

# PGS Newsletter

<http://www.pittsburghgeologicalsociety.org/>

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Vol. LVIII, No. 1

Robert Burger, Editor

September, 2005

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**Wednesday, September 21, 2005**  
**The Pittsburgh Geological Society**  
**And**  
**The Society of Mining, Metallurgy and Exploration**  
**presents**

## **Coal's Contribution to the Electrical Generation Industry**

By William (Bill) J. Beck  
FirstEnergy Corp.

The utilization of coal by FirstEnergy Corp for electrical generation will be presented as the utility transitions into the era of de-regulated electrical sales to consumers. Coal has been the backbone of the nation's electrical generation industry providing over 50% of the energy requirements. The coal mining industry has made various improvements over the last twenty years to keep coal as one of the low-cost sources of energy in the USA. The future is bright for the coal industry with many proposed coal-fired power plants to meet the electrical needs of the nation and there is an ample supply of coal in this country to meet these needs. The industry knows how to mine it and burn it in an environmentally acceptable manner but the future is uncertain for the coal industry because of numerous factors. The transition of the coal industry over the past thirty years as well as the factors that will influence the industry for the next few years will be discussed.

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**Social hour - 6:00 p.m.**

**Dinner - 7:00 p.m.**

**Program - 8:00 p.m.**

Dinner will cost \$20.00/person, students \$5.00; checks preferred. Reservations should be phoned in to Mike Forth at (412) 323-2200 or emailed to [mkf@peoplepc.com](mailto:mkf@peoplepc.com) by **noon Monday, September 19.**

**Meeting will be held at the Terrace Room, Parkway Center, Greentree.**

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# Pittsburgh Geological Society

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## ... FROM THE PRESIDENT'S DESK

Welcome to the Pittsburgh Geological Society 2005 and 2006 program season. First and foremost, I am pleased to have the opportunity to guide the membership's endeavors over the next year. We are fortunate to have in our ranks talented and insightful members that inspire not only our immediate geological community, but those just seeking our guidance. Over the years the Pittsburgh Geological Society has been active in the dissemination of geologic knowledge, whether through the monthly meetings, public outreach, publications, or through our many programs. We intend to keep the tradition of providing these services to those who ask.

I realize the difficulties in finding the time to balance a work or school schedule with the ever-decreasing amounts of free-time we have to spend with family and friends. I want to personally thank our members for their continued support financially and, more important, through the time they invest in the Society activities. Of course, as President I would be remiss in reminding everyone that we can provide these programs only as long as we have the support of our members.

We look forward to seeing you at the monthly meetings. If you can't make the meetings we still value your input on our many programs. Events to look forward to this program season include:

- "So You Want to be a Geologist" Seminar
- Field Methods – Primer Course
- Annual Field Trip(s)

The Pittsburgh Geological Society is always looking for people to assist in our programs. If you have any idea and don't know how to implement it, feel free to contact us – with our range of disciplines, finding someone to help is usually not a problem. Suggestions for improving the Society are appreciated as well. Remember, this is YOUR Pittsburgh Geological Society.

Frank Benacquista, P.G....

*"Bad times have a scientific value ... We learn geology the morning after the earthquake."*

Ralph Waldo Emerson

## AAPG EASTERN SECTION MEETING

The AAPG Eastern Section will be holding its 34<sup>th</sup> annual meeting in Morgantown, WV on September 18 through 20, 2005. The full meeting announcement, including a list of all talks, events, hotel information and registration form, is available at the meeting website at:

<http://www.wvgs.wvnet.edu/www/esaapg05/index.html>.

## SPRING NORTH AMERICAN COALBED METHANE FORUM ANNOUNCED

The North American Coalbed Methane Forum will hold its Fall session on October 25-26, 2005 at the Lakeview Conference Center near Morgantown, WV. For more information, please contact Ihor Havryluk at 412-798-1391 or Dr. Kashi Aminian at 304-293-7682 ext. 3406.

## ORIGINS OF WESTERN PA PLACE NAMES

The name Sewickley is fairly common in western Pennsylvania. Sewickley is a boro in Allegheny County and a township in Westmoreland County, as well as the name of several creeks in those two areas. Sewickley Creek in Westmoreland County lent its name to the Sewickley coal in the Monongahela Formation of southwestern Pennsylvania. The word Sewickley is an English corruption of the Shawnee name, Asswekales. Asswekales itself is an English corruption of Hathawekela, a division of the Shawnee that migrated into western Pennsylvania from the Potomac River valley.

## ASSOCIATION LAUNCHES NEW CHAPTER

The National Brownfields Association has established a Pennsylvania chapter to promote the responsible redevelopment of brownfields in the state. Brownfields are typically abandoned or underutilized industrial or commercial properties where redevelopment is hampered due to the real or perceived presence of environmental hazards. Putting these properties back into productive use provides both environmental and economic benefits – it creates jobs, restores local economies and cleans up impacted soils and groundwater.

The chapter is hosting an inaugural reception to introduce its executive team members and discuss opportunities for individuals and organizations to get involved with the chapter to advance the local brownfield market. The reception will be held on September 28 from 6:00 – 8:00 p.m. at Harrisburg Hilton and Towers (One North Second Street, Harrisburg). All are welcome to attend.

This event will be held in conjunction with “Pennsylvania Brownfields 2005: Putting the Deal Together,” sponsored by the PA DEP on September 29 in Harrisburg. For complete information on the National Brownfield Association and the Pennsylvania Chapter, please visit [www.brownfieldassociation.org](http://www.brownfieldassociation.org).

### PCPG SYMPOSIUM

The Pennsylvania Council of Professional Geologists will hold a two-day symposium entitled “Our Earth Resources: A Major Factor in Pennsylvania’s Economy” on October 31 through November 1, 2005. The meeting is geared toward persons involved in developing and stewarding Pennsylvania’s natural resources including oil, gas, coal, aggregates, concrete, and water. It will be held at the Hotel Carlisle in Carlisle, PA. For more information visit [www.pcpge.org](http://www.pcpge.org) or call (717) 730-9745.

### DON’T FORGET TO RENEW

It’s time to renew your PGS membership for the 2005-2006 season. Please fill out the membership application included with this newsletter and return it with your dues to John Harper at the address on the form.

### DID YOU KNOW . . . ?

- The Pennsylvanian-aged Joggins Formation of Cumberland, Nova Scotia, is considered by many to be the best exposure of coal-bearing Carboniferous strata in the world
- The typical Hawaiian lava flow starts out at the eruption as pahoehoe and becomes 'a'a as it travels away from the vents.
- The lowermost Ordovician Stonehenge Limestone of Pennsylvania and its dolomitized equivalent, the Larke Dolomite, represent the time of maximum deepening during the Sauk Sequence, a prolonged 1<sup>st</sup>-order transgressive-regressive event that lasted from latest Precambrian to early Middle Ordovician.
- When oceanic crust forms by crystallization of mantle melts at spreading centers the heat carried by the melt is removed by both conduction and hydrothermal circulation.
- New research into Meteor Crater in Arizona suggest that, rather than one large meteorite striking the ground at high velocity, the crater resulted from a lower velocity, pancake-shaped swarm or meteorite pieces formed from the explosion of a large meteorite.
- The National Science Teachers Association recently conducted a poll of its members in which 31% of respondents said they felt pressured to teach alternatives to evolution in the science classroom, and an additional 30% felt pressured to omit or deemphasize evolution in their lesson plans.

### Website Of The Month

<http://www.nmnh.si.edu/paleo/paleoart>

**President:** Frank Benacquista  
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**Secretary:** Dan Martt

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**Memberships:** For information about memberships, please write PGS Membership Chair, PO Box 58172, Pittsburgh PA 15209, call John Harper at (412) 442-4230, or e-mail [jharper@state.pa.us](mailto:jharper@state.pa.us). Membership information can also be found at our website: [www.pittsburghgeologicalsociety.org](http://www.pittsburghgeologicalsociety.org).

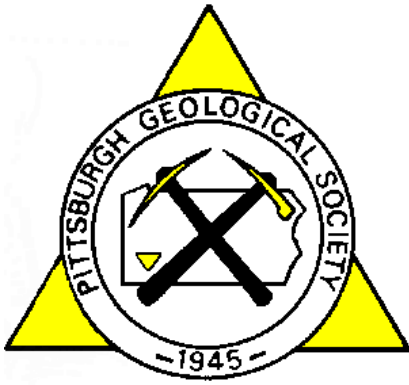
**News items:** To submit a news item in the PGS Newsletter, please contact Bob Burger at (724) 772-7977, FAX at (724) 772-7980, mail at 1885 Redcoach Road, Allison Park, PA 15101, or email at [r.burger@verizon.net](mailto:r.burger@verizon.net). Be sure to also send a phone number where you may be contacted.

**PGS web address:** [www.pittsburghgeologicalsociety.org](http://www.pittsburghgeologicalsociety.org).

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PITTSBURGH GEOLOGICAL SOCIETY  
PO Box 58172  
Pittsburgh PA 15209



# PGS Newsletter

<http://www.pittsburghgeologicalsociety.org/>

Vol. LVIII, No. 2

Robert Burger, Editor

October, 2005

Wednesday, October 19, 2005

The Pittsburgh Geological Society and the Association of Engineering Geologists  
presents

**Hurricane Storm Surge Studies at San Salvador, Bahamas,  
Groundwater Arsenic Concentrations in Ohio,  
and  
Landfill Pollution Potential: Applied Research at Youngstown State University**

by Jeffrey C. Dick, Associate Professor  
Geological and Environmental Sciences, Youngstown State University

The Environmental Studies Master of Science degree program at Youngstown State University is developing an emphasis in applied environmental geology research and geographic information systems (GIS). Three current environmental geology applied research theses demonstrate the range and utility of GIS technology (ESRI ArcGIS 9.1) in the investigative, analytical, and presentation phases of the projects.

**Shoreline Physical Controls on Measured Hurricane Storm Surge Heights: Evidence from Hurricane Frances on San Salvador, Bahamas, Ginger Cartright.**

The direct hit of Hurricane Frances (Category 4) on the island of San Salvador in September 2004 provides a unique opportunity to investigate the influence of shoreline features on the observed storm surge. It is hypothesized that the extent of barrier reefs, shoreline orientation relative to storm wind direction, water depth, beach width, and dune development all contribute to surge height. Three individual beaches that exhibit a variety of physical features are being studied. The elevation and geographic coordinates of debris strand lines created by the storm surge were surveyed during June 2005. The survey data was combined with high resolution digital aerial photographs of the beaches and topographic map data using GIS. Preliminary results indicate water depth, beach orientation, and barrier reef development contribute to the measured surge height.

(continued on next page)

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Dinner - 7:00 p.m.

Program - 8:00 p.m.

Dinner will cost \$20.00/person, students \$5.00; checks preferred. Reservations should be phoned in to Dan Martt at (724) 916-0311 x722 or emailed to [dmartt@agesinc.com](mailto:dmartt@agesinc.com) by **noon Monday, October 17.**

**Meeting will be held at the Terrace Room, Parkway Center, Greentree.**

### **Arsenic in Ohio Aquifers, John Hnida**

Through the Ambient Monitoring Program of the Ohio EPA, a wide variety of inorganic chemical parameters from selected public ground water drinking water sources have been monitored. Concentrations of total arsenic, and geochemically affiliated species such as total iron, manganese, and nitrate/nitrite are tabulated on the Ohio and federal EPA STORET on-line database. Although these data are publicly available, little or no work has been done to relate the data to geologic controls and human activities. The study focuses on the geographic distribution and temporal variations of arsenic in aquifers across Ohio. Data spanning as much as twenty-five years from more than two hundred public water supply wells are studied using GIS within the context of aquifer lithology, aquifer distribution and land use.

### **Effects from Poland Township's BFI Landfill: A Question of Trans-border Ground Water Contamination, Nicole Eve**

As a means of evaluating environmental risks, the pollution potential of the BFI Carbon-Limestone Sanitary Landfill, Poland Township, Ohio is being evaluated. The project is aimed at examining the environmental conditions that currently exist around the landfill with the objective of evaluating the health and safety of the citizens immediately surrounding the landfill. Residential well water quality data will be obtained from the county health department and surface water features will be sampled and tested. The physical properties of the area will be mapped and a pollution concentration surface will be created using GIS.

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## **Pittsburgh Geological Society**

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### **FROM THE PRESIDENT'S DESK**

Well, I am fresh back from attending the Northeast Intercollegiate Geologic Conference. I had three fun-filled days of hiking through Connecticut and speculating on the Taconic, Acadian, and Alleghanian orogenic events that shaped the bedrock in that area. Can you say staurolite porphyroblasts in a garnet schist? How about sigmoidal-shaped inclusion trails? I can now. Look me up at the next meeting and we can discuss some hand samples and photographs. Anyway it is good to be back in Pittsburgh amongst the familiar redbeds and coal seams.

Once again the Pittsburgh Geological Society sponsored a successful monthly meeting attended by over 50 people. We would like to send appreciation to the Society of Mining Engineers for co-sponsoring the meeting. Mr. Bill Beck, of First Energy Corporation gave an informative presentation on the past, present, and future of coal production in the United States. The slide of the Black Thunder mine coal seam was truly impressive.

The Board meeting was equally productive. Some of the issues being discussed include:

- Coal mine calendar project
- Evolution vs. Intelligent Design – adopting the PCPG statement

- Landslide public outreach program
- AAPG nominations for “Teaching of Natural Resources Award in Earth Sciences” (if you would like to nominate a teacher, let us know)

The PGS also has available logo stickers and newly designed hats – so be sure to ask on how to order. Also we will be selling publications at a *MUCH* reduced rate. Could be time to start thinking about those hard-to-buy-for geologist types in your world.

The Annual Field Conference of Pennsylvania Geologists will be held (October 13 through 15) near Sharon in northwestern Pennsylvania and the PGS is one of the sponsors this year. There will be field trips to visit the type section of the Homewood Sandstone, and structural and glacial features in the area. If anyone attends this conference, let us know what you thought.

The PCPG is holding a conference at the end of October titled “Our Earth Resources – A Major Factor in Pennsylvania’s Economy.” The conference will be in Carlisle (PA). More information can be found on the PCPG website. See you at the October meeting.

*Bad times have a scientific value ... We learn geology the morning after the earthquake."*

Ralph Waldo Emerson

## COOPERATIVE CALENDAR PROJECT PROPOSED

A number of years ago, the Society prepared two years of wall calendars using photographs from the Mather collection in the Drake Well Museum in Titusville, Pennsylvania. The projects were successes, both years selling out rapidly and completely. The Society now is considering getting back into the wall-calendar game in cooperation with Chris Dellamea of Beckley, West Virginia, this time using his photographs of the widespread coal-mining camps in southwestern Pennsylvania, West Virginia and eastern Ohio to prepare a year 2007 calendar. We encourage you to view Chris's many photos on his web site: [www.coalcampusa.com](http://www.coalcampusa.com).

A committee has been formed to look into this proposal, and on October 1 we held our first meeting with Chris. We are looking for three or four volunteers to form the working group to handle the project. It is estimated that each volunteer should be prepared to devote the equivalent of three or four days a month for several months to see the project through. It should be fun and interesting. If you have an interest, please contact us.

Ray Follador, Immediate Past President,  
[geodawg@comcast.net](mailto:geodawg@comcast.net)

Mary Ann Gross, Past President,  
[magrs@yahoo.com](mailto:magrs@yahoo.com)

Erica Love, Communications Committee Chair,  
[erica.love@shawgrp.com](mailto:erica.love@shawgrp.com)

Pete Briggs, Counselor, [regpeteb@aol.com](mailto:regpeteb@aol.com)

## ORIGINS OF WESTERN PA PLACE NAMES

Mercer County (and its county seat, Mercer) was named for Brigadier General Hugh Mercer, a Scottish physician who joined the wrong side in Bonny Prince Charlie's push to regain Scotland from England's King George in the 1740s. He fled to America and became a French and Indian War and Revolutionary War hero. Mercer is the type locality of the first Pennsylvanian-age marine zones to transgress westward into Pennsylvania, and to the coals, shales, siderite zones, and other strata of the Pottsville Group associated with those marine zones.

## DID YOU KNOW . . . ?

- Public support for creationism and "Intelligent Design" (i.e., creationism dressed in a tuxedo) has been growing steadily, according to polls, including a Harris Interactive Poll in July that found that 54 percent of US adults refuse to accept that human beings evolved from earlier species.
- Although magnetic data have been used for decades to understand the composition and structure of the basement, recent advances in acquisition, processing, and interpretation of magnetic data now make it possible to map intra-sedimentary faulting and fractures as well.
- Ignoring the ramification of Hurricane Katrina, experts agree that the rising price of oil is a product of high demand, not supply disruptions. Most of that demand is in the developing nations.
- And speaking of Hurricane Katrina, a new report from the National Geodetic Survey states that land in Louisiana and, probably, throughout the Gulf of Mexico, has been sinking at a relative rate of more than 5 feet per century for at least the last 100 years.
- If you haven't heard, Charles "Chip" Groat, director of the USGS resigned in June. The associate director for geology, Patrick Leahy, is currently acting director.
- Yes, you can determine the sex of a dinosaur. It turns out that female birds have a certain type of bone tissue that male birds lack, and this type of tissue has been found in a specimen of *T. rex*, leading scientist to speculate that it was a female.
- The Western Canada Sedimentary basin is the largest oil sand deposit in the world.
- Research shows that large arctic lakes are drying up, leading scientists to speculate that the phenomenon is related to warming of the permafrost.

### Website Of The Month

<http://www.leakeyfoundation.org>

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<b><u>President:</u></b>	Frank Benacquista	<b><u>Past President:</u></b>	Ray Follador	<b><u>Director-at Large:</u></b>	Mary Robison
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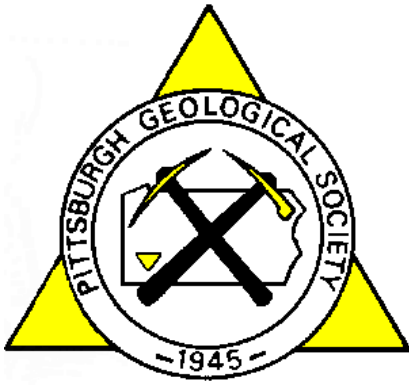
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# PGS Newsletter

<http://www.pittsburghgeologicalsociety.org/>

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Vol. LVIII, No. 3

Robert Burger, Editor

November, 2005

**Wednesday, November 16, 2005**  
**The Pittsburgh Geological Society**  
**presents**

## **The dynamics of tropical vegetation during the late Paleozoic cool-to-warm Earth transition**

by Bill DiMichele  
Research Paleontologist and Curator, Smithsonian Institution

During the late Paleozoic the Earth went through a major cool climate interval – an “ice age”, beginning in the late Mississippian and ending in the mid-Permian. This is the only time in Earth history when a complete transition has been made from warm-cool-warm Earth AND the land surface has been heavily occupied by living organisms. Fossil plants, in combination with the study of paleoclimates and paleoenvironments provide insights into the way ecosystems respond to such major extrinsic changes. The late Paleozoic biological-geological system is spatio-temporally comparable to the modern world and, thus, can inform us regarding the kinds of changes that might take place during an extended period of global warming.

Vegetational change in tropical latitudes during the late Paleozoic is hierarchical and can be characterized as within-biome and between-biome (biome – a species pool with distinct climatic tolerances and biogeographic extent): **(A)** Within-biome change consists largely of persistent dominance-diversity patterns with gradual species turnover, via background extinction and origination, at levels of less than 10% between stratigraphically successive, isotaphonomic sampling points (presumed glacial-interglacial events during some time intervals). Rarely, within-biome change may involve highly elevated short-term levels of extinction that result in restructuring of dominance-diversity. **(B)** Between biome change results in widespread spatial replacement of one major species pool by another.

Within-biome gradual species turnover occurs in those biomes for which there are sufficient long-term data to document it (Pennsylvanian wetlands and Early Permian seasonally dry environments). Both within-biome major turnovers and between-biome replacements appear to be driven by geologically short-term climatic shifts in paleoatmospheric pCO<sub>2</sub>, temperature, and precipitation patterns between presumed cool and warm earth conditions. Major turnovers reflect ecosystem reassembly after disruption. Replacements reflect ecosystem tracking of climatic change. The best documented major within-biome change occurs at the Middle-Late Pennsylvanian transition (tree ferns replace lycopsids and seed ferns in most wetland habitats). At least three between-biome changes occur during the Early Permian and record an overall trend toward drying in the tropics interrupted by shorter-lived wetter and possibly colder intervals. With each event, the new vegetation consists of progressively more evolutionarily derived species, suggesting long periods of independent evolution in extrabasinal areas before its appearance in the lowlands.

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**Dinner - 7:00 p.m.**

**Program - 8:00 p.m.**

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**Meeting will be held at the Terrace Room, Parkway Center, Greentree.**

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# Pittsburgh Geological Society

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## FROM THE PRESIDENT'S DESK

Writing this column causes me to reflect on the “geologic happenings” that affect (or at least be of interest) to our members. So....what’s going on you ask. Well, of course, there was our monthly meeting, but more on that later. From personal experience, at the beginning of October I was taking in the geology of Connecticut as part of the Northeast Intercollegiate Geologic Conference. A week later many of our members and associates were doing the same in northwestern Pennsylvania as part of the Annual Field Conference of Pennsylvania Geologists. I am certain if I looked hard enough many other similar excursions were taking place. The PCPG has just completed its Earth Resources Conference. And as I write I am putting lead in my mechanical pencil and putting fresh batteries in my calculator for the upcoming “Stability of Rock Slopes” seminar sponsored by ASCE and AEG. The 2006 Northeast GSA regional meeting will be in Harrisburg this spring. The PGS will be sponsoring the “So You Want to be a Geologist” and “Field Training” courses as well this winter and early spring. And I just received my renewal for Geological Society of America. The point? Just that many opportunities exist for us to stay active in our profession – much beyond the work and school week. No easy task considering the pressures of family, work, and school. But one thing is abundantly clear, after listening (alright eavesdropping) to many of you at the monthly meetings, our membership is taking advantage of these opportunities and I firmly believe that is needed for the future of the profession. Any thoughts?

The joint meeting with AEG was well attended and the talks very informative. The advent of readily accessible data is opening new avenues for geologic interpretation. Oh, to have GIS and a laser level when I went to school...sigh.

I'll get down from the soapbox now and move onto PGS business news.

- The PGS will be adding to our website a Pittsburgh Geology Board Room. I invite everyone to visit the Board Room and let us know what is on your mind. Joining the Board Room will require a little

information (screen name, password, etc.). This is not a “chat room,” but more of a site to leave messages. We are giving this a try in an attempt to reach some of our members that can't attend the meetings but still want a forum to express opinions as well as those of us that just need a place to vent.

- The PGS is moving forward with the Coal Mine Camp calendar project with the cooperation of Chris Dellamea. We are in the planning (read: cost) stages but are anticipating having a calendar ready for 2007.
- Dates for the Student workshops “So You Want to be a Geologist” and “Basic Field Training” were tentatively set for the end of January and end of March (2006), respectively. Watch the Newsletter for details.
- The PGS will be adding a new member to our ranks very shortly – a geologic consultant so to speak. Look for Dr. S. Twing Rockhammer to make an appearance in the Newsletter. Dr. Rockhammer will attempt to resolve those pressing geologic questions – “Where is the Fourth River?” Or “If we pump all the oil from the ground why doesn't the ground collapse?” Or “Thoughts on the tectonic setting of the southwest Pennsylvania” Well maybe not the latter, but you get the picture.
- PGS again is supporting the Pittsburgh Concert Chorale by advertising in the Christmas Program. Who says we “ain't got none of that there culture?” Seriously, plan to attend this delightful Holiday program.

Put this month's meeting on your schedule.

*“...Oh Andy loved Geology; I guess it appealed to his meticulous nature, an ice age here, million years of mountain building there, geology is the study of pressure and time. That's all it takes really, pressure, and time...”* (From the movie [The Shawshank Redemption](#))

## DID YOU KNOW . . . ?

- Large normal fault arrays develop through the propagation, interaction, and physical linkage of *en echelon* fault segments.
- If you think the weather we experienced this past year or two was bad, be glad you weren't around during the Late Precambrian when the Earth experienced what was probably the most extreme climate changes in geologic history, including several episodes of global refrigeration.
- The Chesapeake Bay impact structure is one of the largest known on Earth – 53 miles in diameter.
- There is good evidence that the Cretaceous/Tertiary boundary event was strongly selective for those in food chains dependent on primary productivity – plants and animals in detritus-based food chains, or that were resistant to starvation, appear to have been the ones that survived.
- Because of the popularity of uniformitarian principles, most views of crustal growth during the early Precambrian are derived from modern-day plate tectonic theory, despite some problem areas that don't really fit the modern model.
- The compositions of most igneous rocks found at the surface result from modification of primitive mantle melts in crustal-level magma chambers.

## ORIGINS OF WESTERN PA PLACE NAMES

The town of Slippery Rock (and Slippery Rock University of Pennsylvania) was named for Slippery Rock Creek, which in turn was actually named for a specific slippery rock. This is an outcropping of the Upper Connoquenessing sandstone (supposedly) that was excessively slippery due to an oil seep. The outcrop occurs in the creek bed at an old ford, about a mile and a half upstream from the village of Wurtemberg, Lawrence County. The oil seep led to drilling in the area, and to the discovery of the Slippery Rock oil field in 1864.

## PRE-HOLIDAY PUBLICATION SALE

If you haven't heard, all available PGS publications, with the exception of "Building Pittsburgh – A Walking Tour of Pittsburgh's Building Stones" are on sale at a huge discount

over regular price. "Environmental Geology in the Pittsburgh Area" and "Lots' of Danger" have been reduced from \$4.00 to \$0.10 each. The Rose Run Sandstone report, normally \$10.00, is now only \$1.00. And the large format "Atlas of Major Appalachian Gas Plays", which usually sells for \$75.00, is on sale for only \$10.00. The only catch is that the publications have to be ordered ahead of time and picked up at either the November or December PGS meeting or at the Washington's Landing office of the Pennsylvania Geological Survey. For more information, contact John Harper at [jharper@state.pa.us](mailto:jharper@state.pa.us) or 412-442-4230.

## HOW ABOUT THAT 2005 PA FIELD CONFERENCE?

The Field Conference of Pennsylvania Geologists recently completed its 2005 field trip in the Sharon and New Castle area. It seems to have been a roaring success, despite only about 120 people showing up. We got to see a day of interesting glacial geology and a little more than one day of Pennsylvanian stratigraphy. It was fascinating to learn that the type section of the Homewood sandstone (upper Pottsville Group) probably contains NO Homewood sandstone!!!

Did that teaser grab you? For those of you interested in western PA geology, but didn't have a chance to attend the Field Conference, the guidebook is available for purchase. You can order it directly from the FC website at <http://home.paonline.com/gfleeger/fcpg/>. The book is \$14, plus \$3.95 S&H. John Harper may be getting a small supply of them before too long, if you prefer to avoid paying that large S&H charge.

John Harper also has copies of the 1992 (Warren County), 1993 (Somerset County), 1998 (Erie County), and 2000 (Pittsburgh area) guidebooks. In addition, the FC website has a whole list of guidebooks, including all out-of-print guidebooks on a CD-ROM. For more information, contact John at [jharper@state.pa.us](mailto:jharper@state.pa.us) or 412-442-4230, or order directly from the FC website.

### Website of the Month

[http://seis.natsci.csulb.edu/basicgeo/IGNEO\\_US\\_TOUR.html](http://seis.natsci.csulb.edu/basicgeo/IGNEO_US_TOUR.html)

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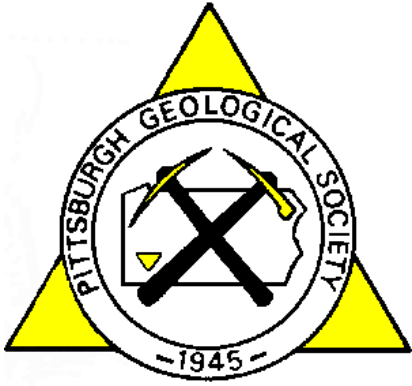
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# PGS Newslett er

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Vol. LVIII, No. 4

Robert Burger, Editor

December, 2005

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**Wednesday, December 21, 2005  
The Pittsburgh Geological Society  
Annual Spouses Night**

**In the Footsteps of Darwin:  
Landscapes and Life in *Tierra del Fuego* and *Antártida***

by Patrick Burkhart  
Slippery Rock University

Over the holidays of 2004-2005, the father and son team of Nestor and Patrick Burkhart followed in the tracks of Charles Darwin across southern Argentina. This travelogue weaves the observations of a modern adventure into the context of a classic expedition. Because Charles withdrew from college and twice abandoned his course of study, his uncle Josiah Wedgwood had to intervene in order that his angered father relent and underwrite his passage on the Beagle, 1831-1836. Himself a college drop-out turned professor, Patrick describes the classic times as hydrographer Beaufort and geologist Lyell were chiseling natural history in Darwin's day. Anticipation escalates with departure from Buenos Aires, crossing Patagonia and the Straights of Magellan, to arrival in Ushuaia on the Beagle Channel. Stand-by as the lines are cast from the Russian research vessel, *Akademik Shokalskiy*, and seas rise to 10+ meters on crossing the Drake Passage to the South Shetland Islands and the Antarctic Peninsula. Amazing photography portrays the legends of life and land in the Southern Ocean. From profitable applications of Tectonic Theory, to a modern environmental interrogation of precipitous events, do come revel in this twist of memorable sojourns.

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**Social hour - 6:00 p.m.**

**Dinner - 7:00 p.m.**

**Program - 8:00 p.m.**

Dinner will cost \$20.00/person, students \$5.00; checks preferred. Reservations should be phoned in to Mike Forth at (412) 323-2200 or emailed to [mkf@peoplepc.com](mailto:mkf@peoplepc.com) by **noon Monday, December 19.**

**Meeting will be held at the Terrace Room, Parkway Center, Greentree.**

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# Pittsburgh Geological Society

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## FROM THE PRESIDENT'S DESK

I was attempting to pen a column that would reflect the festive and spiritual atmosphere of the Holiday season. Thoughts of family, friends, health, and other worldly worthwhile causes passed through my mind and almost to my keyboard. But being neither a preacher nor a politician, I thought celebrating should best be left to the individual. So, relieved from the task of attempting to restore world peace, I narrowed my recollections to a small list that made my life as a geologist a bit easier over the last year. Let me share...

### Some Things to Be Thankful For (in no particular order):

1. Dry, comfortable steel-toe boots
2. Rite-in-the-Rain field books
3. Field projects next to a pizza place
4. A driller that knows how to deal with flowing sands
5. En-Core samplers (NOT !!)
6. GPS, AutoCAD, and Digital cameras
7. A Brunton, mechanical pencil, and Kodak film (if and when No. 6 doesn't work)
8. Administrative assistants and secretaries (should be No. 1)
9. Having the *right* socket
10. Monitoring well locks keyed the same
11. Bolt cutters (see above)
12. Outcrops with no distracting vegetation
13. Knowing how to draw contour maps without using a computer
14. GIS, aerial photographs, or how about just a good old map
15. eBAY.

Feel free to add to this list.

Just a brief update of PGS happenings:

- We are continuing to pursue the Mining Camp calendar project
- Student workshops will be scheduled for the end of January
- Internet "bulletin board" site

Hope everyone has a safe and joyful Holiday with a prosperous New year.

## Quote for the Month.....

*And some run up hill and down dale, knapping the chunky stanes to pieces wi' hammers, like sae many road makers run daft. They say it is to see how the world was made.* (Sir Walter Scott, St. Ronan's Well, 1824)

## STUDENT WORKSHOP ANNOUNCED

If you have wondered what you might do after graduating with that degree in geology, here is your chance to find out. PGS will be holding its popular "So You Want to be a Geologist" student career workshop on Saturday, January 28, 2006 from 10:00 AM to 3:00 PM at DEP/DCNR at 500 Waterfront Drive on Washington's Landing. Four instructors will speak about a variety of subjects including:

- careers in geology
- field camps, co-ops, and colleges
- taking the GRE
- job opportunities
- applicant information – interviewing, resumes, etc.
- professional etiquette
- "must-have" skills and attributes
- professional organizations
- licensing, ethics, and legalities.

Attendance is free for students. PGS will serve pizza and soft drinks for lunch. To register or find out more, please contact Judy Neelan at (412) 442-4087 by January 15, 2006. Class size will be limited to 25 individuals, so please reserve early. Information for this seminar can also be found at [www.pittsburghgeologicalsociety.org](http://www.pittsburghgeologicalsociety.org).

### HAVE YOU PAID YOUR 2005-06 DUES YET?

Your 2004-05 membership runs out at the end of the year. Please remember to renew your membership before then or you will not be receiving any more newsletters and announcements.

## **PGS NAMES TWO NEW HONORARY MEMBERS**

The PGS Board unanimously approved awarding Jim Hamel and Tom Sturges with Honorary Membership at the November meeting. Both are long-time members of the society who have been active in different ways. Jim has been an active participant at meetings, field trips, and special activities. Tom has been a long-time Regular and Corporate Member who has aided PGS personally and financially over the years through a number of projects. Congratulations to both. We look forward to their continued contributions and involvement with the Society.

## **ORIGINS OF WESTERN PA PLACE NAMES**

The town of Glassport, on the Monongahela River a few miles from McKeesport, was built by the United States Glass Company in 1894. The town mill was called "The Glass House," which became one of the world's largest hand-crafted glass manufacturers in the country. It manufactured various glassware, tobacco jars, coke glasses, meter covers, and battery jars. The business was greatly curtailed during the machine age of pressed glassware. A severe tornado, which struck Glassport in August of 1963, destroyed Glassport's oldest plant that was originally built at a cost of \$68,497.00 in the year 1894.

## **LAST CALL FOR THE PRE-HOLIDAY PUBLICATION SALE**

All available PGS publications, with the exception of "Building Pittsburgh – A Walking Tour of Pittsburgh's Building Stones," are on sale at a huge discount over regular price. "Environmental Geology in the Pittsburgh Area" and "'Lots' of Danger" have been reduced from \$4.00 to \$0.10 each. The Rose Run Sandstone report, normally \$10.00, is now only \$1.00. And the large format "Atlas of Major Appalachian Gas Plays", which usually sells for \$75.00, is on sale for only \$10.00. The only catch is that the publications have to be ordered ahead of time and picked up at either the December PGS meeting or at the Washington's Landing office of the Pennsylvania Geological Survey by December 23. For more information, contact John Harper at [jharper@state.pa.us](mailto:jharper@state.pa.us) or 412-442-4230.

## **DID YOU KNOW . . . ?**

- A buried island in the Straits of Gibraltar, called Spartel, apparently sank about 12,000 years ago as the result of an earthquake and tsunami, lending credence to Plato's report and description of Atlantis.
- An undergraduate student at the University of Alaska found a 70-million year old dinosaur footprint in Denali National Park, the very first evidence of dinosaurs in the interior of Alaska.
- The leading hypothesis to explain the abrupt warming of the oceans at the Paleocene/Eocene boundary is that a huge amount (up to 3 trillion tons) of frozen methane on the sea floor suddenly melted, putting a large amount of CO<sub>2</sub> in the atmosphere.
- Prior to 1950, very few maps presented engineering geology information. Those that did were intended for engineers, rather than geologists.
- Western Pennsylvania isn't as barren of interesting minerals as many people believe. Barite, calcite, chalcopyrite, marcasite, pyrite, sphalerite, and wurtzite can be found in many of the concretions found in association with marine limestones in the Conemaugh Group.
- Data on stream flow from the USGS show that, nationwide, streamflow has increased since 1940, with peaks occurring several weeks earlier than they used to because of earlier snowmelt.
- Introductory earth science, or some aspect of it within a general science curriculum, has been a standard in middle school (junior high school) in the US since the 1940s.
- The old Davis Island Lock and Dam was the first lock and dam built by the Corps of Engineers on the Ohio River, in 1878 to 1885. It was, at the time, the world's largest movable dam, and included the world's first rolling lock gate and widest lock chamber. It was replaced by the Emsworth Locks and Dams in 1922

### **Website Of The Month**

<http://www.olywa.net/radu/valerie/StHelens.html?>



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Vol. LVIII, No. 5

Robert Burger, Editor

January, 2006

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**Wednesday, January 18, 2006**  
**The Pittsburgh Geological Society**  
**presents**

## **Earth's dynamic surface as viewed from Space: Using Space photographs to observe earth system interactions and environmental changes**

by Joseph F. Reese

Department of Geosciences, Edinboro University of Pennsylvania

On flying the Space Shuttle, former astronaut Sally Ride stated that, besides the rush of initial lift-off and the feeling of weightlessness, "the third thing that stands out is the view of Earth, because it's absolutely spectacular. It's a view that you can only get from Space" (*NWA World Traveler*, Nov 2002). Space Shuttle astronauts have been taking photographs of planet Earth with hand-held cameras since missions began over 20 years ago. Space Shuttle and, more recently, International Space Station photographs are excellent observational data sets of the surface of the Earth. These images provide a large-scale, true-color view of the landforms and formative processes operating on the surface, spectacularly revealing the Earth's dynamic nature. A digital library of photos is readily accessible from the NASA Earth Sciences and Image Analysis website (<http://eol.jsc.nasa.gov>).

Photographs taken by astronauts show the Earth's spheres operating on enormous spatial scales. These photographs document large-scale earth-system processes and interactions as well as natural and human-induced environmental changes also operating on a variety of temporal scales. Space Shuttle photographs clearly indicate that, over short time scales, humans are an active and integral part of the Earth system. Photos, and especially time-series of photos, record the impacts of humans on the environment.

Using these photographs in the classroom increases our and our students' understanding of how remote sensing imagery, especially Space Shuttle and International Space Station photography, is used to monitor, document, and interpret the surface of the earth. It is my view that this vast, impressive visual resource is under-utilized in geoscience education, and that photographs of Earth from Space provide a valuable alternative electronic tool that would

enhance student learning, especially in technology-based activities in the classroom.

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**Social hour - 6:00 p.m.**

**Dinner - 7:00 p.m.**

**Program - 8:00 p.m.**

Dinner will cost \$20.00/person, students \$5.00; checks preferred. Reservations should be phoned in to Mike Forth at (412) 323-2200 or emailed to [mkf@peoplepc.com](mailto:mkf@peoplepc.com) by **noon Monday, January 16.**

**Meeting will be held at the Terrace Room, Parkway Center, Greentree.**

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# Pittsburgh Geological Society

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## FROM THE PRESIDENT'S DESK

The inspiration for this month's column is a result of the upcoming talk for the January 2006 meeting. We should all be "caretakers" of our profession – taking a role in making sure that we not only practice professional and ethical standards but also and, most importantly, educate. Most of us are involved in education on a daily basis; whether enhancing the skills of entry level geologists in your firm to actively teaching in a classroom setting. I think most will agree that education extends well past the classroom. Being able to apply the principles of geology to "real life" situations plays a vital role in the development of a geologist. It used to be a rock hammer, magnifying glass, and a lot of field time was all you needed to start making a contribution to the science, but no longer. We all have access to vast arrays of information and it is vital that we disseminate this to future geologists, earth scientists, and engineers. Schools need to teach students more and teach them better. A box of stones and plastic dinosaurs just doesn't work anymore. Some schools are rising to the challenge – integrating standard classroom fare with real world research. The students get hands-on up-to-date science, and most importantly, learn the reasons for doing it.

Education does (or should) not stop once we leave the classroom. Our profession is constantly changing through new discoveries and/or new regulations and we must be able to understand these changes by educating ourselves and others. Think about picking up that first rock in your driveway to becoming a full-fledged geologist.

I suppose a good question is "Who makes a good educator?" Is it the research-oriented PhD or is it the hardened geological consultant. To be quite honest it is both AND neither. I have found in my twenty-odd years as a geologist that some of the most profound "geology" has come from those with the least experience. Is this due to classroom education, an innate understanding of the principles, or just pure genius? You tell me. The important part of education is learning how to listen because you just never know where the next answer will come from.

## STUDENT WORKSHOP ANNOUNCED

If you have wondered what you might do after graduating with that degree in geology, here is your chance to find out. PGS will be holding its popular "So You Want to be a Geologist" student career workshop on Saturday, January 28, 2006 from 10:00 AM to 3:00 PM at DEP/DCNR at 500 Waterfront Drive on Washington's Landing. Four instructors will speak about a variety of subjects including:

- careers in geology
- field camps, co-ops, and colleges
- taking the GRE
- job opportunities
- applicant information – interviewing, resumes, etc.
- professional etiquette
- "must-have" skills and attributes
- professional organizations
- licensing, ethics, and legalities.

Attendance is free for students. PGS will serve pizza and soft drinks for lunch. To register or find out more, please contact Judy Neelan at (412) 442-4087 by January 15, 2006. Class size will be limited to 25 individuals, so please reserve early. Information for this seminar can also be found at [www.pittsburghgeologicalsociety.org](http://www.pittsburghgeologicalsociety.org).

## A WORD ABOUT THE BAR

As a courtesy to its membership and guests, PGS provides snacks and a bar during the social hour at its monthly gatherings. The expenses required to maintain the bar are a significant part of the meeting costs and PGS asks that patrons who consume alcoholic beverages limit themselves to two free drinks. A tip jar is present at each meeting for those wishing to make a contribution to the bar fund and, remember, it's illegal for anyone under the age of 21 to consume alcoholic beverages.

### Website Of The Month

<http://www.amnh.org/exhibitions/darwin/>

## ORIGINS OF WESTERN PA PLACE NAMES

The town of Vanport, on the Ohio River just west of Beaver in Beaver County, was named for presidential candidate “Matty Van” (Martin Van Buren) in 1835. It is the type locality of the Vanport Limestone, one of the most valuable carbonate resources in western Pennsylvania. Because of its location, it was a natural port for shipping the town’s major products – lime from Vanport Limestone kilns, and pottery, ceramics, and refractories made both from Allegheny Formation (specifically Kittanning) underclays exposed in the Beaver River valley and from Pleistocene terrace clays found along the Beaver and Ohio River valleys.

### DID YOU KNOW . . . ?

- Many bolide impact craters contain abundant organic matter, which suggests that such events might play a role in hydrocarbon generation and concentration.
- Scientists from Alabama and Florida recently tested the hypothesis that Caribbean corals were in decline long before the modern (since 1980) outbreak of disease, bleaching, and other problems we see today, and their results indicate that these coral populations were healthy until just recently.
- Twenty-five percent of inner-city children in New Orleans, LA, and 14% of all children in the city, are exposed to potentially dangerous levels of lead in the soil through both inhalation and hand-to-mouth contact (in Pittsburgh, it’s about 4%).
- Buffalo Creek, which empties into the Allegheny River at Freeport, is the largest tributary on the west side of the Allegheny between Franklin (Venango County) and Pittsburgh.
- Fluids carrying mantle-derived volatiles through fracture systems in the Earth’s crust often mix with shallow groundwater, basement fluids, and Phanerozoic brines that can be detected through isotope studies of noble gases.
- The compositions of most igneous rocks found at the surface result from modification of primitive mantle melts in crustal-level magma chambers.
- “Humans are now an order of magnitude more important at moving sediment than the sum of

all other natural processes operating on the surface of the planet.” (Bruce Wilkinson, University of Michigan).

- Natural weathering over the course of geological time has lowered continental surfaces by a few tens of meters per million years; in comparison, human activities such as construction and agriculture, transport enough sediment and rock to lower all ice-free continental surfaces by a few hundred meters per million years.
- Oceanic anoxic events in both the continental shelf and abyssal environments have been recurring throughout Earth history.
- A set of human footprints found in volcanic ash in Mexico is stirring up controversy about how long people have been in North America – the footprints have been dated to more than 40,000 years ago.
- Numerous spherule layers have been identified in Precambrian strata during the last 10 years, mostly in approximately 2.5 billion-year-old Australian and African sedimentary rocks, that are interpreted to be impact ejecta.
- Inclusions and other impurities in diamonds provide one of the best ways for geologists to get direct information about the chemical and mineralogical composition of the Earth’s mantle.
- A group of astronomers and paleontologists, led by researchers from the University of Kansas, have hypothesized that a gamma ray burst from space may have triggered the mass extinction at the end of the Ordovician Period.
- Some researchers think we could have a reversal of the Earth’s magnetic field within the next few millennia.

### HAVE YOU PAID YOUR 2005-06 DUES YET?

If you have not yet paid your 2005-2006 dues, your membership has expired. Please remember to renew your membership as soon as possible or this may be the last newsletter you will receive.

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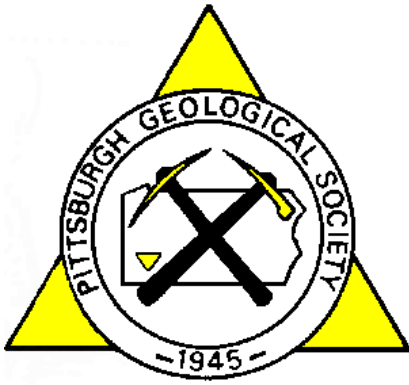
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# PGS Newsletter

<http://www.pittsburghgeologicalsociety.org/>

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Vol. LVIII, No. 6

Robert Burger, Editor

February, 2006

Wednesday, February 15, 2006  
The Pittsburgh Geological Society  
presents

## Dewatering and Engineering Geologic Mapping at Saluda Dam

by Howard Gault, P.G.  
Paul C. Rizzo Associates, Inc.

Geologists were responsible for several aspects of the construction of Saluda Dam located near Columbia, South Carolina. These included a large dewatering effort of the excavation and dam, engineering geologic mapping of the foundation, the management of environmental permits, and the locating and operation of a borrow area. Prior to construction, the geologists conducted much of the subsurface investigation. This talk will present a case history of the design and implementation of the dewatering system required to facilitate the remediation of the Saluda Dam and the engineering geologic mapping of the foundation.

### Dewatering

The Saluda Dam Remediation included the construction of a Roller Compacted Concrete Berm (1.3 million cubic yards) and a Rock Fill Berm (3.5 million cubic yards) along the downstream toe of an existing earthen dam in order to withstand a future seismic event similar to the Charleston earthquake of 1886. An excavation to non-liquefiable soils or bedrock was required prior to berm construction. The installation and operation of an extensive groundwater dewatering system was required to protect from slope instability due to unstable and wet dam soils, to lower pore pressure, and to control groundwater elevation and seepage within the excavations. Failure to control water during and after dewatering could result in flooding of the excavation, unstable or unworkable subgrade, uplift of construction features, safety issues, delays in the project, loss of fines from the dam, or a host of unstable conditions such as boils, springs, blowouts, seeps, or piping effects. Catastrophic conditions with this unique dam could have arisen due to the fact that Columbia, South Carolina was just eight-miles downstream of the Dam and over 120,000 lives would have been at risk if a Dam breach occurred.

Obviously, this dewatering challenge was incredibly exceptional in that an entire dam was to be dewatered, not just an individual excavation. Dewatering efforts were centered on construction efforts and construction schedules, which didn't always agree. In addition, construction of the dewatering system needed to keep up with the fast-paced construction schedule. Pumps were repeatedly turned off and on to see effects in the soils

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Social hour - 6:00 p.m.

Dinner - 7:00 p.m.

Program - 8:00 p.m.

Dinner will cost \$20.00/person, students \$5.00; checks preferred. Reservations should be phoned in to Mike Forth at (412) 323-2200 or emailed to [mkf@peoplepc.com](mailto:mkf@peoplepc.com) by noon Monday, February 13.

Meeting will be held at the Terrace Room, Parkway Center, Greentree.

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or bedrock at certain locations. Work became critical when a deep well pump malfunctioned above an active excavation location. Furthermore, if there was a location where the pore pressures were too high to begin or continue excavation, shallow wells or eductor lines had to be drilled on a very short notice to avoid costly delay charges from the General Contractor. Additional complications arose with the reluctance of dam contractors to accept responsibility for the dewatering and related safety impacts on dam stability.

### **Geologic Mapping**

The excavation for the new dam exposed high grade, polyphase deformed rocks along the Modoc shear zone in central South Carolina. The Modoc zone is part of the Eastern Piedmont Fault System and separates the Dreher Shoals terrane from the Carolina terrane. Excavations to competent bedrock for the foundation of a new roller compacted concrete (RCC) and rock fill berm backup dam provided a unique opportunity to examine 2400 ft. long, 250 foot wide section of pristine bedrock across strike in the core of the Modoc zone. Subsequent cleaning required multiple methods of excavation as well as significant manual excavation, pressure washing, and vacuuming. Sections 2800 feet long at the northern and southern ends of the RCC foundation were excavated to non-liquefiable soils for construction of a Rock Fill Berm. Mapping was constrained by the construction schedule and geologists had as little as one hour to map a given exposure. The entire exposure was mapped at 1-inch equals 10-foot scale. Lithology, structural measurements, and engineering properties (hardness, weathering, and discontinuity descriptors) were recorded and used to calculate rock mass ratings for the entire bedrock foundation.

The exposed rocks at the construction site are metamorphosed to mid to upper-level amphibolite facies and record multiple deformational events. At least two episodes of Alleghanian ductile deformation are observed associated with movement along the Modoc shear zone, and at least one period of later brittle deformation is apparent along the exposure. Evidence for both high and low angle fault movement exists. Mapped lithologies include: mylonized quartzo-feldspathic gneiss (Lake Murray gneiss), migmatitic to anatectic granite, stromatic migmatites (deformed pegmatites), biotite-quartz-plagioclase schist, mica-hornblende schist, kyanite-garnet-mica schist, penetratively deformed garnet amphibolite, two-feldspar pegmatites, aplites, and mafic and felsic dikes. Structural elements include a pervasive N70-80E striking foliation and lineation, tight to closed, moderately to steeply northeast plunging asymmetric folds,ptygmatic folds, sheath folds, boudinage, narrow, 1-5 inch wide shear bands, riedel shears, and numerous mesoscopic kinematic indicators in the form of rotated porphyroblasts and sigmoidal fabrics within sheared rocks. Brittle deformations consist of late stage NNW to NE striking faults with zones of fault gouge up to several inches wide. The outcrop appears to contain a near complete exposure of the northern limb (NW-dipping) and a portion of the core of the Irmo antiform.

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## **Pittsburgh Geological Society**

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### **A WORD TO THE MEMBERSHIP**

If you have paid your dues for the year, but have not filled out a 2005-2006 membership form with at least your name and the word "same" on it to indicate that there is no change in information, the Membership Committee has no record of your renewal.

If you pay the Secretary or his representative for your dues at a monthly meeting, **please remember to fill out a membership form.** Otherwise you will be relegated to the status of "former member" and will stop receiving the newsletter and announcements.

### **PGS STUDENT WORKSHOP A SUCCESS**

On January 28, PGS sponsored the 2005-2006 "So You Want to be a Geologist" workshop for 17 students from three surrounding universities. The workshop was held at DEP on Washington's Landing and ran from 10:00 a.m. to 2:00 p.m. PGS provided pizza for lunch. Although several students from SRU and Kent State were present, most of this year's attendees were from Pitt. Frank Benacquista, Brian Green, and Ed Girard did their usual good job discussing topics on professions in geology, academic preparation, securing jobs, and professional behavior.



## PGS STUDENT NIGHT CALL FOR ABSTRACTS

Students are invited to submit abstracts of a senior research project, senior design project, Master's or Ph.D thesis for presentation at the Fourth Annual Student Night joint meeting of the Association of Engineering Geologists, the Pittsburgh Geological Society, and the Geotechnical Group of the Pittsburgh Section of the American Society of Civil Engineers. Abstracts related to geology, engineering geology, geotechnical engineering, environmental engineering, hydrogeology, and hydrology are welcome. The meeting will be held 6:00 p.m., Wednesday, April 19, 2006 at the Terrace Room, Parkway Center, Greentree, PA.

Three students will be selected to give a 15-20 minute oral presentation based on their abstract. Students not selected to give oral presentations will be invited to present a poster summarizing their work. **The three students selected to give oral presentations will receive \$100 awards.** All student presenters will receive a one-year membership to PGS.

The deadline for abstract submittal is March 10, 2006 and notification of acceptance will be given on March 17, 2006. Abstracts should be limited to 350 words and may be submitted via email to [barnerwl@cdm.com](mailto:barnerwl@cdm.com). If you have questions or wish to submit your abstract through the mail, contact Wendell Barner at (412) 208-2409.

## ORIGINS OF WESTERN PA PLACE NAMES

Waynesburg, the county seat of Greene County, was named for General "Mad" Anthony Wayne, the fearless Revolutionary War hero who defeated the Indians in 1795 to secure the western frontier for settlers moving west. Waynesburg was laid out in 1796, and incorporated as a borough on January 29, 1816. The town lends its name to the Waynesburg Formation, the transitional Pennsylvanian/Permian-age portion of the Dunkard Group, and to the Waynesburg coal, which has been mined in various areas of southwestern Pennsylvania.

### Website Of The Month

<http://www.amnh.org/exhibitions/darwin/>

## DID YOU KNOW . . . ?

- 2005 may end up being remembered as the year the US Congress finally passed a comprehensive energy bill, but never managed to address the country's most pressing energy challenges.
- Researchers from Colorado have developed a comprehensive climate system model that indicates that elevated levels of CO<sub>2</sub> during the latest Permian led to climatic conditions inhospitable to both marine and terrestrial life.
- Because niobium (Nb) and tantalum (Ta) generally have little or no fluid mobility when compared to other elements, geochemists consider a negative Nb-Ta anomaly in magmatic rocks to signify a typical subduction-zone signature.
- Although modern marine mammals typically look very different from the marine reptiles that were the dominant predators in Jurassic and Cretaceous seas, the early Tertiary ancestors of our modern marine mammals took on the forms of many Mesozoic reptiles – a form of adaptation to a specific niche. Modern dolphins still look amazingly similar to Mesozoic ichthyosaurs.
- Tectonic block rotation of as much as 9° per million years occurs in the forearcs of convergent plate margins.
- The amount of hydrogen in the upper mantle of the Earth has been estimated at from 60 to 600 parts per million – a huge amount given the volume of the upper mantle.
- Based on fluid inclusions in evaporites, the major ion chemistry of seawater has changed throughout the Late Proterozoic and Phanerozoic.
- Dinosaurs were essentially unknown prior to 1802 when tracks of Jurassic dinosaurs were discovered in Massachusetts, although there is some speculation that some mythological creatures probably represent early attempts at trying to explain dinosaur remains.
- The calcium/magnesium carbonate shells of foraminiferans have been used extensively to extract information on ocean temperatures (from  $\delta^{18}\text{O}$  studies), and when combined with related salinity these data can be used to reconstruct ancient oceanic circulation patterns.

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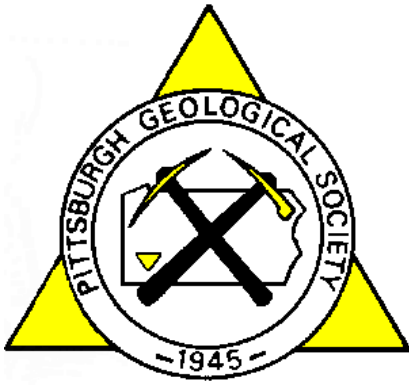
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# PGS Newsletter

<http://www.pittsburghgeologicalsociety.org/>

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Vol. LVIII, No. 7

Robert Burger, Editor

March, 2006

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**Wednesday, March 15, 2006**  
**The Pittsburgh Geological Society**  
**presents**

## **Tectonic History of Major Faults in the Yucca Mountain Region: Potential Pathways for Fluid Migration**

by Thomas H. Anderson  
Department of Geology and Planetary Science, University of Pittsburgh

Kinematic analysis of regional fault systems and field studies (mainly west of Mercury, NV) provide insights into the tectonic history of Yucca Mountain and the relation to the important Devil's Hole-Ash Meadows spring system. Our results support the interpretation of the Yucca Mountain region as a pull-apart basin filled with volcanic units erupted through thinned crust. The boundaries of the southern part of the pull-apart basin coincide with major faults (Kawich Greenwater rift or Gravity fault, Highway 95/Carrara, and Bare Mountain). These major fault structures may influence and possibly control the transmission of water from the proposed repository into Amargosa Valley.

Volcanism and deformation during Middle Miocene time between ~16 and 10 Ma, are interpreted to be important manifestations of tens of kilometers of right-lateral displacement along the Las Vegas Valley Shear Zone (LVVSZ). The Middle Miocene events record very different responses to displacement along the LVVSZ that are: 1) the formation of Crater Flat and Yucca Mountain during extension and volcanism, and 2) intense fracturing during uplift and contraction of the rocks in the Specter Range and adjacent areas. The close timing of these events and their occurrence at the apparent northwestern end of the LVVSZ suggests that they reflect processes at bends in the LVVSZ. A bend to the west between Mercury and Lathrop Wells resulted in transpression whereas a bend to the north along Forty Mile Wash resulted in transtension. The changes in the strike of the fault from northwest to west to north probably reflect the influence of important deep pre-existing faults that broke the crust.

The interaction between the older deep faults and the LVVSZ appears to relate closely to pathways and barriers of groundwater in the vicinity of Devil's Hole. If, as previously postulated, Devil's Hole is fed from sources to the northeast, then the zone through which the water efficiently moves coincides with the strongly fractured Cambrian carbonate rocks in the transpressional belt along the LVVSZ. The eastern boundary of the Devil's Hole-Ash Meadows system of springs coincides with the southward extension of the Kawich Greenwater rift or Gravity fault.

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**Social hour - 6:00 p.m.**

**Dinner - 7:00 p.m.**

**Program - 8:00 p.m.**

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**Meeting will be held at the Terrace Room, Parkway Center, Greentree.**

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# Pittsburgh Geological Society

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## PGS PRESENTS “TOOLS OF THE TRADE” STUDENT WORKSHOP

Students, have you ever wondered what your fieldwork might be like once you land that job in geology? Then you will want to attend this workshop. Subjects covered in this workshop will include:

- Soil boring techniques
- Monitoring well installation
- Soil and groundwater sampling
- Geotechnical and environmental field methods
- Designing field investigations

This workshop will be held Saturday, April 1, 2006 from 9:00 a.m. to about 4:00 p.m. It will take place outdoors rain or shine, so attendees should wear sturdy shoes, old clothes, and dress for the weather. PGS will provide safety glasses and hard hats.

There is no charge to students, and pizza and soft drinks will be provided for lunch. To register, contact Frank Benacquista at 412-469-9331 ext. 22 or [fbenacquista@kuresources.com](mailto:fbenacquista@kuresources.com). The registration deadline is March 24, 2006. Class sizes will be limited to 30 students so reserve your spot early. Additional information can be found at [www.pittsburghgeologicalsociety.org](http://www.pittsburghgeologicalsociety.org).

## ORIGINS OF WESTERN PA PLACE NAMES

Pittsburgh's South Side once comprised a number of smaller communities, including Birmingham and East Birmingham. John Ormsby was given this land for his service as the King's Commissary of Provisions and Paymaster of Disbursements at Fort Pitt during the French and Indian War.

Ormsby's son-in-law laid out the town and named it Birmingham after his home in England (he also named the streets after family members.)

J. J. Stevenson named the Birmingham shale member of the Casselman Formation (Conemaugh Group) for exposures of the landslide-prone mudrocks between Birmingham and Temperanceville (between the South Side and the West End in modern terminology).

## STUDENT NIGHT MEETING

This is a reminder to students submitting abstracts for the third annual Student Night joint meeting of the Association of Engineering Geologists, the Pittsburgh Geological Society, and the Geotechnical Group of the Pittsburgh Section of the American Society of Civil Engineers that the deadline for receipt is March 10, 2006. Abstracts are limited to 350 words and students whose abstracts are selected for oral presentations will receive \$100 awards.

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## DID YOU KNOW . . . ?

- The basic Carboniferous stratigraphy of the eastern US was established by the early 1900s and, except for minor modifications, still exists in that form today.
- Recent research suggests that the synthesis of organic molecules that might be precursors of biological molecules can occur within the interlayers of smectite clays that protect and promote the synthesis.
- There is some concern that, with the effect of global warming, outbreaks of great numbers of insects that might not otherwise survive colder winters could play havoc with forests, which in turn could affect the carbon cycle on Earth.
- Scientists from Woods Hole Oceanographic Institution have found a new category of oceanic spreading ridges that they term “ultraslow” because the spread is less than 20 millimeters per year as compared with “slow” spreading of 20 to 55 millimeters per year.
- Although the break-up of Pangea began during the Triassic, the Western Tethys and Central Atlantic Ocean began to open only during the Middle Jurassic. The Caribbean portion of the Tethys probably opened during the Late Jurassic–Early Cretaceous.

**Website Of The Month**  
<http://www.hubbertpeak.com>

- The surface of Titan, Saturn's largest moon, is riddled with river channels, lakebeds, and erosional patterns that planetary geologists think were possibly carved by recurring methane rain.
- Studies of oceanic gabbros from both the recent oceanic crust and from ophiolites found microtextures that imply the propagation of water-rich fluids on grain boundaries in a ductile regime causing hydrous partial melting.
- At the family level, the fossil record of insects and spiders shows an exponential increase over time, suggesting that spiders probably evolved and radiated alongside insects, with the major radiations of both groups occurring at least 100 million years before the origin of angiosperms.
- West Greenland comprises some of the oldest rocks on the planet Earth.
- The Hempstead Resource Recovery Facility (trash incinerator) in Westbury, New York burns garbage 24/7, producing an average of 72 megawatts of electricity per year.
- Paleontologists working in China recently uncovered fossils of a house cat-sized swimming mammal from the Jurassic that had a beaver-like tail and sharp otter-like teeth for eating fish. This is the earliest known mammal associated with an aquatic environment.
- Diamonds from the Juina kimberlites in the Rio Soriso area of Brazil contain several subpopulations that originated in the upper and lower mantle, with some of them from depths below 1,050 miles that ascended in a plume formed at the core-mantle boundary.

### **SPRING NORTH AMERICAN COALBED METHANE FORUM ANNOUNCED**

The North American Coalbed Methane Forum will hold its spring session on April 18-19, 2006 at the Hilton Garden Inn Southpointe near Canonsburg, PA. For more information, please contact Ihor Havryluk at 412-798-1391 or Dr. Kashi Aminian at 304-293-7682 ext. 3406.

### **PGS SPRING FIELDTRIP**

PGS is looking into running a fieldtrip to the Bloomsburg/Hazleton/Shamokin area in northeastern PA. One of the highlights of the trip is to be a stop at the Whaleback. The trip is tentatively scheduled to take place the first weekend of May. Look for more information in the next PGS newsletter or on the PGS website at [www.pittsburghgeologicalsociety.org](http://www.pittsburghgeologicalsociety.org).

### **DAM REMEDIATION SHORT COURSE**

The Allegheny-Ohio Section of the Association of Environmental & Engineering Geologists is offering a short course entitled "State of the Art in Dam Design, Construction and Remediation: Rock Grouting, Rock Anchors, Cut-off Walls, and Crisis Management." It will be held at the Holiday Inn, Greentree, PA. For more information, please contact Dale Andrews at (412) 922-5575.

### **GSA OFFERS SPECIAL RATE FOR SLOPE STABILITY SYMPOSIUM**

The Geological Society of America is offering a special one-day rate of \$103.00 to individuals attending the Slope Stability Symposium at the North Central Section meeting in Akron, OH. The symposium is being held on Friday, April 21, 2006. To view the technical program schedule, visit <http://www.geosociety.org/sectdiv/Northc/06ncmtg.htm> click on "Technical Program Schedule" and search for session number T9.

To receive the special rate, you must print the Adobe Acrobat (pdf) registration form (not the on-line form), fill it out, and return it to Erin Pitner at the address or fax number on the form. Please print "BRIAN GREENE – SPECIAL RATE" on the top of the form. If you have any questions, please contact Ms. Pitner at (303) 357-1006 or [epitner@geosociety.org](mailto:epitner@geosociety.org).

*If you have any announcements or items of interest that you would like to have published in the PGS Newsletter, please send them to Bob Burger at [r.burger@verizon.net](mailto:r.burger@verizon.net) or 1885 Redcoach Road, Allison Park, PA 15101.*

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# PGS Newsletter

<http://www.pittsburghgeologicalsociety.org/>

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Vol. LVIII, No. 8

Robert Burger, Editor

April, 2006

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Wednesday, April 19, 2006

## 4<sup>th</sup> Annual Student Night

**Joint meeting with the Pittsburgh Geological Society, the Association of Engineering Geologists,  
and the American Society of Civil Engineers**

### PGS Award Winner

#### **A Classification of Pseudokarst in the White River Badlands, SD.**

Coffman D., Burkhart P., Livingston J., Jahn M., Kowalczyk R., Slippery Rock University

Pseudokarst describes a variety of karst-like landforms that arise in the semi-arid landscape of the White River Badlands, South Dakota. The phenomenon is produced by granular erosion of subsurface pipes, which are enlarged by water percolating through the poorly consolidated siltstones that dominate the regional stratigraphic column. We present a classification system for the various varieties of occurrence. Three varieties, including rill tunnel, micro-curtain, and lateral retreat pseudokarst, exist in the tall 'castles' of Tertiary bedrock. Rill tunnel pseudokarst forms in steep drainages and may be initiated by a chockstone that has fallen from above or a resistant stratum. Conduits range in scale from small tunnels of millimeter aperture to large land bridges in ravines tens of meters deep and wide. Lateral retreat morphology can be observed where a resistant mesa capstone fractures from the loss of lateral support and conduits form in the underlying materials along the pressure-release joint set. The micro-curtain variety exists on very steep slopes, where erosion is focused in small ravines of centimeter scale. Conduits form just below the surface of the cliff faces, in places dissecting the subsurface so extensively that the exposure assumes the perforated texture of a lacey veil. On the Holocene sod tables, ponded water percolates into the alluvium, flowing laterally until a seepage face is encountered along the perimeter of the table. This sapping conduit morphology enlarges in a progression that demonstrates youthful, mature, and old-age. Initially, isolated sinks lack identifiable interconnections. At the mature stage, connectivity between multiple sinks often exists in a lineament that is connected to an adjacent outfall at the cliff along the sod table edge. The outfall pipe is invariably present at the Tertiary-Holocene unconformity, forming an ephemeral contact spring. Eventually, at old-age, the bridges between adjacent sinks collapse, forming pseudokarst valleys. At that juncture, fluvial erosion rapidly obliterates any vestigial evidence of subsurface processes, leading us to assert that erosion by groundwater can easily be underrepresented in geomorphic interpretations of the complex landscape.

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**Dinner - 7:00 p.m.**

**Program - 8:00 p.m.**

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**Meeting will be held at the Terrace Room, Parkway Center, Greentree.**

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# Pittsburgh Geological Society

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## ASCE Award Winner

### **A geotechnical evaluation of the soil-nailing method of landslide stabilization in Summit County, Ohio**

Wendlandt, Nichole J, .Department of Geology, Kent State University

I am in the process of conducting a geotechnical evaluation of six selected landslide sites that have been stabilized using launched soil nails in Summit County of northeast Ohio. All of these sites are located in the Cuyahoga River valley, and the landslides occur along county highways. The landslides in Summit County occur in clays and silts that were deposited in lakes when the Pleistocene glaciers blocked portions of the Cuyahoga Valley. Launched soil nails have been an economical and quick choice of stabilization method, not only in northeast Ohio but also in many other states. The method of soil nailing was developed to improve soil strength and stability. The soil nails are effective in stabilizing slopes immediately after they are inserted. The nails are 1.5 inch in diameter and 20 feet long hollow steel or fiberglass bars. The soil nail launcher forces the nails into the soil at speeds up to 200 mph. All of the sites in this study have the upper slope stabilized to prevent damage to road pavements. The soil nailing technology is relatively new, and there is a need to evaluate the effectiveness of the soil nails as a method of landslide stabilization.

The six sites in this study were chosen based on their different sizes and varying impacts on the roads. Of these six sites, three were chosen to be pegged for monitoring near-surface movement. At each of the six sites, the following field investigations were completed: (i) the type and causes of the slope movements were identified, (ii) the location of the failure plane was established, (iii) stratigraphic profiles were established, (iv) soil samples were collected to determine natural water content, dry density, Atterberg Limits, and shear strength parameters, (v) photographs were taken to depict various landslide features and the nature of each slope movement, and (vi) slope movement is being monitored on a monthly basis using pegs. Once all of the laboratory tests have been completed, a stability analysis will be performed on each site using the STABL IV computer software.

Laboratory test results indicate that the soils present at the six sites consist of silts and clays. The cohesion values of the samples range from 0 psi to 0.25 psi, and the friction angle varies between 26° and 29°. The modes of failure for each site are identified as rotational and translational slides caused by the steepness of the slopes, the fine grained nature of the soil, development of pore pressure, and undercutting of the toe. With increasing water content, the lower portions of the failed material at some sites tend to change into earth flows. Preliminary results of the monitoring show that the upper parts of the slopes that were stabilized using the soil nails have not moved.

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## AEG Award Winner

### **Acid mine drainage assessment on well and spring water quality in the Pike Run Watershed, PA**

Lisa Horvath, California University of PA

The purpose of this study is to assess the groundwater quality of the Pike Run Watershed, located in Washington County, Pennsylvania. Determination of groundwater quality within this watershed is highly valuable since most residents use groundwater as their main water source, since public water is not available. 27 domestic wells and natural springs within the watershed were sampled, analyzed and compared with National Drinking Water Standards established by the EPA. Chemical analysis of the water included pH, temperature, dissolved oxygen, alkalinity (bicarbonate), hot acidity, conductivity, sulfate, iron, manganese, aluminum, calcium, and magnesium. These parameters were used after preliminary studies documented high levels of sulfate, magnesium, calcium, and iron at five selected sites within the study area. Water samples were analyzed by the National Research Center for Coal and Energy Lab in West Virginia.

Based on the history of intensive coal mining in the study area, we assumed that high concentration of above ions in the groundwater are related to acid mine drainage (AMD). AMD was documented as a non-point source pollutant of the surface water within the watershed.

The chemistry of groundwater was also evaluated based on local stratigraphy, mineralogy and petrology of hydrologic units, stratigraphic position of aquifers, and possible locations of mining pools. Sample collection sites were georeferenced, chemical parameters and geologic information were inputted into GIS. Existing well log data were inputted into RockWorks software. These technological tools were used for spatial analysis of the ground water chemistry, local geology, and abandoned mines. This information was used to determine whether local aquifers were confined or unconfined, the impacts of mine subsidence to the groundwater system, and how mining has impacted the overall hydrologic system.

Based on the assessment of the data, it has been determined that aquifers lie within abandoned mined areas, and are being used as water supplies by local residents. Therefore, acid mine drainage is a non-point source pollutant of the groundwater within the watershed.



night include:

**A geotechnical investigation of embankment failures in selected counties of northeast, OH**

Dan Bole, Kent State University

**Assessment of Hurricane Frances tidal surge on San Salvador, Bahamas**

Ginger R. Cartright, Youngstown State University

**Occurrence of arsenic in glacial aquifers in northeastern Ohio**

John E. Hnida, Youngstown State University

**Study of pyrite dissolution rate and extent for various sedimentary and hydrothermal pyrite samples**

Ran Liu<sup>1</sup>, Amy Wolfe<sup>2</sup>, David A. Dzombak<sup>1</sup>, Brian Stewart<sup>2</sup>, Rosemary Capo<sup>2</sup>

<sup>1</sup> Carnegie Mellon University, <sup>2</sup> University of Pittsburgh

**Seismic inversion using soft computing protocols**

Emre Artun, Penn State University

**PGS OFFICER NOMINEES**

The following is a proposed list of candidates for open positions on the PGS board of directors for the 2006-07 season:

President: Pat Burkhart

Vice President: Michael Forth

Treasurer: Mary Ann Gross

Secretary: Ray Follador

There are four Directors-at-Large positions open. The current candidates are Bob Fedinetz, Erica Love, Mary McGuire, and Mary Robison. If you are an active member of PGS and wish to become a candidate, or know of a member who would be a good candidate, please inform Ray Follador, Nominations and Elections Committee Chair at [geodawg@comcast.net](mailto:geodawg@comcast.net) or (724) 744-0399. All candidates will be announced at the April meeting. The election will be held at the May meeting.

**PGS SPRING FIELD TRIP**

On April 28<sup>th</sup> and 29<sup>th</sup> PGS is sponsoring a field trip to north central Pennsylvania. The field trip will include stops at Hyner View State Park featuring the view seen on the cover of the *Geology of Pennsylvania*, the Red Hill excavation and museum where the oldest known tetrapod in North America was discovered, Kettle Creek State

Park, and Bitumen, PA where we'll see mine subsidence, reclamation, and remnants of the mining camp and collect fossil plants.

The trip will depart from Parkway Center Mall around 2-3 p.m. Friday, April 28. Price is \$30/adult and \$10/student plus food and lodging. For further information and to register, contact Wendell Barner at (412) 208-2409, [barnerw@cdm.com](mailto:barnerw@cdm.com), or Erica Love at (412) 201-5500 [loveei@cdm.com](mailto:loveei@cdm.com). Registration deadline is 5:00 p.m. Thursday, April 20.

**FIELD WORKSHOP**

On Saturday April 1, 2006, PGS sponsored a field workshop attended by over 30 students from Pitt, Indiana University of Pennsylvania, Kent State, Slippery Rock, Carnegie Mellon, and Youngstown State Universities. The weather cooperated fairly well despite being a bit breezy. Topics covered included split spoon sampling, rock coring, well installation, field preparation (proposals, contracts, safety), and general geology. During the workshop we successfully installed a 34-foot monitoring well on the campus of Slippery Rock University. The core of a sandstone member of the Clarion Formation presented the students with an excellent profile of a bedrock weathering sequence complete with a loss of water during drilling.

PGS thanks the following companies for donating time and materials to make the field workshop a success:

- Geo-Environmental Drilling Company (drill rig and well installation)
- Field Environmental Services, Inc. (field testing equipment)
- Pace Analytical Services, Inc. (sampling containers)

We also thank Dr. Pat Burkhart (Slippery Rock University), Steve McGuire (Veolia Water), Dan Martt (AEGIS), Judy Neelan (PADEP), and Frank Benacquista (KU Resources) for dedicating time to make this project a success. Lastly, thank you to the students for attending and showing your dedication to your careers. Hopefully the workshop gave everyone insight into what it takes to gather geological data.

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<b><u>President:</u></b>	Frank Benacquista	<b><u>Past President:</u></b>	Ray Follador	<b><u>Director-at Large:</u></b>	Mary Robison
<b><u>Vice President:</u></b>	Pat Burkhart	<b><u>Director-at Large:</u></b>	Mary Ann Gross	<b><u>Director-at Large:</u></b>	Richard Ruffolo
<b><u>Treasurer:</u></b>	Mike Forth	<b><u>Director-at Large:</u></b>	Erica Love	<b><u>Counselor:</u></b>	Pete Briggs
<b><u>Secretary:</u></b>	Dan Martt	<b><u>Director-at Large:</u></b>	Mary McGuire	<b><u>Counselor:</u></b>	John Harper
		<b><u>Director-at Large:</u></b>	Steve McGuire		

**Memberships:** For information about memberships, please write PGS Membership Chair, PO Box 58172, Pittsburgh PA 15209, call John Harper at (412) 442-4230, or e-mail [jharper@state.pa.us](mailto:jharper@state.pa.us). Membership information can also be found at our website: [www.pittsburghgeologicalsociety.org](http://www.pittsburghgeologicalsociety.org).

**News items:** To submit a news item in the PGS Newsletter, please contact Bob Burger at (724) 772-7977, FAX at (724) 772-7980, mail at 1885 Redcoach Road, Allison Park, PA 15101, or email at [r.burger@verizon.net](mailto:r.burger@verizon.net). Be sure to also send a phone number where you may be contacted.

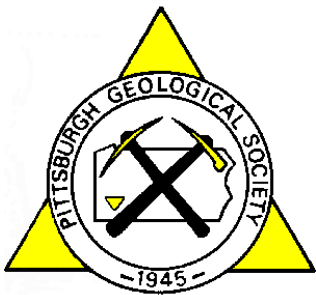
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PITTSBURGH GEOLOGICAL SOCIETY  
PO Box 58172  
Pittsburgh PA 15209



# PGS Newsletter

<http://www.pittsburghgeologicalsociety.org/>

Vol. LVIII, No. 9

Robert Burger, Editor

May, 2006

Wednesday, May 17, 2006

## Foster's Restaurant, Foster Plaza Building 10

The Pittsburgh Geological Society and the Pittsburgh Association of Petroleum Geologists  
Presents

### Oil and gas reserves estimating—we have met the enemy, and he is us.<sup>1</sup>

Peter R. Rose

Rose & Associates, LLP, AAPG President

Whether predictions are expressed *deterministically* (single-number forecasts) or *probabilistically* (as ranges of forecasts corresponding to perceived probabilities), they are still estimates, subject to vagaries of nature, human error, and various biases. But probabilistic estimating has five important advantages:

1. Forecasting accuracy can be measured;
2. Use of statistics improves estimates;
3. Reality checks can pre-detect errors;
4. It is faster, more efficient, avoids false precision; and
5. It promotes better communication of uncertainty to decision-makers and investors.

However, using prevailing practices that have evolved through decades of engineering practice, reinforced by SEC-approved standards, "Proved Reserves" is a deterministic number that refers to a specified volume (or more) of hydrocarbons that the estimator is "reasonably certain" will be recovered from a well, property, field, or district. Even so, it is actually a probability statement, *except that no confidence-level (= probability) is specified*. It is up to the individual reserves appraiser to sense his/her "reasonable certainty", and in fact, experience indicates that individual "reasonable certainty" ranges widely. Accordingly, proved-reserves estimators cannot be accountable. Reserves estimates are also susceptible to bias because appraisers may be aware that larger proved-reserves estimates may benefit the value of their own shares, annual bonuses, repeat business, or organizational status. On the other hand, various negative career and legal consequences may ensue if the "reasonably certain" estimate turns out to be larger

than the actual outcome. To say that all of this constitutes a self-made, illogical, and insupportable professional conundrum is a severe understatement!

Today, Petroleum E&P is a divided industry: during the late 1980's and early 1990's, Exploration adopted probabilistic methods as best-suited for estimating recoverable volumes of oil and natural gas from drilling prospects and plays, given discovery. But the Production side of E&P generally remains stuck in the old rut of deterministic methodology, even though it is demonstrably inferior.

A simple remedy would facilitate the transition to probabilistic methods for the entire E&P industry: for members of all professional geotechnical and engineering societies to specify that when they use the term "proved", they are explicitly affirming 90% confidence in their estimates, regardless of outmoded and illogical SEC definitions. This would immediately allow measurement and accountability, and would lead eventually to the adoption of full probabilistic methods throughout the E&P industry. Such assertive leadership has yet to emerge from the professional associations, however.

Ill-defined reserves standards, plus misaligned corporate incentive schemes, organizational coercion, and motivational bias, all tend to encourage unethical behaviors in reserves estimating. Constant focus by individuals and companies on recommended practices, professional standards, and personal ethics are essential for consistent and reliable results.

<sup>1</sup> Walt Kelly, POGO, c 1970

Social hour - 6:00 p.m.

Dinner - 7:00 p.m.

Program - 8:00 p.m.

Dinner will cost \$20.00/person, students \$5.00; checks preferred. Reservations should be phoned in to Mike Forth at (412) 323-2200 or emailed to [mkf@peoplepc.com](mailto:mkf@peoplepc.com) by noon Monday, May 15.

Meeting will be held at Foster's Restaurant, Foster Plaza Bldg 10, Greentree.

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# Pittsburgh Geological Society

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## FROM THE PRESIDENT'S DESK

It's that time of year for me to sit back and dwell on the accomplishments of the past year. It is also time to thank all those involved in our successes. As you are aware, the May 2006 meeting will conclude our 2005-2006 program schedule. I want to thank all our speakers and members for making this season successful. I would like to especially express gratitude to Wendell Barner for coordinating the speakers for the monthly program. I can not tell you the number of times I have heard from geological societies in other states that they wish they had programs as active as ours. Although our formal speaker program concludes this month, we are by no means resting until September. Remember to check the web site for news and information. We need your support to maintain a strong and active organization. Appreciation goes out to all our corporate sponsors for all their assistance in making our projects a reality. Also, thanks to the corporate sponsors that supplied time and materials for our programs. If you have the opportunity, please support these corporate sponsors. Outside of the mundane business affairs, projects for this year included:

- 2007 Calendar Project: We are in the midst of publishing a calendar for 2007 depicting scenes of coal mining towns in Northern Appalachia. The photographs are being supplied by Chris Dellamea. The excellent job of coordinating the Calendar Project has been from Erica Love and Pete Briggs. Hopefully we can make the Calendar Project a yearly endeavor.
- Student Night: Our Student Night Program in April was another success. The future of our geological profession is in good hands and minds judging by the quality of the presentations. Thanks to the board and members of AEG and ASCE for co-sponsoring the program.
- Western Pennsylvania Regional Science & Engineering Fair: PGS again sponsored awards for outstanding projects related to the Earth sciences. The winners of the PGS awards were honored at the April Student Night program.
- "So You Want To Be A Geologist" Series: PGS again sponsored two seminars for those aspiring

to become geologists. Part I gave students knowledge of opportunities, interviewing techniques, and curriculum necessary to succeed in the geological field. Part II exposed students to field methods commonly used in geotechnical and engineering projects. Look for a possible Part III – Sampling Techniques for next year.

- Spring Field Trip: April 28<sup>th</sup> and 29<sup>th</sup> PGS sponsored a field trip to North Central Pennsylvania. Appreciation to those who attended and to Wendell Barner and Erica Love for organizing the venture.
- Northeast Geological Society of America Meeting: PGS (with the assistance of the students from Slippery Rock) presented a booth at the regional meeting. Look for a booth at the National GSA Meeting this Fall in Philadelphia.
- Geo-Hazard Committee: Chuck Shultz has been active in providing local communities with information regarding geological hazards. Judy Neelan's tireless efforts to keep open the lines of communication are key to the success of this forum.
- ASBOG Exam Training Course: PGS and PCPG co-sponsored the training course for the ASBOG Licensing exam.
- Ball Caps and Decals: Mary Ann Gross did an excellent job in procuring new hats and decals. No self-respecting geologist should be without one.

Also, PGS is currently working on a "special" local geology project – but I leave the details of that for my successors. Keeping us all up to date on the goings-on of the PGS is no easy task. So many thanks to Robert Burger and John Harper for minding the "p's and q's" of the Newsletter. The web site has evolved to its current level of excellence due to the work of Mary McGuire. PGS as of last month has a new meeting "home" at Foster Plaza. Check the web site for directions to Foster's Restaurant. Meeting times are the same. Lastly, my tenure as President concludes in June 2006 and I appreciate the PGS Officers, board members, and membership for allowing me the opportunity to serve. Your continued support of PGS made my task easier and certainly more enjoyable.

## **PGS PRESENTS AWARDS AT THE 67<sup>TH</sup> PITTSBURGH REGIONAL SCIENCE AND ENGINEERING FAIR**

The Pittsburgh Geologic Society is pleased to announce the winners of our awards at the Carnegie Science Center Pittsburgh Regional Science Fair held on March 31, 2006 at Heinz Field. PGS has been a long time sponsor of awards at the Science Fair. The PGS sponsors three separate awards with an award presented in each of the three Divisions. In evaluating student projects, the PGS judges considered the relevance of the project to the core scientific disciplines represented in the PGS, the manner in which the student followed the scientific method in the experimental design, conduct, evaluation of the results, and overall knowledge of the subject. The PGS judges were Lisa Whited, Wendell Barner, and Steve McGuire. This year the judges faced a happy dilemma where all Divisions had multiple excellent projects that directly addressed geology, geochemistry, geophysics, the geologic basis of environmental problems, mining safety, and earth materials.

### **Senior Division**

The Senior Division award was presented to Alexander Okert who is a Senior at South Allegheny High School. The title of Alex's project was "Synthetic Wonder". The project involved a method of synthesizing beryl using solvent to break the bonds of the feedstock material thus allowing beryl structures to form. This research was conducted as part of a special geochemistry class taught by Dr. Janice Skraly. Since many strong chemicals were used as part of the reactions, laboratory safety procedures were developed and documented as part of the research presentation. The handling of hydrofluoric acid presented special safety concerns. The formation of the crystals required that the chemical reactants be added in a specific order with all reactions being performed under a laboratory ventilating hood. The formation of beryl crystals was verified on the basis of the chemicals present in the reaction system and the structure of the resultant crystal. During the interview with the PGS judges, Mr. Okert demonstrated an impressive knowledge of the geochemical reactions and his research subject.

### **Intermediate Division**

The winner of the Intermediate Division award was Rachel Folwarczny who is in the 8<sup>th</sup> grade at Ambridge Area Junior High School. The title of the project was "Which Rock Absorb The Most Heat." Rachel indicated that she became interested in this subject because of the rising cost of heating and cooling their homes. Use of the correct type of rock can significantly cut the cost of heating and cooling. Rachel tested five types of common rocks: granite, coal, sandstone, limestone, and slate. Brick was used as a control. Each material has a different color and texture. Heat absorption through conduction was tested by setting each material under a heat lamp and measuring temperature. Ten trials were run on each material. Heat absorption by conduction was tested by placing each material in an oven. The data for each material was normalized by proportional mass to account for differences in sample sizes. The experimental results indicated that slate absorbed the most heat by radiation and sandstone the most by conduction. The PGS judges were particularly impressed by the way that Rachel addressed three potential sources of error in the experimental procedure and the experimental databook used to document the testing results and observation on the progress of the research. The advisor for the project was Mr. Don Ayers at the Ambridge Area Junior High School.

### **Junior Division**

The Junior Division is made up of 6<sup>th</sup> grade students. The PGS Junior Division winner was Kelsey Johnson who is in the 6<sup>th</sup> Grade at Ingomar Middle School. The title of Kelsey's project was "What Makes a Bigger Wave". Kelsey's project was stimulated by the recent tsunami that devastated Southeast Asia. The object of the experiment was to determine whether wind, an underwater current, or an underwater shock would generate a bigger wave. The experiment required the design and construction of an elaborate experimental box that could simulate each of the phenomenon. Wind was simulated by a fan blowing over the water. An underwater current was simulated by air injected through holes in a distribution tube. A shock was simulated by the use of mousetraps. The advisor for the project was Diane Hinds at Ingomar Middle School.

## **PGS BOARD-OF-DIRECTORS ELECTION**

The Election of officers and directors for Pittsburgh Geological Society's 2006-07 season will be held at the PGS May 2006 meeting on May 17, 2006. A ballot is included with this newsletter listing one candidate each for the positions of President, Vice President, Secretary, and Treasurer. Four candidates are running to fill three two-year and one one-year Director-at-Large positions. Regular members, corporate members, and honorary members are eligible to vote; student members are ineligible. Please complete your ballots and bring them to the May meeting. If you cannot attend, please send them to PGS at P. O. Box 58172, Pittsburgh, PA 15209. Allow time for the ballots to reach us before the meeting.

## **WORKSHOP ANNOUNCED**

The Appalachian Petroleum Technology Transfer Council with the help of Wild Well Control, Inc. will present a workshop entitled "Well Control 101". This workshop will be held at the Holiday Inn Meadowlands, in Washington, PA from 9:00 a.m. to 4:30 p.m. on Tuesday, May 16, 2006. The major topics of discussion will be introduction to well control, management of well control risks, and response to a well control incident. These topics are intended to help operator personnel to better understand the importance of early kick detection and proper response to minimize the chance of escalation to a catastrophic event. For more information, contact Mark Hoffman at (304) 293-2867 ext. 5446.

## **ANOTHER WORKSHOP ANNOUNCEMENT**

The Appalachian Petroleum Technology Transfer Council and the Society of Petroleum Engineers, in conjunction with the Ohio Oil & Gas Association, present a day-long workshop entitled "Drilling and Completion Technology Updates" on May 31st, 2006 at Salt Fork Resort, Cambridge, Ohio. The morning will feature a presentation on DOE's Microhole Technology initiative along with case histories. The afternoon will feature a presentation on the newest completion technologies being applied in the Appalachian Basin with an emphasis on horizontal completions and shale / multiple zone completions. For more information contact Workshop Coordinators Dale Jennings at (740) 587-1051, or Greg Mason at (740) 348-1267.

## **DID YOU KNOW . . . ?**

- Lead in the environment, and especially human exposure to lead, are expected to remain a problem in the future due to the need for lead in many fields—particularly in storage batteries. The amount of exposure risk depends entirely on the control of use, i.e. not ALLOWING excessive lead contamination in the environment.
- The current President of the Pennsylvania State Registration Board for Professional Engineers, Land Surveyors and Geologists is . . . a geologist—Theodore Tesler, PG of Alliance Environmental Services, Inc.
- According to the Federal Energy Regulatory Commission, January 2006 was the warmest on record, resulting in a 15% decrease in demand for natural gas across the United States.
- The January 1996 floods, which were the third highest in Pittsburgh in the 20<sup>th</sup> century, were caused by an unusual combination of heavy rain, unseasonably high temperatures, high winds, and the resultant rapid melting and runoff from thick snowpack.
- Although Mars has a smaller surface gravity than Earth, it also has a lower atmospheric pressure, allowing very large wind speeds (often as much as 300-375 mph) that move dust particles and transport them across the planet, creating both erosion and aeolian deposits.
- Petrologic and geochronologic studies indicate that compositionally diverse felsic gneisses and granitoids, including abundant opx-bearing charnockites, dominate the basement rocks in the core of the northern Blue Ridge.
- Gold ores worldwide in 1974 averaged 0.15 ounces troy per ton, and by 1986 the average had dropped to 0.05 ounces per ton.
- The Ohio River Basin encompasses a region of 204,000 square miles covering parts of 14 states and including a population of nearly 25 million people.

### **Website Of The Month**

<http://www.nineplanets.org/europa.html>

**Ballot**  
Pittsburgh Geological Society  
**Board of Directors Election**  
May 17, 2006

Note: Eligible voters include regular Members, Honorary Members, and Corporate Members (one vote each, by representative). Student members are ineligible to vote.

\_\_\_\_\_ President: Patrick Burkhart  
\_\_\_\_\_ Vice President: Michael Forth  
\_\_\_\_\_ Secretary: Raymond Follador  
\_\_\_\_\_ Treasurer: Mary Ann Gross

Director-at-Large Positions (vote for 3)

\_\_\_\_\_ Robert Fedinetz  
B. S. Environmental Geology 2005, University of Pittsburgh, Geologist  
CONSOL Energy, Inc., member since 2003.

\_\_\_\_\_ Erika Love  
M. S. Geology 2003, University of Pittsburgh, Hydrogeologist, Camp, Dresser, & McKee, Inc.,  
member of PGS since 1999, current Director at Large.

\_\_\_\_\_ Mary McGuire  
B. S. Geology 1973, The Pennsylvania State University, Graduate Studies, University of  
Pittsburgh, member of PGS since 1974, Past President and current Webmaster and Director at  
Large.

\_\_\_\_\_ Mary Robison  
Ph. D. Geochemistry 1978, University of Pittsburgh, Free-lance Geochemist, member of PGS since  
1970, Past President, Honorary Member of the Society, and current Director at Large.

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**President:** Frank Benacquista  
**Vice President:** Pat Burkhart  
**Treasurer:** Mike Forth  
**Secretary:** Dan Martt

**Past President:** Ray Follador  
**Director-at Large:** Mary Ann Gross  
**Director-at Large:** Erica Love  
**Director-at Large:** Mary McGuire  
**Director-at Large:** Steve McGuire

**Director-at Large:** Mary Robison  
**Director-at Large:** Richard Ruffolo  
**Counselor:** Pete Briggs  
**Counselor:** John Harper

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