



Our New Name; Department of Geosciences

During Spring 2002 faculty discussed a broader umbrella name to better represent the instructional, research, and outreach activities in the Department of Geological Sciences. After extensive discussions, deliberations, and polling, the faculty, with near unanimous support, have decided to change the name of the Department from Geological Sciences to "Geosciences." This will accommodate a broader umbrella within the College of Science. Other groups representing a broader coverage also use the term "Geosciences." Among those are:

- Potential employers representing environmental, water, and geotechnical related services, petroleum companies, and government agencies
- Professional organizations such as American Geological Institute, American Geophysical Union, Society of Exploration Geophysicists, and Geological Society of America
- Funding agencies such as the National Science Foundation, Department of Energy
- The National Research Council and the National Academy of Sciences

The Advisory Board of the Department, which consists of seven members representing industry, government, and academia, was asked what umbrella name would best serve the Department and its graduates. Independent of faculty inclination and support, they included a statement on the Departmental name issue in their May 12, 2003, report following a meeting in Blacksburg on April 18, 2003. The report states the following: "The Board unanimously preferred "Department of Geosciences" over several others. The name is short, and sufficiently generic so as to account for all specialties."

Please see New Name on Page 7

A New Field Course

By James A. Spotila

In 2003, the Department introduced *Geoscience Field Observations (GEOL2444)*. Required for all majors, this class is comprised of field studies in the surrounding region and takes place on weekends of the spring semester. Teaching this course for the first time was a wonderful experience, and below I provide some of the highlights on this successful new element of our undergraduate program.

It was at the Department's annual Alumni Dinner two years ago, while standing in the buffet line, that my appreciation for the significance of the undergraduate field geology experience peaked. As they shuffled turkey onto their plates, alumni were sharing revelry



Looking at rhyolite atop Buzzard Rocks near Whitetop Mountain and Mount Rogers, Smyth County, Virginia

Please see Field Course on Page 8

Message from the Chair

Hello from Blacksburg! It is with great pleasure that I share the following news with our alumni and friends.

We have a new faculty member on board, Dr. Shuhai Xiao, Assistant Professor of Geobiology, formerly from Tulane University and now Virginia Tech, joined our department in August 2003. Dr. Xiao received his Ph.D. from Harvard University in 1998 and was accompanied to Blacksburg by his wife, Ling Li, and son, Michael. For further information about Dr. Xiao, please turn to page 4. As the 12th new faculty member, the arrival of Dr. Xiao marks the completion of our Phase I hiring plan that was put together in 1995.

I am pleased to report that Virginia Tech presented Geosciences' EIGER (Economic Initiatives through Geologic and Environmental Research) as 1 of 4 research thrusts (proposals) for the Governor's Study for funds (about \$10 M) to support the Department in hiring nationally visible faculty and enhancing infrastructures of the Department. This thrust involved nine faculty members presently on board under the leadership of University Distinguished Professor Robert Bodnar and Professor Mike Hochella. I congratulate Drs. Bodnar and Hochella and other members of this group for their success.

Your Department has a new name! The "Department of Geosciences" is continuing to enhance its academic and scholarship image to achieve its goal and make Virginia Tech one of the top five public institutions in Geosciences by the National Research Council rankings. The name change will accommodate our goal.

In this issue, I submit a few productivity profiles that illustrate how the Department's upward trajectory continues. The graphs (see page 6) show the positive trends about your Department and do not require additional explanations. Instead, I would like to inform you about the following strategies to achieve our goals:

- Increase external funding to >\$200K per faculty per year (currently \$150K, highest among Virginia Tech sciences)
- Enhance alumni relations and industry-alumni partnerships
- Have a Geosciences Building by 2010
- Enhance undergraduate education and experience with field and research components
- Increase the number of graduate students to 65 by 2005 and 80 by 2010 (currently 59)
- Increase number of faculty to 28-30 (currently 22 positions)
- Increase number of staff to 15 (currently 10)

We shall continue to interact with our alumni and inform them as "stakeholders" about our strategies through on- and off-campus alumni-faculty meetings. I thank Mike Strickler '83 for taking charge in forming the Houston Area Virginia Tech Geosciences Support Group (HAVTGSG) to complement the departmental Alumni Relations Committee (ARC). See page 12 for additional information. Following the suggestion of HAVTGSG, the Department will hold another alumni-faculty meeting in Houston, Texas, probably in February or March.

It is my great pleasure to announce and publicly thank William C. "Bill" and Francia J. Presley for establishing "The William C. "Bill" and Francia J. Presley Endowed Scholarship." See page 12 for further information.

On behalf of the faculty, students, and staff I thank our alumni for their support and generous contributions.

Please see Message on page 6

Cahit «oruh

Department Chairman

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F. Donald Bloss
John K. Costain
Thomas T. Jeffries
A. Krishna Sinha
Mary McMurray

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Alumni Distinguished Professor Emeritus
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Virginia (Holden) Hummel (1917 – 1998), part of the Holden Legacy to Geosciences, Virginia Tech and the Town of Blacksburg

By Lynn Glover III
October 2003



Virginia (Holden) Hummel

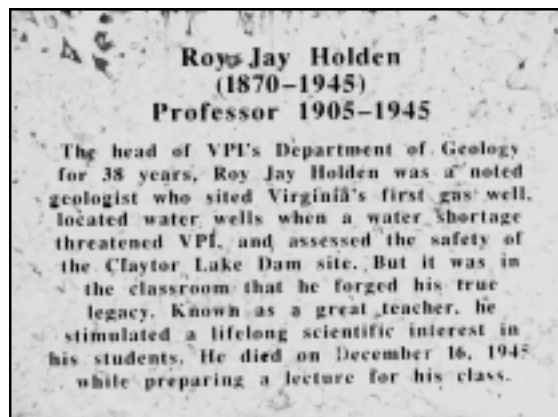
On May 1, 2003, Townscape, a volunteer committee of citizens advisory to the Town of Blacksburg, planted two Japanese Dogwood trees by the Town Library in honor of Virginia Hummel a longtime member of Townscape.



Plaque for Dr. Roy Holden mounted outside of Holden Hall on the Virginia Tech Campus (see closeup above)

I first learned of the impending event from my wife Ellen, also a member of Townscape. Emeritus Professor Wallace Lowry and I decided to pay the department's respects and join in this honor to Virginia, eldest daughter of Dr. Roy J. Holden, second geologist and founding head (1905 – 1945) of the Department of Geological Sciences (now Geosciences) at Virginia Tech. The tree planting was attended by her sister Elizabeth "Dit" (Holden) Rocovich, Blacksburg Mayor, Roger Hedgepeth, and Sara Hummel. Linda Plaut and Trudy Becker of the Foreign Languages and Classical Studies, at Virginia Tech represented Virginia's life long interest as a student of these fields. Ellen Glover, Donna Dunay and Blacksburg Mayor, Roger Hedgepeth, spoke of her service on Townscape and enthusiastic

interest in the progress of Blacksburg. Lynn Glover and Wallace Lowry spoke of the Geology Department's heritage



Plaque Closeup

from Virginia's father, Dr. Roy J. Holden, founding Head of the Department. Virginia's nephew, John Rocovich, is a noted lawyer and Rector of the Board of Visitors at Virginia Tech. (see photo on page 13)



L to R, Front row: Linda Plaut (Humanities), Trudy Becker (Classical Studies), Elizabeth "Dit" (Holden) Rocovich, Sara Hummel, Ellen Glover (Townscape), Donna Dunay (Architecture and Townscape). Back row: Blacksburg Mayor Roger Hedgepeth, Wallace Lowry and Lynn Glover (both Department of Geosciences)

Martin C. Chapman

Research Assistant Professor of Geophysics

by Martin Chapman

I was born in Kingsport, Tennessee and grew up in Gate City, Virginia. I have had an almost continuous association with the Department of Geosciences that began my freshman year at Virginia Tech in 1973. I received my B.S. degree in 1977 and M.S. degree in 1979. There was a four year hiatus in the association during the early 1980's. Returning to the department as a research associate, my Ph.D. was awarded in 1998. Two years later I joined the faculty.

Upon completion of M.S. studies, I went to work with Law Engineering, Inc., a geotechnical/environmental engineering firm in Marietta, Georgia. Construction of commercial nuclear power stations was underway in those bygone days, and my job involved addressing earthquake hazard issues for facilities in the southeastern part of the country. I was acquainted with the earthquake history of the region, having studied under Professor Gil Bollinger during my graduate work. However, it became apparent that I had a lot to learn about how to quantify strong ground motion and earthquake hazard for engineering purposes. I was introduced to Allin Cornell, then professor of engineering at the Massachusetts Institute of Technology. Dr. Cornell, now at Stanford University, developed the concept of probabilistic seismic hazard analysis in a famous paper published in the *Bulletin of the Seismological Society of America* in 1968. He served as a consultant on several of our projects, and he took me under his wing. The learning experience was sort of like drinking from a fire hydrant. I missed a lot, but somehow managed to absorb a little bit of Allin's incredibly vast knowledge. The result was that I chose a career near the interface between engineering and earthquake seismology.

Returning to the Department of Geosciences as a Research Associate in 1984, I worked with Gil Bollinger, Arthur Snoke, Matthew Sibol (now with EnSCO, Inc.) and graduate students in the seismological observatory. We tackled



Martin Chapman

diverse research projects, while keeping an eye on earthquake activity in Virginia and the rest of the southeastern U.S. The seismic observatory during that period recorded continuous data from as many as 22 stations across Virginia, and it was an exciting time. Our lab, like others across the country, went through a transition from the traditional analog recording of trace data on drum recorders and photographic film to digital recording on mini-computers. The transition here was led by Arthur Snoke. Analyzing and archiving the large amount of data we recorded presented challenges for all of us, but we had the means to look at seismic waves from a new perspective. In addition to monitoring and cataloging local and regional earthquakes, we studied high frequency seismic wave attenuation in the southern Appalachians. We took advantage of the large coal-mining blasts in Kentucky and West Virginia to pursue research on earthquake/explosion discrimination, sponsored by the U. S. Air Force. We also did research on quantifying the differences in strong motion propagation between the eastern United States and California. This was a very productive time. Gil Bollinger retired from the Department in 1993. He is a great scientist and mentor. The seismic observatory has soldiered on with the momentum he built.

In 2000 I joined the faculty. My research involves the study of the seismicity and seismic hazard of eastern North America, and the observational element is a high priority. The seismological observatory currently operates 5 high-dynamic-range telemetered stations in western Virginia and southern West Virginia. The on-campus seismic vault near the airport houses the short-period and broad-band seismographic instruments that collectively comprise seismic station BLA, which has been recording ground motion data almost nonstop since 1963, in one form or another. The instruments on campus as well as those distributed in the field are supported by the U.S. Geological Survey as part of the Advanced National Seismic System.

My research and that of the two graduate students working with me is mostly aimed at trying to understand the causes and potential effects of earthquakes in the eastern United States. I collaborate with other seismologists on these problems. A special interest is the eastern Tennessee seismic zone, where a 300 km long belt of earthquake activity extends from beneath the Paleozoic thrust sheets to the mid-crust, suggesting the potential for a major shock in the future. Developing strong ground motion prediction models for earthquake engineering purposes in the eastern United States is another research area. Ground motion propagation in the east is different from that in the tectonically active parts of western North America. As a result, empirical models developed in California cannot be applied directly in this region of the country.

We work with colleagues in the Department of Civil and Environmental Engineering on projects to assess the nature of site response in areas with thick sedimentary sequences, and to refine estimates of seismic hazard in the more active parts of the southeastern United States. For example, we are currently studying nonlinear site response and are developing scenario earthquake ground motion simulations for the South Carolina area, work that is sponsored by U. S. Geological Survey and the South Carolina Department of Transportation.

Introducing New Faculty Member:

Dr. Shuhai Xiao Assistant Professor of Geobiology

Dr. Shuhai Xiao received his B.S. (1988) and M.S. (1991) degrees in geology from Beijing University, where he studied Paleozoic biostratigraphy. In 1993, he joined Dr. Andrew H. Knoll's group at Harvard University to study Precambrian paleobiology and received his Ph.D. in biology in 1998. During his study at Harvard, he worked on the paleobiology of the Neoproterozoic Doushantuo Formation in South China and described some of the most important Neoproterozoic fossils, including cellularly preserved animal embryos and red algae. After graduation, he stayed for two more years as a post-doctoral fellow to continue working on the Doushantuo Formation. He then spent three years as an assistant professor of geology at Tulane University.



In August 2003, Dr. Xiao joined the Department of Geosciences, Virginia Tech, as an Assistant Professor of Geobiology. His current research focuses on the interactions between biological and environmental evolution in the Proterozoic and Early Cambrian. Building upon his earlier work on the Doushantuo Formation, he is currently working on several exceptional taphonomic windows, including cellular phosphatization, silicification, and Burgess Shale type compression, in

order to evaluate the taphonomic biases of different preservational pathways, to delineate the environmental distribution of Neoproterozoic biodiversity, and to obtain a clearer and more complete picture of the Neoproterozoic biosphere. He uses geochemical tools to understand Proterozoic environmental changes, such as CO₂ evolution, redox condition, and glaciation. He uses both chemostratigraphic and radiometric tools to correlate and to constrain the age of Proterozoic successions. The paleobiological, paleoenvironmental, and

geochronologic data are then synthesized to understand a series of biological and geological events leading to the Cambrian Explosion.

Dr. Xiao's research projects have taken him to scenic regions such as South China and exotic terrains such as the Gobi Desert and Tianshan. It is likely that his field research will expand to elsewhere in the world in the years to come. His interdisciplinary approaches also give him opportunities to interact and collaborate with other geoscientists.

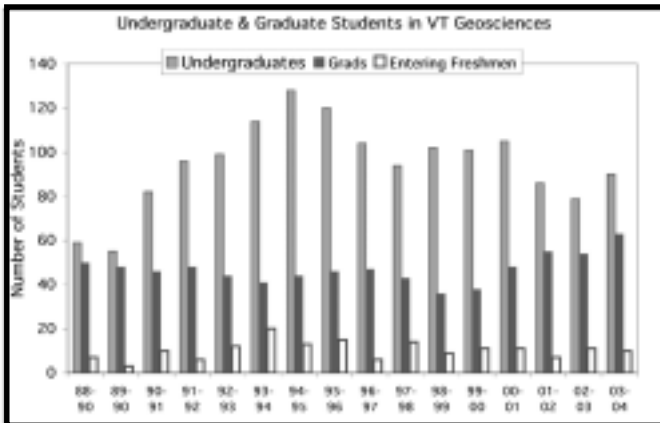
Professor Emeritus Richard K. Bambach Awarded Paleontological Society Medal

In November 2003, at the Annual GSA meeting, our Professor Emeritus Richard K. Bambach was awarded the *Paleontological Society Medal*. According to the official statement issued by the society, "the

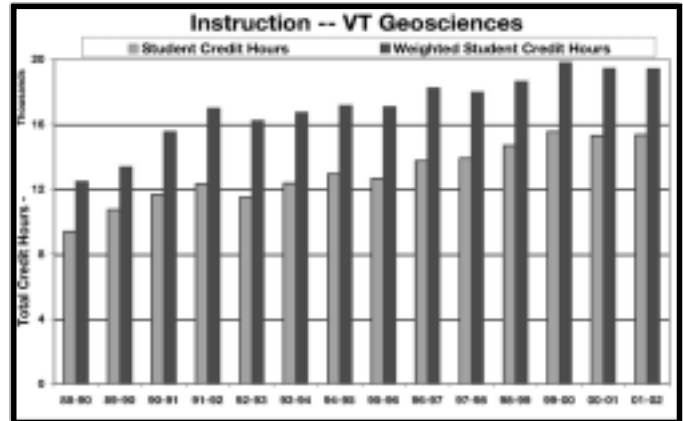
Paleontological Society Medal, the most prestigious honor bestowed by the Society, is awarded to a person whose eminence is based on advancement of knowledge in paleontology." Some of you may recall that several years ago

Richard also received "The Raymond C. Moore Paleontology Medal" awarded by SEPM in recognition of "Excellence in Paleontology." There may be only two or three people in the history of paleontology who received both of these medals! If you would like to congratulate Richard, contact him at rbambach@oeb.harvard.edu.

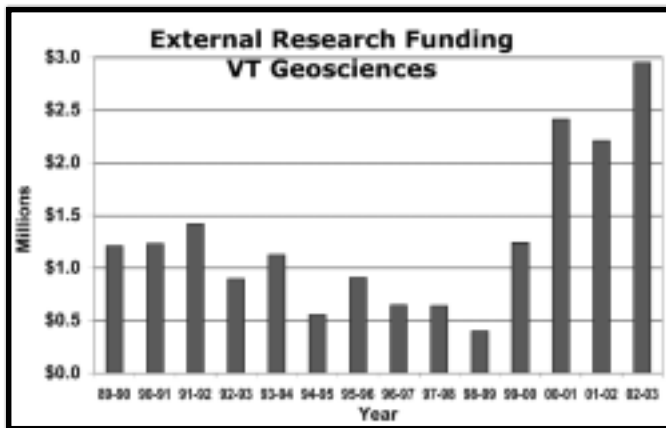
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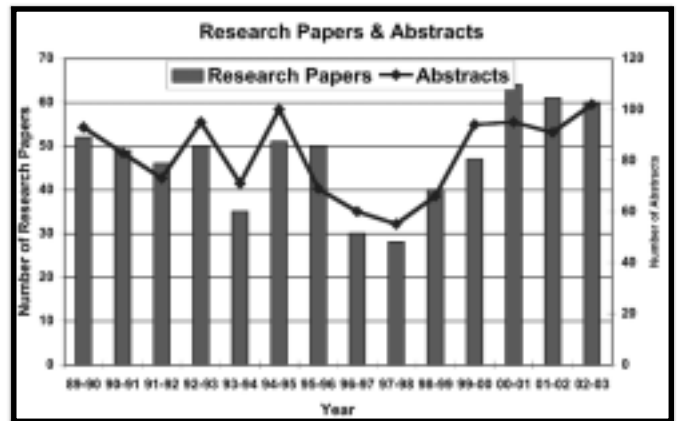
In terms of geosciences undergraduate enrollment, Virginia Tech is in the 90th percentile in the country. The Department gets one-third of its freshmen majors directly from high schools, while two-thirds come through transfers. The increase in graduate student numbers is the result of aggressive recruitment as a part of the Department’s strategic plan.



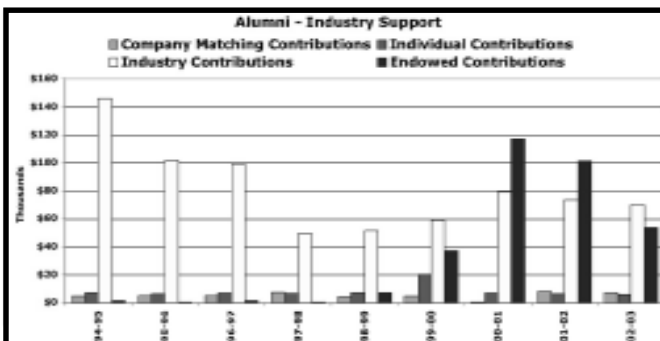
The instructional activities include offering service courses (Physical Geology, Resources and The Environment, The Earth and Life Through Time, and Elements of Geology) to about 2,500 students per year. In spite of budget reductions and massive faculty retirements during the mid-1990’s, the Department has continued increasing its instructional contributions to the University.



The yearly external support for faculty and graduate student research shows a steady increase after a critical low during the mid-1990’s due to budget reductions and massive faculty retirements. As in the case of scholarship productivity, faculty and graduate students deserve credit for this successful turnaround. The total funding is about \$8 MM for 2003.



The scholarship productivity of faculty and graduate students shows a steady increase after a critical low during the mid-1990’s due to budget reductions and massive faculty retirements. Faculty and graduate students deserve much credit for this increase.



This graph is presented here to thank our alumni for their support. Contributions in terms of endowed scholarships are very encouraging. Thanks to our alumni and industry for their continuing support. The Alumni Relations Committee (ARC) under the leadership of Dr. Lynn Glover III was initiated in 1994-95. Due to the efforts of the ARC, alumni contributions have increased.

“New Name” continued from page 1

Additionally, I solicited input from individual alumni, representatives of companies that offer employment to our graduates and students, and present undergraduate and graduate students. Including the results of the polling of our present undergraduate and graduate students, I report that there was unanimous support for the faculty suggestion to change the name of the Department from the “Department of Geological Sciences” to the “Department of Geosciences.”

We have submitted the necessary paperwork to finalize the:

- Name of the Department from the “Department of Geological Sciences” to the “Department of Geosciences”
- Undergraduate degree name from “B.S. in Geological Sciences” to “B.S. in Geosciences”
- Graduate degree names from “M.S. in Geological Sciences” and “Ph.D. in Geological

Sciences” to “M.S. in Geosciences” and “Ph.D. in Geosciences”

- Departmental and catalog abbreviation of the Department from “GEOL” to “GEOS”

It is important to note that these changes will not affect any student in terms of time to graduate or courses to be taken.

Will the name change or alter what is being accomplished or the mission and strategic plans of the Department? The answer is no, nothing will change. But the name change will better identify and represent instruction and research efforts of the Department. Furthermore, it is expected to attract a greater number of excellent undergraduate and graduate students to Virginia Tech, who may have a broader interest than common perceptions of what “Geological Sciences” implies. Additionally, “Geosciences” will better represent faculty credentials and research in geology, geobiology, geochemistry, geobiochemistry, geophysics, seismology, hydrogeosciences,

geomorphology, tectonics, structure, sedimentology, stratigraphy, mineralogy, crystallography, geoinformatics, geonanoscience, etc. The new name will also better identify the scope, breadth, and depth of the programs offered by the Department, which will better attract attention of employers, students, faculty candidates, funding agencies, and the university community.

Under the new name, the “Department of Geosciences” will continue to enhance its academic and scholarship image to achieve its goal and make Virginia Tech one of the top five public institutions in “Geosciences” by the National Research Council rankings. Under the new name, the members of the Department of Geosciences are looking forward to forming new partnerships, while participating in joint initiatives with other units and programs of the University and College of Science.

Cahit Çoruh, Chairman

Connie Lowe Represents Department at Recruiting Fair



L to R: Chris Thomas, Connie Lowe, and two students from North Carolina State

Chris Thomas, Physics, and Connie Lowe, Geosciences, graduate student coordinators, represented the Virginia Tech Graduate School and the College of Science at the College of Physical and Mathematical Sciences Fair (PAMS) at North Carolina State on November 5.

Dean Daniel Solomon of the College of PAMS invited the Virginia Tech representatives to participate in a stimulating luncheon discussion with other faculty members and representatives from companies who attended for the purpose of recruitment and identifying prospective graduates for employment and internship potential.

“Field Course” continued from page 1

and swapping stories about the “so-and-so formation” or the exposure of “x” at the bend in route “n” that they’d studied back in their VT field class. I wasn’t familiar with these rocks at the time, and many of the old exposures are overgrown and weathered. But what impressed me was the impact of the field experience on these geologists; that it should be recalled in such detail and that such a central understanding of geology had been gained.

A field course is a highly effective way to convey concepts of geology and workings of scientific thought to beginning students. It also bears the physical and spiritual rewards of sharing experiences and camaraderie in the outdoors. Recognizing a void in our undergraduate program, the Department, based partly on advice from alumni and the Advisory Board, initiated a curriculum revision several years ago that would include a new field course. Mine was the task of creating and administering this course.

The concept was to expose students to a wide range of geologic features and field relationships after their introductory courses, but before specialty classes such as Structural Geology or Petrology. By showing them rocks outside of the trays and boxes of the labs, we hoped to provide the context and intellectual framework into which subsequent knowledge would more easily and more understandably lodge. We also wanted students to think scientifically, by collecting and manipulating real data. There’s no way to teach how to approach research questions, make good observations, or organize interpretations, other than by experience. The course thus represents different strategic educational goals than traditional field camp (which is still required).

So it begins. The ideal design for this course would be an intense two-week program in the summer. This fell victim to practicality, however, when the logistics, such as the added tuition and housing hassle, became clear. Facing this dilemma and unwilling to ask Coach Beamer to work with me on a fall schedule, I decided to try running the course in the latter half of the spring

semester. This drew warnings from some of the leading meteorologists of the state (Bob Tracy, Fred Read, among others), which turned out to be mostly accurate (we actually got snowed on *twice*).

By far and away, 2003’s most popular expeditions were the two weekend-long trips (see the list of trips below). The other trips were one-day, Saturday affairs (six of them), which

acoustic guitar. And who can deny the happiness that comes just from eating hot food when camping? It’s amazing how boiled hot dogs and canned beans and corn taste gourmet when eaten in the cold night.

As I retired that night, I realized that I had perhaps pitched my tent too close to Comedy Central (the fire). But it all worked out fine, because none of us was going to get any sleep anyhow.



The 2003 GEOL 2444 group photo. Shown from left to right are (front row) Jessica Burleigh, Evelyn Hudson, Dr. Spotila, Lacey Kelley, Jen Moll, Marty Griffith, Ashley Hogan; (second row) Ed May, Dean Snidow, Kyle Brown, Brian Leibowitz, Brett Kiser, Katie Walraven, John Sarao; (standing) Beth Glusica, Sabrina Perrotta, Annie Spicer, Chris Buonassissi, Dan Breske, Rao’uf Al-Sharif, Jeri Hawkins, Sam Denning, Rob St. Claire, Greg King, Jamie Buscher (TA), and Dylan Ward (TA) (not shown; Jessie Sigman). For more photos of geological stops, log-on to <http://www.geol.vt.edu/2003geol2444/>

were well liked too. Our first camping trip was to North Carolina on the last weekend in March, for our first exposure to igneous and metamorphic rocks. Following a tour of the Mt. Airy granite quarry, rain threatened to dampen our geologic spirits, but held off long enough to work out some crosscutting relationships along a roadcut at Stone Mountain. That night we stayed in a private group campground, amidst tall pines and high-tension-wire towers. About a third of the students were sharing their first-ever camping experience. The night included competitive flashlight tag and more than a modicum of singing and professor imitating. The campfire was kept alive industriously with foot-diameter, un-split logs. One TA, Dylan Ward, even introduced Pink Floyd to the North Carolina woods with his

The rain started around 1:00, and didn’t stop until it turned to snow during breakfast. There was thunder when the front passed. When I started contemplating the electrical resistance of my foam sleeping pad, I realized that perhaps it was time to pile in the vans and head for shelter. But as it turned out, the lightning didn’t get close and quickly stopped. The only casualties that night were the campers in the borrowed tent; *sans* fly (it’s important for keeping the water out). They managed to dry out by late April. The morning snow didn’t deter us, until it started accumulating. Unfortunately, it was too slippery for our geologic transect across the Stone Mountain pluton, a granite dome that was used in the filming of The Last of the Mohicans. The executive decision to abort was made, and we started to head

back via interstate (avoiding the Blue Ridge Parkway). There was a third of a foot of snow on the ground in Floyd County (for pictures of this and other trips, log-on to www.geol.vt.edu/2003geol2444).

Our second overnight trip was to Mt. Rogers in mid-April. Although the area had received ample snow days before, it had *mostly* melted by the end of our first afternoon. In truth, besides a bit of a chill and some slush on the top of Grayson Highlands, we enjoyed a deep blue sky and crystal-clear air. The streams were full and cold and the lowlands were just starting to green. Geologic highlights included ignimbrite (tuff) of the Mt. Rogers Formation on Wilborn Ridge (OK, that walk may have been a little cold), a nonconformity between the Mt. Rogers formation and Cranberry gneiss that you can just about put your finger on below Buzzard Rocks and Whitetop Mtn., and world-class dropstones and sedimentology in the Late Proterozoic Konnarock Formation. The exposures along the Virginia Creeper Trail are a rich record of environmental and tectonic change, from volcanism and glaciation, through Iapetan rifting (Unicoi Fm.), and into the Cambrian drift sequence (Chilhowee group). You can't quite put your finger on the Precambrian-Cambrian boundary, but can just about convince undergraduates that it's somewhere within a barn-sized outcrop (*snicker, snicker*). Our camping was sublime, despite the massive pot of thick chili I had cooked the night before (it was the best I have ever tasted, *before* I added the quarter cup of "mystery spice"). The serenity was only disturbed by 7AM, tent-to-tent, megaphone wake-up calls.

The camping experiences may figure prominently in our memories, but truthfully this was a serious class that delivered solid geology and required hard work. Each trip involved a major task that required collection of real data to solve a problem. It was not a show-and-tell approach. I would give preliminary lectures at the outcrop to explain context and the specific facts they needed, and then outline their mission for collecting data. Example tasks were measuring stratigraphic sections and interpreting environment

of deposition, or deciphering pressure-temperature conditions from metamorphic mineral assemblages. The 24 students were broken up into groups of ~4, consisting of a mix of sophomores and freshmen. Each group attacked the problem of the day and shared data, but each student was responsible for individual reporting and interpretation. The tasks could not be completed successfully until the problem and observed phenomena were understood.

Groups were equipped with tools, including Brunton compasses, measuring tapes and staffs, and GPS receivers, and each student purchased their own geologic hammer, hand lens, and field book. The field notebook was of particular importance, as this is where data were recorded and interpretations written or drawn. They were also graded very seriously. While groups made observations and struggled with interpretations, instructor and TAs circulated, keeping the herd together, watching out for cars, and moving the orange pylon base-station markers (to keep the students on their toes). The TAs were particularly essential for acting as mediators between professor and students, including Jamie Buscher who earned the adoration of many. In addition to showing each of the major rock types and geologic settings, the

trips were multidisciplinary, exposing students to numerous rock-less techniques, such as down-hole sensing for physical hydrology, water quality sampling, fluvial geomorphology, soil development, geophysical imaging (seismic reflection and ground penetrating radar), and of course passenger van maneuvering on narrow dirt roads, wet grass, and un-level pavement.

The specific skills and general understanding learned during the course should facilitate learning in higher-level courses and better prepare students for field camp and geoscience careers. The student response to this trial run of the course was very enthusiastic. In a survey at the end of the semester, 100% of the students indicated that i) this course should be taught in the future, ii) they enjoyed this course, and iii) this course increased their desire to be a geoscience major. On a scale of 1-5 of how much was learned, the average student response was 4.7. There was so much enthusiasm, that we are considering a second field course for juniors and seniors, based on a spring-break trip out West. In the meantime, *GEOL2444* will be back in spring '04, for a large group of new majors and more richly rewarding experiences in the field.

Trips of the 2003 *GEOL2444* Experience

Huckleberry Trail, Christiansburg: introduction, basic tools, observations

Cove Mountain, I-77 in Wytheville: stratigraphy, sedimentology, measuring section

Mt. Airy and Stone Mountain, N.C. (overnight): igneous intrusives, metamorphic rocks

Newport and Giles County: Valley and Ridge fold and thrust structure

Mt. Rogers (overnight): volcanic rocks, glaciation, ancient climate change, Blue Ridge structure

New River, Kentland Farms: geochemical hydrology, soils, fluvial processes, geophysics

Blue Ridge escarpment, B.R. Parkway: metamorphic rocks, geomorphology

Little Stony Creek, Cascades (make-up)

SUBMIT YOUR FIELD STORY!

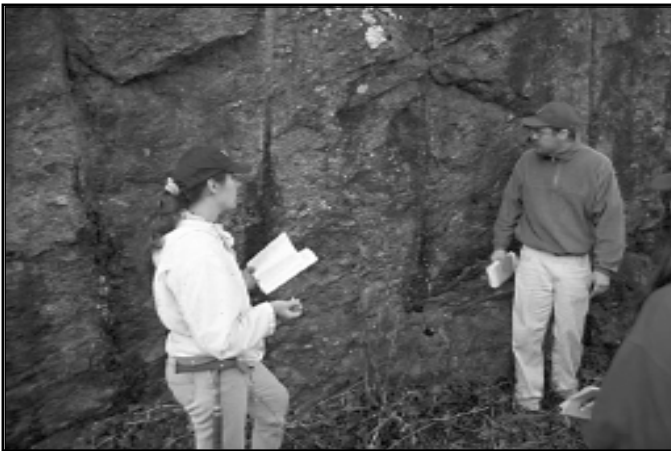
We want to hear from you! Write us your favorite VT field geology experience. What were your favorite rocks? What was your funniest experience? Send your story to the Newsletter Editor, Department of Geosciences, Virginia Tech, Blacksburg, VA 24061, or e-mail mcmurray@vt.edu



Trying the ground penetrating radar on a fluvial terrace of the New River at Kentland Farms



Dr. Spotila introduces a Jacob's staff to the class at Cove Mountain, near Wytheville, Virginia



Dr. Spotila examines conglomerate of the Mt. Rogers Formation near Troutdale in Grayson County, Virginia



Students examine contact relationships of the Stone Mountain pluton in North Carolina



Orienting folds in the Mocassin Formation near Newport, Virginia



Dr. Tom Burbey demonstrates down-hole surveying equipment used to quantify flow characteristics in groundwater wells, near Floyd, Virginia



Dr. Spotila, student, and TA Dylan Ward (left) examine bedding-cleavage relationships in one of the "Lowry" anticlines at Newport, Virginia



Students take notes on an apparent channel cutting through shale of the Konnarock Formation near Konnarockin, Smyth County, Virginia



Dr. Spotila explains fluvial geomorphology along the banks of the New River, just downstream of Big Falls



TA Jamie Buscher (far left) and Dr. John Hole (2nd from left) supervise installation of seismometers into the ground for a seismic refraction survey of a New River terrace at Kentland Farms



Dr. Schreiber (hooded, far left) demonstrates (in the rain) equipment for measuring geochemistry and water quality using well water sampled from a retention pond on campus

William C. “Bill” and Francina J. Presley Scholarship Endowment is Established

The William C. “Bill” and Francina J. Presley Endowed Scholarship has been established to recognize a Virginia Tech Geosciences Junior or Senior residing in the Southern Appalachians or Blue Ridge, and planning to pursue traditional career opportunities in resource exploration. Additionally, the recipient must have established a QCA of 3.2 or greater. The candidate must meet the following criteria: First, strong academic achievement; second, financial need; and, third, extracurricular leadership.

William “Bill” and Francina “Fran” Presley recently began an endowed merit scholarship to support a Junior or Senior from the Southern Appalachians or Blue Ridge majoring in Geosciences. Bill and Fran’s generous support will ensure that the department can recognize top students pursuing traditional career opportunities in resource exploration. Bill and Fran focused on resource exploration because Bill’s career in exploration with ExxonMobil provided him the



opportunity to see the world and provide for his family while drawing on the fundamental skills he gained as a student at VPI. Bill is a proud alumnus of Geosciences and the class of 1957. In retirement, he enjoys visiting his children and grandchildren and serving as a member of the Dean’s Roundtable for Virginia Tech’s College of Science. We salute Bill and Fran’s support of academic



excellence in the department and look forward to awarding the Presley Endowed Scholarship for many years to come!

Should you have any questions about supporting the Department of Geosciences and/or the ease of leveraging matching gifts to assist in providing endowed support, please contact Dr. Kylie H. Johnson or Mr. Daniel J. Palmer at 540-231-9542.

New Houston Area Virginia Tech Geosciences Support Group

The department is pleased to announce the creation of this new support group under the leadership of Mike Strickler '83.

Purpose: The Houston Area Virginia Tech Geosciences Support Group (HAVTGSG) is formed to complement the departmental Alumni Relations Committee (ARC). HAVTGSG is expected to work closely with ARC on a more local level in support of the Department of Geosciences at Virginia Tech.

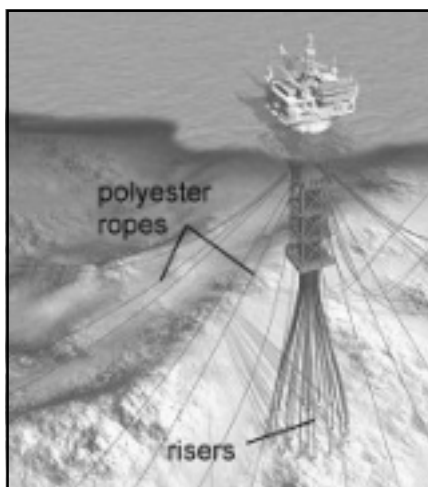
Expectations: The primary goal of HAVTGSG will be to provide an important communications link between Houston area Virginia Tech Geosciences alumni and the Department in Blacksburg to support and promote the image and visibility of the Geosciences Department at Virginia Tech. The group would facilitate a cooperative and coordinated effort to support the Department locally.

Organization: A coordinator and a number of individuals selected by the coordinator to help him/her will organize the efforts and activities of HAVTGSG. Mike Strickler ('83), as the founder of HAVTGSG is asked to be the first coordinator. There is no term-limit for coordinator and others involved.

A New Twist in the Petroleum Industry

Barbara Costain reports on a major change in how some offshore drilling platforms will be moored in the ultra-deepwater Gulf of Mexico beyond the continental shelf, one of the greatest new oil provinces in the world. An example is the Mad Dog field discovered in November 1998. Mad Dog is operated by BP Amoco and lies beneath water depths of 4,500-6800 ft. The field is a large structure, with over 4,000 ft of structural closure covering 26,500 acres. Development of Mad Dog will utilize a spar platform. A spar consists of a cylindrical buoy that floats vertically in the water with the platform placed on top. It is anchored to the seafloor via cables as much as a kilometer away. See diagram. Spar technology stabilizes the entire floating platform to absorb the force of sea state and even hurricanes.

The “risers” shown on the diagram represent steel conduit pipes inside of which the wells are drilled and within which the production tubing is later run



to bring the liquids and gases to the surface.

But here's the real news. Instead of the usual steel wire rope normally used for deep-water mooring systems such as for a spar installation, Barbara says the new approach uses polyester ropes manufactured from high-performance Honeywell polyester yarn. The Mad

Dog development marks the first use of synthetic moorings to anchor a floating platform to the seabed in the deep water Gulf of Mexico. 84,000 feet of rope segments will be delivered to the Gulf of Mexico by October 2003 for the Mad Dog project, which will be moored in 4420 feet of water! The ropes made from the Honeywell fibers are the strongest ever produced for deep-water mooring — better than steel!

“Not only do these polyester ropes have a high breaking strength, but the lower weight of synthetic fiber as compared to steel wire or chain offers improved mooring capability in deep water and has a dramatic effect on the overall costs of deep-water mooring systems and offshore platforms”, says Barbara Costain, Marketing Manager for Honeywell Performance Fibers. (Barbara is the daughter-in-law of Emeritus Professor John Costain.)

Editor's Note: On September 26, 2003 Barbara Costain received the Honeywell Chairman's Award for Growth for her part in leading the team developing Honeywell polyester yarn used in the mooring ropes.



Alumni Faculty Dinner held at Blacksburg Country Club, October 24, 2003. Back L to R: John Rocovich, Rector of Virginia Tech Board of Visitors and grandson of Roy J. Holden, Elizabeth Rocovich, great granddaughter of Roy J. Holden, Cahit Çoruh, Department Chair, Lynn Glover, class of '52, ARC chairman. Seated: Elizabeth “Dit” Holden Rocovich, daughter of Dr. Roy J. Holden.

Alumni Careers Mickey Gunter '87

I would like to thank Lynn Glover and Don Bloss for asking me to write this piece. I have become accustomed to thanking professors at Virginia Tech, especially Don, Paul (Ribbe), and Jerry (Gibbs). I feel whatever success I've had in my career, I owe in large part to them. Lynn provided some suggestions on how to write this article and said, "don't forget a photo." I chose a group photo because it symbolizes what a career, as a professor is all about: our students, colleagues, and mentors.

I spent the first 21 years of my life living in a small rural community in southern Illinois. Neither of my parents attended college. My mother worked in a shirt factory and my father worked in the oilfield and as a carpenter. Both my parents desperately wanted me to attend college. However, during my first senior year in high school my mother was quite disappointed when she received a call from the principal two weeks before commencement informing her that her son had not been seen at

school for a considerable length of time. She was somewhat consoled later by the fact that I did return the next year to finish high school.

It appeared that my future would be working with my dad as a carpenter. To occupy my evenings, I started a motorcycle repair shop. However, taking into account that if longevity is truly based on your mother's side of the family (my grandmother at that time was in her 80s and seemed like she would continue living much longer), at the age of twenty I pondered whether I wanted to be a carpenter and mechanic for the rest of what hopefully would be a very long life, and the answer was "no." I decided to go college. My mother was delighted, while my dad was skeptical, and he had every right to be.

Now that I had made the decision to go to college, I needed to decide where to go and what to major in. I decided on Southern Illinois University (SIU), which was just 50 miles from home, and had very low admission standards. Part of SIU's mission was to provide a second chance for students who did poorly in high school. As far as selecting a major, I recall thinking what

the first thing I wanted to do in life would be after being a policeman, a fireman, or doing what my dad did – the answer was to be an oilfield geologist, since I had some exposure to this type of work from my dad.

When I arrived at SIU, I doubted I would be able to pass my classes. For the first time in my life I worked very hard; I never missed class, and I studied. My career goals changed from becoming an oilfield geologist to a college professor. I would need to continue my education in graduate school, but like many undergraduates, I was somewhat unsure of what specialization to choose. I sought the help of the professors at SIU. Paul Robinson recommended I go to Virginia Tech and work with Don Bloss. We used Don's books in both mineralogy and optical mineralogy, and I was very impressed with them.

In reality, my path toward Virginia Tech was set by my birthplace in southern Illinois. Before Don taught at Virginia Tech, he was a professor at SIU, and Paul was one of his students. Don invited me for a visit to Virginia Tech. I flew to Blacksburg in May 1979. During that visit, I talked with Don and Jerry Gibbs. I recall meeting Don in his office. He was very excited with his student's research proving the distortion index of cordierite was incorrect. I didn't tell him I had never heard of cordierite.

With my self-confidence waning, Don took me to see Jerry. Jerry handed me a couple of reprints about the mathematical derivation of point and space groups. I kind of remembered what point groups were; it had been a couple of years since I had mineralogy, but I didn't understand much else he was talking about. Fortunately, I did not meet Paul Ribbe, who would have probably launched into a discussion of $t1o$ and $t2m$. At that point, my ignorance might have convinced me I was out of my league.

My first quarter was academically very difficult, probably the most difficult I ever had in college. I was taking three courses and was a Teaching Assistant in Jerry's undergraduate mineralogy class. Fortunately, I had taken linear algebra as an undergraduate. Who would have



The above photograph was taken on July 12, 2003, of the five instructors for a 3-day spindle stage short course at the McCrone Research Institute in Chicago, Illinois. No doubt most of you will recognize at least one person in this photograph because four of the five have ties to Virginia Tech; the odd man out is one of my recent graduate students. From left to right: Shu-Chun Su (Ph.D., VT, 1985), Bryan Bandli (M.S., University of Idaho, 2002), Mickey Gunter (Ph.D., VT, 1987), the world's largest spindle stage, Don Bloss (VT Emeritus Alumni Distinguished Professor), and Rob Weaver (Ph.D., VT, 2001).

thought linear algebra would be helpful in teaching mineralogy? After that first quarter, things got much easier. I moved along with my coursework, taking classes from Paul and Jerry, as well as several statistics courses. At the same time, I began my research on the optical properties of andalusite. Also, during my first quarter I met Thomas Armbruster, who was a postdoc with Don.

At the end of my second quarter, I did one of the three most important things in my life. I met Suzanne Aaron who was attending Radford. The other two important things were starting college and quitting smoking cigarettes. Suzanne and I were married a little over a year later at Mountain Lake. Shortly after that, I spent fall semester at the University of New Mexico while Suzanne finished her B.A. Don was on sabbatical there, and I assisted him in setting up a spindle stage lab and finished writing my thesis. One of the highlights of the New Mexico stay was meeting Shu-Chun Su, a new PhD student of Don's who had just arrived from China.

I was offered a position back at SIU using X-ray diffraction to quantify mineral matter in coal ash. After a couple of years, I began to search for a PhD program. When I contacted Don to ask him for letters of reference, he suggested I return to Virginia Tech. We returned to Blacksburg. I worked with Don on developing an instrument to measure the refractive indices of minerals in thin section. While the theory existed to do this, the mechanical implementation proved difficult. I completed a PhD on this project and worked as a postdoc with Don while he was department chair.

During this time, a mineralogy position was advertised at the University of Idaho (UI). I applied for it, but it was a difficult decision because I wanted to continue working with Don. Not only was I lucky enough to get an interview, I was also lucky enough to be offered the position. I accepted and we moved to Moscow, Idaho, in the fall of 1989.

In reality, this is when my career began; I was finally a college professor. Even though the UI was a step down academically from Virginia Tech, I

loved it! The students were great! After all, why be a professor if you don't like students? Most of the students were first-generation college students from rural communities. The facilities were awful. My office was a remodeled laundry room in the basement of the Student Health Building. We had an old microprobe, and the data reduction was done by hand. But I had a new colleague, Charlie Knowles, who ran the probe. Charlie and Jerry had been classmates at Chicago, and Charlie played a major role in my research efforts at UI. Fortunately, I was able to set up a spindle stage lab and continue my work on the optics of zeolites.

Along with mineralogy and optical mineralogy, I taught Geol 101. I was unsure how I would like teaching the large intro class, but I really enjoyed it. In fourteen years, I have taught the course in the fall semester to over 5,000 students. Primarily because of that course, I received UI's outstanding teaching award in 1997.

After my first year at UI, Thomas Armbruster invited me to Bern, Switzerland, for the summer. We worked on the structure of clinoptilolite in different hydration states. This started our collaboration, which was highlighted by our chapter in the recent zeolite RiMG volume. My zeolite research also led to an invitation to Kyoto University last year where I taught and conducted zeolite research with Tamada Osamu and his students. Tamada spent a sabbatical leave at Virginia Tech working with Jerry, where he met Monte Boisen. Monte left Virginia Tech to become department chair of math at UI. Monte was also a visiting professor at Kyoto – small world! Also, last year I was promoted to the rank of full professor.

One of my other main research interests has been in the health effects of mineral dusts. Recently I was involved in the Libby, Montana issue, which has gained attention in the national media. A vermiculite mine at Libby contained trace amounts of a nonregulated amphibole asbestos, mainly winchite. We have done considerable work on the crystal chemistry of these samples. Some of the work was done in collaboration with our neighbors at Washington State University only eight

miles to the west. Nick Foit is my colleague there, and he was also a postdoc at Virginia Tech in "the early days." However, my main research interest is still how light interacts with minerals (i.e., optical mineralogy). My main research tool is the spindle stage. Over the past few years, my interests have evolved and we are using the spindle stage integrated into the SEM, XRD, and synchrotron. Now I like to say my interest is in studying the orientational dependence of the physical properties of minerals.

At this point, my career seems to be moving into new areas. Last year I was asked to be an MSA distinguished lecturer. My two talks were on mineral dust and optical mineralogy. I left zeolites out, because Thomas Armbruster was also an MSA distinguished lecturer. This year I was elected to MSA council. Most of my current efforts are writing an NSF-funded mineralogy book with Darby Dyar. Also, I am co-hosting the 2005 Goldschmidt Conference. The University of Idaho, and our department, have come a long way since I arrived. We have had several new buildings, including one for geology, and I have more available instrumentation than I can possibly find time to use!

In conclusion, I would like to refer to the photograph at the start of this article. There's no doubt in my mind that I have chosen the best career, and this was all made possible thanks to individuals like those in the photo. Don represents the professors who mentored me, Shu-Chun my peers, Bryan my students, and Rob, one of my many colleagues from Virginia Tech. A professor cannot hope to be successful without such a group! And lastly, I owe so much to my wife of 22 years whom I met in Virginia back in 1980.

Mickey Gunter
Professor of Mineralogy
Department of Geological Sciences
University of Idaho, Moscow, Idaho,
83844-3022; 208-885-6015,
mgunter@uidaho.edu,
www.uidaho.edu/~mgunter
B.S., 1979, Southern Illinois University
M.S., 1982, Ph.D., 1987, Virginia Tech

Mike Huggins, MS '83

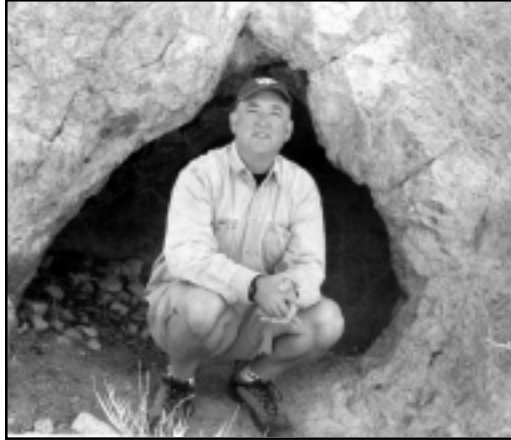
Lynn,

In light of the upcoming geosciences alumni homecoming at the end of the month, I thought I would send some information about myself. Unfortunately, we are unable to make the trip east at that time, although I hope I'll have the time to visit the Blacksburg area sometime in the next year or two.

I have attached a couple of photos so my cohorts can see how I've turned out in my "more advanced" years. One is of me striking a puzzled geologist's pose in Anza-Borrego State Park earlier this year (alas, my treasured Hokie hat was "snatched" at the Orange County, California fair not long after - I guess by a disillusioned and displaced Wahoo). The second photo shows our whole family at home: my wife Barbara (RN - SUNY Binghamton and MN - LSU), and my daughters Jennie (11) and Ellyn (9), and our dog Sophie.

We live in Irvine, California, a pretty nice place to live for families, with plenty to do and nice public schools. I work as a Senior Geologist in Buena Park, about 20 miles north, for a small environmental consulting and

contracting firm, Wayne Perry, Inc. My work is primarily for Shell on a long-term project - the Charnock MTBE project as it pertains to several Shell properties in West Los Angeles and Culver City. We built a large MTBE/TBA treatment system for groundwater



(air-stripping and carbon) after extensive and detailed subsurface investigations, for which I was very actively involved. Our treatment system treats approximately 5 to 6 million gallons of water per month. We are currently waiting on some legal situations to be resolved to see if more hydrogeologic assessment will be forthcoming. Right now, we are gearing up for a visit to our site from the

highest-level management of Shell in the UK, at the end of the month.

California has great and fantastic geology. I wish I had more time to get out and see more of it closely. Regardless, it's a neat place to live.

I wish all my Virginia Tech friends and colleagues well, good health and good luck.

Sincerely,

Mike Huggins, M.S. '83

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Irvine, CA 92604

949-552-1622

Home: michaelhuggins@cox.net

Work: mhuggins@wpinc.com†

34 Years Ago

by Don Bloss

Some 34 years ago, Jerry Gibbs, Paul Ribbe and I gave an NSF short course on crystallography and crystal chemistry for 30 (mostly) mineralogy professors from across the country. It was before Derring had air conditioning in place and it was HOT. I happened to come across the song that the departing class composed (to the tune of Bye, Bye, Blackbird) and sang at our final "graduation" ceremony. It's kind of funny:

Bye, Bye, Blacksburg

Pack up all your matrices
No more symbols by Schoenflies
Bye, Bye, Blacksburg

Back we go to our own schools
Forgotten now are Pauling's rules
Bye, Bye, Blacksburg

Mr. Angstrom's had his day of glory
Just wait 'til NSF hears our sad story

Screw those glilde planes and cork balls
We depart these torrid halls
Blacksburg, Bye, Bye.





John Grotzinger, class of '85, at the National Academy of Sciences on April 29, 2003, with Sean Solomon (nearest to John), planetary geophysicist and Director of the Department of Terrestrial Magnetism, Carnegie Institution of Washington; and Adam Dziekonski, seismologist and Professor at Harvard University. The dress is formal because this was at the President's Dinner (President of NAS), held this year in the National Building Museum in Washington DC.



Letter from a former Student

Dear Dr. Bloss:

Just checking out the department site, found your name listed there, and had to say hi! You won't remember me, but you were one of my first teachers when I entered the department in 1975. I think you taught me my first quarter in intro. I stayed with Geology for almost three years and then doubled and finally transferred to Earth Science Education.

I have been teaching Earth Science in Chesterfield for 28 years. I spent five years at the Math/Science Center as their Earth Science educator for the Metro area, and now work with gifted kids in Chesterfield. Finished an MS in Geosciences several years ago and teach Physical Geology as an Adjunct for John Tyler Community College. Still list geology as my first love and have been involved with research, field work, and curriculum development ever since. I enjoy the state field trips every fall and just have too many rocks in my garage!

I credit you and the entire department for always having the time to answer questions, the enthusiasm that was contagious, and a genuine love of your work that was an inspiration. My best memories of Virginia Tech always involve Derring Hall and all of you fine people.

Thank you so much for a job well done. Keep up the good work and my best to you all.

Frederick Lamar Brandt

[Address redacted]

4/27/03

Bill Henika Retires

October 26, 2003

Dear Lynn,

Thank you very much for your interest in the Geological Survey office closing at Virginia Tech. I was sorry it had to end the way it did. After my heart attacks and surgery in 1991, the first of which took place along the Big Otter River near Evington, I requested permission to hire and train a new state survey geologist in the Southwest Valley and Ridge and Blue Ridge-Piedmont Region. It is my opinion that continued state budget cuts and reductions in staff created a priority of the survey to focus more on digital cartography and data management in the far southwestern coalfields. Hopefully the regional geology mapping projects that established the Blacksburg office in the late 1970s can be carried on through assistance of the U.S.G.S. State Map and ED Map programs.

This was actually the second Geologic Survey office at Virginia Tech. Thomas Leonard Watson directed the first office. He was appointed second State Geologist of Virginia by the Virginia General Assembly and established the Geological Survey of Virginia (a Division of the Virginia Department of Agriculture) within the VPI Geology Department in the early 1900s. Watson oversaw the publication of the first four Bulletins of the Geological Survey of Virginia in Blacksburg before he was called to Charlottesville about the time of the publication of the Jamestown Exposition Volume (1907). For some peculiar reason, the new survey was renamed the Virginia Geological Survey and published four new Bulletins (titled 1a-4a) to establish the series in Charlottesville. The Classic 1907 volume that established both Watson and Roy Holden as authorities on the mineral resources of Virginia may be reprinted for the 2007 Jamestown Event.

Jerry Bartholomew and I started the second Blacksburg office in the late 1970s to support our expanded regional

studies that were first described in a Salem Times-Register article on July 17, 1977 (see photo below). We completed detailed maps of more than twenty 7.5-minute quadrangles in the Blue Ridge, Valley and Ridge and Cumberland (Pine Mountain) Overthrust Block of SW Virginia with the help of some notable Virginia Tech students including Art

Commonwealth Resumes Geologic Mapping



M. J. Bartholomew and W. S. Henika

Schultz, Chuck Stanley, Patricia Dove, and Carol Walsh-Stovall.

My regional studies based in the Blacksburg office have included more detailed work in several quadrangles in the eastern half of the Radford 100 K sheet and publication of the Roanoke and Danville 100 K sheets that involved new mapping and compilation including the work of numerous Virginia Tech students such as Bob Baird, Alex Gates, Bill Hazlett, Ron Kreisa, Wendy Thompson and Ping Wang.

During the late 1960s, J. F. Conley began the longest and most detailed geologic survey project in Virginia history. The first phase of this project that focused on the Martinsville area was completed in the early 1980s. Beginning in July of 1990, I began the second phase of that project which focused on the Piedmont and Blue Ridge southwest of the James River at Lynchburg. The second phase of the project was conducted under completely different working conditions largely because of DMME management philosophy.

The first phase was based in the Charlottesville DMR office with numerous analytical labs, a library and redundant support staff. The first phase was also a cooperative project among a

host of investigators paced by almost exclusively summer field seasons and regular publication of comprehensive quadrangle reports. We had the time, numerous college interns and new trainees to assist in the completion of petrographic, x-ray, geochemical and structural and economic investigations and to archive samples and draft explanatory illustrations.

The second phase started out as a mapping marathon for the 1993 state map. It was based in initially rented office space with no lab facilities and evolved into an ongoing regional



Bill Henika mapping

consulting project where I was continuously gathering data in order to respond to continuously more complex requests for geological assistance by contractors and consulting geologists. Although I was able to take time to draft maps and give periodical scientific papers and conduct several well-attended field reviews, the methodical scientific work to bring the project to a successful completion was left out of the mix.

In 1991, after my heart surgery at Roanoke Memorial hospital, it became apparent to me that working under the then current conditions I would never be able to complete the project in the same manner that we finished up the first phase. Later on it became apparent that the Division would no longer have the facilities or supporting staff to duplicate our former products. I decided to map on

for 10 years and then try to finish and write up the analytical science part of the study as a retirement project. In the last three years, I have been invited to do the science either at the Virginia Museum of Natural History in Martinsville or here at Virginia Tech. I am opting to begin it at Virginia Tech because of the broad base of analytical expertise and regional geological knowledge preserved in Virginia's only remaining University supporting advanced research in the geological sciences.

I have also attached a more recent photo that you requested. I chose this one to portray the fact that after thirty plus years on the road I have finally stopped to smell the roses. The photo also shows one who I hope will be the fourth scientist in our line, Mathew Sinclair Henika, who has the great fortune to live here in Blacksburg.

Sincerely Yours,
William S. Henika
bhenika@vt.edu

VITA

WILLIAM SINCLAIR HENIKA

William S. Henika was educated at the University of Virginia where he received a broad background in regional geology and applied geophysics based on a work-study program with initial two years completing science and math in the School of Engineering and Applied Sciences. While he was at Virginia, he received several academic awards including the Dean's List for four semesters in 1964 and 1965. He was elected President of the Virginia Chapter of Sigma Gamma Epsilon in 1964, and The Society of the Sigma Xi in 1967. He completed the Bachelors Degree in 1965 and received the Master of Science Degree while he was working with James F. Conley, mapping in the Martinsville area in 1969.



Bill and his grandson, Matthew, enjoying a day at the Blacksburg Country Club pool. Retirement is great!

Henika joined the staff of the Virginia Department of Conservation and Economic Development in 1968. There he worked on geologic mapping, geophysical and mineral resource projects in the Cumberland overthrust block (Southwest Virginia coalfield), Valley and Ridge, Blue Ridge and Piedmont. In 1981, he returned home to Texas to help care for his father, Dr. F. S. Henika and worked as a project geologist/geophysicist in oil and gas exploration for British Petroleum. At BP, he received nearly five years of intensive technical training that prepared him to manage geophysical exploration projects and programs in the Appalachian, Arbuckle, and Wichita Mountains. His last appointment with BP was manager of the combined Rocky Mountain Overthrust Exploration Group. After his father's death in Dallas in 1985, he returned to the Appalachians to work as a contract investigator compiling geologic maps, stratigraphic and structural data for a digital groundwater geology database to be administered by the Virginia Division of Mined Land Reclamation. This was a five-year joint project between the Virginia Department of Mines, Minerals, and Energy, the U.S. Office of Surface Mining and the U.S.G.S Division of Groundwater.

Henika was appointed VDMR liaison at Virginia Tech by Dr. Robert

Milici in 1979. He reopened the VDMR Blacksburg office in 1986 and continued active field investigations, mapping in the Southwest Virginia Region until 2003. He was elected Adjunct Professor of Geosciences by the Faculty of Virginia Tech in 1995 and was appointed as a research associate with the Virginia Museum of Natural History in 2000. When he retired from the Virginia Department of Mines, Minerals and Energy in 2003, he was the most experienced geologic survey geologist in the agency having conducted detailed geology surveys on more than 35 quadrangles. He served as primary or co-author on 29 - 7.5 minute quadrangles published by the Virginia Division of Mineral Resources. This includes six Cumberland Block (Southwest Virginia Coalfields) quadrangle maps, five Valley and Ridge quadrangles, five Virginia Blue Ridge quadrangles and at least thirteen quadrangles now published in the Virginia Piedmont. He was primary author and compiler of the Roanoke and the Danville 30 by 60 minute quadrangles published in 1997 and 2002 and is a coauthor of the Radford 100k quadrangle bedrock geology map currently under review (2003).

Dwight Holland '86

Hello to everyone from Roanoke. I have been very busy since the war started, getting called up for missions as a USAF Reserve Officer for the USAF Office for Scientific Research (AFOSR), and continuing to develop/support the crew systems analysis curriculum at the Navy Test Pilot School. Recently, I represented the USAF's AFOSR scientific community assets at an international conference on Bioterrorism in Mexico. After the meeting, I took a few days to go to a remote region of Mexico and attempted to climb Pico de Orizaba. It is a quiet volcano that towers at about 18,500 feet, making it the third highest mountain in North America. As

fate would have it, we ended up getting smacked by a storm and whiteout as my climbing partner and I neared the summit. We dug a little cubbyhole out of the glacial ice and snow at about 18,000 feet on a 45-50 degree pitch, just like they taught me in survival school in Antarctica. When the weather broke, we climbed down to the relative safety of the tent at about 16,250 feet, just before another blast of bad weather and wind hit us. The nasty storm blew across the mountain all night then after a break in the weather the next day we climbed down 2,000 feet to a hut called Piedra Grande over rather steep (in places) snow- and ice-covered rocks and scree. About 1,000 feet was pretty tricky, the rest not so bad. Apparently, for two nights my climbing partner and I were

the highest-sleeping people in North America... well, we did not sleep a whole lot due to the thin air/and high winds up there. It was a memorable trip one that will not soon be forgotten. It was my first exposure to high-altitude mountaineering above 14,500 feet.

I have attached two pictures from our camp at 16,250 feet or so on the North Face of Orizaba. One looks down toward the valley below at 14,000 feet, and the other looks up to the summit more than 2,000 feet above us on the glacier.



View from camp at 16,250 feet on the north face of Orizaba looking up to the summit more than 2,000 feet above on the glacier



Looking down from camp toward the valley below at 14,000 feet

2004 Spring Alumni/Faculty Dinner Meeting Houston, Texas

The Houston area Virginia Tech Geosciences Support Group and the Department of Geosciences are organizing the following meeting:

Date: Spring 2004 - Date to be announced

Time: 6:00 PM cash bar; 7:00 P.M. Dinner

Place: The Holiday Inn Select, 2712 Southwest Freeway, Houston, Texas

Purpose: Inform alumni about the state of the Department and its strategies. The Dean of the College of Science, Chair of the Department of Geosciences, members of the Alumni Relations Committee, and a number of active and emeritus faculty will attend from Blacksburg.

The Governor's Research Initiative, 2003 (a.k.a. The Proposal We'll Never Forget)

by Michael F. Hochella

This fall, the Department of Geosciences gained a unique opportunity to acquire funding from the Commonwealth of Virginia via a program called the Governor's Research Initiative. All research universities in the state were permitted to apply to this program, but with a limited number of proposals allowed from each campus. Virginia Tech was allowed four (the maximum number), and through a University-wide competition, a group within the Department of Geosciences made the final cut and was allowed to enter the statewide competition. The program put forth is called The EIGER Project (Economic Initiatives through Geological and Environmental Research), and the faculty involved include (in alphabetical order) Ross Angel, Bob Bodnar (group leader), Tom

Burbey, Patricia Dove, Mike Hochella, Don Rimstidt, Nancy Ross, Maddy Schreiber, and Chris Tadanier. The idea behind the proposal was to collect research within the Department that has fundamental research excellence, but also economic potential in terms of invention disclosures, patents, company collaborations, or even start-ups. Research represented in the group includes novel material synthesis, proteomics with bioremediation objectives, and the development of a wireless aquifer management system. The proposal asks for instrumentation acquisition, as well as start-up monies for new faculty positions and a development officer. The budget for the proposal totals nearly \$11,000,000.

All proposals to the Governor's Research Initiative were reviewed by

panels of high level scientists (National Academy members and the like) at the Center for Integrated Technologies just outside of Washington, D.C., in October. Each team was allowed to give a 15 minute presentation, followed by 45 minutes for discussion with the panel. The EIGER Project was presented by Mike Hochella and Bob Bodnar. Governor Mark Warner spoke at the opening dinner to this two day event.

At the time of this writing, it is not clear how many proposals will be funded, or at what level (only 5 of the 27 proposals submitted statewide were in the Earth and Environmental category). However, just the opportunity to compete in this competition has already had a highly beneficiary effect. The Department of Geosciences has been given a great opportunity to showcase its strengths to high level administration within the University, and to the NAS-level scientific panel and various state officials. This will definitely be a proposal that we will not soon forget!

Geosciences Faculty



Kneeling L to R: Donald Rimstidt, Martin Chapman, Cahit Çoruh, Department Chair; Second Row L to R: Michal Kowalewski, Susan Eriksson, Arthur Snoke, Patricia Dove, Fred Read; Back Row L to R: A. K. Sinha, Michael Hochella, Robert Tracy, Gerald Gibbs, Kenneth Eriksson, Thomas Burbey, Jim Spotila, Christopher Tadanier, Matthias Imhof, John Hole, Richard Law, Nancy Ross, Robert Bodnar, Madeline Schreiber, Barbara Bekken

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James Martin II	Civil & Environmental Engineering, VT	540-231-3934	JRM@vt.edu
Maureen Julian	Materials Science & Engineering, VT	540-131-7123	erie@vt.edu
Matthew Mikulich	Corporation Chief Geophysicist - Chevron Corp. (retired)		mjmikulich@msn.com
Stephen Scheckler	Biology, VT	540-231-6653	scheckler@vt.edu

Awards Received by Faculty and Past and Present Students

Thomas Wynn, graduate student of Dr. J. Fred Read, won the Margaret Hawn Mirabile Best Student Paper at the 2002 Eastern Section of the AAPG Meeting. The paper by Wynn, T.C. and Read, J.F., 2002, was High-resolution Sequence Stratigraphic Model for Subsurface Mississippian Greenbrier Group, West Virginia: Eastern Section American Association of Petroleum Geologists Annual Meeting, Champaign, Illinois.

Megan Brown, graduate student of Michal Kowalewski, received the Powell Fellowship Award for the 2002-2003 school year.

The current and former students of Robert J. Bodnar received the following awards:

Megan Elwood-Madden has received a grant from the Barringer Family Fund for Meteorite Impact Research. The Barringer family owns Meteor Crater in Arizona and every year funds a small number of projects related to meteorite impacts. Megan's proposal was one of those selected this year.

Fang Lin has received the L. Austin Weeks Grant from the American Association of Petroleum Geologists to support her work on synthetic petroleum fluid inclusions. AAPG awarded 97

grants out of 331 applications, so the success rate is less than 1 in 3 for this grant.

Dr. Jean S. Cline, an alumna of our department (Ph.D. 1990), has received the 2003 College of Sciences Distinguished Researcher Award from the University of Nevada, Las Vegas. Jean was the lead scientist on a research project to investigate hydrothermal activity at the proposed Yucca Mountain nuclear waste storage facility, and the award was given for her work on that project, as well as her pioneering work on the famous Carlin gold deposits.

Michael F. Hochella's group and **Steven Lower's** group at Ohio State (Steven is a former student, and recent Ph.D. graduate from our group, and we still work together) received the Department of Energy Award for the best earth science research by a university for this year.

Kevin Rosso, who got his M.S. with Bob Bodnar and Ph.D. with Mike Hochella, just won the annual MSA Award, given to the world's best young (35 years or younger) mineralogical researcher by the Mineralogical Society of America. Past winners include a who's who list of superstars, including Gary Ernst, Bob Berner, Alex

Navrotsky, Don DePaolo, Raymond Jeanloz, Russ Hemley, and Jill Banfield. Kevin has been at Pacific Northwest National Labs since finishing here a few years ago. He has been unbelievably successful in science and is still very much a Hokie, working closely with Jerry Gibbs and Chris Tadanier, and watching (or listening over the internet) to every Tech football game. Kevin will be honored at the MSA banquet at next year's GSA meeting. If you would like to congratulate him, his e-mail is Kevin.Rosso@pnl.gov.

Madeline Schreiber's graduate students awards: **Forest Walker**, received the William R. Walker Graduate Research Fellow Award, and **Jonathon Roller** received the Tillman Teaching Award.

Susan Eriksson, Associate Professor, has been elected to the Advisory Board for the Digital Library for Earth Sciences Education, a national project sponsored by the National Science Foundation.

The **Museum of Geological Sciences** received the Friends of Mineralogy Award for Best Education Exhibit in the institutional category at the February 2003 Tucson Gem and Mineral Show.

Steven Lower Recognized as Outstanding Young Alumnus

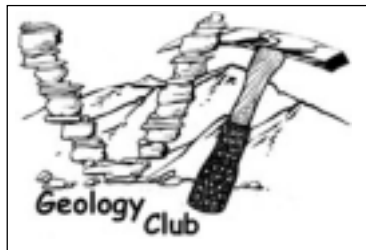
Steven K. Lower (Ph.D. '01) was recently selected as the 2003-2004 Outstanding Young Alumnus for the Virginia Tech College of Science. Steven was nominated for the award by his former Ph.D. advisor and mentor, Professor Michael Hochella. Professor Hochella states the following in the nomination letter, "What Steven did for his dissertation was truly world-class and absolutely remarkable. He discovered a way to attach single, living bacterial cells on a force sensing apparatus called the atomic force microscope, and he proceeded to measure the forces of interaction between those cells and mineral surfaces. No one had ever done this before, but many biologists and geologists are keenly interested in it because it quantifies something that was not quantifiable before, and it is important in several branches of fundamental science, as well as several areas of applied science. In fact, the technique, which he calls biological force microscopy or BFM, has dozens of applications, and it will open up new research directions and projects all over the world."

Steven is currently an assistant professor at Ohio State and is considered a new generation scientist, one that is "cross-trained." He has formal and advanced training in the fields of geochemistry and mineralogy, as well as biochemistry, microbiology, molecular biology, and ecology. To sum it up, Steven is both a true geologist and a true biologist with an environmental slant.

Congratulations, Steven!

The Geology Club at Virginia Tech

The Geology Club at Virginia Tech meets every Tuesday at 5pm in Derring 4045. The current officers (Nicole Nackley, president; Keith Rodgers, vice president; Evelyn Hudson, treasurer; Scott Dowell, secretary; Marty Griffith, historian, and Richard Law, club advisor) would like to invite all interested undergraduates and graduates of all majors to join the club. Anyone with an interest in the study of our planet is welcome. The four main purposes of the club are friendship, community, education, and good times. Friendship: Get to know undergrads, graduates, and faculty in a



relaxed atmosphere. Community: Outreach and various community service programs. Education: Career development and insight into geology, mentoring, majors fair, and field camp night. Good Times: Outdoor recreation including camping, hiking, white water rafting, and intramural sports.

Many geoscience classes have weekend field trips that the club

sometimes joins. These trips give an insight into geologic processes that cannot be gained from textbooks alone. The club is also in the process of starting several student chapters of professional organizations such as AAPG, American Association of Petroleum Geologists, and AIPG, American Institute of Professional Geologists. The Geology Club has future plans to visit the Smithsonian Museum of Natural History in early spring 2004 and several other possible trips to the surrounding states. Interested in joining? Visit the club's website to find out how! <http://filebox.vt.edu/org/VTGeologyClub/>



Geology Club Members. Back Row from left: John Sarao, Dean Snidow, Sam Denning, Jason Betner, Jeanette Montrey, Bret Viar, Kevin Flaherty, Laura Duncan, Scott Dowell (secretary), Brett Kiser. Front Row from left: Beth Glusica, Ashley Hogan, Marty Griffith (historian), Joe Lachewitz, Crystal Cooper, Evelyn Hudson (treasurer), Nicole Nackley (president). Kneeling: Keith Rodgers (vice president) Not pictured: Richard Law, Club Advisor, Zoe Paterson, Russell Clark, Rocky Severs, Jessica Burleigh, Carroll Ellis III, Alison Barg, Peter Durkee, Karina Cheung, Andrew Schlueter.

ALUMNI NEWS

'49

George B. Vockroth (B.S. '49) is retired from his company, Vantage Oil Company. He writes: "I was appointed by the Governor of Mississippi, Ronnie Musgrove, to represent the Mississippi Geological Society of the Mississippi Water Resources Advisory Council in the DAS Department of Environmental Quality. I am chairman of the Mississippi Geological Society Water Resource committee." George can be reached at 621 Ferncreek Drive, Jackson, Mississippi 39211.

'51

William D. Siapno (B.S. '51) lives in Durango, Colorado, and is a geological consultant. He is rejuvenating mine flood water for industrial and drinking uses.

'60

William M. Eckroade (B.S. '60; M.S. '62) is retired and living in Portugal. He is enjoying travel with his wife, mostly in Europe this past year. They plan to take Amtrak across America next year.

'68

Joe C. Drumheller (B.S. '68) owns and operates Densification, Inc., a nationally operating geotechnical specialty contracting firm specializing in dynamic compaction. Dynamic compaction involves dropping fifteen ton weights from sixty feet on the ground to densify loose sands and old fills. He has been a ground improvement contractor for twenty years. Prior to owning Densification, Inc. he was a geotechnical consultant with Law Engineering, and a geophysicist for the U.S. Naval Oceanographic Office. <filldoctor@aol>

Terry Kennedy (B.S. '68) lives in Matthews, North Carolina, and is Vice President at Geological Resources, Inc. in Charlotte, North Carolina. Terry and his wife recently had a new daughter,

Lillian, born March 23, 2003, to join her sister Sadie born July 28, 2000. <TDK@GeologicalResourcesink.com>

'77

Bill Clay (B.S. '77) is President of Proven Fuel Exploration, Inc. in Lafayette, Louisiana. Bill writes: "I always enjoy reading the Geological Sciences Newsletter. The professional diversity of our graduates is amazing. Over the years I have met many VT graduates in the Oil & Gas business. Their accomplishments are a great tribute to the Department of Geological Sciences. I am winding down after building my company over the last fifteen years, but still keep an open eye for a good drilling prospect. <xplor@cox-internet.com>

'84

Jack (Ken) Meritt (B.S. '84) is the owner of Professional Geological Services, LLC in Lynchburg, Virginia. His company does geotechnical and environmental engineering. They perform test borings and laboratory soil and concrete testing. Jack can be reached at <jkmeritt@aol.com>

'86

Dwight Holland (Ph.D. '86) has been elected to a two-year term as the president of the International Association of Military Flight Surgeon Pilots. The association includes medical doctors, aerospace psychologists/physiologists, crew systems engineers and flight test pilots/engineers, all of whom have military pilot ratings or related piloting credentials. Holland, of Roanoke, is a consultant in human-factors engineering, an Air Force captain, and works for a Navy test-pilot school in Maryland as a reserve instructor. He also conducts research for numerous organizations, including NASA and Human Factors Associates, an ergonomics and engineering consulting firm in Roanoke. "Taken from the Roanoke Times 6/29/03."

'89

George P. Tsoflias (B.S. '89; M.S. '91) just started (May 2003) a tenure track faculty position at the University of Kansas in Lawrence. He is excited to be joining a strong program in near-surface seismology with Don Steeples and the Kansas Geological Survey. He is planning to continue and expand his Ph.D. research in the characterization of fluid flow properties of geologic formations using primarily ground-penetrating radar and near-surface seismic methods. He will also capitalize on his industry experience to teach exploration geophysics courses and oversee applied research in seismic stratigraphy. George writes: "I have enjoyed receiving the Virginia Tech Geology Department newsletter and visiting on the web. I hope to be able to visit Blacksburg in person soon. It has always been a special place." <tsoflias@ku.edu>

'91

Christa Peters-Lidard (B.S. '91) At Georgia Institute of Technology Christa Peters-Lidard ('91, B.S. Geophysics) was a tenure-track Assistant Professor in the School of Civil and Environmental Engineering. She took leave for the 2001-2002 AY to work for the NASA/GSFC Hydrological Sciences Branch. After four years at Georgia Tech Christa found that she preferred the research-only environment at NASA to academia. "I liked it so much at NASA that I resigned from Georgia Tech, to take a permanent Civil Service position at NASA in 2002. I have since been appointed Adjunct Professor at Georgia Tech, and continue to serve on Ph.D. committees, etc." She also enjoys being back in the DC area near family and friends.

While at NASA, Christa has been working on projects that combine high performance computing and communications with land surface-atmosphere modeling. See the press releases at: <http://www.gsfc.nasa.gov/topstory/20020419scimodel.html> and her most recent award building on the above at <http://www.gsfc.nasa.gov/news-release/releases/2003/h03-101.html>

Christa also keeps busy serving as Associate Editor for Water Resources Research, Chair of the American Meteorological Society Hydrology Committee and 2002-2005 Hydrology Conferences, the USGCRP Water Cycle Science Steering Group, the CLIVAR Pan-American Panel and the GEWEX Land-Atmosphere System Study Panel.

Christa and Steve's (B.S., '89 Computer Science) latest accomplishment is the arrival of their second son, Christopher Daniel Lidard, 3/26/2003, 8:58 am, 8lbs, 7oz, 20". "We are doing great! Big brother, Justin Michael Lidard, was 5 on June 22."



Contact: Christa.D.Peters-Lidard@nasa.gov.

'93

Jennifer Gilroy (B.S. '93; M.S. '96) is now a Reservoir Geophysicist with ChevronTexaco Overseas Petroleum and will be traveling overseas several times a year. Jen has moved to Houston, Texas, with her husband, Lyn, and daughter, Grace. Jen and Jim Niemann (B.S. '82; M.S. '84) visited the department in October representing ChevronTexaco as recruiters. <jengilroy@houston.rr.com>

'96

Ed Czaja (B.S. '96) has been working in the water treatment industry since graduating and is currently working for Chemtreat Inc. in Richmond, Virginia, as an equipment engineer. Ed is married to another Tech graduate and they have two children, Eric, two years old, and Emily, two months old. <edczaja@earthlink.net>

'98

Russell Abell (M.S. '98) writes: "Marcos Raul Abell was born July 16, 2003 weighing in at 10 lbs. 9 oz and 23 inches long. Mimi and I are very proud of our little "Big Man"! He is growing very fast – already 13 lbs, 11 oz! We're not getting very much sleep but sure are enjoying having Marcos here!"

My work continues to go well – our firm is very busy and more overseas travel appears to be on the horizon (U.K. probably). Guess we'll have to get Marcos a passport! Mimi is doing very well – although very tired. She is on extended leave and does not return until February 2004. We both enjoy living in Portsmouth, New Hampshire, and have met some good friends. Hope all is well in Blacksburg – unfortunately we will not make the reunion dinner again this year. Regards, Russ, Mimi & Marcos.

Jay B. Thomas (M.S. '98; Ph.D. 2003) is now a Post Doc in the Department of Earth & Environmental Sciences at Rensselaer Polytechnic Institute in Troy, New York. Jay writes, "I have been catching lots of fish in the backyard and I have also found lots of nice people to ride with. The hills here are very similar to those in Blacksburg... tough, tough, tough!" <thomaj2@rpi.edu>

Kai Zhang - (M.S. '98) writes "Greetings from Houston! It's been a long time since we left Blacksburg in 1998 and we miss everyone in the GS department so much! My current employer, Veritas DGC Inc. in Houston, Texas, is one of the leading geophysical service companies. I work in the data processing department, along with Mu Guo, M.S. '94 - Geophysics, and Shaosong Huang, Ph.D. '96 - Geophysics."

'99

Amy Peterson (B.S. '99) left her job as a geophysicist at Geotrace Technologies in Houston, Texas, and is now teaching Earth Science in

Fredericksburg, Virginia. Amy writes, "Hi everyone! We welcomed our son, William Tyler into our lives May 17, 2003. A future Hokie! I would love to hear from my former classmates. Please e-mail me." <wpeterson2@adelphia.net>

Kelly Rose (M.S. '99) married Joseph Thompson in Havre de Grace, Maryland at a small family and friend attended ceremony on a cool, rainy, Friday in March 2003. They live in Morgantown, West Virginia. Thomas works for Westinghouse Nuclear and Kelly works at NETL (the National Energy Technology Laboratory). <keros33@hotmail.com>

'01

John R. Wilson (M.S. 2001) writes: "I am teaching introductory geology and Geographic Information Systems in the Geosciences in the Geology Department at Lafayette College in Easton, Pennsylvania. I'm having a blast." <wilsonj@lafayette.edu>

'02

Alan P. Hoffmeister (Ph.D. 2002) is now an assistant professor in the Physics Department at the College of New Jersey. <hoffmeis@TCNJ.EDU>

'03

Jenny LaGesse (M.S. 2003) is now working for Schlumberger and is now in Scotland for a three month training course. After finishing her training, she expects to return to Indonesia. <jlagesse@duri.oilfield.slb.com>

David L. Rodland (Ph.D. 2003) received a faculty position at Southern Connecticut State University in the Earth Sciences Department. <rodland1@southernct.edu>

TO DONORS

A message from Kylie Johnson: An invitation to be part of something special...

As we prepare for a future in which the College of Science at Virginia Tech is a national leader in scholarship and the teaching of science, we are educating students and building knowledge for a world that is increasingly global, entrepreneurial and ever more reliant on technology and science. These times demand scientists who can push the boundaries, go beyond what is expected and engage in "out of the box" thinking to stay ahead of the constant change of today's world. The College of Science takes on the task of creating these leaders and encouraging their intellectual growth with a deep understanding of their importance in this rapidly changing world.

Virginia Tech's Department of Geosciences is known worldwide and has set the goal of becoming one of the top 5 geoscience programs in public universities in the nation. Our faculty members are discovering cutting-edge technologies and creating innovative solutions. They are successfully collaborating, reaching across the disciplines and building partnerships with industry to produce results . . . results that impact society, improve lives and ultimately make the world a better place.

If you would like to consider making a gift to the Department of Geosciences, currently there is financial need especially for undergraduate scholarships and fellowships including funding for field studies and research, graduate scholarships and fellowships, laboratories for research and teaching including our Geosciences Museum. We are also seeking special funds for a new Geosciences building and endowed faculty positions.

We've made every effort to make giving to the Department of Geosciences easy. Please note that Cahit Çoruh, Chair of the Department of Geosciences, would be happy to work with you to determine the best use of your gift. You may choose to contribute in any of the following ways:

- * Write a check made payable to the Virginia Tech Foundation, Inc. and earmarked to Geosciences
- * Make your gift with a credit card
- * Visit www.givingto.vt.edu and make a gift online using a secure website.
- * Call toll-free at 1-866-401-9926 between 8 a.m. and 5 p.m. Eastern Time.
- * We also accept gifts of appreciated stock or gifts made through electronic funds transfer.

And don't forget that you may be able to double or triple your gift to VT through your employer's matching gift program! Whatever you do, please give. Your gift truly does make an impact.

For information about estate planning, special gifts, or anything else, please contact Dr. Kylie Johnson, Director of Development for the College of Science at 1-866-401-9926 or 540-231-2551 or kyliej@vt.edu. Thank you for your support.



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