

# THE EARTH SCIENCE NEWS

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EARTH SCIENCE CLUB OF NORTHERN ILLINOIS

-----E S C O N I-----

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**EARTH SCIENCE CLUB OF NORTHERN ILLINOIS 2009**

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<b>Junior</b>	Open			

John Good & Karen Nordquist are delegates to Chicagoland Gems & Minerals Association. Mark Kuntz served as the March Show Chairman.

The aim of the **Earth Science Club of Northern Illinois** is to promote an interest in the Earth Sciences. In addition to the regular General Meeting, study group meetings are held monthly. They are held by groups of **ESCONI** members interested in the studies of Archaeology, Mineralogy, Micromounts, Paleontology, and the Lapidary Arts. There are also study sessions for Junior members to help them learn more about the earth sciences. From time to time field trips are arranged. **ESCONI** has a fine library of books on the earth sciences that are available to members.

We welcome the attendance of all interested persons at any or all sessions. The schedule is printed on the back page (date, time and place of meeting). Specific information is published in this bulletin.

Membership is \$20.00 (which includes the Bulletin) for annual family membership, or \$50.00 for three years. Dues are payable either at the monthly meetings or by mailing to the **Membership Chair** listed above.

Deadline for Bulletin articles to the editor is the 2<sup>nd</sup> weekend of each month.

Articles in this publication may be reprinted if full credit is given the author and **The Earth Science News**. Exchange bulletins may be mailed directly to the Editor.

**ESCONI** website is [www.esconi.org](http://www.esconi.org)  
Web Administrator is Diana Lord

**June 2009****President's Message**

Chicagoland was a lot of fun again as usual. There were a lot of demonstrators showing their skills and talents – what a great variety there was! There were many dealers with a variety of goodies for one and all. And fun for the youngster also. Thanks to all of you who helped out. It was good to see everybody there.

Our librarian Andy Jansen brought an interesting book to our attention from the new additions to our library from the donation from Don Brazda. It is a book called "Trapped" about the Cherry Mine Disaster of 100 years ago. I never heard about it before and it turns out that it is the third worst mine disaster in US history with 259 deaths. I just finished the book and have returned it to our library so that others can enjoy it, hopefully, this year – the year of its centennial anniversary. The author's grandfather survived the event because he didn't go to work that day – he had a hangover that day and it saved his life. She described life in 1909 in Cherry where 3% of homes had electricity and ice boxes really used ice and stoves used wood. The new Cherry mine was the largest coal shaft in the US and the safest and it was fireproof. Then on that Friday November 12, 1909 a small fire started in a hay bale used to feed the mules stabled in the coal mine and it burned for months. It is a good read with some miners surviving the fire after a week underground.

Our speaker at the General Meeting this month should be very interesting. Bob Martin from the Field Museum is an expert on hominid research and has been involved in the controversy on the hobbits found in Southeast Asia. Where some have said that these small fossils are a new species, *Homo floresiensis*, Dr. Martin does not agree with this. It will be interesting to hear what he has to say.

All of you who have Mazon Creek fossils, start looking them over and selecting the best ones. We will want you to bring them to the Paleontology meetings starting in September as we start to redo the Mazon Creek Animal Book. We will be looking for fossils to photograph for inclusion in the new book. We want the best ones and some representative ones to add to the book. We are going to start with jellyfish. So come and help us out. It will be fun.

I hope that everyone has a good summer and look forward to hearing about what everyone does during the summer break. Keep an eye on the web site for what is going on over the coming months.

Karen Nordquist, President

**2009 ESCONI Gem, Mineral and Fossil Show Demonstrators and Exhibitors by  
John Good**

The 2009 ESCONI Gem, Mineral and Fossil Show at the College of Dupage on March 14 and 15 chaired by Mark Kuntz was a great success. Special thanks to the demonstrators and exhibitors who contributed to the show. Also thanks to Diana Lord for demonstrating the new ESCONI Web site.

Demonstrators were Lorel Abrell, David and Sheila Bergmann, Jeanine Milecki, Don Cronauer and Ted DeJong.

Exhibitors were Lorel Abrell, Archaeology Study Group, Robert Beadle, Larry Bertsch, David and Sheila Bergmann, Joan Bledig, Kathy and Judy Dedina, Field Museum, Bealis Gidding, John Good, Lizzadro Museum, Mark Kmiecik, Mark Kuntz, Mineral-Micromount Study Group, Bill Morse, Paleontology Study Group, Richard Rock and Betsy Rogers. I hope I got them all. Many thanks to the College of Dupage for the use of their facility.

**JUNE 2009 ESCONI EVENTS**

College of DuPage (COD) Building K, Room #131 for most meetings, but note that the room

**General Meeting:** Dr. Bob Martin from the Field Museum, "**From Primate Ancestry to Human Origins**".  
**8:00pm Friday, June 12**

**Mineral-Micromount** **Geodes: Illinois and Beyond**  
**7:30 PM, June 13** David Bergmann will bring his geode splitter.

**Paleontology** No meetings are planned for the summer.

**Archaeology** No meetings are planned for the summer

**Junior** Subject to reorganization.

**ESCONI Field Trips** See Web Site, [www.esconi.org](http://www.esconi.org), for details about future field trips in 2009. Contact John Good for information at 630-483-2363 or [ESCONI@hotmail.com](mailto:ESCONI@hotmail.com)

**BOARD MEETING** The next Board Meeting is scheduled for August 28th

GROUP	GENERAL	MICRO	PALEO	ARCH	BOARD	JUNIOR
June	12	13	X	X	X	
July	X	X	X	X	X	
August	X	X	X	X	28	
September	11	12	19	26	25	
October	9	10	17	24	23	
November	13	14	21	X	Dec 4	
December	TBD	12	X	X	X	
DAY	2 <sup>nd</sup> FRI	2 <sup>nd</sup> SAT	3 <sup>rd</sup> SAT	4 <sup>th</sup> SAT	4 <sup>th</sup> FRI	2 <sup>nd</sup> FRI
TIME	8:00	7:30	7:30	7:30	7:30	7:00

## General Meeting

April 10, 2009

President Karen Nordquist called the meeting to order and welcomed everyone. She reported that the Mid America Paleontology Society (MAPS) show (April 3-5, 2009) was good. Next year's MAPS show will be held a week earlier than usual, which could conflict with the time that we want to hold our ESCONI show. The theme for the MAPS show will be the Ordovician period. Dr. Robert Fry will be the keynote speaker. MAPS is looking for additional articles for the show. Karen went on to mention that our show held March 14 and 15 was also very good and was enjoyed by all. She expressed her thanks to all that helped to make the show a success. It is still uncertain as to where and when we will have next year's show.

Upcoming General Meetings were then discussed. On May 8, Dr. Lindsay Zanno will be giving a presentation on "Resurrecting Dinosaurs – How New Science Is Bringing Ancient Beasts to Life." On June 12, Dr. Bob Martin from the Field Museum will give a presentation on human evolution. Upcoming field trips were then discussed. These included the May 16 trip to Braceville and the May 17 trip to Braidwood. Future trips beyond those are uncertain at this time. See our web site (<http://www.esconi.org>) or the Bulletin for field trip information. Eileen Mizerk (Membership Chair) mentioned that 11 new members signed up at the ESCONI show. One of these new members also donated \$20 towards covering ESCONI room rental costs. To date, 41 families have taken advantage of the 3-year membership deal. Past members that have not renewed their memberships were culled.

The Chicagoland Gems & Minerals Association show will be held Memorial Day weekend (May 23 and 24) at the DuPage County Fairgrounds. There will be about 28 dealers at the Chicagoland Show plus lots of demonstrations. See the May 2009 Bulletin or the ESCONI web site for further information. Cases are available for anyone that wants to display at the show. Help is needed for set-up at the Chicagoland Show.

A mention of the two books that ESCONI has for sale was made. A few of ESCONI's old plant books are also available. Jack Wittry, Jim Fairchild, and others will be editing a new Mazon Creek animal book and Rob Sula will be doing the art work. This book will include more animals than that in our previous book, and will be aimed more at species identifications rather than at species descriptions. It is planned that the book will include photographs of both good and general specimens. The later are those that represent the typical specimens that most amateur collectors come across. All ESCONI members can share in this project by having their specimens photographed for the book. This project will start in September, so members are encouraged to start bringing their specimens to either the General or to the Paleontology Group meetings. First up will be jellyfish.

Upcoming study group presentations for April were mentioned. Check the web site or Bulletin for study group activities. Joe Kubal mentioned that several ESCONI members volunteered at the Peggy Notebaert Nature Museum to help identify specimens. It is possible that ESCONI may be able to have a field trip to the museum this fall or winter. Joe also discussed the display he had at the Morton Arboretum and that he will have a display at Fullersburg Woods Nature Education Center for Earth Day.

### General Meeting of April, 2009, Continued

1<sup>st</sup> Vice President Rob Sula then introduced the speaker for the evening: Dr. Terry “Bucky” Gates from Lake Forest College. ESCONI was privileged to have Dr. Gates present some new information on recent hadrosaur discoveries that he will be submitting soon for publication.

#### “Biogeographic and Macroevolutionary Significance of Recent Hadrosaurid Dinosaur Discoveries”

Bucky began his talk by providing an overview of hadrosaurs or duck-billed dinosaurs. They were among the most numerous large herbivorous dinosaurs of the late Cretaceous, and thus were a staple in the diet of *Tyrannosaurus rex*. They are also among the most common dinosaur fossils that are encountered. The hadrosaurs took many forms and sizes. While hadrosaurs could walk/run on two legs, they could also walk on all fours (e.g., while grazing). Hadrosaur ancestors evolved about 90 to 86 million years ago (MYA), while first duckbills evolved about 79 MYA. Hadrosaurs can be placed within two basic groups (subfamilies): the hadrosaurines and the lambeosaurines. The hadrosaurines had relatively flat heads and bony ridges on their snouts, while the lambeosaurines had large cranial crests or tubes with hollow air passages on top of their heads. Some of the more familiar lambeosaurines were *Corythosaurus*, *Lambeosaurus*, and *Parasaurolophus*.



Bucky’s studies have focused mostly on fossil remains from the “western continent” of the United States from about 75 MYA. To date, he has named two hadrosaur species: *Velafrons coahuilensis* (a lambeosaurine) and *Gryposaurus monumentensis* (a hadrosaurine). He will soon be naming a third hadrosaur species. Bucky then showed a phylogenetic chart of the hadrosaurs. Bucky talked about two clades of hadrosaurines. The first consisted of taxa such as *Brachylophosaurus*, *Maiasuara*, and an unnamed taxa that occurred between 79 and 76 MYA. The second clade consisted of several species of *Gryposaurus* that occurred between 78 and 75 MYA. Bucky mentioned that *Gryposaurus* species were generalized feeders, which accounts for little variation in their evolution (other than increasing size). Bucky mentioned that the complete diet of duckbills may never be known. Remains found in fossil specimens, such as wood, only represent the foods eaten on one particular meal. [As hypothesized by Chin (2007), hadrosaurs may have eaten wood to supplement their diets. Nutrients were actually obtained from detrital resources released by fungal decomposition and from the decomposers and invertebrate detritivores occurring in the wood.]

### General Meeting of April, 2009, Continued

Bucky then gave an overview on the biogeography of hadrosaurs. Constraints to north/south movement along the inland seas in the Utah area resulted in a northern and southern clade of hadrosaurs. The northern clade, as typified by *Prosaurolophus*, moved across the land bridge to Asia. Once in Asia, they led to the demise of *Bactrosaurus* (a primitive relative of duckbills) due to competitive pressures. The southern clade of hadrosaurs, typified by *Gryposaurus* and *Kritosaurus*, expanded into Mexico and eventually South America.

Bucky ended his talk discussing his planned work in the Book Cliffs area of southern Utah. He will be interested in seeing how different this area may be from where he has previously worked. He is especially curious to discover whether specimens of *Gryposaurus* or *Parasaurolophus* will be discovered. His initial thoughts are that *Parasaurolophus* will not be found there, as the Books Cliff area is in close proximity to the inland sea and *Parasaurolophus* occurred away from oceans.

Following the well-received presentation, Rob Sula presented Dr. Gates with an honorarium. Following a series of questions and answers, the meeting was adjourned with thanks to Bucky for a highly entertaining presentation. Refreshments were served.



The citations for the papers in which Bucky named the two hadrosaur species are:

Gates, T.A., et al., 2007, "*Velafrons coahuilensis*, a New Lambeosaurine Hadrosaurid (Dinosauria: Ornithopoda) from the Late Campanian Cerro del Pueblo Formation, Coahuila, Mexico," *Journal of Vertebrate Paleontology* 27(4):917-930.

Gates, T.A., and S.D. Sampson, 2007, "A New Species of *Gryposaurus* (Dinosauria: Hadrosauridae) from the Late Campanian Kaiparowits Formation, Southern Utah, USA," *Zoological Journal of the Linnean Society* 151:351-376.

The citation for the Chin (2007) parenthetical statement is:

Chin, K., 2007, "The Paleobiological Implications of Herbivorous Dinosaur Coprolites from the Upper Cretaceous Two Medicine Formation of Montana: Why Eat Wood?" *Palaios* 22(5):554-566.

Respectively Submitted, William S. Vinikour, Recording Secretary

John Good, Chairman  
Date: April 18, 2009

## Paleontology Study Group Meeting

Chairman John Good called the meeting to order and mentioned that he had baked cookies and brownies for refreshments tonight. The Dedinas also had baked a cake so there were lots of goodies to enjoy tonight. John mentioned that the ChicagoLand Show on Memorial Day weekend would need help for set up and tear down. Karen Nordquist mentioned that she had forms for cases for anyone who wanted to display their fossils or other collections at the show. John reminded everyone about the field trips to Braceville on May 16 and to Braidwood on May 17. The May Paleontology Meeting will be Dave Carlson on the Search for Dinosaurs in Illinois. In September it will be Show and Tell. The May General Meeting will be Lindsey Zanno of the Field Museum on Therizinosaur Dinosaurs. John Catalani has been calling quarries and the new trend he is finding is that they are not open on Saturdays as part of the new economy. He is still working on it.

Librarian Andy Jansen reported that Don Brazda donated his personal book collection to our library and he is currently sorting it out. One of the books, "Trapped The 1909 Cherry Mine Disaster" is a very interesting one he brought in to recommend. The meeting was then turned over to member Dave Dolak who teaches at Columbia College.

### Silurian Bedrock of Northeastern Illinois



The Silurian is from 443-416 million years ago and there are many quarries in the area that we are familiar with from this time including Thornton, Sugar Reef, Joliet, Kankakee, and others. The Niagaran Formation of the Silurian surrounds the Basin and sits on top of the Ordovician. They include dolomites that are made up of calcium magnesium that is a one to one that are high in salinity. It will loose magnesium when dissolved in fresh water. Dolomite is a mineral that is also called dolostone. If it is pure it has few clastics and silt in it. The purer dolomite is used to make cement. The less pure dolomite is used to make flagstone. It is not classed as metamorphic.

There are only a few areas where there are natural areas of exposure today. In the other areas you have to dig to the exposures in quarries. The rest are covered with glacial material. There was a large reef under Illinois with large inter-reef areas around it under Illinois that formed long ago. Thornton Quarry is now where it was. Then there is the Larson Quarry which is at the Silurian Ordovician border. There is the National Quarry in Joliet in the Joliet series. Along the Des Plaines River is the Sugar Run near Lemont. It is called Dellwood Park Quarry. This is some of the inter-reef flagstone and much of this material is used for some of the construction of buildings. the inter-reef flagstone and much of this material is used for some of the construction of buildings. There are some fossils – trilobites in the chert layers here. He does give some tours here.

Paleontology Study Group Meeting, Continued

Then there is the mighty Thornton Quarry that is 400 feet deep on Interstate 80. It is in the Racine Formation and will soon have part of it closed off as part of the Deep Tunnel project. You can see the center of the reef and the flank beds on its sides. They have another 100 feet to go in the quarry. On the headwall there are crevasses with Devonian fill. On field trips there was some collecting time to gather coral, and brachiopods.

SILURIAN		ALEX. NIAGARAN		HUNTON		Thickness (feet)	Characteristics
				Racine		0-300	Dolomite, pure in reefs, mostly silty, argillaceous, cherty between reefs
				Waukesha		0-30	Dolomite, even bedded, slightly silty
				Joliet		40-60	Dolomite, shaly and red at base, white, silty, cherty above, pure at top
				Manitou		20-45	Dolomite, thin beds, green shale partings
				Edgewood		0-100	Dolomite, cherty, shaly at base where thick

This is from "Summary of the Geology of the Chicago Area" by H. B. Willman

Dave had material from several of the quarries he had talked about including rugose corals from Larson Quarry. From the National Quarry in Joliet he had clastic material and trilobites. From Sugar Run Dellwood Park he had nautiloids and trilobites, crinoid stems and bryozoans. And from Thornton Quarry he had brachiopods, crinoids and trilobites (photo below).



Others also shared what they brought to the meeting. John Catalani had some fossils from the Indiana Silurian including a nautiloid with growth lines.

Irene Broede had an enrolled trilobite from Lemont, a trilobite from Morris, and a trilobite from an ESCONI field trip. She also had several fossils from the Thornton Quarry including a nautiloid, a brachiopod, a bryozoan and a stromatoporoid.

Chris Cozart had several trilobites from a Grafton Illinois Quarry. He also had a cystoid from the Sugar Run Formation and a

nautiloid from Downers Grove. He had several corals from Louisville limestone in Southern Illinois.

Tyler Holm has a trilobite and a nautiloid.

Dave Carlson had a stromatoporoid, a systoid and horn coral from Larson Quarry.

Dale Gallian had a nautiloid, rugose coral and a gastropod.

The meeting was adjourned for delicious refreshments and discussion.

Respectfully submitted, Karen Nordquist, Secretary

June – Pearl  
(Alternate gems: Moonstone and Alexandrite)

By LaVergne R. Novak

The pearl is organic in origin, not mineral, and therefore, not truly a stone. However, our friendly lapidary, the mollusk, produces such a beautiful gem that the pearl is always included in any list of gemstones.



Willard A. Heaps, in *Birthstones*, likens the creation of a pearl by a mollusk to the formation of a tumor in humans—not a very pleasant comparison, but not altogether erroneous, either. When a bit of foreign matter enters the mollusk’s shell, it becomes an irritant to the soft tissue of the mollusk’s body. To ease the irritation, the mollusk begins to cover the foreign matter with layer after layer of nacre, the smooth, calcium –based substance that lines its shell; and a pearl is formed. This, incidentally, is why the shell

lining is called mother-of-pearl.

The ancients believed that pearls were alive and were nourished by contact with the skin. This belief was based on two things: one, the pearl’s organic origin and two, the tendency of pearls to lose their luster if not worn for long periods of time. Actually, they become dull when they are not lubricated by body oils, not for lack of nourishment. Thus, their appearance is enhanced when worn regularly.

There are not many superstitions attached to the pearl. Rather, it has had romantic and poetic associations and has been a sign of wealth. Cleopatra crushed a pearl in a glass of wine and drank a toast to Mark Anthony. The early Romans, too, found that crushed pearls lent a delicate flavor to wine and served it to special guests. Arabians called pearls “the tears of the gods” because they believed raindrops falling into open shells became pearls.

As early as 2000 B.C. the pearl was used as medicine by the Chinese, who thought it would cure insanity. The Romans used pearls to cure a long list of ailments. Ladies used ground pearls as a powder to soften and beautify their skin. During the Renaissance, though, pearls were thought to be unlucky for lovers. They became the symbol of tears because they were produced by mollusks to ease the mollusk’s pain.

Pearls can be found in many parts of the world, from the tropical waters of the South Seas to Sri Lanka, from Australia to southern California. These, of course, are all salt water pearls; but pearls can also be found in fresh water. In fact, the exquisitely colored pearls—black, yellow, pink, and blue—are more commonly found in fresh water.

Early in the 20<sup>th</sup> Century the Japanese, taking advantage of the mollusk’s ability to shield itself from an irritant, devised a way to produce cultured pearls. By placing a tiny bead or other foreign particle inside the shell of the mollusk, they induced the mollusk to build a protective pearl around it. Because of a continuing demand for pearls and the great length of time it takes for a mollusk to produce a natural pearl, about 90% of all pearls sold today are cultured pearls.

(This is a birthstone series. Text was first printed by the Lizzadro Museum. Photo of natural fresh water pearls is from “Pearls; A Natural History” by Landman et al.)

**MINERALOGY/MICROMOUNT****May 9, 2009**

The meeting was called to order at 7:30 PM by Kathy Dedina.

This month's program was on fluorescence. Jim Daly gave an explanation of the mechanism of fluorescence, and Kathy Dedina described some of the better-known localities for fluorescent minerals. Jim Daly had some fluorescent mineral specimens for sale, and there was a silent auction of micro material owned by the study group.

The June meeting will be on geodes. Kathy Dedina will describe how geodes are formed and Jim Daly will describe the minerals found in Keokuk geodes.

Kathy Dedina provided refreshments.

Submitted by Jim Daly

Note: Kathy Dediina's Presentation follows. Jim Daly's Presentation will be in the July-August newsletter.

**Minerals by Kathy Dedina**

About 500 of the 3600 known minerals show some fluorescence according to the Fluorescent Mineral Society website. We will feature those minerals we are likely to have in our collections rather than rare and unusual specimens. Fluorite (calcium fluoride) is the mineral after which this optical property is named. Stokes was studying fluorite from Alston Moor, England in focused sunlight. He was not the first to notice this response but he did put a name on it. Luckily this fluorite has one of the brightest responses especially to LW (Longwave). It fluoresces in the blue color the most common color for fluorite. Fluorites from Cumberland and Weardale in England, several Arizona locations. Socorro Co, New Mexico and Camp Bird in Colorado also exhibit the blue color. This is due to the presence of the rare earth element europium. Fluorite also exhibits yellow, orange, red, pink, violet, green and brown colors. Fluorites from the Illinois, Indiana and Ohio areas fluoresces a cream or butter yellow due to organic matter. Not all fluorite from S. Illinois fluoresces. Many exceptional purple specimens show no response to ultraviolet light. Some not so perfect specimens may make excellent fluorescent specimens. It is worthwhile to check all specimens in UV (Ultraviolet) light. The red fluorescence of some specimens from Mapimi, Mexico and Spain is rare and not understood. Some fluorite from Fort Wayne, Indiana exhibits a violet color in LW. According to Henkel's glossary about half of the referenced fluorite fluoresces.

Calcite( calcium carbonate) is a common fluorescent mineral occurring in a wide range of colors including shades of red, pink, orange, yellow, green, blue, white and brown usually brighter under SW (Shortwave). There are two locations especially famous for calcite among the many sites worldwide. The Franklin, New Jersey area is probably the best known fluorescent site in the world. The brilliant red-orange fluorescence of calcite especially combined with the green of willemite is a classic. The color is strong. Manganese is the activator with a coactivator. Specimens are plentiful and relatively inexpensive. Tons of specimens have been removed from the mines in the course of the long working life of the mines. Terlingua, Texas. is the other of these famous locations. Calcite from there displays different colors under short wave (SW) and long wave light. It fluoresces blue under SW. Under LW it fluoresces pink. The cause of this unusual response is unknown. Several other Texas locations plus a few scattered across the U.S. also display the unusual property. Red fluorescing calcite is also found in several western states including California and Arizona. Some calcite from Cave-in-Rock, Illinois displays an orange color. Green fluorescing calcite probably due to uranium is found in the Badlands of South Dakota and in the Tres Hermanas Mts. of New Mexico.

## Minerals, Continued

Judy and I visited the Harrodsburg, Indiana millerite location. We left with no millerite and little else. We did find some calcite that fluoresced by checking our specimens under UV light. Part of the fun of fluorescent minerals is finding them in unexpected places. Henkle's glossary s lists more than half of the reference specimens as showing some response to UV light.

Willemite (zinc silicate) is the other brilliantly colored mineral from Franklin usually associated with the above mentioned calcite. It occurs as yellow green under sw. Manganese is also the activator. Willemite from many Arizona locations fluoresces in the yellow-white color range. Rare colors are orange, brown or bluish.

Scheelite ( calcium tungstate) is self activated and fluoresces blue-white under sw. The color turns white then yellow as the concentration of molybdenum increased. It is found in many western states and more recently from China. Its fluorescent property was used in the search for tungsten deposits.

Many secondary uranium minerals are collected for their bright colors in natural light and for their fluorescence under uv light. Meta-autinite (calcium uranium phosphate) is known for a bright green fluorescence in both SW and LW. It is probably what most autinite specimens have been altered to. The uranyl group is formed of uranium and oxygen. While most of us do not have large collections of uranium secondary minerals we do have specimens of opal, adamite, chalcedony, calcite, aragonite and apophyllite that fluoresce green because of the presence of the uranyl group as an impurity. Specimens from the western states are good illustrations of this.

Sphalerite is known to fluoresce under LW in colors of orange, blue, yellow or red. Many specimens do not fluoresce. Specimens for Bisbee, Arizona, Franklin, New Jersey and Tsumeb do show a response. Minerals of the apatite group including vanadinite, minetite, pyromorphite and fluorapatite fluoresce in a variety of colors. Members of this group should be checked under the ultraviolet light. The same is true of feldspar group minerals. Some diamonds fluoresce. Stronianite, witherite and barite from S. Illinois fluoresce. Sodalite from some locations fluoresces a bright orange. Several books reference the major fluorescent minerals.

There are a few locations that are noted for their exceptional fluorescent minerals. The Franklin, New Jersey area was declared the Fluorescent Mineral Capital of the World by the New Jersey legislature in 1968. For once, they are probably right. What makes Franklin-Sterling Hill unique? This area has a large number (80) of fluorescent minerals many of which show exceptional intensity. Many specimens have multiple minerals up to 7 in colorful combinations. Pieces with 2 to 4 minerals are common. Specimens come in relatively large sizes and are plentiful. The use of electric equipment in the mine with associated sparking and arcing made the fluorescence of nearby minerals possible. Fluorescence was useful in locating and processing ore. It also added a new dimension to the mineral collecting hobby especially after the development of portable uv lights. The classic specimen is a combination of red calcite and green willemite. Barite fluoresces white, esperite green yellow, wollastonite orange, hardystonite violet, margarosanite blue, clinohedrite orange and manganoaxinite red. Although the mines are closed some collecting is possible on sites associated with local museums and mineral societies. The website Introduction to Franklin Fluorescence provides information and links about Franklin and Sterling Hill.

Minerals, Continued

The Mont Saint-Hilaire in Canada is another famous site with over 40 fluorescent minerals. Here many of the minerals are micro sized but are still viewable under UV light and the microscope. Calcite and willemite are present. Other minerals with a UV response include sphaerite, fluorite, fluorapatite, scheelite, apophyllite and tugtupite.

Greenland has an unusual group of fluorescent minerals including tugtupite. It fluoresces in a red color under SW and orange under LW. It is found at Mont Saint-Hilaire and the Kola Peninsula in Russia. Other fluorescents from Greenland are sodalite, analcime, chkalovite, ussingite, polyolithionite and soresonite. Specimens with multiple minerals are not uncommon. The collecting areas have limited accessibility.

Tsumeb in Africa, Langban in Sweden, the pegmatites of Afghanistan and Pakistan, the Kola Peninsula of Russia, Minas Gerais in Brazil and Bancroft in Canada have listed fluorescent minerals or gems. More fluorescent mineral locals are found in the western states of Arizona, Nevada, California, New Mexico, Montana, Texas and South Dakota. Illinois is listed because of the fluorescent minerals of the fluor spar district. References for fluorescent minerals and locations are listed below

Fluorescence by Manuel Robbins  
The Henkle Glossary of Fluorescent Minerals  
The World of Fluorescent Minerals by Stuart Schneider  
Collecting fluorescent Minerals by Stuart Schneider

The fluorescent Mineral Society offers membership in an organization devoted to the fluorescent mineral hobby.

Note:

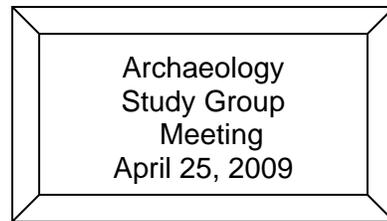
UV— Ultraviolet Light, SW—Shortwave Ultraviolet Light, LW— Longwave Ultraviolet Light

**Remember the June 13, 2009 Mineral Study Group Meeting will be on Geodes.**

**Hard Rock Geode Dig Family Fun  
June 26, 27 & 28, 2009  
Montebello Access Area—Hamilton, Illinois  
Guided Hunts 2009  
2—Friday, June 26th  
2—Saturday, June 27th  
1 Sunday, June 28th**

Swap & Vendor Areas—Displays—Geode Cracking  
Speakers —Identification— On-Site Breakfast & Lunch

For more information contact Mike Shumate (573) 518-4739 or geodefest@hotmail.com  
Www.firstcrackgoedes.com or www.hamiltonillinois.org



## Colonial Williamsburg by Lexico Kiamco

Colonial Williamsburg is a town in Virginia located close to Jamestown. Colonial Williamsburg is important because it was the capital of Virginia during colonial times.

In 1926 the Reverend DR. W.A.R. Goodwin invited Mr. JD Rockefeller JR. down to Williamsburg and showed him the restored Burton parish church and the Gorge Wyth house currently in the process of restoration. He pointed out to Mr. Rockefeller that Williamsburg was the only city connected with both pre-revolutionary and revolutionary events that was capable of restoration.

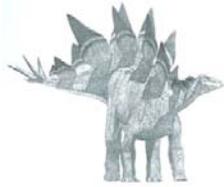
Mr. Rockefeller agreed and over the next 18 months his agents quietly purchased property in Williamsburg. Mr. Rockefeller was extremely anxious that the work should be done in accordance with historic verity. To this end research work was organized and research workers were sent to England and to France to study the records in the British foreign record office in the libraries in the universities of England and in the military offices and historic libraries of France. As a result of this work information indispensable to the restoration was secured.

Archaeology in Williamsburg is broken down into three different phases.

The first phase was called the earliest phase; it was overseen by Prentice Dull. In the earliest phase they used pickaxes and shovels. They hired unemployed laborers to dig cross trenches. Their goal was to find the footprint of the buildings so they can reconstruct the whole town. They only collected things that would be useful during reconstruction; locks, hinges, door knobs, bits of marble mantle and anything else useful for reconstruction. This phase lasted from 1928- 1958. Because they were so intent on only finding the buildings and they ignored the everyday artifacts, they really don't like to consider this phase archaeology.

The second phase lasted from 1958- 1982. They considered this phase true archaeology. They traded pickaxes and shovels for trowels. They still used laborers but they trained them in archaeological techniques. The man who oversaw this was a British archaeologist named Ivor Noel Hume. During this phase, excavation was separated from the Office of Architecture. Ivor Noel Hume made crucial changes; first he introduced open-area stratigraphic excavation. His second was the systematic retrieval of artifacts. As laborers worked their way down through the site's history they began to uncover many of the things that had been missed by earlier trenching; trash pits, post holes, stains identifying the locations of fence lines or lightly constructed buildings gardens and backyard work areas. The goal in phase 2 was not only to reconstruct the buildings, but also to reconstruct the lives of the people who lived there.

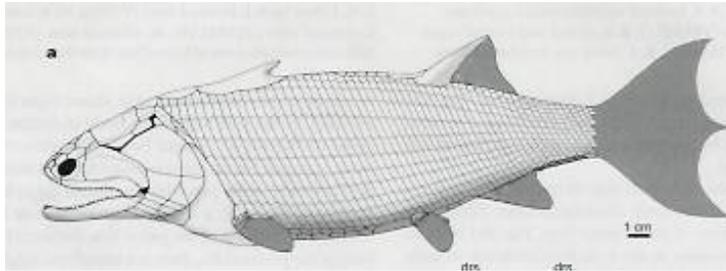
In 1982 Marley Brown the third replaced Mr. Noel Hume as Director of archaeological Research. The third phase is from 1982 – present. The third phase is similar to the second phase with the following differences. In the third phase they replaced the 10 foot squares with one meter squares. They also started collecting environmental data such as phytoliths, shells, and all animal bones. And to this day, Williamsburg has one of the biggest bone collections in the U.S.A.



## Karen's Komments



### New Early Sarcopterygian Fish from China – *Guiyu*



The early evolution of the bony fishes (osteichthyans) extends back to the Silurian period but has involved very fragmentary fossils before this new fossil find discovery from Yunnan, China. It represents the oldest gnathostome or jawed vertebrate known. The drawing above is a restoration of the entire

fish with the grey areas unknown. It has been named *Guiyu oneiros* from the Chinese 'gui' meaning ghost or secret and 'yu' meaning fish and the Greek 'oneiros' meaning dream, alluding to a dream fish with mosaic gnathostome characters. It is about 418 MYA and measures about 33 cm long (13 in.). The fossil is nearly complete with a part and counterpart lacking only the caudal fin. It is similar to *Psarolepis* in many respects and differs in several. There is an extra tooth bearing bone behind the premaxillary bone that is not found in osteichthyans but corresponds to the preostratal plate of placoderms. There are a row of sharp conical slender teeth on the dentary. There is only one fin spine and it is associated with the dorsal fin. This fish includes a primitive pectoral girdle and fin spine like a gnathostome but other features similar to osteichthyans. This is a primitive fish close to the split of osteichthyans from gnathostomes. . (Zhu et al in **Nature** Vol. 458 3/28/2009)

### *Hurdia*, the Other Anomalocarid from the Burgess



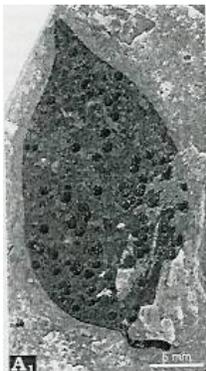
There was another anomalocarid from the Burgess Shale besides *Anomalocaris* and *Laggania* and its name was *Hurdia*. It also was first identified as separate parts as were the other two. The distinguishing feature of *Hurdia* was its prominent anterior carapace, *Proboscicaris*. It is made up of a front element a pair of oval eyes on short stalks, a mouth made

up of 32 elliptical plates that form a domed structure within which there is five inner rows of teeth, a pair of appendages of either side of the mouth made up of 9 to 11 podomeres bearing spines. The body consists of 7 to 9 lateral flaps with a series of gill-like blades and there are two small tail lobes. There are 732 specimens besides the holotype and they measure up to 200 mm (7.8 in.) long. It is the most common of the predators in the Walcott Quarry. It also appears in Utah and Nevada and China. (Daley, Collins et al in **Science** Vol. 323 3/21/09)

## Karens Komments, Continued

Triceratops Bone Bed Found in Montana

Although many skeletons of *Triceratops* have been found they have always been solitary fossils and therefore thought to be non-gregarious dinosaurs. Herds of their cousins, *Psittacosaurus*, have been found in Asia and recently a group of young ornithomimids were found by Paul Sereno. This site was found by the Burpee Museum in the Hell Creek Formation in 2005 when they found their exciting find Homer, a fairly complete *Triceratops* they are preparing for display. The site as seen in the photo above was dense in spots. While they were excavating they found three postorbital horncores and determined that they had more than one specimen. Two of these are equal in length and one is shorter. All have the posterior curvature indicative of juveniles. They have three left nasal bones indicating three individuals and they are all unfused indicating that they are from juveniles. There were four large logs without roots found in the site and it is interpreted as overbank sediments on a floodplain. There was one *Tyrannosaurus* tooth, a fish scale and an osteoderms and tooth from a *Champsosaurus* found at the site also. There are 130 *Triceratops* bones and bone fragments found so far. Most of the parts found consist of cranial and pelvic and pectoral parts with the smaller parts having been transported away. The prepared parts do not show signs of abrasion or predator damage or trampling. It is speculative, but *Triceratops* may have lived together as juveniles. (Matthews, Brusatte, Williams, Henderson et al in **JVP** Vol. 29(1) March 2009)

Scale Insects from Eocene of Germany

The well known Lagerstätten of Messel and nearby Eckfeld are the source of some interesting fossil leaves with preservation of armoured scale insects that increase the number of taxa. Scale insects have been known primarily from the males that have been found in amber. They have legs and wings while the females do not and have not been found as frequently in the fossil record. The adult female has a sac-like body with mouthparts and simple antennae. She secretes wax from glands and pores that encase the moults as they develop. It only lives from several hours to a few days. The fossils were preserved in glycerine and removed from the leaves by scalpels and placed in ethanol and embedded in resin. The leaves had not been modified and the animals were not within the scales. The scale covers ranged in size from 1 mm to 2.6 mm in size. The leaves seemed to develop a ring on the surface in reaction to the scale insect. Usually there were two rings representing the first and second instars or nymphal stages of development. Some of the scale insects appear to be related to extant species which are pests of various agricultural crops of today. The photo above shows a complete preserved leaf of an undetermined dicotyledon with about 70 scale insect covers. Others were found on the lower sides of palm leaves. On some leaves they found elongate scales that appeared to be feeding directly from the veins of the leaves and they do not resemble scale insects of today. Scale insects are also known from the Cretaceous because of abundant fossils from the Denver Basin of Colorado and it is believed that they go back to the Late Triassic in origin. (Wappler & Ben-Dov in **Acta Palaeontol. Pol.** Vol. 53/4 2008)

Karen Nordquist, Paleontology

## Museum Events

### LIZZADRO MUSEUM OF LAPIDARY ART

#### June 6 “Stone Hunt”

This hands-on activity allows children and adults to search for gemstones and mineral specimens among more common rocks and minerals. Learn the difference between rocks and minerals and how to distinguish between them. Each rock or mineral found is identified and can be taken home.

Activity – Ages 5yrs. to Adult – 50 minutes - 2:00 p.m.  
\$4.00 per person - Museum Members Free

#### June 20 “Geode Collecting Field Trip”

Collect geodes near the Mississippi River in Illinois. A hilltop quarry yields abundant and fascinating geodes. A geode cracker will be on hand to open geodes in the quarry. Other minerals and fossils are available to collect. Trip fees include tour guides, collecting and cracking fees and motorcoach.

Field Trip – Ages 8 yrs. to Adult – 7 a.m. to 9 p.m.  
Fee: \$105.00 per person – Museum Members \$100.00  
Reservations Required: (630) 833-1616



#### Kenosha Dinosaur Discovery Museum

5608 Tenth Avenue  
Kenosha, Wisconsin  
262-653-4450

<http://www.kenosha.org/dinosaurdiscovery/index.html>

Hours: Monday, Closed Tuesday through Sunday, Noon to 5pm Closed holidays

Carnotaurus installation will temporarily close the Dinosaur Discovery Museum in June. The Dinosaur Discovery Museum will be closed June 1-15, 2009 for the installation of Carnotaurus.

Temporary Exhibits Fossils From the Field Opens June 16, 2009

See real bones excavated 2006-2008 from southeast Montana during Carthage College Institute of Paleontology's field school.

#### Family Highlight Tour

Saturday, August 8, 2009; 3pm-4pm

Tour the Dinosaur Discovery Museum with curator of education Chris DeSantis at this free family event. Explore the Age of Dinosaurs, touch real fossils and meet Little Clint, the youngest T-rex, with skull and post-cranial bones, ever found.

**SUMMER EVENTS****4th Annual Ben E. Clement Gem and Mineral Show With Digs****June 6 & 7, 2009****Crittenden County High School Rocket Arena****West Elm Street, Marion, Kentucky**

Saturday 9AM—5 PM Sunday 11 AM—5 PM

Museum Tours, Field Trips for Fluorite and Fluorescent minerals, Event speakers and dealers.

Contact Tina Walker, P.O. Box 391, Marion, KY 42064, (270) 965-4263; e-mail: be-clement@kynet.biz; Web site: clementmineralmuseum.org

**44th Annual GEM MINERAL – FOSSIL SHOW – SWAP****June 26, 27, 28, 2009 Sponsored by Lawrence County Rock Club, Inc.**

Wide Variety of Gems, Jewelry, Minerals, Fossils, Rocks, Gifts, Lapidary Supplies, Rockhound &amp; Prospecting Supplies, 4-H Project Material, Science Project Material

Show and Swap Schedule - EDT

Friday 26th 10:00 AM to 6:30 PM Saturday 27th 9:00 AM to 6:30 PM

Sunday 28th 10:00 AM to 4:00 Pm

Held: Monroe County Fairgrounds, West of Bloomington, IN

Directions: From the Junction of IN 37 and IN 45S, go south on IN 45S for 1.2 miles, turn right (west) on Airport Road for 0.7 miles. Fairgrounds are located on the right.

For additional information call: 812-295-3463 or 812-247-3780

**34th Annual Upper Peninsula Gem and Mineral Show****Ishpeming Rock and Mineral Club August 1,2,3 2009**

Ishpeming Elks Club Hall

597 Lake Shore Drive

Ishpeming, Michigan

Free Admission

August 1 Field Trips to Local Quarries for micromount. Hard Hat and Goggles required.

August 2 - Show with demonstrations, display, dealers and silent auction

9:30 a.m. to 4:30 p.m. (All times are Eastern Daylight Savings Time)

August 3 - Field Trip to Lindberg Quarry for Kona Dolomite. Hard Hat and Goggles required.

**Copper Country Mineral Retreat****August 2 to 9, 2009****Houghton, Michigan****A Week of Mineral Collecting and More**

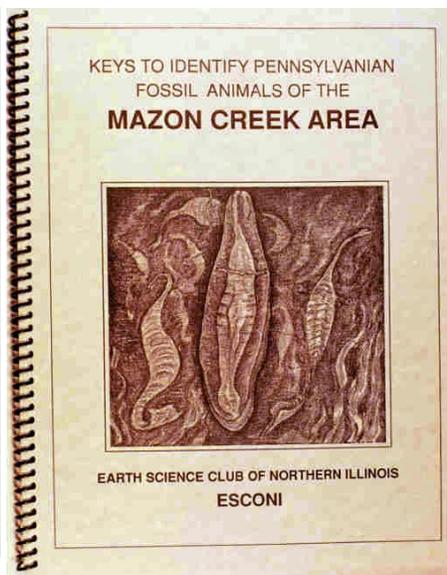
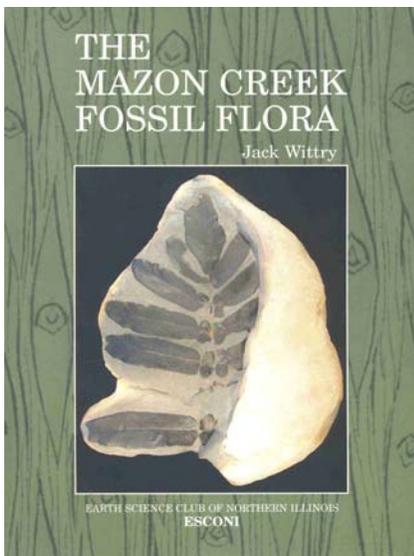
Prepared surface collecting, photography workshop, underground collecting, mineral banquet &amp; auctions, brag session and social speakers

Check here for more details [http://www.museum.mtu.edu/copper\\_country\\_mineral/index.html](http://www.museum.mtu.edu/copper_country_mineral/index.html)

## Keys to Identify Pennsylvanian Fossil Animals of the Mazon Creek Area

ESCONI first published Keys to Identify Pennsylvanian Fossil Animals of the Mazon Creek Area in 1989. With the success of the publication of The Mazon Creek Fossil Flora, it is time to consider updating our twenty-year-old publication of Keys to Identify Pennsylvanian Fossil Animals of the Mazon Creek Area. Jim Fairchild, Jack Wittry, Rob Sula, Chris Cozart, and John Catalani have come together with a goal to produce a quality publication that could complement The Mazon Creek Fossil Flora. In this updated version, the publication will not only utilize existing illustrations, but will also include photos to represent this diverse fauna. One difference is that the flora book presents major revisions to the classification of Mazon Creek plants, requiring museum specimens to be pictured. The new fauna book, will not present major revisions to species which will allow us to picture specimens from private collections. This provides all Mazon collecting ESCONI members with an opportunity to be a part of this new publication. We envision that each species will be represented by photos of one exceptional specimen and two typical specimens. By doing this we hope to show the reader examples of fossils that are representative of those they are attempting to identify.

To start the process, John Good has agreed to set aside a portion of the Paleo Study Group meeting to select and photograph potential specimens of any ESCONI member's collections for possible inclusion in the new book. Each month, the selection process will focus on a new group of animal fossils. We are looking for the best specimen as well as a few typical examples of each species. It is our hope that most of the members who actively contribute to this process will have an opportunity to have his or her specimen pictured in the book. The actual pictures will be selected by the editors at the end of the process with the intent of producing the highest quality publication possible.



On September 19th, we'd like to begin examining Mazon jelly fish fossils at the first paleo meeting. Then, on October 17th, we will cover the worms. We'll keep updates in the bulletin as the book evolves so examine your Mazon Creek collections over the next few months and consider any possibilities you may have to contribute to the new book. Any questions? Contact Jim Fairchild

**The Mazon Creek Fossil Flora** by Jack Wittry  
 313 color pictures, 113 taxa, 145 drawings  
 \$65 hard covers for ESCONI Members  
 \$35 soft and \$6 to ship  
 Make check out to  
 ESCONI Associates

**Keys to Identify Pennsylvanian Fossil Animal of the Mazon Creek Area**  
 125 Pages, 212 Black and White Drawings  
 \$12.00, \$5 to Ship

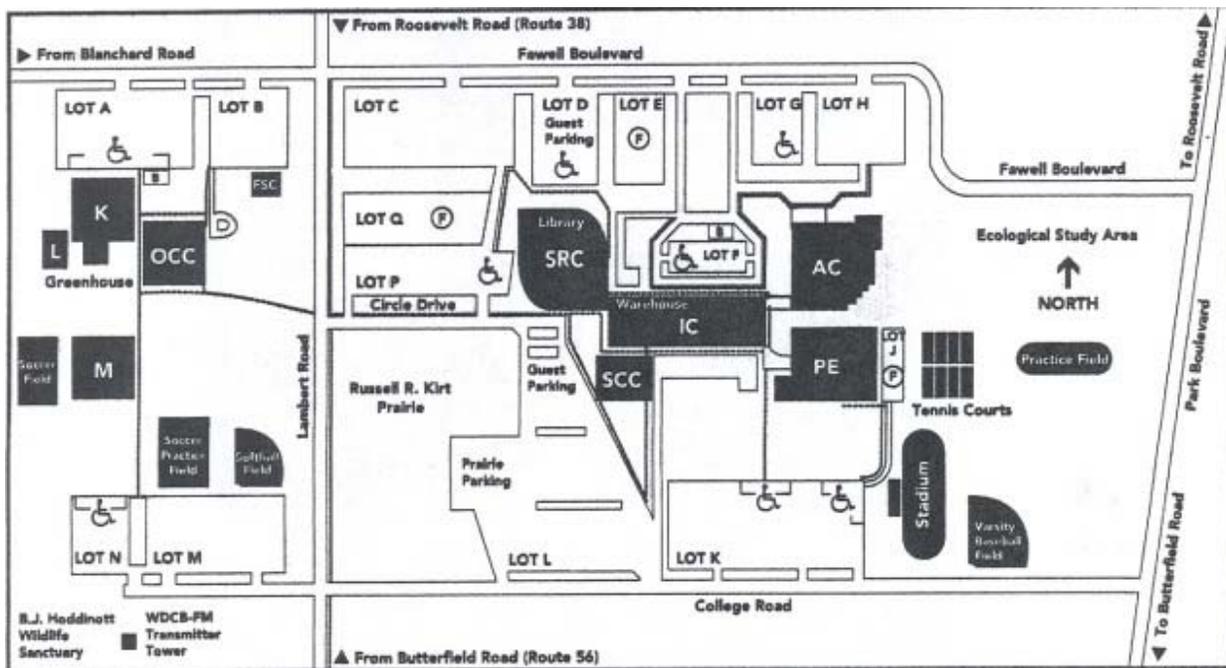
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