



Department of Geological Sciences

"A University Exemplary Department"

Newsletter

Virginia Polytechnic Institute and State University

SPRING 2003



John Wood

John A. Wood '54, Urges New Emphasis in the Study of Meteorites

Interviewed by Lynn Glover

Wood attended VPI (as it was then called) 1950-1954, and was in the Corp of Cadets, graduating as a Distinguished Military Student. His home at that time was Jacksonville, Florida, though he had been raised in Virginia. After graduation he pursued a doctoral program in the Department of Geology and Geophysics at M.I.T., concentrating on petrology, and received his degree in 1958. Thereafter he served a six-month military commitment at Fort Belvoir (1958), spent a postdoctoral year at Cambridge University, England (1959-1960), and was a Research Associate at the Enrico Fermi Institute, University of Chicago, from 1962-1965.

Apart from these excursions, Wood's professional career has been played out entirely at the Smithsonian Astrophysical Observatory, a research arm of the Washington Smithsonian that is located at Harvard University in Cambridge, Massachusetts. His research there has been on meteorites, which he had begun to study as a graduate student, and which can be regarded as the intersection between geology and astronomy. His research digressed from meteorites and lunar samples in 1969 and the early 1970s, and Venus mineralogy in the early 1990s.

Please see Wood, Page 13

Geological Sciences Branch Library to be Closed

The Geosciences Library, long a fixture on the third floor of Derring Hall, is slated to be closed during the summer of 2003. This action is a direct result of budget shortfalls precipitated by recent cuts in state funding for higher education. Materials will be reintegrated into the main collection in Newman Library and staff reassigned to fill other vacancies. This decision followed discussions and negotiations by the Dean of Libraries, Eileen Hitchingham, with the Department of Geological Sciences regarding possible sources of alternate funding and/or staffing support for the facility to keep it viable. During this period, however, the department has of course been dealing with significant cuts of its own and felt it had no resources to spare. Consequently hours of operation at the Geosciences Library were reduced at the start of the 2002/2003 academic year and one of two full-time staff members was transferred. Then in late 2002 it was announced that due to additional cuts in funding it would be necessary to close the branch entirely as soon as practicable and the planning process was begun.

The library has been in existence for just over 30 years. In July of 1972, what was then known as the Geology Library became an official branch of the Virginia Tech University Libraries, utilizing space in Derring Hall formerly occupied by two labs and a sample preparation room. Since that time, it has been the only department-level library on campus that was part of the University Libraries system -

though, of course, many departments maintain informal reading room collections. Two other branch libraries are located on campus, one for the College of Architecture and Urban Studies and the other serving the College of Veterinary Medicine.



Edward Lener '90

Please see Library, Page 7

Message from the Chair

Greetings from Blacksburg! I take great pleasure in passing on the following news about our alumni and friends.

As reported in previous issues, Virginia Tech has been going through restructuring and reorganization since 2002.

The Department of Geological Sciences is now in a new college called the College of Science. At this time, the departments of Biology, Chemistry, Economics, Geological Sciences, Mathematics, Physics, Psychology, and Statistics are the academic units forming the new college and there is flexibility for further changes in this configuration. Dr. Lay Nam Chang, former chair of the Department of Physics and the Interim Dean of the College of Arts and Sciences, is now the first Dean of the College of Science. As a part of the University's strategic plan, the College of Science, under the leadership of Dean Chang will provide entrepreneurial leadership for the growth and development of academic, research, and outreach programs in the sciences at Virginia Tech.

Congratulations to the departments forming the College of Science and to Dr. Chang as its first leader!

Your department, in spite of these fiscally difficult times, is in an excellent state and continues its activities toward enhanced excellence in all dimensions. We are now in the process of hiring a new faculty member in Geobiology. We are also trying to take part in the University's multi-disciplinary initiatives by establishing important new programs, such as nano-scale science and technology and computational sciences, and attracting highly visible faculty to Virginia Tech. The structure and priorities of the new College of Science will better support and accommodate our efforts in research excellence. As a strategic goal, we will continue to increase the number of graduate students and externally



funded research and scholarly activities. We will also try to enhance our undergraduate curriculum so that we can attract top-notch students into geosciences. The Curriculum Committee has recently adopted a curriculum for an Earth Science Education option so that we can also take part in preparing science teachers. A demand for about two million science teachers is expected during the next ten years.

Input, feedback, and support from our alumni and friends continues to help us improve. You are important in enhancing the quality of the education we provide and in building our national and international reputation. Our mutual accomplishments reflect well upon each other; therefore, alumni-faculty gatherings are important ways for us to communicate and network. The meeting in Houston in April 2001 was well received and encouraged us to continue these regional meetings.

Unfortunately, the Northern Virginia alumni-faculty gathering planned for April 12 had to be cancelled. Circumstances beyond anyone's control prevented us from meeting. Nevertheless, we will press forward with plans to bring our alumni together in the fall. Plan now to meet in Blacksburg on Friday, October 24 for a nice dinner and renewal of old acquaintances at the Blacksburg Country Club (see page 11). I should also mention that I have put in a request for a beautiful autumn weekend at Virginia Tech. If food and fellowship are not enough to entice you to visit, then the beautiful fall foliage of southwest Virginia is a "must see."

I would like to close with a suggestion. I propose that groups of alumni communicate and find a suitable time and place for future off-campus alumni-faculty meetings. I would like to bring together our new college dean, faculty, and alumni to discuss strategic plans for the department, and I need feedback from our alumni. I look forward to hearing from you.

With my very best wishes!
Cahit Çoruh

Cahit Çoruh

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F. Donald Bloss

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Current Graduate Student Research in Exploration Seismology

by Matthias Imhof

The exploration seismology group currently consists of Dr. Matthias Imhof, two Ph.D. students, and three M.S. students. All projects are industry-related and performed in collaboration with the industry.

Reeshidev Bansal (Masters Candidate 2003) is working on "Seismic Characterization of Fractures in a Naturally Fractured Gas Reservoir." His project helps site production wells which are dependent upon fracture permeability for successful operation. Reeshidev developed seismic data processing algorithms to locate fracture signals in surface seismic data. Fracture signals are typically considered noise and removed by seismic data processing. Reeshidev is working on processing methods to enhance fracture signals and to suppress noise and traditional reflection events. The project is supported by the Assistant Secretary for Fossil Energy, National Energy Technology Center, U.S. Department of Energy and performed in collaboration with ConocoPhillips and Schlumberger.

Kristian Hassinger (Masters Candidate 2003) is working on "High-Resolution Seismic Stratigraphy." Typically, outcrops provide a 2D understanding of stratigraphy and lithology. Seismic data can provide the 3D image, but suffer from resolution and ambiguity issues. By combining outcrop data and seismic images, Kris will extend lithology and stratigraphy into 3D to resolve the ambiguities and to improve the resolution which will provide us with a better understanding of the three-dimensional geometries of sedimentary elements.

Sailendra Mahapatra (Ph.D. Candidate 2004) is working on "Deterministic High-Resolution Seismic Reservoir Characterization." His research focuses on the integration of stratigraphy, lithology and petrophysics of the clastic Temblor (Miocene) heavy oil reservoir in Coalinga, California, to figure out methods to precisely map the inter-well connectivity in a highly heterogeneous reservoir. Sailendra performed a seismo-stratigraphic analysis of seismic data and wireline logs and is currently working on volume visualization and geobody analysis to obtain a reservoir model of the highest resolution possible with deterministic analysis of geophysical data. His study will demonstrate the deterministic resolution limit and serve as a benchmark for other reservoir characterization techniques. The study is supported by the DOE contract DE-FC26-00BC15301.

Ethan Nowak (Ph.D. Candidate 2004) is developing an "Object-Based Stochastic Facies Inversion Method." He developed a novel seismo-geostatistical inversion method to

generate likely realizations of hydrocarbon reservoirs. Conventional techniques of stochastic reservoir modeling incorporate lithology logs, reservoir statistics, architectural element analysis, and deterministic seismic interpretation. Due to resolution limits of seismic interpretations and the one-dimensional nature of well data, these techniques rely on geologic intuition and modern/ancient analogs to further characterize a reservoir. Ethan's work aims at defining the parameters for the reservoir models from seismic data to better constrain the results. The study is supported by the DOE contract DE-FC26-00BC15301.



Matthias Imhof

Jeremy Odom (Masters Candidate 2003) is working on "VSP Application: Fracture Quantification in Gas Reservoirs." The Department of Energy, Lawrence Berkeley National Laboratory, and ConocoPhillips acquired a multioffset, multicomponent vertical seismic profile in the San Juan Basin in New Mexico to locate and characterize fractured gas reservoirs. Jeremy is currently processing the VSP data to determine if he can distinguish between fracture signals and lithologic reservoir heterogeneity. This project is supported by the Assistant Secretary for Fossil Energy, National Energy Technology Laboratory, U.S. Department of Energy.

Alumni! You'll be able to park downtown when you visit!

Blacksburg citizens listed parking convenience as one of the top reasons they did not shop downtown. So Blacksburg will invest \$2 million in the parking garage component of the so-called Kent Square project to provide downtown parking. The project is planned at the corner of Main Street and Washington Street and bordered by Lee Street and Draper Road. If you have forgotten where this is see the map at http://www.blacksburg.gov/economic_development/KentSquare_Ig.jpg.

The project includes an approximately 320-400 space parking garage surrounded on three sides by retail and office space. This is the most recent proposal to address the downtown parking problem. See more and keep updated on the progress at http://www.blacksburg.gov/economic_development/kentsquare.php

Siliciclastic Sedimentology Lab

by Kenneth A. Eriksson

Graduate student research in my lab over the past eight years has focussed on the Carboniferous section in southwestern Virginia, West Virginia and eastern Kentucky. These research projects have involved a combination of fieldwork and subsurface studies concerned with establishing a sequence stratigraphic framework for Late Mississippian and Early Pennsylvanian strata in West Virginia and Virginia. Related aspects of the research are understanding the evolution of incised valley fills, recognizing tidal effects in the incised valley fills as well as in progradational deltaic deposits, identifying long as well as short term paleoclimatic changes, understanding controls on sandstone diagenesis such as paleoclimate, framework composition and depositional environment, U-Pb zircon dating to identify provenance ages and changes in provenances through time, and reconstructing the thermal evolution (burial and exhumation) of the central Appalachian basin using a combination of vitrinite reflectance, fluid inclusion (with Bob Bodnar), and radiogenic He dating (with Jim Spotila) techniques.



Kenneth Eriksson

Rhonda Adkins studied tidal rhythmites in the Breathitt Group of eastern Kentucky and completed her M.S. in 1997. She has a paper published in a special publication of the *Society of Economic Paleontologists and Mineralogists* and recently completed her Ph.D. at James Cook University in Townsville, Australia. She will be joining Chevron in the near future.

Dan Miller worked on the upper Mississippian Mauch Chunk Group and completed his Ph.D. in 1998. He is now working for Marathon Oil Company in Cody, Wyoming. Based on his research, three papers were published in prestigious journals including *Journal of Sedimentary Research*, *Geology*, and *Bulletin of the American Association of Petroleum Geologists*.

Joel Maynard worked under the supervision of Rick Law and myself on the upper Mississippian Bluefield Formation in West Virginia and Virginia. He completed his M.S. in 1999 and is now working for the Virginia Department of Environmental Quality.

Jesse Korus worked on the lower Pennsylvanian New River Formation in southern West Virginia and completed his M.S. in 2002. He has a paper submitted to the *Journal of*

Sedimentary Research and is now a Ph.D. student at the University of Wisconsin.

Jason Reed is in the final stages of his Ph.D. research comparing the diagenetic histories of upper Mississippian, lower Pennsylvanian and upper Pennsylvanian sandstones, and constraining the subsidence and exhumation histories of sedimentary rock in the Appalachian Plateau of West Virginia. He has submitted papers to *Canadian Mineralogist* and *Geology* and is preparing a third paper for submission to *Journal of Sedimentary Research*.

Another Ph.D. student, Andrey Bekker, graduated in 2001. He worked on the chemostratigraphy of Paleoproterozoic successions in North America and South Africa. One paper based on his research was published in the *American Journal of Science* and another two recently appeared in *Precambrian Research*.

My research over the past ten years in collaboration with individuals outside the department has been in South Africa and Australia. Ed Simpson from Kutztown University and I have quantified a tidal record preserved in the 3.25 billion year-old Moodies Group in South Africa. The results of this study are published in *Geology* and indicate that semi-diurnal and neap-spring tides comparable to today operated on the Archean Earth. Together with Ed and Pat Eriksson from the University of Pretoria we have been working on aeolian and associated playa lake deposits from the 1.8 billion year-old Waterberg Group in South Africa. Two papers have been published on this research in *Palaios* and *Journal of Sedimentary Research*. Another project in collaboration with Ian Campbell and Charlotte Allen from the Australian National University and Michael Palin from the University of Otago involves dating detrital zircons from modern rivers draining the Appalachians and from Appalachian sandstones. Analyses are being carried out in the Research School of Earth Sciences at the Australian National University using Excimer Laser Ablation Induction Coupled Plasma Mass Spectrometry. One paper on the river data and another on the sandstone-hosted zircons have been accepted by *Journal of Geology*.

In each of the past two summers, I have co-led field trips associated with international conferences: 1) "Carboniferous Depositional Systems and Sequences of the Central Appalachian Foreland Basin" with Steve Greb and Jesse Korus in association with the International Fluvial Conference held in Lincoln, Nebraska in 2001; and 2) "Archean to Proterozoic Sedimentological Superlatives along the eastern Kaapvaal Craton" with Nic Beukes and Dawn Sumner in association with the International Association of Sedimentologists conference held in Johannesburg in 2002.

Allosaurus Fragilis (remember me?)



Photo by Mark Fortney

Allosaurus was the largest carnivorous dinosaur of the Jurassic Period (190 to 140 million years ago). This specimen is 22 feet long and had an estimated body weight of $\frac{3}{4}$ of a ton (1500 pounds). This large animal was just partially grown. At full growth, Allosaurus was over 30 feet long and weighed two tons.

Allosaurus walked on its hind legs with the body extended forward in a crouch. The long, heavy tail acted as a counterweight to keep the body balanced on the hind limbs. The front legs, with their heavy claws, were free to clutch prey as the jaws bit for the kill. The sharp teeth and claws are clues to the meat eating habits of Allosaurus but final proof comes from a specimen of Brontosaurus (a large plant eating dinosaur) in the American Museum of Natural History (New York City) which has tooth marks on its backbone. Broken Allosaurus teeth were found among the bones of this chewed skeleton. This specimen is a plaster cast of a skeleton preserved at the University of Utah, Salt Lake City, Utah. The original bones were collected between 1960 and 1965 from the Morrison Formation at the Cleveland-Lloyd Quarry, Emery County, Utah. This specimen was purchased by the Department of Geological Sciences in 1974. Evan J. Deemer, assisted by James Ligon (V.P.I. & S.U. '78) and Tracy Mancini (V.P.I. & S.U. '78) prepared and mounted the skeleton under the supervision of Dr. Richard Bambach.

Eighth Annual Virginia Tech Geological Sciences Student Research Symposium March 20 & 21, 2003

The Geological Sciences Student Research Symposium (GSSRS) is an annual event produced and organized by the students and faculty of the Department of Geological Sciences at Virginia Tech. The symposium is held in the Geological Sciences Seminar Room and provides an opportunity for the public to learn more about research topics currently being investigated in the geosciences by graduate and undergraduate students at Virginia Tech. It also provides students an opportunity to prepare and present professional geoscience talks in a friendly atmosphere.

Contributions were received from BP, Marathon Oil Corporation, the Virginia Tech Department of Geological Sciences, Kevin Anderson with matching funds from ExxonMobil, Andrew Bush, Jeanne Jerz, Stephen Lewis, Eric and Maria Rufe, and Langhorne Smith. The committee would like to thank all of the contributors and the faculty members who evaluated their presentations.

Presentations were given by the following students.

Tristan Azbej (Ph.D.)	A New Interpretation of the Genesis of Carbonate Aggregates from Hungarian Lamprophyres: Are Ocelli Magmatic or Hydrothermal Origin?
Amanda Albright (Ph.D.)	Hydrodynamic Effects on Mineral Dissolution Rates
Reeshidev Bansal (M.S.)	Seismic Characterization of Fractures in a Naturally Fractured Gas Reservoir
Susan Barbour Wood (Ph.D.)	Neogene Diversity Trends of the Atlantic Coastal Plain
Saumyaditya Bose (Ph.D.)	Acid Mine Drainage Potential of Zawar Mines, India with Geochemical Analysis and Acid Base Accounting as Tools
Brenda Brown (M.S.)	The Sorption of Roxarsone, an Organoarsenic Feed Additive
Megan Brown (M.S.)	Losing Mussel Mass: An Analysis of Morphology and Mercury Levels in Freshwater Mussel Shells from the North Fork Holston River, Virginia
Jason Burt (Ph.D.)	Potential Hydrogen Bonding Sites in Nominally Anhydrous Minerals: Kyanite, Sillimanite, and Andalusite
Jamie Buscher (M.S.)	Glacial Erosion as a Primary Control on Landscape Evolution of the Active Chugach/St. Elias Range of Southern Alaska
Tracy Cail (Ph.D.)	Experimentally Derived Sticking Efficiencies of Microparticles Using Atomic Force Micros- copy: Toward a Better Understanding of Particle Transport in Porous Media
Brian Cook (Ph.D.)	Preliminary Studies in Strain and Vorticity of Flow at the Base of the Moine Nappe, NW Scotland
Meredith Dunn (M.S.)	Relocation of Micro-earthquakes in Eastern Tennessee
Megan Elwood Madden (Ph.D.)	Experimental Simulation of Shock Re-equilibration of Fluid Inclusions during Meteorite Impact
Maria Fokin (M.S.)	Plume-Induced Neoproterozoic Magmatism in Eastern Laurentia and its Bearing on the Breakup of Rodinia
Turgud Gurer (M.S.)	Transpressive Uplift and Deformation of the San Emigdio Mountains, California
Kristian Hassinger (M.S.)	High Resolution Seismic Stratigraphy
Danielle Huminicki (Ph.D.)	Coupled Dissolution and Precipitation Reaction Rates for Calcite and Ferric Oxyhydroxides
Richard Krause (Ph.D.)	An Assessment of Morphological Fidelity in the Sub-Fossil Record of a Rhynchonelliform Brachiopod
Jenny LaGesse (M.S.)	Core-Based Sequence Stratigraphy, Subtropical to Temperate Self Succession, North Carolina Paleogene
Angela Larson (M.S.)	Using Surface Waves to Constrain the Crust and Upper Mantle Structure of the Southern African Craton
Fang Lin (Ph.D.)	Formation of Synthetic Hydrocarbon Inclusions in Quartz: Progress and Problems
Viktor Liogys (Ph.D.)	Proterozoic and Paleozoic Thermal History of the Grenvillian Blue Ridge Terrane in Central Virginia: Chemical Dating of Monazites by Electron Microprobe
Laura Lukes (M.S.)	Mechanisms and Rates of Uplift within the San Andreas Fault Zone, Southern California
Andrew Madden (Ph.D.)	Manganese Oxidation Promoted by Hematite as a Function of Particle Size: A Test of Size Quantization Effects on Earth Processes
Sailendra Mahapatra (Ph.D.)	Deterministic High-Resolution Seismic Reservoir Characterization
Kelly McDaniel (B.S.)	Bugs in Rocks

Ari Mitra (Ph.D.)	Felsic Magmatism Associated with Flood Basalt Provinces: A Study of the Catoctin Formation
Ethan Nowak (Ph.D.)	Stratigraphic Filtering
Stephanie Nowak (Ph.D.)	Seismicity of Turkey: A Numerical Modeling Approach Incorporating InSAR Data
Jeremy Odom (M.S.)	Processing and Interpretation of the San Juan Multi-Offset VSP Data
Jason Reed (Ph.D.)	Burial and Exhumation History: Appalachian Plateau, Central Appalachian Basin
David Rodland (Ph.D.)	Home on the Half-Shell: Encrustation of Brachiopods and Bivalves from the Subtropical Shelf of the Southeast Brazilian Bight
Jonathan Roller (M.S.)	Arsenic Release Due to Dissimilatory Reduction of HFO's in Petroleum-Contaminated Aquifers
Caleb Scheetz (M.S.)	Fate and Transport of Lead on Shooting Ranges
Matthew Severs (Ph.D.)	Synthetic Co-Existing Melt and Aqueous Fluid Inclusions: A Preliminary Study
Arvind Sharma (Ph.D.)	Image Deconvolution Using Spectral Factorization Technique
Jennifer Stempien (Ph.D.)	Evaluation of the Preservation Potential of the Yellow Shore Crab, <i>Hemigrapsus oregonensis</i> , in Tidal Flat Environments
Walter Sullivan (Ph.D.)	Field Relations within the Northern Half of the White Mountain Shear Zone, Eastern California and Nevada
Jay Thomas (Ph.D.)	Melt Inclusion Geochemistry
Jon Trujillo (M.S.)	Magmatism and Mid-Ordovician Collision Tectonics in the Central Appalachians
Mariano Velázquez (Ph.D.)	The Influence of Peptide Chain Length on Calcium Carbonate Growth: Building an Understanding of Biological Mineralization Processes
Forest Walker (Ph.D.)	Origin, Fate, and Transport of Arsenic in the Hyporheic Zone of a Second Order Stream
Dylan Ward (M.S.)	Testing the Roles of Climate, Tectonics, and Bedrock Lithology in the Late Cenozoic Incision History of the New River
Sandra Warner (M.S.)	Quantifying Aquifer Strain and Storage in an Unconsolidated Confined Aquifer
Bradley White (M.S.)	Evaluation of Ground Water Recharge in the Blue Ridge Physiographic Province
Darren Wilson (M.S.)	Nanoscale Effects of Strontium on Calcite Growth: A Baseline for Understanding Biomineralization in the Absence of Vital Effects
Thomas Wynn (Ph.D.)	Sequence Development on a Foreland Carbonate Ramp, Mississippian Appalachian Basin, West Virginia



Library continued from page 1

During its history, the library has had five librarians in charge of overseeing its operations. Previous ones include Bill Garribrant, Randy Bellinger, John Crissenger, and Patricia Morris. I am the fifth librarian and have served as head since 1992. As a graduate myself of the Virginia Tech Department of Geological Sciences (B.S. 1990, M.S. 1996) to now find that I am the individual charged with implementing this decision to close the facility has been particularly challenging. However, I and other library staff are working with a small group of faculty representatives for the department to try to make the transition as smooth as possible.

We anticipate moving the materials over a period of several weeks beginning soon after the end of the spring semester. A web site will be put up that will be updated daily with the current status of the move. Certain selected materials that duplicate those already in the main library will be used as the nucleus of a small reading room collection.

Working in the branch has been a rewarding experience for me and is certainly one that I will miss. I appreciate the expressions of support from faculty and students concerning what the library has meant both to them personally and to the department as a whole. A branch provides materials in close proximity to clientele and provides more opportunity for personal interaction. It not only offers a full range of services to users but can often better customize those services to meet specific needs. Unfortunately operating a "library in miniature" is also an expensive proposition, and this closing is part of a clear nationwide trend as universities reevaluate how to best allocate limited funds.

Edward Lener
College Librarian for the Sciences



Craig R. Altare, BS



Reeshidev Bansal, MS



Christopher M. Belback, BS



Brenda L. Brown, MS



Jamie T. Buscher, MS



Crystal M. Cooper, BS



Paul B. Cooper, BS



Maria A. Fokjin, MS



Brian K. Hollenberger, BS



Elizabeth A. Jennings, BS



Treavor A. Kendall, PhD

Geological Sciences *Class of*



2003



James R. Leary, BS



Kelly M. McDaniel, BS



Chelsea C. McRaven, BS



Kenneth R. Megginson, Jr, BS



Stephen J. Miller, BS



Jason S. Reed, PhD



David L. Rodland, PhD



Heather R. Shannon, BS



Jay B. Thomas, PhD



Elizabeth A. Vanacore, BS



Lauren M. Velander, BS



Darren S. Wilson, MS



Robert J. Woodman, BS



Thomas C. Wynn, PhD

W. Miles Gentry, MS - Not Pictured

Jason T. Herman, BS - Not Pictured

Patrick D. Kee, BS - Not Pictured

Joshua C. McClain, BS - Not Pictured

Jeremy B. Odom, MS - Not Pictured

Walter A. Sullivan, MS - Not Pictured

Karen M. Weber, BS - Not Pictured

Alumni-Faculty



Alumni attending: Back row from left, Howard Phillips '53, Jim Niemann '82, Nancy Ross, '79, Lynn Glover III '52, John Karpa III '72, Bill Moon, Jr. '55, Front row from left, Tom Gathright '59, Forrest Fiedler '67, Patricia Dove '84, Mike Hochella, Jr. '75



Post-Dinner Program

Homecoming Dinner 2002



From Left, Lynn Glover '52, Howard Phillips '53, Wally Lowry



From left, Dean Lay Nam Chang, Mike Hochella '75



From left, Jim Niemann '82, Fred Read



From left, Robert Bodnar, Madeline Schreiber

2003 Alumni-Faculty Dinner October 24, 2003

Mark your calendar!

Don't forget to reserve time on your calendar for the Alumni-Faculty Dinner at the Blacksburg Country Club on October 24, 2003. The Social will begin at 6:00 P.M. and the Buffet Dinner at 6:45 P.M. We have reserved a block of rooms at the Hampton Inn and Microtel Inn & Suites, both in the NRV mall area with great room rates.

Hampton Inn (540-381-5874); \$74 plus tax per night - ask for "VT Geological Sciences" block
Microtel Inn & Suites (540-381-0500); \$39.95 plus tax per night - ask for "GEO10/24" block

Call some classmates and friends that you haven't seen for a while and meet them here! More details will arrive later.

Departmental Research Informs Nanoscience Education

Mike Hochella's research group is also in the business of nanoscience education in the K-12 arena. Susan Eriksson heads the educational portion of the NSF funded project aimed at developing curriculum for the various secondary sciences and mathematics to incorporate the research group's findings on minerals, microbes and water. Madeline Schreiber and Chris Tadanier are also principal investigators on the project.

Five teachers attended a workshop last summer and were involved in laboratory experiences designed by some of Mike's graduate students, Treavor Kendall, Andrew Madden and Tracy Cail. The researchers, graduate students, and teachers collaborated on several presentations at professional science and science education meetings this past year. Details and more information about the project are on the project's website www.nanoed.vt.edu.

The teachers return this summer to write curriculum which will be distributed locally and nationally.

This project already has widespread impact. Dr. Mike Rocco, head of NSF's nanoscience initiative quoted the Virginia Tech group in an article which has been published in the web version and later in the printed format of *Small Times*, the nanoscience industry's magazine (see next column).



From left, Treavor Kendall, graduate student, Mary Norris '84, physics teacher, Tracy Cail, graduate student and Andre Green, graduate student in Teaching and Learning, using an optical microscope

BUSINESSES NEED TO PLANT NANO SEEDS IN SCHOOLS, NNI CHIEF SAYS

By Garry Kranz

Small Times Correspondent

RICHMOND, Virginia, Dec. 3, 2002

<http://www.smalltimes.com/>

[document_display.cfm?document_id=5133&keyword=roco](#)

....."The NSF last summer provided funding for a four-year project that paired Virginia high school teachers with research faculty at Virginia Polytechnic Institute in Blacksburg, Virginia. Five Virginia public school teachers of high school biology, chemistry, earth science, physics and mathematics joined Virginia Tech faculty members and graduate students to use new adaptations of atomic force microscopes to increase knowledge of microbe-mineral interactions. These interactions are considered important to groundwater research.

Teachers prepared lessons in physics and math based on the principles of AFM operation, and discovered ways to use the research and its findings in biology, physics, mathematics, chemistry and earth sciences lessons. The broader purpose is to help secondary school teachers incorporate nanosciences into classroom studies, researchers say.

"One of my objectives is to get graduate students used to doing outreach. I want them to recognize the power of working with K-12 teachers and students," said Susan Eriksson, the Virginia Tech Geological Sciences professor who spearheaded the project. She also helped organize the science teachers' conference at which Roco spoke.".....



From left, Mary Norris '84, physics teacher at Salem High School, Treavor Kendall, graduate student working on the Atomic Force Microscope

Charles Edward and Frances Peppin Sears Endowed Scholarship Fund established

Dr. Charles Edward "Rosy" Sears, of Blacksburg, Virginia, died July 8, 1998. He was 86. A native of Salem, Virginia, Rosy received a B.S. in 1932 and an M.S. in 1934 from then VPI, and a Doctor of Science from Colorado School of Mines in 1953. At VPI&SU (Virginia Tech) he was: undergraduate student, master's student, acting head and instructor in Mining Engineering and, after 1946, faculty member in the Department of Geological Sciences. In addition to teaching, he founded and directed the Virginia Tech Seismological Observatory, and acted as liaison for the Museum of the Geological Sciences. Outside of the University he was widely known as a consulting geologist. He was the first faculty member chosen by Dr. Byron N. Cooper, the new head of the Geology Department, after the death in 1945 of its long time head, Dr. Roy J. Holden. Rosy was a big help in building the department because he alone on the faculty knew much about the local geology. Thus, he provided continuity between the Department of Holden and the new department under Cooper that was to grow at an astonishing rate within the decade.

Rosy was a fine colleague – a true native Virginia gentleman devoted to his wife and children, and devoted to a department to which he contributed so much. He retired from Virginia Tech in 1977 as Professor Emeritus of Geology after teaching for 39 years.



From 1942 -1946 he served as a Major in the US Army Air Forces. He was a member of the Christian Science Society, Blacksburg, and a long-time member of the Christiansburg-Blacksburg Rotary Club, where he was a Paul Harris Fellow. His wife of 61 years, Frances Peppin Sears, died October 22, 1999, at Hampton, Virginia. He is survived by his four children and their spouses, Dr. C. Frederick ('62 PHYs, '64 MSE) and Judith Loope Sears, Port Matilda, Pennsylvania; Nancy Brown and William Forbes, Hampton, Virginia; Dana A. ('73 ME) and Mary Sears, Brooklyn Park, Minnesota; and Holly Sears and Jim Luton, Brooklyn, New York; five grandchildren and two great-grandchildren.

by Lynn Glover, Nancy Forbes and Wallace D. Lowry

Wood continued from page 1

Meteorites seemed a topic worth spending a career on. They are much more than mere curiosities, being the oldest rocks in the solar system, samples of the first planetesimals that came together as the system took form. They are extremely complex in structure and geochemistry, and contain an enigmatic isotopic record of the timing of events back at the very beginning. NASA has considered it worthwhile to support a vigorous program of research on them. However, the question of what the meteorites are trying to tell us has proven to be very hard to answer.

Wood's research has received considerable recognition, and in 1991 he was elected to the National Academy of Sciences. (In 1994, he delivered the commencement address to seniors graduating from the Virginia Tech Department of Geological Sciences.) In 2000 he was invited to give the plenary Masursky Lecture at that year's Lunar and Planetary Science Conference, which is held annually in Houston, Texas. At something of a loss about what to say,

Wood's talk rambled over several topics, but finally settled on a subject that concerns him deeply: the small amount of progress that has been made in understanding the story in the meteorites, in spite of the very large amount of data that have been collected. There is an optimal balance between theory and observation in any field, and Wood asserted the ratio is much too low in meteoritics.

The talk turned out to be very controversial, with the result that an offer to publish it in a journal was withdrawn. It was reported on by Richard Kerr in *Science* magazine (Vol. 293, 2001, p. 1581; see also Vol. 298, 2002, p. 350). Those curious about the talk will find a version of it, including most of the original slides but with its didactic section somewhat sanitized, on the web at <http://home.earthlink.net/~jawood/>.

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John Wood as a Cadet

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A directory for Emeriti Faculty, Research Associates, Post Docs and Adjunct Professors can be found at <http://www.geol.vt.edu/>

Museum of Geological Sciences Receives Award

The Museum of Geological Sciences received the Friends of Mineralogy award for Best Educational Case from an institution at the February, 2003 Tucson Gem and Mineral Show. Approximately 30,000 people attend this show and the museum has been an invited participant for 13 years. This award was established five years ago to recognize institutions and individuals who display fine mineral specimens in an educational context. One award in each category is given each year.

Virginia Tech's exhibit this year had the theme of Pyrite Disease. Thought to be the result of high humidity which promotes acidic conditions, this process causes the disintegration of many fine specimens in private and institutional collections each year. The theme of the show was Minerals of the Andes; the museum's exhibit included pyrite specimens from Peru.

ALUMNI NEWS

'73

Dave Goodman (B.S. '73) took an early retirement from Arco Alaska in September 1999, and is now a BP retiree! He started a consulting group (the irf group) and the seven principal scientists (all paleontologists) are working on projects around the world. Dave writes, "Working in Alaska is great! Hello to all in Blacksburg. If you ever get to Alaska give me a call and we'll go fishing. I'm a registered Alaska fishing guide and will drop everything at a moments notice to fish." <flyfish@alaska.net>

'74

Andy Gambill (M.S. '74) left Hunt Oil Company in Houston and formed TechXplore (not "Virginia Tech exploration," but "technica exploration" with two other ex-Hunt Oil guys. They will be using 3-D seismic, onshore South Louisiana heavy computer power, and a "seasoned" subsurface geologist (Andy) with a large drafting table. "Where else can one slip multiple logs?" Elsewhere: Andy's wife, Kelle, is teaching, his son is in baseball, daughter is barrel racing, and he golfs or goes whitewater rafting in between. <geodoryntx@aol.com>

S. Linda (Cranford) Reed (B.S. '74) works at Lockheed Martin as a Senior Software Quality Engineer. Linda and her husband, John, have adopted four children, three siblings from India (Khushboo, girl – 16, Sunny, boy – 8, Julie, girl – 10), and Andrea – 3 from China. <reedsgarden@aol.com>

'77

Ed Aguirre (B.S. '77) started Ed Aguirre & Associates, Inc., a geologic consulting business focusing on Engineering Geology, Environmental Geology, and Environmental Insurance, in 1998. He started an affiliated company, Pridgers & Aguirre Water, LLC, focusing on environmental recycling of petroleum imported water and soil in 2001; started Ed Aguirre Earth Sciences, LLC, focusing on environmental impact studies in 2003 (www.edaguirre.com). Ed writes, "Our first daughter, Valerie, graduated from UNC at Chapel Hill in December 2002. Our youngest daughter is a sophomore at UNC at Greensboro. We are a long way from crystallography (Fall of '74 and Fall of '75). Huh." <edaguirre@edaguirre.com>

'83

David B. Spears (M.S. '83) is beginning his eleventh year at the Division of Mineral Resources in Charlottesville. David writes, "The great thing about this job is the variety; I've worked on projects dealing with coal, natural gas, precious metals, and even field mapping in the Piedmont. Last fall, I took (and passed!) the National ASBOG exam, so now I am a

'Certified Professional Geologist.' I live with my wife, Jennifer, and two children on a nice little farm in Buckingham County. Stop by for a visit if you're ever out this way." <dspears@geology.state.va.us>

'85

Mark Gresko (Ph.D. '85) Contact Mark c/o Devon Energy, 1200 Smith Street, Suite 3300, Houston, Texas 77210. <mark.gresko@dvnc.com>

John H. Piggott (B.S. '85) is working for the US Army Corps of Engineers in the Transatlantic Programs Center (TAC) in Winchester, Virginia. TAC covers all DOD construction and design work for the Middle East, all of the Stans, and parts of Russia. He just returned from Kabul in support of OEF. David writes, "I would like to say hello to the class of 1985, Drs. Snoke, Robinson, Costain, and others who were there from 1981-1985. I am still trying to get a college teaching job in physical geology or geo-engineering. I am not married but am actively seeking. I would love to hear from anyone and everyone. <john.h.piggott@usace.army.mil>

Lisa Keeton Stoner (B.S. '85) was recently appointed volunteer coordinator to the largest Miocene tapir locality in North America, the Gray Fossil Site, directed by East Tennessee State University. The Gray Fossil Site (GFS) was discovered during a road work project by a TDOT crew in 2000. Lisa writes, "We are just beginning to excavate a site that is incredibly rich and diverse in both flora and fauna. GFS is one of a few Miocene localities in Eastern North America. Because of its location and abundance of fossils, GFS promised to provide much needed information regarding environmental and ecological conditions in Eastern North America during the Miocene."

Anyone interested in learning more about the site and what they are finding there can contact Lisa at <geoiggets@hotmail.com>

News from a Friend

Matt and Donalyn Mikulich are moving from Danville, California to Buena Vista, Colorado, about May 1, 2003, where they are now constructing a retirement home. Matt retired as Corporation Chief Geophysicist and Earth Science Principal Technical Advisor, Chevron Corporation, a few years back. He is currently appointed Adjunct Professor of Geophysics in the Department of Geological Sciences, Virginia Tech. He says, "if you are in our area, please call or drop an email: mjmikulich@msn.com. If you don't have time for lunch, I hope we can at least chat over a cup of coffee at Bongo Billy's."

DONORS

If you would like to consider making a gift to the Department of Geological Sciences, simply send your check payable to the Virginia Tech Foundation in care of Chairman, Department of Geological Sciences, Virginia Tech, Blacksburg, Virginia 24061, Ph: 540-231-6894. Please include a brief note stating how you would like the money used. Currently there is a financial need especially for:

- *Undergraduate scholarships and fellowships including funding for field studies and research
- *Graduate scholarships and fellowships
- *Endowed chairs for faculty
- *Laboratories, research and teaching including our Geosciences Museum

Donations from our alumni and other friends are critical to our plans for endowing scholarships, professorships and programs within the Department. Most people know about making cash donations, but there are other methods to give that may better suit your financial situation. You may be surprised to learn what kinds of gifts Virginia Tech accepts, and how you can avoid some taxes you thought you would have to pay. For more information about giving stock, receiving income in exchange for your gift or making a donation through your estate plans, please contact Dr. Kylie Johnson, Director of Development, College of Sciences, 101 Old Security Building (0136), Blacksburg, Virginia 24061, Telephone (540) 231-2551; Fax (540) 231-2208.



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