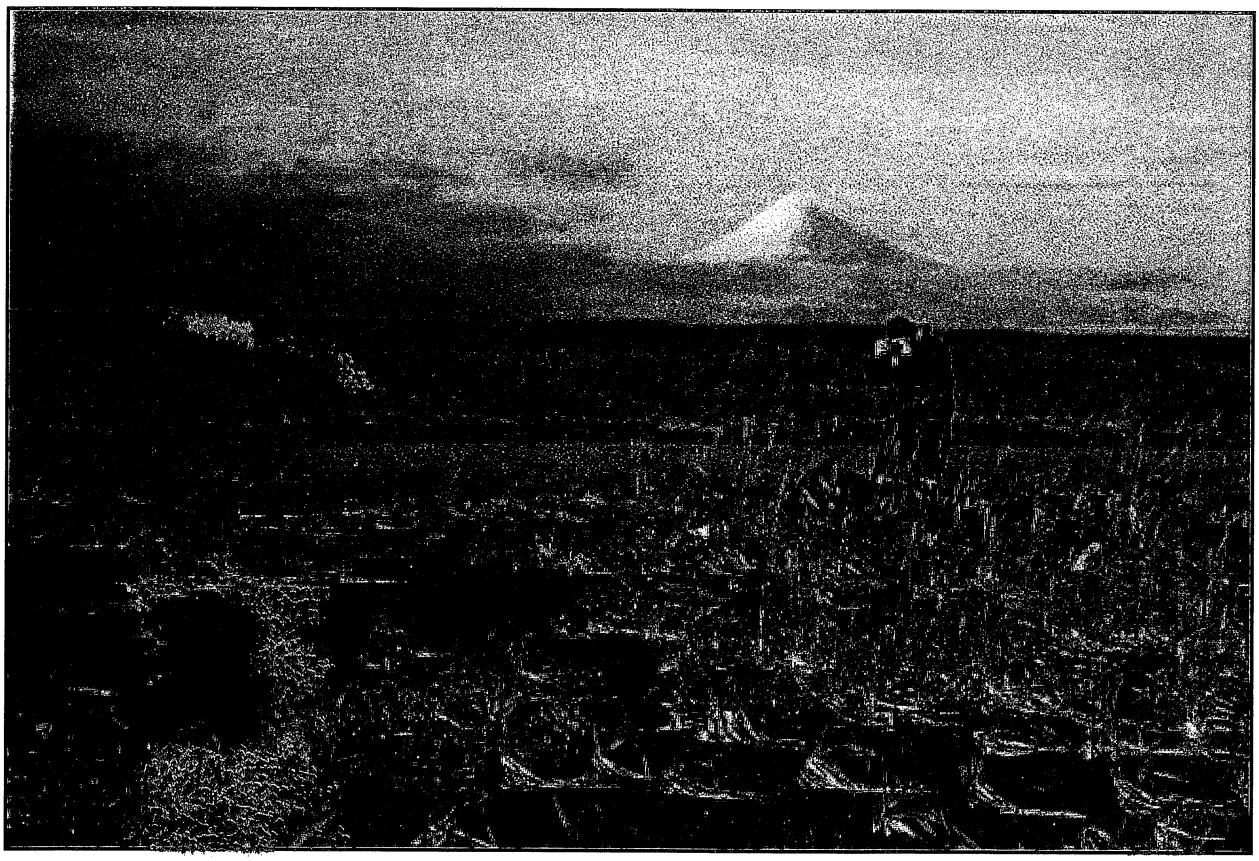
Alumni Newsletter
1999-2000

University of Pittsburgh
Geology and Planetary Science



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Thanks to Todd Bowers, Dolly Chavez, Mark Collins and Candy Weller for their help in putting this newsletter together.

On the cover:

Michael Ramsey, Shishaldin Volcano, Unimak Island, AK, 1999, photo by Rick Wessels. The photo was taken in August 1999 while Ramsey and Wessels were looking at the eruption products following the March 1999 eruption. Unimak is the easternmost island in the Aleutian chain and contains 3 historically active volcanoes.

Table of Contents

THOMAS H. ANDERSON
YEAR13

"You can't trust anybody over thirty." This statement has special meaning for me. Today Sara Lee, who happens to be the oldest Anderson kid, turns thirty. Cogitating upon this turn of events has led to the following conclusion: If one may not trust anybody over thirty then someone over fifty five who has been chair for thirteen years is well beyond suspect!! This conclusion strongly supports the decision, which I reported last year, to relinquish the reins of power along with my favorite quirt to Harold "Bud" Rollins. I hope that my tenure as chairman has resulted in constructive, positive progress for the Department. Bud is an excellent choice who will bring a kinder, gentler approach to the job (Did I stay too long?).

"Change" describes G&PS as we enter the new millennium! New people, new programs, and shifting research foci compose some of the changes that distinguish this year. A big change having to do with people is that Professors Lidiak and Bikerman, each of whom has served the Department for more than 30 years, have retired. They were honored during a two day symposium entitled "Energy and Environment; Challenges of the 21st Century". During the Symposium graduates and friends of the Department offered an array of informative presentations that stimulated our thinking as we embark upon the new millennium (More information about the Symposium may be found within the Newsletter). Their retirements, coupled with that of Bill Cassidy and the growth of the Environmental Studies Program have left wide gaps in teaching and research programs not to mention advising, mentoring, coordination of internships, undergraduate research and curricular modifications related to the development of Environmental Studies. The ES program has attracted almost 100 new students. The interdisciplinary nature of the program requires that courses offered in many units (arts and sciences, health, law, business, engineering) that contribute to the curriculum be monitored so that changes. Principally Bud Rollins and Jack Donahue provided support for this array of activities. However as the Es program grew, the student and program needs outstripped their capacity to meet the demand, especially in view of Bud's new responsibilities as chair. The Heinz Foundation endowment saved the day because it enabled G&PS to recruit Mark Collins as program coordinator. Mark, hit the ground running (he claims that he had no choice) and has not only aggressively addressed the program and student needs but also teaches scientific communications, a course recommended by the ES advisory board.

Mike Ramsey, who joins the department this summer, bolsters the planetary group. He applies remote sensing to many aspects of planetary evolution; from volcanism to climate, as well as in considering the changes (*e.g.* sediment migration, desertification, and effects of fires), resulting from both natural processes and human activities. His expertise provides strong interdisciplinary linkages among remote sensing, environments of Earth and other planets and the program in geographic information systems.

During long and productive careers, Ed Lidiak and Mike Bikerman were mainstays in graduate and undergraduate programs. Every G&PS graduate since the middle sixties has taken at least one class and commonly more than one from each of these professors. They

introduced students to geosciences by means of basic 80 and 800 level courses. They taught fundamentals of physical and historical geology and igneous and metamorphic petrology to hundreds of geology majors and they provided tools to graduate students especially those studying geochemistry and petrology of crystalline rocks. Needless to say we viewed their absence with trepidation. Fortunate for us, we have attracted Charlie Jones, an outstanding teacher, who is a skilled geochemist, to help shoulder the heavy burdens laid down by Ed and Mike. Charlie (besides being a Rhodes scholar) is an inspiring and caring teacher who evinces high praise from students whom he has taught. I am confident that he will continue the tradition of "kid glove care " fostered by Bud and Jack during many years of advising undergrad majors.

The challenge of providing more clean water, as population grows coupled with the need to expand training for students in water-related topics has stimulated a shift in educational and research focus within G&PS. Chen Zhu, an expert in water chemistry and groundwater modeling, will provide expanded and enhanced educational and research opportunities for our students. Chen has impressive interdisciplinary strengths that enable him to address problems requiring quantitative modeling of groundwater, hydrothermal and other geochemical systems (*e.g.* metal contaminants) as well as groundwater bacteria in aquifers. This versatility links his strengths to other areas such as tectonics, petrology and paleontology in which potential applications abound.

An internal bi-annual review of G&PS was conducted on November 23, 1999. Data provided by the Office of the Dean of FAS combined with that from G&PS revealed that during the last decade significant progress has been made in many areas. Productivity as indicated by the number of undergraduate student credit hours and G&PS majors is near or at all-time highs. Total enrollments are the highest in departmental history; empty seats are at the low. Externally funded research continues to expand. By the end of summer, 2000, the number of graduate student researchers and the percentage of funded faculty (70%) will be at the highest levels in more than a decade.

This is the second year of the effort to meet the challenge generously offered by Mrs. Margaret Flint to expand the Field Geology Fund in honor of her husband, Norman. This ambitious effort to increase the number of fellowships that support field training of undergraduate students who major in G&PS has been highly successful.

I believe that these results presage a bright future for the G&PS. Thanks to each of you who have helped during the past thirteen years, which have been challenging and stimulating.

Cheers and good luck to all.

Tom Anderson

THOMAS H. ANDERSON

Hmmm-----As is said, "this is the end of the line; "that's all she wrote", etc. etc. Well, not really, although after a stint of 13 years chairing around, the change in my personal status is most welcome. I must say that the experience has been stimulating. The good things happened in large part because my colleagues are rational, hardworking, tolerant souls who responded gently to my unnumbered goof-ups. I am very, very appreciative of the restraint that they maintained as we plunged along in our little ship buffeted by strong winds and waves. (There is a much, much more colorful way to express this feeling that would be characteristic of me, but rare good taste prevails.) At this juncture, we are hopefully on the other side and breaks in the clouds appear. Off I go for a sabbatical committed to reconstituting myself. I am so excited that I am condensing my report of activities which departs little from past years (see activities list below) in order to emphasize the next year's schedule, devoted to manuscript preparation and proposal writing.

Research Component
Meetings, Conferences and Field Expeditions

- Penrose Research Conference – Geological Society of America Penrose Conference (by invitation) – Terrane accretion along the western Cordilleran margin: Constraints on timing and displacement; Winthrop, Washington, 6/21-27/99.
- Continuing Education – Three-Dimensional seismic interpretation (short course) - Geological Society of America Annual Meeting, Denver, Colorado, 10/23-24/99.
- Meeting – Geological Society of America – National Meeting, Denver, Colorado, co-author 2 papers, 10/25-28/99.
- Meeting – 2000 American Geological Institute Geoscience Associates Conference – Contributions of Geoscience to Society (included many Department Chairs, representatives of State, Federal and other Geoscience Organizations as well as Private Industry), Reston, Virginia, 10/30-31,11-1/99.
- Meeting – Nye County – USGS Geophysics/Structural workshop Yucca Mountain study group, Pahrump, Nevada, 02/03/00
- Field Trip – Nye County, Nevada, 02/04-06/00, visit to key structural localities, preliminary to tectonic synthesis and Sharon Lauffer thesis work.
- Meeting – Cuarta reunion sobre la geologia del noroeste de Mexico y areas adyacentes (Fourth meeting on the geology of northwestern Mexico and adjacent areas), co-author 3 papers, Hermosillo, Sonora, Mexico, 03/06-08/00.
- Symposium Chair – Estratigrafia, paleogeografia y tectonica de la margen sudoccidental del craton de Norteamerica (Stratigraphy, paleogeography and tectonics of the southwestern margin of the Northamerican craton), Cuarta reunion sobre la geologia del noroeste de Mexico y areas adyacentes (Fourth meeting on the geology of northwestern Mexico and adjacent areas), Hermosillo, Sonora, Mexico, 03/06-08/00.
- Field Visit -- Santa Margarita Region, Sonora, Mexico, 03/09-11/00; participation as PhD Committee member for Jose Luis Rodriguez–C., (PhD candidate UNAM (Nacional University of Mexico)) during visit to dissertation area.
- Field Research – Southern Huachuca Mountains, Arizona and adjacent border region Sonora, Mexico, 03/12-18/00, Co-operative project with J. and M.B. McKee (University of Wisconsin, Oshkosh) on transtensional structures within the Sawmill Canyon Corridor.
- Field Trip – A transect of the Southern Canadian Cordillera from Calgary to Vancouver, Annual Meeting of the Cordilleran Section of the Geological Society of America, 04/24-26/00.
- Meeting -- Geological Society of America – Cordilleran Section, Vancouver, British Columbia; co-author 1 paper, 04/27-29/00.

- Research Visit – University of Wyoming, 05/01-03/00.

- Meeting - Dr. Abdel Aty B. Salman, Chairman, Nuclear Materials Authority (NMA), E. Lidiak and T. Anderson, Development of a co-operative research agreement, 05/08/00.

- Field Meeting – Appalachian structure and tectonics group - Newark Basin structures, Milford – Flemington, New Jersey, 5/22-23/00.

- Fieldwork – South Mountain, Pennsylvania, Mylonitic rocks along the east flank of the Blue Ridge Anticlinorium, 05/22/00, co-operative research with Patti Campbell (Slippery Rock Univ.).

- Meeting -- Los Angeles City Council, Los Angeles, California, 05/31/00, participant on behalf of Exploration Technologies Inc., Houston, Texas commenting on the role of faulting pertaining to "Subsurface geochemical assessment of methane gas occurrences – Playa Vista Development First Phase Project, Los Angeles, California."

- Field Visit – Adirondack Mountains, New York, 06/12-16/00, visit to the field area of J. Kradyna, (PhD candidate whom I advise) with R. Fakinduny, Chief of New York State Geological Survey, supported in part by United States Geological Survey

Invited Presentations

- University of Wyoming – New Evidence of Structures and the Extent of the Mojave – Sonora Megashear, 05/01/00

I know, I know, I thought about the Alpine Fault in New Zealand, too. But for some reason (heredity? stupidity? naiveté?) I think that I really want to write about the things that I have thought about at 4:00 a.m. upon waking up with eyes glazed by lack of sleep and administrative hate. So take a peek at what's below and you will find that which floats TA's boat. There is much grist here for those who may note that poor TA's eyes are a heck of a lot bigger than his stomach! However I will give it a shot.

Research

Field and Laboratory Work and Associated Writing Activities

- Ductile deformation along the Mojave-Sonora megashear, a Late Jurassic transform – co-operative research with Dr. P. Campbell, former PhD student.

  Campbell, Patricia A. and ***Anderson****, Thomas H., in review, Structure and kinematics along a Jurassic plate boundary transform, The Mojave-Sonora Megashear, northwestern Sonora, Mexico: (submitted to Geology and rejected with the recommendation that the paper be expanded to include supporting data). We will complete the revision this summer.*

- Cretaceous deformation in northwestern Mexico - Evolution of the Sawmill Canyon corridor, northern Sonora, Mexico – This co-operative research with James McKee, University of Wisconsin, Oshkosh and Mary Beth McKee, G&PS PhD stemmed from Mary Beth's dissertation work and was initially funded by National Science Foundation. Fieldwork was completed this winter and manuscript is in preparation.

Thomas H. Anderson
Research: Field and Laboratory Work and Associated Writing Activities (continued)

- Determination of slip along the Mojave-Sonora megashear between Nevada, U.S. and Sonora, Mexico – co-operative research with John Marzolf, Southern Illinois University

  *Marzolf, John, and **Anderson**, Thomas H., in review, Mesozoic stratigraphic constraints of displacement of the Caborca Terrane: (submitted to Geology, reviewed, currently in revision, should be re-submitted this summer.)*

  *Marzolf, John E. and **Anderson**, Thomas H., 2000, Facies distribution, hiatal geometry, and cross-cutting relations of Lower Mesozoic tectonosequence boundaries: Constraints on Jurassic displacements of the Caborca terrane [abs.], in Calmus, Thierry and Perez-Segura, Efren, eds., Libro de resumenes, Cuarta reunion sobre la geologia del noroeste de Mexico y areas adyacentes, Publicaciones Ocasionales no. 2, Estacion regional del noroeste, Instituto de Geologia, Universidad Nacional Autonoma de Mexico, p. 60.*

  *Marzolf, John E. and **Anderson**, Thomas H., 2000, Cross-cutting relations of Lower Mesozoic tectonostratigraphic boundaries: constraints on Jurassic displacement of the pericratonic Caborca terrane [abs.]: Abstracts with Programs The Geological Society of America, v. 32, no.6, p. A-28.*
- Releasing bends among faults of the Mojave-Sonora system, northern Mexico and southwestern U.S.A. – co-operative research with Jon Nourse, California State Polytechnic University, Pomona

  ***Anderson**, Thomas H. and Nourse, Jon, in preparation, Releasing bends of the Late Jurassic Mojave-Sonora fault system - Principal structures within the southwestern borderland of North America: (submitted to Geology, reviewed with the recommendation that the manuscript be expanded).*
- Ductile and brittle deformation at the western margin of the Blue Ridge: A history of deformation during Appalachian orogeny (with Mark Evans)
- History of Cretaceous sedimentation and deformation across the Cananea high – co-operative research with Jose Luis Rodriguez – former MS student at Pittsburgh, now a senior geologist with the Institute of Geology of Mexico and currently enrolled in the PhD program at the national university (U.N.A.M.) Mexico City. This work is supported by a grant from CONACYT, the national research council of Mexico, which defrays field expenses for me. Fieldwork is in progress.
- Laramide inversion of Jurassic basins, southwestern North America – co-operative research with James Hardy, PhD, a geologist with Applied Geological Studies, Inc., Englewood, Colorado. Paper is in development.
- Early Miocene reconstruction of southwestern U.S.A. and northwestern Mexico – dissertation research of John Dembosky. Supported by Provost Research Grant. Anticipated completion, Fall, 2000.

  *Dembosky, John A., Jr., and **Anderson**, Thomas H., Stahl, Erin R., and Nourse, Jonathan A., 1999, Field constraints of the trace of the Mojave-Sonora Megashear in southwestern Arizona [abs.]: Abstracts with Programs The Geological Society of America, v. 31, no.7, p. A-115.*
- Mantle exposure, southwestern Puerto Rico – a record of the formation of the Caribbean plate? – co-operative research with Ed Lidiak (G&PS) and Wayne Jolly (Brock University).

  *Lidiak, Edward G., **Anderson**, Thomas H., and Jolly, Wayne T., 2000. Tectonostratigraphic evolution of southwestern Puerto Rico [abs.]: accepted for the 31st International Geological Congress, Rio de Janeiro, Brazil.*
- Melange in northern Mexico – co-operative research with James McKee and Norris Jones, University of Wisconsin, Oshkosh. Fieldwork is completed, a manuscript has been prepared and is being revised.
- Imbrication of the northern Blue Ridge, Pennsylvania – Co-operative research with Patti Campbell (Slippery Rock University). Field work in progress, supported by the Pennsylvania Department of Environmental Resources.

- Reconnaissance U/Pb geochronolgy of the Caborca terrane, Sonora, Mexico.
- The Jurassic volcanic arc in Sonora, Mexico.
- Strain path of The Aibo granite: A record of Mesozoic tectonism in westernmost North America.
- Extension in western North America: The tracks of transform plate boundaries.

As in past years, research and graduate advising complement teaching activities. In the Fall, I taught structure and the basic geology labs for all majors. In the Spring, labs in co-operation with Ed Lidiak.

Full-time grad students, John Dembosky and Sharon Lauffer are very able and are doing their best to help me into the 21st century! John is working of tectonic reconstructions of crust in the region of the border between Sonora, Mexico and California. Sharon is trying to unravel the tectonic history of the region surrounding Yucca Mountain, Nevada. Each is determined to finish in the upcoming months. Jim Kradyna and Jeff Orient continue with part-time dissertation work in the Adirondack Mountains of New York and the Newark Basin of Pennsylvania.

Garrett is continuing toward his PhD in genetics at Cornell. Sara Lee, who has moved to Columbus, Ohio has changed course and is prepping to apply to veterinarian school at Ohio State. Concurrently, she works almost full time at a vet clinic. Tanna is three books ahead for her reading group! I am off to the library.

Cheers!

MICHAEL BIKERMAN

This was my last year of active service on the Pitt faculty, and as of 1 May 2000 I became emeritus. There was a very good symposium put on by the department on 7 & 8 April 2000 to honor Prof. Ed Lidiak and myself on our retirements. Amongst the distinguished group of speakers were former graduate and/or undergraduate students in this department. It was good to see how well some of our many students had done since their days of sweating our classes! The symposium was enhanced by the elegant surroundings of the Twentieth Century Club for the lectures and banquet, and the equally nice facilities of the University Club for lunch.

An additional, and quite unexpected, honor came from the Pittsburgh Geological Society that presented me with the eighth Walt Skinner award. This award is named after a late Professor of Geology and Physics at Duquesne University who was a past president and a long time counselor to the Society. It is given occasionally for service to the Society and the geologic community and was started 13 years ago.

The last year of teaching was usually busy. In the Fall term I taught Geology 0040, Physical Geology, and Geology 1500, Chemistry of the Earth and its Environment. The latter class had 38 students in a writing [W] course so there was a lot of reading and rereading of papers as well as judging short oral presentations. Spring term had me teaching Physical Geology again along with Geology 0800 and half of Geology 0060, Historical Geology, shared with Prof. Rollins. The last two West Virginia field trips for Physical Geology went well, and our old friends at Thompson's Motel said they would miss our semi annual visits. My graduate advising role continued throughout the year.

On the research front undergraduate student John Boulanger and I presented a poster on the cryptomelane dating study the Pennsylvania Academy of Sciences in Reading in April. Earlier in March, I gave a paper on the most recent work on dating the Masontown Dike to the Northeastern Section meeting of the Geological Society of America meeting at New Brunswick, NJ. My conclusion that perhaps we were seeing two separate events in the dike was controversial, and I hope will generate more study.

Michael Bikerman continued

Lastly, my wife, Viola and I look forward to our Semester at Sea voyage around the world this Fall Term. The Academic Dean job has been interesting, and in late December when we are home in Pittsburgh the success in my first real academic administrative job will be known. Now I am looking forward to meeting my faculty in Vancouver on September 9th, and putting faces with the names. Not seeing our older children and three grandchildren for 100 days will be sad, but our youngest, Tania, will be on board as the computer specialist.

Best wishes to all, and I hope we will have a chance to talk in the future.

Articles:

Bikerman, M., and Boulanger, J., 2000, Two-step heating K-Ar dating of Pennsylvania mangandese Ore (Cryptomelane) deposits: Journal of the Pennsylvania Academy of Science, v. 73, p. 148.

Abstracts:

Bikerman, M., and Phillips, D., 2000, $^{40}Ar/^{39}Ar$ Dating of Masontown, Pennsylvania Kimberlite and comparison to K-Ar, Rb-Sr & Sm-Nd results: Geological Society of America Abstracts with Programs, v. 32, no. 1, p. A6.

ROSEMARY C. CAPO

My students and I are completing a three year NSF-supported project that uses a combination of field, mass balance and isotope tracer studies to model the effects of climate change on terrestrial weathering and soil formation. Over the last two years, Prof. Brian Stewart and I have taken graduate students (Sherry Stafford, Victoria Pretti, Joey Minervini) and undergraduates (Jenny Lee and John Boulanger) out to learn about Quaternary desert geomorphology at the Desert Soil-Geomorphology Project near Las Cruces, New Mexico. Jenny and John's research projects were supported by Brackenridge Summer Scholarships through the Honors College. Jenny is heading out this fall to start PhD work at UC Santa Barbara; we'll miss her, but John and undergrad Erin Minster continue to help our ace technician Brian Games keep our labs running smoothly. Research with former PhD student Chuck Whipkey on carbonate mineral formation on the Kohala Peninsula, Hawaii, resulted in two journal articles published this year, with another submitted. Chuck is now an Assistant Professor at Mary Washington College in Virginia.

Brian Stewart and I are beginning our third year as part of NASA's three-year-old Astrobiology Institute (NAI) – a partnership among universities and research centers – that is examining the "possibility of life-sustaining worlds in the universe outside Earth and the future of life on our planet." Pitt is part of the Penn State Astrobiology Research Center, a principal member of NAI. Our investigations in collaboration with researchers from Penn State, SUNY Stony Brook, and U. Kansas involve geochemical and isotopic analysis of a variety of ancient rocks for clues about the Earth's early atmosphere. PhD student Sherry Stafford presented results of her work on the three billion year old Steep Rock paleosol in Canada at the AGU meeting in San Francisco, and she and grad student Amanda Reynolds (studying core and paleosols from the Dunkard Basin in West Virginia) will present their research at a special session on paleosols at the annual GSA meeting in Reno, Nevada later this fall.

We're also continuing our AMD research focused on the chemistry and hydrology of discharges from abandoned underground coal mines, pioneered by former grad student Ted Weaver working with Dr. Robert Hedin, formerly of the Bureau of Mines. Bill Winters (part-time Master's student, and a geologist at Pennsylvania DEP); in collaboration with undergrad Matt Wolinsky; presented a paper at the Pittsburgh Coal Conference; Bill will go on for a PhD; Matt is now a grad student at Duke. PhD student Candace Kairies continues her work on the iron oxides precipitated by AMD in

collaboration with George Watzlaf. She's supported through the Department of Energy Student Partnership program and by a DOE/NETL/EPA grant ("Monongahela Basin Mine Pool Project" in collaboration with WVU, CMU and the West Virginia National Mine Reclamation Center).

Articles:

Capo, R.C., and Chadwick, O.A., 1999, Sources of calcium and strontium in desert soil and calcrete: Earth and Planetary Science Letters, v. 170, p. 61-72.

Capo, R.C., Whipkey, C.E., Chadwick, O.A., and Blachère, J., 2000, Pedogenic origin of dolomite in a basaltic weathering profile, Kohala Peninsula, Hawaii: Geology, v. 28, p. 271-274.

Whipkey, C.E., **Capo**, R.C., Chadwick, O.A., and Stewart, B.W., 2000, The importance of sea spray to the cation budget of a coastal Hawaiian soil: A strontium isotope approach: Chemical Geology, v. 168, p. 37-48.

Abstracts:

Kairies, C.L., **Capo**, R.C., Hedin, R.S., and Watzlaf, G.R., 2000, Characterization of iron-rich mine drainage precipitates associated with Monongahela and Allegheny group coals [abs.]: Geological Society of America Abstracts with Programs, v. 32.

Macpherson, G.L., Stafford, S.L., **Capo**, R.C., Stewart, B.W., and Ohmoto, H., 2000, Geochemistry of an Archean paleosol, Steep Rock, Ontario, Canada [abs.]: Whole rock and LAM-ICPMS analysis: Geological Society of America Abstracts with Programs, v. 32.

Pretti, V.A., Stewart, B.W., and **Capo**, R.C., 1999, Hydrologic sources for the Owens River system, eastern California: Chemistry and strontium isotope composition of eastern Sierra Nevada stream water: EOS, Transactions of the American Geophysical Union, v. 80, F421-432.

Reynolds, A.C., and **Capo**, R.C., 2000, Paleoenvironmental reconstruction of the Pennsylvanian-Permian Dunkard Basin: Geochemical evidence from lacustrine core and associated paleosols [abs.]: Geological Society of America Abstracts with Programs, v. 32.

Stafford, S.L., **Capo**, R.C., Stewart, B.W., and Hedin, R., 1999, Strontium isotopic ratios trace alkaline addition to coal mine drainage: Harvard University; Lunar Planetary Institute Contribution No. 971, 9th Annual V.M. Goldschmidt Conference, p. 283.

Stafford, S.L., **Capo**, R.C., Stewart, B.W., Macpherson, G.L., and Ohmoto, H., 1999, Micromorphology and geochemistry of an apparent Archean weathering profile, Ontario, Canada: EOS, Transactions of the American Geophysical Union, v. 80, p. F1167.

Stafford, S.L., Stewart, B.W., **Capo**, R.C., and Ohmoto, H., 2000, Neodymium isotope investigation of an archean weathering profile: Steep rock paleosol, Ontario, Canada [abs.]: Geological Society of America Abstracts with Programs, v. 32.

Stewart, B.W., **Capo**, R.C., Watanabe, Y., and Ohmoto, H., 1999, Provenance of a 2.6 Ga terrestrial carbonate sequence from the eastern Transvaal region, South Africa: EOS, Transactions of the American Geophysical Union, v. 80, p. F69-70.

Whipkey, C.A., **Capo**, R.C., and Chadwick, O.A., 1999, Development of Quaternary pedogenic calcite and dolomite on the island of Hawaii: Harvard University; Lunar Planetary Institute Contribution No. 971, 9th Annual V.M. Goldschmidt Conference, p. 324-325.

Winters, W.R., **Capo**, R.C., Wolinsky, M.W. and Weaver, T.J., and Hedin, R.S, 1999, Geochemical and hydrogeologic evolution of alkaline discharges from abandoned coal mines: Proceedings from the Sixteenth Annual Pittsburgh International Coal Conference, October 11-15, 1999.

In Press or In Review:

Stewart, B.W., **Capo**, R.C., and Chadwick, O.A., 2000, Effects of precipitation on weathering rate, base cation provenance and Sr isotope composition in a volcanic soil climosequence, Kohala Peninsula, Hawaii: *Geochimica et Cosmochimica Acta, in review.*

Whipkey, C.E., **Capo**, R.C., Hsieh, J.C.C., and Chadwick, O.A., 2000, Development of magnesian calcite and dolomite in Quaternary soils on the island of Hawai'i: *Journal of Sedimentary Research, in review.*

MARK COLLINS

I feel a little sheepish contributing to the Geology and Planetary Science newsletter; I am not a geologist, nor do I play one on TV. I was hired in January to coordinate the department's Environmental Studies program—advising students, helping to place them in internships, finding the right field study courses. I also teach a writing class, which is a core course in the Environmental Studies curriculum.

The first six months have been busy, but I'm very grateful for the help I've received from Candy Weller, Todd Bowers, Dolly Chavez, Bud Rollins, Tom Anderson, Rosemary Capo and Brian Stewart, and students Jill Harley and Paula Bradley.

In my previous life I worked as a writer for PITT MAGAZINE, the University's alumni magazine. Because of that background, I'll be doing some writing this summer about the field program at Yellowstone National Park. The article should appear in an upcoming issue of the magazine—unless I decide not to come back, in which case it's been very nice knowing you...

DAVID A. CROWN

During the past year, I team-taught Geomorphology with Jack Donahue, who made an already interesting class field trip to Slippery Rock Gorge even more eventful with the recurrence of a knee injury about half way into a 7 mile hike (in case you were wondering-- we all made it back okay, though it didn't look good at the time), as well as a new graduate course Topics in Planetary Science: Geology of Venus, which focused on the results of NASA's Magellan mission (1990-1994) and controversies regarding our sister planet's evolution that are currently being debated in the planetary science community. In terms of research, the past year has been a productive one, with a series of articles completed regarding volcanic flows on Earth, Mars, Venus, and Io, a book chapter published treating volcanic eruptions under Martian environmental conditions, and two geologic maps of the Reull Vallis canyon system on Mars in various stages of publication by the USGS. Research support from NASA's Planetary Geology and Geophysics Program has been supplemented by funding from the newly created Mars Data Analysis Program. I am conducting a study of several ancient Martian volcanoes using the new Mars Global Surveyor datasets. PhD student Jeff Byrnes continues to conduct remote sensing analyses of lava flow fields on Earth (Hawaii) and Venus, and, in G&PS tradition, will participate in the ANSMET program's 2000 field season in Antarctica. Scott Mest has returned from a year away to pursue his PhD analyzing fluvial systems on Mars, and Tim Pierce has joined the group to undertake a study of Martian debris aprons which appear to be analogous to rock glaciers. We are all participating in a new planetary science outreach effort with colleagues at CMU call Eventscope (www.bigsignal.net/eventscope). I am also very happy to welcome Mike Ramsey to our department and to the Planetary Science Group.

Articles:

Crown, D.A., and Baloga, S.M., 1999, Pahoehoe toe dimensions, morphology, and branching relationships at Mauna Ulu, Kilauea Volcano, Hawai'i: Bulletin of Volcanology, v. 61, p. 288-305.

Greeley, R., Fagents, S.A., Bridges, N.T., **Crown**, D.A., Crumpler, L.S., Mouginis-Mark, P.J., and Zimbelman, J.R., 2000, Volcanism on the Red Planet: Mars, *in* Zimbelman, J.R. and Gregg, T.K.P., eds., Environmental effects on volcanic eruptions: From deep oceans to deep space: Kluwer Academic/Plenum Publishers, New York, 266 pp.

Peitersen, M.N., and **Crown**, D.A., 2000, Correlations between topography and intraflow width behavior in Martian and terrestrial lava flows: Journal of Geophysical Research, v. 105, no. E2, p. 4123-4134.

Abstracts:

Byrnes, J.M., and **Crown**, D.A., 1999, Mapping small-scale lava flow surface units with remote sensing data: Implications for flow field evolution, Supplement to EOS, Transactions of the American Geophysical Union, v. 80, p. F1090-F1091.

Byrnes, J.M., **Crown**, D.A., and Ramsey, M.S., 2000, Thermal remote sensing characteristics of basaltic lava flow surface units: Implications for flow field evolution: Lunar and Planetary Science Conference XXXI, Abstract 1867, Lunar and Planetary Institute, Houston (CD-ROM).

Crown, D.A., and Mest, S.C., 2000, Geologic mapping of MTM quadrangles -45252 and -45257, Reull Vallis region of Mars: Lunar and Planetary Science Conference XXXI, Abstract 1969, Lunar and Planetary Institute, Houston (CD-ROM).

Crown, D.A., and Mest, S.C., 2000, Geologic mapping of the Reull Vallis region of Mars, Planetary Geologic Science and Mapping Meeting, June 22-24, 2000, Flagstaff, AZ.

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JACK DONAHUE

The year 2000 is half over (August) at this point and I have been enjoying a relaxing sabbatical leave since January. I am just completing my contribution to Volume two, The Town Site, which is the final report on Bab Edh-Dhra, an Early Bronze site along the shore of the Dead Sea in Jordan. This is a project I have worked on since 1977 when I started field work in Jordan. My contribution, Chapter two, covers the geoarchaeology and geomorphology of the site area. I plan to complete my contributions to Volume three and four in the next two years.

I have spent the last thirty five years teaching, first five years at Queens College in New York and then thirty at Pitt. I find that I am satisfied with my accomplishments over that time and that it is time for me to graduate. I will retire in May 2001. Jesse and I are remaining in western Pennsylvania midway between our two sons and their families. Our grandson, Kevin, will be one year old the first week in October and we are looking forward to his first birthday. Although we do intend to do some traveling, certainly Australia, New Zealand and Greenland for starters, we are mainly looking forward to the freedom of doing whatever we choose in the future.

MARK A. EVANS

The past year has been a busy, yet productive one. I recently returned from the Geofluids III Conference in Barcelona, Spain where I presented the results to date regarding my work on paleofluid flow in the Appalachians. I also spent a week on a field trip in the Pyrenees learning about European tectonics, and talking to my European colleagues about a possible collaboration in the Jura of eastern France.

On a more local note, I am happy say that two new grad students have joined my research program. Gina Hobbs and Kristen Lydy will be working on the detailed structure and geochemistry the Alleghanian paleofluid flow event in the central Appalachians and how it is related, or not related, to the Permian remagnetization event. In addition, I am setting up a Microanalysis Laboratory in the old darkroom on 4th floor SRCC. This lab will include petrography, fluid inclusion microthermometry, reflectance microscopy, UV microscopy, and digital analysis and image acquisition capabilities. In the future, I hope to obtain a cathodoluminescence system to add to the mix. This lab will be available as a research center for the entire department.

On other projects of note, I'm still collaborating with Mark Fischer (Univ. of Northern Illinois) on a project to examine the effect of fluids on deformation in the Sierra Madre Oriental of Mexico. Also, I hope to start looking at paleofluid flow in the Triassic basins of New Jersey and eastern Pennsylvania. This project would be in conjunction with the New Jersey Geological Survey. Finally, I am finishing a project detailing the 'Erie fold-and-thrust belt' with Jeff Gryta at Edinboro University. Yes, there are deformed rocks near Erie. All of these projects are a lot of work, but they are also a lot of fun.

Articles:

Evans, M.A., and Battles, D.A., 1999, Fluid inclusion and stable isotope analyses of veins from the central Appalachian Valley and Ridge Province: Implications for regional synorogenic hydrologic structure and fluid migration: GSA Bulletin, v. 111, no. 12, p. 1841-1860.

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Abstracts:

Evans, M.A., 2000, Characterizing the deformation associated with cross-strike tear faults in south central Pennsylvania: Geological Society of America Abstracts with Programs, v. 32, p. 23.

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BRUCE W. HAPKE

Last October my wife and I traveled to Italy, where I attended a planetary science conference in Abano Terme, which is a small town just outside of Padova (Padua). Padova is in the NE part of Italy, near Venice and has one of the oldest universities in Europe. Galileo taught there and they still have his lecturn. It was quite a thrill to stand where he had lectured. After the conference we took a quick tour of Italy and visited Florence and Rome, with a stop to see the ruins at Pompeii. Italy is a beautiful country, with fascinating historical and archeological sites, and the people are delightful.

On to science: In 1975, Bill Cassidy, Ed Wells and I proposed an explanation for the observation that lunar soil is darker and has more subdued absorption bands than ground-up rocks from the same site. This darkening phenomenon is now called "space weathering". We suggested that it is caused by dark coatings on the grains of lunar soil that consist of deposits of vapor generated by both meteorite impacts and solar wind sputtering. Laboratory work by us showed that such coatings would be good light absorbers because they contain submicroscopic metallic iron. Our suggestion was ridiculed and ignored. However, last March at the annual Lunar and Planetary Science Conference in Houston workers from the Johnson Space Center and elsewhere reported the discovery that nearly every grain of lunar soil is covered with coatings containing submicroscopic metallic iron. It took 25 years, but I am happy to report that our model is now rapidly becoming widely accepted.

In 1996 I developed a model that described mathematically the transfer of radiation and heat in a planetary regolith. The equations consist of three non-linear partial differential equations and can only be solved numerically. This year a graduate student, Amy Snyder Hale, developed a computer program for solving these equations for her doctoral dissertation. She applied the solutions to find the distribution of temperature under the surface of the moon, Mercury and Io. One of her interesting results is that within a couple of degrees of the poles of both the moon and Mercury, the temperature about 10 cm below the surface is cold enough for water ice to exist indefinitely, even when the surface is fully illuminated by sunlight. This result strengthens the case for ice near the poles of the moon. Water ice would be an important resource for a lunar base.

Bruce W. Hapke continued

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Hapke, B.W., 1999, Scattering and diffraction of light by particles in planetary regoliths: Journal of Quantitative Spectroscopy and Radiative Transfer, v. 61, p. 565-581.

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Abstracts:

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Nelson, R., Shkuratov, Y., Ovcharenko, A., Smythe, W., and **Hapke**, B., 1999, A particle size dependence of the opposition effect: 31st annual meeting of the Division for Planetary Science of the American Astronomical Society, Padova, Italy.

Snyder Hale, A. and **Hapke**, B., 2000, The thermal state of SO_2 frost on Io: 31st Lunar and Planetary Science Conference, Houston, TX.

In Press or In Review:

Nelson, R., **Hapke**, B., Smythe, W. and Spilker, L., 2000, The opposition effect in simulated planetary regoliths. Reflectance and circular polarization ratio change at small phase angle: *Icarus, in press.*

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WILLIAM HARBERT

Things here are quite busy. During the last year I was happy to have Ms. Sarah Zimmerman finish her M.S. degree. Sarah completed a great analysis of lineament structure in the triple junction region of the Kamchatka Peninsula using high resolution SAR data. She then worked with a group in Civil and Environmental Engineering to finite model this region with respect to several possible models of interaction. This was a really fascinating thesis and was presented at the American Geophysical Union and NASA Planetary meetings.

In the computer world, as part of the "denial of service" attack, I believe that we were hacked last summer. After a disk cleaning and installation of patches I think we have things under control. My new colleague Mike Ramsey and I are coordinating strategies to keep our systems as tight as possible. For those of you maintaining computer systems on the Internet be sure to keep up with those patches and upgrades! On NT we try to maintain these also and are up to NT 6a. Our GIS certificate program continues to expand. Our server now has a gigabyte of RAM, two processors and 200 gigabytes of disk (yeah!). Generous corporate support by ESRI and ERDAS allow us to use these software packages (Arc/Info 8, ArcView 3.3, IMAGINE 8.4 and Virtual GIS) on our system. In addition Sun Microsystems generously matched a university contribution which allowed us to upgrade our teaching lab to 10 new SPARC ULTRA 10 computers. This was a big growth step.

In paleomagnetism my lab continues to successfully operate with visitors from Magnetic Stratigraphy, University of Akron and the Slovak Republic last year. I am just finishing up my Kamchatka paleomagnetic research and running the last group of samples this summer.

Please hit our web site, http://www.geology.pitt.edu and drop us a line!

Abstracts:

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Harbert, W., Gaedicke, C., Freitag, R., Tsukanov, N., Alexeiev, D., Baranov, B. and Kramer, W., 2000, Paleomagnetism of the Kamchatka Peninsula, Russia: Implications for development and evolution of the northwest Pacific Basin [abs.]: *Geological Society of America Abstracts with Programs, in press.*

Krylov, K., Heiphetz, A., **Harbert**, W., Grigoriev, V., and Layer, P., 2000, Tectonics, geochronology, paleomagnetism and geochemistry of the Kuyul region, northeastern Russia: Implications for development and evolution of the northwest Pacific basin: *submitted Zonenshain volume, Moscow, in review.*

CHARLES E. JONES

I have just arrived at G&PS as a new lecturer. I got my undergraduate degree at Stanford University, went to Oxford University on a Rhodes Scholarship to get my PhD, and then spent 4 years as a post-doc at the University of Michigan and another 4 years at the University of North Carolina at Chapel Hill. I am very pleased to be joining this department because with the new hires and expanded undergraduate programs, it is clearly moving in the right direction. In addition, the people are so nice!

My primary focus will be to provide excellent instruction to the undergraduates. I truly enjoy teaching and look forward to creating classes that are thought-provoking, memorable, enjoyable, and of course useful! I love it when I can design lectures that stimulate people to make connections between different topics and draw inferences that go well beyond the normal boundaries of the class.

Charles E. Jones continued

My second focus will be as an undergraduate advisor. My goal here is to help attract new majors and provide a range of information and advice to existing majors that not only gets them through their 4 years here, but also gets them into graduate school or careers that they find worthwhile. I have always found undergraduates to be shy of the Real World, and I would like to help them take a better look now at the opportunities that the Real World offers so that they can make the best career choices possible.

My final focus will be research. I have one project looking into when the uplift of the Andes first connected their drainages with those of the Amazon River and another investigating the use of Nd and Pb isotopes in fossil fish teeth from deep sea cores as records of changes in oceanic paleocirculation. In addition, I am looking forward to worthwhile collaborations with the faculty and students here at Pitt!

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Jones, C.E., Halliday, A.N., Rea, D.K., and Owen, R.M., 2000, Eolian inputs of Pb to the North Pacific: Geochimica et Cosmochimica Acta, v. 64, p. 1405-1416.

Price, G.D., Ruffell, A.H., **Jones**, C.E., Kalin, R.M., Mutterlose, J., 2000, Isotopic evidence for temperature variation during the early Cretaceous (late Ryazanian-mid-Hauterivian): Journal of the Geological Society, London, v. 157, p. 335-343

Erba, E., Channell, J.E.T., Claps, M., **Jones**, C.E., Larson, R., Opdyke, B., Premoli Silva, I., Riva, A., Salvini, G. and Torricelli, S., 1999, Integrated stratigraphy of the Cismon APTICORE (Southern Alps, Italy): A "reference section" for the Barremian-Aptian interval at low latitudes, in Huber, B., Bralower, T.J., and Leckie, R.M., eds., Biotic Change and Paleoecology of Black Shale Environments: A Memorial to William V. Sliter, Journal of Foraminiferal Research v. 29, p. 371-391.

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Thomas, D.J., **Jones**, C.E., Bralower, T.J., 2000, Neodymium Isotopic Records Consistent with Altered Deep-sea Circulation During the Late Paleocene Thermal Maximum, [abs.[: *EOS, Transactions of the American Geophysical Union, in press.*

MICHAEL RAMSEY

I am both happy and excited to be returning to Pennsylvania after a ten-year absence. I am also very pleased to be starting my new faculty career with the Geology and Planetary Science Department here at the University of Pittsburgh. Originally from "the other side" of the state, I received my undergraduate degree in Mechanical Engineering from Drexel University in Philadelphia in 1990. I left for the desert southwest to attend graduate school at Arizona State University in planetary geology and volcanology. Thanks to an inspiring geology professor at Drexel, I was convinced to leave engineering behind for the pursuit of the earth sciences. That mentoring and excitement showed by my undergraduate professors is something which has stayed with me and that I try to pass along to my students.

My graduate research focused primarily on thermal infrared remote sensing for mineral identification and mapping on alluvial and volcanic surfaces. Upon graduation in 1996, I turned down a post-doc offer at the University of Alaska, Fairbanks to stay in Arizona because of the closer ties with several NASA projects. My research has continued to stay focused on this planet, but has expanded to include active volcanic monitoring from space, global land use/land change in urban environments, as well as utilizing new technologies such as advanced Global Positioning System (GPS) mapping. I am currently on the science team of a newly-launched NASA-Japanese instrument called ASTER. The data returned from ASTER will be used for a large array of science goals from sea surface temperature measurements and coral reef health to volcanological monitoring and natural hazard reduction.

Having a background in engineering and computers has helped me tremendously in the quantitative nature of this field of geology. It has also focused my research on the more applied aspects of the science. I currently have funded projects from NASA's Office of Earth Science Natural Hazards Program. The goal of this program is to fund research into the practical applications of NASA technology for the purposes of mitigating hazards and reducing risks to human populations around the world. One project will involve looking at active volcanic domes in hopes of understanding how these features grow and ultimately collapse to form deadly pyroclastic flows. This project is global in scale and will involve extensive travel and field work. The second project is timely and involves using remote sensing to better understand brush fire initiation and propagation in the western US. The summer of 2000 has been the worse on record for fires in the west. Unfortunately, the effects of these fires are felt by local residents in the way of fouled drinking water and the increased potential for flooding for years after the fires are out.

I will be teaching a wide array of courses at the University and setting up a state of the art image visualization and spectroscopy laboratory here. I will be co-teaching Natural Hazards, Volcanology and GIS-related classes. In addition, I envision starting new courses in Applied Remote Sensing and GPS techniques, an integrative undergraduate course call Earth System Science, as well as graduate courses in computer methods and techniques.

Articles:

Ramsey, M.S., Stefanov, W.L., and Christensen, P.R., 1999, Monitoring world-wide urban land cover changes using ASTER: Preliminary results from the Phoenix, AZ LTER site: Proceedings of the thirteenth Applied Geological Remote Sensing Conference, Vancouver, BC, Canada, v. 2, p. 237-244.

Ramsey, M.S., and Fink, J.H., 1999, Estimating silicic lava vesicularity with thermal remote sensing: A new technique for volcanic mapping and monitoring: Bulletin of Volcanology, v. 61, p. 32-39.

Abstracts:

Byrnes, J.M., Crown, D.A., and **Ramsey**, M.S., 2000, Thermal remote sensing characteristics of basaltic lava flow surface units: Implications for flow field evolution: Lunar and Planetary Science Conference XXXI, Abstract 1867, (CD-ROM).

Eisinger, C.L., **Ramsey**, M.S., Wessels, R.L., and Fink, J.H., 2000, Discriminating compositional variations on the silicic domes of Medicine Lake Volcano, CA, with the new airborne hyperspectral MODIS/ASTER simulator: Proceeding Abstracts of the General Assembly IAVCEI, p. 158

Ramsey, M.S., 2000, Mapping the city landscape from space: The Advanced Spaceborne Thermal Emission and Reflectance Radiometer (ASTER) urban environmental monitoring program, Invited (U01: Earth Sciences in the Cities special session) EOS, Transactions of the American Geophysical Union, v. 81, p. S11.

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Michael S. Ramsey
Abstracts continued

Ramsey, M.S., Wessels, R., and Eisinger, C., 1999, Accurate mapping and monitoring of silicic domes using thermal infrared and radar remote sensing: Implications of lava texture and surface roughness [abs.]: EOS, Transactions of the American Geophysical Union, v. 80, p. F1145.

Stefanov, W.L., **Ramsey**, M.S., and Christensen, P.R., 2000, Monitoring urban land cover change: An expert system approach to land cover classification of the Phoenix metropolitan area: Abstracts of the Ecological Society of America Annual Meeting, pp. 387-388.

In Press or In Review:

Ramsey, M.S., and Stefanov, W.L., 2000, The Advanced Spaceborne Thermal Emission and Reflectance Radiometer (ASTER) urban environmental monitoring program: Local results using airborne MASTER data from Phoenix, AZ, Invited (MASTER special session): *Proceedings from the ERIM Fourteenth Applied Geological Remote Sensing Conference, in press.*

HAROLD B. ROLLINS

During Spring of 1999 I was wrapped up with teaching duties and the organization of a symposium dealing with molluscan evolution. That symposium, entitled "New Looks at Old Mollusks", unfolded over the Fourth of July at the downtown Pittsburgh annual meeting of the AMS (American Malacological Society), and was conducted by Ellis Yochelson (Smithsonian Institution) and myself. We both are now (summer of 2000) heavily involved in seeing the presented papers through to publication in a special issue of the Bulletin of the AMS. One of the papers is co-authored by John Harper and myself. The event gave John and myself an excuse to sort of relive our earlier research activities with snail evolution and touch base with many colleagues from what at times seems like a past life.

Work on St. Catherines Island continues, still supported by the Noble Foundation through the American Museum of Natural History. Judy and I visited the Island twice over the last year (in March of 1999 and March of 2000). Both times we were accompanied by G&PS undergrad majors who helped with the current research project dealing with measurement of predation intensity as it relates to preservation in the fossil record. Mark Collins, our Environmental Studies Coordinator, also joined us for a few days on the last visit. The summer of 2000 is also a time of final preparation and submission of a bunch of St. Catherines manuscripts from "research past". One completed paper is coauthored by Kathi Beratan, Jim Pottinger (Pitt MS), and me and deals with origin and promulgation of beach ridges in mesotidal environments. Two other manuscripts dealing with the geological evolution of St. Catherines Island, have been resurrected from the past to be included in a book edited by David Hurst Thomas (American Museum of Natural History), and are co-authored by Dave Linsley (Pitt PhD), Gale Bishop (Georgia Southern University) and myself. And, finally, another paper is in press to be published as a A.M.N.H. Novitates issue, coauthored by Bob Prezant (Queens University), Ron Toll (Central Arkansas Univ.) and myself. It documents the macro-invertebrate diversity of the Island, and will provide the most complete published tabulation of species in the coastal waters of the Georgia Sea Islands.

Katharine Hakala successfully defended her PhD dissertation over the last year and is now preparing her work on the climatological record of Grass Lake for publication. Lee Beatty was awarded a Mellon pre-doctoral fellowship and continues his research on the Pinecrest bivalves and evolutionary "arms races".

On the personal side, our son Steve has left Alaska and is now involved in commercial diving along coastal Georgia. Judy and I were able to visit him twice in Alaska and took full advantage of the opportunity to geologically tour South-Central Alaska (with occasional time off for fishing, etc.!).

There have been many changes in our Department over the last year, and I look to assuming duties of chair with excitement and, I admit, some trepidation. There will be many more changes over the next several years and this is truly a significant time in the history of our Department.

Abstracts:

Rollins, H.B., and Harper, J.A., 1999, The bellerophon controversy revisited: AMS Annual Mtg., Pittsburgh.

Rollins, H.B., 1999, Mid-Holocene climate in western South America: A malacological perspective: Ferco Conference, Orono, ME.

In Press or In Review:

Harper, J.A., and **Rollins**, H.B., 2000, The Bellerophon controversy revisited: *American Malacological Bulletin, v. 15, no. 2, in press.*

BRIAN W. STEWART

Our NSF-sponsored work on the Owens River system in eastern California continued this year with another successful sampling trip, this time with graduate student Joey Minervini and undergraduate John Boulanger (besides me and Professor Capo) in May. We spent a week in the Owens Valley sampling both dissolved and suspended loads of streams draining the eastern Sierra Nevada, followed by another week examining desert soils in New Mexico with some of the top soil scientists in the country, as part of Dr. Capo's study of Quaternary weathering. Joey has been busy determining the composition of the solutes in the waters we collected, and he is beginning the challenging job of dissolving trace amounts of suspended materials on cellulose nitrate filters for isotopic analysis. He is going to be relating the composition of the waters and suspended sediments to authigenic and clastic sediments preserved in Owens Lake core OL-92. John has started a senior thesis project characterizing spring waters from Death Valley, which is the terminus of the Owens River system during glacial periods. The waters were provided by Dr. Tim Lowenstein of SUNY Binghamton, who gave a talk in our department last fall and has been collaborating with us on this project. Victoria Pretti successfully defended her Masters Thesis on her groundbreaking work on Owens Valley stream water chemistry, and she will be going on for a PhD at Binghamton with Dr. Lowenstein.

The isotope geochemistry laboratory has been running at full steam under the very capable management of technician Brian "B.K." Games (Research Specialist III). Dr. Capo and I initially hired him part-time using funds from our collaboration with the Penn State Astrobiology Research Center (PSARC), but he quickly became indispensable, and so we have been providing support from our other research grants. In addition to processing some of our most critical samples, Mr. Games has kept the laboratories organized, the equipment in good running order, and, most importantly, the students trained in clean lab and instrumental techniques. He has also been aided by excellent undergraduate help, including John Boulanger and Erin Minster. Our collaboration with PSARC (part of NASA's Astrobiology Institute) has also led to some exciting new results from graduate student Sherry Stafford, who submitted an abstract for the national GSA meeting in November on neodymium isotope systematics of a three-billion-year-old preserved soil (paleosol) from Canada.

On other fronts, Steve Schatzel has been putting in long hours developing chemical techniques and processing samples for his challenging and novel PhD investigation of the isotope geochemistry of coals. He obtained his first coal neodymium isotope data (to our knowledge, the first of its kind),

Brian W. Stewart continued

and submitted an abstract to the national GSA meeting. He plans to finish his dissertation this Fall, and then go back to full time work at NIOSH (mine safety research group). Masters student Mary Lynn Yurko defended her thesis last summer, and she has been working ever since as a hydrogeologist at Environmental Strategies Corporation in Pittsburgh, a job she has found both challenging and extremely rewarding. Ann Kim, who got her Masters here with Dr. Bikerman a few years ago, has been making good progress as a part-time PhD student, and will be doing a project on coal ash leaching that is related to her work at DOE. Finally, Dr. Capo and I continue our collaboration with researchers from the Jet Propulsion Laboratory (JPL) in California on developing an *in situ* instrument for determining the ages of planetary surfaces. As part of this NASA-funded project, we are analyzing the results of laser ablation experiments carried out at JPL, and will be collaborating on high-resolution resonance ionization experiments.

Articles:

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CHEN ZHU

Last July, my wife and I packed our two kids in the car and drove to Pittsburgh from Norfolk, Virginia, where for two years I had held a tenure-track position at Old Dominion University. Raised in China, I received a Master's degree from the University of Toronto, a PhD from Johns Hopkins University, and a post-doctoral fellowship from Woods Hole Oceanographic Institution.

My specialty, interdisciplinary hydrology and aqueous geochemistry studies, is a research area where basic science and societal needs converge. Hence, I have enjoyed funding from the National Science Foundation, the US Environmental Protection Agency, the Nuclear Regulatory Commission, and the Department of Energy. All of my research is field-based. I collect rock and water samples from the field, analyze them in the lab, and use numerical models as a tool to integrate hydraulic, geochemical, and isotope data. I want to understand quantitatively the fundamental processes in groundwater systems.

At Pitt, I will take over Groundwater Geology in spring 2001, and probably Mineralogy in the fall. I am planning to create new graduate courses in hydrogeological and geochemical modeling. In addition, I am currently completing "Project Iceberg", a book entitled *Environmental Applications of Geochemical Modeling* that I am currently writing with Greg Anderson of the University of Toronto, to be published by Cambridge University Press in 2001. Renovations are underway to build a start-of-the-art hydrogeological and geochemical modeling laboratory at Pitt.

My programs fit in quite well at Pitt. My goal is to bring high-quality research and graduate training in the growing environmental field. Pittsburgh has an environmental legacy, which means many research opportunities for my students. In the past, Pitt has produced many excellent students. With funding already in place, I am looking forward to recruiting some new students.

Now, my wife and I have settled in historic Squirrel Hill. My wife Lei Gong is a molecular biologist, and she works at Carnegie Mellon University. Our two children, Agnes (four) and Gregory (one), also go to CMU's daycare.

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THOMAS H. ANDERSON

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KATHI K. BERATAN

- Preparation of ground-truthed vegetation maps for Pennsylvania state parks from aerial photography, *DCNR, Commonwealth of Pennsylvania*
- Preparation of an Information System to Assist in Regulating Development of Steep Slopes and Unstable Surfaces, *Municipality of Murrysville, PA*

ROSEMARY C. CAPO

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DAVID A. CROWN

- Models for the emplacement of lava flows: Styles of effusive volcanism on Mars, *NASA*
- Geologic mapping of Reull Vallis, Mars, *NASA*
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- The impact of Antarctic meteorites on planetary science, *National Science Foundation Conference Proposal*
- Emplacement of terrestrial and planetary lava flows, (Co-I, M. Ramsey), *NASA*
- Volcanic evolution and erosional history of Tyrrhena and Hadriaca Paterae, Mars, *NASA*

MARK A. EVANS

- Characterization of fluid evolution and migration during the Late Paleozoic Alleghanian orogeny: Central Appalachian plateau province, *American Chemical Society, Petroleum Research Fund*
- Collaborative research: Remagnetization and organic fluids: Testing the hypothesis in the central Appalachians, *National Science Foundation*

BRUCE W. HAPKE

- Photometric analysis of spacecraft planetary images, *NASA*
- Remote sensing of planetary surfaces: Cassidy Symposium, *NASA*

WILLIAM HARBERT

- Collaborative research: Tectonics and paleomagnetism of Kamchatka peninsula composite terranes, northeastern Russia, *National Science Foundation*

CHIAO-MIN (JIMMY) HSIEH

- Mapping China's past: A cartographic reconstruction of Chinese history, *Rockefeller Foundation*

MICHAEL A. RAMSEY

- *Monitoring the hazards of silicic volcanoes with remote sensing*, NASA
- *Multi-spectral remote sensing of brush fire scars in arid urban regions: analysis of future fire and flooding hazards, NASA*

BRIAN W. STEWART

- Quaternary paleohydrology of the western Great Basin province, USA, The radiogenic isotope record of lacustrine sediments of the Owens River system, *National Science Foundation*
- Miniature *in situ* geochronology instrument for planetary surface deployment: Breadboard development (co-Is R. Capo and D. Crown), *NASA, Jet Propulsion Laboratory*
- Penn State Astrobiology Research Center (co-Is R. Capo and D. Crown), *NASA, Astrobiology Institute*
- *In situ* miniature age-dating laboratory for planetary surface deployment, *NASA, Jet Propulsion Laboratory*

CHEN ZHU

- Silicate reactions kinetics in a major aquifer in Arizona, *National Science Foundation*
- Simulation of the migration of an acid plume using coupled reactive transport models at an abandoned uranium mill tailings site, *U.S. Environmental Protection Agency*

WALT SKINNER AWARD
PITTSBURGH GEOLOGICAL SOCIETY

MICHAEL BIKERMAN

1999-2000

The 2000 winner of the Walt Skinner Award is Michael Bikerman. This awarded is from the Pittsburgh Geological Society (PGS) and is an award for meritorious service to the society and to the geological community. Mike has served PGS as a member of the Board of Directors, including a stint as President in 1977-78, and as an active member and on field trips. He is retiring as Professor of Geology at the University of Pittsburgh as Professor of Geology at the University of Pittsburgh where, since 1967, he has taught a variety of classes ranging from introductory geology ("rocks for jock") to graduate classes in isotope geology.

Mike has maintained an active research interest in potassium-argon dating, isotopic geochemistry, volcanology, Precambrian rocks of Saskatchewan, and kimberlite dikes and manganese ores of Pennsylvania. He has also served as a volunteer research associate at The Carnegie Museum of Natural History, as general chairman of the NEGSA meeting held in Pittsburgh in 1987, and as co-chair of the Earth & Space Science section of the 40th International Science and Engineering Fair held in Pittsburgh in 1989.

He may be retiring after 33 years of teaching, but that isn't going to stop Mike from remaining active and influencing students. He is currently preparing to go as Academic Dean for the university's Fall 2000 Semester at Sea voyage. PGS members are encouraged to come to this month's meeting to offer congratulations to Mike on winning the Walt Skinner Award.

LAURENCE L. SLOSS AWARD FOR SEDIMENTARY GEOLOGY
GEOLOGICAL SOCIETY OF AMERICA

GEORGE D. KLEIN

1999-2000

George D. Klein, a former faculty member in the Geology and Planetary Science, has just been selected as the Year 2000 recipient of the Laurence L. Sloss Award for Sedimentary Geology. It is a career award given by the Division of Sedimentary Geology.

The award will be presented to George at the Annual Geological Society of America Meeting in Reno, Nevada in November 2000.

DISPUTE ERUPTS OVER KIMBERLITE DIKE

It's just a slab of gray rocks, and the difference between it and other slabs of gray rocks in Fayette County, Pennsylvania, is barely perceptible, except to veteran geologists who've spent years identifying rocks, especially rare and unusual varieties.

But the Masontown Kimberlite Dike is the center of a debate between researchers in the international geology community over its origin.

Kimberlite is an igneous rock, formed by magma, or molten rock, erupting from deep in the earth. Kimberlite is especially of interest because it can contain diamonds. There are no diamonds in Masontown, unfortunately, because the kimberlite dike there apparently formed at too shallow a depth to create the necessary pressure.

Michael Bikerman, emeritus professor of geology and planetary science at the University of Pittsburgh, caused the row at a Geological Society of America Northeastern Section meeting in March when he presented his hypothesis that the Masontown Kimberlite Dike was a product of two separate events, rather than a single event, as had been previously supposed.

Geologists use a dating system that incorporates the fact that radioactive elements decay over time. The time during which the strength of an element decays to half its original value is called a half-life, and examining the level the element has decayed helps to determine the age. But these measurements are not precise in terms that humans can relate to, however: The half life of potassium is 1.25 million years, for instance!

Previously, on geologic grounds, the dike was known to be younger than 290 million years old, the upper limit of the age of the surrounding Pennsylvanian sedimentary rocks through which the dike intruded. However, researchers using potassium-argon (K-Ar) dating had measured dates of 350 million years ago by testing large mica phenocrysts-large crystals imbedded in the dike-and interpreted these dates to indicate the presence of excess argon-argon not derived from decay of the parent potassium within the mica.

Earlier research by Bikerman and Pitt graduate students Nellie Pimental and Henry Prellwitz confirmed the 350-million-plus age of some of the stones, but found that others in the dike did not conform to these ages.

Bikerman used two other dating methods, rubidium-strontium (Rb-Sr) and samarium-neodymium (Sm-Nd). Using the alternate methods, Bikerman dated stones such as garnet and phlogopite at 145-188 million years old. The Rb-Sr technique produced results about 180 million years old, and the Sm-Nd, an imprecise 145 million years old.

Using a higher precision variant of K-Ar dating, Bikerman and colleague David Phillips of the Australian National University, determined dates on micas to be between 180 and 145 million years old, leading Bikerman to come to the conclusion that two events, not one, created the Masontown dike.

Evidence that younger kimberlite was mixed with older, along with the way the ground around the fault reacted to the eruptions, gave Bikerman the clues that he was looking at one eruption 180 million years ago, followed by a second eruption 149 million years ago.

"An excess or inherited argon emplaced 149 million years ago could explain the difference in the disagreement we get with the potassium-argon dating, but there's no way to explain why the other tests came out as they did unless we're looking at two events."

Disagreements like this are common, Bikerman says, especially when new research challenges old assumptions.

"My presentation was well-received, but since then I've gotten a few calls from colleagues who disagree," Bikerman said.

As if to reinforce the idea, Bikerman points to a framed motto on his office wall: "Geology has several versions of reality."

That's what happens when you get an educated group of people into a field like geology. We're like detectives, only our evidence is millions of years old."

[Reprinted from the University of Pittsburgh ***Researchreview,*** *Summer 2000, John Fedeli]*

MARS RESEARCH

In the blockbuster film Star Wars, one of the favorite sayings of smuggler/mercenary Han Solo was "It's not my fault!" And, despite his role on the National Aeronautics and Space Administration's (NASA) Mars Site Selection Steering Committee, **David Crown**, assistant professor of geology and planetary science, can say that about the latest mishap with the $165 million Mars Polar Lander.

This mission wasn't one of the Site Selection Committee's, and Crown hopes that public opinion over the Polar Lander's problems doesn't derail the entire project.

The Steering Committee was formed to provide advice and assistance on landing site selection for the Mars Surveyor program, primarily for the planned Mars 2001 mission, and those that follow.

"Despite several recent setbacks, there is a really exciting program of exploring the surface of Mars, leading up to returning to Earth with samples from its surface in 2008.

"We haven't yet had the opportunity to study the detailed chemistry of rocks that we know haven't traveled from Mars through space in the form of meteorites."

Crown is referring to the 1996 study of a meteorite, thought to be from Mars, that some scientists believe held fossilized remains of primitive life forms.

"Since 1996, NASA has geared its exploration program around finding environments in which life could have existed," said Crown "The real thread of that is looking for evidence of water on the surface, or near the surface,and how that may have changed over time.

"That's one of the goals of the program, looking at the data that's coming back from the Mars Global Surveyor, the spacecraft that's orbiting right now. We're trying to get a very detailed view of where water may have been."

The Global Surveyor can spot objects or areas as small as one meter across, which offers a better closeup of the Martian surface than has ever been seen. The Surveyor's newest mission is to photograph the intended landing area of the Polar Lander in the hope of spotting a parachute or anything that would help the researchers to understand what happened.

"It's frustrating, because at this point, we really don't know what happened. I think some of the changes you'll see are that they will build in some instrumentation so that, if there's a mistake, we can learn from it. We don't expect everything to work perfectly, but we need to know why it didn't."

Crown's role with the Site Selection Committee relies on his expertise in volcanology and comparative planetology.

"In evaluating landing sites for future missions, we're trying to explore some parts of the planet that may have been affected by water. And so, one potential kind of landing site we're looking for is a hydrothermal spring deposit," he explained. "We know there has been volcanic activity on Mars, and we know that's an environment where you have heat and water coming together.

"It's as if you took Yellowstone National Park and turned it off for a billion years-you'd find that kind of environment preserved on Mars. That's one potential area. Another area is where we see potential drainage networks on the planet. Those networks may have had water running through them for quite a long period of time."

Crown, who has been creating maps of Mars since 1988, was appointed to the Site Selection Committee in the fall of 1997. Prior to joining Pitt in 1994, Crown served a two-year post-doctoral research fellowship with NASA's Jet Propulsion Lab.

"I do comparative planetology, and I look at volcanoes on Earth, and volcanoes on other planets. You use your knowledge of Earth and apply it to other planets. You think you know what goes on on Earth, and you can view what goes on on other planets as experiments that are run under different conditions. Each of the planets has its own unique set of starting points. We can learn a lot about Earth in a comparative mode."

This is a real opportunity to increase our understanding of how lavas and magmas work on the Martian surface and to understand the general evolution of the planet.

Crown says that the Mars program is geared in stages, and the initial stage is to use some of the advanced technology to bring back samples. Eventually, he says, they hope to put human explorers on Mars.

"First we need to build our confidence in getting spacecraft there, getting things into orbit, and learning more about the surface. In the 2001 mission, there is a segment designed by the human exploration component of NASA that's going to do some soil testing as a precursor for putting people down on the planet."

This story is based on an interview by Sharon Blake and Ken Service that originally aired on Higher Education Review on KQV radio, 1410 AM. H.E.R. is broadcast the first Monday of every month at 7:00 p.m.

[Reprinted from the University of Pittsburgh ***Researchreview,*** *Spring 2000, John Fedeli]*

MARS WATER DISCOVERY COULD ALTER EXPLORATION PLANS, PITT PROF SAYS

Last month, the National Aeronautics and Space Administration (NASA), in a hurriedly called press conference meant to discourage speculation, announced that photographs from the Mars Global Surveyor suggest the presence of sources of liquid water at shallow, near-surface depths on our neighboring planet.

While no one suggested that the photos meant there are Martians training for Olympic swimming events, the new evidence may influence future Mars missions, including which areas of the planet are more conducive to scientifically fruitful exploration. And the findings point to at least the possibility of life forms existing on the Red Planet, though NASA has downplayed the suggestion.

"The interesting thing from my point of view as a geologist is those deposits likely made by ground water seepage, first, sit on surfaces that are very young, possibly even contemporary, and, second, are close to the surface, both of which are surprising based on our current knowledge," said Pitt's **David A. Crown**, assistant professor of geology and planetary science.

Crown has studied Mars for more than 15 years, focusing on two large volcanic areas in the southern hemisphere. His dissertation, "Volcanism in the Eastern Hellas Region of Mars," concentrated on an area showing evidence of recent geologic development partially formed by percolating surface-water sources.

NASA said the wet spots have been sited in more than 120 places, including some of the coldest parts of the planet. This challenges prior understanding, because sub-zero surface temperatures and thin atmosphere should have kept the wet spots from forming.

Pictures from previous Mars missions dating back to 1972 point to giant flood channels in the northern hemisphere probably caused by water in the planet's early history.

"What we do know from the Mariner and Viking missions of the 1970s are that channel features in the northern lowlands suggest prior floods," Crown said.

It was generally believed that any water on Mars would be several miles below the surface. That is, until the recent pictures from the Global Surveyor.

Crown, whose planetary research is backed by NASA funding, said that the area of Mars he has been mapping may increase in scientific priority for future Mars projects as a result of the new photographic evidence.

"Most past landing plans, due to power constraints and landing systems technology, have been confined to equatorial regions," Crown said. "Using solar power meant staying in those regions for a longer mission life. We'd been using 'settle landing' technology, not air bag systems that we have today. As of now, the future missions are all planned toward equatorial sites. But recent groundwater seepage close to the surface forces the need to characterize these areas as a higher priority science target." In other words, NASA should "follow the water."

However, determining landing sites is complicated, said Crown, who has sat on NASA committees discussing such issues. Scientists write proposals pushing certain sites; engineers counter with mission feasibility studies. "Then you have NASA administrators in the mix who say we want the absolutely safest, most risk-free landing sites. So, it's an ongoing debate."

NASA has to be especially cautious because of restricted budgets and recent failures. The space agency lost the $165 million Mars Polar Lander last December, the $125 million Mars Climate Orbiter last September and the $1 billion Mars Observer in 1993. There is a scheduled launch in April 2001 and planned missions in 2003 and 2005.

Crown said that the Global Surveyor pictures may renew public support for Mars missions, especially given the intriguing possibility that Earth is not the only life source in the solar system. Adding liquid water to the list of likely minerals and carbon-based chemicals on the planet increases the odds.

"People are going to argue about life forms and when they may or may not have been there no matter what. The most commonly acceptable approach for looking for life is thinking that it probably was there, if at all, early in the life of the planet," some 3 billion-4 billion years ago. Today, Mars is mostly a wind-blown, arid desert. "The temperature and pressure on Mars is such that if we put a drop of liquid water on the surface, it disappears. Now we may need to re-think our approach to evaluating the potential for existence of life."

The most likely explanation for the near-surface water, according to Crown, is that there are hydro-thermal water reservoirs below ground that pulse up to the surface, the way a spring does on Earth. As the water nears the surface, it begins to freeze, trapping some sub-surface and surface material. The slushy mixture acts as a conduit that facilitates the flow of material down crater slopes, accounting for

the large gullies shown in the photographs. The resulting debris is likely water-influenced because of the great distance it travels.

"The debate over the fluvial history of Mars, and the corresponding potential for sustaining life, still continues," Crown said. "There is debate over whether there was an ocean and the timing of that. The debate throughout history shows an oscillation from wet to dry [theories]. We still need to better interpret these features" before drawing any conclusions.

As for his own research, Crown is working with Pitt graduate student Scott Mest on comparing older images from Mars missions of the '70s with the images being released by NASA from the Mars surveyor. "It's the first new look in 20 years, and I've been studying this region of Mars since about 1985," he said.

The current mission tells scientists more in part by using lasers to measure surfaces, Crown said. "Like the data we see from satellite photos of the Sahara Desert, where we've discovered ancient riverbanks and lost cities, these data allow us to quantitatively characterize topography in ways we couldn't before. Geologists deal in relative ages and absolute ages. The best way to determine the absolute age is to find a rock that has been in place for a long time, get the rock, bring it back and study it. But what is on top of something else helps determine the geologic relative age, which is something we can measure."

Crown estimated that sending humans to Mars is still 20-25 years away. "We have the technology, but given that it would be a 2-3 year mission, we need to study if extended space-flight is safe, among other considerations."

Though debates rage on about the Red Planet, one thing seems clear: The new Mars Global Surveyor photographs indicate that the planet is not dead geologically.

[reprinted from the University Times, volume 32, number 23, July 20, 2000, Peter Hart]

PITT BOOSTS CHINA STUDIES

The University of Pittsburgh has boosted its study of China and hopes its many links to the world's largest country will pay dividends for local companies and the university's prestige.

This is a large, long-standing effort to educate the next generation of China experts, which is very much in the countries' national interests," said Burkart Holzner, director of Pitt's Center for International Studies.

Pitt's East Asia program, which studies everything from maps to mail-order brides, ranks in the top five to 10, said William Kirby, director of the Harvard University Asia Center. There are hundreds of Asia studies programs of various sizes in the country.

Mame Bradley, whose World Trade Center Pittsburgh helps Pennsylvania companies sell their products and services, welcomes Pitt's expertise.

"One American job in seven is supported by exports, but in southwestern Pennsylvania, it's more like one in 20," said Bradley, executive director of the center.

The center is concentrating on increasing exports to China and Brazil because of the size of those markets and the slow pace at which American companies have been able to break into those markets.

Part of the problem, Bradley said, is that local businesses often fail to tap Pitt's resources so they can make headway into the Chinese market, which is now dominated by European and Latin American companies.

"I'm not sure the business community is as knowledgeable as it should be about the depth of expertise that exists out there at Pitt," said Dennis Unkovic, a Downtown attorney who helps companies do business overseas.

He considers access to such expertise especially important in dealing with the Chinese. He has made six trips to China in the past year.

"In my opinion, the Chinese are the best negotiators in the world. They have great patience, and they enjoy the process," Unkovic said.

Aside from the expertise of the university's faculty, Unkovic cited Pitt's links in China.

Shipping magnate C.C. Tung, who is on Pitt's board of trustees, gave the university the boat it uses for Semester at Sea, a floating classroom that tours the world. The People's Republic of China appointed C.H. Tung, his brother, chief executive of Hong Kong.

In addition, numerous Pitt alumni run or help administer some of the most important universities in

China. In just one city, for example, Pitt graduates serve in key positions at Hong Kong Baptist University, the Chinese University of Hong Kong and the University of Hong Kong.

Pitt established its first overseas alumni club in Hong Kong four years ago.

Pitt traces its early involvement with China to former Chancellor Wesley Posvar, who worked to establish Pitt's pre-eminence in international studies. When China opened up to the West, Posvar traveled there and set up links.

Among those arriving at Pitt 30 years ago was **Chiao-min Hsieh**, emeritus professor of geology. He has received a Rockefeller Foundation Innovator's Grant to create an "Atlas of Chinese History and Culture."

The atlas will convert data on climate changes, vegetation, wildlife population and migration patterns into maps on the four major Chinese dynasties.

"In the course of our planning and budgeting over the last five years, we've been carefully adding strengths in the study of China," Pitt Provost James V. Maher, Jr. said.

Pitt has between 20 to 25 faculty members specializing in China and sends three or four graduate students there every year.

"China is such an enormous part of the contemporary world, it is of utmost significance for us in the United States to be aware of what is happening there," Holzner said.

"And in order to know what's going on there, we've got to have a presence in China, and they have to have a presence here."

[Reprinted from the Pittsburgh Tribune-Review, March 27, 2000, Bill Zlatos]

VOLCANOLOGIST WAS CAUGHT OFF-GUARD BY ERUPTION

As molten rocks the size of softballs rained down around him, geologist **Michael Ramsey** concentrated on advice he had heard from a survivor of a volcanic eruption seven years before.

Drop down. Protect your head.

Falling face down on a ridge that shielded him from the direct blast of the 12,000-foot volcano in Indonesia, the 33-year-old volcanologist from the University of Pittsburgh held his camera bag across the back of his head and tried to flick away the hot, glassy pebbles that pelted him and melted into his parka.

The July 26 eruption of the Semeru volcano in eastern Java had caught Ramsey and a small group of fellow volcanologists by surprise. It lasted just 40 or 45 seconds and was by most standards a minor volcanic event, little more than a hissy fit of Nature. Yet when Ramsey stood and surveyed the aftermath, he was aghast at the power Semeru had just displayed.

Two Indonesian colleagues lay dead. An American scientist was unconscious, bleeding and seriously burned. Ramsey and another American were both injured.

And, as they learned as they made their way off the mountain, this was only the beginning of their ordeal.

Ramsey, who joined Pitt's geology and planetary science department only three months ago, normally views volcanoes from the safety of his office. A specialist in remote sensing, he is part of a scientific team trying to monitor volcanoes by using a camera aboard Terra, a satellite launched last December as part of NASA's Earth Observing System.

But visiting the sites of active volcanoes -- assessing what might be detectable from space and what might not -- is also part of his job. To date, he's been to about a dozen of them.

His presence atop Semeru, the tallest mountain on Java, was largely a matter of happenstance, however. He had presented a paper to the International Association of Volcanology and Chemistry of the Earth's Interior, which had its annual assembly in mid-July in Bali, just one island over from Java. Afterward, two scientists from the Smithsonian Institution's Global Volcanism Program, Paul Kimberly and Lee Siebert, were to accompany a team from the Volcanological Survey of Indonesia on a trip up Semeru and Ramsey was invited along.

Volcanoes are a major concern in Indonesia, an island nation where 216 million people inhabit a land

area about three times the size of Texas. There are so many active volcanoes -- more than 130 -- that the exact number isn't known. The nation has had some of the largest, deadliest eruptions in history: Tambora in1815, leaving 92,000 dead, and Krakatau in 1883, with 36,000 dead.

The remote sensing work done by Ramsey is a tool that scientists hope will enable them to better understand volcanoes, perhaps allowing them to spot warning signs of dangerous eruptions in time to alert surrounding populations.

At Mt. Semeru, the American scientists were accompanying Volcanological Survey staff members on a routine, weekly monitoring tour.

Semeru has erupted at least 55 times since 1818, sometimes producing lava flows, pyroclastic flows -- swiftly moving, deadly clouds of hot gas and rock fragments -- and mudflows that have killed hundreds of people over the years.

For several decades, however, Semeru has been a "popper," sending up 1,000-foot plumes of steam and ash every 20 minutes or so. Molten magma isn't visible from the crater, but water seeps down through the crust of rocks and ash at the bottom of the crater until it hits hot rock. The water flashes to steam, building up pressure under the crust until an explosion occurs.

"It's just this big pit and every so often it blows," Ramsey said. A national park surrounds the mountain and, despite the dangers, the crater has become a popular hiking destination.

On July 25, Ramsey and the rest of the group drove to a small village near the mountain and hiked 12 to 13 miles into the park, setting up camp about 1,000 feet above the tree line and 1,000 feet below the summit.

They rose at 2 a.m. the next day to begin their climb, planning to reach the crater by dawn, take some photos, make some measurements, and, after a couple of hours, make their way back to camp. Ramsey, a former Grand Canyon river guide with training in field medicine, usually carries a first aid kit, but he tossed it back in his tent before leaving, figuring he could do without the extra 2 pounds on the short trek.

Then he thought better of it and retrieved the kit.

About 20 people were at the summit at sunrise, including Ramsey, the two Smithsonian volcanologists, an Israeli student and four scientists from the Indonesian agency, as well as a couple of porters and a Dutch tourist.

The crater at the top is inactive; the steam-and-ash explosions occur in a smaller crater that is about 200 to 300 feet below the summit and connected to the summit by a curved ridge. After watching three or four eruptions, the group decided to venture down the ridge to get a closer view. The summit was cloudy that morning and the fog became thicker as they reached the active crater.

Ramsey, Kimberly and the Dutch hiker got discouraged and headed back up the ridge. About halfway up, the clouds rapidly dissipated. Someone at the crater called out a good-natured taunt to the departing trio: "Thanks for leaving, guys -- now we've got a clear shot."

Kimberly took the hint and began running back to the crater, perhaps 100 feet away.

Ramsey stayed in place fiddling with the telephoto lens on his camera. He felt a tremor beneath his feet.

"That's when I got a little nervous because we hadn't felt that before."

That low vibrational motion most likely was caused by fresh magma pushing up through the rock, cracking it. Unlike the usual steam-and-ash eruptions, which are caused by water seeping down from above, this movement originated deep within the volcano, maybe a mile beneath the volcanologists' feet. Perhaps a new batch of gas-rich magma had flowed into the chamber below Semeru; when it mixed with the existing magma, its gas would decompress and begin rising like bubbles in a glass of champagne.

The sudden dissipation of the fog, Ramsey realized later, may have been caused by the heat of the hot magma as it pushed to the surface.

But none of that was evident before it was too late. Looking back toward the crater through his camera, Ramsey saw a wall of rock and ash shoot straight up toward the group gathered at the crater.

"I immediately knew we were in big trouble," Ramsey said. The Dutch hiker started to scream. Ramsey shoved him toward a rock outcrop about 20 feet away down the side of the ridge opposite the crater.

Rocks were starting to fall. The rocks -- molten when they hit the air -- were nearly 1,300 degrees Fahrenheit, and Ramsey knew it was important to remain conscious so that he could extricate himself from any scalding masses that struck him. He threw himself to the ground and positioned his camera bag behind his head. Small gobs of glassy stone pelted him, sticking to his clothes until he could flick them off. Something big hit the camera bag, knocking it off his head and out of his hands.

Something hit his left boot, melting all its rivets.

And within 40 or 45 seconds -- 60 seconds at most -- it was over. A minute later, Ramsey clambered to his feet. Ten feet away lay a smoldering

rock the size of a basketball. He found his camera case, which was melted in one corner.

"That's when I started hearing the screaming and wailing," he said.

Kimberly had been knocked unconscious. Unable to protect himself from the nearly molten projectiles, he suffered third-degree burns to his arms and legs.

Making his way to the crater's edge, Ramsey found the two senior Indonesian volcanologists, who had been caught in the direct blast of the eruption. He barely knew them. The man he knew as Willie, named Asep Wildan, and his colleague, named Mukti, were both dead, killed instantly from blows to their heads.

Amit Mushkin, the Israeli student, was largely unscathed, but Siebert, the other Smithsonian scientist, was bleeding from his head and had a large chunk of skin missing between the thumb and forefinger of his right hand.

Ramsey and the other survivors helped get Kimberly to his feet and back to the summit, where two other Indonesian scientists had remained. The Indonesians radioed for help.

Within a half-hour, Kimberly became coherent again and Ramsey assessed his injuries. He had a broken arm and a smashed hand. His pants had burned off and he had third-degree burns on the tops of both thighs. He was bleeding from a rip in the upper left arm of his jacket; closer inspection showed a hole almost the size of a half dollar that continued down to his fractured collarbone.

"I wanted to get him off the summit," Ramsey said, so they headed down the mountain, past their tents to a base camp 2,000 feet below the summit, where there was a small hut and room for a helicopter to land.

As they waited to be evacuated, Ramsey took out two suture kits from the first aid kit he had almost left behind and began to stitch up the gaping wound on Kimberly's shoulder.

"I had learned to do sutures on a big slab of roast beef," he said, but had never done it on a live human being before. "About halfway through, Paul said, 'Are you going to begin soon?' so I guess I wasn't too bad."

By 5 p.m., it was obvious that no helicopter would be coming that day. "None of us got much sleep that night," Ramsey said.

The next morning, word came that a helicopter rescue had been approved, but that clouds and rain would make it impossible.

So villagers, who had hiked up with supplies through the night, constructed a gurney for Kimberly and suspended it by ropes to a single pole supported on the shoulders of two men. The village men were small, skinny and usually barefoot, but they expertly moved Kimberly down the hill, with replacements taking over as each set of porters tired.

Ramsey, his left foot swollen from the impact of the flying rock, limped along in the procession, a tree limb serving as a makeshift crutch. Siebert, who had worked in Indonesia before, took the lead in communicating with the Indonesians and Mushkin aided with Kimberly's transport.

"All of us were kind of the walking wounded," Ramsey recalled, "so we didn't have much energy."

It was about 9:30 p.m. on July 27 before they arrived in the trailhead village of Ranupane, where Kimberly, Siebert, Ramsey and Mushkin piled into an ambulance headed for the next major city, Lumajong. When they arrived about 2:30 a.m., almost two days after the eruption, 30 or 40 reporters greeted them.

Siebert and Kimberly were flown to a hospital in Singapore. Siebert, now back at work at the National Museum of Natural History, declined to be interviewed for this story, explaining, "This tragedy is still much too close at hand for me." Randall Kremer, spokesman for the museum in Washington, D.C., said Kimberly continues to undergo treatment for his burns and is expected to make a full recovery.

Ramsey said doctors in Lumajong found nothing wrong with his bruised foot, though it still bothers him a month later. Covered in bruises, he returned with Mushkin to Semeru to gather up the camping gear. Ramsey then returned to the United States.

Hindsight is 20/20 and Ramsey wishes he and the others hadn't made their trek to Semeru. But he also knows it's not the last time he will visit a volcano.

"You really need to be out there," he said. "It's not enough to look at satellite images on a computer screen."

Reprinted from the Pittsburgh Post-Gazette August 27, 2000, Byron Spice, Science Editor

CURRENT GRADUATE STUDENT ENROLLMENT

Fouzan Al-Fouzan
William Lee Beatty
Jeffrey M. Byrnes
John A. Dembosky, Jr.
Melanie Hellman
Gina Hobbs
Barbara H. Homison
Candace L. Kairies
Ann G. Kim[Δ]
James Kradyna[Δ]
Kristen R. Lydy
William M. McCaughtry
Scott C. Mest
Joseph M. Minervini
Jennifer L. Piatek
Timothy L. Pierce
Amanda C. Reynolds
Paul A. Robb
Sharon Lauffer
Steven J. Schatzel
Garrett E. Sleeman
Sherry L. Stafford
Robert Templeton[Δ]
Christopher Westenberger

[Δ]Part-time students

On the lighter side.....

THE LAST REVISION

The draftsman and the designer
Are men of skill and vision
At least they are until they hear
That challenging word -- REVISION

The designer with a practiced eye
Surveys his grand design,
The draftsmen then expertly draws
Each complicated line.

"Complete," they sigh contentedly,
Miraculous precision.
Oh, optimists. Tomorrow brings
A new idea, and -- REVISION

Revision One adds this new piece
Revision Two improves it.
Revision Three makes it just right
Then number four -- removes it.

"You can't do this, you can't do that"
"We'll wait for a decision."
"But in the meantime just revise
That last revised revision."

Revise, revise, the very word
Fills draftsmen with dread.
Tho' die they must, they'll be revised
To make darn sure they're dead.

They trust that God's the perfect Designer
When He makes His decision,
If once they earn their wings they hope
There'll be no last -- REVISION

Revised by an "Unknown Designer"

DOCTOR OF PHILOSOPHY

Katharine J. Hakala

Late-Quaternary vegetation and climate history near Grass Lake, southern Cascade Range, California

Date: December 1999
Advisor: Harold B. Rollins
Committee Members: Thomas H. Anderson, Kathi K. Beratan, Walt Carson, Jack Donahue
Employment: Consultant

Amy S. Hale

A time dependent model of radiative and conductive thermal energy transport in planetary regoliths with applications to the Moon, Mercury, and Io

Date: April 2000
Advisor: Bruce W. Hapke
Committee Members: William A. Cassidy, David A. Crown, William Harbert, Ermentrout G. Bard
Employment: National Research Council Research Associate, Jet Propulsion Laboratory

Charles E. Whipkey

Atmospheric and basalt weathering cation inputs to soils and the development of secondary calcite and dolomite on the island of Hawaii

Date: August 1999
Advisor: Rosemary C. Capo
Committee Members: Jack Donahue, Brian W. Stewart, Harold B. Rollins, Oliver A. Chadwick
Employment: Assistant Professor, Mary Washington College

MASTER OF SCIENCE

Sarah B.Z. EcElfresh

GIS analysis and stress modeling of tectonic blocks at Cape Kamchatka, Russia using principal stress proxies from high resolution SAR: New evidence for the Komandorskiy Block

Date: April 2000
Advisor: William Harbert
Committee Members: Jack Donahue and David A. Crown
Employment: Instructor, Cedar Crest College

Mary Lynn Hronakes-Yurko

The strontium isotope and major and trace element composition of freshwater mussel shells as a record of streamwater chemistry: French Creek watershed, Pennsylvania, 1897-1998

Date: August 1999
Advisor: Brian W. Stewart
Committee Members: Rosemary C. Capo and Harold B. Rollins
Employment: Environmental Strategies Corp., Hydrogeologist

John O. Izzo

Light hydrocarbons in soil-gases, Lost River region, West Virginia: Relation to stratigraphy and geological structures

Date: December 1999
Advisor: Thomas H. Anderson
Committee Members: Kathi K. Beratan and David A. Crown
Employment: Consultant

Victoria A. Pretti

Geochemistry and strontium isotope composition of eastern Sierra and western White-Inyo Mountain Streams: Solute sources in Sierra Nevada stream water

Date: August 2000
Advisor: Brian W. Stewart
Committee Members: Rosemary C. Capo and David A. Crown
Employment: PhD candidate, SUNY at Binghampton

Sherry L. Stafford

Strontium-isotope ratios trace natural alkaline addition to coal mine drainage

Date: August 1999
Advisor: Rosemary C. Capo
Committee Members: Brian W. Stewart and Harold B. Rollins
Employment: PhD candidate, University of Pittsburgh

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Byrnes, J.M., Crown, D.A., and Ramsey, M.S., 2000, Thermal remote sensing characteristics of basaltic lava flow surface units: Implications for flow field evolution [abs.]: Lunar and Planetary Science Conference XXXI, Abstract 1867, Lunar and Planetary Institute, Houston (CD-ROM).

Crown, D.A., and **Mest**, S.C., 2000, Geologic mapping of MTM quadrangles -45252 and -45257, Reull Vallis region of Mars [abs.]: Lunar and Planetary Science Conference XXXI, Abstract 1969, Lunar and Planetary Institute, Houston (CD-ROM).

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Reynolds, A.C., and Capo, R.C., 2000, Paleoenvironmental reconstruction of the Pennsylvanian-Permian Dunkard Basin: Geochemical evidence from lacustrine core and associated paleosols [abs.]: Geological Society of America Abstracts with Programs, v. 32.

Schatzel, S., and Stewart, B.W., 2000, Coal mineral matter origin and provenance: A neodymium isotope study of the Lower Kittanning coal bed, western Pennsylvania [abs.]: Geological Society of America Abstracts with Programs, v. 32.

Snyder Hale, A. and Hapke, B., 2000, The thermal state of SO_2 frost on Io [abs.]: Lunar and Planetary Science Conference XXXI, Lunar and Planetary Institute, Houston (CD-ROM).

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Zimmerman, S.B., Harbert, W, Anderson, R.C., 1999, Changes in paleo-stress orientations as indicators of rotation at Cape Kamchatka, Russia, as resolved through GIS lineament analysis [abs.]: American Geophysical Union Fall Meeting, v. 80, p. F927.

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Mest, S.C., and Crown, D.A. 2000, Geologic Map of MTM Quadrangles -45252 and -45257, Reull Vallis Region of Mars, *U.S. Geological Survey, in review.*

Mest, S.C., and Crown, D.A., 2000, Geologic Map of MTM Quadrangles –40252 and –42057, Reull Vallis Region of Mars, *U.S. Geological Survey, in press.*

Piatek, J.L., **McElfresh**, S.B.Z., **Byrnes**, J.M., **Snyder Hale**, A., and Crown, D.A., 2000, Color and morphology of lava flows on Io: *Icarus, in press.*

Pretti, V.A. and Stewart, B.W., 2000, Solute sources and chemical weathering in the Owens Lake watershed, eastern California: *Water Resources Research, in review.*

Mest, S.C., and Crown, D.A., 2000, Geology of the Reull Vallis region, Mars: *Icarus, in review.*

PENNSYLVANIA SPACE GRANT CONSORTIUM FELLOWSHIP
1999-2000

AMY SNYDER HALE
SARAH B. ZIMMERMAN

Amy Hale and **Sarah Zimmerman** were awarded the Pennsylvania Space Grant Consortium Fellowship for their outstanding academic record and research in an area related to the NASA space program.

Amy's proposal was entitled "Studying thermal energy transfer in the surfaces of atmosphereless planets so as to better interpret remotely sensed data acquired from earth based observatories and NASA planetary missions". Her research results will be highly relevant to such topics as the interpretation of data from the thermal emission spectrometer on the Mars Surveyor spacecraft and where the water ice detected in the polar regions of the moon by the Lunar Prospector spacecraft can exist under stable conditions. Amy finished her PhD dissertation on the subject of thermal emission from planetary soils. Amy also spent part of the summer 1999 working at NASA's Jet Propulsion Laboratory in Pasadena, CA.

Sarah's proposal was entitled "Structural mapping from synthetic aperture radar data for Cape Kamchatka, Kamchatka, Russia and Guinevere Planitia, Venus." Sarah's master's research was on a tectonic interpretation of the Cape Kamchatka region of the Kamchatka Peninsula, Russia and Guinevere Planitia, Venus. She used SIR-C radar (Russia) and Magellan Synthetic Aperture Radar (SAR) (Venus) data for these interpretations by creating a lineament dataset for each region. There was also a strong GIS component to the projects to include geology, magnetics, gravity, and topography data where available.

MELLON PREDOCTORAL FELLOWSHIP

1999-2000
JEFFREY M. BYRNES

2000-2001
WILLIAM LEE BEATTY

William Lee Beatty and **Jeffrey M. Byrnes** were awarded the Mellon Predoctoral Fellowship for 2000-2001 and 1999-2000 respectively. Andrew Mellon Fellowships are awarded to students of exceptional ability and promise who are enrolled or wish to enroll at the University of Pittsburgh in programs leading to the Ph.D. in various fields of the humanities, the natural sciences and the social sciences. Lee Beatty's research proposal is entitled "The Spinose morphology of the bivalve Arcinella as a deterrent to predators: A test of the hypotheses of escalation and arms race." Jeffrey Byrne's research proposal was entitled "Compound lava flow fields on Earth and Venus."

THE HENRY LEIGHTON MEMORIAL GRADUATE SCHOLARSHIP
1999-2000

JENNIFER PIATEK
AMANDA REYNOLDS
GARRETT SLEEMAN
JOSEPH MINERVINI

Joseph Minervini, **Jennifer Piatek**, **Amanda Reynolds** and **Garrett Sleeman** were awarded the Henry Leighton Memorial Graduate Scholarship for the 1999-2000 academic year.

Joseph Minervini is completing the first year of his master's degree in geology and planetary science at the University of Pittsburgh. Joseph is from California where he earned a bachelor's degree in Soil Science from California Polytechnic State University in San Luis Obispo. His academic interests include soil science and geochemistry. He will begin work on his research project in the Owens Valley, located just east of the Sierra Nevada Mountains in California, this summer. Joseph's research project will investigate the sources of the suspended sediment in streams draining the Owens Valley watershed, including an analysis of the sediment within the Owens (dry) Lake in California. This May, he will spend one week in California collecting samples for his project and the following week he will attend a desert soils conference and tour in New Mexico. Registration fees for this conference have been funded by the Leighton scholarship. Joseph has been an active member of the earth science honors society, Sigma Gamma Epsilon, at Pitt and plans on serving as an officer in the organization for the 2000-2001 school year. His personal interests include swimming, surfing (when he's in California), and playing guitar.

Jennifer Piatek is currently completing her third year as a PhD student in the department. Her dissertation is a study of the interaction of light with particulate surfaces, such as those found at the surface of the Earth or another terrestrial planet. The ideal outcome of this research would be to allow geologists to make determinations of particle size with remote sensing data. Part of this research will be completed this summer at the Jet Propulsion Laboratory under the guidance of Pitt alumnus Dr. Robert Nelson: this trip will be paid for using the Leighton scholarship award. In addition to her research, Jennifer is a member of Sigma Gamma Epsilon, and has served as both the Secretary/Treasurer and President of this organization. She is also currently the graduate student representative to the faculty, and is one of two graduate students responsible for keeping the grad student computer lab up and running.

Amanda Reynolds is finishing her second year as an M.S. student. She is studying paleosols associated with late Pennsylvanian freshwater lake sediments in order to determine what type(s) of environments existed in the Appalachian Basin at that time. She is expected to present her material at the Geological Society of America conference in the fall and will defend her thesis at the end of the winter semester. Participating in the local Sigma Gamma Epsilon chapter and in the Graduate Student organization FAS-GSO, she has shown her commitment to and appreciation of the department.

Garrett Sleeman is completing his second year of study towards his master's thesis. His research focuses on changing sedimentation patterns in the Red River Delta and how it affect settlement patterns of prehistoric cultures in northern Vietnam. He received a Bachelor's degree in Anthropology with a focus in Archaeology from West Virginia University in 1993. Funding from the Leighton scholarship will help cover travel expenses allowing completion of his research began in the summer of 1999. Garrett is a member of the Geological Society of America and Sigma Gamma Epsilon. He is an avid traveler and enjoys camping, swimming and hiking.

SIGMA GAMMA EPSILON

SIGMA GAMMA EPSILON OFFICERS
1999-2000

President: Jennifer Piatek
Vice-President: Amanda Reynolds
Business Manager & Secretary: Sarah Zimmerman
Faculty Advisor: William Harbert

The Beta Chapter of Sigma Gamma Epsilon had a very successful year, both in the induction of new members and in fundraising activities. Ten new members were inducted in 1999–2000: Tim Pierce, Joey Minervini, Adam Nagle, Amy Snyder Hale, Bill McCaughtry, Debora Zieger, John Boulanger, Nicole Nastanski, Richard Ruffolo, and Ned Bolth. In addition, Scott Mest rejoined the Chapter after returning to Pitt to begin his PhD work. Full induction ceremonies were performed both in September and in February. Continuing members for 1999–2000 are President Jen Piatek, Vice-President Amanda Reynolds, Secretary-Treasurer Sarah Zimmerman, Andrea Borraidaile, Brian Ruskin, Candace Kairies, Erik Hoffman, Garret Sleeman, Jeff Byrnes, Jenny Lee, Lee Beatty, Sharon Lauffer, and Victoria Pretti.

The Beta Chapter would like to congratulate the recent graduation of the following active members: Sarah Zimmerman (MS), Sharon Lauffer (MS), Victoria Pretti (MS), Amy Snyder Hale (PhD), Jenny Lee (BS), and Andrea Borraidaile (BS). Good luck to you all!

Fundraising activities for 1999–2000 consisted primarily of selling submarine sandwiches. The response of departmental members and the general Pitt student community was very positive, resulting in steadily increasing sales and weekly sellouts. We look forward to continuing the sandwich sales in the upcoming year while initiating other fundraising efforts (selling mugs, T-shirts, etc.).

The Annual Departmental Banquet, aka. "Geoprom," was held in March at Duranti's Restaurant in Oakland. This year's event was co-hosted by SGE and the Geology Club. SGE membership cards and certificates were formally presented to our new members, and the esteemed W. A. Tarr Award was proudly presented to Jenny Lee.

The upcoming 2000–2001 year will be an active and exciting year for SGE at Pitt. New officers for the upcoming year were elected in April. President Tim Pierce, Vice-President John Boulanger, and Secretary-Treasurer Bill McCaughtry are planning activities such as tutoring for lower-division undergraduate geology courses, field trips, social events, various fundraising activities, and a Departmental softball game. Our first official meeting will be held in late September. Full induction ceremonies will be performed for new members, and we will set the groundwork for enriching activities throughout the school year.

---- Tim Pierce

B.S. in Environmental Geology

Graduates

Andrea M. Borradaile
M. Jeanetta (Jenny) Lee
Evonne M. Pacinda
Steven A. Wielechowski

Current Majors

John R. Boulanger
Christopher J. Ickes
Erica I. Love
Christopher T. Markley
Richard M. Ruffolo
Maureen K. Utz
Zachary Zrimsek

B.S. in Geology

Graduates

Joshua A. Banta
Scott M. Knoflicek
Heather L. Miller
Marc R. Wagner

Current Majors

Kelly A. Bavuso
Carrie N. Blakey
James A. Bleil
Edward A. Bolth
Jeffrey M. Cebula
Douglas G. Dean
Filip Gieszczykiewicz
Michael F. Golebiewski
Alex L. Hanko
Erik N. Hoffmann
Paul J. Korom
Sally S. Kuhn
Denise J. Mayes
Erin E. Minster
Adam R. Nagle
Nicole M. Nastanski
Jessica M. Oesterling
Stephen R. Pesch
Thomas J. Peterman
Melissa S. Remaley
Brian G. Ruskin
Ben J. Senkowicz
Marshall W. Smith
Dennis A. Szpara
Genevieve M. Triantafillou
Michael A. Urban
Erich V. Zorn

GIS Certificate

Joshua A. Banta
Scott M. Knoflicek
Kenneth P. Mignogna Jr.
Michael G. Spangenberg
Matthew A. Wolinsky

B.A. in Environmental Studies

Graduates

Michael A. Antelman
Jessica W. Baker
Michael R. Baltrusaitis
Robert Baranowski
Jennifer A. Beveridge
Candace A. Blumenfeld
Amanda B. Celo
Marisa J. Cicconi
Jodie J. Clouse
Nina Ca. Coleman
Jennifer A. Crock
John B. Davisson
Patricia M. DiGuilio
Cynthia K. DiPasquale
Michael J. Dooley
Ryan W. Fandray
Elizabeth A. Foley
Kimberly A. Green
Jeremy W. Hancher
Amanda J. Houpt
Heath Lahr
Nicole L. Householder
Amanda L. Hutcheson
David L. Irvine
Bridget C. Kerwin
Richard C. Kilpatrick II
Amy C. Magarity
Carrie Y. McMillon
Melsina M. Michaels
Christopher S. Park
Brian J. Richard
Jaclyn M. Samoni
Bryan L. Sanft
Tammy D. Schall
Jayme E. Schwalm
Kelly M. Sonville
Michael J. Speerschneider
Michael G. Spangenberg
Jayme E. Schwalm
Matthew A. Wolinsky
Donald M. Yoder

Current Majors

Sarah M. Alessio
Kristen L. Bailey
Laura L. Baney
Pamela A. Baumiller
Randall F. Bennis
Steven C. Bodnar
Lauren S. Burkert
Jason L. Bush
Elizabeth S. Capan
Gaylyn R. Castor
Monica R. Clayton
Ryan K. Cohen
Brett T. Coneybeer
John L. Day
Matthew R. Dominick
Michael A. Dunkle
Cassandra M. Enochs
Christopher D. Falbo
Cara D. Ferguson
Kristy L. Flavin
Jessica E. Freyer
Adam D. Gailey
Dean J. Galitsis
Christina L. Gebhardt
Justin R. Gilmore
Kimberly Gleser
Steven M. Graham
Brian W. Green
Emily E. Grisolia
Brittany L. Guthrie
Kenneth A. Haduch
Sharon L. Harden
Nicholas W. Harman
Jeremy J. Henchir
David S. Hornack
Daniel R. Hyslop
Kari E. Johnson
John E. Katras
Matthew F. Kaus
Kamwanya C. Kazadi-Tshibangu
Carrie A. Kiel
Katie A. King
April A. Kocis
Bruce P. Levan
Christopher J. London
Alyssa Lyons
Ron T. Malec
Jaclyn D. Matthews
Steven W. McGill
Scott T. Mough
Thomas S. Moutsos
Jessica M. Newberry
Erin E. Nock
Melinda A. Norbeck
Jeffrey A. Palm
Kevin R. Perkey
Peter B. Perrier
Moses S. Pinkston
Dean Matthew Poloka
Kevin M. Pryor
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Noel M. Weisenbacher
Catherine L. Welch
Nicole E. Yanich
Justin R. Zarzeczay
Deborah J. Zieger

UNDERGRADUATE: PUBLICATIONS

Bikerman, M., and **Boulanger**, J., 2000, Two-step heating K-Ar dating of Pennsylvania mangandese Ore (Cryptomelane) deposits: Journal of the Pennsylvania Academy of Science, v. 73, p. 148.

Ruskin, B.G., and Evans, M.A., 2000, Fluid inclusion analysis of veins from the western margin of the valley and ridge province, northern West Virginia: Implications for syn-orogenic paleofluid flow [abs.]: Geological Society of America Abstracts with Programs, v. 32, p. 29.

THE NORMAN K. FLINT MEMORIAL FIELD GEOLOGY SCHOLARSHIP 1999-2000

M. JENNY LEE, ERICA LOVE, CHRISTOPHER MARKLEY, BRIAN RUSKIN

The department was pleased to give four awards of five hundred dollars each in support of undergraduate students attending field camp. Applications for this support were assessed on the basis of merit, need, and a letter outlining achievements and plans for field work.

M. Jenny Lee is a senior who will graduate in August with a degree in environmental geology. She will be attending the field camp conducted by the University of Missouri at the Branson Field Laboratory near Lander, Wyoming. She will be attending the PhD program at the University of California, Santa Barbara where she has been awarded a Doctoral Fellows Scholarship. She has been the recipient of the 1999 Udall Scholarship and the Brackenridge summer research fellowship, and was president of the Geology Club for 1999-2000.

Erica Love is a senior who will graduate in August with a degree in environmental geology. She will be attending the University of Missouri-Columbia's field camp. She hopes to continue on to graduate school in hydrogeology and structural geology. She has completed two internships with the Pennsylvania Department of Environmental Protection. Her first internship in the summer of 1998 she worked with hydrogeologists and engineers sampling water wells in the north central region of Pennsylvania. Her second internship for the spring and summer 1999 found her working as a Geographic Information Specialist (GIS) for the Mine Subsidence Insurance Program in southwestern Pennsylvania. For her internship she co-authored a procedure manual for the GIS and created a demonstration CD-ROM for the program. She was also a member of Sigma Gamma Epsilon and was vice-resident of the Geology Club for 1999-2000.

Christopher Markley is a junior with a double major in Environmental Geology and Environmental Studies who plans to graduate in April 2001. He will be attending the State University of New York at Buffalo's field camp this summer that explores field areas in Colorado, New Mexico, Utah and Wyoming.

Brian Ruskin is a junior pursuing a double major in geology and studio arts. He will be attending the University of Missouri's Geology Summer Field Course at the Branson Field Laboratory near Lander, Wyoming. After graduation he hopes to pursue a graduate degree in geology and hopes to become a professor.

AMERICAN MINERALOGIST UNDERGRADUATE AWARD
1999-2000

BRIAN G. RUSKIN

The American Mineralogist Undergraduate (AMU) Award recognizes outstanding students who have shown an interest and ability in the discipline of mineralogy. The AMU Awards allow MSA to join with individual professors to formally recognize outstanding students. Each student is presented a certificate at an awards ceremony at his or her university or college. In addition, each recipient receives a complimentary student membership, including a one-year subscription to *American Mineralogist*.

Dr. Edward Lidiak sponsored both years' outstanding undergraduate students.

TARR AWARD
1999-2000

M. JENNY LEE

M. Jenny Lee won the W.A. Tarr Award who was presented by the Beta Chapter of the Sigma Gamma Epsilon for the academic year of 1999-2000.

BARRY M. GOLDWATER SCHOLARSHIP
2000

BRIAN G. RUSKIN

Pittsburgh, April 7 – Four University of Pittsburgh undergraduates have won prestigious Barry M. Goldwater Scholarships for 2000.—No institution may nominate more than four Goldwater candidates, and this year, all four Pitt nominees for these scholarships were winners.

Recipients are: Christopher Farrell, a junior majoring in biological sciences; Jacob Nadler, a junior majoring in neuroscience; Brian Ruskin, a junior majoring in geology and planetary science; and Kathlean Schaefer, a sophomore majoring in chemistry.

The Goldwater Scholarship was established by Congress to recognize outstanding students in the fields of mathematics, the natural sciences, and engineering. It is the premier undergraduate award of its type in these fields. Goldwater Scholars this year were selected based on academic merit from a field of 1,176 competitors nominated by colleges and universities nationwide.

"A high caliber of independent research is required to win the Goldwater," says University Honors College Dean Alec Stewart, Pitt's Goldwater Scholarship representative. "Pitt's near-perfect record year after year with the Goldwater speaks volumes about the resources available here for ambitious undergraduates in the natural science and engineering."

The Goldwater Scholarship covers tuition, room and board, fees, and books – up to a maximum of $7,500 – for each student's junior or senior year of study. Pitt undergrads have won 24 Goldwater Scholarships since 1990.

GEOLOGY CLUB

GEOLOGY CLUB OFFICERS 1999-2000

President: **M. Jenny Lee**
Vice-President: **Erica Love**
Business Manager: **Andrea Borradaile**
Secretary: **Brian Ruskin**
Exhibit Coordinators: **Heather Miller and Evonne Pacinda**
Faculty Advisors: **Michael Bikerman and William Harbert**

The last year has been one of the most productive in recent history for the Geology Club. We'd like to believe that a new era has begun for us, one that will see us more active in the department and in the local community.

We took a variety of field trips this year, including the traditional four-day trip to Bancroft, Ontario - the mineral capital of North America. This year's trip was well attended and all had a wonderful time. The trip included the usual mineral collecting sites with prizes ranging from uraninite and biotite to beryl and garnets. One adventurous group this year located some new sites that provide not only beautiful minerals for collection, but also a closer look at the regional geology of Bancroft.

Other field trips this year included: fossil collecting in New York with Dr. Rollins, a visit to the Gem and Mineral collection at the Smithsonian, a day trip to learn more about a local watershed association and their work with abandoned mine drainage, and a mini-tour of the geology of Schenley Park.

Field trips were not the only thing keeping the Geology Club busy this year. We played a large role in organizing the installation of both an undergraduate computer lab, and a resource room. Both rooms are located on the second floor of SRCC and are finally fully functional. The computer lab is equipped with six computers, Ethernet connection, and printing capabilities. The resource room is a perfect place for quiet study and research. So many journals and books were donated that it was a challenge to find shelf space for them all.

A major goal of ours this year was to increase the exposure of the Department of Geology and Planetary Science both on campus and in the community. To this end, we participated in the freshman activities fair in both the fall and spring semesters. The number of active members in the club doubled in comparison to the previous year. We also volunteered at the Carnegie Museum of Natural History, helping to organize educational activities for the Children's Rock and Mineral Club. We were all enthralled with the enthusiasm and intelligence of these young geologists. We hope to continue and expand the newly formed relationship with the museum.

Our fund raising activities were also accelerated. In addition to our soda, candy and t-shirt sales, we held two silent auctions and a raffle. We are pleased to report that our treasury increased enough this year that we were able to add a field trip to Mammoth Caves to our itinerary for next year.

This year has been a good one for the geology club, and next year promises to be even better. Planning has already begun to make next year's activities the best we have ever sponsored.

--- Jenny Lee

Website: http://www.pitt.edu/~geoclub/ , Email: geoclub+@pitt.edu

Pitt Students Need Your Advice - Please Help Us!

The Department of Geology and Planetary Science is in the process of creating a ***Point of First Contact Program*** for G&PS students that will help smooth the transition from college to career in today's difficult job market. We want to give our students the best start on their careers we can - ***and we need the help of our alumni.***

The goal of the a ***Point of First Contact Program*** is to build an extensive database of alumni who are willing to talk to G&PS students about companies and agencies in which they work. The database will only be accessible in the G&PS main office to our students, where they will be able to research the current job market and pursue possible summer internships.

We are asking you to agree to:

- accept a prearranged telephone call from a student, either at home or work
- explain the structure of your place of employment
- provide the name of an individual in your company to whom the student might address a cover letter and resume
- if possible, suggest a 'next step' that the student might follow

We need as many alumni as possible to join this program to make it viable. We are seeking both established and recent graduates in all disciplines. Recent graduates are especially valuable because they have just gone through the process and are able to communicate their job search experience with current students, and well-established alumni have the advantage of experiences and wider personal networks. Please show you support for the Department of Geology and Planetary science by joining this program.

---------- ***Point of First Contact Program*** ----------

I would like to join the program and will talk to undergraduates in:
_____ geology _____ environmental geology _____environmental studies

Name: _____

Job Title: _____

Company: _____

Company location: _____

Company does work in the following fields: _____

Company looks for people with skills in the following field(s): _____

Is company interested in summer interns? YES/NO: _____

If yes, what background should the students have? _____

Students may telephone me at: _____ [work] _____ [home]

FAX: _____ e-mail address: _____

Special requirements to be followed by the student (*e.g.* times to call, fax first, etc):
Comments:

RETURN TO: Harold B. Rollins, Chair, G&PS, 321 EH, U. of Pittsburgh, Pittsburgh, PA 15260-3332.

In four short years, the Environmental Studies program has achieved three milestones: More than 100 students are majoring in ES; more than 50 have graduated; and the program now has an official coordinator, thanks to a generous grant from the Heinz Foundation. MARK COLLINS has joined our department as ES advisor and lecturer. In addition to registering students and setting up internships and field studies, Mark also teaches a course in professional writing and communication, which is now a requirement for Environmental Studies majors. - Mark Collins

1999-2000 Advisory Board

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Energy and the Environment: Challenges of the Future

A Symposium in Celebration of the Retirement of Professors Michael Bikerman & Edward Lidiak

April 7 & 8, 2000

A Comprehensive Environmental Approach to Mining in a Geologically and Environmentally Sensitive Setting
Patrick R. Atkins
Director of Environmental Control, Alcoa

Does Russian Legal Reform Act Matter? Evidence from Crude Oil-Export Allocations
Daniel M. Berkowitz
Department of Economics, University of Pittsburgh

Late Neogene Compressive Deformation in the Salinas Grandes Basin, Northwest Argentina
Chris D. Connors
Department of Geology
Washington and Lee University

Structural Analysis of the Lower Congo Basin - Offshore Congo
Franco Corona
Senior Geologist, ExxonMobil Exploration Company

Challenges of the 21st Century: The Legal Prospective
Ronald Cusano
Co-Chair, Environmental Practice Group
Schnader, Harrison, Segal and Lewis

Energy and Water; Mining Coal and Maintaining Clean Water
Richard Gray
Senior Vice President, GAI Consultants

Globalization, Development, and the Environment
Robert M. Hamilton
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Oil and Gas in Pennsylvania: Where Do We Go From Here?
John A. Harper
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Pennsylvania Geological Survey

Surface Geochemical Applications to Petroleum Exploration
and
Application of Forensic Geochemical Methods in Assessment of Hydrocarbon Release
Victor T. Jones
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Oil is Where You Find It
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Risk Assessment in International Oil and Gas
Michael Rodgers
Senior Director, Petroleum Finance Company

Stratigraphic Prediction from the Shelf to Deepwater- New Hydrocabarbon System and Plays
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Drilling for Gas in the 21st Century: Politics and Policy
Christine J. Toretti
President, S.W. Jack Drilling Company

How to Manage Industrial Leftovers
Bette J. Waters, Esq.
Vice President, Secretary and General Counsel
ALCO Industries, Inc.

Recent Exploration in the Appalachian Basin
William A. Zagorski
Manager, Great Lakes Energy Partner

09/16/99 Samuel W. Berkheiser, Department of Environmental Resources, Pennsylvania Geological Survey, *Industrial minerals in Pennsylvania*

09/23/00 Michelle S. Broido, Research & Health Sciences, University of Pittsburgh, *Global change, or not global change: Is that the question? Musings of a former fed*

10/13/99 Robert C. Balling [The AAPG 1999-2000 Distinguished Lecturer Program], Office of Climatology, Arizona State University at Tempe, *A climate of doubt about global warming*

1021/99 Michael Bau, Department of Geosciences, The Pennsylvania State University, *Geochemical twins and their fate in magmas and natural water*

11/04/99 Tim Lowenstein, Department of Geology, State University of New York at Binghamton, *Secular changes in the chemistry of seawater: Evidence from fluid inclusions*

11/11/99 David A. Dzombak, Department of Civil and Environmental Engineering, Carnegie Mellon University, *Sorption of NOM and effects on reactions at the oxide-water interface*

11/18/99 Thomas E. Jordan, Key Environmental, Inc., *Delineation of a former landfill site using magnetic, electromagnetic, ground penetrating radar and global positioning system technologies*

12/04/99 H.M. Skip Kingston, Dirk Link, and Ye Han, Department of Chemistry and Biochemistry; the Center for Microwave and Analytical Chemistry and the Center for Environmental Research and Education, Duquesne University, *New standard methods developed for environmental analysis using inductively coupled plasma mass spectrometry*

01/13/00 Lori Bettison-Varga [NAGT 1999-00 Distinguished Speaker] Department of Geology, College of Wooster, *Integrating student research and education: A view from the trenches tips on acquiring funding for undergraduate research*

01/20/00 Jeen-Shang Lin, Department of Civil Engineering, University of Pittsburgh, *The September 20, 1999 Taiwan earthquake*

01/27/00 Hassan A. Karimi, Department of Information Science and Telecommunications, University of Pittsburgh, *Towards building environmental decision support systems through the integration of GIS and environmental models*

02/17/00 Andrew Kurtz, Penn State Astrobiology Research Center, Department of Geosciences, Pennsylvania State University, *Germanium as a silicate weathering tracer: Applications from Precambrian to present*

02/21/00 Oliver A. Chadwick, Department of Geography, University of California, Santa Barbara, *Changing sources on nutrients during four million years of ecosystem development in Hawaii*

03/02/00 Tim Andreachek, Westinghouse Electric Company, *Seismic design considerations for commercial nuclear power plants*

03/23/00 William W. Korth, Buffalo State College, *A unique family of rodents from the Miocene of North America*

03/24/00 William Blanford, Department of Geosciences, University of Arizona, *Complexing sugar enhanced flushing of a trichloroethene contaminated aquifer*

03/27/00 Chen Zhu, Department of Ocean, Earth & Atmospheric Sciences, Old Dominion University, *Hydrogeological responses to paleoclimatic changes during late Pleistocene and Holocene, Black Mesa basin, Arizona*

03/31/00 Robert Holt, Sandia National Laboratories, *Can we model flow and transport in heterogeneous unsaturated zones?*

04/03/00 Mark Conrad, Center for Isotope Geochemistry, Lawrence Berkeley National Laboratory, *Isotopic investigations of the fate and transport of groundwater contaminants in the Snake River Aquifer, Idaho*

04/06/00 Michael F. Sheridan, Geology Department, State University of New York at Buffalo, *A tale of two hazards: Colima Mexico and Casita Nicaragua.*

04/13/00 Mark A. Evans, Department Geology and Planetary Science, University of Pittsburgh, *Examining the relationship between remagnetization and orogenic fluids: Central Appalachians*

04/17/00 Charles E. Jones, Department of Geological Sciences, University of North Carolina, Chapel Hill, *History of Andean uplift in the Amazon Basin: A first step toward evaluating the potential role of the Andes in influencing global climate*

04/20/00 Suzanne Smrekar, Geophysics and Planetary Geology Group, Jet Propulsion Laboratory, *Focusing planetary heat flow through the lithospheric lens*

05/05/00 Manuel A. Iturralde-Vinent, Museo Nacional de Historia Natural, Grupo de Geologia y Paleontologia, Cuban geology: A new plate-tectonic synthesis

Tom Burbine (MS, 1991)

Tom Burbine just got his PhD in Planetary Sciences from MIT. He is currently a postdoc in Mineral Sciences at the National Museum of National History at the Smithsonian in DC.

Gary D'Urso (MS, 1981)

I have recently completed my PhD at West Virginia University and am currently a sabbatical replacement for Fall 2000 at Clarion University.

I am contacting schools in central and western PA, as well as, southern NY to schedule seminar/guest speaker presentations of my research. I have remapped the glacial margins in Slippery Rock Creek basin, correcting mapping errors from the 1950's. I have also developed a paleohydraulic reconstruction of the Wisconsin meltwater floods, paying particular attention to the western outlets of Proglacial Lake Watts, which was believed to have drained catastrophically. My model argues that there was no such catastrophic draining. As important as this fact is, the methodology I developed to force an engineering model, in this case HEC-RAS, to account for the geological evidence is even more important. Therefore, this presentation, may be of interest to some members of your engineering faculty, as well.

For the time being, I can be contacted by e-mail - gdurso@MAIL.CLARION.EDU or at (814) 393-2577 or (814) 223-9106 in the evenings.

Michelle Rogan Finnemore (BS, 1985)

Michelle has been promoted to Project Manager for the Gateway Antarctica, University of Canterbury, in Christchurch, New Zealand. Gateway Antarctica is building on database, GIS and remote sensing work that in the past was not handled by any one organization. This work includes: map production, data capture and data management, aerial photo and satellite image storage and investigation, production of Management Plans and Protected Areas Plans for New Zealand, USA and Italy. Gateway Antarctica is part of the UNEP GRID network and, as such, works with other UNEP organizations on environmental databases and environmental assessment models for the Antarctic region.

Tom Flaherty (MS, 1993)

Tom Flaherty continues in his position as the Oil & Gas Management permits chief for the Pittsburgh region at Department of Environmental Protection. In addition to his regular duties, Tom is conducting an independent research project on the stratigraphy of the Upper Devonian Elk sands in southwestern Pennsylvania. A paper may be in the works over the next year. This past summer Tom visited Ireland for the first time. After spending the two-week vacation in central and southern Ireland, he plans to return in a year or two to see northern Ireland and Scotland. Tom's daughter began college in Fall 2000 at Case Western Reserve University as a math/engineering major. Tom sends his best wishes to all his fellow GPS alumni and former Professors.

Ralph P. Harvey (PhD, 1990)

Fall of 2000 finds me imbedded in my junior faculty job at CWRU like a fly in amber; scientifically relevant but going nowhere. I'm teaching some popular classes (Earth and Planets, an intro level planetary geology course, has 40+ students in it, nearly a record for our department's offerings), spending far too much time speaking publicly about Mars (and the possibility of life thereon), trying to finish up a microprobe lab (instrument in place, upgraded, and I'm struggling with maintenance and software issues), and trying to be a good dad to my boy Tucker (who turns 3 in October). I still run The Antarctic Search for Meteorites program that Bill Cassidy so kindly handed down to me, and NSF recently awarded us another 6 years of support (through 2006) but at a lower level than I

Ralph P. Harvey continued

had hoped for. So, life goes on at a pace slower than the calendar on the wall says it ought to- no disasters taking place, but no fantastic triumphs either. Just lots of little everyday disasters and triumphs, the kind that are amusing when they happen to somebody else.

Darius Greenidge (PhD, 1993)

In Japan, I have been continuing research in the study of color centers and crystal defects by optical absorption methods, ESR, NMR and x-ray diffraction techniques. The work is very much interesting and fun. Right now there is very much earthquake and volcanic activity in Japan, so it is quite a thrill to go out and visit some of the volcanoes. On one trip, I was relaxing at a hot spring inn, admiring the various rocks they used in the floors and walls of the bath area, when I recognized a sandstone with an iron stained pattern resembling a dinosaur footprint. After getting out of the bath, I asked the manager about it, who simply laughed. However, when he saw that I was serious enough to have him research the locations from which they carted the rocks, it turns out that that sandstone actually was brought from a region in Japan where dinosaur footprints (which are rare occurrences in Japan) have been found. They were thrilled about that (Pitt alumnus Andy Redline may get a laugh out of that).

I was once asked by the family of the late Dr. Victor Schmidt, to say, "Hello", for them to a Dr. Yagi, geophysicist at Tokyo University. I did look him up and sent a message to a Dr. T. Yagi, only to find that the name I had found was actually that of the son, who had succeeded him. However, I will get a chance to meet the father, now aged 86 and living in Hokkaido. It seems that he and Dr. Schmidt were very good friends.

Well, that's all for now. Take care. Darius

Rene (Kearney) Kotyk (BS, 1994)

Rene (Kearney) Kotyk graduated from The University of Pittsburgh with a B.S. in Geology in 1994. She is married to David Kotyk and they have one daughter, Sierra Marie Kotyk born February 1998.

She is presently employed at Envirotrol in Darlington,PA. Envirotrol is a resource, recovery, and reactivation carbon facility. She is a research and development assistant. Also she has been completing Environmental Technology classes at the Community College of Beaver County.

Her email address is ReneK27@excite.com.

Brian Kirchner (MS, 1999)

Our biggest news is that we now have a son, Jaime Myron Kirchner, whom some of you have already met. He was born July 9th, 1999, and is now 13 months old, full of energy and curiosity. He keeps us busy. When we're not doing Jaime-related things, we are working at a software company (Brian) and pursuing a master's degree in Adult and Community Education at IUP (Rachel). Brian is looking at PhD programs at various schools around the country and is preparing to take the GRE sometime in the next month. Overall we are very busy and excited about the future.

Scott Knoflicek (BS, 1999)

I live in Delran, New Jersey and am currently working as a Hydrogeologist at an environmental consulting firm in Central New Jersey. We design, operate, and manage treatment systems for retail petroleum facilities. We are also working on an environmental database management system for our largest client, ExxonMobil Corporation. I am currently playing on my company's Volleyball team, and enjoy seakayaking, mountain biking and hiking on the weekends.

Chad Lupp (BS, 1999)

Hey Pittsburgh! I have been living in Golden, CO since Sept. 1999. I am working for MFG, Inc. in Boulder as a GIS analyst. I am working on mapping for an array of projects that deal mainly with environmental remediation. I love the work, I love the mountains and I recently got engaged to my girlfriend Rebecca of 4 years.

Hope all is well in the Burgh!

Chad Lupp, GIS Analyst, MFG, Inc, 4900 Pearl East Circle, suite 300W, Boulder, CO 80301, (303) 447-1823, chad.lupp@mfgenv.com

Suzanne G. Traub-Metlay (PhD, 1993)

Greetings from the Front Range of the Rocky Mountains! I sincerely hope that you are doing well. After many years of public and private sector employment (including two years directing the State Clearinghouse in the Florida Governor's Office), I am finally back where I began -- in geology and planetary science. Along with my husband, Mike Metlay (PhD, Physics, Pitt 1992) and daughter, Julia (born 1995), I moved to Denver, Colorado, in 1996. We now live an hour north of Denver and are expecting our second daughter in December 2000. I am currently an instructor at Front Range Community College (FRCC), a two-year college, and at The Metropolitan State College of Denver (MSCD), a four-year college. I also serve as a part-time academic advisor at MSCD. In addition to a summer stint teaching physics and scientific writing to Upward Bound high school students at the University of Colorado at Boulder, I have taught several college courses in geology, geography, and astronomy.

Last semester, I successfully led the effort to change textbooks in two departments at FRCC, where I also won a $400. grant to adapt website information for classroom use in a "Learning College". I have also written textbook reviews for Freeman and Prentice Hall publications, and hope to begin authoring textbook supplements soon. Needless to say, I am loving it!

Please feel free to drop in and visit at any time (GSA conference time especially)! You may reach me at: Suzanne Traub-Metlay, 821 S. Gay St., Longmont, CO 80501, (303) 702-9297 (home), (303) 404-5597 x3087 (voicemail), traub@iname.com

Tom Wright (BS, 1998)

Marinne (my wife of two years) and I bought a house in Penn Hills (a suburb of Pittsburgh) and are planning on increasing the family size shortly. I am still testing coal for USX in their research center in Monroeville. Other than that this hasn't been a very eventful year. The house has occupied most of my free time, which is a nice distraction since I was usually bored to tears in the apartment.

Sarah B. Zimmerman McElfresh (MS, 2000)

After graduating in April 2000, Sarah taught Intro to GIS at Pitt in June, got married in Massachusetts over the fourth of July weekend and then moved to Allentown, PA after a honeymoon in Nova Scotia. She will be teaching Physical Geology at Cedar Crest College in Allentown for the fall semester and Historical Geology in the spring as a part-time instructor.

We are very grateful to the below mentioned contributors to these funds. Your generosity is greatly appreciated.

If there are any questions, or concerns, please contact either Todd Bowers at (412) 624-8784 or Harold Rollins at (412) 624-8783. We try very hard not to miss a single donor, but we aren't perfect. If we goof, please let us know. Thanks.

Department Gifts

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____ **Norman K. Flint Memorial Field Geology**
In appreciation and recognition of devoted and inspiring teaching in the field and in the classroom, his students, friends, and colleagues have established in his honor the Norman K. Flint Memorial Field Geology Fund. Mrs. Flint will match gifts up to $5,000.

____ **Frances Dilworth Lidiak Memorial**
Money generated from this account is used for departmental seminars to which outstanding scientists will be invited to present public lectures on topics in the geological and planetary sciences.

____ **Alvin J. Cohen Memorial**
The family of Dr. Cohen has suggested that donations in memory of Dr. Cohen be made to the Department of Geology and Planetary Science for support of students conducting basic research in fields close to Alvin's interests.

____ **Henry Leighton Memorial**
The scholarship is established in response to a contribution from Professor Leighton's daughter, Helen Leighton Cannon. A permanent graduate scholarship fund has been established and the scholarship is awarded on the basis of merit and need.

____ **Harry Werner Oil Finders Endowment**
In an effort to continue to attract Pitt students to prepare themselves to meet the diverse challenges presented during the search for energy resources, Franco Corona initiated the Harry J. Werner Oil Finder's Endowment.

____ **Major Equipment**
Bill and Bev Cassidy have provided the initial monies in an effort to augment and enhance departmental instrumentation. The FAS Dean Office then matched the initial amount, matched by Bev's employer, Westinghouse Corporation.

____ **Victor A. Schmidt Memorial Classroom**
In memory of Vic Schmidt and in commemoration of his love of teaching, family, friends and colleagues have begun the memorial classroom fund.

____ **Unrestricted Departmental Gifts**

____ **Other (please specify)** _____

NAME: _____

ADDRESS: _____

CITY, STATE, ZIPCODE _____

PHONE NUMBER _____

AMOUNT OF DONATION: $_____

Please complete this form so that we can include your news in the "Alumni News" section next year.

Name_____Degree_____Year_____

Address_____

Spouse's Name_____

Names and Ages of children_____

Company with which you are affiliated:_____

Your Position, Title, etc._____

Your duties_____

Other items of potential interest to classmates: Write on overleaf

Information on other departmental grads? Write on overleaf

Please return to:

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