

ALUMNI NEWSLETTER

1994

Department of

Geology and Planetary Science

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Thanks to Rochelle, Candy, Kathleen and Jodi
for putting this newsletter together.

On the cover:

Cassidy Glacier appears on the recently published topographic map of Beacon Valley, Antarctica. Professor William Cassidy has spent 15 field seasons in Antarctica, recovering meteorites that are distributed worldwide to research scientists.

U.S. Geological Survey and the New Zealand Department of Survey and Land Information in cooperation with the U.S. National Science Foundation, 1993, Beacon Valley, Antarctica 77199-Y1-TM-050, Department of the Interior, U.S. Geological Survey, scale 1:50,000-series (Topographic).

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T.A.'s Tale - Lucky Seven

Dear Alumni and Friends:

The year 1994 was marked by a number of notable departmental happenings. **Jack Donahue** was awarded the Rip Rap Medal of the Archaeological/Geology Division of the GSA. The presentation was made at the awards banquet of the national meeting of the Geological Society of America last October in Seattle. Earlier, **Jack Sharkey** was honored as a pioneer in Mass Spectrometry along with A.O. Nier and F.W. McLafferty of Cornell University. Jack and the others traced the development of commercial mass spectrometers from 1940 to the present at the Waters Symposium held at the Pittsburgh Analytical Conference in Chicago. Jack was honored for his early contributions to mass spectrometry instrumentation and for teaching the first graduate level mass spectrometry course in the country. **Ed Lidiak** has just returned from a conference in India held in honor of William Fyfe and Kenzo Yagi. The conference was organized by Alok K. Gupta, a former student and post-doc with Ed. Alok K. Gupta, who has recently been elected to the National Academies of India, visited Pittsburgh late last summer and recalled the days during the mid-sixties when the infrastructure of the department as it is today was being formed. **Bruce Hapke** has been selected as a Fellow of the American Geophysical Union. All that is needed to top off the year is for sales of Bruce Hapke's book, which represents comprehensive treatment of reflectance and emittance spectroscopy, to skyrocket.

We hope that you share in the pride that we feel about the achievements of these faculty and alumni.

Environmental Geology

Students are attracted to the new major in environmental geology. As one might expect, the curriculum has some kinks. One problem is that there are so many requirements that students have a difficult time scheduling such things as chemistry - oops. This has stimulated continuing appraisal of both the traditional geology and environmental geology curricula. We are determined to fix them.

New Faculty

In the midst of this curricular ferment, G&PS is exceedingly fortunate to have been joined by **Dr. Rosemary Capo** and **Dr. Brian Stewart**. Our aspiration is that they develop and nurture an extensive program in isotope geochemistry with emphasis upon environmental applications. Rose earned BS and MA degrees at the University of Texas (Austin) and her PhD at University of California (Los Angeles). Before her arrival, she was a Post-doctoral Fellow at Caltech and at the Jet Propulsion Lab in Pasadena, California. Capo gathered information about element fluxes from the atmosphere and the processes and rates of silicate mineral weathering and dissolution, and how these parameters have changed with global climate fluctuations. Understanding the flux of elements from land to sea to atmosphere may yield

Chairman's Letter

New Faculty continued

insights into the formation of soil, paleoclimate and paleoceanography. Other work involves trace elements and isotopes which may be used to track the sources of cations and metals in groundwater and to quantify the extent of the interaction of fluids with surrounding rocks.

Brian Stewart earned an undergraduate degree from Brown University, before matriculating at U.C.L.A. for a PhD. His PhD research involved use of the isotopes of neodymium and strontium to study layered mafic intrusions, which are the crystallized remains of volcanic "plumbing" systems. Later, during post-doctoral work at Caltech, he used Nd and Sr to study the chronology of planet formation and the physical and chemical conditions that applied during the formation of crust and core soon after condensation of the planets 4.5 billion years ago. This work dovetails nicely with that of Bill Cassidy whose interest in and work with meteorites of Antarctica is well known. Stewart has also studied soil formation processes. His work has shown that isotope systems may be used to identify soil weathering sites and that significant changes in the distribution of soil nutrients may take place on a time scale of decades.

Fund-raising for major equipment

Drs. Capo and Stewart provide new impetus and focus for the departmental aspiration to develop first-rate capacity in a number of geochemical systems. G&PS is exceedingly grateful to Dean Peter Koehler for the support of this program. However, much remains to be done and in order to reach departmental goals it is necessary to shift the focus of our fund raising. A high priority has been acquisition of a scanning electron microscope. This instrument is still important to a number of faculty and arrangements have been made to share in the use of existing on-campus instruments at nearby sites. At this time major equipment fund-raising efforts will focus upon acquisition of an inductively-coupled plasma mass spectrometer (ICP-MS), and Capo and Stewart are using start-up matching funds to raise money for a thermal ionization mass spectrometer (TIMS). These instruments will create a focus around which the Department of Geology and Planetary Science (G&PS) will build an active program of research in environmental geochemistry. Existing high temperature and planetary geochemistry in G&PS will also benefit immensely from this significant augmentation of first-class instrumentation. The ICP-MS instrument will allow quantitative analysis of most elements in geologic, biologic, hydrologic, and atmospheric materials, while the TIMS instrument provides a means of measuring isotopic ratios of selected elements in these materials. These ratios are used as tracers for physical and chemical processes, "fingerprints" for sources feeding natural systems, and as geologic chronometers.

Chairman's Letter

The Record

For the academic year 1994-95, forty-two courses were conducted by twelve faculty, of which the average faculty load was 3.3 courses. A total of 2541 students were enrolled in these courses for 7704 credit hours. A breakdown per term for courses is: **fall term (95-1)** - twelve faculty taught 19 courses for an enrollment of 1240 students totaling 3730 credit hours; **spring term (95-2)** - eleven faculty taught 20 courses for an enrollment of 1160 students totaling 3551 credit hours, and **summer term (94-3)** - three faculty taught 3 courses for an enrollment of 141 students totaling 423 credit hours.

Twenty research proposals with requests for \$2,023,715 were submitted between May 1993 to present. Of those twenty submitted, six were awarded for \$167,203 and six are pending for \$467,509.

Undergraduate enrollment currently is 35 students (Juniors and Seniors); 30 graduate students, of which 27 are full-time and 3 are part-time, are also enrolled.

Student Awards

It is a pleasure to announce that we have made awards from the Flint and Leighton funds in support of students.

The **Norman K. Flint Memorial Field Geology Fund** was established by his wife Margaret to support undergraduate field activities. **Dan Cusik** is the first awardee. Dan attended field camp at University of New York at Buffalo.

The **Henry Leighton Memorial Scholarship Fund** was established by his daughter Helen for support of graduate students. Helen Leighton Cannon graduated from our department and had a distinguished career as a paleontologist at the U.S.G.S. **John Dembosky** was awarded the Henry Leighton Memorial Scholarship Fund. John's interest is remote sensing.

With best wishes, very cordially yours,



Tom Anderson

THOMAS H. ANDERSON [taco@vms.cis.pitt.edu]

It is Tuesday, January 3, 1995 and what a difference from last year! Cold, but probably less than an inch of total snow accumulation this season in contrast to the feet (!) on the ground last January. Furthermore, what a peachy, warm, dry Fall we had. Enough weather.

What does it mean when you hear a rattlesnake rattle, behind you, waist high? In my case it reveals that eyes may be going bad but reflexes are just dandy. I really must be more aware of rattlers sunning themselves stretched out in sage bushes. This happened in April in northwest Sonora, where I have completed the initial mapping phase of a large Jurassic strike-slip fault zone. The fault zone is kilometers wide and slivers of the faulted rocks oozed out of the main displacement zone and slid sideways during lateral movement. Neat stuff.

Prior to the fault zone study I spent a few weeks with colleagues Jim and Mary Beth McKee in Mexico across the border from Tombstone, well actually, Douglas, Arizona. We found small-mountain-sized blocks together in an area of about 40 km². We think these masses accumulated in a fault-bounded basin after sliding slowly off the steep basin margins. I know tequila is inexpensive in Mexico, but this is really what may have happened! I reported on both of these projects at the Cordilleran Section Meeting of the Geological Society of America meeting in March. Later, in the Spring, I participated in a Symposium at the Rocky Mountain GSA Section meeting in honor of Professor Lee Silver who served as my mentor during six-years (1968-1974) of post-doctoral work at Caltech.

During the summer I visited Jim and Mary Beth at University of Wisconsin, Oshkosh in order to discuss research and write.

In the Fall, I used a new textbook for structural geology, which kept me busy. I learned as much as the students. I also enrolled in a short course in Geographic Information systems at the National GSA meeting.

Patti Campbell has defended and submitted her dissertation. Now if she can only get me up to speed on Kathi Beratan's computer, we will be map-making fools! Zhang Qing, whom I met in Wuhan, China at the Seismological Institute, has arrived and enrolled. Her goal is to analyze images of the Tanlu fault zone in eastern China to characterize its enigmatic southern extent.

The Master Space Plan of the University has been submitted to the City of Pittsburgh. I am hoping that my duties as co-chairman of the faculty Senate Plant Utilization and Planning Committee will diminish as a result of the culmination of this phase of the planning process. The Senate PUP committee had the responsibility to implement and co-ordinate many activities and meetings associated with the formulation of the plan.

Sara Lee is working in Boston for a public relations firm. Garrett is working to finish his senior thesis in biological sciences at Princeton University. Tanna is working to keep me from fouling up everything else!

Best regards to all!

Faculty News

KATHI K. BERATAN [*kathib@vms.cis.pitt.edu*]

It has been a busy year. I have been writing (and rewriting) a number of papers; one (Nielson and Beratan) will appear in the GSA Bulletin early this year, and three are to be published in GSA Special Papers. I also finally submitted my own GSA Special Paper; editing this volume has been quite a learning experience.

I was able to finagle some time away from teaching last fall, and spent four weeks in the southern Death Valley region of California. The weather and the rocks were both fantastic. My 4-legged field assistant earned his keep, protecting me from bad people and evil lizards. I started out fairly clueless and ended up only slightly confused, so the trip was a success. Some of the results will be in print soon; I was invited to collaborate on a paper with Bennie Troxel and Roland Brady about a Miocene unit in the northern Avawatz Mountains.

The image processing and analysis capability of my remote sensing lab was greatly improved by the addition of a snazzy new software package (ENVI) and a 4.4 gigabyte hard drive. (Remember when 40 megabytes was impressive?) I am forever in debt to Bob Anderson and Brian Peer for installing all of the new stuff and getting it to work. Brian also assisted me in my potassium metasomatism project, analyzing AVIRIS data from near Socorro, New Mexico. I am currently playing with Landsat data of Pittsburgh, my Death Valley field area, and Tom Anderson's turf in Sonora, Mexico.

Bob Anderson's research on Quaternary geomorphic surfaces in the Whipple Mountains of California is progressing nicely. He spent some time in the field at the beginning of the summer, and has been working on sample and image analysis since his return (as well as sneaking in a little Mars work on the side). The first paper from this research has been submitted. Bob's progress is a good news/bad news type of situation for me. His results are interesting and provocative, but he's made himself indispensable, and I'm not looking forward to having to run my workstation myself!

Charles Whipkey, a first-year PhD student, joined my group this year. I am trying to convince him that he really wants to work in Death Valley. We'll see how persuasive I am.

MICHAEL BIKERMAN [*bikerman@vms.cis.pitt.edu*]

1993-94 was a busy year. Henry Prellwitz successfully defended his MS thesis, and we both presented papers on the Masontown kimberlite dike at the NE GSA meeting in Binghampton, NY, last March. Henry did a well received poster session, and I did an oral presentation. The kimberlite work has generated a lot of interest in several places, and we both attended an informal workshop on kimberlites and related rocks at Penn State, which included a field trip for the participants to the Masontown locality. John Dembosky is starting mineral separation for K-Ar work on the Tanoma (Dixonville) dike. It will be interesting to see if that dike has as complex a history as the Masontown dike - whose coarse phlogopite is Acadian, fine phlogopite is Jurassic, and no sign of excess argon in olivine.

Other research accomplishments include presentation of the isotopic results on the Masontown dike done in collaboration with Henry, as well as Tony Simonetti and Keith Bell of Carleton University, Ottawa, Canada, to the International Conference on Geochronology (ICOG-8) held in Berkeley, California last June. There I chaired the session at which our paper

MICHAEL BIKERMAN continued

was presented, at the invitation of the convener, Garniss Curtis. A paper on the dike has been completed, and is now being reviewed.

The annual Pennsylvania Field Conference was in the Somerset area last October, and as usual it was a well run, informative event. Much of the region had been mapped years ago by the late Norm Flint, and the geologists working in the area now commented to me on how well that mapping has stood up.

New graduate students Kelly Greer, James Pottinger and Keith Stewart started classes this Fall.

On the ICOG-8 trip I visited Yosemite N.P. with two nephews, which was a great trip to a place I had never seen before. It truly is a natural wonder, and I added significantly to my slide collection for the National Parks class! I taught that class twice last school year, and will teach it again this Fall. Other classes are as before: Physical Geology and Geochemistry in the Fall, half of Historical Geology and Isotope Geology in the Spring. Last Fall, and this one, I do a Freshmen Studies class as well.

Committee work is as last year: chairing the Community Relations Committee, and serving on the Pitt Club board.

As always, feel free to stop by and visit.

DAVID K. BREZINSKI

With my report of the lithostratigraphy of the Blue Ridge cover rocks for the Maryland Survey finished and published as a report of investigations, I have begun more intensive work on the Lower Cambrian through Ordovician rocks of Maryland's Frederick Valley and eastern Blue ridge.

In the meantime, I also have finished mapping quadrangles in the Valley and Ridge and Plateau country at Cumberland, the Great Valley at Smithsburg and in the Blue Ridge of Middletown. Nothing like variety!

In the summer I spent weeks collecting Mississippian fossils from the Maidson Limestone of Montana with Albert Kollar and John Carter of Carnegie Museum. Trilobite remains were rare, but worth the effort.

Faculty News

ROSEMARY C. CAPO *[rcapo@vms.cis.pitt.edu]*

My research involves studies of surficial processes and low-temperature geochemistry, and in particular, the use of radiogenic isotopes as chemical tracers and geochronological tools in marine and terrestrial environments. Current projects include field, petrologic and geochemical studies of weathering in both arid (Las Cruces, New Mexico) and tropical (Kohala Peninsula, Hawaii) climates. The goal is to determine the nature of eolian input to soils, to trace the weathering-induced release of cations from bedrock to soil and from soil to the hydrologic regime, and to model the effects of climate change on Quaternary soil-forming processes. Other interests include the study of paleosols to better understand the nature of terrestrial weathering in the geologic past, studies of ground water and carbonate diagenesis, correlation of the strontium isotopic evolution of the oceans to paleoclimatic and paleoceanographic events, and the application of radiogenic isotopes to high resolution correlation of marine sediments.

My first 5 months in Pittsburgh have gone by very quickly. Together with Brian Stewart I've been busy getting the new environmental geochemistry facility going. We're renovating two rooms (~1000 sq. ft.) on the 4th floor of SRCC. One will house two analytical instruments: an ICP-MS for elemental analysis, and a TIMS (thermal ionization mass spectrometer) for isotopic analysis. The other room will be a clean chemistry laboratory where samples (including rocks, soil, fossils, vegetation, rain, and ground water) will be prepared. So far, that's meant innumerable meetings with architects, electrical and mechanical engineers, and laboratory equipment vendors, to work out budgets and come up with a construction plan. The University of Pittsburgh has committed a very generous amount of money to renovate these laboratories, and when construction is complete, G&PS will have a state-of-the-art geochemistry facility. It's an exciting process building a lab from the ground up -- so exciting that in the midst of getting lectures ready (I'm team teaching Groundwater Geology and Environmental Geology this term), and papers and proposals written, it's just sinking in that it's only 15° outside. My body is still calibrated to Los Angeles, but I am enjoying the bluer skies and lower ozone content of Pittsburgh air, and the fact that the ground generally remains stationary. Even though it looks like winter is finally here, it was a real treat to watch my 19-month old daughter Emma squealing with glee as she made her first snowball this week. Emma is the other major collaborative effort I share with my husband Brian Stewart -- we all really like living in Pittsburgh -- we think it's a great place to raise a family and do geology!

JOHN L. CARTER

Last year I spoke too soon when I stated that I was just about finished with my contribution to the TREATISE ON INVERTEBRATE PALEONTOLOGY. Actually, my portion of the spiriferid brachiopods -- Late Paleozoic and Mesozoic -- is finished but my colleague Jess Johnson, who was doing the Silurian and Devonian ones, passed away recently and I must finish his contribution as well. I hope to have it finished by this fall.

Vladislav I. Poletaev from the Institute of Geological Sciences, Ukrainian Academy of Sciences in Kiev, Ukraine, just finished spending six months with me here in Pittsburgh. He is a well known authority on Late Paleozoic spiriferid brachiopods. We worked together on a fascinating Lower Moscovian (Middle Pennsylvanian) fauna from Ellesmere Island, Canadian Arctic Archipelago. This fauna contains many anachronisms, genera that are both too young and too old, and is a mixture of Russian and North American species! When we get this published it should give paleogeographers something to chew on.

WILLIAM A. CASSIDY *[ansmet@vms.cis.pitt.edu]*

I visited Antarctica again last year, figuring to spend the first half of the field season at the Lewis Cliff Ice Tongue, where we have recovered some 2000 meteorite specimens over four or five field seasons. We took along a glaciologist, Keith Echelmeyer, from the University of Alaska, to make radar measurements on the ice thickness and bottom configuration of the ice tongue, hoping to better understand local ice movement and meteorite concentration mechanisms. We also cut a 10-meter longitudinal sample of the ice, using a chain saw, with the idea in mind that the ice might be upturned so that we could sample a stratigraphic time sequence without expensive drilling.

I was unfortunate, however, in hurting my back at McMurdo Station before leaving for the field. Once in the field, I realized how inconvenient it is to struggle into the usual cocoon of clothing in the confines of a tent when your back doesn't want to twist around at all. Need I mention also the tension involved in crouching over a hole in the snow once a day, when you don't know if you will be able to stand up again, even though you know you must? Well, we got our radar depth measurements and our ice samples, and it looks as if we'll learn something quite interesting from them.

Ralph Harvey had come down early to take the second half of the field season, so as soon as we had accomplished these high priority tasks I asked Ralph to come out early so I could get back to McMurdo. Ralph, sterling fellow that he is, accommodated me and I returned to McMurdo with a great sense of relief. The ice samples have now been cut up and shipped to seven or eight colleagues who will perform a variety of measurements on them to see if they resemble ice core samples.

Ralph is now co-principal investigator on the ANSMET grant and over the last few years he has been assuming more and more of the responsibilities for logistics and field work. He is currently negotiating for a position with a major university, and we have agreed that when this comes through he will take the grant with him to his new job. Having the Antarctic Search for Meteorites project at Pitt has brought a certain degree of renown to the university and to our department. Thus, it will be hard to see it go, but I believe that science will be served best by this move, and it will, after all, still be in the hands of one of our department graduates, all of whom are special people! Best regards to you all!

Faculty News

DAVID A. CROWN [dcrown@vms.cis.pitt.edu]

After ten months in Pittsburgh, I am now acclimated to the University and our Department. This year has been a busy one, including initiating several new research efforts, travel to conferences, NASA committee meetings, and field work, and becoming familiarized with the many facets of life at Pitt. In addition, I am now on the homestretch in my first semester of teaching, introducing a new graduate course in volcanology and participating in the remote sensing course. The interest and thought provoking questions of the students have made this semester a good one.

I continue to be active in several NASA sponsored geologic studies, with a focus on analyses of volcanic deposits, eruption dynamics, and flow emplacement processes on Venus and Mars and corresponding studies of terrestrial analogues in the western U.S. and Hawaii. In March, I presented results of a mapping study of Venus at the annual Lunar and Planetary Science Conference at Johnson Space Center, and in July, I participated in the Mars and Venus Geologic Mapping Meetings held in Pocatello, Idaho in conjunction with several field trips to the Snake River Plain. I continue mapping quadrangles on both Mars and Venus containing a variety of puzzling volcanic landforms. In July, I spent several weeks investigating the surface properties of the Inyo and Mono domes in eastern California; characterization of the surfaces of these lavas will allow interpretation of AIRSAR (airborne radar) data in order for detailed comparisons to be made with Venusian lava domes.

In May, I initiated a new project concerning the formation of pahoehoe flows on Kilauea volcano in Hawaii. Field work was successful (and enjoyable despite a good amount of rain) and analyses of the data will allow simulations of the development of compound lava flow fields to be made in the near future. Complementary to this effort is an analysis of the effects of cooling history, topography, and rheologic properties on the dimensions of lava flows erupted in recent years on Kilauea's east rift zone. Matt Peitersen, a new graduate student, has been working on this project since arriving in August from the University of Wyoming.

Next semester I will be teaching Groundwater Geology with Rosemary Capo. The summer should be quite full, between teaching The Planets, my second year on a NASA review panel, and field work. I look forward to the many challenges of the upcoming year.

JACK DONAHUE

The 1994 year saw some major changes for me. First, I stayed in Pittsburgh this summer for the first time in a number of years and enjoyed myself thoroughly. Jessie and I took a very satisfying vacation in July. We rode horseback into the Bridger National Forest in western Wyoming with an outfitter and remained at his camp for a week where we rode and fished for cutthroat trout. At about this time, I received a letter from Bill Dickinson, this year's GSA president, informing me that I would receive the Archaeological Geology Division award at the national meeting in Seattle. Jessie and I went to the meeting in October and had the pleasure of meeting people we have both known for many years. In September, I sent the last manuscripts for volume 9 into John Wiley and Sons for Geoarchaeology and gladly handed the

JACK DONAHUE continued

position of Editor-in-Chief over to Paul Goldberg. Although I still remain on the editorial board, I no longer face the hassle of being Editor-in-Chief.

Course-wise and research-wise, I have become increasingly interested in soils and micromorphology: the examination of soil thin sections. This is an invaluable technique both in geoarchaeology and environmental geology. This whole area is generally not covered in a standard geology curriculum and I think it is important that we do so.

Finally, our two sons, Mike and Jack, have made some significant decisions. Mike accepted a position with a computer consulting company near Washington, D.C., and loves his work. He is making full use of his computer science degree from Penn State. Jack and Lisa, his fiancée, are making plans for their wedding in May, 1996 and are presently saving as much money as possible for their life together.

BRUCE W. HAPKE [hapke@vms.cis.pitt.edu]

This past year I was pleased and honored to be selected as a Fellow of the American Geophysical Union. Less than 0.1% of AGU members are chosen in any year.

My book, Theory of Reflectance and Emittance Spectroscopy, which was published by Cambridge University Press in September, 1993, continues to sell well. Apparently, there was a need for a textbook of this sort. It has received several positive reviews (some of which, however, pointed out embarrassing typographical errors!).

Last year I was asked to be a member of a team of scientists that recently proposed a mission to NASA to place a spacecraft in orbit around Mercury early in the next century. The mission, which is called **Hermes**, is intended to be part of NASA's new **Discovery** program of smaller, better, cheaper unmanned spacecraft for planetary exploration. The mission was organized and led by my former student, Bob Nelson, who is a scientist on the staff of JPL. The competition to be selected is fierce, as there are a number of excellent proposals, but Bob's proposal is outstanding. The missions are to be selected early in 1995, so by the time you read this we should know whether we were chosen. Keep watching.

My graduate students and I continue to work with Bob Nelson and his colleagues at JPL, measuring the light scattering properties of particulate materials in order to develop models for interpretation of remote sensing observations of planetary regoliths. So far, we remain perplexed by the coherent backscatter opposition effects and negative polarizations that such materials display. (However, we are sure a breakthrough will be imminent any day now.)

Faculty News

WILLIAM HARBERT [harbert@vms.cis.pitt.edu]

This year has gone very quickly. Our paleomagnetic laboratory continues to work. In addition to Jiang-yun Zheng and myself, we had extended visits from scientists at Western Carolina University, and SUNY Binghampton. A masters student, Xi Xu, recently finished an excellent thesis studying the paleomagnetism of samples from southern Siberia and showed that these units are related to the North China Block-Tarim Block, and only recently accreditated into this region during the final closure of the Paleo-Tethys ocean. This is the first high-quality paleomagnetic result from this region. Our remote sensing/GIS lab continues to expand. We benefited from a computer donation of a SUN 3/280 system, which included 3 gigabytes of disk, 9 track magnetic tape drive and power supply. In addition ESRI donated their "ArcScenes" CDROM. We are presently running Arc/Info 7.0.2 and ArcView 2 (beta version). We have been attempting to get high resolution DMA-DTED topographic data for North Kamchatka and southern Siberia but have been unsuccessful so far. In our department we now have more than 10 gigabytes of disk and a data archive of 169 gigabytes! We have submitted a proposal to the National Science Foundation to acquire a GIS teaching computer laboratory and are keeping our fingers crossed. Best regards to all.

P.S. Arc/Info Users:

We have recently added an Arc/Info related area to our ftp/WWW site. This site at the Dept. of Geology and Planetary Sciences can be accessed via anonymous ftp (IP# 136.142.122.26) or Mosaic (<http://earth.eps.pitt.edu>). Presently we are archiving the AlaCarte tools of Todd T. Fitzgibbon but would like to build an AML archive and directories containing public domain Arc/Info related material as well. If you have Arc/Info related material which you would like to place in this archive site, please contact me at (bill@earth.eps.pitt.edu).

We also have about 15 megabytes of remote sensing related material.

Computer Proposal:

We have just submitted a proposal to develop a GIS/Remote Sensing Class room. In writing this proposal we were amazed by the amount and diversity of digital data which the department has now accumulated. These data (mostly on CDROM and magnetic tape) are shown in the table, p. 9.

After construction (assuming that we can generate funding and matching funds for this project) we hope to introduce students from a wide variety of courses to "digital" geology. This will include Arc/Info GIS work, remote sensing, and exploration of world geography using simple-to-use viewers and actual global digital elevation models (DEMS) such as etopo5. When we totaled the number of courses which we felt would benefit from some exposure to our proposed computer lab, we found that something on the order of 700 to 800 hundred students per two year cycle might use this lab. The courses which we listed are shown in the table, page 10.

WILLIAM HARBERT continued

**Digital Data Available
Department of Geology and Planetary Science University of Pittsburgh**

Type	Number/Media	Description	Size(Megabytes)
Earth	6 CDROMs	Kilauea	3600 Mbytes
Earth	8 CDROMs	Mauna Loa	4800 Mbytes
Earth	3 Mag Tapes	LANDSAT MSS	120 Mbytes
Earth	43 Mag Tapes	LANDSAT TM	3870 Mbytes
Earth	4 Mag Tapes	HiRes Magnetics	400 Mbytes
Earth	6 Mag Tapes	ERS-1 SAR	540 Mbytes
Earth	9 CDROMs	GRSFE	5400 Mbytes
Earth	13 CDROMs	NEIC Event	7800 Mbytes
Earth	1 CDROM	Geophy Nr Am	600 Mbytes
Earth	4 CDROMs	N.Am. SLAR	2400 Mbytes
Earth	4 CDROMs	Dig.Cht.Wrld.	2400 Mbytes
Earth	2 CDROMs	Arc/USA	1200 Mbytes
Earth	2 CDROMs	Arc/WORLD	1200 Mbytes
Earth	1 CDROM	Arc/Scenes	600 Mbytes
Earth	5 CDROM	Sat. Sea Surf.	3000 Mbytes
Earth	4 CDROMs	Hi. Res. US DEM	2400 Mbytes
Earth	5 Mag Tapes	AVIRIS	1250 Mbytes
Planetary	49 CDROMs	Viking	2940 Mbytes
Planetary	16 CDROMs	Voyager	9600 Mbytes
Planetary	6 CDROMs	Galileo	3600 Mbytes
Planetary	142 CDROMs	Magellan	8520 Mbytes

TOTAL 169380 Mbytes
of Data

Source Code	4 CDROMs	Arc/Info	2400 Mbytes
Source Code	1 CDROM	GRASS	400 Mbytes
Source Code	1 CDROM	ERMapper	630 Mbytes
Source Code	1 CDROM	Arc/View	500 Mbytes
Source Code	1 CDROM	Arc/Doc	600 Mbytes

TOTAL 4530 Mbytes
of Source Code

Faculty News

WILLIAM HARBERT continued

**Use of proposed Instructional Computer Laboratory by course.
Larger survey courses will remotely access laboratory exercises
using CIX X-Window terminals.**

Other courses will work directly in the instructional computer laboratory.

Course	Topic	Apprx. Enrollment
GEO 0870	Planet Earth	200
GEO 0890	Oceanography	200
GEO 0896	World Geography	100
GEO 1020	Sed./Stratigraphy	20
GEO 1050	Regional Geology of the U.S.	15
GEO 1051	Groundwater geology	20
GEO 1060	Geomorphology	20
GEO 1080	Geoarcheology	15
GEO 1100	Structural Geology	15
GEO 1410	Exploration Geophysics	15
GEO 1460	Remote Sensing	20
GEO 1640	Environmental Hazards	20
GEO 1701	Geology of the Planets	10
GEO 2110	Plate Tectonics	10
GEO 2111	Advanced Plate Tectonics	10
GEO 2100	Advanced Structural Geology	10
GEO 2221	Morphologic Analysis	5
GEO 2400	Geophysics	20
GEO 2701	Planetary Physics I	10
GEO 2702	Planetary Physics II	10
GEO 2750	Volcanology	10
TOTAL ESTIMATED (two year academic cycle)		755

EDWARD G. LIDIAK [egl@vms.cis.pitt.edu]

The year 1994 was a very productive and active year for me. In a nine month span, from March through December, I wrote no less than seven manuscripts. Yes, that is not a misprint, seven, as in four plus three; a total of about 62,000 words! I finally feel that I have eliminated the backlog and can now think totally in terms of new research projects.

Writing was not all that I accomplished in 1994; far from it. In February, I spent about three weeks in the Caribbean carrying out a rather arduous mapping and sampling program on an ultramafic complex in western Puerto Rico. It was hard work but great fun; in addition, I missed two of the three major snowfalls that hit Pittsburgh in February. If you feel a lack of sympathy for my plight, you should talk to my wife who remained in Pittsburgh and suffered through the rough winter. However, her spirits soared considerably in March when, as a necessary part of one of the research papers (on rare earth elements) we took a trip to the volcanoes of Hawaii (Oahu, Maui, Big Island). Again, I sense a lack of sympathy on your part. But you must realize that someone has to do these things. April found us for a week in Santa Fe where I attended the annual DOSECC (previous newsletter, 1992/1993) meeting. I have grown fond of Santa Fe; Taos you can have, but I love Santa Fe. If only there were not so many tourists. In May, I made my annual pilgrimage to the eastern American Geophysical Meeting in Baltimore. The meeting was very interesting, but the crab meat cakes were better. I was delighted at the meeting to see and talk to Bill Lowrie (PhD 1967), in from Zurich, where he is a Professor and Head of Department. Bill is one of my old golfing buddies, but unfortunately like me, is not actively pursuing the true avocation. We need to get our priorities in order. He informs me that Randy Smith (PhD 1966) actually still exists and looks the same handsome self. Pete Waseliwesli was also in attendance where he presented a comprehensive poster session. I also enjoyed talking to Phil Piccoli, one of my former students (MS 1987). He is a Research Associate at the University of Maryland.

Toward the end of June, I attended a field conference in western Oklahoma looking at basement rocks of the southern Oklahoma aulacogen. It may be perhaps a surprise to you, but some of the most intriguing igneous rocks of the U.S. occur in Oklahoma. The diversity includes Precambrian granitoids, Cambrian A-type granites and rhyolites, and a complex of diabase dikes emplaced along the margins of the aulacogen. For example, a recently opened rock quarry exposes one of the best examples of a diabase dike swarm present anywhere, a truly world-class example; you would have to see it to appreciate its magnificence.

Meanwhile, back at the ranch and thanks to my trusty portable computer, I continued to write. The summer was particularly productive, a manuscript a month, 500 words a day, etc.

During the summer, I also had the pleasant surprise of a phone call from my first PhD student, Alok Gupta (PhD 1969). He is professor and head of his department at the University of Allahabad, India (see alumni listing). Alok has been spectacularly successful; he recently was elected to all three of the national academies of sciences in India. He also had just received a major grant for the purchase of state-of-the-art high pressure experimental research equipment. He was in the U.S. familiarizing himself with the new machines. We were fortunate to have Alok visit the department for a week in August. He presented a departmental seminar on some

Faculty News

EDWARD LIDIAK continued

recent high pressure research he and his students have been carrying out. Alok, thanks for your visit. We enjoyed very much having you with us. Alok is another prime example of one of our former students who continues to excel.

I attended the annual Geological Society of America meeting in Seattle, Washington, in November. Fortunately, the weather was excellent for most of the meeting, and, in addition to attending technical sessions, my wife and I took side trips to Victoria, British Columbia, and to Mt. Rainier.

In December, Carol and I traveled to India for two weeks where I had been invited to attend a symposium in Calcutta on "Mantle Dynamics and its Relation to Earthquakes and Volcanism." The symposium was convened by Alok Gupta and sponsored by the Indian Academy of Sciences in honor of Kenzo Yagi (Visiting Professor in our department in 1965) and William S. Fyfe, both internationally known experimental mineralogists/geochemists. I presented a paper at the symposium on my Caribbean geochemical research and also gave an invited lecture at the Department of Geology, University of Calcutta. After the symposium, we took an overnight train to the city of Allahabad. Allahabad is the birthplace of Nehru and his daughter, Indira Gandhi, and is the city in which Rudyard Kipling had a magnificent house and did much of his writing on India. We had a wonderful visit in Allahabad where we had an opportunity to see Alok's experimental laboratory, meet a number of the prominent members of the faculty of the University, the geology graduate students, and Alok's lovely wife and two sons. I also presented a paper to members of the Indian Academy of Sciences while there. We then took a side trip via bus to Varanasi (Benares), one of the oldest cities in the world, dating from the time of Babylon and Nineveh. The city is situated along the Ganges River and I will not even attempt to describe what goes on along the banks of the river. Varanasi is the spiritual center of the Hindu faith, and Sarnath, a few kilometers away, is the center of the Buddhist world and birth place of Buddha. We then returned to Allahabad and took another night train to Delhi where we spent a few days before returning to Pittsburgh. It was quite a trip.

I have now been to India twice (first in 1987) and have had an opportunity to travel rather extensively; yet feel that I have seen very little of it. What strikes me most about India is its diversity. India is a fascinating country, but it clearly is not for everyone. India stretches from the Himalayas to the coasts and includes deserts, jungles, rain forests, vast plains, and numerous well-tilled fields. Forty years ago the population was about 350 million people; now it has 850 million and is growing by more than one million a month. It is a country that truly exists in several centuries at once. Remove the motorized vehicles and places like Varansi and Dehra Dun have probably not changed much in over a hundred years. Yet Delhi is a modern city in every sense of the word. And Calcutta is a place unto its own. I was prepared to be shocked by the poverty and over-crowding in Calcutta, and both are present, but it was not as bad as I had anticipated; yet the pollution and traffic jams overwhelmed me; it's not my kind of town. To end on a happier note, India is a fascinating mixture of modern and ancient, rich and poor, a prominent country in the scheme of things, and a place well worth a visit.

Best wishes to all.

LANCE LUGAR [*lugar@vms.cis.pitt.edu*]

The Physics/Geology library has been focusing on the acquisition of new electronic materials to facilitate the geological research process. We have expanded the collections of materials related to Remote Sensing and to the use of GIS to solve various geological problems. The journal Photogrammetry and Remote Sensing has been made part of the collection. Several dozen books on GIS are here or on order, and in conjunction with Professor Beratan, we have been upgrading our collections of materials in sedimentology, stratigraphy, and remote sensing as well.

We have acquired the 3 Arc" terrain data maps for the entire United States, Alaska, Hawaii, and Puerto Rico. The ULS has added the ARC/VU software and is beginning to move in the direction of providing a map making service to the University community.

I continue to be interested in paleobiology, and am working on a project in Pleistocene paleoecology with H.B. Rollins.

WALTER PILANT [*pilant@vms.cis.pitt.edu*]

Last year, I reported that my ankle was giving me problems. Well, things got worse and I had to have a total knee replacement in May (ultimately leading back to my young-and-foolish days playing football at CalTech). As the Fall holidays are here I'm now much more able to get around and with the first warm days in the spring I'll be back in the field.

The Computer Labs Committee work goes on. Computer Labs are filled to overflowing and the Provost has asked Departments to take up the slack -- we're doing our bit in Geology. The latest push is to get several classrooms wired with ethernet ports so we can bring the world to our students through internet. You might like to know that some introductory texts are coming out with a "free" CD-ROM with slides, reference material and other teaching aids. I'm not sure the "computer" will ever replace the "professor" but they surely can do a nice job with enhanced audio-visual.

Faculty News

HAROLD B. ROLLINS [snail@vms.cis.pitt.edu]

My activities over the last year have been diverse, albeit not overly productive in terms of papers published (unfortunately!). My research on St. Catherines Island continues to be supported by the E.J. Noble Foundation, Inc. and the American Museum of Natural History. My co-workers (Bob Prezant and Ron Toll) and I just received two-year support of our ongoing biodiversity study of saltmarsh habitats.

I have several graduate students as advisees and they are involved in what seems like a totally unconnected diversity of activities - ranging from freshwater mussels in French Creek, to the causation of Permian extinction, to the geochemistry of slag heaps, to displaced faunas along coastlines, to saltmarsh forams, to coal stratigraphy, to Mississippian brachiopods, to ??? - see what I mean?

Judy and I inherited a big old house (130 years old) in upstate New York and used it as a base of operations for a field trip in late October. We had some great eurypterid collecting! Our son, Steven, changed his employment from the St. Augustine Alligator Farm to Sea World in Orlando. He is now employed as an aviculturist working with penguins - a bit safer than his previous specialty. I have agreed to teach in the Yellowstone honors course and look forward to two stints next summer headquartered in the Sunlight Basin.

Meanwhile, I continue to hear, somewhat sporadically, from alumni. I think it would be great to hear from you more often - and we could pass some of the news along in this newsletter. For example, Michelle Rogan reported in from New Zealand where she has finished her first year of law school, on her way to a new career in environmental law! At least, you should "check in" so we can send you a copy of the newsletter when you change jobs or locations.

JACK SHARKEY

My research activities continue to involve the Surface Science Center that is based in the Chemistry Department. Use of laser mass spectrometry and secondary ion mass spectrometry has greatly expanded the knowledge of the surface of many materials including coal that is of interest to me. Several students and faculty in G&PS are using these instruments. My research continues on the surface properties of coal; in particular, coal oxidation that alters the combustion characteristics of coal. The newer types of mass spectrometers can determine molecular weights in excess of 150,000. With this new development, interest in mass spectrometry has expanded greatly in the Bio-Sciences. The number of students in my introductory course has increased from 15-20 to 40 this Fall Term.

I have continued to be active in The Pittsburgh Conference of Analytical Chemistry and Applied Spectroscopy Pittcon, and the American Society for Mass Spectrometry. At the 1994 Pittcon Conference held in Chicago, Ill. I chaired an Antiquities Museum Committee. We collected for display early models of major analytical instruments used in the natural sciences. Three graduate students in the department assisted: Henry Prellwitz, Roman Kyshakovych and Rich Risek. Over 4,000 attendees toured the display that included over 100 instruments.

BRIAN STEWART /bstewart@vms.cis.pitt.edu

My research is designed to gain an understanding of the geochronology and geochemical processes that take place in earth and planetary systems. I approach these problems by measuring isotopes of elements such as strontium, neodymium and lead as tracers for natural physical and chemical processes, and as parent-daughter radioactive decay chronometers. Sample preparation for such measurements involves dissolution of material such as rock powders or soils under clean laboratory conditions, separation of the elements of interest, and analysis on a thermal ionization mass spectrometer. Since arriving in Pittsburgh this past August, Rosemary Capo and I have been spending much of our time planning the new G&PS geochemistry facility, which will provide the department with the capability to carry out this type of research, and a lot more.

Prior to my arrival in Pittsburgh, I spent some time as a postdoc at the California Institute of Technology, where my research initially revolved around meteorites composed of iron metal and silicate rock. I used long-lived and short-lived Nd isotope chronometers to gain information not only about the chronology of planet formation but also about the physical and chemical conditions that applied during differentiation of asteroids, including formation of crust and core soon after condensation of the planets 4.5 billion years ago. I spent the latter part of my postdoc on a project designed to understand modern weathering rates and anthropogenic effects on soil-vegetation-atmosphere systems. The objective of this study is to use radiogenic isotopes to identify soil evolution processes and quantify weathering rates. Continued work will include trace element and lead isotope studies to determine the effects of atmosphere-derived heavy metals and the rates and processes by which these toxins are worked into the developing soil-vegetation system. My PhD at UCLA involved isotopic studies of layered mafic intrusions magma fluid dynamics, and I look forward to continuing work on igneous geochemistry and crust-mantle evolution problems while at Pitt.

I have thoroughly enjoyed living in Pittsburgh, and interacting with other members of G&PS since beginning work here. I'm in the beginning stage of collaborative projects with Kathi Beratan (applying Sr isotopes to lacustrine sediments in Death Valley) and Tom Anderson (tracing the source of iron in ore bodies located along the Appalachians), and I look forward to further interaction with other G&PS students and faculty. Rosemary and I feel very comfortable living in Highland Park, and our daughter Emma loves the great playgrounds and the zoo! We're happy to say that Pittsburgh lives up to its reputation as the most livable city, and we feel lucky to have the chance to make this our home.

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WILLIAM A. CASSIDY

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JACK DONAHUE

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Submitted and Pending FACULTY PUBLICATIONS

- Anderson, R., Beratan, K.K., Zimmerman, P.A., Hercules, D.M., and McKeown, P.J., in press, Analysis of rock varnish from the Whipple Mountains, southeastern California, using Time-of-flight Secondary Ion Mass Spectrometry: submitted to *Chemical Geology*.
- Beratan, K.K. (editor), 1995 (in press), Reconstructing the history of Basin and Range extension using sedimentology and stratigraphy: *GSA Special Paper*.
- Beratan, K.K. and Nielson, J.E., 1995 (in press), Tests of detachment fault models using Miocene syntectonic strata, Colorado River extensional corridor, southeastern California and west-central Arizona: *GSA Special Paper* edited by K. Beratan.
- Beratan, K.K., Hsich, J., and Murray, B., Pliocene/Pleistocene stratigraphy and depositional environments, southern Confidence Hills, Death Valley, California: *GSA Special Volume* edited by B. Troxel and L. Wright.
- Beratan, K.K., in press, Relationship between transfer faults and monolithologic breccias, Colorado River extensional corridor, southeastern California - western Arizona: submitted to *GSA Special Volume* edited by J. Faulds and J. Stewart.
- Brady, R., Troxel, B., and Beratan, K.K., in press, The Miocene Military Canyon Formation: Depocenter destruction and constraints on lateral faulting, southern Death Valley, California: *GSA Special Volume* edited by B. Troxel and L. Wright.
- Cassidy, W.A. and M.L. Renard, 1995, A structural interpretation of Crater 10, Campo del Cielo, Argentina and a reexamination of Crator 9: orbital constraints on the parent body.
- Crown, D.A., and Greeley, R., 1994, Geologic Map of MTM Quadrangles - 30262 and -30267, Hydriaca Patera Region of Mars, U.S. Geological Survey, in review.
- Donahue, Jack, 1995, Meadowcroft Rockshelter: A Quantitative Model for Cliff Line and Colluvial Slope Development [abs.]: *Geological Society of America Abstracts with Programs*.
- Echelmeyer, K., W. Cassidy and J. Schutt, 1995, Radio echo-sounding thickness measurements of the Lewis Cliff Ice Tongue, Antarctica: *Antarctic Journal of the U.S.*, in review.
- Gregg, T.K.P., Crown, D.A. and Greeley, R., 1994, Geologic Map of MTM Quadrangle - 20252, Tyrrhena Patera Region of Mars: U.S. Geological Survey, in review.
- Lidiak, E.G., 1993, Geology of Proterozoic basement rocks in the eastern midcontinent, United States [abs.]: *AAPG Hedberg Research Conference*.
- Stewart, B.W. and DePaolo, D.J., (in press), Isotopic studies of processes in mafic magma chambers: III. The Muskox intrusion, Northwest Territories, Canada *in* Basu, A. and Hart, S., eds., *Isotopic Studies of Crust-Mantle Evolution (Geophysical Monograph Series)*: American Geophysical Union.
- Stewart, B.W., Papanastassiou, D.A. and Wasserburg, G.J., (to be submitted 4/95), Sm-Nd systematics of a silicate inclusion in the Caddo IAB iron meteorite: *Earth Planetary Science Letter*.

STUDENT PUBLICATIONS

Articles:

Bikerman, M., Henry S. Prellwitz, A. Simonetti, and K. Bell, 1994, Isotopic study of the kimberlite dike of Masontown, PA, USA in Lanphere, M.A., Dalrymple, G.B., and Turin, B.D., eds., Abstracts of the Eighth International Conference on Geochronology, Cosmochronology, and Isotope Geology: U.S. Geological Survey Circular 1107, p. 30.

Heiphetz, A., Harbert, W. and Savostin, L., 1994, Reconnaissance paleomagnetism of the Oluitorsky superterrane, northeast Russia: 1992 Proceedings International Conference on Arctic Margins, MMS 94-0040, p. 223-228.

Heiphetz, A., Harbert, W., and Layer, P., 1994, Preliminary reconnaissance paleomagnetism of some late Mesozoic ophiolites, Kuyul region, Koryak superterrane, Russia: 1992 Proceedings International Conference on Arctic Margins, MMS 94-0040, p. 229-234.

Jones, J.R., B. Cameron, and H.B. Rollins, 1995, Paleoenvironmental history of a Holocene freshwater deposit discovered along coastal northeastern Massachusetts: Northeastern Geology and Environmental Sciences, vol. 17, no. 1, p. 89-94.

Risek, R.M., Rollins, H.B., Kneller, W.A., Fleming, A., 1994, Stratigraphy and paleoenvironmental reconstruction of the Harlem and Ames Coals (Upper Pennsylvanian Glenshaw Formation, Appalachian Basin): Eleventh Annual International Pittsburgh Coal Conference, paper #28, P.

Skoog, Sonya Y., Cynthia Venn, Edward L. Simpson, 1994, Distribution of Diopatra cuprea Across Modern Tidal Flats: Implications for Skolithos: Palaios, v. 9, p. 188-201.

Abstracts:

Anderson, T.H., and Campbell, Patricia A., 1994, The role of the Quitobaquito thrust in Mesozoic deformation - Cordilleran-Chihuahua corridor [abs.]: Geological Society of America Abstracts with Programs, v. 25, no. 2, p. 35.

Anderson, R.C. and Beratan, K.K., 1994, Identifying characteristics of geomorphologic surfaces, Whipple Mountains, SE California [abs.]: Geological Society of America Abstracts with Programs, v. 26, p. 34-35.

Anderson, R.C. and Beratan, K.K., 1993, Identification of geomorphic surfaces from Landsat data, Whipple Mountains, southeastern California [abs.]: Geological Society of America Abstracts with Programs, v. 25, p. A106.

Bikerman, M., H.S. Prellwitz, and K. Bell, 1994, Interpretation of new K-Ar dates on phlogopite from the Masontown, PA kimberlite dike [abs.]: Geological Society of America Abstracts with Programs, v. 26, no. 7, p. 7.

Publications

STUDENT PUBLICATIONS continued

Evans, Tim, Donahue, Jack, Watters, David, 1994, Barbuda, Northern Lesser Antilles: Archaic Occupation Along A Former Shoreline [abs.]: Geological Society of America Abstracts with Programs, v. 26, no. 7, p. A341.

Kyshakevych, R.G., Rollins, H.B., and W. Harbert, 1994, Analysis of subannual growth increments in the mussel Lampsilis ovata, using remote sensing image processing software: ER Mapper [abs.]: Geological Society of America Abstracts with Programs, v. 26, no. 3, p. 30.

Kyshakevych, Roman G., Rollins, Harold B., Harbert, William, 1994, Analysis of Subannual Growth Increments in the Mussel Lampsilis ovata. Using Remote Sensing Image Processing Software: ER Mapper [abs.]: Geological Society of America Abstracts with Programs, v. 26, no. 7, p. A57.

Prellwitz, H.S., and M. Bikerman, 1994, Xenoliths from the Masontown, PA, kimberlite intrusion: A sample of the mantle and lower crust from western Pennsylvania? [abs.]: Geological Society of America Abstracts with Programs. v. 26, no. 7, p. 67.

Risek, R.M., Rollins, H.B., Kneller, W.A., Fleming, A., 1994, Stratigraphy and paleoenvironmental reconstruction of the Harlem and Ames Coals, (Upper Pennsylvanian) [abs.]: Geological Society of America Abstracts with Programs, v. 26, no. 3, p. 69.

Risek, R.M., Rollins, H.B., Dulong, F., and Kneller, W.A., 1994, X-Ray Diffraction Analysis of the Harlem and Ames Coal Beds Glenshaw Formation Upper Pennsylvanian [abs.]: Geological Society of America Abstracts with Programs, v. 26, no. 7, p. A215.

Xu, Xi, Harbert, William, Dril, Sergi, Kravchinsky, Vadim, 1994, Reconnaissance Paleomagnetic Investigation of Some Paleozoic Rocks From the Mongol-Okhotsk Collision Zone, Chita Region, Southcentral Russia [abs.]: Geological Society of America Abstracts with Programs, v. 26, no. 7, p. A471.

Xu, Xi, Harbert, William, Dril, Sergi, and Kravchinsky, Vadim, 1994, Reconnaissance paleomagnetic investigation of some Paleozoic rocks from the Mongol-Okhotsk collision zone, Chita region, southcentral Russia [abs.]: American Geophysical Union, v. 75, p. 125.

Zheng, J., Schmidt, Victor, Barnosky, Anthony and Harbert, William, 1994, Magnetostratigraphy of a middle Miocene sedimentary sequence in Railroad canyon, Idaho [abs.]: American Geophysical Union, v. 75, p. 130.

CURRENT FUNDED RESEARCH PROJECTS

Anderson, Thomas H., Contrasts in Style of Cretaceous Deformation, northwestern Mexico - National Science Foundation.

Beratan, Kathi K., The Search for the Lost Meteorite: Application of Remote Sensing Techniques to Meteorite Studies, Campo del Cielo, Argentina - University of Pittsburgh Central Research Development Fund Award.

Cassidy, William A. and Harvey, Ralph, Antarctic Search for Meteorites - National Science Foundation.

Crown, David A., Models for the Emplacement of Lava Flows: Styles of Effusive Volcanism on Mars - National Aeronautics and Space Administration.

Crown, David A., Geologic Mapping of Reull Vallis, Mars - National Aeronautics and Space Administration.

Hapke, Bruce W., Photometric Analysis of Spacecraft Images - National Aeronautics and Space Administration.

Harbert, William P., Tectonics and Paleomagnetism of the Kamenskoye-Penzhinskaya Guba Regions, Koryak Superterrane, northeastern Russia - National Science Foundation.

Students

UNDERGRADUATE STUDENTS

- | | |
|-------------------------------|-------------------------------|
| 1. ANSTEY, Jonathan* | 25. MYERS, Todd C.♦ |
| 2. ARNEL, Aimee S.♦ | 26. NICHOLS, Brent P.* |
| 3. BALKOVEC, Robert M.* | 27. NIEBRZYDOWSKI, Thomas J.♦ |
| 4. BISHOP, William P.* | 28. NYGAARD, John G.♦ |
| 5. BREITENBACH, Elizabeth A.♦ | 29. PROSSER, Edwin J.♦ |
| 6. DEAN, Douglas G.♦ | 30. QUINN, Heather L.♦ |
| 7. DeRUBERTIS, Diana M.♦ | 31. ROJAS, Alfredo J.♦ |
| 8. DeSTEFANO, Christine A.♦ | 32. SALIZZONI, Kara♦ |
| 9. DOERR, April E.♦ | 33. SAVEL, Lori J.♦ |
| 10. DROP, Timothy Joel♦ | 34. SESPIO, Matthew A.♦ |
| 11. DUNN, Ricky J.* | 35. SIEFFERT, Brian G.♦ |
| 12. EBOLI, Richard V.♦ | 36. STEINHART, William E.♦ |
| 13. GWILLIM, Keith Thoms* | 37. STRALLY, Tammy L.* |
| 14. HALSBAND, Scott J.♦ | 38. TORBIC, Mark J.* |
| 15. HOLLAND, Christopher J.♦ | 39. TRESCHOW, Steven J.* |
| 16. JANKOVIC, Erik M.♦ | 40. TURIANO, Christopher J.* |
| 17. KEARNEY, Rene A.♦ | 41. VINSON, Cassandra N.♦ |
| 18. KENNEMUTH, Tina L.♦ | 42. WESTRICK, Thomas J.♦ |
| 19. KULP, Susan E.♦ | 43. WETZEL, Lawrence M.* |
| 20. LEWIS, Glen C.* | 44. WILSON, Yvonne M.♦ |
| 21. LITTLE, David C.♦ | 45. WRANA, Charles V.♦ |
| 22. MARINE, James T.♦ | 46. WRIGHT, Thomas M.♦ |
| 23. MASTANDREA, Joanna L.♦ | 47. ZAMPOGNA, Damian M.♦ |
| 24. McCONNELL, Amy S.♦ | |

* Environmental majors ♦ Geology majors

GRADUATE STUDENTS

- | | |
|-----------------------------|---------------------------|
| 1. ANDERSON, Robert C. | 15. PEER, Brian |
| 2. AYRES, Gregory A. | 16. PEITERSEN, Matthew N. |
| 3. CAMPBELL, Patricia A. | 17. POTTINGER, James E. |
| 4. DEMBOSKY JR., John A. | 18. PRELLWITZ, Henry S. |
| 5. DeLILLO, Nicholas Joseph | 19. RISEK, Richard M. |
| 6. DiMUCCI, Domenic C. | 20. SCHATT, Daniel Evan |
| 7. EVANS, Timothy Scott | 21. SCHATZEL, Steven J.* |
| 8. HAKALA, Katherine K. | 22. STEWART, Keith H. |
| 9. KENDRICK, Andrew W.* | 23. VENN, Cynthia |
| 10. KRADYNA, James | 24. WHIPKEY, Charles E. |
| 11. KYSHAKEVYCH, Roman G. | 25. XU, Xi |
| 12. LIBERMAN, Svetlana | 26. ZHANG, Qing |
| 13. MARSHALL, Leland P. | 27. ZHENG, Jiang-yun |
| 14. MUELLER, Kelly G.* | |

* part-time graduate student

BACHELOR OF SCIENCE

Cusick, Daniel P.
Everitt, Wayne D.
Geho, Erik S.
Kearney, Rene A.
Schultz, Aimee Marie

MASTER OF SCIENCE

Flaherty, Thomas

Stratigraphy of the Upper Devonian Bradford Group in SW Pennsylvania - A Hierarchical Classification of Cycloid Transgressive-Regressive Units

Thesis Advisor: Jack Donahue
Harold B. Rollins
Graduated: April, 1994

Marshall, Leland

Geochemistry of Mid-Continent Rift System Basalt in the Subsurface of Nebraska

Thesis Advisor: Edward G. Lidiak
Graduated: April, 1994

Kyshakevych, Roman

Subannual Growth in Unionoideans

Thesis Advisor: Harold B. Rollins
Graduated: April, 1994

Prellwitz, Henry

Geochronology and Petrography of the Masontown PA Kimberlite Intrusion

Thesis Advisor: Harold B. Rollins
Graduated: May, 1994

Xu, Xi

Reconnaissance Paleomagnetic Investigation of Some Paleozoic Rocks from the Mongol-Okhotsk Collision Zone Chita Region Southcentral Russia

Thesis Advisor: William Harbert
Graduated: August, 1994

Awards and Honors

WILLIAM CASSIDY FROZEN TUNDRA PROVIDES HOT DISCOVERY

The Pitt Advocate magazine from the Alumni Association has acknowledged Pitt Professor of Geology and Planetary Science William Cassidy and a team of U. S. Geologists found a piece of the moon during a recent expedition to Antarctica. Cassidy, the principal investigator for the project, and other team members have found four lunar meteorites since 1976. Worldwide, only 11 lunar meteorites have been found.

CORRECTION FROM 1988 FOR ERIC DRAPER

An omission was made in the Newsletter for 1988. Eric A. Draper was awarded in that year the Undergraduate Award of The American Mineralogist by the Mineralogical Society of America, in recognition of exceptional interest, ability and performance as a student of mineralogy at the University of Pittsburgh for 1988.

Sorry for the omission, Eric!

The Pittsburgh Geological Society presents GREENHOUSE WARMING AND COAL FORMATION by Maurice Deul

Visiting Professor, University of Pittsburgh

Coalbed formation requires accumulations of peat whose aggregate thickness must have been 50 to 100 times that of the derived bituminous coal. This means that the average thickness of peat that became the Pittsburgh coalbed ranged from 300 to 600 feet and that the Wyodak coalbed peat ranged from 4800 to 9600 feet in thickness. This leads to an apparent paradox: How can we account for the formation of such vast accumulations of preserved plant material over thousands of square miles and during so many periods of geologic time?

Greenhouse effect warming is the current environmental "bogeyman" and carbon dioxide is most often portrayed as the scariest of the gases that contribute to the perceived problem because humans cause so much of it to be emitted. Yet, we must ask what is the net result of greenhouse effect warming?

Increased temperature?

Increased relative humidity?

Rising sea level?

If that is indeed the result, then we may have a solution to the problem of what kind of an environment is essential for plant accumulation to begin to form future coalbeds and to appreciate that the end of such an interval will be caused by the formation of a very large terrestrial carbon sink.

The May meeting was held in the Parkway Center Building on May 18, 1994.

AMERICAN MINERALOGIST UNDERGRADUATE AWARD

Eighteen MSA (Mineralogical Society of America) members have taken advantage of the Society's American Mineralogist Undergraduate (AMU) Award program to recognize outstanding students who have shown an interest and ability in the discipline of mineralogy. Each student was cited by his or her department for outstanding achievement in mineralogy-related courses.

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 *American Mineralogist*, for 1995.

This year's outstanding undergraduate student is Kara Salizzoni who was sponsored by Dr. Edward G. Lidiak.

AMERICAN GEOLOGICAL INSTITUTE'S MINORITY GEOSCIENCE SCHOLARSHIP (AGI-MPP)

Award recipients must be geoscience majors who are U.S. citizens and members of ethnic minority groups that are underrepresented in the geosciences. Individual scholars are selected by the AGI-MPP Advisory Committee because the student appears to have particular potential for success in the geoscience profession.

The awards are supported by funding from the National Science Foundation and by contributions from geoscience corporations, professional societies, and individuals.

Congratulations to Alfredo Rojas who is the recipient of the AGI's minority Geoscience Scholarship for the 1994-95 academic year.

THE NORMAN K. FLINT MEMORIAL FIELD GEOLOGY SCHOLARSHIP

Mr. Daniel Cusik was awarded the first NKF Memorial Field Geology Scholarship. This award was given to him to support his field study required for graduation. Applications for this support were assessed on the basis of merit, need and a letter outlining achievements and plans for field work. Mr. Cusik attended the University at Buffalo for their four week field geology training. There he was exposed to areas of geologic importance in Colorado, Wyoming and Utah. Daniel currently works at Cummings and Riter Consultants, Inc.

Awards and Honors

JACK DONAHUE AWARDED THE RIP RAP MEDAL

Jack Donahue received the annual archaeological geology division award at the GSA meeting in Seattle this year. The award is for outstanding contributions to the interdisciplinary field of archaeological geology. Jack served as the fourth chairperson for the division in 1980 as well as organizing and leading one of the first formal division field trips during the 1978 GSA annual meeting in Toronto.

Jack has specialized in geoarchaeology (archaeological geology) for more than 20 years. Research started with Meadowcroft Rockshelter near Avella, PA. Additional sandstone rockshelters were studied in Kentucky and Mississippi with funding from contract archaeology programs with the U.S. Army Corps of Engineers and the National Park Service. Synthesis of field data resulted in development of the first model for evolution of sandstone rockshelters in humid, temperate climate. He has also done field studies in the Dead Sea Valley in Jordan reconstructing the environmental setting for four Early Bronze sites, two of which may be Sodom and Gomorrah, along the southeast Dead Sea basin. He had also worked on desert and fluvial settings in Peru, Ecuador and Colombia in South America, island settings with establishment of paleoshorelines on Barbuda, Antigua and Montserrat in the Caribbean and, most recently, Aztec sites south of Mexico City. This work has been reported in three books, 42 papers and 59 abstracts either authored or co-authored by Jack.

In another vein, Jack served as co-editor, with Norm Lasca, University of Wisconsin, Milwaukee, for the GSA Decade of North American Geology, Special Volume on Archaeological Geology. He also founded and was editor-in-chief for the International Journal of Geoarchaeology until last year.

THE HENRY LEIGHTON MEMORIAL GRADUATE SCHOLARSHIP

The 1993-94 winner of the Henry Leighton Memorial Graduate Scholarship was Mr. John A. Dembosky Jr. His current interest is the application of remote sensing to geologic problems.

John received his undergraduate degree from Indiana University of Pennsylvania where he was a distinguished scholar winning the IUP Foundation Distinguished Achiever Scholar, was Provost Scholar for two years and graduated Summa Cum Laude. He had a summer internship at USGS Flagstaff under the NASA Planetary Geology and Geophysics Undergraduate Research Program in 1993. He is also a student member of GSA and the Pittsburgh Geological Society. He also served as an officer for SGE Delta Zeta Chapter and won the 1993 W.A. Tarr Award.

Basim Al Qayim (PhD 1983) is a Professor of Geology at the Department of Geography, College of Arts, University of Baghdad at Baghdad, Iraq teaching undergraduate and graduate students as well as continuing research on the Tertiary-Cretaceous sequence of NE Iraq. Your P.S. was noted on the bottom of your Alumni Response Form. Let's hear from you again and update us on the new year.

Patricia Buis (PhD 1988)...Weather down here in northern Mississippi right now is like April without the flowers, warm and unsettled. I was hired as Assistant Professor in the Geology and Geological Engineering Department at the University of Mississippi (Ole Miss). As the geochemistry and environmental sciences professor, I teach geohydrology, geochemistry, and economic geology, among other things. Since I now have a MSc in mining engineering from Michigan Technological University and hoping to defend my second dissertation for my PhD, I also teach rock mechanics.

My dissertation is titled "Bioremediation Techniques for the Removal of Phosphorus from Tilden Iron Ore". I have studied how certain fungi solubilize inorganic phosphate (i.d. mineral apatite). Cleveland Cliffs, a mining company up in Marquette, Michigan, is seeking cheap methods of removing small amounts of phosphorus from the iron ore they mine. These fungi may provide the cheap method. All part of the new field of biogeochemistry.

If any Pitt geology students would be interested in either undergraduate or graduate work here at Ole Miss, we are actively recruiting. The department consists of Dr. Nolan Augenbaugh, geological engineering; Dr. David Bazard, geophysics (research work in Arizona Triassic rock paleomagnetism); Dr. William Reynolds, clay petrology (petroleum geology, depositional environments of coastal plain sediments); me (geochemistry, metallic geology, mining, hydrology). By next year, we will also have a GIS specialist.

The department has teaching assistantships with tuition waivers attached. Also, the Mississippi Marine Research Institute, next door to us, has research assistantships. We offer BSc, MSc, PhD degrees in geology and geological engineering.

If anybody happens to be in the neighborhood (70 miles from Memphis), please stop by. Always glad to hear a Pittsburgh accent (or a Northern one)!

David Cercone (BS 1987) and his wife Cindy live in Verona. Dave is affiliated with ICF Kaiser as a Hydrogeologist. He investigates and remediates soil and groundwater contaminated by industrial activities. Potential interest to all concerned is that ICF is looking for computer literate BS & MS's with excellent written, oral and personal and communication skills. Travel is required. Dave reports that department grad Bob Botterman has recently joined Delta Environmental Consultants in the new Pittsburgh office. Thanks for all the info Dave.

Richard Gray (friend of G&PS) and his wife Audrey live in the Greensburg area where Richard is Senior Vice President of GAI Consultants, Inc. He is the recent recipient of Pittsburgh Geological Society's Walt Skinner Award for Meritorious Service.

Alumni News

Donald W. Groff (PhD 1966) and his wife Mary ("Polly", Pitt, Math, (BS 1960)) live in Brookfield, Ct. where Donald has retired to "Senior Technical Advisor" for several firms in western CT and southeastern NY. He creates project specifications for environmental remediation, oversees special projects, reviews data and final reports.

Alok K. Gupta (PhD 1969) is professor and head of the Department of Earth and Planetary Sciences, University of Allahabad, Allahabad, India 211002. Alok was recently elected to all three of the National Academies of Sciences of India. In August, 1994, he visited Pittsburgh and the department where he presented a seminar on high-pressure petrological research he and his students are conducting at Allahabad. In December, he was the organizer and convenor of a National Academy of Sciences, India, symposium in Calcutta on "Mantle Dynamics and its Relation to Earthquakes and Volcanism." The symposium was attended by scientists from Canada, India, Japan, and the United States. Alok sends his warm regards to all his friends. He can be contacted at the above address.

Christopher M. Hunsicker (BS 1992) works at Earth Sciences Consultants, Inc., as a geologist II, phase I & II environmental assessments. Chris said that Mike Kohn has recently started at Earth Sciences.

Simon Loli (BS 1992) and **Kayvan Ilkhanipour** (BS 1992) are both almost done with their Masters in hydrogeology at San Diego State.

William Lowrie (PhD 1967) attended the American Geophysical Union meeting in Baltimore, Maryland, May 23-27, 1994. He presented a paper entitled "Evidence for a near-circular origin for the Sudbury basin (Ontario) from strain and AMS data."

Caron O'Neil (MS 1986) is living with husband Mark, two children (Corey who is now 13 and Bryan who is now 6 and in kindergarten) and Magic the dog (a beagle/lab mix?). Still working at PA Geological Survey and would appreciate hearing from old friends.

Karen Wells-Souza (MS 1985) and **Rich Souza** (MS 1989) are the proud parents of a little girl, Madeleine, who was born on December 19th. Karen and Joe Chepega are involved in creating a new company called Hydrosystems Management Inc. The company office in Washington PA. Rich is working with UEC of US Steel doing environmental work.

Dave Perry (friend of G&PS) has his own company - American Geoscience.

Phil Piccoli (MS 1987) and his wife have a little girl named Ashleigh Nicole born August 4, 1994. He can be reached at the University of Maryland. He gave a seminar at Pitt this spring.

Eric Smith (BS 1987) last living in L.A., Orange County.

Michelle Rogan (BS 1985) living in New Zealand.

Andrew Redline (MS 1990) is working at the Science Museum of Minnesota in the Paleontology Department in the Minneapolis/St. Paul area. He is the Director, Paleontology Science Hall. Andy reports that he is too young to be an administrator but he will struggle through the meetings and into the suits and ties. A possible cover on GQ, Andrew?

David Linsley (PhD 1993) is working as a curatorial assistant in the Section of Vertebrate Paleontology, Museum of Natural History, The Carnegie. Keep up the good work, Dave.

Chris Kern (MS 1993) married in summer of 1994 and working at Hafer Inc.

Joe Chepega (MS 1987) and his wife currently have three children. Joe is working in his own company in Washington, PA. The company's name and address are: Hydrosystems Management Inc., Glassworks Center, 331 South Main Street, Washington, PA 15301. FAX number: 412-228-4343.

Doug Spicuzza (BS 1982) working at Cummings Riter.

Michael Dropkin (friend of G&PS) Joe Chepega reports that he is doing well and is working in New Zealand.

James Werner (PhD 1951, MS 1949) retired as of January 31st. Don't work too hard at relaxing!

Robert Botterman (MS 1990) will be getting married in September.

Frank Benacquista (BS 1981) won 2nd place in the national competition for car stereos and took 1st in the eastern regional competition.

Timothy Kuntz (MS 1986) and Mary Beth have four children: Connor, Audrie, Ryan, Brendan.

John Panian (MS 1987) is reported to be studying hard at Texas A&M. How's the weather down there, John?

Ralph Harvey (PhD 1990)...Contributing to Pitt Geology's Alumni Newsletter puts me in a pretty funny spot: I'm not just alumni, but also adjunct faculty because of my co-PI status (with Bill Cassidy) on the Antarctic Search for Meteorites grant (ANSMET). However, I suppose the best thing to do is just blurt out what I'm up to, and leave it at that. Since leaving Pitt late in 1990 I've been spending the major proportion of the year in the Dept. of

Alumni News

Ralph Harvey continued

Geological Sciences at the University of Tennessee in Knoxville. There I hold the position of Associate Research Professor (funded by a NASA grant to Hap McSween), and we've been studying the petrology of a variety of different meteorite types. Most of my time has been spent studying the group of meteorites (often called the SNC's, for Shergotty-Nakhla-Chassigny, the three type specimens) thought by many to have come from Mars. Using studies of zoning profiles in cumulate minerals, mineral chemistry within melt inclusions, and trace and REE analyses, we've worked out theories concerning the composition of primitive basaltic magma in the martian crust, and the total water budget for the planet.

Recently we've been working on the most recently recognized member of this group, ALH84001. This enigmatic orthopyroxenite, strongly linked to the other martian meteorites by oxygen isotopes and detailed mineralogy, contains a surprisingly large amount of interstitial carbonate. My studies strongly support the formation of this carbonate during blasts of hot, CO₂-rich fluid that percolate through the martian crust following impacts. This first evidence for metasomatism on a planet other than our own yields some fascinating speculation of what the crust of Mars is really like.

During the other 3 months of the year I am officially a Pitt employee, busy directing the field activities for ANSMET. In fact, right now while I write this, I am sitting in a science lab in McMurdo Station, Antarctica, waiting patiently for the flight which will take us out to the "Foggy Bottom" area at the headwaters of the Beardmore Glacier. I really enjoy this work; Antarctica suits me well, and I get a thrill out of the service to the scientific community represented by the yearly recovery of specimens. This year marks my 6th season in Antarctica, and it gets a little easier and a little less frantic for me every year. I'll do what I can to keep the project and my involvement in it going strong. I've got another Antarctic project underway as well. Susan Taylor, Jim Lever (both from the US Army's Cold Regions Research and Engineering Lab) and I are designing and testing a device to collect micrometeorites from the bottom of the South Pole Station Water Well (SPWW), a large cavity excavated in the icecap by hot water drilling. The original purpose of the well was to supply drinking water to South Pole Station; however, during its operation literally millions of particles will be freed from the ice and settle to the well's bottom, and we've designed what is basically the world's most expensive pool cleaner to scoop this stuff up. Particle collection will begin in 1996 and we are eagerly awaiting those first results.

On the personal side, I'm doing what I can to get a more permanent position, but we all know what the climate for this is like right now. I've been short-listed for several jobs over the last two years, but the combination of wanting time off to go to Antarctica and my uselessness in helping schools meet affirmative action quotas has made the search a difficult one. Luckily, the support from the ANSMET and SPWW grants makes it possible for me to fund a significant part of my salary myself and "create" a position wherever I can find takers. Over the last 8 months I've been discussing just such a possibility with Case Western Reserve University in Cleveland, and it appears very likely I will be working there by late spring. I have an ulterior motive, of course; Nancy Obuchowski, my long term "significant other", has a tenure-track position at the Cleveland Clinic Foundation. It won't make me rich, but will make me happy.

Best to all my friends and colleagues!

1994 January

- 13 **Jack Donahue**, Geology & Planetary Science, University of Pittsburgh, *Aztec Site Distribution, Yautepec, Mexico*
27 **Dr. Paul Goldberg**, Texas Archaeological Research Laboratory - BRC#5 University of Texas @ Austin, Austin, TX, *Micromorphological Approaches to Archaeological Sediments and Quaternary Landscapes*

1994 February

- 03 **Professor Shiao-Hung Chiang**, Chemical and Petroleum Engineering Department, University of Pittsburgh, *Coal, Energy and the Environment*
10 **William A. Cassidy**, Geology & Planetary Science, University of Pittsburgh
Five Short Stories on Cosmic Dust
17 **Dr. William R. Brice**, University of Pittsburgh, Johnstown, PA, *Charles Frederick Hatt 1840-1878, The John Wesley Powell of Brazil*

1994 March

- 03 **Candice Martin**, Oswego State, University of New York, New York, *Osmium Isotopes and the Geochemical Cycle of Platinum Group Elements in Seawater*
04 **Michael Palin**, Oswego State, University of New York, New York, *Sediment-water Interactions at Convergent Plate Margins: An Oxygen Isotope Perspective*
07 **David Pickett**, Chemical Science & Technology Division, Los Alamos National Laboratory, *Protactinium Analysis by Mass Spectrometry and Geochemical Applications*
10 **Enriqueta Barrera**, University of Michigan, *Climate and Productivity In the High Latitude oceans in the Cretaceous and Early Paleocene*
21 **Dr. Kathleen Allen**, Department of Anthropology, University of Pittsburgh, *Archaeological Applications of Geographic Information Systems*
31 **Roman Kyshavych**, Geology & Planetary Science, University of Pittsburgh, *Analysis of Subannual Growth Increments in Freshwater Mussels, Using Remote Sensing Image Processing Software: ER Mapper*

1994 April

- 07 **J. Steven Kite**, Department of Geology and Geography, West Virginia University, *Magnetic Susceptibility Profiles: a Prospecting Tool for Deep Stratified Archaeological Sites*
08 **Robert Ripperdan**, Department of Geological Sciences, University of California, Santa Barbara
Using the ¹³C to Solve the Cambrian Ordovician Boundary Dilemma and Oxygen Isotopes in O₂ Liberated By Enzymatic Decomposition - is there a magnetic effect?
11 **R.W. Murray**, Department of Earth Sciences, Boston University, *Causes of Sedimentary Cycles in Geologic and Oceanographic Deposits: Results from Inorganic Chemistry*
13 **Dr. Jack Donahue**, Geology Department, University of Pittsburgh, *Aztec Site Distribution, Yautepec, Mexico*
14 **Rosemary Capo**, California Institute of Technology, Division of Geological and Planetary Sciences, *Quantification of Fluxes in the Soil-Atmosphere System Using Strontium Isotopes*
21 **Eugene S. Ilton**, Department of Earth & Environmental Sciences, Lehigh University, *Interaction of Metal-Bearing Solutions With Layer-Silicates*
28 **Lee Marshall**, Geology & Planetary Science, University of Pittsburgh, *Geochemistry of Mid-Continent Rift System Basalt in the Subsurface of Nebraska*

Seminars

1994 May

- 09 Jeffrey J. Roberts, Lawrence Livermore National Laboratory, *Hydrological Research in Support of the Large Block Test, Yucca Mountains, Nevada*
10 Jeffrey J. Roberts, Lawrence Livermore National Laboratory, *Electrical Properties of Mantle Materials: Information Concerning Grain Boundaries, Microstructure, and Defect Chemistry*
12 Henry Prellwitz, Geology & Planetary Science, University of Pittsburgh, *Geochronology and Petrography of the Masontown Pa Kimberlite Intrusion*

1994 August

- 11 Xi Xu, Geology & Planetary Science, University of Pittsburgh, *Reconnaissance Paleomagnetic Investigation of Some Paleozoic Rocks from the Mongol-Okhotsk Collision Zone Chita Region Southcentral Russia*
18 Dr. Alok K. Gupta, Department of Earth & Planetary Sciences, University of Allahabad, *Experimental Studies of the Join Pyrope ($mg_3al_1(sio_4)_3$) - Knorringite ($mg_3cr_2(sio_4)_3$)*

1994 September

- 08 Introduction
15 Karen Cohen, Pittsburgh Energy Research Center, *Seismic Field Demonstration at a Subsidence Site in the Anthracite Fields of Eastern Pennsylvania: Tools in Aid Multiple Phases of Characterization and Remediation*
22 Pete Hutchinson, The Hutchinson Group, Ltd., *Upper Cretaceous (Auston Group) volcanic Deposits as a Hydrocarbon Trap*
29 Tim Warner, West Virginia University, *Spatial Processing of Digital Elevation Data for Ecological Geobotany*

1994 October

- 06 Jack Beuthin, University of Pittsburgh-Johnstown, *Origin of the Mississippian-Pennsylvanian Boundary in the Central Appalachian Basin: Constraints From Paleogeomorphology and Paleopedology*
13 Steven Baloga, Proxemy Research, Inc., *Are There Terrestrial Analogs of Planetary Lava Flow?*
20 William Harbert, Geology and Planetary Science, University of Pittsburgh, *Reconnaissance Paleomagnetic Investigation of Some Paleozoic Rock From the Monogol-Okjhotsk Collision Zone, Chita Region, Southcentral Russia*
27 GSA

1994 November

- 03 Jack Donahue, Geology and Planetary Science, University of Pittsburgh, *What is Geoarchaeology?*
10 J.R. Blachere, Materials Science and Engineering Department, *Characterization of Materials Synthetic or Natural*
17 Mary Dawson, Carnegie Museum, *Curator of Vertebrate Paleontology*

1994 December

- 01 Robert Witkowski, Advanced Materials Technology Department, Westinghouse Science and Technology Center, *Growing Diamonds*

SIGMA GAMMA EPSILON

President - John Dembosky
Vice President - Amy McConnell
Secretary/Treasurer - William Steinhart

In the Fall of 1994, Sigma Gamma Epsilon was proud to induct five new members, April Doerr, Christopher Holland, Edwin James Prosser, Keith Stewart, and Yvonne Wilson. Additional members of the Beta Chapter are Greg Ayres, Katherine Hakala, Henry Prellwitz and Roman Kyshakewych. The ceremony ended with pizza and soft drinks.

The sale of Syria Mosque plaques will continue this year as well as tickets to the SGE Spring Banquet or "Geoprom." In the black financially, SGE is considering taking a well-deserved break from fund raising this year.

This past year SGE has helped acquire a new hard disk drive for the graduate computer room. This will hopefully decrease the demand for much needed work space on the graduate computer system.

The Beta Chapter is looking into a trip to help sponsor at the end of the semester as well as other activities at the current time. The department did not award the W.A. Tarr Award last year.

THE NATIONAL COUNCIL OF THE SOCIETY OF SIGMA GAMMA EPSILON

REGULATIONS OF THE W. A. TARR AWARD

1. Any student in the Earth Sciences at the school in which an active chapter of the Society is located is eligible to receive the Award whether a member of the Society of Sigma Gamma Epsilon or not.
2. The recipient of the Award must have majored as an undergraduate in some phase of the Earth Sciences (e.g., Geology, Metallurgy, Mining, Petroleum Engineering, Geological Engineering, Ceramics, Geophysics, Hydrology, Oceanography).
3. Scholarship is the essential basis of the award, but personality, leadership, contribution to the school, ability to get along with people are worthy of consideration.
4. The Award preferably should be granted to a graduating senior. (It is not contemplated that the Award will be made more than once to the same person).
5. Completion of one or more courses such as field work subsequent to the date of normal graduation may not cause an individual to be ineligible..
6. The selection of the student to receive the Award shall be made by a committee consisting of members of the Active Chapter and Three faculty members -- two of whom shall be members of the Society. The Faculty Advisor, in conjunction with the chapter, shall set up the method of selecting the Award Committee.
7. The Award will consist of a suitably engraved certificate, signed by the National President of the Society and by the Faculty Advisor of the respective chapter.

Department News

Geology Club

The Club met on January 21st and for starters elected the following new officers:

President:	Tom Wright
Vice-President:	Dave Little
Business Manager:	Beth Britenbaugh
Secretary:	Christine DeStefano

Next we talked about the undergraduate computer lab and decided we would like to purchase two more IBM's. The plan was to use profits from the football pool to purchase one in the immediate future. All current members who have paid up annual dues would be allowed free access to the computer lab. All others would be charged a five dollar per semester fee. Finally, there was discussion on several possible trips this spring including a skiing trip, a spelunking trip, and of course the annual pilgrimage to Sudbury. Also, there will be a going away party for all graduating seniors at the end of the semester.

If you have anything you would like to bring up please leave a message for Tom Wright in the Geology Club mailbox or contact him at home (781-5979).

Banquet News

The Annual Pitt Geology and Planetary Science Department Spring Banquet, also known as the "Geoprom", will, again, be held at Duranti's Park Plaza Restaurant located at 128 North Craig Street in Oakland on Friday, March 31, 1995. A cash bar will be opened at 5:30 p.m. with dinner to follow at 6:30 p.m. The banquet will consist of a dinner buffet at a cost of \$20 per person or \$38 per couple, including taxes and gratuity.

If you are interested in attending the banquet, please contact an officer of Sigma Gamma Epsilon at (412) 624-8780 as soon as possible.

Christmas Party

A festive Christmas party was held at the Cassidys' on Friday December 9th, 1994. We had quite a nice turnout and the seams of the house were straining. The pot-luck foods were varied, from Dr. Pilant's famous corned beef hash to a stunning trifle from Mrs. Bikerman. It was a nice drive to Monroeville and it was nice that the weather cooperated.

Tentative plans for next year's Christmas party are that the party will be held at the Pilants' and it will be a combination Christmas/Retirement Party. Dr. Pilant will be retiring at the end of December 1995, after 32 years of teaching in G&PS.

Geology Picnic

The picnic was held at the home of the Donahues' and it was enjoyable to see their geodesic dome. It's a great place and Jesse and Jack did a lot of the work themselves. It turned out to be a beautiful day out near Sarver, PA after everyone was worried about rainy or cold weather. For the adventurous, there were horseshoe throwing, for the less adventurous, hammocks to swing in.

There was a little scrambling at the last minute in finding a place and setting a date, so hopefully next year we can get organized a little earlier so that we can get notices out so that alumni can come and visit.

Syria Mosque Paperweights

Syria Mosque Paperweights

This is your chance to obtain a unique souvenir of the recently demolished Syria Mosque. Complimentary paperweights prepared from interior stonework are available with a donation* to our newly established Department of Geology and Planetary Science Major Equipment Fund at the University of Pittsburgh. Each piece is cut and polished, and a metal plaque engraved with "Syria Mosque, 1916-1991" is centered on the top of the paperweight. The bottom of each paperweight has felt pads to prevent damage to desk tops.

<u>Rock Type & Appropriate Size</u>	<u>Available for a donation of:</u>	<u>Choice</u>
Limestone (contains fossils) 2"x4"x1	\$ 15.00	_____
3"x5"x2"	20.00	_____
Serpentine (green with white veins) 1.5"x3"x0.75".....	15.00	_____
3"x3"x0.75"	20.00	_____
Pink Granite Slabs (polished top, rough edges) sizes vary, max. size 5"x7"	2.00 (per sq in)	_____
Size desired _____		_____

LIMITED QUANTITIES AVAILABLE (ESPECIALLY OF SERPENTINE).

ORDER EARLY TO ASSURE SATISFACTION. Indicate a second & third choice in case the supply of your first choice has been depleted.

Checks for donations* should be made out to the University of Pittsburgh, with the Department of Geology & Planetary Science Major Equipment Fund noted in the memo blank of the check. Remember that your company may also have matching funds available.

NOTE: Custom orders (bookends, larger blocks, etc.) may be ordered at a negotiated price. Contact Henry Prellwitz at (412) 624-9320.

To place your order, indicate your choice by number in the blanks above and fill out your name, address & phone on the opposite side of this form. If you order a granite slab, be sure to indicate the approximate size desired in the blank above. Enclose this form with your check.

*tax deductible

Special Department Funds

Norman K. Flint Memorial Field Geology Fund

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.

Frances Dilworth Lidiak Memorial Fund

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 Fund

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 Fund

The scholarship is established in response to a contribution from Professor Leighton's daughter, Helen Leighton Cannon. Mrs. Cannon requests that a permanent graduate scholarship fund be established and that the scholarship be awarded on the basis of merit and need.

Major Equipment Fund

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

Departmental Field Vehicle Fund

Victor A. Schmidt Memorial Classroom Fund

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 Fund

Other (please specify)

NAME:

ADDRESS:

AMOUNT OF DONATION:

\$

List of Contributors

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 Candy Weller at (412) 624-8784 or Thomas Anderson 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.

Norman K. Flint Memorial Field

Geology Fund

Buckwalter, Margaret Vaness
Carothers, Marshall Curtis
Flint, Jonathan Keith
Flint, Margaret F.
Flint, Mary H.
Flint, Susan M.
Gray, Richard E.
Groff, Donald & Mary
King, Sally Flint
Sarg, J. Frederick

Unrestricted Gifts

Anderson, Thomas
Bikerman, Michael
Carter, John & Ruth
Cercone, David & Cynthia
Garrow, Mary Margaret
Duerring, Nancy T.
Gray, Richard E.
Groff, Donald
Hapke, Bruce
Hirsch, Stuart
Hoffacker Jr., Ben F.
Hoque, Mominul
Lee, Kiehwa
O'Neil, Caron E.
Reynolds, Diana Seely
Shaak, Graig Dennis
Sharkey, Jack
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Etienne, Anne G.
Futrell, Darryl
Gray, Richard

Frances D. Lidiak Memorial Fund

Cain, Bruce Allen
Lidiak, Edward G.

Alvin J. Cohen Memorial Research Fund

Wagner, Jeffrey K.

Henry Leighton Memorial Scholarship Fund

Cannon, Helen Leighton

Vehicle Fund

Groff, Donald
Rudeski, P.

Victor A. Schmidt Memorial Classroom Fund

Jaschke, Mary
Schmidt, Bertha M.
Schmidt, Inge F.

Alumni Response Form

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

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:
Mrs. Rochelle Chesterpal
321 Engineering Hall
University of Pittsburgh
Pittsburgh, Pennsylvania 15260-3332