THE OHIO STATE UNIVERSITY
School of
Earth Sciences
SPRING 2009

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DIRECTOR'S UPDATE

Frank W. Schwartz

On behalf of the School of Earth Sciences (SES), I would like to extend greeting and best wishes to our alumni and friends. As the newsletter points out, this year has been exciting, with news, events, and emerging initiatives. As has been our custom, we hosted alumni events at the AAPG and GSA national meetings last spring and fall. With the GSA meeting in Houston, our alumni energy interest group took the opportunity to get together in Houston with faculty and students at the Petroleum Club. Thanks to Jory Pacht for organizing this event and leading the evening's discussion. We are making plans to host our breakfast and alumni party at the AAPG meeting in Denver.

The newsletter contains write-ups describing the research work of three faculty members C.K. Shum, Steven Lower, and Ian Howat. As you read these stories I hope that you will be impressed by their fascinating work in satellite applications, geomicrobiology, and glaciology. The breadth and scope of research in the School is amazing. Through our newsletter, we'll keep you apprised of the exciting developments across the board in science and technology.

One of our newest initiatives is the Shell Undergraduate Research Program. The accompanying article will show how with Shell's support we were able to develop a summer internship program to help majors in geological sciences undertake research in topics of their choice and make money at the same time. We aim to continue and even expand internship opportunities again this summer with primary funding from Shell and additional funding from Battelle. As I mentioned in my November letter, these kinds of programs are helpful in making an Ohio State education more affordable, and in creating an awareness of industrial opportunities, especially in the petroleum industry.

An important area of emphasis in our programs is undergraduate teaching. Alumni will be interested to learn that we have had a large increase in student numbers taking our courses. The numbers of students taking basic earth science courses has nearly doubled over the past five years to about 1200 per quarter. There is a variety interesting courses stretching across the spectrum of Earth Sciences from national parks to oceans to planets and more. The number of undergraduates in our primary B.A, B.Sc. programs has almost doubled to about 100. These are exciting times in the Earth sciences, as reflected by growing student interest across the campus.

Thanks again for your financial support of our alumni giving campaigns. Best wishes and Go Bucks.

Frank Schwartz

OHIO STATE AT AAPG DENVER, 2009

All-Alumni Party
Monday, June 8, 5:30 - 7:30 pm Hyatt Regency Convention Center, Room Capitol Ballroom 1, 2 and 3.

OSU Earth Sciences Breakfast
Tuesday, June 9, 7:30 - 8:30 am, Hyatt Regency Third Floor, Room Mineral D.

For Breakfast reservation send e-mail to Betty Heath heath.18@osu.edu by June 4.

A LETTER FROM THE ALUMNI SOCIETY PRESIDENT

The loosely organized Geology Alumni Society is going to change - an organizational transition. We are all proud of the fact that we are geologists and Earth scientists, and as Alumni we are the legacy of Earth Sciences at Ohio State. The Society needs to refocus, regroup, realign so that we can be more effective as a group in supporting, and advising, the School of Earth Sciences--another change, this time for the Society. We have a responsibility to our legacy to continue and to increase our support of future Earth scientists. Contributions to the Friends of Orton Hall or other funds in the School of Earth Sciences, do make a difference, and are a responsible way for us to reaffirm our relevancy to society. I am looking for a change in the School of Earth Sciences with rising visibility for outstanding teaching, research and funding.

It's a great feeling to be a Buckeye, and know that our heritage is preserved in one of the very best geology and Earth science programs in the country. Go Bucks!

Pete MacKenzie, '94
President, Geology Alumni Society

HOUSTON ALUMNI MEETINGS

One of the highlights in spring 2008 was a series of meetings with alumni in Houston and Columbus that focused on repositioning the School and its programs to take advantage of opportunities in energy. Jory Pacht, Pete MacKenzie, and Jeff Daniels were instrumental in developing these events with the help of Julie Dials and staff members in the School.

In early October 2008, our second meeting was held in Houston downtown at the Petroleum Club. In retrospect, the timing could have been better, following hard on the heels of Hurricane Ike a few weeks before. Nevertheless, we had a great group of alumni in attendance, along with a contingent of faculty and students in Houston attending the GSA meeting. Jory Pacht led a discussion that included an update on his earlier visit to Columbus and how our alumni could help the School address the exciting new opportunities. Mike and Cindy Morgan have kindly agreed to host the next meeting in mid-April 2009.

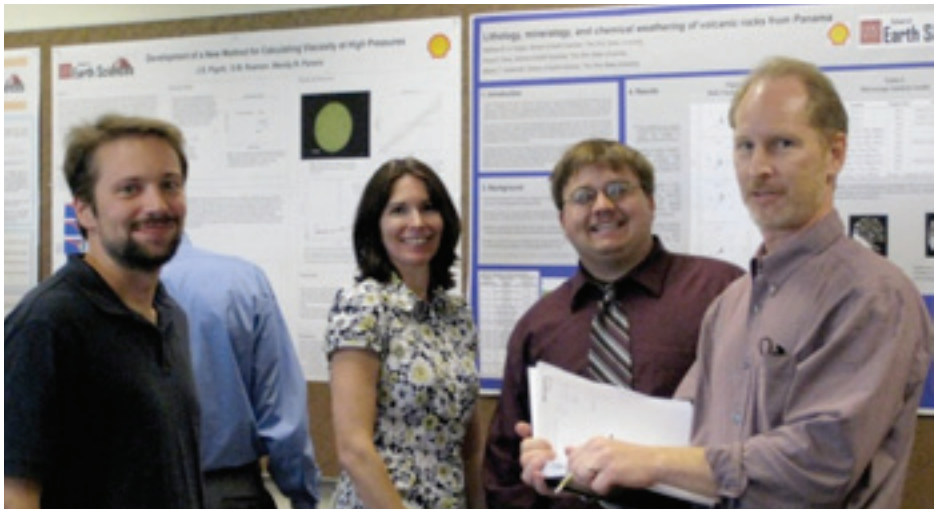
All in all, a great time was had by all. The evening was capped off by a close win by the Ohio State Buckeyes at Wisconsin.

SHELL UNDERGRADUATE RESEARCH EXPERIENCE (SURE) 2008

On September 19th, 2008 the first ever offering of the Shell Undergraduate Research Experience (SURE) came to an exciting finale after its eight week run this past summer. Financial support from the Shell Exploration and Production Company as well as the faculty from the School of Earth Sciences (SES) helped 11 majors to pursue their personal interests in geological research, and to gain critical competencies necessary for a career in Earth Sciences.

SURE was conceived to promote research in Earth Sciences and to create knowledge of opportunities in industry. The students were selected by an interview/application process, which was headed by Associate Professor Anne Carey. Anne said "How to apply for jobs, work etiquette, and broad ranging professional experience were covered extremely well." Steve Goldsmith, PhD candidate, acted as the day to day coordinator for activities. During the program, the interns also had the opportunity to work with Pat Jackson, of Shell Alaskan Subsurface Team.

Through Shell and his own personal visits, Pat sought to promote student interest in Earth Sciences and to develop leadership and business skills. Pat noticed an enhanced connection between the students and their advisors



Poster session discussion (left to right) Steve Goldsmith, Julie Sheets, Matt Dugan and Pat Jackson

as they worked together. Being able to interact with an industry geologist heightened the importance of the students' experience. Pat thinks that SURE can only improve by getting more faculty involved, emphasizing technical coherency, and allowing more students to participate.

The SURE program began in mid-July, after students who attended field camp In Ephraim, Utah returned to Columbus. Students worked 38 hours each week. Most of the working time involved research that was designed to lead to a poster presentation at the end of the program. The remaining hours were spent in technical workshops.

The workshops introduced the students to key software packages like MATLAB and Arc GIS. These programs are key science packages for data manipulation, storage, and display. Real data used in these workshops came from research in Antarctica. Cynthia Applin, Director of the MAPS Professional Experience Program, was the coordinator for other parts of the educational program, which consisted of two half-day professional development seminars. The seminars covered resume writing and group communication skills, which are essential in a working environment. Undergrad Jeffrey Piggott said "The frustration of the programming and research was a personal gain in itself. I felt that working with professionals in the field and with the research group was extremely beneficial."

The Poster Session on September 18th was the highlight of SURE. It gave students the opportunity to discuss their research findings with members of the SES faculty and Pat Jackson from Shell. The work was interesting and greatly varied. For Example undergrad Saskia Smith conducted her research on "Seismic wave phase velocity variations in Ohio." Her study was designed to provide better estimates and precise locations for local and regional earthquakes. J. Patrick Calhoun worked with Professor Lawrence Krissek on a paleoclimate project in which they used evidence of changing ice-rafted debris as indicators of climatic conditions. Sediment samples from the Ocean Drilling Program were examined for evidence of material from melting ice bergs that traversed the North Atlantic. The main purpose of the research was to better understand the locations and history of glaciated landmasses. These studies are only two examples of the exciting research being done by these talented students.

The faculty and students of the SURE 2008 group again give their sincere thanks to Shell and Pat Jackson for supporting this exciting program. - John Macauley

ENDOWED CHAIR IN SUB-SURFACE EXTRACTION AND SEQUESTRATION SCIENCE, A JOINT CHAIR BETWEEN THE SCHOOL OF EARTH SCIENCES AND THE DEPARTMENT OF CHEMISTRY AT OSU

Ohio's Third Frontier Program has awarded OSU $2.5 million for an endowed Chair in subsurface extraction and sequestration science. With a primary home in the School of Earth Sciences and a dual-appointment in the Department of Chemistry, the person hired will hold the title of "Ohio Scholar". OSU will contribute matching funding for this position and it is anticipated that a second person in this important new area of geological research will be hired in the near future. The proposal that secured the position was part of an overall energy proposal by OSU's Institute for Energy and Environment and the IEE proposal also included positions in clean coal research at Ohio University in Athens. It is anticipated that through our Subsurface Extraction and Sequestration Scholar position at OSU, we will develop a strong partnership with OU to help the state develop a leadership role in clean energy and position SES as a leader in this new field of research and education.

The scholar will interface with other programs and researchers in Ohio to develop advanced approaches for in-situ extraction and geochemical processes for geologic sequestration of CO2 in the subsurface or carbonation of CO2. Collaborating programs at OSU include BPRC, carbon capture researchers in the Department of Microbiology and Chemical Engineering, and the university sponsored Carbon Water and Climate Initiative (CWC). The scholar will also interface with the Voinovich Center at OU, the Ohio Coal Development Authority, and Ohio's energy and power industry.

In order to attract the best possible candidate to the School, SES sponsored, with financial support from Battelle and AEP, a workshop on March 9-10, 2009 entitled "Advancing the Science of Geologic Carbon Sequestration". The workshop brought the very best geologic carbon sequestration researchers in the country to OSU and SES to address a truly global problem with far-reaching basic science and technological impact (See report in this newsletter).

UTAH FIELD CAMP 2008

We were very pleased to have a class of 19 students this year, and we hope this increase in numbers will continue. The discovery and now production from the Covenant oil and gas field near Salina has led to a boom in drilling activities in the Sanpete Valley and one additional discovery has been made south of Mayfield. Local landowners see us in the distance in the field and are not sure whether we are the usual Ohio State field camp people or petroleum geologists and their agents doing a little scouting.

The instructors for the course were Lindsay Schoenbohm, Shelley Judge (Department alumna now at the College of Wooster) and

David Elliot. Judge and Elliot taught the introductory three weeks and Schoenbohm the second three weeks. Field exercises and excursions were essentially the same as in recent years, emphasizing the scale and three-dimensionality of geology. Perhaps the most significant change was modifying the field trip to the Salt Lake district in order to examine exposures of the Wasatch fault near Provo.

SIGMA GAMMA EPSILON

Sigma Gamma Epsilon, the National Honorary Society for the Earth Sciences, has returned to Ohio State. SGE is a Society dedicated to promoting the academic and professional advancement of high achieving students. OSU's chapter has been reactivated this fall under the leadership of Student President Justin VonBargen. This new addition to the School of Earth Sciences is made up of an elected student officer core and 23 current members who have been working all of fall quarter to get the organization off the ground. The official induction of new members took place on Friday, January 23 but even before then many projects were underway. Current activities include study tables to help tutor other Earth Sciences undergraduates, a monthly geology-themed movie night, and fundraisers to raise money for an OSU Geology Field Camp scholarship to be awarded in the spring. Through these activities and more that are still in planning stages, Sigma Gamma Epsilon hopes to help its members build connections with other students and faculty and promote academic and professional opportunities for these highly qualified students.

GEOCLUB'S WINTER WEEKEND

In early January 2009 the Geology Club braved the elements and set up camp for the weekend at Lake Hope State Park. The group of 25 rented three cabins for the winter wilderness experience in the snow and began the first evening with a warm out-door fire where everyone gathered in the freezing rain. The weather did not dampen their spirits and in the morning they hiked through the soggy, snowy trails to take in the winter scenery in the Hope Furnace area and observe sandstone structures, ice, and small karst features. Following the hike seven brave souls took a dip in Lake Hope. With a water temperature about 36°F there was not much stopping the Polar Bear Club swimmers! A secluded weekend in the woods was a perfect escape from campus for the Geology Club members in mid-winter. The event was also an opportunity for students new to the geology program to get to know the esteemed veteran students of SES. GeoClub is open to undergraduate and graduate students and is intended to provide educational, social and networking opportunities to help students pursue their career goals. The club's board consists of: President Dino Scott, Vice-President Rachael Gray, Treasurer Julie Ditkof, and Secretary Bill Magee. –Bill Magee

ADVANCING THE SCIENCE OF GEOLOGIC CARBON SEQUESTRATION

On March 9, 10, a cutting edge workshop on geological carbon sequestration was held at Ohio State.

The workshop brought together key researchers and stakeholders

from inside and outside the United States. School of Earth Sciences Professor Jeffrey Daniels, the conference organizer, set out to bring together the best and brightest working in the field together to exchange views and to develop new partnerships for

research within Ohio.
Alumni from the School of Earth Sciences figured prominently in the program. Dr. Neeraj Gupta from Battelle, described the multi-million dollar studies that Battelle has underway across the Midwest Regional Carbon Sequestration Partnership. Dr. Andrew Duguid from Schlumberger Carbon Services discussed advanced logging techniques applied to problems of carbon sequestration. Joel Sminchak from Battelle described work at a site in the Northern part of the Michigan Basin. During lunches at the Blackwell, participants heard two wonderful presentations from Dr. Klaus Lackner from Columbia University and Mark Shanahan, Executive Director of the Ohio Air Quality Development Authority and Energy Advisor to Governor Strickland.

This workshop was one of this year's important research highlights here at Ohio State. Funding for this workshop was kindly provided by American Electric Power (AEP), Battelle Energy Technology, and OSU's Institute for Energy and the Environment. SES and IEE, in partnership with Ohio University, co-hosted the workshop. More information and presentations can be found at www.earthsciences.osu.edu/carbseq.

ALUMNI NEWS

Joseph R.J. Studlick (MS '77) and co-editors Tor H. Nilsen, Roger D. Shew, and Gary S. Steffens of AAPG's Studies in Geology 56, Atlas of Deep-Water Outcrops, received the Robert H. Dott Sr. Memorial Award in 2008. The award honors the author/editor of the best special publication dealing with geology published by AAPG. The Atlas displays reservoir architectural data on deep-water deposits from 103 outcrops around the world that will inform conceptual models, detailed modeling, and exploration and development of deep-water reservoirs. http://www.aapg.org/explorer/2007/08aug/st56_outcrops.cfm

Michael S. Johnson (BS '47, MS '49), consultant, Denver, is the recipient of AAPG's Outstanding Explorer Award (2009) for his achievement in originating the concept that led to the Parshall Field discovery in North Dakota – and opening the current much publicized and highly successful Bakken Shale play. Award is presented to AAPG members in recognition of distinguished and outstanding achievement in exploration for petroleum or mineral resources, with an intended emphasis on recent discovery. (See below for Johnson's generous gift to support the AAPG Datapages.)

Richard B. Alley (BS '80, MS '83) was awarded the 2009 Tyler Prize for Environmental Achievement for improving our knowledge of global climate change and human impact on the environment. His research focus on the cryosphere has helped reveal how abrupt climate change can be (ice cores suggest the last ice age ended in about three years) and how ice sheets and sea level might change. His service on many review boards and advisory committees, his books and lectures, and his ability to explain science to the non-specialist have informed the scientific community, global and local policy leaders, educators, and the public. His book, The Two-Mile Time Machine: Ice Cores, Abrupt Climate Change, and Our Future (2000), is now available in Spanish and Japanese. Richard is an Evan Pugh Professor of Geosciences at Penn State.

COLIN BULL'S INNOCENTS IN THE DRY VALLEYS

In 1958-59, while a senior lecturer at Victoria University of Wellington, "Colin Bull… Dick Barwick, Barrie McKelvey, and Peter Webb, using food, equipment and transport that was mostly begged, borrowed or even salvaged from the Scott Base rubbish dump, carried out research for two months for under $1000." Later, at

OSU, Bull served as director of the Institute of Polar Studies, chair of Department of Geology, and Dean of the College of Mathematical and Physical Sciences. Since retiring, he co-edited a biography of Sir Charles Wright (for whom Colin named Wright Valley) and authored Innocents in the Arctic (University of Alaska Press, 2005). Bull Lake, two kilometres broad and fully ten centimetres deep in places, was named for him by his students when he became Dean. (modified from the cover, with permission; Victoria University Press, April 2009). www.victoria.ac.nz.vup

SUPPORTING SES AND OSU

Adding to the popular Digital Products Fund - University Subscription Program, AAPG member, Michael S. Johnson provided funding to support a subscription for his alma mater, The Ohio State University, in honor of his advisor, Dr. Ed Spieker. A Digital Products University Subscription provides students and faculty at the designated university access to the entire AAPG digital collection. The Foundation Digital Program University Subscription Program was initiated in early 2005 and has received funding for 50 designated universities. -- Pete MacKenzie

FACULTY SPOTLIGHT:
Professors Howat, Shum and Lower

Professor Ian M. Howat

Assistant Professor Ian M. Howat joined the SES faculty in January 2008. His research interests range from the dynamics of ice sheets to the climate sensitivity of snowpack, with the common thread of understanding the fundamental controls on Cryosphere response to climate change. This work is motivated by the potential for substantial, near-future changes in Polar and Alpine environments and their global impacts, especially rapid deglaciation and resulting sea level rise. His methodology incorporates all available means of observation, including remote sensing and fieldwork, for the purpose of constraining analytical and numerical models of physical processes.

The speed and extent of ongoing changes in the velocity and geometry of large outlet glaciers, especially those draining the Greenland Ice Sheet, have taken the scientific community by surprise, underscoring the need for an improved understanding of how climate change may impact glacier dynamics. This need is especially critical considering that Greenland's contribution to sea level rise may have doubled during the past few years, and this rate may increase to over many times what is predicted by current models for the coming century. Gaining an improved understanding of these changes will require a detailed observational framework upon which interpretations of physical processes can be built and modeled. Using a wide range of air and spaceborne remote sensing data, Dr. Howat is mapping ice velocity, surface elevation and front position changes around Greenland, Antarctica and Alaska. His goal is to maximize both the temporal and spatial resolution of these observations, so that processes can be observed at the scale of forcing and response. This approach enabled Dr. Howat and his coauthors to propose a mechanism of rapid outlet glacier collapse in Howat et al. (2005) that has become widely accepted and referenced in the glaciological community. His work has also revealed the high temporal variability of outlet glacier discharge. The implication of this variability is that ice sheets may lose mass in distinct, rapid pulses, rather than a steady trend, under climate warming. This result has far-reaching implications for coastal societies and policy makers because sea level may rise rapidly and unpredictably over short time periods.

Much of the large uncertainty in predictions of future glacier and ice sheet behavior stems from a poor understanding of the stress conditions at glacier beds. Dr. Howat's work in subglacial processes is aimed at improving quantitative constraints on the large-scale physical processes that control the basal motion of glaciers. For this, he uses geophysical inversion methods to infer changes in basal stress regime from observations of surface motion obtained from field measurements and by remote sensing. He assesses how the basal stress regime varies in response to changes in hydrological conditions, which provides information about the processes that control ice motion at the scales relevant to modeling ice flow.

Professor Howat received a B.A. Geology in 1999 from Hamilton College and his PhD. in Earth Science in 2006 from the University of California, Santa Cruz. Before coming to OSU, he completed postdoctoral studies at the University of Washington and the University of Colorado. He received Cryosphere Young Investigator Award in 2007 from American Geophysical Union and his work has been published in high-profile journals, such as Science and Geophysical Research Letters. Dr. Howat is a frequent interviewee for popular media, including National Public Radio and the New York Times and he has advised former Vice President Al Gore on Cryosphere-related science. More information can be found at www.bprc.osu.edu/~ihowat.

Professor C.K. Shum

Dr. C.K. Shum, Professor of Geodetic Science in the School of Earth Sciences, is a Distinguished University Scholar. As a geodesist he uses geodetic measurement to research interdisciplinary topics in the Earth sciences including climate change and sea level rise. He participated in preparation of the 2007 IPCC Fourth Assessment Report (Working Group I, Physical Basis) as a lead author on the chapter involving sea level rise assessment. (Later, the IPCC organization and Al Gore, Jr were awarded the 2007 Nobel Peace prize.)

What is Geodesy?

The scientific discipline of Geodesy has evolved from the science of determining the shape and size of the Earth using measurements of distance, time and gravity, to the contemporary science of determination and interpretation of changes in the Earth's shape and size. Geodesy is one of the oldest sciences, with a history of more than two thousand years. Geodesists exploit and are constantly innovatively applying new technologies to acquire fundamental measurements such as time, positioning and realization of reference frames, gravity, tides, topography, bathymetry, Earth

orientation, and ocean vector winds. Modern space and airborne geodetic sensors and techniques of this discipline include GPS or GNSS, altimetry, Lidar, multi-spectral radiometry, synthetic aperture radar (SAR) interferometry, gravity gradiometry and gravimetry. Using geodetic measurements and computations, geodetic scientists are seeking to understand changes in sea level, ice sheets, sea ice, glaciers, and climate; solid Earth deformation, earthquake mechanisms, glacial isostatic rebound, ocean circulation, tidal dissipation, space weather, geomagnetism, meteorology, atmosphere, and hydrology – all topics of interest to other Earth scientists.

The Geodetic Science Graduate Program at The Ohio State University is world renowned and has a long heritage. Developed partly within the Department of Geology in the 1950s, the Program became a department at OSU in the early 1960s. Professor Shum is in the Division of Geodesy and Geospatial Science in SES. His current research interests include satellite geodesy, sea level and geodynamics. He and others in Mendenhall Laboratory collaborate on a variety of Earth System Science projects. C. K. holds a PhD degree in Aerospace Engineering from the University of Texas at Austin (1982). For more information on his research, grants and papers, see his web site on the SES site. http://www.earthsciences.osu.edu/geodetic_sciences.php

Professor Steven K. Lower

At first glance, Professor Lower doesn't look like a professor at all. He is more likely to be mistaken for an undergraduate because he is so young. Or, at least he looks very young. He would only smile and shake his head when asked about his age.

Regardless of his age, Professor Lower's accomplishments are comparable to those who have been in this profession for a long time. He was hired as an Assistant Professor straight out of graduate school in 2001. He earned his first grant, a $350,000 award from the National Science Foundation (NSF), six months later. Shortly thereafter, grants number two, three, and four came from the NSF, the Department of Energy, and the American Chemical Society's Petroleum Research Fund. At the present time, Dr. Lower is the sole-PI on three different grants – two from the NSF and one from the National Institutes of Health (NIH). One of the grants, called the CAREER award, is the "the National Science Foundation's most prestigious award" for junior faculty. All told, Professor Lower has

received over $2.3 million dollars as a sole-PI or lead-PI.

What does Professor Lower do with his research money? His interests span a wide range of disciplines including biochemistry, geochemistry, microbiology, mineralogy, molecular biology, and medicine. The common thread in Professor Lower's research seems to be size, or perhaps better stated, the lack thereof. You see, Dr. Lower studies processes that occur at the nano to molecular scale. This includes: electron transfer mechanisms involving cytochromes and metal oxide minerals; bacteria biofilms on implanted medical devices like heart valves; protein templates that direct biomineralizaiton reactions; molecular dynamic simulations of peptide-mineral bonds; and the molecular pathology of mesothelioma caused by asbestos fibers.

Professor Lower's research has been published in leading scientific periodicals such as Science, Nature, Journal of Bacteriology, Langmuir, Applied and Environmental Microbiology, Environmental Science & Technology, Geomicrobiology Journal, EOS, American Mineralogist, and Geochimica et Cosmochimica Acta. Dr. Lower has also given invited lectures at the annual meetings of the American Chemical Society, the American Society for Microbiology, the American Geophysical Union, and a Gordon Research Conference.

Lower earned his Ph.D. from Virginia Tech in 2001. He was then hired as a Professor by the University of Maryland, where he spent two years. Dr. Lower came to Ohio State University in 2003. He was promoted to Associate Professor with tenure last year. He currently holds faculty positions in both the School of Earth Sciences and the School of Environment and Natural Resources. Dr. Lower's research group currently includes one post-doc, three graduate students, and one undergraduate. Professor Lower teaches large undergraduate classes (e.g. ES100 Planet Earth) and small graduate courses related to his areas of expertise.

Incidentally, Professor Lower has an identical twin brother, Brian, who is a biochemist. Brian recently began a new job as a tenure-track Assistant Professor right here at Ohio State University. We now have two Professor Lower's in Columbus. Name tags may be in order.

For more on his research and his research group, see Steven's SES Web page. A recent article about Professor Lower is in onCampus, the OSU Faculty Staff Newspaper. http://www.oncampus.osu.edu/article.php?id=2597

NECROLOGY

FACULTY

Charles H. Summerson, age 93, died April 28, 2008. A major contributor to the science of geology as a researcher and educator for over 35 years, Charles began his career with undergraduate and graduate degrees at the University of Illinois (PhD,1942). During WWII, Charles and his late wife Harriet (Rockwell) lived in the Sangre de Cristo Mountains of New Mexico where he explored for strategic minerals for the U.S.G.S. and war effort. In 1947, he joined the Department of Geology at OSU. With Richard Goldthwait he wrote the prospectus for the OSU Institute of Polar Studies (now Byrd Polar Research Center). In recognition of his work in Antarctica, he received a commendation from the U.S. Congress and Mt. Summerson was named after him. Charles first retired in 1982 after a long and distinguished career and later was responsible for leading the renovation of Orton Hall and Mendenhall Laboratory. A memorial celebration organized by his children and their spouses (Hal, Jane and Mike, Phil and Kelly), was held on Sunday, September 14, 2008 in the Summerson Auditorium (Room 100) Mendenhall Laboratory. Many friends and colleagues from geology and other disciplines on campus continued to share memories at the reception that followed in the Faculty Club Grand Lounge.

Sidney E. White, age 92, died September 6, 2008, in Columbus, OH. He was awarded an undergraduate degree from Tufts University (BS 1939) and an MS from Harvard (1942) before entering the U.S. Navy where he served as a Photographic Intelligence Officer on numerous aircraft carriers in the Pacific during WWII. After graduating from Syracuse University (PhD, 1951), Sid joined the faculty at OSU where he taught geology for 34 years. Known and long remembered for his teaching, he received the Distinguish Teaching Award from OSU in 1966 and while a Visiting Professor at the University of Colorado in Boulder received a similar award. Professor White truly loved the mountains, his primary laboratory, and spent parts of most summers in the field. He was a member of both the Institute of Arctic and Alpine Research at UC and the Institute of Polar Studies at OSU. He held several offices in the Geomorphology Division of GSA and was a co-founder and officer of the Eastern Section, Association of GeologyTeachers in 1950 (later part of the NAGT). In addition to his research papers, reviews, contributions to USGS publications, and his editorial roles he contributed to The McGraw-Hill Encyclopedia of Science and Technology and was a consultant on pre-college textbooks. He continued to contribute to educational and scientific publications many years after retirement. He is survived by his loving wife, Patricia of 62 years; daughter, Mary Lindsay (Timothy Jackson) White; grandsons, Jeffrey R. and Matthew A. Jackson.

ALUMNI

Ralph D. Arthur, age 82, died June 19, 2007, in Worthington, OH. Retired from the Engineering Department of North American Rockwell, he was also a real estate broker with Ohio State Company Realtors. A U.S. Navy Veteran of WWII, he graduated in geology from OSU (BS, 1952). He held memberships in the OSU Alumni Club and the Navy League.

Richard B. Bonnett, 69, of Proctorville, Ohio, died July 14, 2008. Richard Bonnett (PhD, 1970) was a professor of geology at Marshall University from 1968 to 2002 and chair from 1977 to 1992. His research focused on Pleistocene drainage changes and deposits along the ancient Teays and Ohio River Valleys. As a private consultant, he served as a subject matter expert on many occasions. He was an active supporter of academics and athletics of the Fairland School Local District, and served as a member of the board of education.

William J. "Bill" Buschman Jr., age 89, died April 6, 2009 in Upper Arlington, OH. He graduated with a BS in geology from OSU in 1948 and retired in 1984 as a geologist with the Ohio Geological Survey. Bill served as head of the subsurface Geology Section for several years before taking charge of Survey fiscal and purchasing matters and a variety of administrative duties. He spent 16 years as a petroleum geologist in Venezuela and Columbia before joining the survey in 1965. He was a member of OSU's President's Club and Buckeye Club. Bill and his late wife, Gwendolyn were benefactors for the renovation of the Trainer's Room at the refurbished Woody Hayes Facility and supported scholarships for the OSU Cheerleaders and Baseball team.

John F. Lindsay age 67 died June 20, 2008. After receiving two degrees in Geology at University of New England, Australia, John continued his graduate education in Geology at OSU (PhD, 1968). In 1969 he became postdoctoral associate with the NASA Manned Spacecraft Centre in Houston, Texas, and later staff scientist with the Lunar Science Institute. There he provided scientific training for Apollo astronauts and studied the lunar samples as

they were returned to Earth. In 1972 he led a mission to study Antarctic landforms as part of the initial preparation for the future Viking Mars landings. During his career he also held positions with Exxon Production Research Company, the Bureau of Mineral Resources (now Geoscience Australia), and most recently the Lunar and Planetary Institute in Houston where he contributed to research on NASA's manned Mars expeditions and a return to the moon. He led many field trips throughout central Australia and published many papers. He held an adjunct professor position (Earth Sciences) at Oxford University; the Lunar and Planetary Institute accorded him the great honor of a memorial service.

John B. McKeon age 61, of South Bristol, Maine, died December 19, 2008. He graduated from Johns Hopkins, University of Maine and The Ohio State University (PhD, 1975). He began a professional career at Bendix Aerospace Systems in Ann Arbor, Mich., before accepting a position at the Environmental Research Institute of Michigan. He then worked as a remote sensing geoscientist for Gulf Oil in Pittsburgh before joining The Atlantic Richfield Co. in Plano, Texas for 21 years. John pioneered the use of computer satellite technology at Spot Image Corp. and Earth Resource Mapping and broadened the scope of his efforts as Alto Research Technology's marketing director. As a member of the South Bristol Comprehensive Planning Committee, he designed detailed maps for the town's upcoming comprehensive plan report and also left a remarkable legacy with his published "Small Craft Explorers' Map and Guide to the Damariscotta River Estuary."

David E. Rieske, 51, of Piketon, OH, died March 10, 2009. David was a geologist for CDM Corporation. In 1990 he received a MS degree in Geology from The Ohio State University.

Russell B. Stein, 73 of Powell, OH, died Sunday, April 27, 2008. He received a BS in Geology in 1956 from The Ohio State University. He was a geologist with the Ohio Department of Natural Resources, retiring from the Ohio Environmental Protection Agency in 1992. He loved the Buckeyes.

Arthur R. Weinle age 61 of Grosse Pointe, Michigan died August 3, 2008. He was a graduate of The Ohio State University, earning his undergraduate degree in 1968 and his master's degree in 1973. He retired from Grosse Pointe North High School after 31 years of teaching earth science and geology. Most recently he was an adjunct teacher at both Macomb Community College and Wayne State University. For many years, he devoted himself to the successful operation of the Michigan Earth Science Teachers Association and held various positions on its board. He also was an active member of the Michigan Mineralogical Society and was involved with its annually- sponsored Detroit Gem and Mineral Show. Mr. Weinle had a passion for teaching and was an enthusiastic supporter of his alma mater, OSU.

Howard "Whitey" D. Zeller, age 86, died on April 14, 2009. He served in the Navy in WWII in the Pacific arena, including the Battle of Iwo Jima; he retired military service as a Lieutenant JG. In 1945, Howard was assigned to the USS LSM 144 as the Commanding Officer to take the ship from Guam to the states for decommissioning. At 21 years of age, Howard ensured that his vessel made the long journey safely across the Pacific, through the Panama Canal transit, and to Norfolk, VA. Howard received his BS and MS in 1949 in Geology from The Ohio State University, and was employed for 35 years by the U.S. Geological Survey. During his USGS tenure, he discovered two new uranium minerals: Zellerite; and Metazellerite.

Captain Robert Alexander, MS, 1955, 3/10/2009;

Doris R. Brosnan, BA, 1937, 9/12/2008;

William C. Butterman, BS 1958; MS, 1961;PhD, 1965, 1/3/2009;

Meechai Chaisrakeo, MS, 1960, 1/1/2008

Robert Edward Furry, MS, 1965 5/30/2007

Phyllis Weidman Glasgow, BS, 1936, 7/28/2008

George F. Linn Jr., BS, 1958 7/13/2008

Mark Macomber, MS, 1958; PhD 1966 3/16/2008

William Riley Jr., BS, 1952 4/22/2008

David Scott, MS, 1954 4/28/2008

Pauline Smyth, MA, 1951 4/27/2008

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MORE SES NEWS ONLINE, SPRING 2009

The passing of two retired faculty members, Drs. Summerson and White, and 20 alumni is noted in a two-page section of this newsletter that is only available online. Please check the SES website, http://www.geology.ohio-state.edu/ , for the alumni link to the newsletter for Spring 2009 and other information about the Geosciences at OSU. We extend our condolences to the families and friends of those who are no longer with us as we recall many exciting days together in the field in our search for geologic resources and for understanding of the Earth system.

In this newsletter learn about the successes of students, faculty, and our alumni; new research initiatives and an endowed chair at SES; the Director's Update with new opportunities for our growing number of talented undergraduates and our increased interaction with former students; Alumni Society President Pete MacKenzie's vision for the Society; and activities of your fellow alumni. The Faculty Spotlight is on Drs. Howat, Lower, and Shum. We thank you for your support of Earth Sciences at OSU, including our field programs, and for your willingness to help our undergraduates and recent graduates in their search for their first fulltime or intern position in the Earth Sciences. Some of these students might be working with you this summer as interns or fulltime employees.

It is always rewarding to see former students and colleagues at the professional society meetings. We thank those who attended the alumni events at the recent AAPG meetings in Denver and we look forward to seeing you and others in technical sessions and the exhibit hall at the 2009 GSA meetings in Portland, OR. The alumni receptions at GSA are on Monday, October 19th. Check the SES website for updates regarding this meeting and other activities. - *Garry McKenzie*

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