DVESScapades

escapades: interesting, stimulating, exciting activities and



Delaware Valley Earth Science Society Newsletter

Program: November 10th



Dr. Phil Betancourt will be showing us his new presentation, based on a recent trip, of: "Minerals of the Northern Rockies".

President's Message - Grant Elliott

I trust everyone who attended the annual banquet on Sunday October 24th came away well fed and informed by Henry Kennedy's exploits in Brazil. His beautiful gemstones were fun to behold.

After exciting expeditions led by Terry Wilson, AnnLynne/Mil this month, everyone should be excited about other adventures that will be planned for 2011.

The eminent Phil Betancourt will tell us about minerals of the Rockies at this monthly meeting -Don't miss it.

NEXT YEAR'S OFFICERS : We have to start thinking about individuals who will fill positions for next year. Our year for dues and the club runs from Jan 1 to Dec 31. The suggested and accepted slate of individuals and positions was confirmed: Terry Wilson - President, AnnLynne Benson - 1st VP, Lou Detofsky - 2nd VP, Gary Weinstein - Treasurer, and Grant Elliott - Secretary. Nominations are still open from the floor.

Nov. Jr Rockhounder Meeting:

We had two children at the Oct. meeting. We discussed part two of the minerals & the elements of the human body. Then the kids were given a bunch of turkey bones to try and figure out how to put them where they belong.

We had an unannounced visitor - Shelby the 5 year old 50 lb. plus African tortoise that every one could hold, touch and have a picture taken with. Shelby proceeded to go the adult meeting where some adults were "shocked into amazement" and fun. Then, Shelby made a really grand entrance and commotion when she crashed the United Methodist Women's District meeting (100 plus people). At least 55 cell phone cameras went into action, with women trying to get as close to Shelby as possible.

The Nov meeting will be conducted by our newsletter editor Carol De Cuzzi, topic -'Bugs and Leaves'. Mil will not be the person conducting the class due to personal and family medical issues. Mil LeCompte, Jr Rock Coord. can be reached (856)783-0960 Or RocksAndBadges@yahoo.com

2-Billion-Year-Old Fossils May Be Earliest Known Multicellular Life

By Brandon Keim June 30, 2010 | 3:24 pm | Categories: Animals, Biology

A newly discovered group of 2.1-billion-year-old fossil organisms may be the earliest known example of complex life on Earth. They could help scientists understand not just when higher life forms evolved, but why.



Figure1

The fossils — flat discs almost 5 inches across, with scalloped edges and radial slits — were either complex colonies of single-celled organisms, or early animals.

Either way, they represent an early crossing of a critical evolutionary threshold, and suggest that the crossing was made necessary by radical changes in Earth's atmosphere.

"There is clearly a relationship between the concentration of oxygen and multicellularity," said Abderrazak El Albani, a paleobiologist at France's University of Poitiers. The fossils are described in the July 1 issue of Nature.

Single-celled organisms emerged from the primordial soup about 3.4 billion years ago. Almost immediately, some gathered in mats. But it was another 1.4 billion years before the first truly multicellular organism, called Grypania spiralis, appears in the fossil record.

Grypania may have been either a bacterial colony or a eukaryote — an organism with specialized cells, enclosed in a membrane. Whatever Grypania was, it was one of the few known examples of complex life until about 550 million years ago, when the fossil record explodes in diversity.

The newly described fossils, which have yet to be given a species name, make Grypania less solitary. They lived at roughly the same time — Grypania in what is now the northern United States, the new fossils in Gabon. By raising the possiblity that multicellularity was a trend rather than an aberration, they also hint at an answer to the question of why complex life evolved, not just when.

Just a few million years before Grypania and the newly discovered fossils appear in the fossil record, Earth experienced what's called the Great Oxidation Event. The sudden evolution of photosynthesizing bacteria radically changed Earth's atmosphere, kick-starting its transformation from nearly oxygen-free into today's breathable air.

"The bacterial world was undergoing the greatest episode of climate change in the history of the climate," wrote University of Bristol paleobiologists Phil Donoghue and Jonathan Antcliffe in a commentary accompanying the findings. "The proximity in the age of these fossils to the timing of the Great Oxidation Event fits elegantly" with the notion that changing ocean chemistry fueled the evolution of complex life.

Bacteria possess chemical signaling systems, and many researchers now see their colonies -

which can stretch for centimeters, numbering millions of individuals — as collective organisms, with different individuals having specialized body types and tasks.

Growth patterns seen in the new fossils fit with those found in multicellular organisms capable of complex signaling and coordinated responses. Earth's suddenly fluctuating climate would have favored communication.

"When bacteria are under stress, it triggers their cooperation," said biophysicist Eshel Ben-Jacob of Tel Aviv University. "Those that have to cope with a more complex environment show higher complexity."

"You have multicellular organization during the first upswelling of oyxgen in the atmosphere," said El Abani. He said multicellular organisms likely evolved in many places, but the fossils haven't yet been found. "All life on the earth had to change," said Ben-Jacob.

Images: Figure 1) Virtual reconstruction of outer and inner structure of fossil specimen./ from Abderrazak El Albani and Arnaud Mazurier. Figure 2) Fossil remains./ from Abderrazak El Albani.

See Also: Microbe May Answer Mystery of Multicellular Life; First Animals Found That Live Without Oxygen ; Life's Complexity Began With Poop ; Viral Missing Link Caught on Film ; Complex Life Traced to Ancient Gene Parasites ; Citations: "Large colonial organisms with coordinated growth in oxygenated environments 2.1 Gyr ago." By Abderrazak El Albani, Stefan Bengtson, Donald E. Canfield, Andrey Bekker, Roberto Macchiarelli, Arnaud Mazurier, Emma U. Hammarlund, Philippe Boulvais,

Jean-Jacques Dupuy, Claude Fontaine, Franz T.Fursich, Francois Gauthier-Lafaye, Philippe Janvier, Emmanuelle Javaux, Frantz Ossa Ossa, Anne-Catherine Pierso. Nature, Vol. 466, No. 7302, July 1, 2010.



Figure 2

More referances for your own research:

"Origins of Multicellularity." By Philip Donoghue and Jonathan Antclifee. Nature, Vol. 466, No. 7302, July 1, 2010.

Brandon Keim's Twitter stream and reportorial outtakes; Wired Science on Twitter. Brandon is currently working on a book about ecological tipping points.

Tags: Bacteria, Complexity, Evolution Post Comment | Permalink 0diggsdigg Digg Stumble Upon

Read More at

http://www.wired.com/wiredscience/2010/06/early-multicellularity/#ixzz12MZM18pB

See Also: Microbe May Answer Mystery of Multicellular Life

First Animals Found That Live Without Oxygen ; Life's Complexity Began With PoopViral Missing Link Caught on FilmComplex Life Traced to Ancient Gene Parasites

Citations: "Large colonial organisms with coordinated growth in oxygenated environments 2.1 Gyr ago." By Abderrazak El Albani, Stefan Bengtson, Donald E. Canfield, Andrey Bekker, Roberto Macchiarelli, Arnaud Mazurier, Emma U. Hammarlund, Philippe Boulvais, Jean-Jacques Dupuy, Claude Fontaine, Franz T.Fursich, Francois Gauthier-Lafaye, Philippe Janvier, Emmanuelle Javaux, Frantz Ossa, Anne-Catherine Pierso. Nature, Vol. 466, No. 7302, July 1, 2010.

"Origins of Multicellularity." By Philip Donoghue and Jonathan Antclifee. Nature, Vol. 466, No. 7302, July 1, 2010. Brandon Keim's <u>Twitter</u> stream and <u>reportorial</u>

Read Even More at

http://www.wired.com/wiredscience/2010/06/early-multicellularity/#ixzz12McX58yQ

*** A recently found copy of the Club's constitution is now available upon request. We are a registered non-profit orginization. ***

Info on our Club's programs for the rest of the year. Gary, program chair.

Nov. Dr Phillip Betancourt will present on his trip. Dr Phil will also host the Nov. exec.

Dec. Holiday party, Gift exchange and elections. Club will again supply food though we also ask members to bring a dish to share. Sign up at ...

This year I will also bring a video program to watch while we partake and make available specimens to purchase for your holiday gift giving needs. Yes, it is OK to buy yourself a gift.

Science Lecture Series

The New Jersey State Museum is excited to announce the fourth season of the Saturday Science Lecture Series. Scholarly, yet family-friendly lectures are presented in the Museum's Auditorium by some of the world's most distinguished and prominent researchers in the fields of paleontology, marine biology, climate change, archaeology, wildlife science, and exploration. Following each lecture, guests will have the opportunity to ask questions, share their own experiences and ideas, and meet the featured lecturer. Admission and parking are free. Each lecture begins at 3:30 pm in the Museum Auditorium. For more information, please visit newjerseystatemuseum.org, or call (609) 292-8594.

November 13: Brian Switek, Natural History Author, "Written in Stone: Evolution, the Fossil Record, and Our Place in Nature" March 12: Wayne Callahan, NJSM Natural History Research Associate, "Late Cretaceous Fossils in Monmouth County, NJ"

April 9: Jason P. Schein, New Jersey State Museum, "Dinosaur Hunting with the NJSM"

The following nine (9) pages are courtesy of Diamond Dan, as per agreement





A Monthly Publication for Young Mineral Collectors



Back in August of this year, the Mineral of the Month was *muscovite*. The mineral of the month this time is a cousin of muscovite. It is another mica mineral. It is called *Lepidolite*. The name come from two Greek words. *Lepis* means *scale* and *lithos* means *stone*. This name was created for this mineral because it is often found as masses of very small flakes.



The color of lepidolite is always light purple to lavender. Just like muscovite (and other mica minerals like *biotite* and *phlogopite*) lepidolite can be split into very thin sheets that are so thin you can see right through them. All mica minerals can be split into thin sheets because of their *cleavage*. Do you remember that "cleavage" is the ability of a mineral to break on a flat surface. The scientific name for the cleavage found in all the mica minerals is *perfect basal cleavage*. It is also known as *micaceous cleavage*.

Flakes of lepidolite have a special physical property that is described as *elastic*. If you bend a thin sheet of lepidolite it will spring back to its original flat shape. Some minerals, like gypsum, can be bent - if you are very careful. But they do not return to their original shape. All of the mica minerals have this property.

Chemical Formula: K2Li3Al4Si7O21(OH,F)3

Crystal System: Monoclinic

Color: Pink to lilac purple, sometimes pale yellow.

Luster: Vitreous (glassy) Hardness: 2 1/2

ZSpecific Gravity: 2.8 - 3.3

Cleavage: Perfect basal (micaceous)

Uses: Lepidolite is an ore of the element *lithium*. Lithium is a soft, silver-white metal. It is used in nuclear devices. It is also used to make very special medicines. *Right: Quartz crystals, a long, dark green tourmaline crystal, and many small lepidolite crystals. From Brazil. Above right: A single lepidolite crystal.*



Minerals Used in Makeup

Our girl Mini Miners might find this article more interesting than the boys. For anyone, though, it's fun stuff to know. One of the biggest industries in the world is the cosmetic industry. These are the businesses that make makeup like lipstick, blush, base, eyeliner and more. You may find it interesting to know that some minerals are



used in makeup products. Here's a list for you.

Mica like biotite and muscovite. Mica breaks into very thin flakes (because it has the physical property called *cleavage*). It can also be crushed into extremely small pieces. Very fine flakes of mica are added to makeup for a sparkly look. This is what is used to make "glitter." Left: Silvery muscovite from Brazil.

Hematite and Limonite Iron

minerals like hematite and limonite (both of which are iron oxide minerals) are used to color makeup including red, yellow and black. *Right: Intergrown hematite crystals from Austria.*





Kaolinite Kaolinite is a clay mineral. It can be crushed into a very fine powder.

Crushed kaolinite easily absorbs oil. So, crushed kaolinite is added to makeup to absorb the oil in your skin. Your skin looks soft and smooth instead of shiny and oily.

Rutile Rutile contains the element *titanium*. Titanium dioxide is a natural sunscreen to protect the skin from sunburn and sun damage. It is also *opaque* which means that light can't pass through it. Opaque makeup covers over marks in the skin so they can't be seen anymore. It can cover up dark spots, wrinkles and scars so it looks like they are not even there.

Left: Golden-brown rutile crystals (needles) from Brazil growing on silver-gray hematite.

Minerals Used in Medicine

Scientists and doctors have discovered that minerals and the elements in minerals can be used to treat sicknesses. Did you know that the mineral *sphalerite* is used to make diaper rash ointment? Have you ever broken a bone? Gypsum is needed to make the cast that holds the bone in place. Here are some minerals that are needed in the field of medicine.

Gold Gold is used to make some special drugs that fight against certain types of cancer. Gold is also used by dentists to cover weak or broken teeth. Ask your parents or grandparents if they have a tooth covered with gold. Maybe they'll let you see it!





Sphalerite Sphalerite contains the element zinc. The zinc is removed from

the sphalerite and is then combined with oxygen to make zinc oxide. Zinc oxide is the white cream some people use at the beach to protect their noses from a bad sunburn. It is also used to prevent some skin problems like minor burns and cuts. Zinc oxide is rubbed on babies' bottoms to sooth diaper rash. Left: fluorite cubes on deep red sphalerite.

Bismuth Native bismuth is found in nature, but rarely. It is

also found mixed in ores of other metals. Bismuth is used to make medicines that are good for stomach troubles. Some bismuth medicines are used to treat ulcers (an ulcer is an open sore in the stomach). You may have bismuth medicine in your home right now. Have you ever used Pepto-Bismol for an upset stomach? It contains bismuth.

Gypsum Recently our friend, Zoe, fell and broke her arm. The doctor fixed the broken bone and then put her arm in a cast while the bone grew back together. The cast was made of strips of bandage that were soaked in wet plaster. The plaster dried and hardened and made a nice, firm cast that held her arm in place. Plaster is made from the mineral *gypsum*. By the way, Zoe's arm is as good as new! Thank you, gypsum.



Kaolinite Kaolinite is a mineral that belongs to a group of minerals called *clay minerals*. Kaolinite itself does not treat any infection or illness. However, it is sometimes added to skin lotions because it is very soft and breaks up easily. It helps to make a lotion thicker. It is also used to thicken up medicines that you have to swallow. This can make the medicines easier to swallow.

Cinnabar Cinnabar contains the element *mercury*. Mercury is the only metal that is a liquid at room temperature. When it gets warmer it expands. Older thermometers contain mercury. Modern thermometers, however, are electronic and don't use mercury. Ask your parents or grandparents if they still have an old-fashioned mercury thermometer.

Lucien W. Stilwell, Curio Dealer

by Darryl Powell

Soon after our family returned from South Dakota last August, I discovered on eBay an old card written by someone named "LW Stilwell." It was written to one of his customers. After a little research I discovered that Mr. Stilwell was a mineral dealer. Here is his story.

Lucien White Stilwell was born in 1843 in Manlius, New York. His parents had a total of eight children. He moved often in his younger years. He moved to Wisconsin with his parents and when he was old enough, he moved on his own to Illinois. He studied mathematics and literature in college. As a young man he started a company with a friend. This was important experience for him because he would start another company later in his life. He married a young lady named Julia and they had four children.

Mr. Stilwell moved again and in 1879 he settled in the gold mining town of Deadwood, South Dakota. Back in 1879 there was no state called "South Dakota"; that would come later. In 1879 the area was simply known as The Dakota Territory. He found a job in a bank in Deadwood and kept track of their numbers as their Accountant. Some of you who like history might remember that Wild Bill Hickok and Calamity Jane, two famous old-west characters, were also from Deadwood.

Remember the business he started as a young man? Well, now that he was older, he decided to start another small business for himself. It was something he could do, in addition to his bank job, to make a little extra money. He decided to sell Indian artifacts, mineral and fossil specimens, photographs (mostly of Native Americans), elks' teeth and other natural items from the Dakota Territory. He called himself a "Curios Dealer." His business became so successful and large that he eventually left the bank job and worked only in his Curios business. Mr. Stilwell provided unique and valuable mineral and fossil specimens, as well as Native American artifacts, to museums all over the world.

Lucien Stilwell died in Deadwood, South Dakota (and it was officially South Dakota by the time he died) on November 4, 1932. Here is a picture of the card I mentioned above. The picture of Mr. Stilwell seems to be the only one he ever used of himself (it is also reprinted in his business catalog). This card is extra special because



it has his actual signature at the bottom.

Left: Mailing card from L.W. Stilwell dated December 7, 1907. From the collection of the author.

Sand Calcite Crystals

One of the most famous mineral occurrences in South Dakota is the sand calcite crystal occurrence on Rattlesnake Butte in Jackson County. The crystals formed in a bed of sandstone that is found on the top of the ridges found on the butte. The sandstone bed is up to four feet thick.

These crystals are found as individual crystals, small groups of crystals and very large groups of crystals. The crystal groups can weigh hundreds of pounds and stand over 6 feet high. The color of the sand calcite crystals is light tan to grayish tan. Some of the crystals have sharp edges. Others are very rounded.

The sand calcite crystals have been analyzed in a laboratory. The sand is not only on each crystal, but also trapped inside each crystal. The studies have shown that each crystal is 37% calcite. The remaining 63% is sand. The sand contained in these



crystals is made up of very small, rounded grains of the following minerals: quartz, orthoclase, microcline, albite, muscovite, biotite, hornblende, augite, three different kinds of tourmaline, zircon, garnet, staurolite, and magnetite. It also includes grains of volcanic glass. The sand came from the rocks that are found in the Black Hills of South Dakota.

Today Rattlesnake Butte is designated as a National Natural Landmark (NNL). It is managed by the Oglala Sioux Parks and Recreation Authority. Collecting on the land is not permitted without an official permit from the Tribe. Even though most people will not be able to actually collect these wonderful specimens, they are still easily available from mineral dealers and rock shops. There are many rock shops scattered throughout South Dakota and nearly all of these rock shops sell sand calcite crystals of various sizes. Also, look for mineral dealers on the internet. There are many who sell sand calcite crystals. The wonderful thing is that they can be purchased for very reasonable prices. Perhaps you will be able to obtain one for your own collection.

Sand calcite crystal occurrences are rare. The South Dakota sand calcites are perhaps the best known to mineral collectors. There is only one other locality that produces sand calcite crystals and that is Bellecroix, Fontainebleau, France. These sand calcite crystals are light tan in color.

Here is a picture of an antique postcard that pictures three very large masses of sand calcite crystals (author's collection).



MINERALS ON the moon

On July 20, 1969 three American astronauts landed on the moon. This moon mission was called Apollo 11. The astronauts were Neil Armstrong, Edwin "Buzz" Aldrin and Michael Collins. They brought back moon rocks and moon dust for scientists to analyze. Though they didn't find any crystallized specimens like the ones we

mineral collectors like to find, the rock samples <u>did</u> contain minerals that are also found here on Earth. The word search below includes the names of minerals that are found on the moon. Anorthosite and basalt are the names of the two rock types found on the moon. The moon minerals are in bold type in the list below. Good luck!

anorthosite basalt plagioclase feldspar pyroxene olivine glass augite ilmenite spinel rutile cristobalite tridymite quartz apatite zircon mica amphibole aragonite copper tin iron nickel meteorites

Р	С	R	Ι	S	Т	0	В	A	L	1	Т	E	S	D	A
Y	L	L	0	Т	Ι	0	Α	Р	G	D	R	С	Ι	U	L
R	Е	Α	В	L	N	Ι	S	Α	L	Р	Ι	K	l	H	М
0	F	E	G	Т	Ι	0	A	Т	Α	R	D	W	E	S	E
Х	L	Т	V	Ι	U	W	L	Ι	S	Р	Y	Н	Α	Ν	Т
Е	Z	Ι	R	С	0	Ν	Т	Т	S	0	Μ	Ι	С	A	E
N	0	N	V	В	E	С	S	Е	L	Μ	Ι	Т	0	Μ	0
Е	A	0	K	Ι	U	С	L	Α	L	Y	Т	R	Р	Р	R
Ζ	X	G	Н	L	Ν	S	S	Α	М	N	Е	Q	Р	Н	Ι
Т	В	A	J	М	F	E	L	D	S	Р	Α	R	Е	1	Т
R	E	R	V	Е	Н	0	L	L	Y	E	U	Т	R	В	E
Α	М	Α	J	Ν	Ι	С	K	Е	L	Т	G	Ι	G	0	Т
U	A	Α	R	Ι	Р	0	W	E	Ι	Z	1	R	В	L	Ι
Q	U	Α	R	Т	Z	Р	0	L	W	Α	Т	0	M	E	Р
S	Р	Ι	N	Е	L	С	E	K	J	Н	Е	N	Н	1	Т
W	Е	S	L	Y	Α	Ν	0	R	Т	Н	0	S	Ι	Т	E

Careers for Mineral Collectors

Did you ever think that maybe someday your love for minerals could become a career? When I was young people would ask me, "What do you want to be when you grow up?" How would you answer this question? Since you love minerals and mineral collecting so much, perhaps you might want to go to college and study to become one of the following professionals in the field of minerals and mineralogy.

Mineral Dealer To be a mineral dealer you will need training in minerals (geology) and also in business. You will need to know not only how to identify good mineral specimens, but you will also have to know how to advertise and sell them. Most mineral dealers travel many, many miles every year and attend dozens of mineral shows where they sell their specimens. Most dealers also sell their specimens on the internet. Some even have a mineral shop where travelers can stop in, look over the specimens and buy what they like. Eventually you will also need to buy new specimens from other companies or even go into the field and dig for your own.

Mineralogist Mineralogists are geologists who specialize in the field of mineralogy. Professional mineralogists study and analyze the minerals found in a certain location. This often requires many hours in the field actually collecting mineral and rock samples for further study in the laboratory. The information they gather can be used to find ores for starting a mine, for example. Mineralogists are hired by mining companies, petroleum companies and also by governments (like the United States Geological Survey, also known as the USGS).

Museum Curator If you really love specimen mineralogy, you may want to specialize in being a museum curator. A "curator" is a person who takes care of the specimens in a museum. As a mineral museum curator, you would keep a record (a catalog) of all the specimens in the collection, plan and prepare the displays for the public to see, buy and trade for new specimens for the collection, remove any specimens that are no longer wanted or needed. A college degree in mineralogy with some specialized learning in the curation of a mineral collection would be necessary.

Professor You may want to teach others about minerals and mineralogy. Colleges and Universities all over the world hire Professors and Associate Professors to teach classes about minerals, their properties, forms and uses. Professors have a lot of learning to do before they can teach, so you will need to go to college and earn a Ph.D. degree (at which time you will be called Doctor _____).

Author Many people who love minerals learn enough about them to write about minerals for books, magazines, and companies that produce learning materials for schools. To do this you would need to study not only minerals and geology, but also writing. As you can see, college education is very, very important to just about every career in minerals and mineralogy.

MINERAL SHAPES

Every mineral shape has a special name. Some of the names are obvious and some are not so easy to understand. Can you match the mineral picture on the left with the correct mineral shape name on the right? When you are done, go to a mineral book, mineral magazines and the internet to look at as many different minerals as you can and match their shapes to the shapes listed here. Have fun!



Botryoidal (Grape-Like)

Filiform (Filament-Like)

Acicular (Needle-Like)

Saddle-Shaped

Ram's Horn

Fibrous

Dendritic

Reticulated













What Did You Learn?

Here are some trivia questions from the articles in this issue of *Mini Miners Monthly*.

Before South Dakota became a state, the area was known as the					
Lepidolite is named from two Greek words. <i>Lepi</i> s means and <i>lithos</i> means					
What is the mineral needed to make a cast for a broken leg or arm?					
Which mineral is crushed into a powder to make glitter for makeup?					
The mineral is needed to make ointment for diaper rash.					
Name the man from South Dakota who sold minerals, fossils and Native American items to museums all over the world.					
What is the mineral that is contains titanium which is important for making makeup that covers up marks and scars on the skin?					
Lepidolite, muscovite and biotite sheets can bend and spring back to their original shape. What is the word used to describe this property?					
Pepto-Bismol is a medicine used to calm down an upset stomach. What mineral is in Pepto-Bismol?					
Which of the following minerals are found on the moon? Circle all the correct answers. Plagioclase, Calcite, Aragonite, Quartz, Cristobalite, Olivine, Feldspar, Tourmaline, Rhodochrosite, Rutile, Azurite, Malachite, Copper, Tin.					
There are only two rocks found on the moon. What are they?					

Name 5 minerals that are found in the sand that is contained in the sand calcite crystals from South Dakota.

______, ______, ______,

Name the mineral dentists use to cover teeth that are weak or cracked?

The following info was gleaned from DVPS Newsletter V34 I2 pages 5. 6 & 7

My husband and I are members. To the right - The last day of the DVPS recent trip to Madison Co, NY was spent in a stream near Ithaca that is well known for the *Triarthrus* trilobites that are abundant there. Finding a complete one is the challenge. The trilobites at this location are beautifully preserved in white on black shale. Rocks with multiple complete trilobites can be found here.



NEW WEBSITE – NJ PALEONTOLOGY Bill Shankle, Board Member

New Jersey has a rich and varied geologic history with rocks and fossils from nearly all of the major periods of geologic time. My new site, https://sites.google.com/site/njfossils/home is an attempt to summarize the record from each of these periods by providing a systematic breakdown of the fossils found during that time period. The site also contains many links to other sites related to New Jersey paleontology as well as an extensive bibliography of scientific papers and books. I have only just started to work on the Cretaceous fossils section and on the Bibliography. Please feel free to contact me with any information and/or comments concerning this site at fossilsofnj@gmail.com

DIG THIS!

Editor – Ed Grobelny

Fossilized Giant Penguin Sheds Light on Bird Evolution *ScienceDaily* 9/30/10 Paleontologists have unearthed the first extinct penguin with preserved evidence of scales and feathers. The 36- million-year-old fossil from Peru shows the new giant penguin's feathers were reddish brown and grey, distinct from the black tuxedoed look of living penguins. The new species, Inkayacu paracasensis, or Water King, was nearly five feet tall or about twice the size of an Emperor penguin, the largest living penguin today. "Before this fossil, we had no evidence about the feathers, colors and flipper shapes of ancient penguins. We had questions and this was our first chance to start answering them," said Julia Clarke, paleontologist at The University of Texas at Austin's Jackson School of Geosciences and lead author of a paper on the discovery in the Sept. 30 online edition of the journal Science. The fossil shows the flipper and

feather shapes that make penguins such powerful swimmers evolved early, while the color patterning of living penguins is likely a much more recent innovation. Like living penguins and unlike all other birds, Inkayacu's wing feathers were radically modified in shape, densely packed and stacked on top of each other, forming stiff, narrow flippers. Its body feathers had broad shafts that in living penguins aid streamlining the body. Bird feathers get some of their colors from the size, shape and arrangement of nanoscale structures called melanosomes. Matthew Shawkey and Liliana D'Alba, coauthors at the University of Akron, compared melanosomes recovered from the fossil to their extensive library of those from living birds to reconstruct the colors of the fossil penguin's feathers. Inkayacu paracasensis (een-kah-yah-koo par-ah-kah-sinsis) was discovered by Peruvian student Ali Altamirano in Reserva Nacional de Paracas, Peru. Inkayacu's body length while

swimming would have been about 1.5 meters (five feet), making it one of the largest penguins ever to have lived. When the team noticed scaly soft issue preserved on an exposed foot, they nicknamed it "Pedro" after a sleazy or "escamoso" (scaly) character from a Colombian telenovela.

New Horned Dinosaurs Discovered_

"This is an extraordinary site to preserve evidence of structures like scales and feathers," said Clarke. "So there's incredible potential for new discoveries that can change our view of not only penguin evolution, but of other marine vertebrates."

ScienceDaily 9/22/10

Two remarkable new species of horned dinosaurs have been found in Grand Staircase -Escalante National Monument, southern Utah. The giant plant-eaters were inhabitants of the "lost continent" of Laramidia, formed when a shallow sea flooded the central region of North America, isolating the eastern and western portions of the continent for millions of years during the Late Cretaceous Period. The newly discovered dinosaurs, close relatives of the famous Triceratops, were announced in PLoS ONE, the online open-access journal produced by the Public Library of Science. The study, funded in large part by the Bureau of Land Management and the National Science Foundation, was led by Scott Sampson and Mark Loewen of the Utah Museum of Natural History (UMNH) and Department of Geology and Geophysics, University of Utah. The bigger of the two new dinosaurs, with a skull 2.3 meters (about 7 feet) long, is Utahceratops gettyi (U-tah- SARA-tops get-EE-i). The first part of the name combines the state of origin with ceratops, Greek for "horned face." The second part of the name honors Mike Getty, paleontology collections manager at the Utah Museum of Natural History and the discoverer of this animal. In addition to a large horn over the nose, Utahceratops has short and blunt eye horns that project strongly to the side rather than upward, much more like the horns of modern bison than those of *Triceratops* or other ceratopsians.

Mark Loewen, one of the authors on the paper, likened *Utahceratops* to "a giant rhino with a ridiculously supersized head."

Second of the new species is *Kosmoceratops richardsoni* (KOZ-mo-SARA-tops RICH-ard-SONi). Here, the first part of the name refers to kosmos, Latin for "ornate," and

ceratops, once again meaning "horned face." The latter part of the name honors Scott

Richardson, the volunteer who discovered two skulls of this animal. *Kosmoceratops* also has sideways oriented eye horns, although much longer and more pointed than in *Utahceratops*. In all, *Kosmoceratops* possesses a total of 15 horns -- one over the nose, one atop each eye, one at the tip of each cheek bone, and ten across the rear margin of the bony frill – making it the most ornate-headed dinosaur known.

Although much speculation has ensued about the function of ceratopsian horns and frills -- from fighting off predators to recognizing other members of the same species or controlling body temperature -- the dominant idea today is that these features functioned first and foremost to enhance reproductive success. Sampson added, "Most of these bizarre features would have made lousy weapons to fend off predators. It's far more likely that they were used to intimidate or do battle



with rivals of the same sex, as well as to attract individuals of the opposite sex."

The dinosaurs were discovered in Grand Staircase-Escalante National Monument (GSENM), which encompasses 1.9 million acres of high desert terrain in south-central Utah. This vast and rugged region, part of the National Landscape Conservation System administered by the Bureau of Land Management, was the last major area in the lower 48 states to be formally mapped by cartographers. Today GSENM is the largest national monument in the United States. Sampson added that, "Grand Staircase-Escalante National Monument is now one of the country's last great, largely unexplored dinosaur bone yards." Clearly many more dinosaurs remain to be unearthed in southern Utah. "It's an exciting time to be a paleontologist," Sampson added. "With many new dinosaurs still discovered each year, we can be quite certain that plenty of surprises still await us out there."

Fossil of Giant Bony-Toothed Bird from Chile Sets Wingspan Record ScienceDaily 9/19/10

A newly discovered skeleton of an ancient seabird from northern Chile provides evidence that giant birds were soaring the skies there 5-10 million years ago. The wing bones of the animal exceed those of all other birds in length; its wingspan would have been at least 5.2 m (17 ft.). This is the largest safely established wingspan for a bird. Other, larger estimates for fossil birds have been based on much less secure evidence. The new bird belongs to a group known as pelagornithids,

informally referred to as bony-toothed birds. They are characterized by their long, slender beaks that bear many spiny, tooth-like projections. Such 'teeth' likely would have been used to capture slippery prey in the open ocean, such as fish and squid. Fossils of bony-toothed birds are found on all continents, but such remains are usually fragmentary. This is because most birds have fragile bones that often do not survive the fossilization process. Only a single partial skeleton of a bony-toothed bird was known prior to discovery of the new Chilean specimen, and it is badly crushed. The new specimen, which is 70% complete and uncrushed, provides important new information about the size and anatomy of these strange birds. It is the largest bony

toothed bird discovered so far. It also represents a new species named after its country of origin: *Pelagornis chilensis*.

"Although these animals would have looked like creatures from Jurassic Park, they are true birds, and their last representatives may have coexisted with the earliest humans in North Africa," said Mayr. "This specimen greatly improves our knowledge of the appearance of one of the most spectacular and fascinating animals that crossed the skies," said the study's co-author,



Dr. David Rubilar of the Museo Nacional de Historia Natural, Chile. A life-size reconstruction will be on exhibition in the Senckenberg Museum in Germany. We had two trips with the Club this month, one to Beltzville State Park, in which we collected at two places, then to a 'borrow pit', on to Saint Clair to collect fern fossils then to Centrailia, the town that has been on fire for more than 50 years. That was 10/10/10.

The next trip was to Sterling Hill for our annual Mine Tour. Your Newsletter Editor is waiting for photos PLEASE.

This space left blank waiting for your articles and photos !!

Geologists tell us that if all the oceans were to evaporate, the salt left behind would cover the entire planet with a layer of salt 50 meters (half a soccer field) thick. How's that for high blood pressure? Then we'd all be in a pickle. Quote from *The Rockhounder. The* Gem, Lapidary, and Mineral Society of Montgomery County MD., Inc.

AFMS CODE OF ETHICS (American Federation of Mineralogical Societies)

- I will respect both private and public property and will do no collecting on privately owned land without the owner's permission.
- I will keep informed on all laws, regulations of rules governing collecting on public lands and will observe them.

I will to the best of my ability, ascertain the boundary lines of property on which I plan to collect. I will use no firearms or blasting material in collecting areas.

- I will cause no willful damage to property of any kind fences, signs, buildings.
- I will leave all gates as found.
- I will build fires in designated or safe places only and will be certain they are completely extinguished before leaving the area.
- I will discard no burning material matches, cigarettes, etc.
- I will fill all excavation holes which may be dangerous to livestock.
- I will not contaminate wells, creeks or other water supply.
- I will cause no willful damage to collecting material and will take home only what I can reasonably use.
- I will practice conservation and undertake to utilize fully and well the materials I have collected and will recycle my surplus for the pleasure and benefit of others.
- I will support the rockhound project H.E.L.P. (Help Eliminate Litter Please) and will leave all collecting areas devoid of litter, regardless of how found.

I will cooperate with field trip leaders and those in designated authority in all collecting areas. I will report to my club or Federation officers, Bureau of Land management or other authorities,

any deposit of petrified wood or other materials on public lands which should be protected for the enjoyment of future generations for public educational and scientific purposes.

I will appreciate and protect our heritage of natural resources.

I will observe the "Golden Rule", will use "Good Outdoor Manners" and will at all times conduct myself in a manner which will add to the stature and Public "image" of rockhounds everywhere.

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WEB SITES By Wendell Mohr Slide into These Sites

Trinity Site is at <http://www.amwest-travel.com/awt_trinity.html>. Vicariously visit the Trinity Site, place of the first atomic bomb explosion on July 16, 1945. I was prompted to post this site because this is the locality from which the Trinitite, which Jonathan Baum displayed at the last meeting, came.

Read about the tests that changed the world performed there and see historic pictures associated. It is said that old meters and clocks which had radium coatings on their dials generate greater radio activity readings than the trinitite. So, Jonathan, you got a hot specimen, not highly radioactive.

James Kostka, on the other hand, collects radioactive minerals. Yes, some like it hot!

Dinosaur Park, at http://www.pgparks.com/Things_To_Do/Nature/Dinosaur_Park.htm, gives vital information about the park about which Dr. Peter Kranz recently gave us a lecture. Directions, contact information, and vital facts are here. Included is a <myFoxDc.com news

clip with Dr. Kranz and news reporter Gurvir Dhindsa. Don't overlook clicking on the items in the left column: "History of Dinosaur Park" and "Programs and Events." Astrodon Johnsoni Maryland State Fossil - Art work at the Harbor Place Maryland Science Center Baltimore.

Q: What do you call a dinosaur curse? A: A Tyrannosaurus hex! From Richard Jaeger, RMFMS President.

Herkimer Diamonds is a site by Bill and Anne Mcllquham. See <http://herkimerdiamonds.ca/> for this Canadian based couple's fine account of the world-famous locality. You need to click on the underlined "article" to see the body of the work on the Geology.com web site. As is customary no endorsement is made for purchases from this or any commercial web site. Some of the crystals found contain hydrocarbon anthraxo-lite inclusions, the non-fat version of that terrorist's bug.

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