



# PGS Newsletter

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

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Vol. LIX, No. 1

Robert Burger, Editor

September, 2006

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**Wednesday, September 20, 2006  
Foster's Restaurant, Foster Plaza Building 10**

**The Pittsburgh Geological Society and  
The Society of Mining, Metallurgy and Exploration  
presents**

**Can Trends in Seismic Activity be used to Enhance Miner Safety?  
A Case Study from a Western Pennsylvania Mine**

by Anthony Iannacchione,  
Pittsburgh Research Laboratory, NIOSH

When openings are created in underground strata, the rock around the mine entry typically displaces and fractures. Under certain conditions, these fracture events produce enough seismic energy that geophones, placed around the mining horizon, can record their location and strength. The National Institute for Occupational Safety and Health initiated a study to determine if this seismic activity could be used to understand how strata deforms and fails in underground mines and to evaluate the potential for this technology to forecast roof falls. A deep underground Loyalhanna Limestone mine along Chestnut Ridge was selected for field evaluation after observations and measurements revealed the presence of excessive levels of horizontal stress. A seismic recording system with as many as 27 geophones was installed at the mine in February 2000 and emissions were monitored for four years. Over one-hundred thousand seismic events were recorded, nine-thousand of which were classified as rock fracture events. The size of rock fracture events ranged from -3, the lower limits of detection by the system, to almost 1 on the Moment Magnitude Scale (Mm). These Mm values are roughly equivalent to the more recognizable Richter Magnitude Scale. Most of the other non-rock fracture events were associated with mining, i.e., scaling, blasting and drilling. The rock fracture activity was correlated with roof falls at the mine, revealing specific information about how this rock was behaving as it moved from a stable to an unstable state. Trends in the data also demonstrate both the potential and drawbacks for using this data to forecast future roof falls. If some number of these roof falls could be forecasted prior to their occurrence, then the potential for miners being injured in roof falls should decrease.

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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 **emailed** to Mary Ann Gross at [magrs@yahoo.com](mailto:magrs@yahoo.com), please title as "PGS Dinner Reservation." If you are unable to use email, call (412) 440-1468 and leave your name and number of reservations needed by, **noon Monday, September 18.**

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

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# Pittsburgh Geological Society

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## **PRESIDENT'S MESSAGE**

Greetings fellow PGS members,  
I am honored to be your incoming President. Please allow me a few moments to share some thoughts about the coming year, and the one just passed. First, I would like to congratulate Frank Benacquista, past President, under whose leadership we enjoyed enriching monthly programs, and other activities such as fieldtrips and workshops. I felt that the program presented under his leadership, in concert with the remainder of the Board, was enriching. In particular, they extended notable efforts in assembling fine workshops for students, helping to enrich the participants' professional competence in both field and office practices. Indeed, Dan Martt completed his time on the Board with a strong contribution to the drilling practicum. Thanks also to the many other board members and task masters who remain on the team.

The coming year promises both the reliable colloquia and field trips of the Society that you well expect, in addition to the development of two initiatives that were recently proposed—a 2007 calendar and student research grants. The monthly program opens on 20 September with a presentation on Appalachian geology, followed by the 4 October joint meeting with the Association of Environmental and Engineering Geologists and a presentation relevant to the devastation of Hurricane Katrina. Many of you have attended the April Student Night in recent years and been treated to an engaging mix of geologic and engineering investigations. We will continue this outreach to students through both workshops and presentations, but also hope to bolster support for them with a Research Grant program that will be announced this fall. You should also note the release of a calendar depicting old coal towns, or “patches”, that have largely been overprinted by urbanization in the Ohio River watershed. We hope you will enjoy the publication and consider it as a fitting gift for friends over the holidays. I wish you ongoing professional success in the coming seasons, hoping you will continue your involvement with the Society, and encouraging you to engage more colleagues and students in our

deliberations. Both the lethality of recent natural events and the pressures of urbanization suggest that the need is greater than ever to share our expertise on landscapes and the resource base. In the meantime, reveling over photos of glaciers, deserts, mountains, or seashores may be just the diversion you need to refresh your sanity at the monthly colloquia! See you soon. PAB

### **DON'T FORGET TO RENEW**

It's time to renew your PGS membership for the 2006-2007 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.

## **NEXT MONTH'S MEETING**

Our October meeting promises to be an exciting event as Darrel Schmitz, AEG President, will present: “Katrina: Geologic, Disaster, and Personal Perspectives”. The meeting will be a joint meeting hosted by the Association of Environmental and Engineering Geologists at Foster's Restaurant.

This meeting will be held on Wednesday, October 4, 2006. Please note the change in our normal meeting date.

## **PCPG SYMPOSIUM**

The Pennsylvania Council of Professional Geologists will hold it's 2006 Water Resources Symposium “Policy, Stewardship, and the Real World” on Wednesday, October 11, 2006 at the Radisson Penn Harris Hotel in Camp Hill, PA. For more information visit the PCPG website at [www.pcpge.org](http://www.pcpge.org).

## **FALL NORTH AMERICAN COALBED METHANE FORUM**

The North American Coalbed Methane Forum will hold its Fall session on September 19-20, 2006 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.

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<b><u>Past President:</u></b>	Frank Benacquista	<b><u>Director-at Large:</u></b>	Mary Robison		

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**Programs:** If you would like to make a presentation at a PGS meeting, please contact Wendell Barner, Program Chairman at (412) 208-2409 or email at [barnerwl@cdm.com](mailto:barnerwl@cdm.com).

**News items:** To submit a news item in the PGS Newsletter, please contact Bob Burger at (724) 818-5659, 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 an email address and phone number where you may be contacted.

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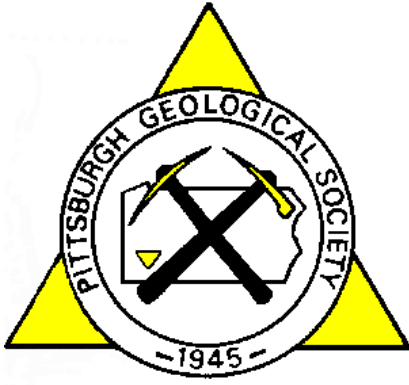
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# PGS Newsletter

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Vol. LIX, No. 2

Robert Burger, Editor

October, 2006

*Wednesday, October 4, 2006*

**The Pittsburgh Geological Society and  
The Association of Environmental and Engineering Geologists  
present**

## **Katrina: Geologic, Disaster, and Personal Perspectives**

by Darrel W. Schmitz, AEG President  
Mississippi State University

Katrina was “born” on August 24 as the twelfth storm of the 2005 Atlantic hurricane season. After raking southern Florida she became an extraordinarily large category 5 (Safer-Simpson scale) storm covering about half of the Gulf of Mexico. Katrina made a second landfall, the first in the northern Gulf, as a category 4 at Burris, Louisiana. She then made an additional landfall near the Louisiana-Mississippi state line. The large size and prior strength, coupled with the geography of the shoreline, resulted in a record high storm surge. The storm surge affected coastal areas from Louisiana to Florida while spawning tornadoes in Georgia. Katrina’s impacts were disastrous. In addition to the devastation by the storm surge, coastal landforms were altered. Some offshore islands are nearly gone, while new sediment has been deposited in other areas. Landform also appears to have limited the inland distance of the storm surge in some areas. Debris deposited by Katrina’s storm surge was found inland to the first marine terrace in coastal Mississippi. Having witnessed the second and most destructive to date hurricane landfall along the Mississippi coast, there are many direct and personal impacts—astounding, amazing, miraculous, and horrendous. Hurricane Camille in 1969 destroyed the Mississippi coast, but even worse destruction occurred from Katrina. Many structures which survived Camille were destroyed by Katrina, primarily due to Katrina’s higher storm surge – about thirty feet in western Mississippi. The initial impact along the Mississippi coast was total destruction. Several towns no longer exist. The impact on New Orleans came later from flooding as a result of failed flood walls that could not withstand the surge forces from Lake Pontchartrain. In northern Mississippi the direct impacts were trivial, compared to those at the coast, but damage and power outages occurred over 250 miles from the coast. However, many at Mississippi State had personal impacts. One of our student’s parents swam to safety from a top story window—in the storm surge. Another student lost his entire family in Gulfport. Most considered the legend of Camille as the ultimate possible hurricane in terms of its destruction along the Mississippi coast. Katrina has now replaced that legend.

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

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# Pittsburgh Geological Society

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## ORIGINS OF WESTERN PA PLACE NAMES

Loyalhanna is the name of a tributary of the Kiskiminetas River whose source is in the hills of Laurel Hill in Westmoreland County. The name is derived from an Indian village (Loyal-hanning) located on the stream at present-day Ligonier. It is a corruption of “lawel-hanna,” meaning “at the middle of the stream.” Loyalhanna Creek provides the name for the Loyalhanna Formation, a Mississippian-age rock that ranges from sandy limestone to calcareous sandstone. The formation is quarried on Chestnut Ridge and Laurel Hill for general aggregate purposes, but formerly was the source of Pittsburgh’s well-known Belgian Block paving stones, which are still being used for landscaping around the city.

### PGS COAL PATCH CALENDAR REMINDER

To guarantee your copies of the 2007 PGS Coal Patch Calendar, your pre-order needs to be placed online at [www.yearbox.com/coalcalendar](http://www.yearbox.com/coalcalendar) by October 31, 2006.

Pre-orders are available for a discounted price of \$12.00 plus S&H.

Based on sales, a very limited supply of these beautiful, full-color and historically significant calendars may remain available from PGS after the pre-order date for \$14.00 plus S&H.

These calendars will not only look good on your walls, but are sure to make great gifts for your friends and colleagues as well. Reserve your copies today.

### *PGS November Meeting*

Michael Zieg of SRU will give a presentation on the melts at the Sudbury complex.

## DID YOU KNOW . . . ?

- Igneous crystallization ages of Blue Ridge basement rocks indicate that protolithic magmas were emplaced at about 1.18–1.16, 1.12–1.08, and 1.06–1.05 billion years ago.
- The amount of zinc in the environment varies from place to place and from season to season. For example zinc in rivers varies from less than 10 µg/L to over 200 µg/L, and even leaves falling from trees in autumn lead to seasonal increases in zinc levels in soil and water.
- Although gold has been mined from ocean beach placers, and even mid-oceanic ridges are known to contain rich gold ore samples, the ocean itself contains vast quantities of dissolved gold, perhaps as much as 10 trillion dollars (US) worth, though in dilute concentrations.
- It is well known that mollusks (clams, snails, squids, and their relatives) first appear in the fossil record about 545 million years ago, in the earliest Cambrian; however, their origin and early evolution is still in debate.
- Although the impact of changes in the mean sea surface temperature in the tropical Pacific have consequences for global climate (El Niño and La Niña, for example), such changes are difficult to predict.
- Crude oil produced in Pennsylvania and adjacent states is classified as Penn Grade crude, a superior quality crude oil that is free of asphaltic constituents, containing only trace amounts of sulfur and nitrogen.
- Recent evidence suggests that bacteria were involved in the precipitation of gold out of dilute hydrothermal solutions.
- About 38% of Kentucky has sinkholes that are recognizable on topographic maps, and 25% has obvious and well-developed karst features.

### Website Of The Month

<http://www.friendsofscience.org/index.php?id=2>  
(a great site for those who are skeptical of the current furor over CO<sub>2</sub> and global warming).

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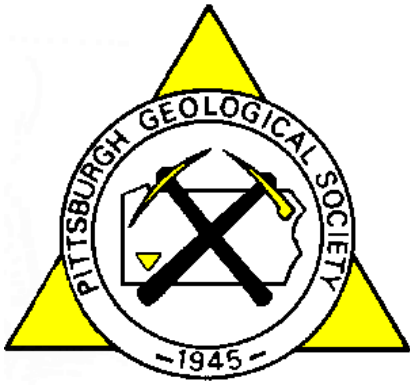
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# PGS Newsletter

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Vol. LIX, No. 3

Robert Burger, Editor

November, 2006

**Wednesday, November 15, 2006  
Foster's Restaurant, Foster Plaza Building 10**

**The Pittsburgh Geological Society  
presents**

**The Sudbury Igneous Complex:  
Viscous Emulsion Differentiation of a Superheated Impact Melt Sheet**

by Michael Zieg,  
Department of Geography, Geology, and the Environment  
Slippery Rock University

The Sudbury Igneous Complex of Ontario, Canada, is the remnant of a voluminous melt sheet produced in a few minutes by impact of a massive meteorite into continental crust 1.85 Ga. There is little about this igneous complex that resembles well-known sheet-like bodies of similar bulk composition. In particular, the complex is divided into two layers, norite and granophyre, that are internally homogeneous and exhibit a remarkable similarity in isotopic and trace element compositions. This is explained as a natural consequence of the impact process in the rapid formation of a superheated magmatic emulsion, which is the high-temperature equivalent of breccia. A wide spectrum of viscously discrete, interdispersed parcels of mafic and felsic liquids, reflecting the compositional heterogeneity of the target crustal materials, formed the emulsion. Within days to months, the emulsion components separated according to their relative densities into a bimodal norite-granophyre assemblage that formed the basic structure of the present Sudbury Igneous Complex. Immediately following emulsion separation, the strongly superheated bimodal melt sheet underwent vigorous thermal convection in each layer. These convective motions homogenized and rapidly cooled the magma to the liquidus temperatures, whereupon convection ceased. All further cooling was by conduction of heat through the upper and lower boundaries during which time solidification fronts were established and propagated inward from the upper and lower margins. There is clear evidence of solidification from the floor upward and the roof downward. Minimal differentiation and compositional modification took place throughout cooling and solidification.

The Sudbury melt sheet is, in essence, a full-scale magmatic experiment. The conditions of formation, relative to any other large terrestrial magma, are very well constrained. Thus, the clear lack of any significant modal layering, the overall homogeneous nature of each unit, and the lack of any significant chemical differentiation through crystal fractionation establish the Sudbury Igneous Complex as a valuable example of what does *not* happen under the initial conditions long assumed to prevail at the formation of most large magma chambers.

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

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# Pittsburgh Geological Society

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## PGS STUDENT FIELD RESEARCH GRANTS

The Pittsburgh Geological Society is committed to supporting the recruitment, education, and professional development of earth scientists and the refinement of their fieldwork skills. The Society intends to offer as many as four grants of \$300.00 each to support student research involving the acquisition of field data. Both graduate and undergraduate students may apply. Applications are to be submitted in the fall for support of activities the following summer, with the expectation that findings will be reported to the society the next academic year. Each recipient will be asked to submit a brief progress report on October 1, 2007 and then to present a poster presentation for Student Night at the April 2008 colloquium

Qualifications for the Student Field Research Grant are:

1. Student applicant must be pursuing a bachelor's or master's degree in geology or closely aligned science.
2. Student and faculty advisor must both be members of the PGS at the time of application.

To apply, please submit a cover sheet or application form (which is available at [http://www.pittsburghgeologicalsociety.org/field\\_grant/researchgrant.pdf](http://www.pittsburghgeologicalsociety.org/field_grant/researchgrant.pdf)), three copies of the project description, and a letter of support from the faculty advisor. The project description should include a thesis statement, description of field activities, anticipated outcomes, budget, and timeline. Please limit the application to three pages per copy. Both the student and the faculty advisor must sign the application. The deadline for receipt of application is **December 20, 2006**. Awards will be announced at the January PGS meeting and funds will be distributed at the 5th Annual Student Night meeting on April 18, 2007.

## COMPLIMENTARY AAPG STUDENT MEMBERSHIPS

You may recall PGS is an affiliated society of the American Association of Petroleum Geologists. Currently, AAPG, through the gracious underwriting of Chevron Corporation, is offering students complimentary memberships in AAPG (i.e. **FREE!!!**). As a student member you will have internet access and a yearly CD subscription to the AAPG Bulletin, a monthly mailing of the AAPG Explorer, book discounts and discounted student rates to many meetings and short courses. Also you will have notification (through the AAPG Explorer and the AAPG web site) of numerous student job fairs. In October alone AAPG sponsored job fairs in New Orleans, Louisiana, Laramie, Wyoming, Buffalo, New York, and Houston, Texas.

To learn more about AAPG please visit the AAPG home page at <http://www.aapg.org/>. To download the student membership application visit [http://www.aapg.org/member/forms/student\\_application.pdf](http://www.aapg.org/member/forms/student_application.pdf).

Once a student member, consider starting a student chapter in your geosciences department. Information on this program can be obtained at <http://www.aapg.org/member/student/index.cfm>.

If you have any questions and would like to talk to the AAPG delegate representing PGS, please contact Dan Billman at [danaret@zoominternet.net](mailto:danaret@zoominternet.net).

## DID YOU KNOW . . . ?

- Although watershed research tends to be concentrated at the scale of the channel reach, the hydrology of the entire watershed drives channel evolution; this is most directly affected by forces external to the channel reach, including land use.
- The Himalayan Mountains represent the most spectacular example of mountain building, plateau development, and continental-scale strike-slip faulting on the planet.

## PGS Website of the Month

<http://www.chinapage.com/archeology/dinosaur/dinosaur.html>



## ENCYCLOPEDIA OF APPALACHIA

Abramson, Rudy, and Haskell, Jean [eds.], 2006, Encyclopedia of Appalachia: Knoxville, The Univ. of Tennessee Press, 1,832 p., illus., \$79.95.

A book review by **Reginald P. Briggs**.

In spite of my critical comments below, I must go along with the opinion of William Ferris in his Foreword to the Encyclopedia. He calls it “a feast of information about its region,” and that’s what this volume is. I imagine few readers of this review will buy the volume owing to its price, but I hope some of you will recommend that your local library acquire it. Then when it comes in, take a free afternoon, go to the library, and browse through it from the start, selecting to read such entries as catch your interest. I am sure you will find it time enjoyably well spent. And you will learn a lot.

However, the Encyclopedia has problems that to a degree limit its usefulness, chief among which are irksome organization, a compressed table of contents, and an inadequate single-tier general index that probably was generated by computer, so that even passing mentions are indexed, even though they are not informative. Other drawbacks are an admitted geographic overemphasis on southern Appalachia to the detriment of the north, a sometimes startling unevenness of coverage, and a tendency toward at times huffy social commentary.

I am a geologist, so almost immediately I got off on the wrong foot with the editors and their selections and organization of their first section, Geology, under The Landscape, which starts with a general statement, not bad in itself, but then goes on with major subdivisions or articles in the following order: Appalachian Plateaus Province; Blue Ridge Province; Cenozoic Era; Coal; Geomorphology; Ice Ages; Mesozoic Era; Metallic Ore Deposits; Military and Cultural Geology; Nonmetallic, Nonfuel Deposits; Oil and Gas; Paleozoic Era; Piedmont Province; Precambrian Eon (!); Ridge and Valley Province; Soils; and, finally, Tectonics, that is, an irrational alphabetical-order hash of subjects without continuity. Having had that dumped in my lap at the start, I thought I was in for a terrible time of it,

with approaching 1,800 pages yet to go. A lockstep alphabetical organization (generated by computer?) is used almost throughout the volume, but in some sections it seemed to work better than in others, though, for example, under the major Transportation heading, it would have been nice to have the railroad entries together.

The Transportation category also yields the following striking example of unevenness of coverage. The experimental monorail in Morgantown, WV has more space devoted to it than the historically far, far more significant Forbes Road, with this inequity made more obvious by the fact that the two descriptions are only 3-1/2 pages apart, owing to the pervasive alphabetical organization. Under the Ecology Section, I came on a column-plus description simply titled “Balds.” This was new to me, so I looked it up in the 2d Edition of the AGI Glossary of Geology (1980) which has: “bald n. A local term, esp. in southern U.S., for an elevated, grassy area, as a mountain top or high meadow, that is devoid of trees.” The Encyclopedia’s long discussion really didn’t tell me a great deal more than that succinct one liner. However, I thought to compare “Balds” to the Dolly Sods Wilderness Area in WV, but I found only one passing mention, no description, of Dolly Sods in the Encyclopedia, so I was out of luck.

The main social comment I find overdone in the Encyclopedia is: COAL MINING IS A BAD THING. In fact it would seem that any large-scale industry, railways, lumbering, what have you, also is a BAD THING. Without the region’s vast resources and without the big (BAD, I’m sure) outside money to develop the resources, however, relatively few would have ever come to the region, certainly not many of the thousands of European immigrants who are so important to the Appalachia story. The Encyclopedia seems to promote the perception that Appalachia would be a far better place if it were bereft of significant resources and everyone had lived a bucolic life idyllically involved in cottage industries, now and then performing in Nashville, though with that simplistic scenario the resulting sparsely populated region probably would not be worthy of 1,800 pages of description.

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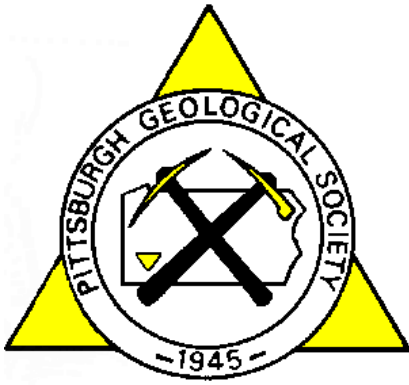
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# PGS Newsletter

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

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Vol. LIX, No. 4

Robert Burger, Editor

December, 2006

**Wednesday, December 20, 2006  
Foster's Restaurant, Foster Plaza Building 10**

**The Pittsburgh Geological Society  
Annual Spouses Night**

## **Geology and the Pittsburgh landscape paintings of John Kane**

by Albert D. Kollar and David K. Brezinski  
Carnegie Museum of Natural History

John Kane, the local, internationally-known landscape artist was born in Scotland in 1860. His first recorded sketch made at the age of five dealt with the Cambrian Slates. Kane began work at the age of nine in the Scottish coal fields and subsequently in the English and Welsh mines. These coal deposits are the European equivalent of the Appalachian coal fields.

In 1879, at the age of 19, he emigrated to the United States with his mother, stepfather and siblings, making Pittsburgh his home for most of his adult life. He died in 1934 at the age of 74.

It was not until 1927 however, when Kane was in his mid-60's, that he became known to the public with the entry of his Scottish Highlands landscape in the prestigious Carnegie International: a time when he began making every effort to put to canvas his many sketches of the Pittsburgh scene.

This presentation we will look at his paintings and illustrate how the Pittsburgh region's geology and physiography impacted this painter's views. Included will be the Monongahela River Valley at the mouth of Turtle Creek, Homestead, Hazelwood and the South Side; Nine Mile Run near Squirrel Hill; the Allegheny River Valley at Aspinwall; and the East Liberty channel districts of East Liberty, Bloomfield, Oakland and Panther Hollow.

When Kane died, the largest sum he had ever received for a picture was \$235. The week after his death a Pittsburgh appraiser valued sixty-three of his paintings at fifty dollars, less than a dollar each. Two years after his death eighteen of his pictures had sold for an aggregate price of \$3,560. Today his paintings are exhibited in the Carnegie Museum of Natural History, the Metropolitan Museum of Art, the Westmoreland Museum, as well as numerous private collections.

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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 **emailed** to Mary Ann Gross at [magrs@yahoo.com](mailto:magrs@yahoo.com), please title as "PGS Dinner Reservation." If you are unable to use email, call (412) 440-1468 and leave your name and number of reservations needed by **noon, Monday, December 18.**

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

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# Pittsburgh Geological Society

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## NEW PENNSYLVANIA LAW REQUIRES CONTINUING EDUCATION TO MAINTAIN PROFESSIONAL REGISTRATION

On November 29, 2006, Governor Rendell signed into law Senate Bill 655 which amends the Engineer, Land Surveyor and Geologist Registration Law of 1945. The Bill states that individuals registered under the act must complete 24 contact hours of continuing education over each two-year licensure period following the initial renewal. The Act will take effect on January 28, 2007 at which time the State Licensing Board will have 18 months to enact regulations implementing the new continuing education requirements.

## ORIGINS OF WESTERN PA PLACE NAMES

Freeport, located in Armstrong County at the mouth of the Kiskiminetas River, was derived from land designated as payment to William and David Todd for their services during the Revolutionary War. It was an ideal location to tie up river craft, and David Todd declared, "No dockage fee will ever be charged to tie up a boat, raft, or barge". Thus the burgeoning town became a "free-port," and was later incorporated as a borough in 1833. The town lends its name to the Upper and Lower Freeport coals of the Allegheny Formation, as well as to some associated sandstone, clay, and limestone layers.

### HAVE YOU RENEWED YOUR PGS MEMBERSHIP?

For those of you who have not yet renewed your PGS membership for the 2006-2007 season, it is about to expire. To ensure your membership, and to continue receiving this newsletter along with other valuable information regarding our profession, please fill out the membership application included with this newsletter and return it with your dues to John Harper at the address shown on the form.

## PUBLICATIONS AVAILABLE FROM PGS

Don't know what to get your friends, boss, co-workers, self for a holiday gift? Why not get them a publication from PGS? The following publications, and other merchandise, are commonly available at the meetings, but may also be ordered directly from PGS using the instructions below.

Building Pittsburgh – A Walking Tour of Pittsburgh's Building Stones	\$5.00
Atlas of Major Appalachian Basin Gas Plays*	\$75.00
Gas Atlas Database on Floppy Disk*	\$40.00
Rose Run Sandstone of Ohio and Pennsylvania	\$10.00
"Lots" of Danger	\$4.00
Environmental Geology of the Pittsburgh Area	\$4.00

\* Atlas and Database together = \$100.00 + \$5.00 S/H

Shipping and handling is \$1.50 for most items. It is \$2.00 for Rose Run Sandstone and \$5.00 for the Gas Atlas (and database). To order, make check or money order payable to Pittsburgh Geological Society, Inc. Send orders directly to John Harper, Pennsylvania Geological Survey, 400 Waterfront Drive, Pittsburgh, PA 15222-4745

In addition, many of the guidebooks from past field trips are available as free downloads from [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.

## DID YOU KNOW . . . ?

- Fifty percent of the acreage in the Gulf of Mexico's offshore continental shelf (OCS) is in water deeper than 1,000 feet, and this area accounts for more than 60 percent of all the oil and 24 percent of all the natural gas produced from the Gulf of Mexico OCS.
- The Neanderthals apparently survived thousands of years longer than previously thought, taking refuge in corners of southern Europe where the environment was favorable and relatively free of modern humans.
- Scientists in New Zealand have determined that the weathering of granitic rocks seems to proceed by initial dissolution of the grain boundaries with subsequent detachment of the grain itself.
- Large-scale troughs that cross the Australian shelf were developed by glacial erosion.
- There is speculation that volcanic ash derived from the eruption of the Yellowstone supervolcano about 2 million years ago has been carried by the Mississippi River to the Gulf of Mexico, and can be detected by geophysical logs run in wells.
- Italian and Greek scientists recently concluded that the hydrocarbon leaks at the Temple of Apollo in Greece do not contain enough ethylene to have induced delirium and trances in the ancient Delphic Oracle, as previously speculated.
- The number of known kinds of dinosaurs has nearly doubled in the past 20 years as new genera have been discovered and identified.
- The Cretaceous Period was a time when atmospheric and oceanic temperatures were often high, the result of a combination of greenhouse conditions from elevated CO<sub>2</sub> and increased anoxia in the oceans.
- Despite the fact that geologists have long speculated that naturally occurring hydrates on the sea floor contain enormous volumes of natural gas, production from hydrates remains uneconomic.
- The eruption of Mt. Vesuvius in AD 79, which buried the Roman cities of Pompeii and Herculaneum, ejected 5.2 billion cubic yards of magma, producing deposits over 37 feet thick in places.
- Carefully documented well-bore and geologic data, combined with earthquake data, can be used to map the direction and magnitude of *in situ* horizontal stresses in the crust. America uses almost 20 million barrels of oil per day.
- Scientists recently discovered a patch of the South Pacific sea floor that is essentially devoid of sediment. This unique setting apparently is a result of a combination of low biological productivity, a shallow calcite compensation depth, little or no dust input, and no hydrothermal deposits.
- Approximately once every 100 years, somewhere in our galaxy a white dwarf star accretes enough matter to trigger the fusion of carbon in its core, releasing so much energy that the star vaporizes, becoming a type Ia supernova.

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# PGS Newsletter

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

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Vol. LIX, No. 5

Robert Burger, Editor

January, 2007

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Wednesday, January 17, 2007  
Foster's Restaurant, Foster Plaza Building 10  
The Pittsburgh Geological Society  
presents

## Lithostratigraphy and Depositional Environments of the Pitkin Limestone in Northeastern Oklahoma

by Lee Nageotte,  
Moody and Associates, Inc.

In the spring and summer of 1980, the author measured 27 stratigraphic sections and collected over 200 rock samples of the Mississippian-aged Pitkin Limestone in Northeastern Oklahoma, at the southwestern edge of the Ozark Uplift. Thin sections were made of each sample and they were photographed in plane or polarized light. The slides revealed a variety of carbonate sedimentary grain types including oolites and skeletal fragments (bryozoans, crinoids, bracheopods, gastropods, pelecypods, algae and foraminifera).

Based on field observations and statistical evaluation of grain counts, eleven litho-facies, were proposed: (1) oolite; (2) oolitic; (3) bioclastic; (4) encrinite; (5) oncolite; (6) nodular limestone and shale; (7) peloidal; (8) wackestone; (9) mudstone; (10) mound; and (11) shale. The author attempted to correlate the facies within the Pitkin Limestone. There was little, if any, lateral continuity of the proposed litho-facies. The abundance of coarse grained lithologies distributed in a mosaic pattern with shallow water algal flora, suggested the Pitkin Limestone in the study area was deposited as a platform carbonate. The irregular distribution of facies within the formation suggested catastrophic depositional processes, such as hurricanes, creating a "facies mosaic" or "crazy quilt" pattern. Based on the stratigraphic and lithologic relationships with the underlying Mississippian-aged Fayetteville Shale and the overlying Pennsylvanian-aged Sausbee Formation, the Pitkin Limestone appears to have been deposited during the regressive phase of a depositional cycle called a mesothem.

An unconformity of regional extent separates Mississippian and Pennsylvanian-aged strata on the Ozark Uplift and is easily recognized in the field. A pre-Pennsylvanian, north-south trending fluvial valley feature with a regional relief of 60 feet was incised into the Pitkin Limestone in Cherokee and Sequoyah Counties as evidenced by cross sections and isopach maps. The Pitkin is locally removed within the study area with the overlying Pennsylvanian Sausbee Formation resting directly on the underlying Fayetteville Shale.

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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 **emailed** to Mary Ann Gross at [magrs@yahoo.com](mailto:magrs@yahoo.com), please title as "PGS Dinner Reservation." If you are unable to use email, call (412) 440-1468 and leave your name and number of reservations needed by **noon, Monday, January 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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## **MORE NEWS ON CONTINUING EDUCATION REQUIREMENTS FOR PROFESSIONAL REGISTRATION IN PA**

The new law establishing continuing education requirements for geologists is set to take effect at the end of this month. As a result of the new rule, geologists registered in Pennsylvania will be required to obtain 24 hours of continuing education credits every two years as a condition of license renewal. All courses, locations, instructors, and providers will be approved by the State Board of Engineers, Land Surveyors, and Geologists.

Geologists in their initial two-year licensing period are exempt from the requirements. In addition, waiver requests may be granted for the inability to complete training during a license period due to military service, serious illness, or other demonstrated hardship. The first renewal period under which the law will take effect is September 2007 and geologists may begin counting credits at that time. The State Board hopes to complete the details related to implementing and establishing the new regulations some time in 2008.

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

Aliquippa, the Beaver County city on the Ohio River that once was a thriving steel-manufacturing town, was named for an important Seneca Indian woman who, when Washington visited western Pennsylvania, was living at the mouth of the Youghiogheny River. The name apparently is a corruption of *alloquepi*, meaning “a hat.”

## **NEXT MONTH’S MEETING**

Our speaker for next month will be Dan Martt of A.G.E.S., Inc. who will present a talk entitled *A Geotechnical Investigation of the New Baltimore Slide and Surrounding Areas*. The famous New Baltimore slide has been causing maintenance problems for the Pennsylvania Turnpike Commission since 1940—the year that the turnpike opened. Plans are currently in the works to widen the turnpike to three lanes in each direction through the slide area.

## ***IS THIS YOUR LAST PGS NEWSLETTER?***

Dues for the 2006-2007 program year were due by December 31, 2006. If you have not yet renewed, this could be your last newsletter. Send your renewal form and check to John A. Harper, Pennsylvania Geological Survey, 400 Waterfront Drive, Pittsburgh, PA 15222-4745 as soon as possible. If you need a renewal form, contact John at [jharper@state.pa.us](mailto:jharper@state.pa.us).

## **PHOTOGRAPHER SEEKS HELP FOR PROJECT ON COAL MINING**

Shuli Hallak is a professional photographer specializing in industrial landscape photography who is starting a project about the coal mining industry. Ms. Hallak shows the beauty of the industry as well as what workers spend their time doing; an underground world that goes unnoticed by the public. Hallak’s past work includes a project on cargo shipping—an unveiling of that industry from local docks to cargo ships passing through the Panama Canal, and photographing a steel mill in Indiana. Hallak is primarily looking for access to photograph active coal mines, but stories, ideas, and insight into the industry would be greatly appreciated. If you have contact information or would be interested in supplying Hallak with insight into the industry, contact her via email at [shuli@shulihallak.com](mailto:shuli@shulihallak.com). You may also view her work at [www.shulihallak.com](http://www.shulihallak.com).

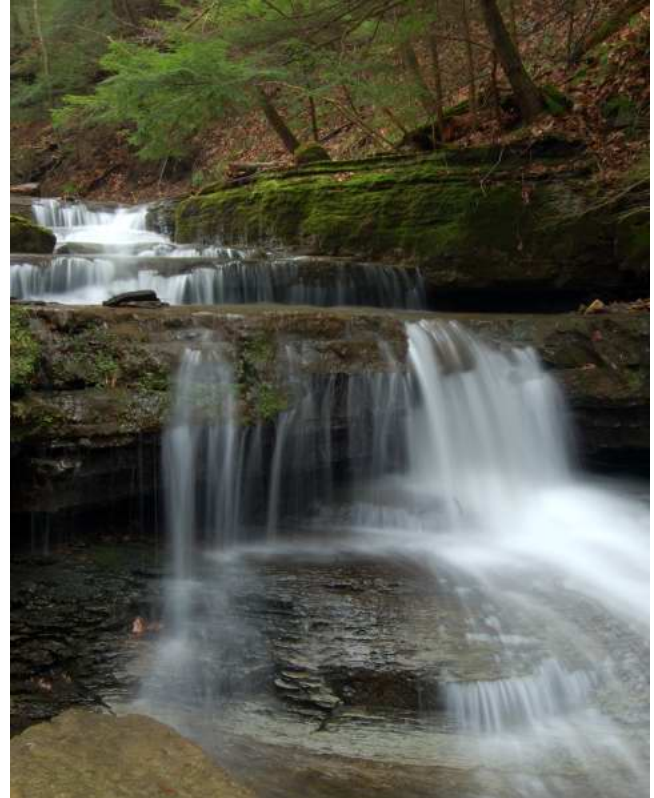
## **Website of the Month**

<http://www.chinapage.com/archeology/dinosaur/dinosaur.html>

## DID YOU KNOW . . . ?

- Marine fossils, isotopes, and sediment analysis from cores indicates that the Bering Strait flooded sometime shortly before 12,000 years ago, effectively sealing any migration pathways between Asia and North America.
- Not everyone thinks the Chicxulub impact in Yucatan was responsible for the extinction of the dinosaurs. One researcher claims there is good evidence that the impact occurred 300,000 years before the K-T boundary.
- Explorers with the Cave Research Foundation have discovered a spectacular new cave at Sequoia and Kings Canyon National Park in California.
- A team of researchers from New Mexico and Massachusetts has discovered a link between solar forcing and Holocene climate that has grave implications for aridity in the southwestern US due to global warming.
- High-resolution radar images of the south pole on the moon have found no evidence of ice in the craters there.
- Scientists found sulfate-reducing bacteria 1.9 miles below a gold mine in South Africa. The bacteria seem to be flourishing without even indirect links to photosynthesis.
- Methane has 21 times more heat trapping ability in the atmosphere than does CO<sub>2</sub>.
- Microbes such as bacteria and cyanobacteria (“blue-green algae”) have been involved in the precipitation of carbonate minerals in a wide range of environments throughout geologic time.

- Apparently, galena and other minerals have been mined for their lead content for about 5000 years.
- Subduction erosion has been inferred to be active along more than 50 percent of all convergent plate margins.



Grindstone Run plunges over Pennsylvanian Homewood sandstone in McConnells Mill State Park. More information on the geology around McConnells Mill State Park can be found in the 1990 and 2003 PGS field trip guidebooks available at [www.pittsburghgeologicalsociety.org](http://www.pittsburghgeologicalsociety.org).

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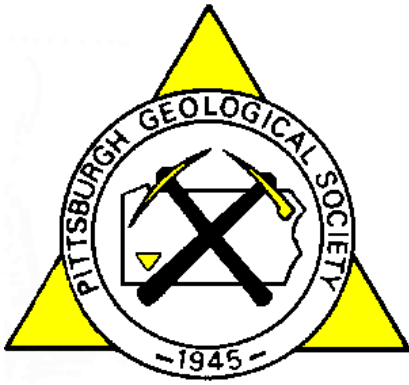
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# PGS Newsletter

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

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Vol. LIX, No. 6

Robert Burger, Editor

February, 2007

Wednesday, February 21, 2007  
Foster's Restaurant, Foster Plaza Building 10

The Pittsburgh Geological Society  
presents

## A Geotechnical Investigation of the New Baltimore Slide and Surrounding Areas (modified from Heirendt, Styler, and Henderson, 2002)

By Dan Martt  
A.G.E.S., INC.

The Pennsylvania Turnpike is a 578 km (359 mi.) limited access highway, traveled by over 172 million vehicles in 2002. The original 257 km (160 mi.) section was opened in 1940 to provide a high-speed transportation route across the Allegheny Mountains and follows a partially constructed railroad alignment, which was abandoned in 1885. The New Baltimore Slide is a major rockslide mass occurring near Milepost 128, which has resulted in maintenance problems for the Pennsylvania Turnpike Commission (PTC) since 1940. Large movements have resulted in major scarps as much as 24 m (79 ft.) on the hillside. The currently active slide mass measures approximately 240 m (787 ft.) wide at the turnpike, 90 m (300 ft.) wide at the top, and 335 m (2000 ft.) up-slope. The slide mass has resulted in heave of the eastbound shoulder area, requiring pavement milling of up to 20 cm/yr (8 in/yr).

An investigation was conducted in order to establish the slide limits, determine the slide mechanism; and develop alternatives with respect to possible slope remediation and monitoring. The scope of work completed included detailed mapping of the slide features, completion of a subsurface

exploration program, installation of geotechnical instrumentation, and optical survey. The instrumentation program included vertical slope inclinometers, Time Domain Reflectometry (TDR) coaxial cables monitored using a digital data logging system, and vibrating wire piezometers. The results of the investigation included the performance of the various instruments utilized, and conclusions with respect to the slide mechanism and recommended treatments.

PASTABL M and the Modified Hoek and Bray analyses indicated factors of safety of 0.97 and 1.01 for a completely drained apparent failure zone ( $r_u = 0.0$ ) with a  $\phi$  of 15 degrees. Since failure is assumed to be occurring along a defined failure zone, the factor of safety of that zone will not increase if the water level is drawn down past the bottom of the apparent failure zone. It appears full drainage of the apparent failure zone will result in a negligible increase in the factor of safety.

A further investigation is currently being undertaken from M.P. 125.8 to 133.5 to widen the highway to three lanes each way. Results and lessons learned from the New Baltimore Landslide investigation will be used in the current study.

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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/member or nonmember, **students \$5.00**; checks preferred. Reservations should be **emailed** to Mary Ann Gross at [magrs@yahoo.com](mailto:magrs@yahoo.com), please title as "PGS Dinner Reservation." If you are unable to use email, call (412) 440-1468 and leave your name and number of reservations needed by **noon, Monday, February 19.**

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

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# Pittsburgh Geological Society

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## A MESSAGE FROM THE PRESIDENT

Happy New Year! The PGS finds itself busy providing many opportunities for professional development in 2007. Next week, the workshop to help practitioners review for the ASBOG professional licensure exam is offered in conjunction with the Pennsylvania Council of Professional Geologists (a few seats remain available, see [pcpg.org](http://pcpg.org)). Our Tools of the Trade workshop that introduces academic students to drilling, well installation, and field sampling techniques is under development for 31 March at Slippery Rock University. Student interest is already amazing. Locales for the spring field trip in late April or early May are under discussion. The call for abstracts at the annual Student Night in April has been circulated. In addition, we are closely monitoring the developing regulations requiring registered professional geologists to complete continuing education units to remain in good standing. We are exploring field trips, colloquia, and workshops as mechanisms to 'get your back'. Please let the society know if you identify programs we might offer to support our discipline and your careers! Lastly, annual corporate renewals are arriving daily. We ask you to encourage your firm to join our 2007 membership, as well as inquiring with your colleagues and inviting them to join us this year, too. With your help and to your benefit, we will prosper together through the coming seasons.

From your neighborhood to across the globe, I wish you fine health and peace throughout the lengthening days!

Patrick A. Burkhart

## CALL FOR ABSTRACTS

Students are invited to submit abstracts of a Senior Research Project, Senior Design Project, Master's or PhD Thesis for presentation at the Fourth Annual Student Night joint meeting of the Association of Engineering Geologists, the Geotechnical Group of the Pittsburgh Section of the American Society of Civil Engineers, and PGS. Abstracts related to geology, engineering geology, geotechnical engineering, environmental

engineering, hydrogeology, and hydrology are welcome. Please limit them to a maximum of 350 words.

Three students will be selected to give a 15-20 minute oral presentation based on their abstract submittal. These students will each receive \$100 awards. Students not selected to give an oral presentation will be invited to present a poster summarizing their research work. All students presenting research, either verbally or orally, will receive a one-year student membership to PGS. The meeting will be held at 6:00 p.m. on April 18, 2007 at Foster's Restaurant, Foster Plaza Bldg. 10, in Green Tree, PA.

Abstracts may be submitted via email to [barnerwl@cdm.com](mailto:barnerwl@cdm.com). If you have any questions, or require a mailing address for abstract submittal, please call Wendell Barner at 412-208-2409. The due date for submittal is March 9, 2007. Notification will be given to the selected speakers on March 16, 2007.

## ORIGINS OF WESTERN PA PLACE NAMES

Connellsville, was founded in 1806 by, and named for, Zachariah Connell, one of the earliest settlers in the area. It became the first city in Fayette County in 1909. During the late 1800s and early 1900s, Connellsville was king of coke manufacturing, with beehive ovens lighting up the hillsides, railroads crisscrossing the town, and more millionaires per capita than any other place in the US. But this came to an end when the demand for Connellsville coke dropped off and the industry, and the economy of Fayette County, imploded. Other than large houses that used to belong to the many millionaires, Connellsville's major claim to fame today is as the type locality of the Connellsville sandstone, the highest major sandstone in the Casselman Formation (Pennsylvanian, Conemaugh Group).

### PGS Website Of The Month

[http://www.angelfire.com/va3/etna\\_analysis/](http://www.angelfire.com/va3/etna_analysis/)



## CALL FOR NOMINEES

PGS is calling on the membership for interested candidates for next year's officer and director-at-large positions.

There are three director-at-large positions that need to be filled. These positions are for a term of two years and require regular attendance at the board meetings held one hour prior to the social hour of each monthly society meeting. The position requires that you become involved at some level in the monthly operations of the society by aiding the officers and committees in various ongoing projects.

If you are an active member of the society and have an interest in being a candidate, or know of a member that you think would be a good candidate, please inform **Ray Follador**, Nominations and Elections Committee Chair, ASAP at [geodawg@comcast.net](mailto:geodawg@comcast.net) or (724) 744-0399. A list of all candidates will be announced at the April meeting with the election to be held at the May meeting.

## DID YOU KNOW . . . ?

- Paleontologists have discovered a silicified egg-clusters fossil from some unknown invertebrate animal in a Middle Cambrian Burgess Shale-type deposit in China.
- Underwater geoarchaeological excavations at Caesarea, Israel document that a tsunami struck and damaged the ancient harbor around AD 115.
- The ability of precipitation to dissolve rock is modulated by the properties of the overlying soil that influence the contact time between water and minerals.
- Gravity and seismic data suggest that the crust beneath the offshore fan of the Amazon River is thin oceanic crust, thinner than elsewhere in the Atlantic Ocean.
- Pahoehoe lava flows typically are less than one meter thick and, although they look nice and smooth, actually have a skin covered with razor sharp volcanic glass similar to shards of a broken window.
- Landslides occur in every state in the nation, although with varying frequency. Over half of all states have landslide rates large enough to be classified as a significant natural hazard.

- Saturn is the only planet less dense than water (~30% less) as the result of an atmosphere composed primarily of hydrogen with small amounts of helium and methane.
- Copper typically is produced by concentrating low-grade copper sulfide ores, followed by smelting, and then electrolytic refining to produce a pure copper metal.
- The Marianas Trench, where the Pacific Plate is descending under the leading edge of the Eurasian Plate, is the deepest sea floor in the world at nearly 36,000 feet below sea level.
- If you believe the reports that most of the oil imported by the US comes from the Middle East, you might be surprised to know that 60 percent of US imports come from Canada, Mexico, Venezuela, and Nigeria. Less than 25 percent come from the Middle East.
- Pittsburgh's Carnegie Museum of Natural History has one of the finest dinosaur collections in the world, including the skeleton of *Diplodocus carnegii* and the most complete *Tyrannosaurus rex* skull known to date.

## PGS OFFERS STUDENT FIELD COURSE

Students, have you ever wondered what your fieldwork might be like once you land that job in geology? Then sign up for PGS's "Tools of the Trade" workshop. At this workshop students will be introduced to:

- soil boring techniques,
- monitoring well installation,
- soil and groundwater sampling,
- geotechnical and environmental field methods,
- designing field investigations.

This outdoor event will take place rain or shine Saturday, March 31, 2007 from 9:00 a.m. to about 4:00 p.m. Be sure to wear sturdy shoes, older clothes, and dress for the weather. PGS will provide safety glasses and hard hats. The workshop free of charge to students; 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). Registration deadline is March 15. The course is limited to 50 students and spots are filling up fast, so reserve yours ASAP. Additional information may be found at [www.pittsburghgeologicalsociety.org](http://www.pittsburghgeologicalsociety.org).

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<b><u>Vice President:</u></b>	Mike Forth	<b><u>Director-at Large:</u></b>	Erica Love	<b><u>Counselor:</u></b>	Mike Bikerman
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**News items:** To submit a news item in the PGS Newsletter, please contact Bob Burger at (724) 818-5659, mail at 1885 Redcoach Road, Allison Park, PA 15101, or email [r.burger@verizon.net](mailto:r.burger@verizon.net). Be sure to also send an email address and phone number where you may be contacted.

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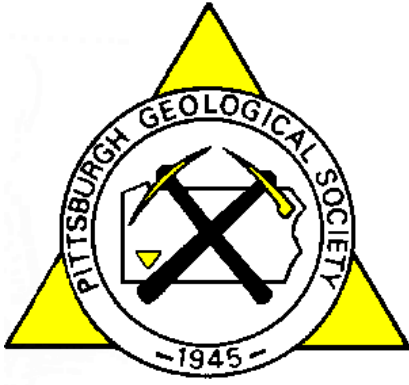
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 PO Box 58172  
 Pittsburgh PA 15209



# PGS Newsletter

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

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Vol. LIX, No. 7

Robert Burger, Editor

March, 2007

**Wednesday, March 21, 2007  
Foster's Restaurant, Foster Plaza Building 10**

**The Pittsburgh Geological Society  
presents**

**New Reflection Seismic System and Associated Research  
at the  
University of Pittsburgh**

by William Harbert  
University of Pittsburgh

In this presentation two recent geophysical studies involving multifrequency electromagnetics and reflection seismic methods will be presented. The goals of these studies were the identification of subsurface hydrogeophysical anomalies and geologic structure. At the Department of Geology and Planetary Science an active collaborative research program focused upon environmental geophysical investigations to detect polluted subsurface water, mine voids, and geologic structure have been developed in close collaboration with the Water and Energy Team of the National Energy Technology Laboratory at the United States Department of Energy, Pittsburgh, PA. Working with NETL/DOE, graduate students from the Department of Geology and Planetary Science at the University of Pittsburgh have completed active field-based programs at sites in West Virginia, Maryland, Wyoming and Pennsylvania. To aid in this environmental geophysics related research, the geophysics program at the University of Pittsburgh recently received a fully functioning 24-bit I/O System II digital seismic imaging system from WesternGECO valued at approximately \$1 million. This system allows accurate imaging of subsurface structure using energy impulses. To process these data, the geophysics program also received a \$1,400,000 donation of software from Seismic Micro Technologies and an approximately \$3,000,000 donation of software from Landmark Geophysics. This presentation will feature both an electromagnetic study of subsurface hydrogeophysics and also a reflection seismic survey using the I/O System II and a portable seismic system.

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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 **emailed** to Mary Ann Gross at [magrs@yahoo.com](mailto:magrs@yahoo.com), please title as "PGS Dinner Reservation." If you are unable to use email, call (412) 440-1468 and leave your name and number of reservations needed by **noon, Monday, March 19.**

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

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# Pittsburgh Geological Society

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## PGS SPRING FIELD TRIP

### GEOLOGY OF THE TRIASSIC AND JURASSIC SYSTEMS IN ADAMS AND YORK COUNTIES, PA.

Our trip this year will be on Saturday and Sunday, April 28 and 29, 2007 with an overnight stay in the Super 8 Motel in Hanover. Included in the trip will be a brief run-through of Gettysburg National Military Park (Seminary Ridge, Gettysburg plain, Little Round Top). Highlights are listed below.

- Gettysburg Formation: caliche mudstone, lacustrine, and fanglomerate facies; dinosaur footprints
- New Oxford Formation: fluvial arkosic fining-upward cycles with petrified wood; limestone and quartzite fanglomerates
- Subcrop at basal unconformity: tectonized Cambrian Ledger Dolomite and Neoproterozoic Catocin metabasalt
- Diabase intrusions: Gettysburg and York Haven plutons, dikes, contacts and contact metamorphic hornfelses; Cu and zeolite mineralization
- Other: Triassic homocline, faults, disappearing stream in limestone fanglomerate sinkhole (doline)

Cost (transportation, guidebook, soft drinks) will be \$40. Bring a bag lunch for Saturday as no food service is available at Caledonia State Park. We will purchase lunch at a convenience store on Sunday. Saturday supper will be at an authentic German restaurant. Substantial boots and hard hats are required. Expect short but steep climbs; some hikes are over ½ mile along railroad tracks.

Register soon - the number of participants is limited to 20 on a first-come, first-served basis. To reserve space on the trip, provide a check for \$40 made out to PGS and get it to either Chuck Shultz, 227 Grubb Road, Boyers, PA 16020 or Wendell Barner, CDM, 2740 Smallman Street, Suite 100, Pittsburgh, PA 15222.

**Registration deadline is Wednesday, March 28**  
**so that we may confirm our actual motel and transportation needs.**

Make your own reservation at Super 8 (717-630-8888) for Saturday evening and state that you're with the Shultz group. A block of 10 rooms has been reserved – 6 doubles and 4 singles. You might want to select a room partner before you call to reserve your room. Doubling up will reduce your cost by half. Cost is \$66 plus taxes either way (\$59.40 with AAA or AARP).

Transportation will be by 1 or 2 15-seat maxivans. No private cars are welcome due to some tight parking conditions. We will meet shortly after 7:00 Saturday morning near the mid-line road of Parkway Center parking lot and will leave the parking lot promptly at 7:30. Should you need to contact me on Saturday morning, call Judy Neelan at 412-708-1617.

Come join us – you'll see some eye-popping geology! Questions?? Call Chuck Shultz at 724-637-2272.

## **LAST CHANCE TO SIGN UP FOR THE STUDENT FIELD COURSE**

There are still a few spots left for PGS's "Tools of the Trade" workshop which will take place rain or shine Saturday, March 31, 2007 from 9:00 a.m. to 4:00 p.m. If you are a student planning to attend and have not yet signed up, please hurry because the registration deadline for this free event is March 15 and class size is limited to 50 students. At this workshop students will be introduced to:

- soil boring techniques,
- monitoring well installation,
- soil and groundwater sampling,
- geotechnical and environmental field methods,
- designing field investigations.

Be sure to wear sturdy shoes, older clothes, and dress for the weather. PGS will provide safety glasses and hard hats. 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).

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

Duquesne, Pennsylvania is a small mill town on the Monongahela River that was named after Fort Duquesne, which in turn was named after the Marquis Duquesne de Menneville, the governor-general of Canada. It is also the type locality of the Duquesne limestone, coal, and shale, a member of the Casselman Formation (Conemaugh Group, Pennsylvanian). The Duquesne limestone and black shales, in particular, have provided a wealth of freshwater fossils throughout western Pennsylvania.

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

The North American Coalbed Methane Forum will hold its Spring session on May 1-2, 2007 at the Hilton Garden Inn Pittsburgh/Southpointe. For more information, please contact Ihor Havryluk at 412-445-5803 or Dr. Kashi Aminian at 304-293-7682 ext. 3406.

**PGS Website Of The Month**  
<http://mtdinotrail.org/>

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

- Demand for mineral resources is so high in China and India that Colorado and other western states are facing worrisome mineral shortages in the near future.
- The USGS found that wetlands in the Prairie Pothole Region of Canada and the U.S. comprise approximately 17 percent of the landscape, but may sequester twice as much carbon as the surrounding agricultural soils.
- The atmosphere of Mars is composed primarily of carbon dioxide (95.32%) with small amounts of nitrogen (2.7%), argon (1.6%), oxygen (0.13%), water (0.03%), and neon (0.00025 %).
- `A`a lava (pronounced "ah-ah" is a type of lava that has a rough, rubbly surface composed of broken lava blocks called clinkers. The spiny surface of solidified `a`a makes walking very difficult and slow.
- Serpentinite is composed partly of the mineral serpentine, formed by hydrothermal alteration of rocks usually found in the upper mantle, often associated with ophiolite sequences.
- Because they contain a high level of toxic metals and are nutrient deficient, serpentinite outcrops can sustain only certain types of rare plant and animal species, and thus appear as desert-like barrens that are ecologically unique.
- An ophiolite sequence is an assemblage of rocks that form at spreading ridges, and includes ocean sediments, mafic extrusive and intrusive igneous rocks, and ultramafic rocks.
- Scientists have unearthed the fossils of exquisitely preserved "soft-bodied" organisms in thin sedimentary beds within the Jurassic-age Kirkpatrick Basalt of Antarctica. They are interpreted to have lived in and around shallow freshwater lakes, some of which were hydrothermally influenced.
- Tectonic subsidence is considered to be a first-order mechanism controlling the evolution of carbonate platforms.
- In 1996, a team of NASA scientists claimed to have found evidence of life within a Martian meteorite, based on the presence of sulfur. However, other scientists argue that the sulfur concentrations derived from atmospheric processes, rather than life on Mars.





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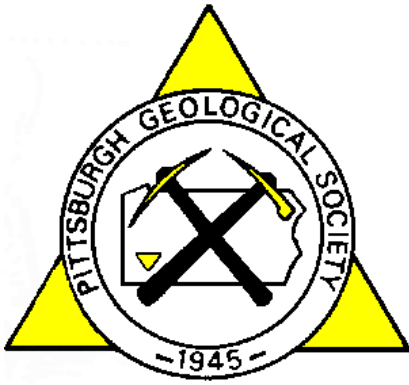
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# PGS Newsletter

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

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Vol. LIX, No. 8

Robert Burger, Editor

April, 2007

**Wednesday, April 18, 2007  
Foster's Restaurant, Foster Plaza Building 10**

## **5<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**

**The Point of Rocks detachment: A major transpressional fault along the Las Vegas Valley shear zone,  
southeastern Nevada**

by Damian Piaschyk, Geology and Planetary Science, University of Pittsburgh

The Las Vegas Valley shear zone (LVVsz) is a lateral fault along which about 50 km of right-lateral movement has taken place between ca. 15-10 Ma as suggested by folded Miocene strata within a positive flower structure exposed north of the Specter Range. The shear zone extends northwestward about 100 km from Las Vegas to Mercury, Nevada where it bends westward beneath the southern Specter Range. Geologic mapping southwest of Mercury shows that the Point of Rocks detachment that crops out in the northernmost Spring Mountains is a major fault zone that dips gently north toward the Specter Range although the fault is locally folded about west-trending hinges. Rare kinematic indicators record south-directed transport. The detachment is marked by tens of meters of generally pebbly cataclastic breccia derived mainly from carbonate strata of the late Cambrian Nopah formation, which forms most of the exposed hanging wall. Beneath the breccia about 1.4 km of strata are missing between Nopah beds and fault slices of much lower early Cambrian Wood Canyon formation. The footwall comprises two parts: 1) Neoproterozoic and Cambrian strata folded about north-trending hinges and 2) an adjacent basin. The Nopah formation and underlying fault rocks have been pushed across the folded strata of the footwall and into the adjacent lake where they are recorded by slab-like masses of breccia intercalated with bodies of carbonate clast conglomerate. The Point of Rocks detachment is a contractional feature that is compatible with transpression expected along the left-step restraining bend in the LVVsz.

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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 Foster's Restaurant, Foster Plaza Bldg 10, Greentree.**

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# Pittsburgh Geological Society

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## ASCE Award Winner

### **Visualization of the mobilized friction angle in simulated granular materials**

by Maria C. Jaime, Department of Civil and Environmental Engineering, University of Pittsburgh

Dense granular materials consist of discrete particles and voids that change their arrangement when subjected to shear. Volume expansion takes place during shear, and is known as dilatancy. For many years, geotechnical engineers have discussed the experimentally obtained relationship between dilatancy and the mobilized shear strength, and have proposed possible models to interpret it. A model by Newland & Alley (1957) is of particular importance since it has influenced subsequent frictional sliding between two rigid rough blocks. The interface between the blocks has a zigzag profile and sliding takes place on this ‘saw-teeth’ shaped planes; consequently, during shearing, there is an increase in volume of the dense granular material.

The measured maximum friction angle of shearing resistance is defined as:

$$\phi_{\max} = \phi_{\text{basic}} + \psi$$

where  $\phi_{\text{basic}}$  is the basic friction angle between two faces of the material making the particles and  $\psi$  is the dilatancy angle (Maksimovic, 1996). The model provides a possible and rational mechanism of shearing and dilatancy. However, according to Oda and Kazama (1998), nobody has observed such zigzag contacts in either experimental or numerical tests.

The present study evaluated if the shearing discontinuities responsible for dilatancy do form or not in simulated dense granular materials when subjected to direct shear stress conditions. Furthermore, a new expression was developed for the maximum angle of friction:

$$\phi_{\max} = (\phi_{\text{rol}} + \alpha) + \psi.$$

The new equation accounts for the so-called dilatancy  $\psi$ , and a most likely mechanism of failure that was found to be rolling instead of sliding between the particles of soil at the contacts along the failure surface.  $\phi_{\text{rol}}$  is the friction angle for rolling at the interface between two particles and  $\alpha$  is a geometric constant regarding the fabric.

The samples during shear present failure discontinuities that are inclined with the direction of shearing. The maximum friction angle  $\phi_{\max}$  measured upon the tests and the one calculated using the new developed expression, compare extremely well. Thus the results of the testes validate the model developed by Newland & Alley (1957) used to interpret dilatancy and shear strength in granular materials.

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## AEG Award Winner

### **Engineering geology considerations for realignment of Interstate-70/76 across the landslide at New Baltimore, Somerset County, SW Pennsylvania**

Lisa A. Nowicki, Department of Geology, Kent State University

The Pennsylvania Turnpike Commission plans to widen I-76 due to increased traffic in Somerset County. The New Baltimore landslide, which has caused serious problems for the turnpike since its construction in 1939, is located within this area. The landslide extends 2000 feet upslope and 1000 feet laterally, and moves 5 to 10 inches per year. The Turnpike Commission plans to cut into the slope between mile markers 128 and 129 on the south side of the turnpike, thereby passing through the New Baltimore landslide. When the Pennsylvania Turnpike is realigned, there could be new instability, reactivating the landslide and adding to instability. The bedrock geology of the New Baltimore landslide site consists of the Upper Devonian Catskill Formation which contains interbedded sequences of harder and softer strata including siltstone, shale, and grayish red sandstone units.

This research project is being conducted to determine the engineering properties of rocks and stability of slopes located between the mile markers. Field work is currently being conducted to find the upper limit of the landslide. Preliminary discontinuity data are being analyzed to evaluate various modes of slope failure. American Geotechnical and Environmental Services, Inc. conducted a subsurface investigation on the New Baltimore landslide consisting of 12 borings and installation of six inclinometers, and one piezometer. These instruments are being monitored monthly to determine the amount of movement along the failure plane. Cores were logged to establish the stratigraphy and to select samples for laboratory testing. Slake durability tests were performed on weaker layers and unconfined compression tests were conducted on harder layers. Direct shear tests will be performed on clayey siltstone units along which the slope movement apparently occurred as indicated by the presence of gouge material.

Study results so far show the slake durability index of clayey siltstone units ranges from 72% to 99% whereas unconfined compressive strength of sandstone/siltstone units ranges from 8,900 psi to 25,600 psi. Inclinometer data shows small movement along the weaker clayey siltstone units and this is being closely monitored. This study is still in progress. The study results will be used to develop remedial measures for the New Baltimore landslide so that the interstate highway can be realigned safely.

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## POSTER PRESENTATIONS

The poster presentations at this year's student night include:

### **Relationship between structures and gold mineralization in neoproterozoic greenstones of the Werri area, northern Ethiopia**

Yonathan Admassu<sup>1</sup>, Friberg, L.<sup>2</sup>, Holm, D.K.<sup>1</sup>  
<sup>1</sup>Kent State University, <sup>2</sup>University of Akron

### **A geotechnical investigation of selected embankment failures in northeastern Ohio**

Dan Bole, Kent State University

### **3D seismic survey and well-log interpretation of a natural gas reservoir in southwestern Pennsylvania**

Vlad Kaminski<sup>1,2</sup>, William Harbert<sup>1,2</sup>, Brian Lipinski<sup>1,2</sup>, Terry Ackman<sup>2</sup>

<sup>1</sup>University of Pittsburgh, <sup>2</sup>US Department of Energy, National Energy Technology Laboratory

### **Degradation of well cement by CO<sub>2</sub> under geologic sequestration conditions**

Barbara G. Kutchko<sup>1,2</sup>, Brian R. Strazisar<sup>1</sup>, David A. Dzombak<sup>2</sup>, Gregory V. Lowry<sup>2</sup>, Niels Thaulow<sup>3</sup>

<sup>1</sup>US Department of Energy, National Energy Technology Laboratory, <sup>2</sup>Carnegie Mellon University, <sup>3</sup>RJ Lee Group, Inc.

### **A record of late Holocene geomorphic events in the White River Badlands, South Dakota**

by Carol Ann Odell, Slippery Rock University

## PGS OFFICER NOMINEES

The proposed list of candidates for positions on the 2007-08 PGS Board-of-Directors include:

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, Maury Deul, Albert Kollar, and Rich Ruffolo. 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.

## FIELD WORKSHOP

All I have to ask you, "What could be better than spending a Saturday on a drill rig installing a monitoring well?" Let me tell you; being able to spend that time with friends—new and old. The PGS successfully conducted the third Student Field Workshop on Saturday March 31<sup>st</sup>. The weather attempted to "rain on our parade", but a few well placed shakes of the fist at the heavens brought about clear skies. The workshop was sponsored by PGS and hosted by Slippery Rock University. Approximately 30 students attended and hopefully gained an understanding of what is involved in the geotechnical and environmental drilling process. One thing was certain; plenty of sage wisdom was transmitted to the students by the professionals that assisted in the workshop.

We demonstrated the principles associated with hollow stem augers, split-spoon sampling, direct-push drilling, diamond-bit coring, and monitoring well installation. We also included demonstrations of headspace testing and volatile organic preservation for soil samples. One of the highlights of the workshop was successfully finding buried utilities with two bent metal wires. Just kidding, we used One-Call, an SRU facility maintenance check, and a magnetic locator, too.

The workshop would not have been a success without the generosity of the following subcontractors:

- Geo-Environmental Drilling Company
- Field Environmental Services
- Pace Analytical Services

who donated equipment, materials, and most of all, their employees, to ensure that this new crop of geologists start off with a firm grasp of field procedures. And many thanks go out to the members of PGS who supported this endeavor—especially Dr. Pat Burkhart (SRU); Dan Martt (AGES, Inc.); Mike Forth (A&A Consultants); Judy Neelan (PADEP); Steve McGuire (Veolia Water); and Bob Burger (DES, Inc.)

What is in the future? This Fall, we are trying to continue with the "So You Want to be a Geologist" seminar. Also be on the lookout for a groundwater sampling and testing workshop that will use the monitoring well installed as part of the Field Workshops.

See you in the field...Frank Benacquista.

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<b><u>President:</u></b>	Pat Burkhart	<b><u>Director-at Large:</u></b>	Bob Fedinetz	<b><u>Director-at Large:</u></b>	Richard Ruffolo
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<b><u>Past President:</u></b>	Frank Benacquista	<b><u>Director-at Large:</u></b>	Mary Robison	<b><u>AAPG Delegate:</u></b>	Dan Billman

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# PGS Newsletter

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

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Vol. LIX, No. 9

Robert Burger, Editor

May, 2007

Wednesday, May 23, 2007  
(please note change in our normal meeting date)

The Pittsburgh Geological Society and  
The Association of Environmental & Engineering Geologists  
present

## Salt, Lead, and Rails: Geology and the Civil War in Southwestern Virginia

by Robert C. Whisonant, Radford University

During the American Civil War, Federal commanders consistently attempted to destroy three targets in southwestern Virginia of national importance to the Confederate war effort—the salt works at Saltville, the lead mines at Austinville, and the Virginia and Tennessee Railroad. Austinville produced one-third of all the lead used by the South during the war, and Saltville manufactured two-thirds of all the salt. The Virginia and Tennessee Railroad not only transported these mineral products, but was also the most direct link between Lee's Army of Northern Virginia and the troops and resources of the western Confederacy. The railroad and mineral operations lay in the Valley and Ridge province, a belt of complexly folded and thrustured Paleozoic sedimentary rocks with elevations that exceed 4,000 feet in many places.

To the west of the Valley and Ridge is the highly dissected Appalachian Plateaus province, and Union forces advancing into southwestern Virginia from nearby Kentucky and West Virginia had to cross both the Plateaus and Valley and Ridge terrain to reach their objectives. In May 1864, Federal Commander-in-Chief Ulysses Grant ordered the Army of the Kanawha, based in Charleston, West Virginia, to sever the Virginia and Tennessee Railroad by demolishing the bridge across the New River; this campaign resulted in the Battle of Cloyd's Mountain, the largest battle ever fought in the region. In October 1864, a Federal army based in Kentucky attacked the massive salt works at Saltville, thus precipitating another bloody fight.

Finally, in December 1864, Union troops under General George Stoneman came into southwestern Virginia from Knoxville, Tennessee, and assaulted the railroad, salt works, and lead operations. The presentation will examine the numerous connections between the geology, geomorphology, and mineral operations versus the military events that occurred in this region.

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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 **emailed** to Mary Ann Gross at [magrs@yahoo.com](mailto:magrs@yahoo.com), please title as "PGS Dinner Reservation." If you are unable to use email, call (412) 440-1468 and leave your name and number of reservations needed by **noon, Monday, May 21**.

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

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# Pittsburgh Geological Society

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## PGS BOARD-OF-DIRECTORS ELECTION

The Election of officers and directors for Pittsburgh Geological Society's 2007-08 season will be held at the May 23, 2007 PGS meeting. 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 terms for 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 are unable to attend, please send them to: PGS Election Committee, P. O. Box 58172, Pittsburgh, PA 15209. Please allow time for the ballots to reach us before the meeting.

## ORIGINS OF WESTERN PA PLACE NAMES

Henry Beeson founded Uniontown, the county seat of Fayette County that is nestled at the base of Chestnut Ridge, by coincidence on the same day as the founding of the United States—July 4, 1776. He named it Uniontown to distinguish it from the township of Union, which surrounds it. Uniontown is the type locality of the Uniontown coal and the Uniontown Formation of the Monongahela Group.

## NORTH PARK GEOLOGY GUIDE

The Allegheny County Parks Department, Allegheny Regional Asset District, and Carnegie Museum of Natural History are pleased to announce the release of a five-page hiker's guide to the geology of North Park. The guide, written by Dr. David K. Brezinski and Albert D. Kollar of the Section of Invertebrate Paleontology of Carnegie Museum, discusses the geologic history of North Park, the origin of the bedrock layers, and the erosive events that produced the landscape that we see today. As a companion to the printed guide, an interactive web page has been prepared that describes the Park's geology and is meant to assist educators and students in understanding the basic geology of the Park and the Tri-State region. To download the guide visit the North Park web site [www.county.allegheny.pa.us/parks/npfac.aspx](http://www.county.allegheny.pa.us/parks/npfac.aspx).

## PGS SPRING FIELD TRIP

On April 28 and 29, a crowd of 18 participants visited Adams and York Counties in Pennsylvania to view rocks of the Triassic and Jurassic systems. Some of the trip highlights included a stop in Gettysburg where we visited Seminary Ridge (site of the first skirmish in the Battle of Gettysburg) to view the Gettysburg formation, a diabase dike, and its associated contact metamorphic effects. Also in Gettysburg, we visited Little Round Top to view the Gettysburg pluton and discuss how geology affected the Gettysburg campaign. At the Valley quarry we viewed hornfelsed Gettysburg formation and zeolite mineralization beneath the Gettysburg pluton. Near Dillsburg, we visited a quarry in limestone fanglomerate and viewed a disappearing stream. North toward Harrisburg we viewed quartz conglomerate of the basal New Oxford formation showing texture and clasts indicating an extremely close provenance, plus an orthopyroxene cumulate at the base of the York Haven pluton.

In addition to witnessing exceptional geology, the participants were greeted with spectacular weather and a joyful time was had by all. PGS sends out a special thank you to Chuck Shultz—the organizer and leader of the trip—for all his efforts to make the trip a great success.

## DID YOU KNOW . . . ?

- The world's largest (Phanerozoic) continental flood basalt is the Central Atlantic Magmatic Province that occurred during the breakup of Pangea around 200 Ma and is now preserved on parts of four separate continents.
- Deltaic and alluvial-fan distributary channels indicate environments of net deposition but, because models of river branching do not consider dynamic processes such as avulsion, the conditions that cause channels to become distributary are not well quantified.
- One of the biggest paradoxes in the record of life on earth is that some of the most numerous and diverse groups of animals on the planet, such as the insects, spiders, worms, shrimp, and mites, are underrepresented in the fossil record.

- Prior to 1977, mining in Pennsylvania was largely unregulated. As a result, the state has more than 180,000 miles of unmarked shafts, unstable cliffs, water-filled pits, abandoned equipment and buildings left over from that period.
- In addition, some 6,200 of Pennsylvania's 83,161 miles of streams are polluted or degraded by acid mine drainage.
- The presence of sand dikes and soft sediment deformation, such as contorted bedding and flow rolls, in some ancient sediments and rock strata has been used to infer ancient large-magnitude earthquakes and calculate earthquake recurrence intervals.

### **PGS SCIENCE FAIR AWARDS**

PGS is pleased to announce the winners of our awards at the Carnegie Science Center Pittsburgh Regional Science Fair held on March 30, 2007 at Heinz Field. PGS sponsored four separate awards with an award presented in each of the three Divisions and—new for 2007—a Team award. In evaluating student projects, PGS judges considered the relevance of the project to the core scientific disciplines represented in 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, Tom Beaty, Bob Burger, 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 Brandon Hough, who is a Senior at South Allegheny High School. The title of Brandon's project was "Linaritis". The project involved a method of synthesizing the mineral linarite. The existence of linarite was proven on the basis of correct color, structure, streak, and composition. 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. During the interview with the PGS judges, Mr. Hough

demonstrated an impressive knowledge of the geochemical reactions and his research subject.

**Intermediate Division** The winner of the Intermediate Junior High Division award was Eric Trylko, who is in the 7<sup>th</sup> grade at St. Thomas More School in Bethel Park. The title of the project was "Force Transfer in Saturated Soil". The subject of this study was the Wal-Mart landslide in Kilbuck Township. Soil samples were obtained from the redbed landslide material. The purpose of the experiment was to determine what effect soil additives have on the transfer of weight through saturated soil and which additives are the most effective on lessening the effects of soil liquefaction. The soil additives were dried bark, dried leaves, Styrofoam popcorn, and granular polymers. The soil with each additive was saturated in PVC pipes. Dowel rods were inserted through the pipe. Seismic activity was then simulated. Soil compaction was measured by pulling the dowel rods with a spring scale. The advisor for the project was Mrs. Conroy.

**Junior Division** The Junior Division is made up of 6<sup>th</sup> grade students. The PGS Junior Division winner was Grayce Behnke at Franklin Regional School. The title of Grayce's project was "Wave Erosion" The object of the experiment was to determine if changing the beach material affects the amount of erosion. Six soil/sand samples were placed in a 12-gallon fish tank to simulate beach and wave conditions. The resulting beach height and length was then measured. Play sand created the most natural beach but eroded the fastest. The advisor for the project was Mrs. Gable.

**Team Award** The new Team award is designed to stimulate the exchange of ideas that comes from working in a group. The Team Award was presented to Danielle Dunshee and Amanda Voss of Ambridge Area Junior High School. The title of their project was "What's An Angle Got To Do With It". The experiment was conducted to determine what solar angle would make a solar panel work more efficiently. The experimental procedure used a solar panel, a holding tank for circulating water temperature measurements, and the placement of a light to match the angle of the sun. The solar panel was then positioned at different angles. The project concluded that a 30-degree angle worked the best. The advisor for the project was Mrs. DeMarco.

**Ballot**  
Pittsburgh Geological Society  
**Board of Directors Election**  
May 23, 2007

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)

\_\_\_ Maurice Deul  
B. S. Geology 1942, Union College (NY), M. S. Mineralogy, University of Colorado 1947, Retired, occasional Consultant, longtime and Honorary Member.

\_\_\_ Bob Fedinetz  
B. S. Environmental Geology 2005, University of Pittsburgh, Geologist  
CONSOL Energy, Inc., current Director at Large, PGS member since 2003.

\_\_\_ Albert Kollar  
B. S. Geology 1974, Southampton, M.S. Geology and Invertebrate Paleontology 1997,  
University of Pittsburgh, Geologist/Collection Manager, Carnegie Museum of Natural  
History, Section of Invertebrate Paleontology, PGS member since 2005.

\_\_\_ Rich Ruffolo  
B. S. Environmental Geology 2001, University of Pittsburgh, M. S. Geology 2005, Kent  
State University, Geologist, GAI Consultants, Inc., current Director at Large, PGS  
member since 1999.

**All ballots must be cast at the May 23<sup>rd</sup> meeting or received at the  
Society mailing address (below) no later than Friday May 18th.**

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