

THE EARTH SCIENCE NEWS

Volume 60

May 2009

Number 5



EARTH SCIENCE CLUB OF NORTHERN ILLINOIS

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

WWW.ESCONI.ORG

EARTH SCIENCE CLUB OF NORTHERN ILLINOIS 2008

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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
Webmaster is Dianna Lord

May 2009**President's Message**

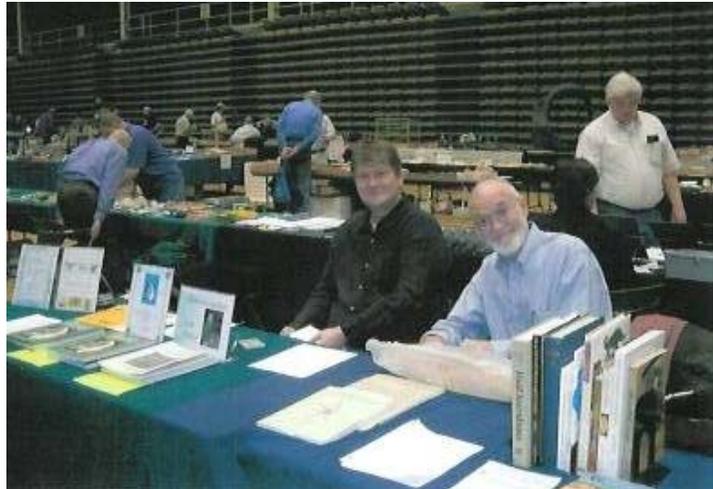
MAPS was fun this year – lots of fossils and friends. As you can see from the photo Charles Shabica joined us (that's Jim Fairchild and John Catalani in the background) this year among many others to share in stories of past exploration and adventures. Irene Broede and Jack Wittry were there to help sell our Mazon Creek Fauna books. Jack had printed up some new Mazon Creek books that he recently put together with Peter Christofferson. It is an addition to the Langford books that was not published before he died. They were a big seller at the show. It is titled "Additions to the Mazon Creek Flora and Fauna: The Wilmington Coal Flora and Fauna from a Pennsylvanian Deposit in Will County, Illinois Book 3"

The next big show is ChicagoLand and we'll need your help. Memorial Day weekend always means fun at the DuPage County Fairgrounds – lots of dealers, demonstrators and auctions. This is the annual show sponsored by ESCONI and several other area rock clubs that gives us all an opportunity to show off our collections. So put together an exhibit case and show off your collection, whether it is fossils, minerals, artifacts or gems. And we will need help with ticket collecting at the door, the silent auctions, and the Kids' Korner. ESCONI also does the set up on Friday May 22 before the show skirting the tables and helpers get a free lunch after we finish our work. Come on out and help and join in the fun May 23 and 24!

Our next General Meetings will be interesting as we learn more about dinosaurs from Bucky Gates and his wife Lindsay Zanno in the months to come. They have both done new work that sheds light on life in the long ago past of our land. So come join us to learn about their research and share the findings of fellow members.

Hope that everyone had a lovely Easter and that spring will finally arrive and bring the lovely warm weather that we all deserve after this cold and blustery winter that we have endured this year.

Karen Nordquist, President



2009 DUES ARE OVERDUE

Please send your check payable to ESCONI for \$20.00 for your 2009 renewal dues, or \$50.00 for three years to Eileen Mizerk, Membership; 2094 Windward Lane Hanover Park IL 60133-6183

ESCONI May 2009 General Meeting: "Resurrecting Dinosaurs: how new science is bringing ancient beasts to life"

Field Museum PostDoctoral Fellow Lindsay Zanno,Phd, will be talking about what we really know about dinosaur biology (using examples from the Jurassic Park movies), how we go about reconstructing dinosaur biology from the skeleton, and what we are doing to better understand the paleobiology of theropods including Falcarius.

MAY 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, May 8

Dr. Lindsay Zanno: “Resurrecting Dinosaurs - How new science is bringing ancient beasts to life”

Mineral-Micromount
7:30 PM, May 9

Kathy Dedina and Jim Daly: “Fluorescent Minerals”

Paleontology
7:30 PM, May 16

Dave Carlson: “The Search for Dinosaurs in Illinois”

ESCONI Field Trips

Braceville May 16 and Bradewood May 17 (Page 4 & 5)
See Web Site, www.esconi.org, for details about future field trips in 2009. Contact John Good for comments at 630-483-2363 or ESCONI@hotmail.com

BOARD MEETING
7:30 PM, May 22

May 23 & 24: Wheaton, IL -

Chicagoland Gems and Minerals Association -

“33rd Annual Gem, Jewelry, Fossil & Mineral Show & Sale”

DuPage County Fairgrounds, 2015 W. Manchester Rd, Wheaton, IL 60187. Dealers, demonstrations, exhibits, kids corner, silent auction, special displays. Food available. Saturday - 10 am to 6 pm. Sun - day 10 am to 5 pm. Adults \$5. Seniors & students \$3. Children under 13 free with adult. Free parking. For more information call (630) 377-0197 or email CGMA@sbcglobal.net

GROUP	GENERAL	MICRO	PALEO	ARCH	BOARD
May	8	9	16		22
June	12	13	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	2nd FRI	2nd SAT	3rd SAT	4th SAT	4th FRI
TIME	8:00	7:30	7:30	7:30	7:30

ESCONI SHOW 2009

The ESCONI Gem, Mineral and Fossil Show at the College of Dupage on March 14 and 15 co-chaired by Mark Kuntz was a great success. Special thanks to Eric Gyllenhaal, the Fairchild family and others for running the ESCONI Juniors. Also thanks to Floyd Rogers and Bruce Nordstrum for running the geode splitter. More details to follow in future issues.



Floyd Rogers and the Geode Splitter



Junior Table with Eric Gyllenhaal and Lexie Kiamco



Fabulous Door Prizes



Don Cronauer Demonstrates

ESCONI Field Trips

Braceville, IL May 16, 2009

Collecting Mazon Creek Fossils

Meet at 9:00 A.M. Saturday at the BP Amoco in Coal City. No Age Limit. Hard Hats not required.

Take I-55 to Exit 236 (Coal City). Take a right onto Highway 113 (Division Street). Go west to Broadway Street and Division in Coal City.

We will be collecting Mazon Creek concretions from an old spoil pile on private property. Hard hats are not required. Boots are recommended. An Estwing rock hammer is the best tool. A small shovel or pick is helpful. Knee pads, backpacks, fanny packs, extra clothes (you will get wet and muddy) are also a plus. Bring a bucket for the fossils. Also bring insect repellent.

Check the web site for details or contact John Good at 1-630-483-2363 for reservations or e-mail at esconi@hotmail.com

Braidwood, IL May 17, 2009

Collecting Mazon Creek Fossils

See next page for details



Jacob Geode Field Trip



MAPS 2009

PIT 11 FOSSIL TRIP SUNDAY MAY 17, 2009

OUR 3rd ANNUAL FIELD TRIP TO PIT 11

WE WILL MEET AT 9 AM AT THE MAIN BOAT DOCK IN PIT 11. THE TRIP WILL LAST FOR FOUR (4) HOURS OR LONGER. YOU WILL BE TAKEN OUT TO ONE OR MORE ISLANDS. BRING WITH YOU INSECT REPELLANT. THERE ARE TICKS, FLIES, MOSQUITOES & OTHER CRITTERS, A SMALL COOLER TO KEEP LIQUIDS COOL, & A LUNCH. COLLECTING MATERIALS SHOULD INCLUDE: HAMMER, BAG OR BUCKET FOR CONCRETIONS, NO SHOVELS ARE ALLOWED, AND ANYONE CAUGHT DIGGING WILL BE TAKEN BACK TO THE DOCK AND NOT ALLOWED ON ANOTHER FIELD TRIP FOR A YEAR. IF YOU GET WATER ON YOUR FACE OR HANDS REMOVE IT IMMEDIATELY.

BY SIGNING BELOW YOU AGREE TO THE FOLLOWING RULES; YOU AGREE NOT TO SUE ESCONI, THE BOAT GROUP, COM ED OR THE DNR. THE BOAT MOVES UP & DOWN WHEN DOCKED BECAUSE OF WIND OR WAVES. PLEASE BE CAREFUL GETTING IN & OUT. WE THE ABOVE ARE NOT RESPONSIBLE FOR ANY LOSS, LEFT BEHIND, STOLEN, OR DAMAGE TO YOUR PERSON OR VEHICLE. YOU MUST BE A MEMBER OF ESCONI OR BY SPECIAL INVITE OF THE BOAT CREW. CHILDREN ARE REQUIRED BY STATE LAW TO WEAR A LIFE JACKET, PROVIDED BY THE BOAT CREW.

COST OF THE TRIP IS \$15.00 FOR ADULTS, 12 & OVER. \$8.00 FOR CHILDREN IF ACCOMPANIED BY AN ADULT FOR EACH CHILD. MAKE CHECK OUT TO PHILIP ROCK ONLY. ANY QUESTIONS CALL RICHARD ROCK AT 1-815-476-7040. THIS TRIP WILL ONLY BE CANCELLED FOR LIGHTENING OR HIGH WAVES. RESERVATIONS CLOSE ON MAY 12, 2009, OR SOONER IF WE FILL UP SPACE.

I agree to the above by signing this waiver.

Name (Print) _____ Sign(Clearly) _____

Address: _____

Date: _____ Telephone: _____

Children's Name & Age: _____

E-Mail: _____

Amount Enclosed \$ _____

MAIL TO: RICHARD ROCK, PO BOX 726, WILMINGTON, IL 60481



BOARD MEETING

February 27, 2009

President Karen Nordquist called the meeting to order. 1st Vice President Rob Sula reported that Bucky Gates would be our speaker at the April General Meeting. He will be giving a presentation on hadrosaur migration. The speaker for the General Meeting in May will be Lindsey Zanno. No speaker is currently lined up for the General Meeting in June. However, speakers have been booked for the September (Jack Wittry), October (Jack McCray), and November (Dave Malone) General Meetings. Subject matter for these presentations will include paleontology, Illinois archaeology, and Alaska geology, respectively. Rob then led a discussion on our next Holiday Party. It was tentatively decided to have it on December 4, 2009 starting at 5:30 pm. A location still needs to be decided upon, as the restaurant location that we used last year has closed.

2nd Vice President Irene Broede announced that all meetings for March and April will be in Room K-131. Rooms for May meetings have not yet been booked. She mentioned that the K Building may be undergoing a major renovation, so she could not reserve K Commons for the March Show in 2010. What building will be available for the show is uncertain at this time.

The minutes from the January 23, 2009 Board Meeting were reviewed and approved, as amended. Treasurer John Good presented the ESCONI Profit and Loss Statement as of December 31, 2008. His report was accepted as presented. A discussion followed on possible means to cut ESCONI expenses. Emphasis was placed on possible means to reduce printing costs for the Newsletter. No resolutions were decided upon at the Board Meeting. Librarian Andy Jansen reported that he obtained a copy of *Outlines in Invertebrate Paleontology*, the textbook written by Dr. Bailey of Western Illinois University, for our library. Andy was able to purchase it for under the budgeted \$100. The book was passed around at the meeting, and Rob Sula checked it out! A suggestion was made that Andy should bring a selection of our books to the General Meetings to try and increase usage of our currently under-utilized library.

Rob mentioned that he finally got hold of Indiana 9 Fossils, but they would be unable to be a dealer at the March Show. John Good reported on upcoming field trips. There will be an April 4 field trip to Hamilton, Illinois for geodes. The tentative field trip to Braceville on May 16 has not been finalized. John then reported that the deadline for contributions to the April issue of the Newsletter is March 5. The Newsletter would then be put together the weekend of March 8 and delivered to Sir Speedy for printing on March 11. John mentioned that he received five new family members and had turned the dues payment over to Membership Chair Eileen Mizerk. He then reported that the first Chicagoland Gems & Mineral Association meeting will be on March 2. John then mentioned that the new web site is up and running. However, some older pdf documents seemed to be missing from the web site. He is going to check on those, as well as on some broken links to other web sites. Finally, John said that he is working with Show Chairman Mark Kuntz on preparations for the March Show. He mentioned that we are currently short on displays and that a work day is needed at the warehouse to get items ready to bring to the March Show.

Under old business, Irene Broede reported on ESCONI Associates. A motion was made and passed that dinners for the General Meeting speakers will be covered by ESCONI.

President Karen Nordquist sent a letter to Recording Secretary William Vinikour that thanked him for his generous donation of items for the 2008 March Show.

The meeting was adjourned.

Respectfully submitted, William S. Vinikour, Recording Secretary

Mineral Micromounts Study Group; March 2009

The meeting was called to order at 7:30 PM by Kathy Dedina. John Sadowski discussed field trips to the Thornton Quarry.

The May meeting will be on fluorescent minerals. Kathy Dedina will describe localities and Jim Daly will explain the mechanism of fluorescence. Bring your fluorescent specimens. UV lights will be available.

This month's program was on "mineral oddities", in recognition of the theme of this year's Tucson show. Kathy Dedina described the various kinds of oddities: Unusual size, Pseudomorphs, Unusual crystal growth, Minerals taking the shape of non-minerals, Optical properties, Inclusions, Occurrences that are hard to explain, Specimens with a special provenance, and finally Odd collectors. Jim Daly showed Powerpoint presentations of unusual micromounts from his collection, some of the cases at the Tucson show, and his collecting trips in Arizona in February.

Jim Daly had the same batch of micromounts from the Harry Dryer collection for sale as last December, since there was insufficient time then to examine them.

Kathy Dedina and Sheila Bergmann provided refreshments.

Tucson Pictures by Jim Daly



Tucson Show 2009



Mineral Oddities

Mineral Oddities by Kathy Dedina

The theme of the 2009 Tucson Mineral Show was mineral oddities. Robert Cook's article in *Rocks and Minerals* magazine Volume 84 No. 1 (Jan.-Feb. 2009) elaborates on that theme. What is a mineral oddity? According to Cook neither rarity nor exceptional value alone makes a specimen an oddity. There are eight categories into which most oddities can be placed. Let's start with an ordinary quartz crystal on a journey into the world of mineral oddities.

Quartz is one of the basic rock forming minerals found in diverse materials including granite, rhyolite and sandstone. Well formed prismatic crystals in the hexagonal system occur in many locations worldwide. Quartz is probably one of the first minerals with well formed crystals that most of us collected. Crystals are plentiful and relatively inexpensive. So how can something so common be an oddity? Let's start with Cook's first category of oddities --size. A one, two, three even four inch crystal of quartz is normal. Yet when quartz occurs in barrel sized crystals from Brazil as illustrated in the article it becomes an oddity. Other noted giant crystal occurrences include gypsum up to 36 feet from Mexico, wire silver to a meter from Norway and giant rhodochrosite from Argentina. Entering "giant crystals" brings up a website devoted to large specimens. At the other extreme are those tiny sparkles found in some Hamilton, Illinois geodes that turn into perfect water clear prismatic quartz crystals under a microscope. In this case the diminutive size of the crystals is the oddity.

Micromounters are well aware of the perfection of micro crystals which often show little or no damage compared to hand specimens. Some minerals such as turquoise are only found in micro size. Most of us will never own a giant specimen but most of us probably own a micro even though we may be unaware of the fact. Some collections are entirely micro crystals.

Another category of oddities is that of pseudomorphs. A pseudomorph is defined as a mineral of one chemical composition having the outward crystal form of a mineral of a different composition. Hundreds of pseudomorphs exist. In our specimens quartz has replaced barite and calcite in crystals that still have the form of the original mineral. This is an example of forming a pseudomorph by substitution of one mineral for another. Malachite pseudomorphs of azurite from Arizona and Tsumeb are highly desirable and relatively common. This pseudomorph formed by the alteration of the original material by a reaction with its environment to add or lose some element in its composition. Both malachite and azurite are basic copper carbonate but with differences in the copper and carbonate composition.

The pseudomorph category can be extended to include mineral replacement of non mineral material. Some very interesting and unusual specimens are in this group. The most unusual is that of a mouse replaced by copper minerals in a Russian museum and a marmot jawbone replaced by turquoise from Nevada both of which are pictured in the Cook article. Petrified wood is a more familiar example. The shells replaced with opal from Australia and pyrite from Sylvania, Ohio are other sought after specimens. Pseudomorphs also form by incrustation of one material on another such as the gypsum coated tennis shoe shown in the article

Mineral Oddities—Continued

Unusual crystal growth or crystallography makes up the third category of oddities. Most crystals have a recognizable if imperfect form. Some crystals however deviate from the norm. Our quartz crystal often shows one oddity—twinning the intergrowth of two or more single crystals in a definite systematic arrangement. The website “The Quartz Page” has a lot of information on quartz including the many types of quartz twins. Numerous minerals form twin crystals that may be simple or highly complex. The penetration twin appears to have parts of two crystals occupying the same space as shown by fluorite from Southern Illinois. Other unusual forms of quartz include scepters and phantoms. Epitactic overgrowths are the oriented growth of one mineral on another. Examples of this type of growth are the pyrite-marcasite overgrowth from some N. Illinois quarries we discussed in the Illinois mineral program. Sometimes crystals grow in one preferred direction resulting in crystals of unusual shapes. You may find micro pyrite from Hamilton geodes in the form of long thin wires. Minerals form in odd shapes such as balls, circles, spirals and corkscrews. Some shapes of minerals actual resemble non minerals objects. At one Esconi show Sylvia Josefek had a case that served breakfast all made of minerals. Specimens resembling animals, plants, body parts etc. are known and limited only by the imagination.

Mineral having certain optical characteristics are placed in the oddity group. Double refraction in the calcite cleavage Iceland spar is a well known example. Color change dependent on viewing direction as in tanzanite is another. The fiber optic character of ulexite and some gypsum fit in the oddity category. By far the largest group of optical oddities would be the many minerals that show fluorescence the topic of next month’s program. Some Illinois fluorite does fluoresce. The Fluorescent Mineral Society specializes in these minerals.

Inclusions make up the fifth oddity category. Our ordinary quartz is transformed into a prized specimen by the presence of another mineral or other material inside the crystal. The number of mineral inclusions in quartz is large because quartz is a common mineral in many environments. A book was written on that topic. Rutilated quartz is both a lapidary material and specimen material even when not a complete crystal. Water bubbles and petroleum inclusions are highly prized. Quartz in geodes from Hamilton may be included with pyrite or hematite. Inclusions are found in many mineral species. Sand included calcite crystals from South Dakota were auctioned at the March 2009 Esconi Show. Garnet inclusions in diamonds were used in the search for diamonds in Arctic Canada. Inclusions cause the star or eye in gemstones. Inclusions in diamonds of gem quality lower the value of the stone unlike most mineral specimens. Books, chapters of books and articles have been written about inclusions.

Why some mineral specimens occur at all is an oddity. It is odd that copper-silver halfbreeds are found in upper Michigan but not in the numerous copper deposits worldwide. Why is there native iron on Disco Island in Greenland when it is rarely if ever found else where. Mine fire minerals are another group in this category.

Provenance which is the seventh oddity group can enhance a mineral specimen just like items on Antiques Road Show. A mineral owned by a famous person or found on a famous shipwreck would certainly qualify as an oddity. Abraham Lincoln’s gold in quartz specimen is unique because of that ownership. Finally the last category the who who make up the hobby and profession. Anyone know of an oddity in that category? The website “Crystal Classics UK Tucson Show Part 3” has photographs of some fabulous oddities from Tucson 2009.

John Good, Chairman
Date: March 21, 2009

Paleontology Study Group Meeting

Chairman John Good called the meeting to order after it was changed to an alternate room because the overhead projector was not working in K-131. John mentioned the Jacobs geode field trip during MAPS on April 4. Tom Williams mentioned the MAPS EXPO during April 3-5 in Macomb Illinois where there will be a silent auction, live auction and lots of fossils. There will be ESCONI field trips on May 16 to Braceville and May 17 there will be a boat trip. The Chicagoland Show is Memorial Day weekend and lots of help is needed for set up and during the show.

Future Paleontology programs are planned as follows:

April Dave Dolak Silurian Bedrock
May Dave Carlson The Search for Dinosaurs in Illinois
September Show and Tell

Brookfield Zoo is having "Dinosaurs Alive" in April through October. Dave Carlson has started an ESCONI Yahoo group on the internet and all interested members should give him their internet address so they can be included. John Catalani then presented the program for the evening.

The Ordovician Period

Traditionally the time periods have been established using the golden spikes determined by GSSP (Global Stratotype Section and Point). Some have used FAD or first appearance datum and LAD or Last appearance datum also. Another important term that will be used is GOBE or the Great Ordovician Biodiversification Event. The history of the Ordovician goes back to 1879 when it was named by Chester Lapworth. It was named for the tribe Ordovices and was finally accepted in 1901 by the British survey and in 1903 by the USGS, but not until 1960 by the International Geological Survey. Over the years there has been some changing of the local Illinois sections and the accepted Ordovician dates are now rounded to 489 to 443 mya. Illinois was below the equator in Laurentia then. There were several fault zones with the Sandwich fault, Plum River fault and Leaf River fault some of the major ones that are nearby.

The Ordovician climate was tropical and wet with southeast trade winds. It was a greenhouse climate until the end with ice ages. There were extensive shallow seas with strong land wind erosion. The GOBE had a two fold increase in orders, a 3 fold increase in families and a 4 fold increase in genera with little increase in body plans but an increase in ecological complexity. There were many filter feeders and infaunal animals and bioturbotic. As one example there was one order of nautiloids in the early Ordovician and 10 orders in the early Late Ordovician. The GOBE spread over the entire Ordovician with 3 pulses of diversification – one in the late early to early middle, the late middle to middle late, and the last in the final to just before the extinction.

The causes of the GOBE included the outcome of the Cambrian Explosion, the increases in hard substrates, the stalled Cambrian explosion, the many niches available, the extremely provincial fauna, the rising sea levels, the increases volcanic levels, the cooling of the oceans, and the meteoric impacts. The disrupted ecosystems created niches.

The characteristics of Ordovician life included an increase in ecological tiering, and abundant infaunal animals and bioturbation. There was one new phylum – Bryozoa. There were the first complex reef communities with rugosoids, tabulates, stromatoloids, articulated brachiopods, etc.

Paleontology Study Group, March 21, 2009, Continued

Then began a parade of the fauna of the GOBE – a slide show of fossils in John's collection (many shown in the photos below) that included some of the following: nautiloids, gastropods, clams, crinoids, trilobites, coral, cystoids, bryozoans, and many more. At the end of the Ordovician glaciation there was a large volume of carbonates deposited, the temperatures dropped and an ice cap formed over North Africa at the South Pole and sea level dropped. A change in Earth's orbit was one cause. The End Ordovician Extinction was the second most severe with 85% species loss 61% genera loss and 26% families loss. Sea level dropped with glaciation. The climate was harsh and the oceans cooled. There were two pulses – first the sea levels dropped and then the sea levels rose. The Silurian recovery was over 5-7 million years. The GOBE period was an important one in the overall biodiversity of fauna over time.

Several people had fossils to show.

- Lexie Kiamco had two Mazon Creek fossils that turned out to be coprolites.
- Bob Beadle had a flattened cephalopod from the Newark Quarry in Beloit and a gastropod from the Stateline Quarry.
- Joan Bledig had some rugose coral from the Devonian of Southern Indiana.
- Tom Williams had a nice collection of Ordovician fossils that included a beautiful trilobite from Dixon that he had had prepared (pictured below), crinoids from Fort Mitchell, Kentucky; a crinoid from Oklahoma; a trilobite from Iowa; a brachiopod from Dixon; two enrolled trilobites from Dixon; a cystoid from China; a trilobite from Canadian shale; 2 colonial corals from Lexington Kentucky; 2 cephalopods from Dixon, one straight and one coiled; a Russian trilobite, and more.
- Dave Carlson had a fascinating cystoid from the Larson Quarry that was the oldest one found there. You can tell by the cross hatching.
- Irene Broede had a collection of fossils from Brooksville Indiana from the Richmond Group in the Upper Ordovician. They included: brachiopods, cephalopods, pelecypods, gastropods, horn corals and an enrolled Flexicalemene.

The meeting was adjourned for more discussion.

Respectfully submitted, Karen Nordquist, Secretary



LEE MINE GRAVEL by Roger Sesterhenn

When most of your favorite quarries are closed, and road cuts are under a foot of blowing snow and the temperature hovers around zero degrees Fahrenheit - you can sit in the comfort of your home and look for fossils by sorting through Lee Mine gravel. I find it a lot of fun and have found some nice fossils. The Aurora Fossil Museum in Aurora, North Carolina maintains a fossil collecting area in front of the museum which consists of truck loads of gravel from the nearby PCS Phosphate Mine, aka Lee Mine. The museum permits one to take small amounts of gravel home.

In the gravel one can find: various kinds of sizes of shark teeth; vertebra from sharks, tuna and porpoise; ray dental plates and teeth; brachiopods; gastropods; sea urchin spines; coprolite; porpoise teeth; barnacles; crab claws; pieces of coral and bone fragments. Shark teeth are the most commonly found fossils. Many of the fossils are broken and some are worn. The first picture shows some of the different fossils that I found in the gravel. The second picture shows what fossils I found by sorting through a 6 oz yogurt cup of gravel. The fossils are mostly of the Miocene epoch from the Pungo River formation about 20 MYA, although James City and Yorktown formations may be mixed in - 1 to 20 MYA.

The gravel consists of a mixture of sand, gravel, rocks, phosphate beads and debris all coated by a pasty, damp, brown mud which obscures the fossils. At the museum I first sift the gravel through a 1/2 inch mesh screen to remove any large rocks and debris and maybe a larger shark tooth. The museum has plastic buckets, scoops and screens that can be borrowed for this work. One gallon Ziploc bags or plastic containers work well for transportation of the gravel home.

At home, I first soak the gravel in water for several hours to loosen the mud, then wash the gravel by placing a small amount into a 1/16 inch mesh screen and shake in a tub of water, then rinse in clear water several times. The gravel can be dried on newspaper.

When finished washing, I let the sand and mud settle to the bottom of the washtub and decant the clear water from the top. When dry enough I put the muck in plastic bags and toss them into the garbage. I have separated the sand from the mud at the bottom of the tub and found virtually no fossils in the sand so apparently the 1/16 inch mesh catches all of the fossils.

A small amount of the cleaned, dry gravel can be placed on a piece of cardboard cut from a cereal box and the fossil treasures removed. There are many fossils to be found in the gravel and you never know what can be found. Shaking the cardboard occasionally to change the orientation of the fossils helps to find them. A toothpick is a useful tool to move things around. Since the fossils are small to tiny, I need to wear a pair of reading glasses over my regular glasses. Some people prefer to use a large magnifying glass.

Aurora is located about 1000 miles from Chicago and is about 100 miles East of Raleigh in the East Central part of the state on SR 33. While at the museum, don't miss viewing the fine collection of fossils and the story of the PCS Mine. The museum has nice fossils, books, tee shirts etc. for sale. One can also look through the gravel piles and keep any fossils found. Rain tends to wash the mud from the surface gravel exposing fossils for surface collecting. Some people prefer to sort through the gravel by hand or using a shovel looking for larger fossils and some screen the gravel looking for the bigger teeth. Prepare to get dirty in the gravel piles. I usually wear knee pads and gloves with a few fingertips removed to protect my hands from the damp mud. It's a great place for kids to look for fossils. Hose them down before letting them into the car. There is no admission charge at the museum or to look in the

LEE MINE GRAVEL—Continued

gravel piles, but the museum does accept monetary donations and fossil or geode donations for display and sales to finance the museum operation. The museum will appreciate any fossils or minerals that you can donate.

With a little effort, one can find some nice small shark teeth and other fossils in the gravel and they don't take up much storage space. The bad news is you will want to go back for more gravel.



May – Emerald
(Alternate gem: Chrysoprase)

By LaVergne R. Novak

The emerald, favorite gem of Cleopatra, has been called the “stone of nature” because of the clarity of its colors. It can be the blue-green of a peaceful sea or the sparkling green of the grass in Olympian fields. It is the symbol of the coming of spring. The deepest shades are the most coveted and most costly. Emerald is a variety of beryl silicate and aluminum. The presence of chromium produces the lovely colors. Because of its crystalline structure and a hardness of 7 1/2 to 8 on the Mohs scale, the emerald is a rather brittle stone, not easily carved. Its name comes from a Persian word *zummurud*, meaning “green.”

The ancient Babylonians and Egyptians treasured the emerald, as did the Europeans when Marco Polo brought home this magnificent gem in the 13th Century. In *Idylls of the King*, Tennyson claims that the Holy Grail had been carved from a single emerald, thus inspiring the quest for the Grail by King Arthur and his Knights of the Round Table.



Emeralds have been discovered on almost every continent, with the finest specimens coming from Colombia. Unlike many other gemstones, the emerald has been the source of mainly pleasant things. It gave promise of happiness and peace of mind. It was especially kind to women, bringing them fulfillment in love, serenity in their domestic lives, and safety in childbirth. Early Persians felt a sense of personal security while in the protection of an emerald. The Hebrews thought it would blind a serpent that gazed upon it, thereby protecting the wearer from the serpent's venom.

The powers emanating from the emerald were many and strong. Confronted with this beautiful green gem, a liar would confess to his duplicity. An emerald would expose treachery by turning pale. Artists wore the emerald to enhance their creative talents. Sailors and explorers called on the emerald to protect them from disease, shipwreck, and the disasters of nature. Soldiers going off to battle presented an emerald to their wives to ensure chastity. The emerald could foretell the future and give the gift of prophecy to its lucky owner. In addition to healing liver and stomach ailments, emeralds were especially useful in treating eye inflammations and infections.

Finally, Pliny the Elder, in the 1st Century, told of this legend which attested to the powers of the emerald: When King Hermios died and was entombed on the island of Cypress, a magnificent marble lion with great emerald eyes stood guard at the entrance to his tomb. So bright were these emerald eyes that fish in the sea were frightened away. With their livelihoods in jeopardy, the fishermen replaced the emerald eyes with common stones and the fish returned.

(This is a birthstone series. Text was first printed by Lizzadro Museum. Picture of emeralds from Colombia was added from colored-stone.com.)

PaleoFest 2009 Report



Once again the Burpee Museum in Rockford Illinois sponsored a successful weekend of talks and activities for all interested in paleontology. There was something for everybody. One of the stars of the show is pictured at left – the entelodont depicted by paleoartist Luis Rey. And what is that in its mouth – why it is a baby *T. rex*! Of course they did not live at the same time, but entelodonts were considered by some to be the *T. rexes* of their time. Entelodonts were the subject of a talk by Scott Foss of the Utah Bureau of Land Management. They were the *T. rex* of the Tertiary 20 MYA with their wide-gape mouths and strange skulls. In his talk, Scott revealed why they had these strange skulls with the wide flanges on the jugal bones and the tubercles on

the lower jaws that have puzzled researchers for so many years. They are for the muscles that support the wide gape of these animals. And as a byproduct it protects them from each other as the males battle each other for territory and mates when face biting. Many of the larger skull fossils do show evidence of this with tooth bite marks.

Lindsay Zanno of the Field Museum described the wide variety of the “predatory” dinosaurs that occurred during the evolution of the creatures. “Raptor” usually means a beast like *Velociraptor* with big sharp claws and teeth like those seen in Jurassic Park. But there were many other groups of related dinosaur relatives coexisting with these beasts in ecological niches. The therizinosaurs were among the most bizarre with their four foot long claws and big pot bellies and small leaf shaped teeth. The most basal is *Falcarius utahensis* found in Utah at quarries where they have found them in abundance. The later species show larger claws and fatter bellies. The family tree of raptors shows that there were many lines of plant eating or omnivores in the lines. Only the dromaeosaurs were meat eaters. And the birds are within the group as well and are the only ones still with us. With over 1,000 shared parts the skeletal evidence is strong that birds and raptors are related. And with 10,000 species of birds and 4,500 species of mammals we are still in an age of dinos.

Chris Brochu from the University of Iowa talked about his favorite subject the Crocodile and why crocs are better than dinosaurs – because we don’t need special effects to see crocs eat people. He says that he does not believe that crocs are really “living fossils” as most people see them. He says that instead they are highly diverse and that the crown group Crocodylia is actually younger than other groups such as the mammal, turtle, squamate and bird crown groups. He said that you can’t actually always tell the difference between crocs and alligators by the width of the snout as most people believe. It is better to tell by the teeth – alligators have an overbite. He showed many of the strange and interesting crocs that have been found over the recent years that he is still trying to understand and place within the phylogeny of the croc family tree. One was shaped like a surfboard with eyes and teeth with no teeth in the lower jaw. One had a huge nose. There were two large periods of many species once in the early Cenozoic and once in the Miocene because they don’t seem to care about the mass extinctions. They lay a lot of eggs and protect the eggs and young. If there is food and it is warm there are crocs.

Paleofest, Continued

Bob Bakker was the dinner speaker Saturday night and did not fail to entertain one and all with his discussion of dinosaurs and other beasts. He also drew several dinosaurs on the spot for auction for the benefit of the Burpee Museum.

Scott Williams of the Burpee Museum is on a collecting high with all the successes that they have had in the field in Montana and now in Utah. The new Hanksville-Burpee Quarry in Utah has paid off beautifully with bones from sauropods including *Camarasaurus*, *Diplodocus*, *Barosaurus* and *Brachiosaurus* (probably). What a terrific start for a wonderful long term field project for the museum. There is also bone material from a theropod, probably an *Allosaurus*, and a *Stegosaurus*. It is a very large site representing a Late Jurassic braided river or stream. It has the potential to become another Dinosaur National Monument in terms of material. And they are continuing their work in Montana with new bones at the Petey location. Petey is believed to be about 15 years old and is important in the study of *T. rex*. They also have found a site with a small crocodylian identified as a juvenile *Brachychampsa*. It is great to see them doing such great things.

Burpee did have a large silent auction going on all weekend and several auctions during the talks. A caterer supplied some good sandwiches, snacks, cake and drinks right there at the site. They also had a book dealer and an amber dealer there during the show. ESCONI had a table where we sold our books and had our club information available for prospective new members. We did sell some books and interest some new members and enjoyed talking to the speakers and visitors.

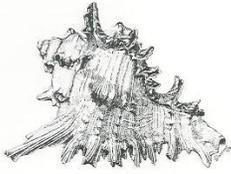
I would like to thank Jim Fairchild, John Good, Irene Broede for their help at the table during the show for making our effort there successful. And thanks to Jim and John for setting up our participation.

Good luck to the Burpee in the future and we are looking forward to PaleoFest 2010!!

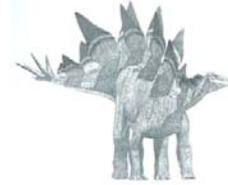
Karen Nordquist, Paleontology

Field Museum News

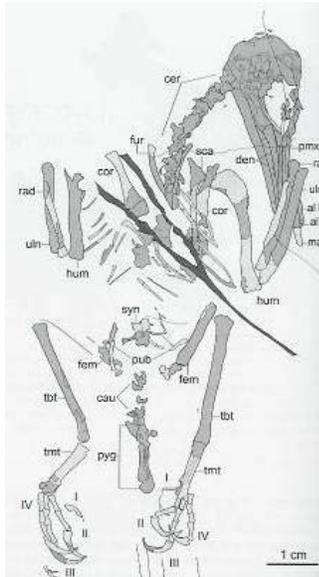
Peter Makovicky, Dinosaur Curator, and his wife Sushma Reddy are the proud parents of a new baby girl, Anisha Elena Reddy Makovicky



Karen's Komments

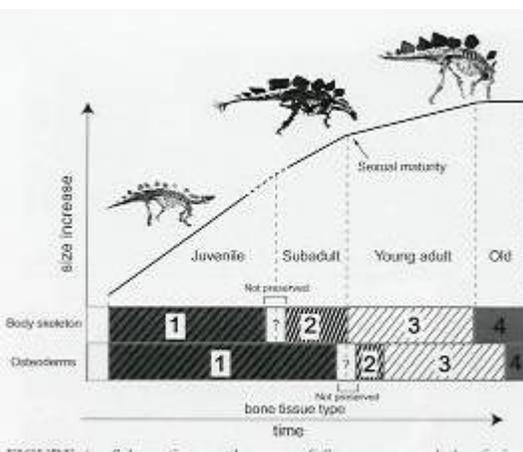


A New Bird with Improved Flight – *Shanweinia*



A new specimen from Liaoning Province China from the middle Yixian Formation of the Lower Cretaceous provides another picture into the evolution of flight. The specimen consists of the slab and counter slab which includes feathers preserved as carbonized traces around the head wings and tail. It has been named *Shanweinia cooperorum* meaning fantail bird because it is the first occurrence of an enantiornithine fan shape tail. The species name honors Carl and Lynn Cooper who have supported the study of birds in China. It has an elongate cranium that is 62% rostrum. It does have small teeth. There are wing feathers with the longest measuring 82 cm (32.3 in.). *Shanweinia* does have an elongate tail with at least four closely vaned feathers parallel directed toward the pygostyle. Other birds such as *Confuciusornis* had long tail feathers that were interpreted as display feathers, but these are closely structured in such a way as to act as an airfoil so they could be used to generate lift for aerodynamic purposes. The authors believe that this specimen was using the tail for aerodynamic purposes and that this fan shaped tail was used to improve flight through increased maneuverability and lift. (O'Connor, Chiappe et al in **JVP** Vol. 29(1) March 2009)

Stegosaur Growth Patterns of Skeleton and Osteoderms



An extensive study was done of a series of stegosaur skeletons of various sizes using six skeletal elements (three fibulae, two tibiae and a rib) and ten osteoderms (seven plates and three spikes) of seven individuals from the Upper Jurassic Morrison Formation. Most of them were identifiable as *Stegosaurus armatus* and previous studies have not determined the ontogeny and maturity of osteoderms with respect to body growth. In addition the function of the osteoderms has long been under discussion. Thin sections of the bones and osteoderms were analyzed from three sizes at small (22% of largest) medium (70% of largest), and large (87% of largest). In the small size they found fibro-lamellar tissue with a

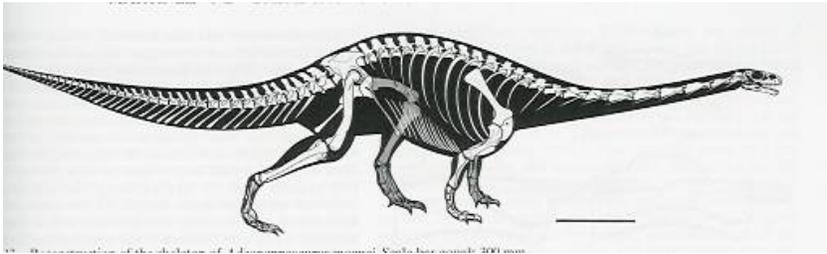
radial network in both the bones and the osteoderms. In the medium individuals they found some LAG lines (lines of arrested growth) in the bones. In the large animals both have fibro-lamellar tissue and multiple LAGS. The bones also have external fundamental systems (EFS) at the periphery and the osteoderms do not.

Karen's Komments, Continued

They found that there were four stages in the growth series and that the timing of these stages was different in the bones and in the osteoderms. That shows up in the graph above. Stage 1 is the fibro-lamellar tissue with a radial network; stage 2 is the fibro-lamellar tissue with a longitudinal vascular network; stage 3 has LAGS; and stage 4 has EFS. The delay indicates that the osteoderms may have had faster growth rates than the body after the maturity of the skeleton. The osteoderms may have had multiple functions – as weapons, temperature regulators and for display.

(Hayashi, Carpenter et al in **JVP** Vol. 29(1) March 2009)

New Basal Sauropod in Argentina – *Adeopapposaurus*



A complete skull and some vertebrae and post cranial material of a sauropodomorph have been found in the Lower Jurassic Canon del Colorado Formation of Argentina. It has been named *Adeopapposaurus mognai* from the

Latin “adeo” meaning far and “pappo” meaning eating referring to its long neck. The species name refers to the locality of Mogna in San Juan Province. When analyzed it appears to be a sister group to *Massospondylus*. The serrated teeth, large neurovascular foramina on the premaxilla and overbite are characteristic of prosauropods. The features are indicative of a horny beak although some argue it could mean mobile lips. (Martinez in **JVP** Vol. 29(1) March 2009)

New Dinosaur with Integument – *Tianyulong*



This new dinosaur was found on a slab in Shangdong Province China which dates to 144 to 99 MYA and it has been named *Tianyulong confuciusi*. It is named for the Tianyu Museum of Nature which houses the specimen and for the philosopher Confucius. The animal is about 70 cm long (2.3 feet) and there are three patches of hair-like fuzz on it. That is what makes this fossil particularly interesting. The filaments are about 1.5 inches long but on the tail they are about 2.0 inches long. It has been

identified as an ornithischian dinosaur which diverged from the theropods where feathers are believed to evolve. So whether these are feather relatives is being questioned by some. Could feathers have been evolving back as far as the common ancestor of all the dinosaurs? Or did they evolve two times in both branches? The filaments on this new fossil are hollow filaments so they are primitive structures. The fuzz here as seen in the illustration above (art by Li-Da Xing) is similar to that seen in a *Psittacosaurus* shows that some type of integument was common in several dinosaurs. The story of feather evolution appears to be more complicated than was thought. (Zheng et al in **Nature** Vol. 458 3/19/09)

Karen Nordquist, Paleontology

Local Calendar of Events

LIZZADRO MUSEUM OF LAPIDARY ART

May 2 & 3 “Pebble Mosaic Demonstration”

Gwyn Roland, artist, instructor and fabricator of fine art mosaics will demonstrate the pebble mosaic technique at Art in the Park. The pre-cast pebble mosaic process utilizes an indirect method of mosaic making in which pebbles are set upside down in a bed of sand. A layer of concrete is then poured over the stones to form the base of the finished mosaic. The various stages of the pebble mosaic process will be shown. These one of a kind mosaics include: benches, tables, pavers, and sculptural objects.

Demonstration - Saturday & Sunday 2pm to 3pm in the Museum’s Lower Level.
Free Admission.

May 9 “Collecting in the U.S.”

Bob Jones, senior editor for Rock & Gem Magazine and avid mineral collector will present important localities to collect minerals in the United States. Find out the basics of collecting in each location and what specimens look like. Learn what makes minerals valuable and how to create a collection. A great planning resource for vacation ideas and fun for rockhounds and families.

Lecture – Youth to Adult – 60 minutes – 2:00 p.m.
Regular Museum Admission – Museum Members Free Reservations Recommended

May 17 “Museum Day in Elmhurst”

Ride the trolley and see all four Museums including the Elmhurst Art Museum, the Elmhurst Historical Museum and the Theatre Historical Society. Participate in activities and view exhibits at each Museum. At the Lizzadro Museum view the permanent collection. Children and adults can create a gemstone picture frame to take home.

1:00 p.m. to 5:00 p.m.
All Ages Welcome – Admission is Free!

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

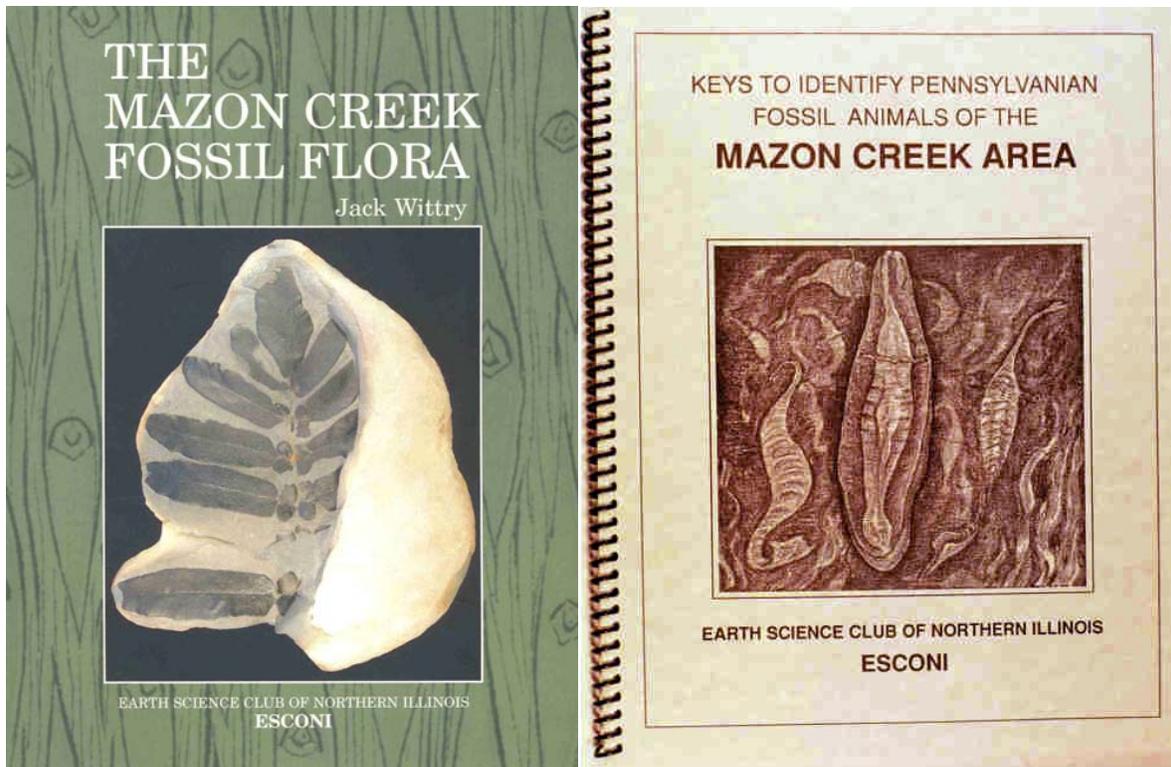
Swap & Vendor Areas—Displays—Geode Cracking
Speakers –Identification– On-Site Breakfast & Lunch

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

Chicago Geode fest Hosted by Chicago Rocks and Mineral Society
Saturday, June 13th ,2009 1 pm—5 pm
Salvation Army—Irving Park Corps
4056 N. Pulaski, Chicago

Free Admission
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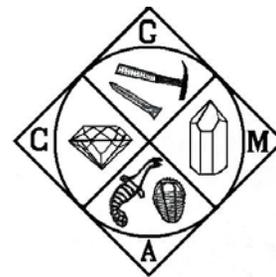


The Mazon Creek Fossil Flora by Jack Wittry
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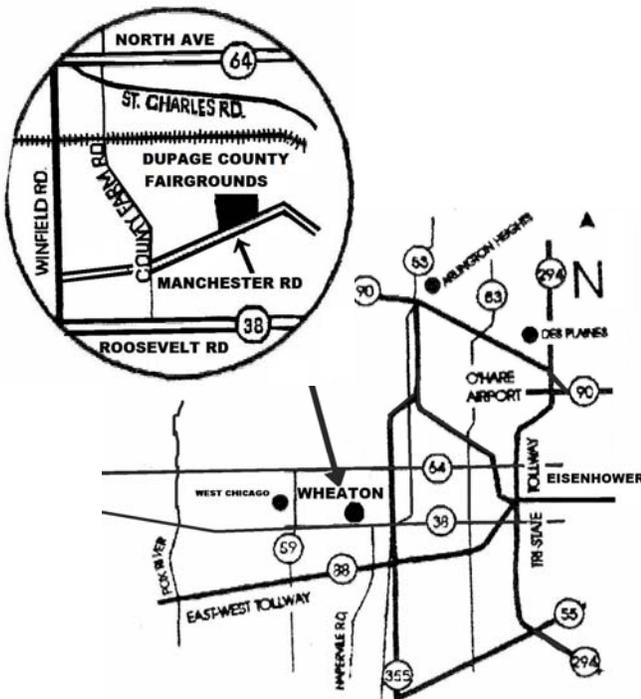
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Memorial Day Weekend

Saturday, May 23, 2009 10 AM - 6 PM

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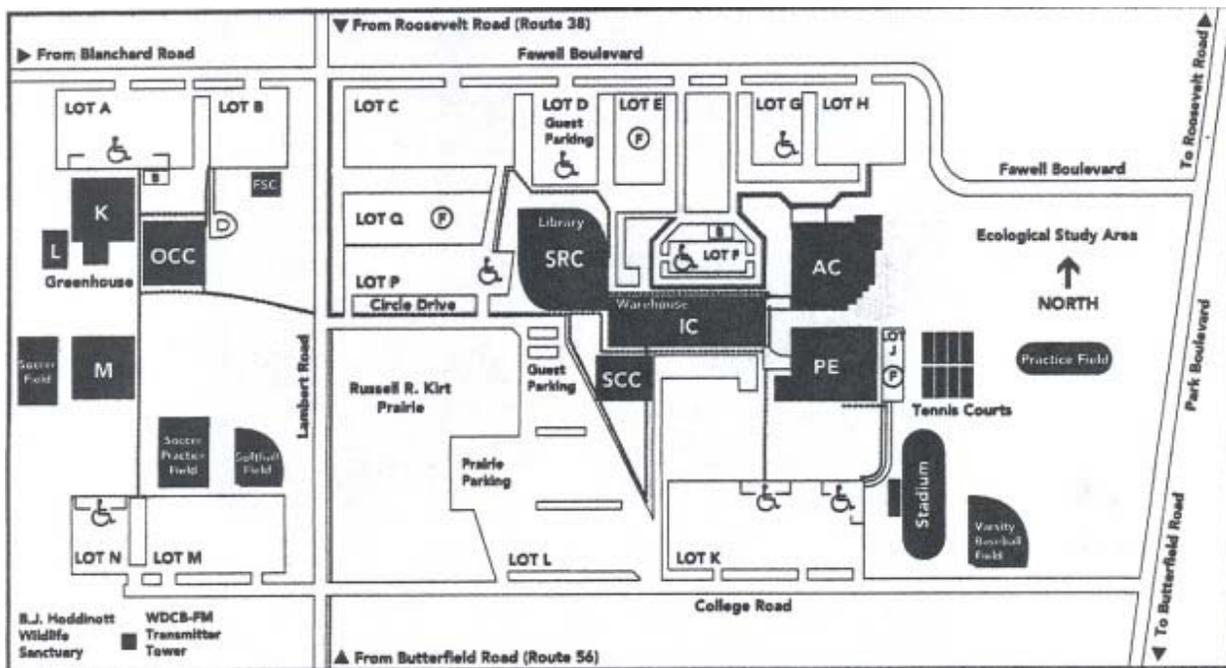
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