

EARTH SCIENCE CLUB OF NORTHERN ILLINOIS 2009

<u>OFFICE</u>	<u>NAME</u>	<u>STREET</u>	<u>TOWN, ZIP</u>	<u>PHONE</u>
President	Karen Nordquist	6340 Americana #808	Willowbrook, 60527	630-325-8189
1st Vice Pres.	Rob Sula	1761 Gary Ave.	Aurora 60505	630-236-9695
2nd Vice Pres.	Irene Broede	2510 S. Forest Ave.	N. Riverside, 60546	708-447-5295
Recording Sec.	William Vinikour	7729 Knotty Pine Ct.	Woodridge, 60517	630-985-6114
Corresp. Sec.	Jim Fairchild	1144 Siesta Keys	Elgin, 60120	630-497-6278
Treasurer	John Good	1891 Windward Lane	Hanover Park,,60133	630-483-2363
Publicity	Don Cronauer	6S180 Cape Road	Naperville, 60540	630-357-6570
Librarian	Andrew Jansen	2 Langford Ct.	Bolingbrook, 60440	630-739-7721
Curator	Randall Bultman	P.O. Box 2262	Joliet, 60434	815-722-0449
Historian	Judy Dedina	11 N. Cumnor Road	Westmont, 60559	630-969-2522
Field Trip	Richard Rock	P. O. Box 726	Wilmington 60481	815-476-7040
Assis. Field Trip	John Catalani	3405 High Trail	Woodridge, 60517	630-852-8747
Editor	Don Cronauer	6S180 Cape Road	Naperville 60540	630-357-6570
Circulation	Howard Svoboda	17046 W. Bluff Road	Lemont, 60439	630-739-7913
Past Pres.	Jim Fairchild	1144 Siesta Keys	Elgin, 60120	630-497-6278
Membership	Eileen Mizerk	2094 Windward Lane	Hanover Park, 60133	630-289-7736
Liaison Rep	John Good	1891 Windward Lane	Hanover Park, 60133	630-483-2363
Alt. Liaison	Karen Nordquist	6340 Americana #808	Willowbrook, 60527	630-325-8189

STUDY GROUP CHAIRS

Archaeology	Bryan Nugent	6621 Westmoreland	Woodridge IL 60517	630 960-5147
Lapidary	Sheila Bergmann	401 S. Lombard Ave.	Lombard, 60148	630-629-5785
Min/Micromt.	Kathy Dedina	11 N. Cumnor Road	Westmont, 60559	630-969-2522
Paleontology	John Good	1891 Windward Lane	Hanover Park, 60133	630-483-2363
Junior	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 2nd 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
Web Administrator is Dianna Lord

November 2009**President's Message**

The year is fast coming to a close and it hardly seems possible. Time is flying by. I just got back from an exciting trip to England where the Society of Vertebrate Paleontologists met this year. It was their first meeting in Europe and they return to the United States next year. It was very interesting and I will report on it elsewhere with more details, but I do like England with all its history and it does have a lot of fossils. I did stop by to see Darwin and wish him a happy birthday!

I did miss the first part of the Paleontology fossil fauna book project though I am sorry to say and I hope that it got off to a good start. They plan to move on to worms now that they took photos of all the best jellyfish in September. Keep looking through your collections of Mazon Creek fossils to see what you have that might belong in this new book.

And it seems that China is as old as we are. It just celebrated its 60th birthday and so shall we. Keep December 4 open so that you can join us for our anniversary party/meeting. We will take a little trip down memory lane and see where ESCONI has been all these years.



And here we are fossil hunting in merry old England. If you look closely you might recognize someone. This is us at the Cromhall Quarry north of Bristol. See the trip report for more info. We are looking for reptiles from the Triassic here and did not have much luck, but as you know the fun is in the looking. So keep looking.

Karen Nordquist, President

Christmas Party is be December 4, 2009 5:30 to 7:30 pm

**Location to be Announced
General Meeting to follow at COD
ESCONI 60th Anniversary!**

Dues are due starting January 1st

NOVEMBER 2009 ESCONI EVENTS

College of DuPage (COD) Building K, Room #131 for most meetings, but note that the room number is subject to change – there will be a note posted on the entrance door.

- General Meeting:**
8:00pm Friday, Nov 13 Dr. David Malone of Illinois State Univ. will present a program "Exploring for Manto-Style Pb-Zn-Ag Deposits in the Forty-Mile Range, East Central Alaska". See below for Jeff Anderson.
- Mineral-Micromount**
7:30 PM, Nov 14 Micro-minerals of Upper Michigan by club members and Jeff Anderson, an agate expert, will also attend.
- Paleontology**
7:30 PM Nov 21 Devonian Period Paleontology and bring your Mazon Creek arthropods (excluding shrimp) such as insects and millipedes.
- Archaeology**
7:30 PM There is NO Archaeology meeting in November.
- Junior** Subject to reorganization.
- ESCONI Field Trips** See Web Site, www.esconi.org, for details about future field trips in 2009 and 2010. Contact John Good for comments at 630-483-2363 or ESCONI@hotmail.com
- BOARD MEETING**
7:30 PM Dec 4 Note that the Board Meeting is moved to the Anniversary Celebration of December

GROUP	GENERAL	MICRO	PALEO	ARCH	BOARD	JUNIOR
November	13	14	21	X	Dec 4	
December	4	12	X	X	X	
January	8	9	16	23	22	
DAY	2 nd FRI	2 nd SAT	3 rd SAT	4 th SAT	4 th FRI	2 nd FRI
TIME	8:00	7:30	7:30	7:30	7:30	7:00

Jeff Anderson Visits ESCONI

We will also have a visitor, Jeffrey Anderson and his Agates. Jeff will be in town in November and will be attending the General Meeting and Mineralogy meetings in November to visit with his ESCONI friends. He will be bringing some samples of his wonderful agate collection with him to share with us. If you have unidentified agates, feel free to bring them.

Remember the ESCONI Holiday Party
December 4, 2009

It is time to celebrate the holiday season with our annual ESCONI get together.

FRIDAY, DECEMBER 4, 2009

5:30 to 7:30 pm
Greek Islands West
300 E. 22nd. Street
Lombard IL 60148-4924
(630)932-4545

The restaurant is on 22nd. street just east of Highland Ave..

PLEASE NOTE THE FOLLOWING CHANGES: Beyond the change in location, the Holiday party will be a Dutch Treat . . . that is, you will pay your own check. ESCONI will be putting the bill on credit card so we will all order off the menu and pay Rob Sula in cash.

We will continue our tradition of a Secret Santa gift exchange. This grab bag is optional. If you do want to participate, please make sure that your gift is earth science related, has a value of \$15.00 and is labeled "male" or "female" if it is a gender specific gift.

If you would like to attend the Holiday Party, please RSVP by December 1st to Rob Sula (630) 236-9695 e-mail: sulasaurus@comcast.net.

After the party, ESCONI will have a special 60th anniversary meeting to be held at The College of DuPage in room K-131 at 8:00 pm.

So even if you can't attend the Holiday Party, please join us for our 60th Anniversary and an exciting presentation. Happy holidays!

**Behind the Scenes Field Trip of the Chicago Academy of Sciences'
Museum Collections**

The Chicago Academy of Sciences (CAS) and its Peggy Notebaert Nature Museum would like to offer a behind the scenes tour of its museum collections for ESCONI members as a thank you to members who generously contributed their time to assist our staff this past year with an inventory of our paleontology collection. *Thank you Joan, Elaine, Dianna, and Jack!*

The tour, given by collections manager Dawn Roberts, will focus on the Academy's natural history collection and will last approximately one hour. The Collections Facility and Office houses approximately 11,000 specimens in the geology collection and holds an estimated 14,000 specimens in the paleontology collection. The facility contains an estimated 250,000 objects in the total collection including photos, artwork, a natural history collection, etc.

Parking is available in front of the facility and down Ravenswood Avenue on Saturday. If parking in the adjacent neighborhood, check for "permit parking only" signs and parking meters. Also, there are several restaurants nearby, in case you are hungry after the tour.

Chicago Academy of Sciences Field Trip—Continued

The tour is restricted to 12 people and you must reserve in advance. Any age is welcome, although the tour is not recommended for children under 10 years of age. In the event that more people are interested, another tour may be added later in the day.

Date: Saturday, January 23, 2010 Time: 10:00 a.m. – 11:00 a.m.

Location: Chicago Academy of Sciences Collections Facility and Office
4001 N. Ravenswood Avenue, Suite 201, Chicago, IL 60613

For more information and to make reservations, please contact: Joe Kubal at 630-983-6159 by telephone or by emailing him at SMKubal0712@aol.com.

BOARD MEETING

August 28, 2009

President Karen Nordquist called the meeting to order. 1st Vice President Rob Sula announced that Jack Wittry will be the speaker for the September General Meeting. He will give a presentation on Mazon Creek plants. Jack will also sign copies of his book (*The Mazon Creek Fossil Flora*) at the meeting. At the October General Meeting, Jack MacRae, a naturalist at the Willowbrook Wildlife Center, will talk on the archaeology of Illinois. Dave Malone from Illinois State University will give the presentation at the November General Meeting. The subject of his talk is not known at this time. A discussion was then held on possible speakers for future General Meetings. Rob then led a discussion on the Holiday Party that will take the place of the regular General Meeting on December 4. The general consensus of the Board was to have a dinner at a restaurant followed by the General Meeting at the College of DuPage. Rather than a guest speaker at the General meeting, there will be a special slide show celebrating the 60th anniversary of ESCONI.

2nd Vice President Irene Broede announced that all September meetings will be in K-131. The contract was mailed for the October and November meetings that will also be held in K-131. The ESCONI Show will be held on March 20-21, 2010 in SRC 2800. Setup for the show will be on Friday September 19. Don Cronauer, Publicity, wants to put together a show flyer for scouts so that they can put our show on their schedule of events. Mark Kuntz, March Show Chairman, then led a discussion about alternative locations and dates for future shows.

Jim Fairchild, Corresponding Secretary, reported that our current storage space may not be available in about a year. The club will probably get a few months notice before we have to move our materials to a new storage location. Karen mentioned that the Bulletin lists upcoming field trips. Howard Svoboda, Circulation, stated that postal bulk rates to mail the Bulletin went up from 16.2 to 17.2 cents per copy. The copy of the Bulletin that is mailed to England has gone from \$2.80 to \$2.92. Postal costs for the few Bulletins that were sent 1st Class were \$0.61 each. Howard mailed the September issue of the Bulletin on Thursday (August 28).

Under old business, Irene Broede reported on ESCONI Associates. The studio lights that Rob purchased will be paid for by ESCONI. They can be used for general purposes by ESCONI members and will also be used when photographing specimens for the upcoming ESCONI Mazon Creek fauna book. Karen mentioned that she received an e-mail inquiring whether ESCONI would be interested in a large "collection" of lapidary items. It was uncertain whether the person wanted to donate or sell the items. A discussion was held about adding a new item to the ESCONI web site to inform people on how they can make donations to the club.

The meeting was adjourned.

Respectfully submitted, William S. Vinikour, Recording Secretary

General Meeting

September 11, 2009

President Karen Nordquist called the meeting to order and welcomed everyone. First Vice President Rob Sula discussed the upcoming General Meeting presentations for October and November and the ESCONI 60-year retrospective that will occur in place of a regular presentation at the December General Meeting. John Good then briefly discussed the ESCONI Show that will be held the 3rd weekend of March, 2010 (March 20 and 21). The show will be held in the Student Resource Center rather than in K Commons. Due to space constraints, it will be a somewhat smaller show than we have had in the past few years. Help will be needed for setting up and running the show. The MAPS Show will be the 4th weekend of March, 2010 (March 26-28). The theme for that show will be the Ordovician Period.

Upcoming field trips were then discussed. These included trips to Braceville on September 26 and 27. See the Bulletin for field trip information. Librarian Andy Jansen brought several Mazon Creek fossil books in case any members might be interested in checking them out. An overview of the upcoming study group meetings was then presented. Dianna Lord mentioned that a teacher from LaCrosse contacted her through our web site to see if we could provide her with some Mazon Creek specimens for her class. A mention was then made that the Midwest Archaeological Conference will be held in Iowa City on October 15-18. It was also pointed out that the Brookfield Zoo dinosaur display will become "extinct" on October 31.

1st Vice President Rob Sula then introduced the speaker for the evening – ESCONI's own Jack M. Wittry. He is currently a volunteer at The Field Museum of Natural History and is the author of ESCONI's *Mazon Creek Fossil Flora* book!

"Antediluvian Phytology
Illustrated by a Collection of Fossil Remains of Plants,
Peculiar to the Coal Formation of Mazon Creek"

Jack started his talk by stating what could be learned from the Mazon Creek plants: climatic conditions, a fossil forming event, and the relative age of the event. He showed a map of the Mazon Creek area and indicated that during the Late Carboniferous it was a tropical forest near an inland brackish sea situated close to the equator. Some 307 million years ago, the days were 22 hours long, the year lasted 398 days, and the oxygen content in the atmosphere was 30% (compared to 21% today).

The major plant types found in the Mazon Creek are the pteridosperms, lycopsids, tree ferns, cordaites, sphenopsids, algae, and progymnosperms. Throughout his presentation, Jack showed excellent photographs of specimens from these plant types. Two species of algae have been identified from Mazon Creek. The most common species, *Taeniophyllum latifolium*, is often found with animal fossils such as shrimp. The genera of lycopsids have been named based on characteristics of their roots, cones, outer or inner bark, and leaves. The lycopsids included giant club mosses that could be 100 feet tall or more and diminutive and herbaceous forms. *Lycopodium* is the only surviving lycopsid genus.

Jack then discussed the sphenopsids (horsetails). The genera of sphenopsids have been identified based on characteristics of their roots, cones, trunks, and foliage. Some of the sphenopsids may have been about 30 feet tall. They are closely related to ferns, and may be ferns based on DNA. *Equisetum* is the surviving genus of horsetails, which includes about 20 species in North America.

General Meeting, Continued,

The true ferns that occurred in Mazon Creek included both tree ferns and shrub-like ferns. The genera of tree ferns were identified based on characteristics of their foliage, trunk, decorticated trunk, branch scars, fertile structures, roots, abortive pinnae, and immature pinnae. The fronds of some of the tree ferns were about 6 feet long. The shrub-like fern genera are identified based on their foliage. Not much is known about the shrub-like ferns other than that they were not trees. There are more tree fern species living today than in the past, and they are about twice as high. *Cyathea intermedia* is a living example of a tree fern.

The pteridosperms (seed ferns) were discussed next. They had fronds up to 10 feet long. Seed ferns went extinct at the end of the Paleozoic. They inhabited more upland areas than other ferns, and could grow up to 35 feet tall. Genera of medullosan seed fern genera were identified based on characteristics of their foliage, pollen organs, and seeds; while the shrub-like seed fern genera were identified based on characteristics of their foliage.

The cordaites were early gymnosperm-like plants. They were upland plants that had woody structures. Genera of cordaites were identified based on characteristics of their foliage, trunk pith casts, pollen and seed cones, and seeds. The cordaites were an evolutionary dead end. In contrast, all flowering plants (gymnosperms and angiosperms) derive from the progymnosperms. The one known genus is *Noeggerathiaestrobis*, which is the rarest known Mazon Creek plant.

Jack concluded his talk by stating that there are at least 90 plant species known from Mazon Creek. The Mazon Creek flora provides evidence of a one time flooding event that lasted no more than a few weeks. This flood event transported the plants into the area, in contrast to the plants having actually grown at the site. The exact nature or cause of the flood event is not known. Nevertheless, it must have been a spectacular event as the Mazon Creek area covers 100 square miles to a depth of up to 60 feet!



Following the well-received presentation, Rob Sula presented Jack with an honorarium. Following a series of questions and answers, the meeting was adjourned with thanks to Jack for a highly entertaining presentation. Refreshments were served. Both prior to and following the General Meeting, Jack was available to sign copies of his book. A copy of Jack's presentation can be on the Mazon Creek Reference Information portion of the ESCONI web site. The web site also has a write-up on Jack's talk by Andrew Young, including several photographs taken during the General Meeting.

Respectively Submitted, William S. Vinikour, Recording Secretary

MINERALOGY/MICROMOUNT October 10, 2009

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

Topics for forthcoming meetings were discussed. In November we will continue our discussion of the Michigan Copper Country, concentrating on the collecting of micro minerals. Jim Daly will describe the micro minerals to be found, and also have some information on mounting of micromounts. Jeff Anderson will also be with us, and hopefully will show us some of the agates and datolites he has collected.

December will be the traditional Identification Contest. Bring 3 specimens and 4 labels on separate pieces of paper.

Jim Daly mentioned a connection for collecting underground in the Alabastine Mine, Grand Rapids, MI. He also told of a new book that is available as a free download on the internet. It is *Treasured Minerals*, by Russ Behnke. The URL is <http://www.russbehnke.com/book.html> This month's meeting was on collecting in the Michigan Copper Country (Keweenaw, Houghton & Ontonagon Counties). Kathy Dedina spoke on the history of copper mining in the area and the geology of the Keweenaw peninsula. Jim Daly described the minerals that can be found in macro (bigger than micro) sizes.

Kathy Dedina and Sheila Bergmann provided refreshments.

Submitted by Jim Daly

History of Copper Mining in Upper Michigan by Kathy Dedina

Every summer eager rockhounds with dreams of copper boulders, datolite nodules and micro-crystals in vugs head north to the Keweenaw Peninsula of Upper Michigan. Mines are located in a 100 mile line through Keweenaw, Houghton and Ontonagon counties. Numerous mines plus pits and prospects dot the area. Some are little more than depressions in dense forests. Some still have foundations of mine buildings and spoil piles visible. Mining ghost towns attest to more prosperous and populous times. Most of us have collected from the spoil piles using metal detectors. For micro collectors a sharp eye for vugs is more important. Winter collecting or underwater collecting is for the adventurous.

Rock collecting here dates back thousands of years to the native Indian population which collected float copper and worked copper from surface mines. These early miners visited the area for the copper but did not live there. The copper was extracted using stone hammers combined with heating then cooling with water worked the native copper. One person wrote of copper in the U.P. in the 1630's. The French followed by the British explored the area before it became part of the United States in 1783. Reports on copper from earlier explorations sparked the opening of a leasing office in 1843 as prospectors moved into the area. Travel to copper country was by boat. Most operations met with little or no mining success. The work was hard and the climate challenging. By the 1850's investors were operating the mining as a business versus single prospectors. Imported labor first from Cornwall than from other parts of Europe often had previous mining experience.

History of Copper Mining in Upper Michigan - Continued

The first profitable mine was the Cliff which worked vein copper. Early mining used hand drilling and black powder. One man held the drill while 2 men hammered it. This early mining was dangerous and difficult. By 1880 most mines were using compressed air drills and nitroglycerine based explosives. Michigan dominated the copper market between the 1860's and the 1880's. By the end of the First World War it was in decline. The cost of mining increased as did the depth of the deposits. Labor strife also entered into the picture in 1913. The western copper mines were taking over with lower production costs. Many of the U.P. miners headed to the western copper fields which mined copper minerals not native copper.

The last native copper mine closed in 1967. The White Pines Mine which processed sulfide ores closed in 1997. Over its 150 year history more than 15 billion tons of refined copper was produced. Silver production was over 16 million troy ounces. The actual amount is probably much larger since miners and mine bosses considered silver "theirs" rather than the company's. Tom Rosemeyer describes recent underwater collecting in *Rocks and Minerals* Volume 6 2002 and Volume 1 2009. The Caledonia Mine near Ontonagon offers for fee collecting tours. The Copper Country Mineral Retreat through the Seamen Museum has fee collecting tours to a number of mine dumps in the area.

The Keweenaw Peninsula is located on the Middle Proterozoic rift system that stretches over 1200 miles from Lake Superior to Kansas. Rifting began about 1,100 mya as a mantle plume caused the crust to thin and spread apart. The thinned crust was fractured and faulted allowing andesitic and basaltic magmas to reach the surface as 200 individual lava flows. These flows formed the portage Lake Volcanics in 2 to 3 million years around 1,095mya. Flows vary from 3 to 1300 feet totaling 9 to 15 thousand feet. The Greenstone Flow was one of the largest or the largest lava flow in the world. Interbedded with the lava flows are conglomerates and sandstones. The region subsided to form the Lake Superior syncline with the younger rocks folded downward. The compression and reverse faulting caused by a collision on the east coast is the final stage. The Keweenaw fault running down the peninsula formed between 1,050 and 1,040 mya. The fissure, conglomerate and amygdaloidal copper deposits formed at the same time as the fault from hydrothermal fluids. A period without volcanic activity followed. The area was covered by an inland sea in the Paleozoic with deposition of sedimentary rock. Erosion and later glaciation wore away the overlying rocks. .

Copper was mined from fissures or veins, from conglomerates and from amygdaloidal lodes. The earliest mines worked the fissure deposits. They produced many mineral specimens but less than 2% the total copper production from all types of mines. Fissures were the source of some of the largest copper masses. The dumps of many of the fissure mines still yield mineral specimens including the Clark, the Delaware, the Phoenix, the Copper Falls and the Cliff. The Amygdaloidal deposits were next worked with the opening of the Quincy mine. These produced many good mineral specimens and almost 57% of the total native copper production. Copper is found in hacky masses and in vesicles in the basalts. Mines of this type include the Laurium, Mohawk, Ahmeek, Wolverine and Kearsarge. Conglomerate mines produced over 41% of the total copper production. The first conglomerate mine was the Calumet which started in 1865. Fewer mineral species come from the conglomerates. Mines in this group include the Calumet and Hecla, the Kingston, the Allouez and the Minesota. Articles by Tom Rosemeyer in *Rocks and Minerals* Volume 76 #3, Volume 82 #4 and Volume 84 #4 describe each of the three types of deposits and the mines and the minerals found. The White Pines mine at the southern tip of the copper belt worked chalcocite ore not native copper.

History of Copper Mining in Upper Michigan - Continued

Members brought in their macro specimens from the Keweenaw. The group has specimens of only 9 of the 135 minerals found there. The majority were copper specimens. Jim Daly had a specimen of prehnite. The Lord family brought in datolite and some agates from their recent trip. Kathy Dedina had silver, copper silver halfbreeds, and domeykite specimens that were good specimens. The quartz, microcline, calcite and chalcocite specimens were of interest only because they were from the Keweenaw. None of us had anything like the specimens pictured in the mineral magazines. It will be interesting to compare these figures with the number of micros from the Keweenaw the subject of the Nov. program.

References:

Geology of the Keweenaw Peninsula of Michigan by Paul Brandes on Mindat website

Michigan Copper Country issue Volume 23 #2

Native silver occurrences in the copper country of Upper Michigan by D.K. Olson in Mineralogical Record Volume 17 #1

Copper Country microminerals by Dan Behnke in Mineralogical Record Volume 14 #4

The Copper-Bearing Conglomerate lodes of the Michigan Copper Country by Tom Rosemeyer in Rocks and Minerals Volume 76 #3

The Kearsarge Copper-bearing Amyglaloidal Lode, Houghton and Keweenaw Counties, Michigan by Tom Rosemeyer in Rocks and Minerals Volume 82 #4

Copper-bearing Fissure Veins, Keweenaw County, Michigan, Lake Superior Native Copper District in Rocks and Minerals Volume 84 #

Through the "Scope: Microminerals of the Caledonia Mine, Ontonagon County, Michigan by Tom Rosemeyer in Rocks and Minerals Volume 65 #3

News from the Keweenaw: Part 2 Recent Mineral Finds in Michigan's Copper Country by Tom Rosemeyer in Rocks and Minerals Volume 77 #6

The Occurrence of Porcelaneous Datolite in Michigan's Lake Superior Copper District Part 1: Northern Keweenaw County and Isle Royale National Park by Tom Rosemeyer in Rocks and Minerals Volume 78 #3

The Occurrence of Porcelaneous Datolite in Michigan's Lake Superior Copper District Part 2: Southern Keweenaw. Houghton and Ontonagon Counties, Michigan by Tom Rosemeyer in Rocks and Minerals Volume 80 # 3

A 2008 Lake Superior Bonanza of Copper Crystals Keweenaw County, Michigan by Tom Rosemeyer in Rocks and Minerals Volume 84 #1

Collecting Macro Minerals in Michigan's Copper Country by Jim Daly

Michigan's "copper country" is world famous for many mineral specimens. It is generally defined as Keweenaw, Houghton and Ontonogon counties in the Upper Peninsula. If you're planning to collect there, though, don't expect to find the sort of specimens that you see in museums, like the A.E. Seaman Museum in Houghton. All the mines except the White Pine have been closed for 40 years, and the White Pine for 14 years. The dumps have been pretty well picked over in that time.

Native copper is by far the most famous mineral from any part of Michigan. It's still quite plentiful on all the dumps in the region, although the odds on finding large specimens are slim. The best method is to use a metal detector. Even with a metal detector you can still be fooled, though. I can recall one collector who got a strong indication on one of the dumps, and spent all morning digging down into the dump, about 5 feet, where he found a large piece of railroad track!

Another well-known mineral from the region is native silver. Large pieces have been found, but they are getting scarce. I've never found anything larger than a micro. I suspect that the macro specimens that are seen on the market today are collected underground by local collectors who have found ways to get into the mines. The most spectacular specimens are the "half-breeds": copper and silver intergrown.

Pumpellyite-(Mg) is found as nodules mainly in the northern part of Keweenaw County and as beach pebbles in the same area. This is known as "chlorastrolite", and is Michigan's State Gemstone.

The beaches on both sides of the Keweenaw Peninsula also yield pebbles of thomsonite, prehnite (which is often mistaken for thomsonite) and datolite, and a variety of forms of quartz: agate, jasper, carnelian and amethyst. Datolite nodules are also found on the mine dumps in all 3 counties.

Datolite crystals are also known from the copper country, but they are uncommon. The same goes for prehnite.

Calcite, in both colorless and pink (due to included copper) crystals are fairly common. The best are probably from the Pewabic Mine. Red crystals are also found at the Osceola and Alouez mines. About half of the crystals are negative scalenohedrons, with the rest being positive scalenohedrons and prisms. Rhombohedrons are rare.

Analcime is found mainly in the northern part of the Keweenaw Peninsula, north of Phoenix. Macro sized specimens are not common. It's generally found as trapezohedrons, white, colorless, or pink from included copper.

Chrysocolla is found at Hays Point at the end of the peninsula. This is in an area now designated as a park, so collecting may not be permitted. Finally, there's melilite, found on the banks of the Houghton Canal. It's in black needles, but this material is not technically a mineral. It's a product of the smelters.

Collecting Macro Minerals in Michigan's Copper Country by Jim Daly— Continued

In summary, there are a lot of collecting opportunities in the copper country, especially during Keweenaw Week, the first week in August. During this week the Copper Country Club runs field trips to various mine dumps. You can go on two a day. They provide maps, have guides on site to help with identification, turn over the dumps with bulldozers the day before each trip. The last time I was there the cost was \$ 17 per trip. At the Caledonia Mine underground collecting is also offered, at a significantly higher price.

There are also talks in the evening by such notables as George Robinson and John Jazczak. There's a "tailgate" show at the Quincy Mine on one evening, and the Houghton Club's show on Saturday. On the way up, you can go to the Ishpeming Club's show on the weekend before, and the field trips they run in conjunction with their show.

ESCONI Field Trips



Braceville September 2008



Braceville September 2009



Larson Quarry September 2009

Archaeology Study Group

For our October 24th meeting, Betsy Rogers will present "Migration Theory – East Coast of North America". For today's meeting, September 26th, Bryan Nugent and John Good presented "When did the Alphabet First Appear".

The following summarizes Bryan Nugent's portion of the presentation. Let's work our way back through time, recognizing 3 periods in time before reaching the origin of the alphabets.

Today information is all around us.

Gutenberg helped to spread the written word with his invention of the printing press.

The Rosetta Stone may be the earliest language dictionary.

In today's world communication is instantaneous. You can twitter and text instantly to almost anyone anywhere. You can see a robbery in progress, because someone has a phone camera and can transmit images across the web. This explosion of information is a recent innovation. The World Wide Web didn't even exist until December of 1990. English physicist Tim Berners-Lee wrote a proposal in March 1989 for what would eventually become the World Wide Web. Berners-Lee along with Belgian computer scientist Robert Cailliau released that web in December 1990 which made information readily available/sharable to everyone.

The invention of the printing press led to books being more readily available to the masses. Prior to his invention, in the 7th to the 13th century, books were produced entirely by hand with the focus largely on religion. Monks made copies of the books in their care, but these books were not easily accessible to the general public. In the 13th to 15th century, books expanded beyond worship to observations of the world at large. But books were valuable and expensive to make so they still weren't easily accessible. In 1440, Johannes Gutenberg changed all that by inventing his printing press, where ink was rolled over the raised surfaces of moveable hand-set block letters held within a wooden form. Then the form was pressed against a sheet of paper. By 1501, there were 1000 printing shops in Europe, which had produced 35,000 titles and 20 million copies.

Back in time to the Rosetta Stone which dates back to 196 B.C. This stone was discovered in 1799 by Napoleon's troops at Rosetta (Rashid) in Lower Egypt. Its importance lies not in the context of what is said, but the fact that the same thing is stated in 2 languages (Egyptian and Greek), using three different scripts: Ancient Egyptian hieroglyphs (upper section of stone), Demotic script (middle section) and Greek text (lower section). The Rosetta Stone was written in 3 scripts so that the priests, government officials and rulers of Egypt could read what it said. I find it interesting that these translations are needed for people in the same locale. Did they normally communicate through translators?

Onto the origin of the alphabet, where did the name alphabet come from? From the Greeks the simplified writing system entered Western culture by the name alphabet, a combination word for the Greek A and B, alpha and beta.

Archaeology, Continued

In 1999, in the desert west of the Nile, limestone inscriptions were found that are said to be the earliest known examples of alphabetic writing. Carved in the cliffs of soft stone, the writing, in a Semitic script with Egyptian influences, has been dated to somewhere between 1900 and 1800 B.C. The first experiments with alphabet appear to be the work of Semitic people living deep in Egypt. An article describing the 1999 discovery notes the invention of the alphabet as comparable to the invention of the printing press much later. Alphabetic writing with fewer symbols became much easier to use and learn.

A recent program titled "Who invented the alphabet" appeared on the Naked Archeologist TV series.

Of course, not everyone agrees where the alphabet originated. That's what makes life interesting.

Respectfully submitted Bryan Nugent and John Good

Bryan Nugent's References:

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http://www.visiontv.ca/NakedArchaeologist/episodes_season1.htm
 Naked Archaeologist TV Series – Previous Episode

Who Invented the Alphabet?

Everyone assumes the Greeks invented the alphabet. But what are its true origins? Archaeological finds tell us it originated in Egypt, where Hebrew slaves began the process of turning hieroglyphics into symbols that convey sounds and can be used to form words. Drawing a line all the way from ancient desert cave scrawlings to present-day urban graffiti, host Simcha Jacobovici traces the evolution of these simple shapes that democratized communication.

http://www.visiontv.ca/NakedArchaeologist/episodes_season1.htm
<http://encyclopedia.farlex.com/alphabetic+writing>

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Junior Group	
Web Administrator	Dianna Lord

November – Topaz
Alternate gem: Tiger Eye

By LaVergne R. Novak



To most of us the word “topaz” conjures up a gem with an autumn-like, golden-brown color. Actually, this gem appears in a broad range of colors: yellow, red-brown, light blue, pink, pale green and colorless. Oscar Wilde wrote, “I have topazes as yellow as the eyes of tigers, topazes as pink as the eyes of wood pigeons, and green topazes that are as the eyes of cats.”

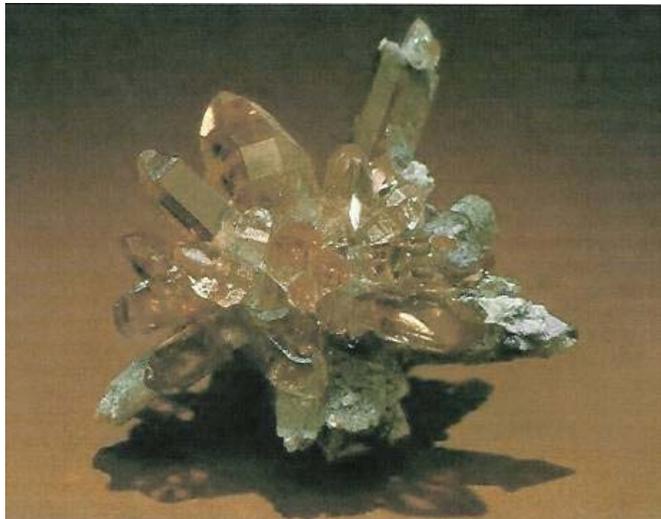
There are two possible sources for the name “topaz.” It is from the name of the Greek island Topazos, now Zebirget, meaning “to seek and find,” because the island was often lost in fog; or it is from the Sanskrit *topaz*, meaning “fire.” The Greek derivation is favored because topaz was first discovered on Topazos by pirates digging for edible roots.

“Topaz” is a name often misused, sometimes being applied to other stones, especially citrine and smoky quartz. This probably stems from the fact that in antiquity all yellow, brown, and even green stones were called topaz.

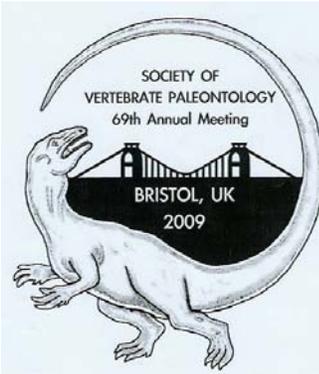
Topaz is found in many areas of the world, with the most important deposits located in Brazil, Sri Lanka, Burma, and Russia. Precious topaz in its most desirable deep golden-brown color has been described as the color of fine sherry wine. Pink topaz is the most valuable. Treating topaz with heat to enhance the color or to change the color of a yellow topaz to pink, colorless, or blue is a common practice. Some topazes, whether treated or natural in color, might fade upon exposure to sunlight.

Various cultures have imbued the topaz with a wide assortment of virtues: it could promote cheerfulness, pleasant dreams, friendship, hearty appetite, and long life and ease fevers and the pain of childbirth. Apparently, there is nothing evil or occult connected with the topaz.

(This is a birthstone series. Text was first printed by Lizzadro Museum. Top photo is from herecomestrebble.files.wordpress.com and the lower photo is from edu.uni-klu.ac.at.)



Field Trip Report – Bristol England



The Society of Vertebrate Paleontology (SVP) went across the sea this year to meet in Bristol England at the University of Bristol. Some things were a little different but there were a lot of talks and posters and a wild and crazy auction with Richard the Lion-Hearted leading the bidding in British pounds. There were some interesting field trips this year due to the location with one to Germany to Solnhofen and one to Darwin country in celebration of his anniversary year. We couldn't make those trips but did get to the London Museum of Natural History and to the quarries of Wales where they found the first bones of the early mammal *Morganucodon*. Here are some of the highlights of this adventure.

Bristol

Bristol is on the west coast of England and used to be a big seaport that was important in the slave trade years ago. Did you know that it has the second highest tide in the world? The Bay of Fundy has the highest. They had to build special canals in the city to keep the city from flooding during high tides. The photo shows the famous Clifton Suspension Bridge over the Avon River at low tide. During low tides it is fun to search for fossils along the mouth of the Severn just north of Bristol, where invertebrates can be found.



We did that one day and found some crinoids and brachiopods.

London Museum

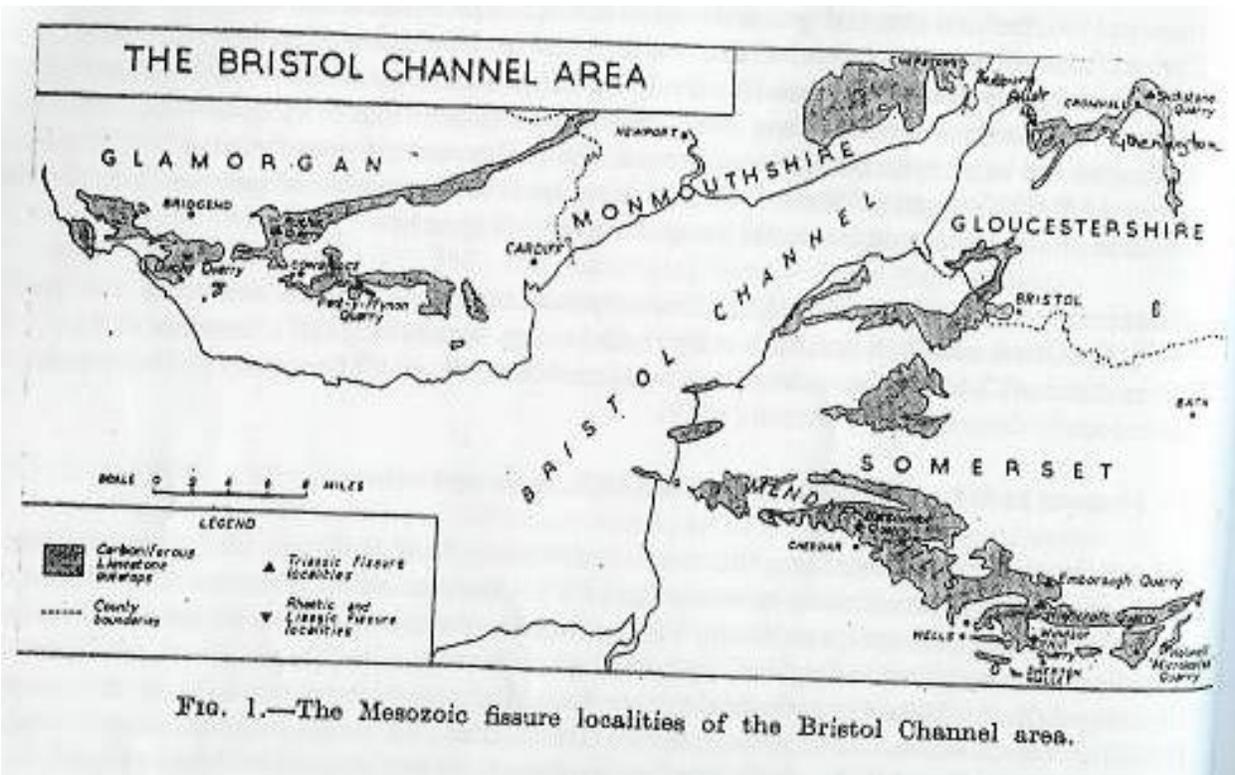
The Museum of Natural History of London was big and crowded (it is free!!). I wish that we had had time to do it all, but there was only time to do the dinosaur hall and some of the marine halls. It was impressive (and dark). They have many displays (mostly casts) from *Coelophysis* to *T. rex* with most of them hanging from the ceiling as you walk an elevated ramp. The marine reptile walls were impressive as well.

Fissures Field Trip

About thirty of us from all over the world went on a bus trip to four quarries, two in Wales and two near Bristol to explore Triassic rocks. It is basically a Carboniferous limestone plateau that was an island archipelago in a shallow sea during the Late Triassic and Early Jurassic. Fossil material is found in the fissure material of the quarry floor where they find tetrapod remains including teeth of mammals and symmetrodonts and sphenodontians. The researchers work closely with the quarry people since they are more mechanized now so that fissures are not processed before they can be studied. All were working quarries except Cromhall.

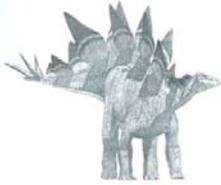
Field Trip Report – Bristol England, Continued

At the first two quarries, they bulldozed out fissure material for us to look through. In the short time that we had not much was found but a few small bones and perhaps some charcoal. The material is usually taken back to the laboratory and washed and sorted under the microscope to find the small fossils within it. Several days later our leader Pam Gill invited us all back to the laboratory in Wills Hall at the University to see samples of the materials found at the quarries. She set out several microscopes and vials of teeth, jaws, skull bones, limb bones and miscellaneous bones for us to view. It was an impressive collection. There were also some bones that had been chewed as examples of bones disturbed by predators.



We first visited the quarries in Wales. At the Pontalum Quarry they have found thousands of specimens of the early mammal *Morganucodon* as well as *Kuehneotherium* and the lepidosaur *Gephyrosaurus*. Then we went to the Pant quarry which is next to it and it has given up a more diverse fauna which includes sphenodontians, archosaurs, tritylodonts, and morganucodontids. It also has more charcoal. *Clevosaurus* is the common sphenodontian found here. They have also found the teeth of a pterosaur, a crocodylomorph and a small theropod dinosaur.

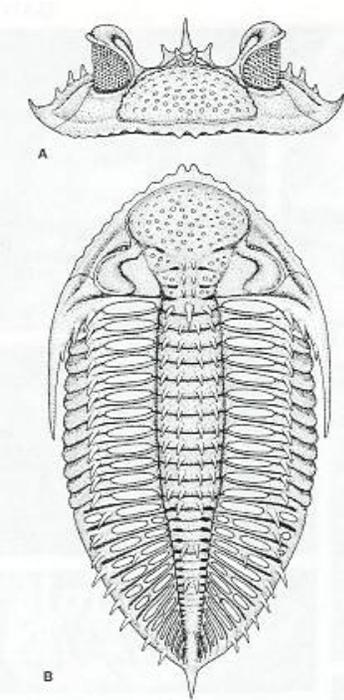
After a delightful buffet lunch at the Watermill restaurant we returned to England to visit two quarries about 25 miles north of Bristol in South Gloucestershire. Here they have found no mammals in the Late Triassic fissures in the Carboniferous limestone. They have found seven reptiles and four sphenodontids at Cromhall quarry. A new one was named *Clevosaurus hudsoni*. The work at Tytherington Quarry was begun in 1975 when a dinosaur was discovered – *Thecodontosaurus*. At both of these quarries we were able to collect at the base of a fissure, but with little success in the time that we had available.



Karen's Komments



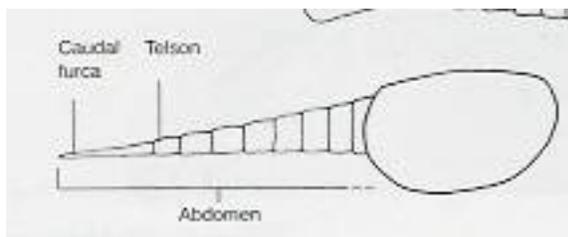
Revision of Interesting Trilobite from Bolivia – *Fenestraspis*



REV FIG 3 Reconstruction of *Fenestraspis amauta*. A.

This trilobite was poorly known but is interesting because of the unusual and extensive fenestration of the pleural region of the pygidium and of the thorax. They are found in the Lower Devonian Belen Formation of Bolivia on the Altiplano about 75 km south of La Paz. The trilobites have been found in a cold shallow marine environment along with brachiopods, bivalves, gastropods and echinoderms. They also have very elevated eyes with a projecting palpebral rim that overhangs the visual surface and many spines that project upward on many parts of the exoskeleton. The eyes have a large number of lenses, at least 918, arranged in about 50 vertical files of up to 21 lenses each. The large eye-shade overhanging it would provide shielding from overhead light. As can be seen in the drawing at left from the article the fenestra or perforation occurs over almost the entire width of most of the ribs. On some of the back ribs there are two or three shorter openings. The trilobite pictured is *Fenestraspis amauta*. Fenestras are rare among trilobites and are only known in a few species. It is not known whether these fenestra were open during life or were covered by a membrane. They were above the gill branches and would have allowed circulation of water for oxygen for respiration even during enrollment. Even if there had been a membrane it may have been permeable. The fenestra may have had a sensory function and been used to determine changes in water pressure. It could have been a weight reduction feature also. In the cold carbonate poor climate in Bolivia it may have helped to reduce the volume of the exoskeleton. (Hollaway et al in **Palaeontology** Vol. 52/4 2009)

A New Arthropod from Chengjiang China – *Synophalos*



Arthropods are found in the Cambrian of Chengjiang in China which is a famous Lagerstätte similar to that of the Burgess Shale. Now there is a new crustacean reported from 22 examples that have been found that are linked together in a chain formation and one in isolation. This is a unique association suggesting some collective behavior

such as migration. It has been named *Synophalos xynos* from the Greek "synodia" meaning journey in company and "Hyphalos" meaning under the sea.

Karens Komments, Continued

The species name is from the Greek “xynos” meaning companion. It is provisionally assigned to Waptiidae with a folded carapace and an abdomen with several segments. It also has a telson with two rami. The holotype is 23.8 mm long (.94 in.). There are 6 or 7 segments in the abdomen compared to 5 in *Waptia*. The carapace shape also differs. The animals are linked by the insertion of at least the telson and caudal furca into the carapace of the individual behind. They appear to have fallen to the bottom rather than to have been in a burrow. Explanations might include feeding, reproduction, migration, survival or defense. Because their feeding opening was covered, feeding might be eliminated. Clustering for reproduction might make more sense. The drawing at left shows a reconstruction of how the traveling chain may have fallen to the bottom of the sea bed. (Xian-Guang et al in **Palaeontology** Vol. 52/4 2009)

A Trilobite and its Trail



It is rare to find the maker of a trace fossil. But this trilobite was caught in the act in the Chengjiang of China. It is a juvenile of *Eoredlichia intermedia* from the Lower Cambrian. This specimen was found in yellowish mudstone. The pink to pale brown trilobite is at the end of a pale orange trail but it is missing its last five thoracic segments and pygidium. Elemental mapping indicates higher levels of Si, Al and O in the trilobite and lower levels of Si and Al on the trail but higher levels of Fe on the trail and depleted levels of Si and Al. The authors postulate that the trilobite lost its pygidium in a predator attack and then trudged along the sea bottom looking for refuge. It left a trail of body fluid along the trail which explains the iron rich deposit along the trail. It was then entombed in a mudflow. The body fluids were a favorable environment for iron

and sulfur reducing bacteria which enhanced the formation of pyrites and silicates. (OU et al in **Palaios** Vol. 24 2009)

DUPAGE COUNTY FOREST PRESERVE EVENTS

DuPage County Rocks!

Fullersburg Woods

Dec. 8, 2009 | 4:00 pm - 5:30 pm

Spend the evening learning about rocks and fossils through hands-on activities; then, take home some samples to begin your own collection. Ages 8 – 11. \$10 per person. To register, call (630) 850-8110.

Local Calendar of Events

LIZZADRO MUSEUM OF LAPIDARY ART

November 21 “Lapidary Activity Day”

Learn more about lapidary art and making jewelry with members of the West Suburban Lapidary Club. Club members will demonstrate cabochon cutting, silversmithing, wirewrapping, beading and carving. Children can participate in making a rock critter or creating a gemstone picture frame. Free jewelry cleaning! A great way to find out more about lapidary art and learn a new hobby!

Demonstrations/Activities - All Ages 12 p.m. to 4 p.m. - Free Admission

December 5 “Create A Gem Tree”

Back by popular demand lapidaries Bill and Lois Zima of the DesPlaines Valley Geological Society teach how to create a small tree using gemstones and wire. These beautiful trees never need water and make a great gift. All materials are included.

Activity – Ages 9 yrs. to Adult - 1 p.m. to 3 p.m. Fee: \$20.00 per person, Museum Members \$15.00 Reservations Required: (630) 833-1616

Calendar of Events

The Field
Museum

The Nature of Diamonds October 23, 2009—March 28, 2010

From its geological origins to its place in art, history and literature, no other gem has captured the world's imagination quite like diamonds. Born from billions of years of crushing force, diamonds have served as both an emblem of romance and strength. Examine the unique properties of diamonds and explore the gem in its natural state as you journey along from mine to dealer. Through ancient manuscripts, compelling multimedia and evocative exhibitory, explore the many facets of diamonds and be dazzled by these breathtaking pieces. Highlights will include pieces by Fulco di Vedula, Cartier, Boucheron, and works from Tiffany & Co. designed by Frank Gehry and Elsa Peretti. Discover the gem that has stimulated scientists, inspired writers and influenced artisans for thousands of years in The Field Museum's exhibition, The Nature of Diamonds, opening October 23, 2009.

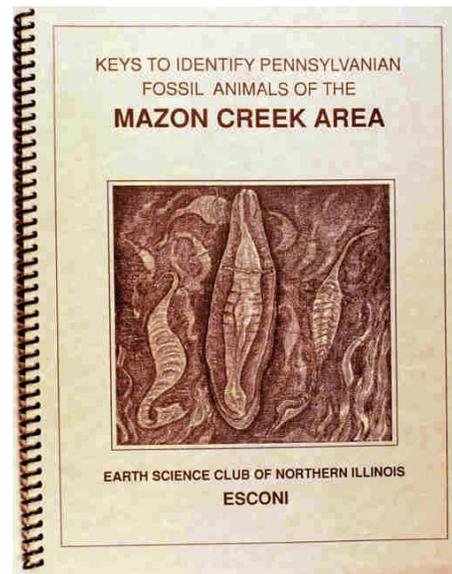
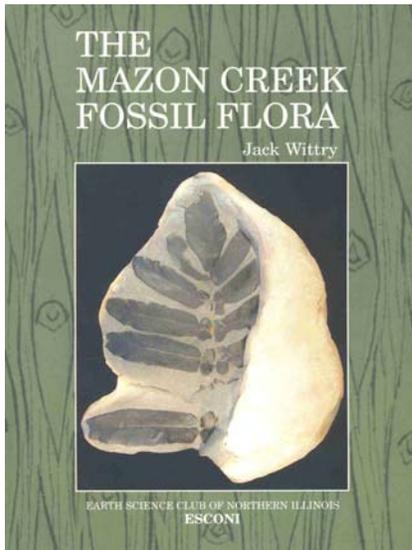
Renovated Grainger Hall of Gems

Explore the human fascination with the natural beauty of Earth's gems when the renovated Grainger Hall of Gems reopens in October 2009. Behold unusual natural formations, dazzling cut gemstones, and incomparable jewelry settings both ancient and modern. Discover beautiful Tiffany pieces from the 1893 World's Columbian Exposition, exquisite rare stones and gold objects from around the world, and never before seen creations from top jewelry designers.

ESCONI'S Next Book Undertaking!

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.

On September 19th, we began by 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 at 630-497-6278



The Mazon Creek Fossil Flora by Jack Wittry
 313 color pictures, 113 taxa, 145 drawings
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**Keys to Identify Pennsylvanian Fossil Animal
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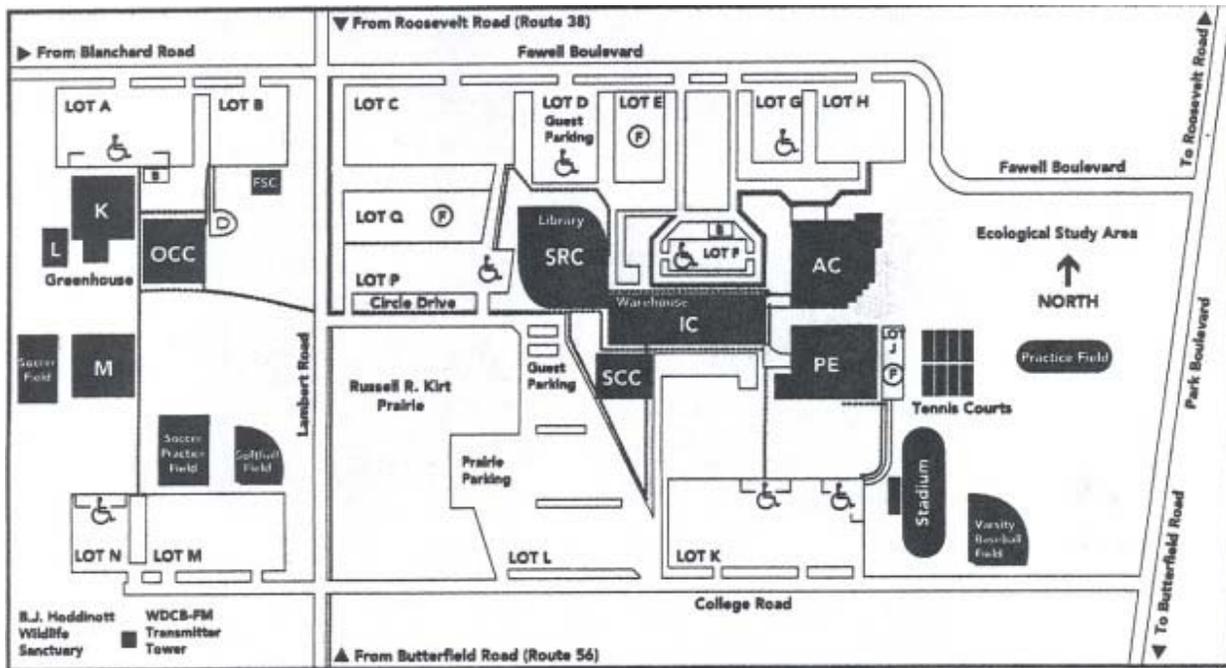
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 2 Langford Ct.
 Bolingbrook, 60440
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