

# PGS Newsletter

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

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Vol. LXII, No. 1

Robert Burger, Editor

September, 2009

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**Wednesday, September 16, 2009**  
Pittsburgh Geological Society presents

## **Origin of the Lower Mississippian Black Hand, Big Injun, and Burgoon sandstones of the central Appalachian basin: forced regression during Gondwanan glaciation**

by Thomas W. Kammer  
Eberly College Centennial Professor of Geology  
West Virginia University

Detailed stratigraphic analysis within the central Appalachian basin of OH-PA-WV shows coarse-grained, fluvial sandstones (Black Hand, Big Injun, Burgoon) are associated with valley incision up to 60 m and a widespread sequence boundary inferred to have resulted from a forced regression at the Lower Mississippian Kinderhookian-Osagean (K-O) boundary interval. Evidence for sea level fluctuation (eustasy) at this time in the Appalachian basin will be presented, along with regional mapping of the K-O boundary unconformity in the conterminous United States. The extent of unconformity at the K-O boundary was evaluated by mapping the inferred positions of shorelines during the Kinderhookian, K-O boundary interval, and early Osagean based on stratigraphic data from the COSUNA charts. This analysis shows areas of extensive exposure at the K-O boundary across the U.S. inferred to be the result of sea level fall and recovery during a period of approximately 2 m.y. or less, based on missing conodont zones. The K-O boundary is equivalent in age to the global Tournaisian Tn2-Tn3 boundary, and supporting evidence for global regression and eustasy at this boundary is also reviewed.

Combining this evidence for eustasy with recently reported middle to early late Tournaisian (Tn2a-Tn3b) diamictites in South America permits the inference of continental glaciation at this time. Previous studies of oxygen and carbon isotope data for marine carbonates and fossils show strong positive anomalies suggestive of global cooling at the K-O/Tn2-Tn3 boundary, providing further support for the hypothesis of continental glaciation in the Early Mississippian.

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

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

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

Dinner will cost **\$25.00/person, students \$5.00**; checks preferred. **Reservations should be emailed to Steve McGuire at [smcguire@chesterengineers.com](mailto:smcguire@chesterengineers.com)**, please title as "PGS Dinner Reservation." If you are unable to use email, call (412) 809-6723 and leave your name and number of reservations needed by **noon, Monday, September 14.**

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

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# Pittsburgh Geological Society

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## **PRESIDENT'S WELCOME**

I welcome you to the 2009-2010 session of the Pittsburgh Geological Society. I urge you to attend as many meetings as possible. The lectures provide an opportunity to broaden your knowledge in areas outside your daily work, and attending the social hour provides an opportunity to “talk shop” (find out how your competitors are doing) and network (find out who is hiring/firing).

In addition to our monthly meetings, the society will continue to provide service to the educational community by supporting the regional science fair and presenting field workshops. We will continue to co-sponsor the Student Night with AEG and ASCE, encouraging research by local students.

This year the society will co-sponsor, with the USGS, a three-day “Stray Gas Workshop” in November. We anticipate speakers from industry, government, and academia to discuss issues in this unique field of environmental and engineering geology. In addition, the society is supporting the annual meeting of the Field Conference of Pennsylvania Geologists held October 8-10 in Venango County to commemorate the 150<sup>th</sup> anniversary of the oil industry.

There are some issues and challenges facing the society also. One is determining what role the society will play in continuing education requirement for professional licensure. The challenges include our efforts to increase our membership and to obtain additional support from industry.

Once again, I encourage you to participate in the society, and I am looking forward to serving another term as your president.

*Mike Forth*

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

The North American Coalbed Methane Forum Fall Session will be held on Wednesday and Thursday, October 21-22, 2009 at the Lakeview Conference Center near Morgantown, WV. For more information, please contact Ihor Havryluk at 412-445-5803, [havryluk@zoominternet.net](mailto:havryluk@zoominternet.net) or Dr. Kashi Aminian at 304-293-7682 ext. 3406, [kashayar.aminian@mail.wvu.edu](mailto:kashayar.aminian@mail.wvu.edu).

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

It's time to renew your PGS membership for the 2009-2010 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.

## **STRAY GAS WORKSHOP**

The U.S. Geological Survey and the Pittsburgh Geological Society are proud to present the “Stray Gas Workshop” held November 4-6, 2009 at the Sheraton Station Square, Pittsburgh. This event focuses on the scientific basis for assessment of, and various types of geochemical analyses for, stray or fugitive gases. Tools and strategies for investigating stray gases will be presented by scientists and specialists whose work has focused on the origins, migration, accumulation, and mitigation of gases—particularly carbon dioxide and methane. Goals are to bring scientists and technicians from government, industry, and academic sectors together with natural-resources managers, investigators, and regulators for exchange of technical knowledge and education, as well as developing professional contacts.

Registration is \$150.00. It includes the three-day workshop, evening Poster Presentation/Reception, and the first day's lunch. For more information please visit [http://pa.water.usgs.gov/stray\\_gas/](http://pa.water.usgs.gov/stray_gas/).

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

The area around Brookville, Jefferson County, was initially settled in the late 1790s, but the town was not established until 1829. Three commissioners were appointed to erect a county seat for Jefferson and they chose the confluence of Sandy Lick Creek and Mill Creek where they form Redbank Creek. According to the history of Jefferson County, the name Brookville derives from the combination of “Brook,” for the number of springs and brooks flowing from the hills, and the French term “yule: a country-seat. Brookville is the type locality of the Brookville coal, the basal member of the Allegheny Formation (Pennsylvania).

## FIELD CONFERENCE OF PA GEOLOGISTS

This year's field conference will take place in Titusville to honor the 150th anniversary of birth of the modern petroleum industry. PGS and the Pennsylvania Geological Survey are cohosting the event entitled *History and Geology of the Oil Regions of Northwestern Pennsylvania*. The conference will take place October 8-10, 2009 and will be headquartered at Cross Creek Resort in Titusville.

Friday, October 9 field activities feature stops to look at Upper Devonian rocks including the Berea Sandstone and "Drake Well Formation", visits to historical sites including the McClintock #1 well, the Blood Farm, and Pithole, then finally a stop at the Drake Well Museum. On October 10, the morning will be spent visiting a complex esker-delta-lacustrine plain complex and the afternoon will be spent reexamining the end-Devonian stratigraphic succession in northwest PA. In addition, two pre-conference events—a visit to Weatherford Wireline Services and a golf outing at Cross Creek Resort—will take place on October 8 for those who are interested.

Attendance is limited to 168 individuals. Pre-registration fees are \$125 prior to September 9, \$150 for afterwards. For more information, and to register, visit <http://fcopg.org>.

### DID YOU KNOW . . . ?

- The properties of bentonite that make it a valuable clay resource were recognized and exploited at least 3,000 years ago in Greece and Cyprus.
- The mudslides that accompanied the China earthquake in May 2008 released a huge amount of CO<sub>2</sub> into the atmosphere, estimated as the equivalent of 2% of the annual global emissions from burning fossil fuels.
- Hurricane Katrina also released a similar amount of CO<sub>2</sub> in 2005.
- The word "galaxy" comes from the Greek *galaxias*, meaning "milky circle."
- Everyone talks about the enormity of the end-Cretaceous mass extinction, because of the dinosaurs. In reality, of the five big mass extinctions known in geologic history, it was the smallest with only 60 percent of all species disappearing, compared with 90 percent for the end-Permian extinction.

- Even the Late Ordovician mass extinction, of which few people outside paleontology circles are aware, had an extinction rate of 85 percent of all species. All of a sudden, the end of the dinosaurs seems paltry by comparison!
- Volcanoes associated with mantle plumes, like Kiluaea, generally spew out viscous lavas having silicon levels close to 65%.
- Scientists seeded a portion of the southwestern Atlantic with iron, expecting the phytoplankton to bloom and take CO<sub>2</sub> out of the atmosphere, then take the carbon to the ocean floor when they died. What they didn't expect was a proliferation of tiny shrimp that ate the algae, thus keeping the CO<sub>2</sub> in the water column.

### GALEY FUND

In the late 1990s, in an effort to encourage student involvement in the society's activities, PGS established a fund to supplement the costs of student attendance in Society functions. The fund was named after deceased PGS honorary member John Galey, who was a strong supporter of geologic education. Since its inception, the fund has been used to supplement the fee for students' dinners at the monthly meetings and fees for students to attend the Spring field trips. In addition, contributions to the Galey fund have allowed PGS to present the annual "So You Want to be a Geologist" and "Tools of the Trade" workshops. These workshops—presented by dedicated PGS volunteers—have been invaluable sources of knowledge and are well appreciated by both students and organizations who hire entry-level geologists. The Galey Fund depends on contributions from individuals and entities who are interested in advancing the education of our next generation of geoscientists. PGS gladly accepts monetary donations to the fund in any amount. If interested, please send your contributions to Steve McGuire, PGS Treasurer, PO Box 58172, Pittsburgh PA 15209. Make checks payable to PGS. Thank you for your support.

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*If you have news items you would like included in the PGS Newsletter, please send them to Bob Burger at [r.burger@verizon.net](mailto:r.burger@verizon.net).*

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### **Other PGS Positions**

**AAPG Delegate:** Dan Billman  
**Newsletter Editor:** Robert Burger

**Webmaster:** Mary McGuire

**Historian:** Judy Neelan

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

**Programs:** If you would like to make a presentation at a PGS meeting, please contact Mary Ann Gross, Program Chair at (412) 721-3499 or email at [magrosspgs1@verizon.net](mailto:magrosspgs1@verizon.net).

**News items:** To submit a news item in the PGS Newsletter, please contact Robert Burger at (412) 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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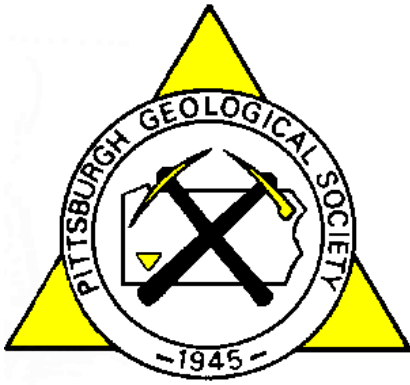
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PO Box 58172  
Pittsburgh PA 15209



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

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Vol. LXII, No. 2

Robert Burger, Editor

October, 2009

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**Wednesday, October 21, 2009**  
Pittsburgh Geological Society presents

## **COAL AND ITS ROLE IN SHAPING U.S. ENERGY POLICY**

by Maurice Deul, Consultant

Formerly with the US Geological Survey, US Bureau of Mines, University of Pittsburgh

Coal will be the essential fuel for the fifty to one hundred years during which the USA will transition from a hydrocarbon-fueled economy to a nuclear-fueled economy. The internal combustion engine, operating at about 17 percent fuel efficiency, will inevitably be replaced by the electric driven motor operating at more than 90 percent efficiency. Coal generated electricity, using modern steam turbines operating at more than 40 percent fuel efficiency, will yield a fuel efficiency of at least 36 percent; compared with the internal combustion engine, electric vehicles will need half the fuel. Since more than half the petroleum used by the USA is for transportation, it is clear that coal-powered electric vehicles will produce less carbon dioxide than conventional hydrocarbon-powered vehicles.

With the current public abhorrence of coal this is an unlikely scenario. Much of the criticism of coal has been well deserved. The coal industry and its major customer, the electric utilities, have objected to almost every call for improvement of environmental issues—from sulfur dioxide reduction to control of fly ash disposal, from cessation of mountain top removal to mercury control.

The coal industry, long the ‘whipping boy’ of the extractive industries, has developed an inferiority complex, striving to keep coal a ‘cheap’ fuel so that it can compete successfully with petroleum and natural gas. But compared with the wild fluctuations in the cost of those fuels, coal remains the affordable fuel for power generation even when all the desirable environmental clean-up is included.

A view is offered as to why the Department Of Energy (DOE), long touted as the builder of the road to ENERGY INDEPENDENCE, continues to fail in providing a viable Energy Policy. The Federal Energy Policy acts of 1992 and 2005 mainly opened the US Treasury to support subsidies and generally ineffective ‘earmarked’ research grants.

It is not easy to promote dependence on the coal mining industry and the electric utilities to carry the burden of providing the fuel we will need to sustain us until we reach the nuclear age, a century and a half after the establishment of the Atomic Energy Commission. What other choices are there?

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**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, Green Tree.**

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# Pittsburgh Geological Society

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## CALL FOR PARTICIPATION

PGS and the GSA are looking for parties interested in helping to plan the 2011 joint NE-NC GSA section meeting, 20-22 March 2011, to be held at the Omni William Penn Hotel. Volunteers are needed to staff committees, plan events, lead field trips, advocate theme sessions, and the like. Please help showcase the dynamic geologic community in which we reside. Send note of interest to Patrick A. Burkhardt, PhD, general meeting co-chair, [patrick.burkhardt@sru.edu](mailto:patrick.burkhardt@sru.edu).

## STRAY GAS WORKSHOP

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The registration deadline is October 16. The fee is \$150.00 and includes the workshop, evening Reception, and the first day’s lunch. Please visit <http://www.pittsburghgeologicalsociety.org/straygas/registration1.htm> to register. For information, visit [http://pa.water.usgs.gov/stray\\_gas/](http://pa.water.usgs.gov/stray_gas/).

### DON'T FORGET TO RENEW

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## ORIGINS OF WESTERN PA PLACE NAMES

Venango County was named for French Creek, which flows into the Allegheny River at Franklin. Originally called “Venango,” the name was inadvertently changed by George Washington who apparently didn’t know the Native American name. The word *venango* is a corruption of *onengo* (or *winingus* in the Delaware tongue) meaning “a mink,” probably because of a substantial mink population in the area. Venango County is home to the Drake Well, completed on August 27, 1859 (150 years ago this year) at a depth of 69.5 feet. The Drake Well is considered to have ushered in the modern petroleum industry.



*Image of Pine Creek outcrop in Moon Twp. PA.*

## CMNH FIELD TRIP

The Section of Geology and Invertebrate Paleontology of the Carnegie Museum of Natural History held its fall geology field trip to Moon Twp., PA on Saturday, September 26, 2009. During the morning, participants collected fossils—both plant and animal—from the Pine Creek member of the Glenshaw Formation, Conemaugh Group, which is middle Pennsylvanian age. The afternoon was spent examining the stratigraphy and depositional environments of the Casselman Formation, Conemaugh Group along Montour Road and FedEx road. PGS members may recall, this was stop 2 of the PGS field trip from last May—Geology and History along the Montour Trail. Although it was a wet day, fun was had by all.

## AAPG HONORS PGS MEMBERS

Several PGS members were honored at the AAPG Eastern Section Meeting in Evansville, Indiana this past September. Long-time PGS board-member and membership chair, John Harper, received the George V. Cohee Public Service Award. Dan Billman, who is PGS's delegate to the AAPG, was presented the Distinguished Service Award. Also of note was Lee Avary, who received PAPG's Honorary Membership Award.

### DID YOU KNOW . . . ?

- The Dead Sea is drying up, thanks to human causes. However, it's not because of climate change, but rather because people have been using the water from source tributaries faster than the sea can recharge.
- A 14-year-old German boy whose hand was grazed by a pea-sized meteorite in June was only the second person on record who was actually hit by one of these heavenly bodies.
- The "lizard-hipped" (saurischian) dinosaurs that gave rise to the birds weren't the only ones with feathers. A new dinosaur from China called *Tianyulong confuciusi* is the first known "bird-hipped" (ornithischian) dinosaur to show evidence of having protofeathers.
- We are currently living in "icehouse" conditions, a period of fluctuating cold climates that allow glaciers to form. The present "icehouse" period began about 33.5 million years ago.
- The Amazon River is about 11.5 million years old, based on sedimentation rates.
- We are currently in a global natural gas glut, but the timing, duration, and extent of the oversupply will vary between regions and have different implications for different buyers and sellers.
- A hole drilled a few hundred feet within the supposed feather edge of the Triassic rocks of the Newark-Gettysburg Basin in Pennsylvania penetrated about 800 ft of Triassic strata, showing that the southeast margin of the Triassic basin is not a simple overlap.
- Researchers have reaffirmed earlier research that showed amino acid sequences of a protein from collagen extracted from a 68 ma *Tyrannosaurus rex* fossil closely matches that of a chicken. Anyone for Rex Parmesan?

- The Sangamon arch is a broad, southwest-trending structure in west-central Illinois that was formed by upward warping during the Silurian and Devonian.
- Thanks to a magnitude-7.6 earthquake that hit New Zealand in July, South Island is 30 centimeters (a foot) closer to Australia than it was in June.
- The Gettysburg basin in south-central Pennsylvania is a remnant of a much larger basin that formed and filled during the early Mesozoic in response to the break-up of the super continent, Pangea, and was deformed near the end of the Jurassic.
- Galileo sited and documented the planet Neptune 230 years before it was discovered. The great Italian genius noted its position in his journal, but thought it was a star.
- Japanese researchers documented dust from northwestern China that literally traveled around the globe in only 13 days before being deposited in the northwestern Pacific. The reason? It blew high into the atmosphere, between five and six miles.
- Solar radiation changes regularly in cycles. Every 11 years (approximately) the sun's radiant energy peaks and helps drive Earth's climate.
- One of the problems relating ophiolites to oceanic crust is that thick ophiolites call for large magma chambers beneath mid-ocean ridges, but so far seismic soundings of mid-ocean ridges has only revealed a few, relatively thin magma chambers beneath these features.
- The element name platinum is derived from the Spanish term *platina del Pinto*, meaning "little silver of the Pinto River."

### PGS Website of the Month

<http://www.bernardine.com/gemstones/rhodochrosite.htm>

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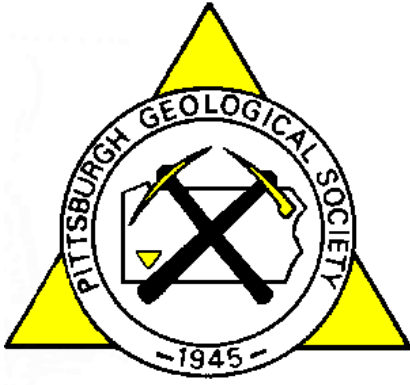
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Vol. LXII, No. 3

Robert Burger, Editor

November, 2009

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**Wednesday, November 18, 2009**  
Pittsburgh Geological Society presents

## **Continuing Education Impacts on Pennsylvania Geologists and PCPG's Young Geologist Initiatives**

by Rhonda Hakundy-Jones  
Pennsylvania Council of Professional Geologists

This talk will address several issues that are currently impacting geologists in Pennsylvania. Questions most often received by the Pennsylvania Council of Professional Geologists (PCPG) pertain to whether or not Professional Geologists (P.G.s) are currently required to earn Continuing Education Units (CEUs) in Pennsylvania and, if not, when will they be required. The two different situations that are presently occurring with regard to continuing education will be explained.

- 1) Continuing education regulations are being addressed by the Pennsylvania State Licensing Board for Professional Geologists, Engineers, and Land Surveyors.
- 2) Legislation regarding continuing education is also before the Pennsylvania Senate, Consumer Protection and Professional Licensure Committee.

PCPG is also promoting a *Young Geologist Initiative* in which they are reaching out to Earth Science and Environmental Science majors in colleges and universities throughout Pennsylvania. PCPG is initially communicating with its members' alma maters regarding the disposition of their earth science programs with concerns about anecdotal information that core geology courses are being cut from these programs and being replaced by more broad-based environmental courses.

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# Pittsburgh Geological Society

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## PTTC / PGS / PAPG WORKSHOP

On Tuesday, December 8, 2009, Chris Laughrey, formerly of the Pennsylvania Geological Survey and now with Weatherford Laboratories, will be presenting a workshop entitled *Applied Petroleum Geology and Geochemistry for Thermogenic Shale-Gas Evaluation—A Primer Focused on Marcellus Exploration and Development in the Appalachian Basin*.

Attendees will be introduced to many of the petrologic and geochemical tools needed for shale-gas evaluation and how they are used to evaluate shale-gas reservoirs and resources. Emphasis is placed upon, and specific examples will be chosen from, the Marcellus Shale, Utica Shale, and other Devonian black shales in the Appalachian basin. The workshop will take place December 8 from 8:30 a.m. to 4:30 p.m. at the Hilton Garden Inn Southpointe in Canonsburg. Attendance fee is \$150 for PGS or PAPG members and ranges up to \$200 for non-members. A limited number of seats are available to students for \$50. Call 412-721-3499 for availability. A Certificate for six (6) Professional Development Hours will be issued at the end of the day.

To register, fill out the form included with this newsletter and return it to Tracee Imai, PAPG Treasurer, 1007 Maple Avenue, Turtle Creek, PA 15145 with your check made payable to PAPG by December 1, 2009. For further information contact Doug Patchen at 304-293-2867, x5443 or Mary Ann Gross at 412-721-3499 / [magrs@yahoo.com](mailto:magrs@yahoo.com).

## ORIGINS OF WESTERN PA PLACE NAMES

When the French came to western Pennsylvania, they labeled the area now known as Washington, PA *Wissameking*, meaning "catfish place." The area was settled by Scots/Irish immigrants and families from eastern and central parts of colonial Virginia around 1768. On March 28, 1781, the Pennsylvania General Assembly passed an act

erecting the County of Washington and naming *Wissameking* as the place for holding the first election. It was the first county in the US named in honor of President Washington. David Hoge laid out a plan of lots immediately after the legislature's action, and his original plan used the name "Bassett, alias Dandridge Town." Before the plot was recorded, "Bassett, alias Dandridge Town" was crossed out and "Washington" was written above. Washington, PA is the type locality of the Washington Formation of the Dunkard Group, as well as the Washington and Little Washington coals.

## DID YOU KNOW . . . ?

- The International Union of Geological Sciences recently reset the base of the Quaternary Period (and, thus, the Pleistocene Epoch) from 1.8 MA to 2.6 MA, at the point where the planet actually began to cool.
- The previous, traditional, Pliocene/Pleistocene boundary had been arbitrarily calibrated to an outcrop in southern Italy.
- Scientists have determined that some plants duplicated their DNA (became polyploidy) around 65 Ma, making them better adapted in the dramatically altered environment of the KT extinction event.
- Experts are predicting that the popularity of the new hybrid automobiles will severely tax the supply of rare earths, such as neodymium, unless new suppliers enter the market.
- Neodymium is found in its most significant quantities in the minerals monazite and bastnäsite, typically accompanied by other rare earth element.
- A brief cold-warm-cold climate occurred in North America during the middle Wisconsinan glaciations, between 39 Ka and 43.5 Ka, as determined by fossil beetles and wood collected from an excavation in Titusville, PA.
- New research indicates that the corn and other plant used to make biofuels consume three times more water than was previously thought. Estimates indicated it can take as much as 2,100 gallons of water to make a gallon of corn ethanol.

### PGS Website of the Month

<http://www.nps.gov/archive/glac/resources/geology.htm>

- The US National Climatic Data Center, which monitors global temperatures, indicates that worldwide water temperature in June was 62.58°F, the warmest on record.
- The Jacksville esker in Lawrence and Butler Counties was deposited in a subglacial tunnel during the Kent glaciations about 23,000 years ago.
- Andrew Carnegie wasn't just your average steel-making robber baron. He also had ties with the early oil industry in Venango County.
- Cornwall-type ores are ore deposits found in southeastern Pennsylvania formed where diabase sills and dikes came into contact with limestone.
- The US ranks third, behind Indonesia and Japan, in the number of historically active volcanoes; in fact, about 10% of the more than 1,500 volcanoes that have erupted at least once in the past 10,000 years are located in the US.
- Geologists estimated that, prior to any mining, Pennsylvania had coal reserves totaling more than 107 billion tons, of which 84 billion tons were of bituminous and 23 billion tons were of anthracite and semianthracite.
- Poor water quality might be the result of human activities, but in many places it is a natural degradation as the result of minerals dissolved from the aquifers in which the water travels and is stored.

### PGS MEMBER NEWS

Carnegie Museum of Natural History (CMNH) geologists Albert D. Kollar and David K. Brezinski recently made a new discovery in Elk County, PA. In 1983 British paleontologists D.E.G. Briggs and W.D.I. Rolfe described the world's largest fossil arthropod trackway which had been discovered in 1948 by former CMNH employee James Kosinski and his brother while hunting in Elk County, Pennsylvania. The 7.5-foot long trackway is on exhibit in the CMNH Benedum Hall of Geology. Questions remained about the exact age of this fossil even when Briggs and Rolfe suggested it was Mississippian age. Kollar and Brezinski visited this site in October and discovered that the track was indeed preserved in early Pennsylvanian Homewood Sandstone, clearly indicating a fluvial if not a terrestrial habitat for this ancient sea scorpion.

On Friday, October 30, Albert D. Kollar spoke at the Sewickley Senior Men's Club (85 members in attendance) on the Geology and History of the Montour Trail. Kollar will lead a geology bicycle trip along the Montour Trail on Sunday, November 22 from 10 a.m to 4 p.m. with Venture Outdoors. Kollar will also lead a geology hike on November 15 with the Nine Mile Run Watershed Association in Frick Park.

### DON'T FORGET TO RENEW

If you haven't already renewed your PGS membership for the 2009-2010 season, please take the time to do it now.

Fill out the membership application included with this newsletter and return it with your dues to John Harper at the address on the form. If you know anyone else who may be interested in joining our society, feel free to pass a form along to them.

### CALL FOR VOLUNTEERS

PGS and the GSA are looking for parties interested in helping to plan the 2011 joint NE-NC GSA section meeting, 20-22 March 2011, to be held at the Omni William Penn Hotel. Volunteers are needed to staff committees, plan events, lead field trips, advocate theme sessions, and the like. Please help showcase the dynamic geologic community in which we reside. Send note of interest to Patrick A. Burkhart, PhD, general meeting co-chair, [patrick.burkhart@sru.edu](mailto:patrick.burkhart@sru.edu).

### 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.

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*If you have news items you would like to include in the PGS Newsletter, please send them to Robert Burger at [r.burger@verizon.net](mailto:r.burger@verizon.net).*

**PTTC / PGS / PAPG Workshop**  
**“Applied Petroleum Geology and Geochemistry for Thermogenic Shale-Gas Evaluation  
– A Primer Focused on Marcellus Exploration and Development in the Appalachian  
Basin”**

**Tuesday, December 8, 2009**  
**Hilton Garden Inn Southpointe, Pittsburgh, PA**

**REGISTRATION FORM -**

Please complete for each registrant (attach duplicate forms if necessary):

NAME: \_\_\_\_\_

COMPANY: \_\_\_\_\_

STUDENT – SCHOOL ATTENDING: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP CODE: \_\_\_\_\_

E-MAIL: \_\_\_\_\_ PHONE: (\_\_\_\_\_) \_\_\_\_\_

PAPG member: \_\_\_\_\_ PGS member: \_\_\_\_\_ I wish to join: \_\_\_\_\_ (specify which society)

CHECK AMOUNT ENCLOSED (PAYABLE TO “PAPG”): \$ \_\_\_\_\_

**The registration fee for this workshop covers the entire workshop, including a notebook, continental breakfast, morning and afternoon breaks and lunch.**

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**Registration payment should be made by check and postmarked before December 1, 2009. *Walk-ins - accepted if space is available, and must be paid in full (\$250) by check.***

**\$150.00 - Pittsburgh Geological Society (PGS) members and members of the Pittsburgh Association of Petroleum Geologists (PAPG)**

**\$175.00 - Non-PGS or PAPG members** who wish to join either society, payment includes annual dues for one year. Specify which society you wish to join on your check and registration.

**\$ 50.00 - College/university students** - a limited number of discounted registrations are available for currently-attending students. Call 412 721-3499 for availability.

**\$200.00 - All others**

**Mail this Registration and your check (payable to “PAPG”) postmarked by December 1, to:**

Tracee Imai, PAPG Treasurer, at 1007 Maple Avenue, Turtle Creek, PA 15145  
Imai.Tracee@gmail.com / 412-825-3811

**For further information contact: Doug Patchen at 304-293-2867, x5443 or  
Mary Ann Gross at 412-721-3499 / [magrs@yahoo.com](mailto:magrs@yahoo.com).**

*No refunds will be issued after December 1.*

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### **PGS Board-of Directors**

**President:** Mike Forth  
**Vice President:** Mary Ann Gross  
**Treasurer:** Steve McGuire  
**Secretary:** Erica Love  
**Past President:** Patrick Burkhardt

**Director-at Large:** Danielle Deemer  
**Director-at Large:** Ray Follador  
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**Newsletter Editor:** Robert Burger

**Webmaster:** Mary McGuire

**Historian:** Judy Neelan

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

**Programs:** If you would like to make a presentation at a PGS meeting, please contact Mary Ann Gross, Program Chair at (412) 721-3499 or email at [magrosspgsl@verizon.net](mailto:magrosspgsl@verizon.net).

**News items:** To submit a news item in the PGS Newsletter, please contact Robert Burger at (412) 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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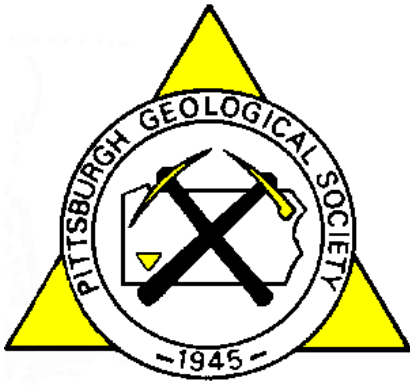
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PITTSBURGH GEOLOGICAL SOCIETY  
PO Box 58172  
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# PGS Newsletter

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

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Vol. LXII, No. 4

Robert Burger, Editor

December, 2009

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**Wednesday, December 16, 2009**  
**Pittsburgh Geological Society Celebrates the Holidays**  
**Annual Spouses/Guest Night**

## **COPPER CANYON, MEXICO** **INCISED INTO A VAST ASH-FLOW PLATEAU** **OF THE SIERRA MADRE OCCIDENTAL**

by Charles H. Shultz  
Professor Emeritus, Slippery Rock University

Imagine a river canyon with seven main branches that is 2,500 feet deeper than the Grand Canyon of Arizona. That's Mexico's Barrancas del Cobre or Copper Canyon. It is carved into thousands of feet of rhyolitic ash-flow tuffs (ignimbrites) of the Sierra Madre Occidental in the states of Sinaloa and Chihuahua. Ground transport into the area is only by way of the El Chihuahua al Pacifico Railroad, dedicated in 1961 and considered one of the finest engineering wonders of the world. It begins in the west near the Gulf of California at Los Mochis and extends 406 miles east through 86 tunnels and 39 bridges to reach Chihuahua City. At the west-facing escarpment of the Sierra Madre it climbs 7,400 feet over 120 miles, requiring a curving 180-degree tunnel and a 360-degree loop over itself (one of only three in North America). The high country is the Land of the Tarahumara native peoples renowned for their long-distance running ability. The rhyolitic tuffs belong to the Upper Volcanic Supergroup dated 34 to 27 Ma (Late Eocene and Oligocene). The tuffs were produced from hundreds of nested and cross-cutting calderas. These eruptions were of enormous scale, perhaps unprecedented in Earth history, resulting in an ash-flow plateau 750 miles NW-SE and up to 150 miles wide. My slides will show the vast beauty of the scenery, the Tarahumara, the railroad, Mexican settlements from tiny villages to large cities (Chihuahua), and a spectacular vehicle trip down 7,000 feet to the depths of Copper Canyon. Excellent outcrops of the rhyolitic tuffs are exposed along the way. Come and enjoy—you won't be disappointed.

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

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

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

Dinner will cost **\$25.00/person, students \$5.00**; checks preferred. **Reservations should be emailed to Steve McGuire at [smcguire@chesterengineers.com](mailto:smcguire@chesterengineers.com)**, please title as "PGS Dinner Reservation." If you are unable to use email, call (412) 809-6723 and leave your name and number of reservations needed by **noon, Monday, December 14.**

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

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# Pittsburgh Geological Society

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## PETE BRIGGS LIBRARY SALE

Submitted by Judy Neelan

As many of you know, long-time PGS member Pete Briggs passed away earlier this year. He left behind a library consisting of books, folios, and maps. His wife, Rete, asked if PGS could collect the library as she is preparing the house for sale. PGS members Ed Girard, Frank Benacquista, and Judy Neelan did so and are planning to begin the process of distributing the library by having a sale of the books and folios at two PGS meetings beginning with the December meeting. As there are many maps, they will be available at a later date once they have been sorted through.

The library will be set out on tables at 6:00 at the December and January meetings. At this time, books have been set at a price of \$5.00 each. The price of folios is yet to be determined. All proceeds collected from the sale will be sent to Rete Briggs. Cash will be accepted, although checks are preferred with the subject line saying "Pete Briggs library". Please make checks out to Frank Benacquista who will then collect all the proceeds and send Rete Briggs one final check. Any questions, call Judy Neelan at 412-442-4087.

## ORIGINS OF WESTERN PA PLACE NAMES

The town and township of Gallitzin in Cambria County were named in honor of Rev. Dr. Demetrius Augustine Gallitzin, a Catholic priest (1770-1840). Father Gallitzin had been a young Russian prince who was sent to the United States in 1792 to be educated. He renounced his wealth, was ordained in 1795, became a zealous Roman Catholic missionary, and never returned to Russia. He decided to build a spiritual empire by establishing a frontier mission in the wild, inhospitable region of the Alleghenies. He founded Loretto, home of St. Francis University. His church in Loretto was, for a while, the only Catholic church between Lancaster, PA and St. Louis, MO. Gallitzin is home to the geological and engineering wonders of Horseshoe Curve, the Allegheny Portage Railroad, and the Gallitzin tunnels. It is also the type locality of the Gallitzin coal (Pennsylvanian, Conemaugh Group, Glenshaw Formation).

## 8th ANNUAL STUDENT NIGHT 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 Eighth Annual Student Night joint meeting of the Association of Engineering Geologists, the Pittsburgh Geological Society, and the Geotechnical Group of the Pittsburgh Section of the American Society of Civil Engineers.

Abstracts on the following topics are welcome:

- Geology,
- Engineering Geology,
- Petroleum Geology
- Geotechnical Engineering,
- Environmental Engineering,
- Hydrogeology,
- Hydrology

Three students will be selected to give 15-minute oral presentations based on their abstract submittal. Students not selected to give an oral presentation will be invited to present a poster summarizing their research work. **The 3 students selected to give oral presentations will receive monetary awards. The top 3 students who participate in the poster session will also receive awards.** All students who present their research, either orally or by poster will receive a one-year membership into PGS, a special award certification, and dinner that evening. Please limit abstracts to a maximum length of 350 words.

The meeting will be held at 6:00 p.m. on Wednesday, April 21, 2010 at Foster's Restaurant, Foster Plaza Bldg. 10, Green Tree, PA. Deadline for submittal of abstracts will be in early March. Notification will be given to selected speakers the following week. For further information, or to submit an abstract, please send an email to Mary Ann Gross at [magrosspgs1@verizon.net](mailto:magrosspgs1@verizon.net).

### PGS Website of the Month

<http://www.archaeologyinfo.com/evolution.htm>

## DID YOU KNOW . . . ?

- Researchers modeled the accuracy of the ecological niche of the North American Sasquatch. Interestingly, “Bigfoot’s” territory coincidentally matches that of the common black bear. Imagine that!
- Climate scientists studying streamflow records in the Pacific Northwest over the last 50 years say that the dry years are getting drier, which could lead to potential water supply problems if the trend continues.
- Widespread water has been detected on the surface of the Moon. Perhaps residents of the Pacific Northwest should sign up for the next lunar mission.
- If you are interested in obtaining a *Tyrannosaurus rex* skeleton for your rec room, the one they’ve been trying to auction off in Las Vegas is still for sale. The highest bid they received, \$3.6 million, was below the minimum bid price.
- The Rijksmuseum in the Netherlands just recently discovered that a “moon rock” from the Apollo 11 mission they acquired 21 years ago from the US ambassador is actually a piece of petrified wood. So much for international relations!
- Beauty and the Beast has a new, biogeological connotation—the root of the common rhododendron decreases the cohesion of its host soil enough to increase the risk of landslides during intense rains.
- A new study indicates that comets are not the causes of mass extinctions after all. The chances of one striking the earth more than once every 500 million years is small.
- Retroviruses have been co-evolving along with mammals for at least 100 million years.
- Eclogites, which are rocks formed in subduction zones, record peak conditions of over 200,000 psi and 1,292°F (indicating burial to 34 miles) and near-isothermal exhumation to 25 miles.
- If the US government ever gets around to rebuilding the country’s crumbling infrastructure (dams, levees, and tunnels as well as roads and bridges), the demand for non-fuel mineral resources such as aggregates and cement will skyrocket.

- The Mid-Ocean Ridge System, at more than 35,000 miles long, is the largest single volcanic feature on the planet.
- Most rocks and soils contain a small amount of uranium, between 1 and 3 ppm. Rocks with higher than average concentrations include igneous and metamorphic rocks, dark shales, and sedimentary rocks containing phosphate deposits.
- In contrast, MVT deposits in the Silurian Lockport Dolomite formed where metal-bearing brines intersected reduced sulfur of biogenic origin dissolved from evaporites in the overlying Salina Group and transported downward.
- Most stromatolites formed during the Archean and older Proterozoic by *in situ* precipitation of laminae, but most younger Proterozoic stromatolites grew by trapping and binding carbonate sediments.

## PGS MEMBER NEWS

Albert D. Kollar of the Carnegie Museum of Natural History led a geology cycling field trip in collaboration with Venture Outdoors along the Montour Trail on Sunday, November 22. The 24-mile trip commenced at the MacDonald Trestle. Stops were made at the Primrose RR cut to examine the Monongahela Group Fish Pot section and at the highest elevation along the Montour Trail—the National Tunnel section where the youngest rocks represented by the Lower Permian Dunkard Group are exposed. Lunch was taken at the Greer Tunnel and overlook of Chartiers Creek. See the full story in the Sunday, December 6, Pittsburgh Post-Gazette.

### **RENEW NOW TO AVOID MISSING A SINGLE ISSUE OF THE PGS NEWSLETTER**

If you have not yet renewed your PGS membership for the 2009-2010 season, please take the time to do it now. Fill out the membership application included with this newsletter and return it with your dues to John Harper at the address on the form by December 31 so you don’t miss receiving the next newsletter.



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### **PGS Board-of Directors**

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**Treasurer:** Steve McGuire  
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**Past President:** Patrick Burkhardt

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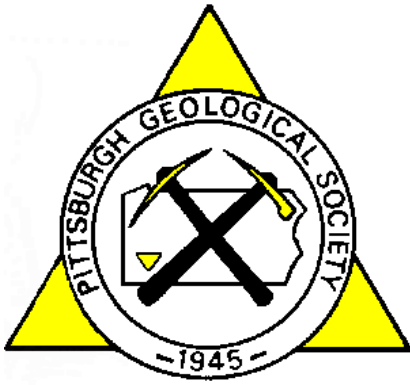
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# PGS Newsletter

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

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Vol. LXII, No. 5

Robert Burger, Editor

January, 2010

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**Wednesday, January 20, 2010**  
**Pittsburgh Geological Society**

## **Enigmatic boulder trains, supraglacial rock avalanches, and the origin of “Darwin’s Boulders” – Tierra del Fuego**

by Patrick A. Burkhart

Slippery Rock University, Department of Geography, Geology, and the Environment

Charles Darwin considered himself a geologist and published extensively on many geologic phenomena. He was intrigued with the distribution of erratic boulders and speculated upon their origins. In the *Voyage of the Beagle*, he described crystalline boulders of notable size and abundance near Bahia San Sebastian (BSS), south of the Straits of Magellan, Tierra del Fuego. Influenced by Charles Lyell’s reflections upon slow, vertical movements of crust, submergence, and ice rafting to explain drift, Darwin proposed that the boulders of BSS were ice-rafted. Benefiting from 170 years of subsequent study of the glacial history of Tierra del Fuego, petrography, and terrestrial cosmogenic nuclide measurements, we revisit the origin of “Darwin’s Boulders” at BSS. We suggest that they, as well as another train of boulders to the west at Bahia Inutil, represent rock falls of Beagle-type granite from the Cordillera Darwin onto glacial ice flowing into the Bahia Inutil-Bahia San Sebastian lobe. These supraglacial rock avalanche deposits were subsequently elongated into boulder trains by glacial strain during transport and then deposited upon moraines. The cosmogenic nuclide exposure dates support the correlation of Andean glaciations with the marine oxygen isotope record and the glacial chronologies recently proposed for Tierra del Fuego by others. In addition to the presentation on Darwin’s interpretations of the geology of Tierra del Fuego, conjectures upon what advice Charles Darwin would give to students will be offered. The master’s experiences in higher education, and science, mirror those of many geoscientists. Study of his words and actions, and his overall career, permits powerful inferences into how he might have advised today’s students to engage with the world.

Read the full article for this talk in *GSA Today* at: <ftp://rock.geosociety.org/pub/GSAToday/gt0912.pdf>.

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

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

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

Dinner will cost **\$25.00/person, students \$5.00**; checks preferred. **Reservations should be emailed to Steve McGuire at [smcguire@chesterengineers.com](mailto:smcguire@chesterengineers.com)**, please title as "PGS Dinner Reservation." If you are unable to use email, call (412) 809-6723 and leave your name and number of reservations needed by **noon, Monday, January 18**.

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

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# Pittsburgh Geological Society

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## UPDATE ON CEUs FOR PA PGs

The following is an excerpt from an article by Theodore Tesler that appeared in the fourth quarter 2009 newsletter of the Pennsylvania Council of Professional Geologists (PCPG).

The State Registration Board for Professional Engineers, Land Surveyors and Geologists took action at its meeting on November 18, 2009 to confront a lack of information regarding the status of Continuing Education (CE) requirements for the Commonwealth's Professional Engineers, Land Surveyors and Geologists. Under best-case conditions, it is estimated that the development of CE regulations will be complete in mid-2010 and that it will take approximately a full year for governmental review and approval. By voice vote, the Board unanimously approved a definitive statement that no CE hours will be required of our licensees until the beginning of the 2011 renewal cycle. CE hours will be required beginning in October 2011 with the first CE certification required with the 2013 renewal application. The 2013 renewal application will require that licensees certify that they have completed the required CE during the 2011 through 2013 licensing period.

Also, the Board's newsletters are currently posted and archived on the Pennsylvania Bureau of Professional and Occupational Affairs website at [www.dos.state.pa.us/bpoa](http://www.dos.state.pa.us/bpoa).

## COAL INDUSTRY SEMINAR

A seminar entitled "Coal Industry Land Law" will be held at the Radisson Hotel Pittsburgh on January 20, 2010. This one-day program is geared toward attorneys, title professionals, landmen, engineers, surveyors, and geologists. Sessions will be held regarding ownership of mineral rights and surface rights, and easements under PA law; coal ownership; rights to coalbed methane; and competition and conflicts between coal, oil and gas owners. For information call 715-835-5900 or visit [www.halfmoonseminars.com](http://www.halfmoonseminars.com). Cost: \$259 per individual. Pre-registration is recommended. Walk-in registration will be accepted if space is available.

## 8th ANNUAL STUDENT NIGHT 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 Eighth Annual Student Night joint meeting of the Association of Engineering Geologists, the Pittsburgh Geological Society, and the Geotechnical Group of the Pittsburgh Section of the American Society of Civil Engineers.

Abstracts on the following topics are welcome:

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Three students will be selected to give 15-minute oral presentations based on their abstract submittal. Students not selected to give an oral presentation will be invited to present a poster summarizing their research work. **The 3 students selected to give oral presentations will receive monetary awards. The top 3 students who participate in the poster session will also receive awards.** All students who present their research, either verbally or orally, will receive a one-year membership in PGS, a special award certificate, and dinner that evening. Please limit abstracts to a maximum length of 350 words.

The meeting will be held at 6:00 p.m. on Wednesday, April 21, 2010 at Foster's Restaurant, Foster Plaza Bldg. 10, Green Tree, PA. Deadline for submittal of abstracts is Friday, March 5. Notification will be given to selected speakers the following week. For further information, or to submit an abstract, please send an email to Mary Ann Gross at [magrosspgs1@verizon.net](mailto:magrosspgs1@verizon.net).

**PGS Website of the Month**

<http://pleistocenecoalition.com>

## STUDENT WORKSHOP

Submitted by Judy Neelan

It's time again for the *So You Want to be a Geologist* workshop! Sponsored by PGS for six years, it is a student's best source of strategies and knowledge for a future in the working community. Join four professionals for a few hours and learn about careers in geology, academic choices, finding and interviewing for jobs, and desirable professional behaviors. The workshop is tentatively scheduled for late February or early March, the date is yet to be determined. Watch for the announcement and details of the workshop on the PGS website.

## ORIGINS OF WESTERN PA PLACE NAMES

Greene County, Pennsylvania was named for Revolutionary War hero Major General Nathanael Greene, who began the war as a buck private and by the end was one of George Washington's most gifted and dependable officers. Greene County was created on February 9, 1796 from the southern portion of Washington County. The county lends its name to the Permian-age Greene Formation, stratigraphically the highest portion of the Dunkard Group and the youngest Paleozoic strata in the Appalachian basin.

## PETE BRIGGS LIBRARY SALE

Submitted by Judy Neelan

Many thanks to all who contributed to the Pete Briggs Library sale of books last month at PGS. Proceeds collected were donated to Pete's wife, Rita. Pete's maps, the remainder of folios, and selected books will be sold at the January meeting. Proceeds will again go to Rete Briggs. Many thanks to all who contributed!

## DID YOU KNOW . . . ?

- The last time the Earth's atmosphere had as much CO<sub>2</sub> as it does today was about 15 million years ago. Temperatures were significantly higher and sea level was as much as 121 feet higher than today.
- A team of researchers from China and England have discovered and described a new Jurassic pterosaur (flying reptile) that bridges the gap between earlier, longer-tailed species and the later, shorter-tailed ones. It has been named *Darwinopterus* (Darwin's wing) in honor of the great man's 200<sup>th</sup> birthday.

- Geologists from Australia and Illinois discovered 320-million-year-old amber in an Illinois coal seam. The chemistry of the amber, which must have come from a gymnosperm, is similar to that of flowering plants from the Mesozoic and Cenozoic.
- *Tyrannosaurus* may have been bigger than its modern bird relatives, but it appears the monster dinosaur was afflicted by the same kinds of parasites and diseases as our common mourning dove.
- Planetary scientists have located more than 400 new planets outside the Solar System since the search for exoplanets began.
- The Precambrian might have been a time of heightened nuclear threats! It has been speculated that concentrated uranium deposits washed out of continental rocks as the Earth's atmospheric oxygen level increased would have created natural fission reactions that could have had dire consequences for emerging life.
- Scientists have discovered a new form of the metalloid (part metal, part non-metal) element, boron. Called gamma-boron, it is almost as hard as diamond and more heat-resistant than diamond.
- Global warming has more consequences than just raising sea level and changing climate patterns. Melting glaciers are disgorging chemicals such as DDT, captured during 20<sup>th</sup> century snowfalls and stored in the ice, into nearby streams and lakes.
- Pennsylvania isn't the only place in North America where the race to develop shale-gas resources is heating up. Canada has numerous shale deposits that represent a potentially crucial source of increased gas supply.
- Biomarkers are individual organic constituents of sediments, sedimentary rocks, and hydrocarbons that are derived from biological precursors such as algae and bacteria. Biomarkers in hydrocarbons constitute the best evidence that the vast majority of oil and natural gas are biogenic in origin.

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*If you have news items you would like included in the PGS Newsletter, please send them to Robert Burger at [r.burger@verizon.net](mailto:r.burger@verizon.net).*

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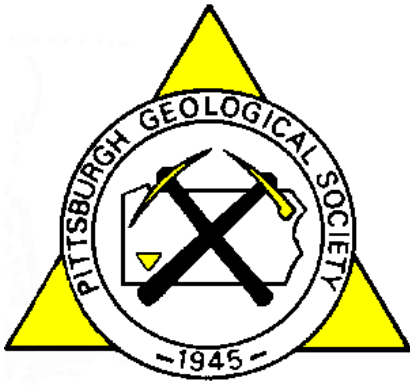
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# PGS Newsletter

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

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Vol. LXII, No. 6

Robert Burger, Editor

February, 2010

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**Wednesday, February 17, 2010**  
**Pittsburgh Geological Society**

## **Geophysical Borehole Logging in Massive Carbonates; Withmoyer Laboratories Superfund Site; Meyerstown, PA.**

by Bill Bour, Northern Virginia Community College and  
Craig B. Clemmens, Appalachian Geophysical Surveys

Craig B. Clemmens presenting

The Whitmoyer Laboratories Superfund site is located in the structurally complex Lebanon Valley in eastern Pennsylvania. The formations beneath the site are predominately carbonate units of middle Ordovician age; the Epler, the Ontalaunee and the Annville. The beds are relatively shallow dipping but overturned with younger Annville Formation overlain by older Ontalaunee and Epler.

Correlations within massive carbonate sequences are difficult because there typically are few distinct marker beds discernable to the naked eye. At this site we were fortunate to have available some 62 boreholes from earlier investigations left open as monitoring wells. Geophysical logs, particularly natural gamma, density and sonic, run in the existing monitoring wells revealed a few subtle anomalies which could be correlated among the deeper wells. The Ontalaunee-Annville contact was identified in two of the deeper wells by slight but consistent differences in density and sonic transit time. Success of these techniques was facilitated by the large number of wells with several hundred feet of exposed strata to compare.

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

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

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

Dinner will cost **\$25.00/person, students \$5.00**; checks preferred. **Reservations should be emailed to Steve McGuire at [smcguire@chesterengineers.com](mailto:smcguire@chesterengineers.com)**, please title as "PGS Dinner Reservation." If you are unable to use email, call (412) 809-6723 and leave your name and number of reservations needed by **noon, Monday, February 15.**

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

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# Pittsburgh Geological Society

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## 8th ANNUAL STUDENT NIGHT 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 Eighth Annual Student Night joint meeting of the Association of Engineering Geologists, the Pittsburgh Geological Society, and the Geotechnical Group of the Pittsburgh Section of the American Society of Civil Engineers.

Abstracts on the following topics are welcome:

- Geology (all aspects),
- Engineering Geology,
- Petroleum Geology
- Geotechnical Engineering,
- Environmental Engineering,
- Hydrogeology,
- Hydrology

Three students will be selected to give 15-minute oral presentations based on their abstract submittals. Students not selected to give an oral presentation will be invited to present posters summarizing their research work. **The 3 students selected to give oral presentations each will receive monetary awards. The top 3 students who participate in the poster session will also receive awards.** All students who present their research, either verbally or orally, will receive a one-year membership in PGS, a special award certificate, and dinner that evening. Please limit abstracts to a maximum length of 350 words.

The meeting will be held at 6:00 p.m. on Wednesday, April 21, 2010 at Foster's Restaurant, Foster Plaza Bldg. 10, Green Tree, PA. Deadline for submittal of abstracts is Friday, March 5. Notification will be given to selected speakers the following week. For further information, or to submit an abstract, please send an email to Mary Ann Gross at [magrosspgs1@verizon.net](mailto:magrosspgs1@verizon.net).

### PGS Website of the Month

<http://daveslandslideblog.blogspot.com/2009/12/landslides-in-oregon.html>

## STUDENT WORKSHOP

It's time again for the *So You Want to be a Geologist* workshop! Sponsored by PGS for six years, it is a student's best source of strategies and knowledge for a future in the working community. Join four professionals for a few hours and learn about careers in geology, academic choices, finding and interviewing for jobs, and desirable professional behaviors.

The workshop will be held on February 27, 2010 from 10:00 a.m. to 3:00 p.m. at the PA Department of Environmental Protection, 500 Waterfront Drive, Pittsburgh 15222 (Washington's Landing). The cost is free to students, and lunch (pizza and soft drinks) will be provided. Dress is casual. The course is limited to 25 students. RSVP to Judy Neelan at 412 442-4087 by February 19 to reserve your space.

## ORIGINS OF WESTERN PA PLACE NAMES

The Mahoning sandstone member and its associated coal (Glenshaw Formation, Conemaugh Group) were named by the First Geological Survey of Pennsylvania under Henry D. Rogers. Since Rogers' massive two-volume work wasn't published until 1858, however, credit for the first publication of the name goes to J. Peter Lesley in his *Manual of Coal*, published in 1856. The name comes from Mahoning Creek, which flows from Jefferson and Indiana Counties to the Allegheny River near Templeton in Armstrong County. The name Mahoning derives from the American Indian word for "at the lick", referring to a place where wildlife go to get a drink of water. Mahoning Creek originally was called Mohulbuctetam Creek, meaning "where canoes are abandoned".

## NEXT MONTH'S MEETING

Our next meeting will feature AAPG Distinguished lecturer Martin Perlmutter from Chevron who will present *High Frequency Paleoclimate Change: Impact on Exploration Strategy and Climate Research*. It will be a joint meeting with the PAPG and held on April 1st at the Radisson Hotel in Greentree. **Please note that this is a change in the usual location and date of our PGS monthly events.**

## **PGS SPRING FIELDTRIP**

For this year's fieldtrip, PGS will head east to Johnstown, PA to tour areas significant to Pennsylvania's famous dam disaster, the Johnstown flood of 1889. The geology of the area will be discussed, as well as its contribution to the flood. The tour will begin at the Southfork Dam site, with a visit to the Museum and lakeside cottages for an overview of the tragedy. Afterwards, participants will travel into Johnstown and ride the incline to the top of the hill where they will be treated to a spectacular and revealing view of the city. From this view, it's clearly illuminated why there was such devastation and a large number of casualties. The trip will finish at the cemetery with unmarked graves holding the remains of Johnstown flood victims.

The fieldtrip will take place on Saturday, May 1. More details will follow in the next newsletter.

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

- New studies on Precambrian banded iron formations indicate these ubiquitous marine deposits were formed by the interaction between hydrothermal fluids and seawater at the sea surface, rather than by microorganisms.
- German scientists are speculating that the great end-Permian mass extinction, in which about 90% of all species died out, was caused by halogenated gases produced by microbes living in giant salt lakes. Large amounts of the gases in the atmosphere might have undermined plant systems, causing desertification that would have led to eventual mass extinction.
- This is important to note because global warming advocates predict an increase in the surface area of today's salt lakes, salt marshes, and salty lagoons.
- At room temperature, the density of rock salt (halite) at a confining pressure of 5 kilobars increases about 2%. Even at depths as great as 60,000 feet, rock salt does not change its density appreciably.
- During the 17<sup>th</sup> Century, German chemist Georg Stahl determined to find out how Moses could have turned the golden calf into "bitter water" in the story of Exodus. He found that gold dissolves in aqueous solutions prepared by heating a mixture of sodium sulfate and charcoal.

## **STRAY GAS CONFERENCE PRESENTATIONS AVAILABLE**

A Stray Gas Workshop was held on November 4-6, 2009 here in Pittsburgh sponsored by the U.S. Geological Survey Pennsylvania Water Science Center in cooperation with the Office of Surface Mining, Reclamation, and Enforcement, U.S. Department of the Interior, PA Department of Environmental Protection and the Pittsburgh Geological Society. This workshop focused on the scientific basis for the assessment and analysis of stray or fugitive gases such as methane (the primary component of natural gas) or carbon dioxide.

Tools and strategies for investigating stray gases, along with case studies, were presented by scientists and specialists whose work has focused on the origins, migration, and accumulation of gases. The workshop presentations had emphasis on carbon dioxide and methane; the implications for safety, mitigation, and management of subsurface resources also were addressed.

You are invited to view the presentations from the workshop on the USGS website under the "Workshop Presentations" tab at [http://pa.water.usgs.gov/stray\\_gas/](http://pa.water.usgs.gov/stray_gas/).

## **PGS MEMBER NEWS**

Albert D. Kollar will present *The Geology that Underlies Squirrel Hill, Frick and Schenley Parks*. Squirrel Hill Historical Society, Sixth Presbyterian Church, February 9, 7:30 p.m.

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

The North American Coalbed Methane Forum will hold its Spring session on April 28 – 29, 2010 at the Hilton Garden Inn Pittsburgh, Southpointe near Canonsburg, PA. This year the forum is celebrating its 25th anniversary. The forum, which is titled *Coalbed Methane—from Prospect to Pipeline*, will consist of two day-sessions with presentations covering technical, regulatory, and legal aspects of coalbed methane development and production.

For more information, contact Ihor Havryluk at 412-445-5803, [havryluk@zoominternet.net](mailto:havryluk@zoominternet.net) or Dr. Kashi Aminian at 304-293-7682 ext. 4, [khashayar.aminian@mail.wvu.edu](mailto:khashayar.aminian@mail.wvu.edu), or visit the website [www.nacbmforum.com](http://www.nacbmforum.com).



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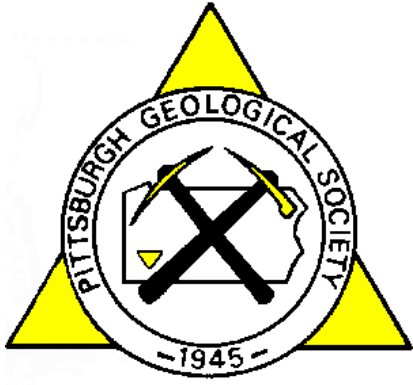
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# PGS Newsletter

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

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Vol. LXII, No. 7

Robert Burger, Editor

March, 2010

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**Thursday, April 1, 2010**

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

*At the Radisson Hotel—Greentree*

## **High Frequency Paleoclimate Change: Impact on Exploration Strategy and Climate Research**

by **Martin Perlmutter**, Chevron Corporation  
AAPG Distinguished lecturer

Orbital cycles alter insolation, which produces climate, sediment yield, lake and sea level cycles. The greatest insolation changes occur at the scale of precession (~20 kyrs) during periods of high eccentricity. Within a hemisphere, the climatic response of a specific region is a function of the phase of the insolation cycle and the paleogeography of the region. Some areas can become wetter while others become drier at the same point in an insolation cycle. Climate cycles affect the type and rate of sediment weathering and transport, the sediment produced, grain sizes, and yield. Analysis of yield as a function of climate indicates that volume can vary by more than an order of magnitude depending on the conditions. Therefore, a climate cycle can produce a distinct sediment supply cycle whose nature is dependent on the regional climate succession. An added complexity, similar in some respects to the systematics of annual seasonality, is that precession-scale insolation cycles cause the warmest (or coolest) conditions in the Northern and Southern Hemispheres to be about 10 kyrs out of phase. This is significant because the affects of glacioeustasy, also a function of insolation and climate, are global. Prior to the Plio-Pleistocene, the common glacial state was a unipolar icecap. Under this condition, eustasy tended to track the precession-scale insolation cycle of the glaciated hemisphere. The results were that similar

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**SOCIAL HOUR - 5:00 P.M.**

**DINNER - 6:00 P.M.**

**PROGRAM - 7:00 P.M.**

To register, visit <http://papgrocks.org>, or contact Katie Schmid at [kschmid3@gmail.com](mailto:kschmid3@gmail.com) or 412-807-1077.  
**\$30.00/person through the website (Paypal) and at the door, students \$5.00**

Please make your reservations by **noon, Tuesday, March 30.**

**Please note change in normal meeting time and location. April 1, dinner at 6:00 p.m. at the  
*Radisson Hotel in Greentree.***

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climatic successions in opposite hemispheres had yield cycles with distinctly different phase relationships to glacioeustasy. Such differences would not exist in an icefree world. Understanding the inherent paleoclimatic and stratigraphic variability of a system helps improve depositional models and interpretation and reduces the uncertainty associated with exploration analyses. For example, by taking into account the interaction of sediment yield and sea level, exploration areas that are prone to the development of sand-rich submarine fans or deltas can be forecast and high graded. The same approaches can be used for lacustrine regimes. Additionally, evaluating the stratigraphic record and recognizing that these types of variability occur and mapping them in an accurate chronologic framework will greatly assist paleoclimate modelers by ensuring that simulations are run with the appropriate input parameters and by validating their simulations at the appropriate timescales.

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## Pittsburgh Geological Society

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### PGS SPRING FIELDTRIP

For this year's fieldtrip, PGS will head east to Johnstown, PA to tour areas significant to Pennsylvania's most famous dam disaster, the Johnstown flood of 1889. The geology of the area will be discussed, as well as its contribution to the flood. The tour will begin at the Southfork Dam site, with a visit to the Museum and lakeside cottages for an overview of the tragedy.

Afterwards, participants will travel into Johnstown and ride the incline to the top of the hill where they will be treated to a spectacular and revealing view of the city. From this view, it's clearly illuminated why there was such devastation and a large number of casualties. The trip will finish at the cemetery with unmarked graves holding the remains of Johnstown flood victims.

The fieldtrip will take place on Saturday, May 1. Full details, including fees and departure information will be advertised in early April.

### ORIGINS OF WESTERN PA PLACE NAMES

Westmoreland County was formed in 1773 from that part of Bedford County lying west of Laurel Hill. Following the tradition of the time, the county was named for a county in England. One historian waggishly said the name was very appropriate because it lay to the **west** and had **more land** than had been occupied up to that time.

### NEXT MONTH'S MEETING

The April meeting of the PGS will be the 8th Annual *Student Night*, which will be held jointly with the Association of Engineering Geologists and the Geotechnical Group of the Pittsburgh Section of the American Society of Civil Engineers. Several senior and graduate level geology and geotechnical engineering students prepared and submitted abstracts related to their disciplines for review. Judges from each of the above organizations reviewed the abstracts and selected winners. At this meeting, the authors of the three most outstanding abstracts will talk about their research projects. In addition, several of the runner-up students will show posters summarizing their research work. The meeting will be held at 6:00 p.m., Wednesday, April 21, 2010 at Foster's Restaurant, Foster Plaza Bldg. 10, Green Tree, PA.

### FOSSIL AMPHIBIAN FROM WESTERN PA: SIGN OF WARMING CLIMATE 300 MYA?

For those PGS members, who participated in the 2009 spring field trip led by Albert D. Kollar, geologist, Carnegie Museum of Natural History, you saw history in the making. On Monday, March 15, 2010, a paper, *A New Trematopid Amphibian (Temnospondyli: Dissorophoidea) from the Upper Pennsylvanian of Western Pennsylvania: Earliest Record of Terrestrial Vertebrates Responding to a Warmer, Drier, Climate*, was published in the Annals of the Carnegie Museum, describing a 300 million year old museum quality fossil amphibian skull, discovered by Mr. Adam Striegel, then a student at Pitt. The authors, all of the Carnegie Museum of Natural History, David S. Berman, Amy C. Henrici, David K. Brezinski, and Albert D. Kollar,

### PGS Website of the Month

<http://astrobiology.nasa.gov/ask-an-astrobiologist/>

examined the late Pennsylvanian-age rocks of western Pennsylvania from which the skull was preserved. In their hypothesis, they suggest that the late Pennsylvanian climate was a time of warm and dry and may have contributed to the evolution of amphibians onto land. Amphibians evolving out of the late Devonian Ice Age, when the climate was cool and wet, eventually became fixed land creatures in the late Paleozoic Permian Period.

*Fedexia striegeli* belongs to the family Trematopidae that represents amphibians living on land. So why would we find this Trematopidae in the Pennsylvanian Period? The rock types of western Pennsylvania, coals, sandstones, shales, both marine and freshwater limestones, and red beds, are indicators of the shifting climate zones when Pittsburgh was centered near the equator while glaciers were occupying the polar regions of the earth. The shift in the early Pennsylvanian Period climate of wet and warm produced abundant economic coals by the end of Freeport Coal deposition. Commencing with Conemaugh deposition, the climate started to dry out. What we see in the rock types are thin-bedded limestones and red beds. This arid climate peaked in the late Conemaugh with the red beds being replaced with fresh water lakes—the time when the amphibian *Fedexia striegeli* was living on land.

### CALL FOR NOMINEES

PGS is calling on the membership for interested candidates for next year's officer and director-at-large positions. Three director-at-large positions need to be filled. These positions are for a two-year term 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 society's monthly operations 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), (724) 744-0399 or John Harper at [jharper@state.pa.us](mailto:jharper@state.pa.us). 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 . . . ?

- A team of Scottish students has engineered a strain of bacteria that glow green when they come into contact with landmines.
- New seismic data indicate that the mantle plume that created the Hawaiian Islands is currently situated directly beneath the island of Hawaii and extends at least 937 miles into the mantle.
- A district court justice has ruled that the U.S. Army Corps of Engineers is liable for failure of part of the levee system in New Orleans during Hurricane Katrina. If uncontested or denied upon appeal, the Corps could be responsible for billions of dollars in damages and punitive penalties.
- Decreases in CO<sub>2</sub> and water vapor during the Middle Devonian, resulting from the inception of terrestrial plant ecosystems, enabled a series of long-term glacial-interglacial cycles that lasted from the Late Devonian through the Permian.
- The Consiglio Nazionale delle Ricerche, Italy's National Research Council, has received much criticism due to its helping to fund and promote a creationist book by the agency's vice president.
- New studies on Precambrian banded iron formations indicate these ubiquitous marine deposits were formed by the interaction between hydrothermal fluids and seawater at the sea surface, rather than by microorganisms.
- Detecting the abundance of lithium at the surface of a star is one way to determine a star's age.
- The Lower Devonian Helderberg Group of New York is the best known and most studied carbonate rock unit in the northeastern US.
- Although the natural gases in a large number of gas fields in the North Sea have low concentrations of CO<sub>2</sub>, some fields have high enough concentrations of CO<sub>2</sub> to provide a risk to commercial gas exploration.

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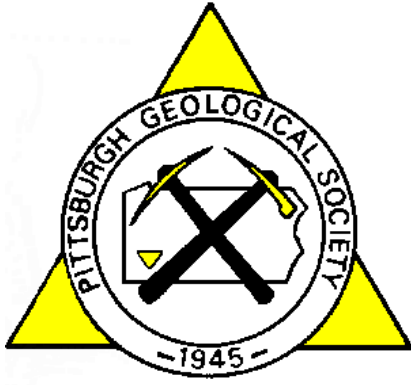
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PITTSBURGH GEOLOGICAL SOCIETY  
PO Box 58172  
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# PGS Newsletter

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

Vol. LXII, No. 8

Robert Burger & Mary Ann Gross, Editors

April, 2010

**Wednesday, April 21, 2010**

**Joint meeting with the Pittsburgh Geological Society,  
The Allegheny-Ohio Section of the Association of Environmental & Engineering Geologists,  
and the Pittsburgh Section of the American Society of Civil Engineers – GeoInstitute Group  
present the**

## **8<sup>th</sup> Annual Student Night**

The PGS, AEG & ASCE are pleased to have the following research projects presented on Student Night. Abstracts will be published on the PGS website: [www.pittsburghgeologicalsociety.org](http://www.pittsburghgeologicalsociety.org) after April 10.

The students have been working under pressure from classes and mid-terms to prepare these oral and poster presentations for your review. Each project is full of interesting information. Your participation in Student Night is an invaluable experience for the presenters, and is highly encouraged. Awards for the three Best Oral and three Best Poster presentations will be given. Please come congratulate all of the presenters for their accomplishments!

### **PROJECT TITLES**

**Creating a classification system for lunar crater rays:** Jason D. Ames; IUP

**Investigating the impacts of underground bituminous coal mining: An interdisciplinary approach:**

Jessica Benner, Alison Hale, Tina Shendge, Megan Witkowski; UPitt

**Assessing the slaking behavior of mudrocks under atmospheric conditions:** Tej P. Gautam; Kent State U.

**Modeling of longwall mining associated highway subsidence:** Juan J. Gutierrez; UPitt

**Vein structures and faults in core samples from IODP Expedition 315, Nankai Trough:**

Preliminary observations: Matthew R. Harding; IUP

**A realistic FEM simulation of the fragmentation process in rock cutting:** Maria C. Jaime; UPitt

*Continued on next page*

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

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

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

Dinner will cost \$25.00/person, students \$5.00; checks preferred. Reservations should be emailed to Steve McGuire at [smcguire@chesterengineers.com](mailto:smcguire@chesterengineers.com), please title as "PGS Dinner Reservation." If you are unable to use email, call (412) 809-6723 and leave your name and number of reservations needed by **noon, Monday, April 19.**

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

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# Pittsburgh Geological Society

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**Spatial and temporal analysis of non-recoverable strain geometry as documented by the inversion of earthquake focal mechanisms in west-central Taiwan:** Ellen A. Lamont, et al; IUP, et al

**A high-temperature micro-furnace for *in-situ* spectral analysis of quartzofeldspathic melts:** Rachel J. Lee; UPitt

**Textural analysis of a simple igneous intrusion, Nipigon, Ontario:** Levi W. Markwood; SRU

**Simulation of rock cutting using distinct and crushable elements:** Jorge A. Mendoza R.; UPitt

**Breccias in strongly extended rocks above the Fluorspar-Bullfrog Hills Detachment:** Implications for groundwater flow near Beatty, Nevada: Sarah A. Morealli; UPitt

**Prehistoric tsunami deposits along the Oregon Coast: Evidence from a coastal lake in Tillamook County, Oregon:** Bryant D. Shue, David P. Pompeani, et al; UPitt - Johnstown, UPitt

**Constraints on 3D Deformation at the Nankai Subduction Zone:** Fault kinematic analysis of core-scale faults at Site C0001 of the Integrated Ocean Drilling Program Expedition 315: Surinder Singh Tara Singh; IUP

## **PGS SPRING FIELD TRIP – MAY 1, 2009**

For this year's field trip, PGS will head east to Johnstown, PA to tour areas significant to Pennsylvania's most famous dam disaster, the Johnstown flood of 1889. The geology of the area will be discussed as well as the flood itself. Also, thanks to our friends at the University of Pittsburgh in Johnstown, we will be introduced to new information about the hydrology and timing of the flood as well as engineering problems related to the dam itself.

The trip will depart from the Lowe's parking lot in Monroeville. Please arrive by 7:15 a.m. so that we can be organized to leave promptly at 7:30 a.m. This will allow us ample time to travel to the

Johnstown National Memorial for a 9:15 showing of a movie about the flood. Afterwards, we'll view the lakeside cottages and clubhouse that were occupied at the time of the disaster, and then on to the dam site itself for an up-close look at the remains and a discussion of the stop. From there, we will travel to a picnic shelter for lunch. PGS will provide refreshments but you should bring your own bagged lunch. After lunch, we will travel to Johnstown and ride the incline to the top of the hill for a breathtaking and revealing view of Johnstown and a discussion of how the catastrophe unfolded. Our last stop will be the cemetery where the remains of the unknown victims rest.

The trip is limited to twenty persons (plus two drivers). The cost is \$20 per person. To reserve your spot, please RSVP to Judy Neelan by April 15 at 412-442-4087.

## **PGS FINAL CALL FOR CANDIDATES**

The April meeting will be the final call for candidates for the upcoming Society election. The ballot will then be closed with the election to be held at the May meeting. At this time the Society is still looking for a candidate to fill the position of Vice President. The chief responsibility of the Vice President is to lead the Program Committee. This important function provides speakers for our monthly meetings among other things. Our current Vice President, Mary Ann Gross, would gladly provide any interested Society member with more details of the position. She can be reached at 724-873-3221.

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

McKean County, Pennsylvania, was created from part of Lycoming County on March 26, 1804 and named in honor of a signer of the Declaration of Independence, Governor Thomas McKean. Much of the area was logged in the early to mid-1800s before the discovery of oil in Bradford in 1871.

## **PGS Website of the Month**

<http://sites.google.com/site/dragonstormproject/>

## DID YOU KNOW . . . ?

- According to tide gauge data, sea level on the Atlantic coast of the US rose 2 mm faster during the 20<sup>th</sup> century than at any time during the last 4,000 years.
- Not only does the Moon affect Earth's tides—it now appears that the Sun and Moon also stimulate slow tremors deep underground at the San Andreas fault, indicating that the fault is lubricated with water under high pressure.
- Wind speed is increasing over Lake Superior at the rate of 5% per decade as a result of increased surface-water temperatures.
- Unconventional natural-gas reservoirs such as the Marcellus Formation are becoming an increasing focus of activity throughout the US as a result of a combination of scientific study, engineering innovations, new technology, persistence, and risk taking.
- Despite the emergence of carbonate skeletons in the late Neoproterozoic, and the overwhelming amount of carbonate (limestone and dolostone) strata in the Cambrian rocks of eastern North America, calcareous skeletons of plants and animals did not become permanent globally-important sources of carbonate sediment until the beginning of the Ordovician.
- The element antimony is used to make certain types of semiconductor devices, such as diodes and infrared detectors. It can also be alloyed with lead for use in batteries, low friction metals, type metal and cable sheathing, among other products.
- The seventh largest mass extinction during the Phanerozoic Era occurred during the Late Mississippian and coincided with the inception of Late Paleozoic glaciation.
- The great magnitude 5.0 earthquake that was supposed to have occurred in Wilkes-Barre in 1954 was not tectonic in origin, but was most likely the result of mine collapse.
- The recent discovery of a new dinosaur at Ghost Ranch, NM suggests that the three lineages of dinosaurs, sauropods, ornithischians, and theropods, diverged and radiated from South America.
- Abnormal pore pressure in rocks develops during compaction when pore water can't drain out of sediment fast enough to maintain hydrostatic pressure.
- Both historical and recent accounts of slope failures along steep coasts generally point to events triggered by earthquakes, but torrential rains and volcanism can also be attributed to their causes.
- Studies of zircon ages from metasediments in southeastern PA indicate that all of the geological units in the area had a similar sediment source, even though the units differ in mineralogy and are divided by two old faults.
- Discovery of the structures that give color to fur, hair, and feathers have been found in some the primitive feathered dinosaur from China. For example, *Sinosauropteryx* had ginger and white stripes along its tail, probably used for display.
- High-quality reservoir rocks generally have pore sizes greater than 30 microns ( $\mu\text{m}$ ) and pore-throat sizes greater than 10  $\mu\text{m}$ . Rocks having pore sizes less than 10  $\mu\text{m}$  and pore throats less than 1  $\mu\text{m}$  typically have low permeabilities and high water saturations.

## SPRING NORTH AMERICAN COALBED METHANE FORUM

The North American Coalbed Methane Forum will hold its Spring session on April 28 – 29, 2010 at the Hilton Garden Inn Pittsburgh, Southpointe near Canonsburg, PA. This year the forum is celebrating its 25th anniversary. The forum, which is titled *Coalbed Methane—from Prospect to Pipeline*, will consist of two day-sessions with presentations covering technical, regulatory, and legal aspects of coalbed methane development and production.

For more information, contact Ihor Havryluk at 412-445-5803, [havryluk@zoominternet.net](mailto:havryluk@zoominternet.net) or Dr. Kashi Aminian at 304-293-7682 ext. 4, [khashayar.aminian@mail.wvu.edu](mailto:khashayar.aminian@mail.wvu.edu), or visit the website [www.nacbmforum.com](http://www.nacbmforum.com).

## NEXT MONTH'S MEETING

Our next meeting May 19, a joint meeting with the Society of Mining Engineers, will feature the 2009 Henry Krumb Lecturer, Anthony T. Iannacchione, who will present "Analysis of Coal Bursts Hazards: Past and Present". Tony is Associate Professor and Director of the Mining Engineering Program at the University of Pittsburgh.



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### **PGS Board-of Directors**

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**Vice President:** Mary Ann Gross  
**Treasurer:** Steve McGuire  
**Secretary:** Erica Love  
**Past President:** Patrick Burkhart

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**Director-at Large:** Maury Deul  
**Director-at Large:** Ray Follador  
**Director-at Large:** Bill Gould  
**Director-at Large:** Barbara Hamel

**Director-at Large:** Albert Kollar  
**Counselor:** John Harper  
**Counselor:** Mary Robison  
**Counselor:** Charles Shultz

### **Other PGS Positions**

**AAPG Delegate:** Dan Billman  
**Newsletter Editor:** Robert Burger

**Webmaster:** Mary McGuire

**Historian:** Judy Neelan

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

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**News items:** To submit a news item in the PGS Newsletter, please contact Robert Burger at (412) 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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Vol. LXII, No. 9

Robert Burger, Editor

May, 2010

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**Wednesday, May 19, 2010**

**The Pittsburgh Geological Society and the  
Pittsburgh Section of the Society of Mining Engineers present**

## ***The US Mining Industry's Response to Major Hazards: Past, Present and Future***

by **Anthony T. Iannacchione**, University of Pittsburgh  
Henry Krumb Lecturer

The disaster at the Upper Big Branch coal mine in West Virginia has many re-thinking the approach to mine safety. The journey towards safer mining conditions in the US is examined. The first example has to do with the coal burst hazards and the use of prevention controls and recovery measures to mitigate safety risks. Serious injuries and fatalities associated with this hazard decrease from the 1950s through the 1990s due largely to innovative engineering and administrative controls. Unfortunately, the 2007 Crandall Canyon disaster demonstrated that this problem has not been totally solved.

The second example has to do with coal mine explosions, a hazard that many thought controlled. In the mid 90s, when the USBM was dissolved and NIOSH conducted miner health and safety research including work on reducing the incidence of coal mine explosions. The Sago, Darby No.1 and Upper Big Branch coal mine disasters remind us that while coal mine explosions are, for the most part, preventable, additional prevention controls and recovery measures may be needed.

These two examples beg the question "why are these devastating disasters still occurring and what can be done to significantly mitigate the risk they present to our nation's mine workers?" Surely government  
*(continued on next page)*

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

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

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

Dinner will cost **\$25.00/person, students \$5.00**; checks preferred. **Reservations should be emailed to Steve McGuire at [smcguire@chesterengineers.com](mailto:smcguire@chesterengineers.com)**, please title as "PGS Dinner Reservation." If you are unable to use email, call (412) 809-6723 and leave your name and number of reservations needed by **noon, Monday, May 17**.

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

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agencies will investigate the Upper Big Branch disaster to seek out new innovations or improved guidelines. In addition, Congress will look to determine if new regulations and standards are needed with stricter enforcement strategies, but there is a certain 'déjà vu' to all this. The US mining industry is already known as one of the most regulated industries in the world, ruled by a proscriptive regulatory structure. This structure is fundamentally governed by safety systems that are focused mainly on compliance strategies, where the threat of fines and other penalties shape behaviors. Such a system promotes a reactionary culture that has not been effective stopping the cycle of disasters that plague the mining industry.

*What if mining operations employed a more proactive approach to underground safety?*

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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 2010-11 season will be held at the May 19, 2010 PGS meeting. A ballot is included with this newsletter listing one candidate each for the positions of President, Vice President, Secretary, and Treasurer. Three candidates are running to fill three two-year terms for the Director-at-Large positions.

Regular members, corporate members, and honorary members are eligible and encouraged 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 your completed ballots to: PGS Election Committee, P. O. Box 58172, Pittsburgh, PA 15209. Mailed ballots must be received by PGS no later than Monday, May 17.

### ORIGINS OF WESTERN PA PLACE NAMES

Fayette County was created from the southern portion of Westmoreland County in September 1783 and named for the Marquis de la Fayette (Lafayette), the famous Frenchman who assisted George Washington during the American Revolution. Fayette County's first mineral resource exploitation was in iron, as iron ore (and wood for charcoal) were abundant. Later industries included glass (using sand from the Monongahela River), limestone, and coal, which was used mainly to produce coke for Pittsburgh's blast furnaces. Fayette County is home to Laurel Caverns, the largest cave in Pennsylvania and, with 2.8 miles of passages, the 16<sup>th</sup> longest developed cave in the United States.

### DID YOU KNOW . . . ?

- Researchers have found an undersea volcanic vent more than three miles beneath the surface of the Caribbean Sea in the Cayman trough, the subduction zone that served as the setting for James Cameron's underwater thriller *The Abyss*.
- A new study indicates that common household pesticides, such as ant poisons, are winding up in water supplies in California as a result of storm runoff and insufficient sewage treatment.
- The Allegheny River watershed covers over 19,000 square miles of western and north-central Pennsylvania.
- At one time, before Pittsburgh became the Steel City, Pennsylvania was the largest iron-producing state in the nation because of the plethora of iron mines and iron furnaces that were worked in eastern Pennsylvania, in the vicinity of Cornwall.
- New models indicate that the Late Precambrian Ice Age probably came to an end as a result of a layer of continental and volcanic dust coating the surface of the ice, thereby reducing its reflectivity and allowing more heat to soak into the ice.
- Crustal extension in the Late Neoproterozoic occurred as the supercontinent of Rodinia broke up, forming the Theic Ocean between Laurentia and Gondwana.
- Along with the opening of the Theic Ocean, two intracontinental rifts developed in the Late Neoproterozoic and into the Middle Cambrian – the easternmost Catoctin rift and the westernmost Rome trough.

- A graduate student at the University of Oxford has discovered fossil trackways in Newfoundland that date to 565 million years, indicating that complex multicellular life had evolved at least five to ten million years earlier than previously thought.
- While the large earthquakes recorded in Haiti, Chile, and Taiwan drew national attention, a 3.8 magnitude quake hit northern Illinois in February. It didn't cause much damage, but scared a lot of people.
- Gliese 581d, discovered in 2007, is the fourth planet of the red dwarf star Gliese 581, which is about 20 light years from Earth. Gliese 581d currently is the best known candidate for a potential earth-like planet orbiting within the habitable zone surrounding its star.
- Maps of planned oil and gas projects in the Amazon basin by 35 or so multinational companies show that the majority of the prospects are in the most species-rich areas for mammals, birds, and amphibians.
- The Newark Basin Coring Project, which drilled a series of core holes in the Newark basin of New York, New Jersey, and Pennsylvania between 1989 and 1994, documented the record of astronomically driven climate cycles preserved in 200 to 230 million-year-old (Late Triassic) lake sediments.

### PGS MEMBER NEWS

The Department of Geology and Invertebrate Paleontology of the Carnegie Museum of Natural History led spring geology field trips along the Montour Trail in Allegheny and Washington Counties and Frick Park in Pittsburgh. On April 11 in collaboration with the Peters Creek Watershed Association and Venture Outdoors, 33 participants hiked along Peters Creek in Jefferson Borough reviewing the geology and natural history of this hidden valley. On April 14, Kollar led his Osher Institute of the University of Pittsburgh, Geology and History of the Montour Trail class to the Moon Township site where the famous amphibian fossil was reported 15 March, 2010, by Berman, Henrici, Brezinski, Kollar, *Annals of Carnegie Museum*, vol. 78, no. 4, 289-318. In addition, Brezinski, Kollar, and Edwards PAIS Publication

### PGS Website of the Month

<http://cavern.com/>

9, 2010, *Geology of the Montour Trail - Milemarker 0.0 to 29.0*, details the geology and history along the Montour Trail. On April 30, a field geology teacher workshop was conducted in Frick Park in collaboration with the University of Pittsburgh Geology Department for the Environmental Charter School (Frick). The *Geology of Frick Park PAIS Publication 3*, Brezinski and Kollar, 2005 was the source material.

### GALEY FUND

In the late 1990s, in an effort to encourage student involvement in the society's activities, PGS established a fund to supplement the costs of student attendance in Society functions. The fund was named after deceased PGS honorary member John Galey, who was a strong supporter of geologic education. Since its inception, the fund has been used to supplement the fee for students' dinners at the monthly meetings and fees for students to attend field trips. In addition, contributions to the Galey fund have allowed PGS to present its annual "So You Want to be a Geologist" and "Tools of the Trade" workshops. These workshops—presented by dedicated PGS volunteers—have been invaluable sources of knowledge and are well appreciated by both students and organizations who hire entry-level geologists. The Galey Fund depends on contributions from individuals and entities who are interested in advancing the education of our next generation of geoscientists. PGS gladly accepts monetary donations to the fund in any amount. If interested, please send your contributions to Steve McGuire, PGS Treasurer, PO Box 58172, Pittsburgh PA 15209. Make checks payable to PGS. Thank you for your support.

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*Special thanks to all who contributed newsletter items this season—especially to John Harper who writes the Did you Know...? and Western PA Place Name Columns. All the best to everyone and have a pleasant Summer! Robert Burger (ed.)*

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