



Volume 58 ♦ Number 10 ♦ October 2012 ♦ A monthly newsletter for and by the members of MAGS

## Meeting is on October 5 Note Date Change

### Why Archaeologists ♥ Pottery

*Guy Weaver, Principal/Senior Archaeologist, Weaver & Associates*



There are many, many reasons why archaeologists love pottery. Not only is it durable like stone, it has function and style that help in the interpretation of past lifeways.

Guy's presentation at the October 5 meeting will look at how archaeologists use pottery to reconstruct foodways, status, chronology, and ritual.

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#### New Field Trips, by Charles Hill

Hi again to all of you MAGSters. I just want to let you know that the way to the gravel bars at Richardson's Landing is open. You must come in the back way because the road construction continues on the boat ramp side of the road. Tuesday, September 18, I went with one of our newest members, Amber Dunn, to those gravel bars.

We arranged to meet at the Walmart in Milling-

ton at 9:00am. We took my truck to the boat ramp and decided to walk in. That turned out to be a good plan. The water was as low as I have seen it. On our walk in we found a dozen places with small patches of gravel, containing keeper rocks. The two of us did encounter a couple of places where we had to put on our climbing shoes but the climbing was easy.

The best part of hunting at this *Continued, P. 3*

# MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

MAGS Rockhound News ◊ A monthly newsletter for and by the members of MAGS

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## Regional and Federation News

### Central Arkansas Gem, Mineral & Geology Society

Field Trip to Razor Rock Quarry, near Harrisburg, AR  
Saturday, October 20

Collecting Crowley's Ridge agates, colorful jaspers, some petrified wood, and some fossils.

More information: Mike Austen, home phone (501) 868-4553, email [steelpony@aol.com](mailto:steelpony@aol.com)

➔ See P. 4 for information on the 40th Annual Central Arkansas Gem & Mineral Show.

### DMC Program of the SFMS Field Trip Committee

An Official Field Trip of The KYANA Geological Society, Louisville, KY (HOST), and of the Memphis

Archaeological and Geological Society

Saturday, October 13, 2012

Taylorsville, Spencer County, Kentucky

Lower Kentucky River

"Ordovician rocks and fossils"

Meeting time 9:00 AM EST

All correspondence concerning this trip should go through Charles Oldham, President and Field Trip Coordinator, [charlesoldham@ymail.com](mailto:charlesoldham@ymail.com), (502) 241-8755, 7405 West Hwy. 22, Crestwood, KY 40014.

➔ DMC Field Trip Policies: [www.gamineral.org/dixie-mineral-council-ft-policies.htm](http://www.gamineral.org/dixie-mineral-council-ft-policies.htm)

Please contribute articles or pictures (everybody likes pictures) on any subject of interest to rockhounds. If it interests you it probably interests others. The 15th of the month is the deadline for next month's issue. Send material to [lybanon@earthlink.net](mailto:lybanon@earthlink.net).

## Links to Federation News

➔ AFMS: [www.amfed.org/afms\\_news.htm](http://www.amfed.org/afms_news.htm)

➔ SFMS: [www.amfed.org/sfms/](http://www.amfed.org/sfms/)

The SFMS 2012 Annual Meeting will be October 19-21 in Tampa, Florida, co-hosted by the Tampa Bay Mineral & Science Club and The Imperial Bone Valley Gem, Mineral & Fossil Society. Check the SFMS website for more information.

# MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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*New Field Trips* site is that some of the keepers have been polished by the sands and river currents. The process is natural and the results are gorgeous. We found polished agates, petrified wood, fossils, jaspers, and even some cherts that look good enough to ride in my truck. What a way to welcome a new member!

We had a great time, brought home some great stones, and enjoyed the cool weather. One Tuesday in the next two weeks, I plan to go back to Pickwick to a new spot and try to find some better fossils. Anyone is welcome to come along, but this is not a field trip. I will be hunting for a field trip site so we might not find anything. I also plan to return to Richardson's landing the next chance I get. With the water this low I know there must be many places I haven't looked. 'Til the next time,

*Charles*

## Education Update

MAGS Member Dr. Nina Baghai-Riding of Delta State University (she gave the adult presentation at the September meeting) reports that several of her students submitted abstracts to the

upcoming Geological Society of America National Meeting, which will be held in Charlotte, North Carolina, November 3-7, 2012. All of their abstracts were accepted! Three of the abstracts were the result of a short Maymester course Dr. Brenda Kirkland conducted at Mississippi State University May 17-24, 2012. Eight of Dr. Riding's Delta State University (DSU) students were enrolled in that Maymester course: Holly Moody, Bobby Horne, Gabe Jasper, Jervis McGee, Candice Woodard, Curlina Williams, Georgeo Grant, and Walter Roberts. These students worked with other students from Mississippi State University in completing their various projects. The first abstract listed below pertains to a study concerning palynomorphs from the Jurassic Smackover Formation in Alabama. DSU student Taylor Davidson, Dr. Carol Hotton, Mr. Larry Baria, and Mr. Pat Niemeyer have all contributed to this research.

Interested individuals can look up these abstracts by going to the Geological Society of America website: [www.geosociety.org/meetings/2012/presenterInfo.htm](http://www.geosociety.org/meetings/2012/presenterInfo.htm)

1. Baghai-Riding, N., Hotton, C., Davidson, T., Baria, L. R., Niemeyer, P. 2012, Palynomorphs from the Jurassic Smackover

Formation, Conecun Embayment Alabama, U.S.A.: Implications for paleoclimate, tectonics, and basinal history; Geological Society of America National Meeting (abstract #211605)

2. Collie, Horne, B. L. Jr., Williams, C., McGee, J. Sr., Kilpatrick, J., Wahidi, M., Collins, J., D., Jr., Baghai-Riding, N. 2012, Indurated, iron-rich layers related to microbes in central Mississippi sandstone; Geological Society of America National Meeting (abstract 204452)

3. Baghai-Riding, N., Bise, R. D., Kazal, E. A., Collins, J. D. Jr., Kirkland, B. L., Merritt, D. N., Moody, H. A., Roberts, W. G. Jr. and Shows, K. J. 2012, Possible microbial influence on dissolution of pyrite in Demopolis Chalk NE, Mississippi; Geological Society of America National Meeting (abstract 204454)

4. Kirkland, B. L. Lindsey, C., Woodard, C., Simmons, J., Jasper, G., Collins, J. D. Jr., Baghai-Riding, N. L., Tisdale, R., and Grant, G., 2012, Enhanced microbial precipitation of iron oxides in Demopolis Calk Formations. Geological Society of America National Meeting (abstract 204453).

## Celebrate National Archaeology Day at the C. H. Nash Museum

*Dr. Robert Connolly, Director, C. H. Nash Museum at Chucalissa*

The American Institute of Archaeology has designated October 20, 2012, as the Second Annual National Archaeology Day. There are over 100 Collaborating Organizations for the 2012 events including the 400 units of the National Park Service, many state agencies such as the Louisiana Division of Archaeology, along with a host of museums, universities, and local archaeological societies. Events are scheduled across North America with a few also planned in Europe and Australia. At Chucalissa we have several special activities scheduled including:

- Tours of the Museum and Excavation Trench

*Continued, P. 4*

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## National Archaeology Day Continued from P. 3

- Flintknapping demonstrations
- Lots of educational and fun activities for the kids
- The opportunity to throw darts with an atlatl
- Artifact Identification
- the re-premier of the 1960s era film narrated by C. H. Nash that features members of the Mississippian

Band of Choctaw Indians making pottery, baskets, and blow guns

- and the opening of our newly constructed replica prehistoric Mississippian era house.

All of this for the price of general admission (Adults \$5.00, Children \$3.00).

Be certain to check out our weekly blog at [chucalissa.wordpress.com/](http://chucalissa.wordpress.com/)

## October Field Trip

October 12-14 (travel days October 11-15), to Valley View, Texas, to collect ammonites and other fossils. If you are interested in going on this trip, contact Matthew or Carol Lybanon at [lybanon@earthlink.net](mailto:lybanon@earthlink.net) or (901) 757-2144.

## 40th ANNUAL CENTRAL ARKANSAS GEM & MINERAL SHOW

OCTOBER 6th & 7th, 2012

9 AM TO 5 PM  
FREE ADMISSION

JACKSONVILLE COMMUNITY CENTER  
5 MUNICIPAL DRIVE  
JACKSONVILLE, ARKANSAS  
(HWY 67/167 EXIT 9 MAIN STREET)

Minerals - Fossils - Beads  
Lapidary Material—Jewelry  
Kid's Dig— Door Prizes

Sponsored By  
CENTRAL ARKANSAS GEM, MINERAL  
& GEOLOGY SOCIETY

FOR INFORMATION  
David 870-255-3679 davidmur99@hotmail.com  
[www.centralarrockhound.org](http://www.centralarrockhound.org)

## Scenes from September Field Trip



On September 8 MAGS and the North Mississippi Gem and Mineral Society had a joint field trip to the Memphis Stone & Gravel Co. North Plant in Arlington, Tennessee. The pictures (thanks to Marc Mueller) show participants having a good time playing on a really big rock pile.



## Juniors Corner

*Carol Lybanon*

I hope every Junior who came to last month's meeting enjoyed putting together a small personal fossil collection. I would like that to be the start of a really good collection. We now also have a small mineral collection. So, Juniors, keep adding to your collections. Remember—you should make good labels so you will always know what you collected, the date, and where your specimens were

found. See examples.

Number _____	Photo _____
Genus _____	
Species _____	
County _____	
State _____	
Formation _____	
Age _____	
Collector _____	
Notes _____	

### Fossil Card

This month we will learn about crinoids. In November we will make a gem tree, and our an-

nual holiday party is in December. Don't forget: our October meeting is on October 5, one week earlier than usual.

Number _____	Photo _____
Chemical Name _____	
Common Name _____	
Chemical Comp _____	
Location _____	
Collector _____	
Date _____	
Notes _____	

### Rock and Mineral Card

# MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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## August Board Minutes

*Mike Baldwin.*

Attending: Mike Baldwin, Ron Brister, James Butchko, Bob Cooper, Charles Hill, Doris Johnston, Carol Lybanon, Matthew Lybanon, W. C. McDaniel, Nannett McDougal-Dykes, Neville Mayfield, Marc Mueller, and Lou White.

President Lou White called the meeting to order at 1830. Minutes were recorded by Carol Lybanon and Mike Baldwin.

**Treasurer:** Doris Johnston presented a combined June and July Treasurer's Report. The report was accepted, subject to audit.

**Rock Swap:** Nannett McDougal-Dykes reported that our August indoor rock swap/picnic/meeting was under control. She has all the necessary picnic supplies. W. C. McDaniel said that he had, and would supply, the silent auction slips. Nannett asked Jim Butchko if we had enough material for the auction. His reply was affirmative. We need to make sure that we have realistic opening bids for all auction items. Ron Brister asked if he should bring books to sell. The Board agreed that he should. Nannett reminded everyone that if you are swapping or selling you need to bring your own table. We need all the church tables for the picnic.

**Librarian:** Ron said there was nothing new. He also reported on Chucalissa. October 20 is Archaeology Day, 10-5. MAGS was asked to put up a membership table. Also, if any MAGS member would like to present a demonstration, it would be appreciated. Ron said that Chucalissa has raised \$11,000 for the construction of Native American houses. Chucalissa would appreciate it if MAGS would donate \$2,000, the amount necessary to complete this project. In August a group from AmeriCorps is coming to help with the building.

**Show:** Matthew Lybanon reported that all expenses for the 2012 show have been paid leaving a balance in the show account of \$12,349.00. \$9,500 of that will remain in the show account as start-up for the the 2013 show. The remaining \$2849.00 will be transferred to the club account.

A motion was made by Carol Lybanon that MAGS donate \$2,000.00 to Chucalissa to help fund the construction of Native American houses. The motion was seconded by Charles Hill, followed by a brief discussion. Marc Mueller suggested that mention of this support be used in next year's show publicity. The motion carried by majority vote.

W. C. informed the board that there will be no rent increase at the Agri-center for 2013. The show dates are April 27-28, 2013.

Nannett suggested that we use one MAGS membership meeting to make things for the show. Maybe we could set up kiosks at the meeting where members could volunteer to work during the meeting. W. C. reminded the board that the April membership meeting is dedicated to preparations for the show.

**Field Trip:** Marc Mueller informed the board that a joint MAGS/NMGMS field trip to one of Memphis Stone and Gravel's north Mississippi gravel mines is being planned for September 8. Marc is looking into a October or November trip to Livingston, Tennessee, for geodes. Carol reported that the MAGS field trip to Dallas, Texas, to collect ammonites is set for October 11-14. Members interested in this trip can visit the Dallas Paleontological Society's web pages for information on the area. Charles Hill is researching and visiting the following potential collecting sites:

- Flint Creek, Alabama. Charles has been talking with someone from the Rocket City Gem and Mineral Society and will meet with them on

Tuesday. Trilobites, ammonites and crinoids can be found at this site;

- Paint Rock River Valley in Alabama to collect paint rock. Charles passed a specimen around for the board to see; and
- an undeveloped cave near Pochontas, Tennessee, where arrowheads and Civil War relics have been found. Ron Brister reminded the board to be aware of regulations regarding burial sites and collecting.

**Junior Program:** Carol Lybanon reported that the juniors will be joining the adults for the August Indoor Rock Swap and Picnic. Carol has activities and games planned for juniors.

**Editor:** Matthew Lybanon thanked board members for sending articles and asked board members to send more. The deadline for September articles is August 15. Matthew asked for a schedule of events [programs, field trips and others] for the next three months.

**Secretary:** Mike Baldwin presented copies of the July minutes to the board for review. The minutes were approved with one correction.

**Web:** Mike Baldwin reported that the August changes will be made on the club website this weekend. The home page will get a little bit of a facelift with a simplified layout, including a calendar of events.

**New Business:** Ron Brister suggested that the board pass a resolution thanking the 2012 Show Committee for their dedication, planning and service to the club and the community.

**Old Business:** Proposed Changes to the By-laws: Carol and Matthew Lybanon presented the following proposed changes to the by-laws.

Article V: Duties of Officers

Section VIII [Duties of the Show Chairman]

Add new paragraph H *Continued, P. 6*

# MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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*August Board Minutes* [existing paragraph H becomes paragraph I]:  
*Continued from P. 5*

To recommend to the Board of Directors any expenditures from the Show account other than those directly incurred in putting on the Show.

Article V: Duties of Officers

Section XVI [Duties of the Board of Directors]

To decide on and authorize any and all expenditures over \$100 from any checking and saving account, including special funds and Show Checking Account, for other than routine operations.

A discussion followed concerning the percentage of proceeds versus the percentage of ticket sales designated for donations. Responsibilities of Show Committee members and Board members was also discussed. A motion to accept the proposed changes to the by-laws was made by Nannett McDougal-Dykes, seconded by Ron Brister, and approved by unanimous vote of the Board. The secretary will present the proposed changes for the consideration of the members at the membership meeting next Friday.

Charles Hill is working on a field trip survey to be presented to the members.

Having no further reports or business to conduct, the meeting was adjourned at 1957.

## August Meeting Minutes

*Mike Baldwin.*

55 MAGS members and 2 visitors were in attendance at tonight's membership meeting.

The meeting was called to order at 1940 by President Lou White.

**Visitors:** Membership Director Neville Mayfield welcomed and introduced visitors.

Mike Baldwin distributed copies of a proposed amendment to the MAGS By-Laws to all members present.

Carol Lybanon introduced the proposed amendment and Mike Baldwin read the affected articles as they currently appear in the by-laws followed by a reading of the proposed changes to the articles. A vote will be conducted at the September membership meeting. Articles V, Section VIII and Section XVI appear below:

Article V: Duties of Officers

Section VIII: Duties of the Show Chairman

Current Wording

It shall be the duty of the Show Chairman:

- A. To be in charge of activities of arranging the annual show.
- B. To appoint a committee to assist in the preparation of the show.
- C. To secure a suitable place to have a show.
- D. To determine the date of the show after conferring with the Board of Directors.
- E. To provide a preliminary estimate of the cost of the show and present it to the Board of Directors at which time the Board of Directors will allocate the monies needed from the Show Fund Bank Account.
- F. To make a report of progress at regular intervals to the Board of Directors.
- G. To submit a written report within one month of the closing of the show to the Board of Directors, itemizing all monies received from tickets, spaces rented, advertisers, etc., and all monies disbursed for advertising, rent, printing, etc., with all profits put in the show account.
- H. To perform all duties of the office.

G. To submit a written report within one month of the closing of the show to the Board of Directors, itemizing all monies received from tickets, spaces rented, advertisers, etc., and all monies disbursed for advertising, rent, printing, etc., with all profits put in the show account.

H. To perform all duties of the office.

### Proposed Change

**Add new paragraph H (existing paragraph H becomes paragraph I):**

**H. To recommend to the Board of Directors any expenditures from**

**the Show account other than those directly incurred in putting on the Show.**

Article V: Duties of Officers

Section XVI: Duties of Board of Directors

Current Wording

It shall be the duty of the Board of Directors, which shall consist of the elected officers, the editor, the librarian and the show chairman:

- A. To be the governing body of the society.
- B. To act on all matters of policy.
- C. To refer matters to the membership for discussion and vote.
- D. To meet each month prior to the Membership Meeting to transact business and formulate plans.
- E. To act as a trial board, hear all charges in case of violations of the constitution or bylaws and to refer their findings to the membership for a final decision.
- F. To approve an annual balanced budget for the next fiscal year by the December board meeting. The fiscal year shall be from January 1 to December 31.

### Add new paragraph G:

**G. To decide on and authorize any and all expenditures over \$100 from any checking and savings account, including special funds and Show Checking Account, for other than routine operations.**

**Field Trips:** Carol Lybanon announced the dates for an ammonite collecting trip to Cooke County, Texas, are set for October 11-14, 2012. Carol and Matthew described the location and fossils of that area. The Lybanons had a Cooke County ammonite on display for everyone to enjoy.

**Programs:** Paul Sides is working on programs for the remainder of the year.

The business portion *Continued, P. 7*

*August Meeting Minutes  
Continued from P. 6*

of the membership meeting was adjourned at 2005, followed by the tenth annual “A Mid-summer Night’s Indoor Picnic and Rock Swap”. Members brought a wide variety of delicious food to share and several members set up tables for swapping and selling hobby-related items. A silent auction was also conducted.

## Dinosaurs...in Mississippi?

George Phillips, Paleontology Curator, Museum of Natural Science, Jackson, Mississippi  
[george.phillips@mmns.state.ms.us](mailto:george.phillips@mmns.state.ms.us), (601) 576-6000

Who isn’t fascinated with the subject of dinosaurs? For many of us, our first exposure to dinosaurs was during childhood, whether in the classroom setting or library, reading our first books about the ancient past. Perhaps equally as many first learned of these creatures as lumbering, otherworldly giant reptilians of yore—thankfully extinct, yet admittedly missed. (What imaginative child hasn’t wished one to life for purposes of gobbling up a younger sibling because they ate the last cupcake?)

Today’s younger crowd, as a result of the accumulation of many recent groundbreaking fossil discoveries, boasts a knowledge of these perennially popular creatures that may be unfamiliar to even the most science savvy modern parents—excluding paleontologists, of course.

In recent decades, the field of paleontology, the study of fossils and ancient ecosystems, has experienced several advances in the understanding of what dinosaurs actually were, as well as what ultimately became of them. The description above—“lumbering,” “giant,” “reptilian,” and, yes, even “yore”—does not adequately illustrate what we now know about dinosaur diversity, anatomy, physiology, biological history, and classification.

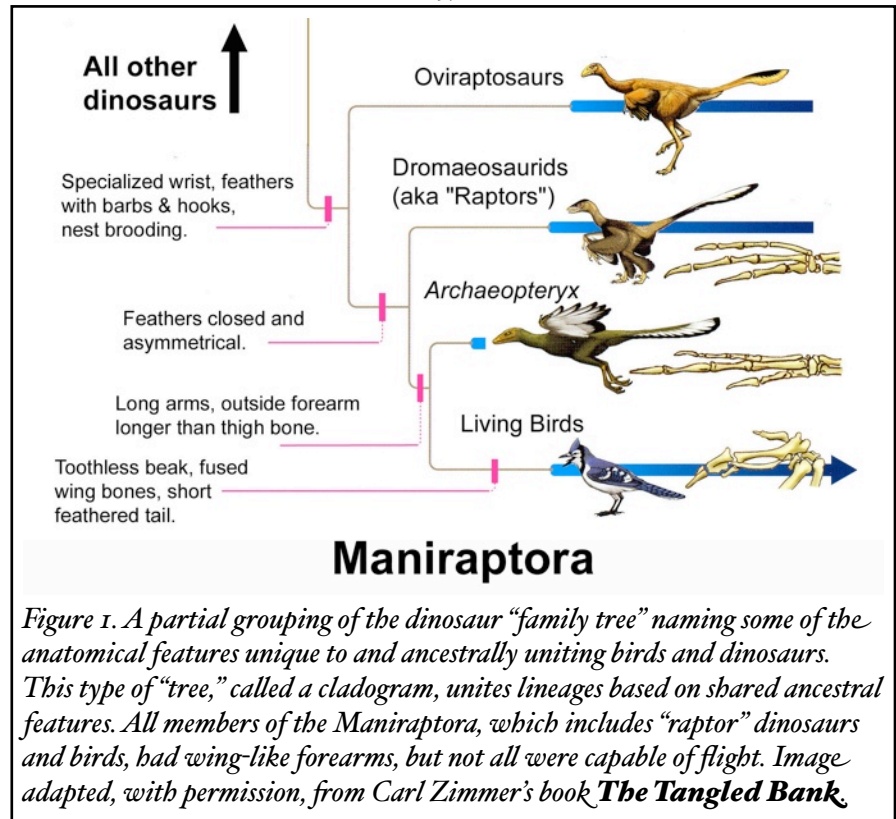


Figure 1. A partial grouping of the dinosaur “family tree” naming some of the anatomical features unique to and ancestrally uniting birds and dinosaurs. This type of “tree,” called a cladogram, unites lineages based on shared ancestral features. All members of the Maniraptora, which includes “raptor” dinosaurs and birds, had wing-like forearms, but not all were capable of flight. Image adapted, with permission, from Carl Zimmer’s book *The Tangled Bank*.

Scientists have learned from studying dinosaur remains that many species, particularly the meat-eaters, were relatively fast on their feet and reasonably intelligent, comparable to today’s mammalian carnivores...and thus far from “lumbering.” Dinosaurs are ultimately “reptilian” in origin, but they formed such a large, diverse group for such a long period of geologic history (135 million years) that they are considered to belong to a separate class in the animal kingdom. Class Dinosauria was just as diverse as any living class of

vertebrate animals, including mammals. We know from the fossil record that this diversity included species of all sizes and seemingly all imaginable four-footed (and even winged) forms, so “giant” hardly describes the group as a whole, although many species exceeded the size of the largest terrestrial mammals that ever lived.

And with a more complete fossil record for all major vertebrate classes (fishes, amphibians, reptiles, etc.), we now know that one *Continued, P. 8*

*Dinosaurs...In Mississippi?* group of  
*Continued from P. 7*

dino-  
saur—  
the Maniraptora—shares such an amazingly similar anatomy, physiology, development, and biological history to that of birds that all birds are now considered to be “avian dinosaurs” (Figures 1, 2). Likewise, it was the “nonavian” dinosaurs that became extinct 65 million years ago. Therefore, dinosaurs are among us today, at least in the classificatory sense of historical biology, thus making “yore” and “otherworldly” seem almost inappropriate.



Figure 2. One of the raptor dinosaurs (*Sinornithosaurus*) as humorously interpreted by Museum of Natural Science artist Steve Peterson. Over two dozen exceptionally well preserved dinosaur species have been discovered with feathers, which otherwise very rarely preserve in the fossil record. No dinosaur feathers have been discovered in Mississippi as yet, but Alabama announced their first dinosaur feather discovery within the last two years.

Few Mississippians are aware that the fossil remains of dinosaurs (that is, nonavian dinosaurs) have been found in our state, as well as neighboring Tennessee and Alabama. In fact, five different types of dinosaurs have been documented in Mississippi and the rest of the Southeast. All have been found in ancient sedimentary deposits dating to the Cretaceous Period, specifically rocks and sediments ranging in age from 84 to 65 million years ago—a span of 19 million years.



Figure 3. Dinosaur teeth found near West Point (A) and Columbus (B-D), Mississippi, the first (far left) consisting of a complete tooth and the other three of crowns only. The armored nodosaurs had notched teeth (A, B), although the notches wear down in adults. Hadrosaur teeth (C) have three edges instead of two, like other dinosaur teeth. Raptor teeth (D) are equally small and have a very fine cutting edge (not visible in this picture).

Unfortunately, dinosaur remains found in the Southeast are very rare and very incomplete. They typically consist of isolated bones and teeth (Figure 3) occurring in marine (ocean) deposits formed from a shallow sea that once covered most of the state during the latter part of the Cretaceous Period. Dinosaur fossils are encountered with much greater frequency and in much more complete condition out

west, in the Rocky Mountains. Western dinosaur remains are more complete because the Rocky Mountain deposits consist of river and lake sediments, which entomb skeletons with less disturbance to the bones. Many North Americans are surprised to learn why dinosaurs are found more commonly out west. During the Cretaceous Period, most of Mississippi lay beneath a shallow sea that completely inundated the lower Mississippi River Valley, and adjoining regions, for about twenty million years (Figure 4).



Figure 4. Mississippi as it appeared approximately 75 million years ago. Only the very northeastern corner of the state and a chain of volcanic islands in western Mississippi lay above sea level. Did you know an extinct volcano resides beneath our state capitol? Map composed by former Museum database manager Matt Smith.

Although regular visitors to the Museum of Natural Science may be well aware of this, perhaps only a *Continued, P. 9*



*Dinosaurs...In Mississippi?* portion  
*Continued from P. 8*

of them know that, contrary to popular belief, dinosaurs did not inhabit the ocean! Although there were many kinds of large creatures living in the ancient seas during the Cretaceous Period—including ichthyosaurs, mosasaurs, plesiosaurs, not-hosaurs, placodonts, sea turtles, crocodylians, and various other sea creatures—none of these are dinosaurs. Dinosaurs were an anatomically discrete group of vertebrate animals that lived only on land—occasionally wandering into streams and lakes, for probably various reasons, but not living there.

So, why are dinosaur fossils found in marine sediments?

Although not inhabiting the ocean, dinosaurs certainly lived and died on the land near it, namely different types of coastal environments and the rivers that pass through them. Storms, tides, and river flow are powerful enough to wash dead animals out to sea. For example, the powerful destruction inflicted by Hurricane Floyd in 1999 included the choking of North Carolina's coastal rivers with thousands of hog carcasses, some of which were carried toward the ocean. As currents carry a floating carcass seaward, scavengers feed upon it, disarticulating the skeleton in the process and scattering any unconsumed bones along the seafloor. The scavengers would have been of many different types, including crabs and various types of fishes. However, sharks commonly left direct evidence of their scavenging

on dinosaur bones, mostly in the form of bite marks and even the tips of teeth wedged into the bone surfaces. Once the bits and pieces were scattered on the ocean floor, whatever remains is colonized by smaller organisms that will slowly decompose even the hard tissue like bone, unless it is buried quickly, which is an uncommon event.

Scarce and scattered dinosaur remains make precise identifications virtually impossible, which is why the types of dinosaurs found in Mississippi are rarely known by specific scientific names—only their group names. Imagine trying to solve a puzzle when all the pieces are scattered, most of the pieces missing, and others torn apart!

Yet from the pieces that we have, we know that five different types (groups) of Cretaceous dinosaurs roamed the Southeast, at least that portion above sea level, on dry land. Southeastern paleontologists have identified three types of theropod dinosaur, the group of meat eaters that includes *Tyrannosaurus rex*, and two types of ornithischians, an herbivorous group that includes the duck-billed dinosaurs, armored dinosaurs, and others.

Although no remains of *T. rex* have been found in our state, several Mississippi fossil bones are very close in shape to bones in a 15% complete large theropod skeleton found near Montgomery, Alabama, in the 1980s. The Alabama theropod, called *Appalachiosaurus*, is a tyrannosaur, but it is different from *Tyrannosaurus rex*. Dromaeosaurs, also called “rap-

tors”, are a group of feathered theropod dinosaurs considered to be close relatives of birds (Figures 1, 2). Many dinosaur fans, young and old, recall pack-hunting velociraptors from the hit movie *Jurassic Park*. Several bone fragments and teeth of this type of dinosaur have been found near Columbus (Figure 3). Foot bones and claw bones of ornithomimids, or “bird mimic,” dinosaurs have also been found there. Of all birds, these most resembled ostriches and their kin.



*Figure 5. A group of life-size hadrosaur dinosaur statues in front of the Fernbank Museum in Atlanta, Georgia. Based on their relative abundance in the fossil record, hadrosaurs were the commonest type of dinosaurs in the eastern United States between 85 and 65 million years ago.*

Among the plant-eating ornithischian dinosaurs recovered in Mississippi, the rarest is a type of armored dinosaur called a no-dosaur, which has notched teeth (Figure 3). However, the most commonly encountered dinosaur in our state's fossil beds is the hadrosaur, or duck-billed dinosaur (Figures 3, 5), so named for the shape of its snout. Many different species of hadrosaur have been found throughout the Northern Hemisphere.

Where they occur *Continued, P. 10*

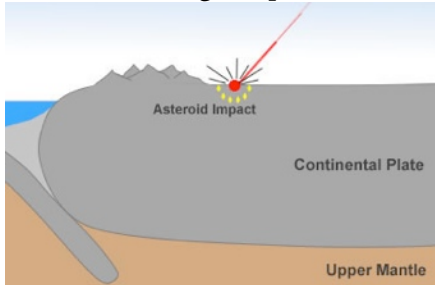
*Dinosaurs...In Mississippi?* at all, their remains are frequently the commonest dinosaur fossils, and, from the close study of their sometimes well-preserved skeletons and eggs, they seem to have had complex herding and nesting behaviors. Due to the inferred chewing and herding behavior of this group of plant-eaters, hadrosaurs have been called the "cattle of the Cretaceous."

Interested in seeing dinosaurs up close? On temporary exhibit at the Museum of Natural Science is a special exhibit of life-like animatronic dinosaurs, a few of which are similar to Mississippi dinosaurs. Eight different species, including *T. rex* and *Triceratops*, are displayed in a variety of situations reflecting what scientists have learned from the fossil record. And always on display are Mississippi fossils in the Museum's *Stories in Stone* exhibit. However, you must come soon (and often!) before the traveling robotic dinosaurs become "extinct" in the New Year.

### DIAMONDS BENEATH THE POPIGAI CRATER



Of all the Soviet Union's cold war secrets, this may have been the most valuable. Recently, Russia declassified the existence of what could very well be the richest diamond field in existence, located in the depths of a 100-kilometer diameter asteroid crater known as Popigai Astrobleme in Siberia. Soviet scientists had in the 1970s uncovered the crater left by a huge asteroid in Siberia 35 million years ago. A closer inspection of the dramatic impact zone—lying thousands of kilometers from any city—revealed a fine material that was actually super-compressed diamonds caking the permafrost.



The diamonds found in the Popigai Astrobleme are known as

"impact diamonds," created when a meteor strikes a graphite deposit. Impact diamonds are significantly harder than normal diamonds, and are best suited for industrial or scientific use. For a long time, the discovery of the diamond deposit was a state secret. It was little publicized after the fall of the Soviet Union when its sheer remoteness—2,000 kilometers from the main Trans-Siberian railway line—made exploitation impossible. But interest is now picking up thanks to work by the Novosibirsk-based Sobolev Institute of Geology and Mineralogy, which gave rare information about the deposit to the media.



"They [the USSR] discovered it in the 1970s and decided to make it secret," Sobolev Institute of Geology and Mineralogy director Nikolai Pokhilenko told Agence France-Presse in a telephone interview. "We were build-

ing synthetic diamond plants at the time, so all the natural industrial diamond research was frozen," he explained.

Pokhilenko said the find was essentially forgotten before his institute picked up its study again three years ago. "They only examined 0.3 percent of the entire territory of the crater and had already established 147 billion carats worth of (industrial) diamonds. So we are talking about many trillion (carats)," said the scientist. He noted that by comparison, Russia's main diamond-mining region of Yakutia has known reserves of one billion carats.



That creates the possibility of Russia undercutting the price of the synthetic material now produced in China and delivering a cheap new technology for making machine and airplane parts as well as jewelry work.

"The Popigai Cra- *Continued, P. 11*

*Popigai Diamonds* ter diamonds  
*Continued from P. 11* could turn eve-  
rything upside  
down. And what happens to  
prices on this market then is un-  
clear," the Yakutnipromalmaz in-  
dustrial diamond institute's deputy  
director Gennady Nikitin said.

Given that diamonds can sell for \$2,000 per carat with unusually large diamonds going for as much as \$20 million, a discovery of "trillions of carats" could value this hole in the quadrillions of dollars. Of course, a diamond discovery of this magnitude is almost sure to have a serious downward impact in the per-carat price should full-scale mining operations ever begin.

But there are also problems linked to accessibility and the site's extreme remoteness from any railways or roads. "There are production cost-effectiveness issues," leading Sobolev scientist Nikolai Tuchkov admitted. "It is quite remote from any population center." The deposit sits at the northern end of the border between the vast Siberian regions of Krasnoyarsk and Yakutia—themselves the sizes of small continents—that mostly extend over uninhabited tundra and permafrost.

*Editor's note:* MAGSters can read more about this on Geology.com. The link is [geology.com/articles/popigai-crater-diamonds/](http://geology.com/articles/popigai-crater-diamonds/).

## Jewelry Bench Tips by Brad Smith

### TEMPLATES

Whenever I have to make more than 2-3 exact copies of any-

thing, I think of making a template. A template lets me easily draw the shape of an item. Art stores sell templates for common shapes like circles, ovals, hearts, etc., but if you need other shapes, it's easy to make your own. Simply cut the shape out of sheet plastic, copper, or brass.



The brass template lets me quickly trace the design of these ginkgo leaf earrings onto silver sheet, and the nickel template makes it easy to drill the pin inlay pattern into the ironwood.

After finding a poor selection of stock templates for ovals at my local art store, I was pleased with the wide selection on Cool Tools at [www.cooltools.us/](http://www.cooltools.us/). If you order, be sure to look for the 10% off code each month on their Home page. Kingsley North also has some nice templates at [www.kingsleynorth.com/](http://www.kingsleynorth.com/).

### DENTAL TOOLS



A ready source of free tools is your local dentist. Dental picks can be reworked into wax tools or straightened and sharpened to

make a stylus for marking and layout. The steel in these tools is high quality, and the handles are designed for comfort. A special note however—don't try to bend one of the tips to a different shape—the steel will snap. To change the shape, heat the tip to red hot and bend it with pliers while it's hot.

And don't forget to ask your dentist for some of the cutting burs they throw out. These are useful for a variety of things. It's best to call a week or two before your visit and ask the dentist to put some of these tools aside for you. It's good practice also to ask that they run them through the sterilizer for you.

In addition, here's an interesting web site that might be of interest to your readers.

### FAKES & FRAUDS

Unfortunately, there's a growing amount of deception and outright fraud these days at gem and mineral shows and in some of the online venues that sell these items. Often "genuine turquoise beads" turn out to be dyed magnesite, and I've been told that the majority of colored stones being sold typically have had some "enhancement" done to them.

If you're interested in what kind of fakes and frauds have been uncovered, there's a well-done page at [www.the-vug.com/vug/vugfakes.htm](http://www.the-vug.com/vug/vugfakes.htm).

More BenchTips by Brad Smith are at [groups.yahoo.com/group/BenchTips/](http://groups.yahoo.com/group/BenchTips/) or [facebook.com/BenchTips](http://facebook.com/BenchTips).

# Really Old Bugs



Researchers working in Italy have found the oldest specimens of bugs trapped in amber. The critters are a whopping 230 million years old, which puts them in the late Triassic period. The team found one fly and two mites in droplets of amber less than 6 millimeters long. These three specimens are 100 million years older

than any other amber-entombed bugs found to date.

According to the results, published in the Proceedings of the National Academy of Sciences, the mites are both totally new species. The fly could not be identified because its body was not well preserved. The mites are actually very similar to the gall mites seen today, which means the species saw little change over the past many millions of years. Now that the researchers know Triassic specimens exist, they said they are excited to hunt for more.

Ref: [www.pnas.org/content/early/2012/08/21/1208464109](http://www.pnas.org/content/early/2012/08/21/1208464109)

## Calendar

### October 4, 2012

Board Meeting, St. Francis Hospital, Library, 6:30 P.M.

### October 5, 2012 (date change)

Membership Meeting, Shady Grove Presbyterian Church, 7:30 P.M.

### October 6 & 7, 2012

40th Annual Central Arkansas Gem & Mineral Show, Jacksonville, Arkansas

### October 12-14, 2012

MAGS Field Trip, Valley View, Texas

### October 20, 2012

National Archaeology Day events, C. H. Nash Museum at Chucalissa, 11:00 A.M.-4:00 P.M.

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