirement fest for Peter Vail. Damian reports: "I am writing to let you (and the alumni newsletter) know that I have moved. After finishing my PhD in May from U. Colorado, I have since taken a position at ExxonMobil in Houston. In particular I'm with the Deepwater group at the Upstream Research Company. Happy to hear that Greg Mountain has joined the staff! Another great addition to the burgeoning stratigraphy powerhouse."

Andy Rowan (RU Geology M.S., 1988) reports "I finished my PhD in Environmental Sciences at RU this past spring (May 2001). I'm still involved as an instructor in the Professional Certificate Program in Geomatics at Cook, and my day job is as Director of The GIS Center at Stony Brook-Millstone Watershed Association. We still live in Trenton (15 years now!), with our two daughters who are growing just way too fast."

Catherine Gibons reports "I earned BA in Geology, 1984, Rutgers College (Catherine A. Schulte). Then I had children. Currently studying environmental science and GIS at Brookdale Community College. Very interested in Certificate Program in GIS and environmental applications. Looking for summer internship. Hope to be on campus in the fall"

Mike Leong (CC92) reports "I teach earth science and astronomy in the backyard of Wright Labs over at Piscataway High School. "After a 2-year tenure as a geologist/project manager with Groundwater & Environmental Services [GES], of Wall Twp. I found out that the geology came second and the business came first. I missed talking, learning, and breathing geology and made the switch to a career in education and have NEVER looked back. Watching my students learn about geology has been a real treat."

Carolyn Leong (formerly Gerenetski; RC93, reports "I am currently on maternity leave from a position as the environmental project manager for Jersey City Redevelopment Agency. Mike and I were wed on 9/29/95 after sharing many geology experiences together as undergrads and currently live in Green Brook with our new daughter Olivia Rose born on 12/22/01."

Michael Whalen reports "I graduated from Rutgers in 1982. I'm now an associate professor here at UAF. Last year I was awarded tenure, promoted, and one of my papers won the Canadian Society of Petroleum Geologists 2001 best paper (Whalen et al., 2000)."

Shaun Dilles reports "I graduated with a BSc. under Dr. Ashley (Cook 81) and work as an imagery analyst at the National Imagery and Mapping Agency (<http://www.nima.mil/>). NIMA is U.S. Govt. Agency that supports both military and civil policy makers, as well as operational military customers. I have enjoyed the last 17 years with NIMA and its predecessor organizations, and have found the work to be stimulating, satisfying and rewarding."

Lawra (Harris) Dodge (BS 1983) is President of Excel Environmental Resources, Inc., North Brunswick, NJ.

Janet Bauer Schwarz (1977) reports she is living in Tenafly; **Jeff Powley**, (1986) is living in Madison.

David Mundhenk reports "I graduated with a B.A. in Geology from Rutgers in 1981... with many fond memories and a good bit of knowledge. I got married shortly after graduation and started out by working in the Environmental field, for someone whom it turns out was a crook and ended up in jail. Luckily, by being honest and following sound scientific methods I learned at Rutgers, I was excluded from this outcome. I broke into the oil industry, starting as a wellsite mud logger. I did enjoy this work (although the hours were borderline on unbearable), and got to see firsthand how wells are drilled. I also learned within about a year (this was around 1983-84) that petroleum geologists seemed to be a "dime a dozen" and without a stellar record and at least a master's degree, I was probably on a dead end street. After about a year of that, I moved back East. I began to follow an urge to work more with computers. I took some courses and did some self-study, and somehow landed a job at Bell Labs in New Jersey. I'm still in the computer industry today. If there is a message here, it would be that even if students don't follow through in the field of geology, what you are teaching is still very valuable. My children often ask me questions about things in the natural world relating to Geology, Chemistry, Physics, etc. and I feel fortunate to have answers that are hopefully more informed than they would be otherwise. Also, I will never forget the camaraderie of the Geology department at Rutgers - I doubt if many other fields have this (I hope and believe that you still have it). Seeing the names of Drs. Olsson, Ashley, Carr, Sheridan, and Fox (God rest his gentle soul) takes me back there, with warm recollection."

Gail Ashley reports on the whereabouts of the following former students: **Nancy O. Jannik** (MS 1980) Dean of Natural Sciences, Winona State University, Winona, MN; **Ronald Martino** (PhD 1981) Chairman, Marshall University; **Theresa Hughes Calcago** (1982) Earth science librarian; **Marie Ferland** (MS 1983) PhD at Macquarie Academic Coordinator at Central Washington University, Ellensburg, WA; **Marjorie Zeff** (PhD 1987) Senior Project Environmental Scientist, URS Corporation, Willow Grove, PA; **Brenda Ekwurzel** (MS 1987; PhD Columbia 2000) Professor, Dept. of Hydrology & Water Resources, University of Arizona; **Daniel Deocampo** (MA 1997; PhD 2001) has a NSF International Research Fellowship, Natural History Museum, London; **Natalia Malyk-Selivanova** (PhD 1998) Professor, Middlesex Community College.

Marie Ferland (MS, 1985) writes "I returned to the US in Dec. 1999 after 15 years of studying and teaching in Australia, New Zealand and Fiji (PhD, University of Sydney, 1991). Since August 2000 I have been working at Central Washington University, with my husband Stephen Glasby (Assoc. Prof., Mathematics). I teach in the Dept. of Geological Sciences part-time and also work as the Academic Coordinator for the McNair Scholars Program. In August 2002, I collaborated with the WA Dept. of Ecology in collecting vibracores on the WA/OR inner-mid continental shelf in order to refine the regional sediment budget. We presented preliminary results at AGU."

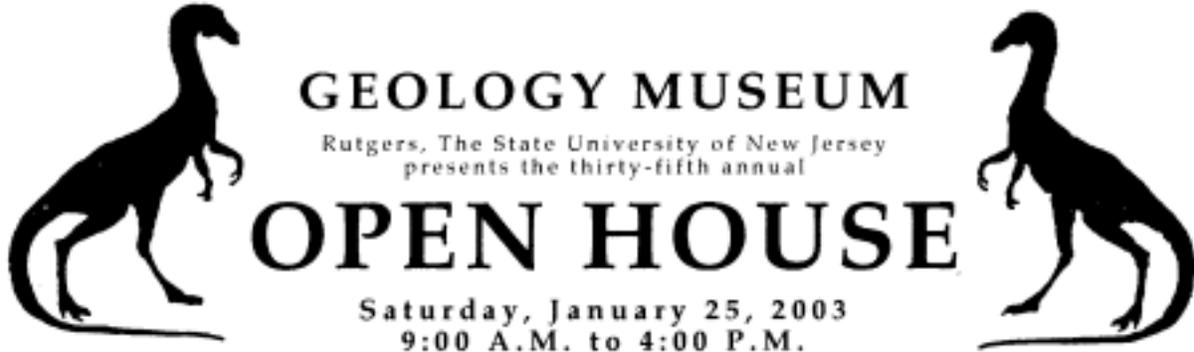
I am sorry to report that **Andrew G. ("Drew") Warne**, (M.S. 1986), was murdered in San Juan, Puerto Rico. Drew worked on Devonian biostratigraphy and received a Ph.D. at the University of North Carolina, Chapel Hill. Drew was living in Puerto Rico working for the USGS. I am also sorry to report that **William N. Agosto** (M.S. 1981) passed away on 26 Feb. 2002. He was hit by a car in Houston. He received a BS degree in Physics from CUNY and a MS from Rutgers.



Left: Geology Faculty picture 1962; First row left to right: Albert Wilkerson, James Martens, Will Lodding; Second row left to right: Steve Fox, Helgi Johnson, Dick Olsson, Peter Wolfe



Right: Geology major picture 1962; 1st row left to right: John Hartman, Kip Westling, Dick Enright, Malcomb Jervey, Barry Cameron, Bob Enlich; 2nd row left to right: two unidentified, Tonis Leetaru, unidentified, Bob Sheridan; 3rd row left to right: unidentified, unidentified, Demar Moeller; 4th row left to right: unidentified, Art Jacob, unidentified, unidentified. DOES ANYONE RECOGNIZE THE UNIDENTIFIED STUDENTS?



Presentations 123 Scott Hall

10:00 a.m.
**ARSENIC, GROUND WATER, AND THE
NEWARK BASIN IN NEW JERSEY**
Michael Serfes
New Jersey Geological Survey
Trenton, New Jersey

11:00 a.m.
**ASTEROIDS OR COMETS
BEGIN AND END DINOSAUR ERA**
Dr. Paul Olsen
Lamont-Doherty Earth Observatory
Columbia University

2:00 p.m.
**HOW OLD IS THE EARTH?
HOW SCIENCE ANSWERS THE QUESTION OF THE AGES**
Dr. Brent Turrin
Rutgers Department of Geological Sciences
New Brunswick, New Jersey

3:00 p.m.
**THE EYE VERSUS MACHINE:
HOW WE PERCEIVE FLUORESCENT MINERALS**
Dr. Earl Verbeek
Sterling Hill Mining Museum
Ogdensburg, New Jersey

Mineral Sale, 135 Scott Hall, **Rock and Mineral Identification** 202 Geology Hall

For information:

William Selden, Collections Manager at (732) 932-7243 rwselden@rci.rutgers.edu
The Museum entrance is on the corner of George and Somerset Street in New Brunswick, NJ.

How to help us

The **Geology Development Fund** is the mechanism for directing alumni contributions to the department. To help the Department, please specify the Geology Development Fund on your contribution. Each month, we get a list of alumni supporters and respond with a thank you (usually). Your generous donations have allowed us to provide summer field camp awards and field expenses for graduate students to conduct their research. Your gifts also have allowed us to leverage University funds to purchase field vehicles for the department. We are also actively seeking contributions to the **Steven K. Fox Student Fund**. This fund was created in Steve's memory specifically to support Undergraduate and Graduate Student Research, Field work/camps, etc. To direct contributions to this fund, specify Geology Department Steven K. Fox Student Fund on your contribution.