



## NOTES FROM THE PRESIDENT'S DESK

February 15, 2013 Volume 12 Issue 10

It's that time again....Happy Birthday NMGMS! That's right; we're twelve years old now, almost a teenager! So, don your party hat, bring something to "show and tell" and come to the Tupelo library on March 16<sup>th</sup> and help us celebrate!

NMGMS has something else to celebrate too, this time, a very successful Geology Day! There were approximately 450 visitors to the Oren Dunn Museum on Feb. 16<sup>th</sup> during our Geology Day and we had 18 boy scouts take the merit badge class that we offered in the afternoon. The other activities that we had set up were a big hit too, if our ticket sales are any indication. Here's the breakdown: beading- 46, fishing game- 131, fossil dig- 137 and the spin and win- 235. Attendees also enjoyed viewing our display cases, as well as the club's hands-on table and the table that Roger set up for the cub scouts' geology belt loop requirements. The club sold out of its grab bags and we gained some new members too! Of course, our biggest draw was George Phillips, who did so many fossil IDs that day that he was hoarse on Sunday! Thanks George, we sincerely appreciate all you do for NMGMS.

The Geology Day made newspaper headlines and was also featured on the Tupelo TV news. NMGMS has been asked to set up at the Lee County Library's summer camp, as well as the summer camp out at the Oren Dunn Museum. Several other area libraries and schools have asked if we could do something for them, so NMGMS gained some much needed publicity from this event. It has been suggested that we make our Geology Day an annual event and coordinate with the Oren Dunn Museum on this and other future endeavors.

I personally wish to thank all of the NMGMS members who helped make this event the great success that it was. It takes tremendous group effort to make these things happen and I believe we showed the community what a fabulous organization The North Mississippi Gem and Mineral Society really is. Our most sincere thanks go to Janice Anthony and Rae Mathis for providing us with this great opportunity and for all of their assistance throughout the whole process.



This was a big step forward for the club and I believe that we gained some fantastic experience from our Geology Day. Hopefully, this will lead to many more wonderful events for NMGMS and the community.

**NANCY ROBERTS**

Above, NMGMS display at Oren Dunn Museum. Photo by Nancy Roberts.  
Left Nancy in a boat. Why? Read inside. Photo Jim Roberts

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### Nugget Deadline

It's changing again, the editor is trying to find one that works and won't be ignored because something is just so awesome it HAS to be included NOW. The new absolute deadline will be High Noon on the Second Friday of every month, to come out the following Monday.

### Deadline

The deadline for submissions for

**April 15, 2013**

Edition will be

**April 13, 2013**

# NMGMS Meeting Minutes

## February 9, 2013



Pledge of Allegiance to the Flag was given by Nancy Roberts, Liam and Victoria Langford  
Introduction of guest: John Jenckes  
Approval of the January & February minutes was postponed until the March meeting.  
**Treasurer's Report:** Closing Balance as of Thursday, February 7<sup>th</sup> \$2118.65

### REVIEW OF COMMITTEE'S

#### **Field Trips:**

There is no actual field trip scheduled for February. We can have an indoor field trip at the MNGMS Rock and Gem Show in Jackson on Feb. 23 and 24<sup>th</sup>!  
Plans have been finalized for our field trip set for March 8-10<sup>th</sup> 2013. (*See handout and emails for details*) Members were reminded to check out the Lodestar for the DMC field trips since we can attend these. [http://www.amfed.org/sfms/lodestar\\_newsletter.html](http://www.amfed.org/sfms/lodestar_newsletter.html)

**Publicity:** (Bob Reinhaus) There is going to be an article about NMGMS in the Sunday, February 10<sup>th</sup> issue of the Daily Journal. Members were asked to save a copy for the yearbook.

**Membership:** (Ann Byzet) Reminder was given that dues need to be paid as soon as possible, so the new roster can be ready by our birthday meeting next month. Dues are \$12 per person and \$20 per family. Currently there are 49 members.

#### **Hospitality:**

Refreshments: March: Robert Langford, Justin Hobart and Peshani Herath Cake: Ann Byzet

April: Nancy Roberts and Robert Diaz

**Website:** (John Byzet) Website has been updated.... Check us out at [www.nmgms.org](http://www.nmgms.org)

**Newsletter:** (Dana Jones) The dead line for the SFMS bulletin completion has been moved to March 15<sup>th</sup>. One thing needed for each issue of the Nugget is a meeting program review and a field trip and/or workshop review. Members who attend these club events were asked to submit their thoughts and/or comments about the events via email at:

[nuggeteditor@gmail.com](mailto:nuggeteditor@gmail.com)

**Youth Members:** (Jim Roberts)

Volunteers: David Loyd

Ms. Brittani Lambert was awarded her 2012 Junior Rockhound of the Year Award and certificate. Victoria Langford presented on growing your own crystals meeting two of the requirements for her Junior Rockhound of the Year award. The Rockheads will be going over to the Oren Dunn Museum after today's meeting to view the club's display and to fulfill their indoor field trip requirement.

**Stamps:** (Kathy Westbrook) Members are encouraged to save stamps, by cutting them off of the envelope and leaving a half inch margin of paper around the stamp if possible.

**Historian:** (Susan Curry) Susan Curry has been the club's historian from the onset and would like to retire. Shirley Randal agreed to accept the committee chair position with Evelyn's assistance.

Members were reminded to submit any 2012 club related photos, newspaper articles, show flyers or other memorabilia for the 2012 club yearbook.

**Show/Kids Day:** (Roger Loyd, Bob Reinhaus, John Byzet and Robert Langford) NMGMS will be hosting a Geology Day, along with scout merit badge classes at the Oren Dunn Museum in Tupelo on Feb. 16, 2013 from 10 until 3p.m. At this time two scouts have signed up for the merit badge class. The museum has had a few calls requesting more information and some of the girl scouts will be coming by also that day.

**Safety:** (David Loyd) The club thanked David Loyd for writing the safety notes for the Nugget. During a brief Board meeting prior to the club meeting President Nancy Roberts shared information regarding the coverage provided by the SFMS insurance and the liability waivers. The representative commented that having all members to sign a liability waiver was a very wise thing for NMGMS to do and should be a must for all invited guests on all field trips. Also discussed was the decision to become an LLC. The Board decided to investigate a little further before presenting to the members for a vote.

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### 2012 Officers

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# Mark Your Calendar

**March 16, 2013**

Tupelo Library 1-3p.m.  
NMGMS 12th  
Birthday!! Displays by  
membership.

# HEAR YE, HEAR YE!

(aka Announcements)

# Rockheads

Please be sure and wear your Rockheads vest to the March Birthday meeting!!

The juniors are really working hard on some of those badges, so we should be handing some out soon!

April 20, 2013	May 18, 2013
Tupelo Library 1-3 p.m.	Tupelo Library 1-3p.m.
"Amazing Family of Quartz"	Program TBD
Myra Soroczak	

## Science Fair Success!

Matthew Lambert took first place again for the second year in a row at the Regional Science Fair last Friday with his science project based on the Blue Springs fossil fish otoliths. He will be going to Jackson, MS for the final state judging on March 26th. Way to go Matthew!!

## NMGMS Lapidary Workshop

Saturday March 23rd from 10:30 until 4pm

Women's Center on Gloster in Tupelo

We will be working with wire, chain, jump rings, beads, links and other findings to complete a multistrand necklace. We will learn how to make simple loops, wrapped loops, make our own jump rings, do some wire bead cages, spirals and make some funky wire beads.

For more info or to sign up, please contact Nancy Roberts  
therockhoundlady@yahoo.com or 731-689-5336.

## NMGMS Meeting Minutes

### Old Business:

- Volunteers are needed to work the Geology Day at the Oren Dunn Museum on Feb. 16<sup>th</sup> for the following stations: 2 per station (1 needs to be an adult)
  - NMGMS club table, which will have some things on display and will be selling grab bags and tickets (25 cents ea.) for the other activities. John Byzet & Ann Byzet
  - Beading table, where we will have beads and stretchy cord for bracelet making; will be using scissors and glue. (1 ticket) Brittani Lambert & Nikki Kenney
  - Cub Scout Belt Loop table, where there will be a display set up covering a basic overview of rocks and minerals and some of their everyday uses, plus some small Geology starter kits for sale. (1 ticket) Roger Lambert
  - Spin and Win game table, handling prizes (1 ticket per spin) Mathew Lambert & Belinda Loyd
  - Rock and Fossil Dig, will be outside with a sandbox, scoops and sieves; will be reseeding as needed. (1 ticket per sieve) David Loyd
  - Fishing Game (if there is room or the weather does not permit the fossil dig) may need to replenish the cups as needed. (1 ticket per cup fished) Jim Roberts
  - Docents to be by the fossil case and the rock and mineral case to answer questions. Dave Hanes
  - Docents to be by the gem and lapidary cases to answer questions. Cheryle Langford and Nancy Roberts

Volunteers are to be at the museum at 9a.m. on Saturday, February 16<sup>th</sup>.

- The Oren Dunn Museum would like the display to run longer than the original end date of March 23rd so that the school groups in the spring can enjoy it. Members with specimens on loan were asked if it would be okay to leave the display set up until the end of April. It was a unanimous decision to leave the displays until the end of April.
- One of the books that we will be donating to the library in Bill Hawkins' memory is Glenn Klein's book titled "Faceting History: Cutting Diamonds & Colored Stones". The Club is still trying to find a special book on birds to donate honoring Bill.

### New Business

We have been invited by George Phillips to set up at the Fossil Road show on March 2nd. Matthew Lambert will be setting up his science fair project based on the *otolith* study from Blue Springs and the theme for the rest of the display will be based on fish. Is anyone else planning to go down and help at our club table or attend this event? Bring your fish tooth and bone fossil specimens to show.

Our **March 16<sup>th</sup>** meeting is our annual birthday party. We will "show off" what we have been working on over the past year. All members are asked to bring in something to display. It was unanimous that everyone still wants to hold the "Brown Bag" auction during the meeting. Members were asked to bring two items, each one packaged in its own brown paper bag. One item is to be a "nice" rock and gem related item (not absolute) and the other item can be silly, funny or cute, (kind of "white elephant") but no garbage, please! These bags will be set out on the table for silent bidding during the meeting.

Don't forget the MGMS Rock and Gem show at the fairgrounds in Jackson, MS on Sat. Feb. 23, 9a.m. to 6p.m. and Sun. Feb. 24, 10a.m. to 5p.m. Adm. Adults \$5, Children \$3

### Motion to Adjourn.....



## Old Bones

To share knowledge of fossil, gem, and mineral collecting and preparation.

**Enjoyable Weekend at the Jackson, MS Show...**  
By Jim Roberts



Jim Roberts At Oren Dunn. I challenge everyone-get a picture of Captain Mysterious Jim Roberts' face and I'll figure out a prize. Nancy is excluded from the this. She cheats. (She's married to him, in reality. So it's more not fair.)

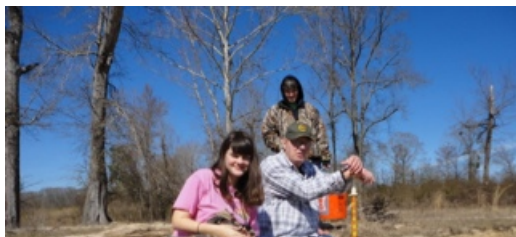
A few weeks ago, Nancy and I loaded up our pop-up camper and headed down to the MGMS Rock and Gem show at the Jackson, MS fairgrounds. The camping area is at one end of the large fairgrounds' parking lot. Not the usual campground environment we're used to, but it is convenient, being close to the building the gem show is in. We arrived Friday around noon and quickly set up the camper, since it was supposed to rain that afternoon. Luckily the rain held off until we were finished. Our next order of business was to set up Nancy's exhibits in the showroom. We had two display cases to fill. For the first one we had a fossil display, including a lot of crinoids that were found at the Parson's Quarry. The other case was set up with a demonstration of the many things minerals are used for. After all this was done, it was time for the buffet supper hosted by the MGMS folks. After the meal, we joined our club member Christy Criss, who sets up as a dealer at the show. We helped her finish putting out all of the many items she has for sale.

Over the next two days, Nancy and I worked as volunteers at the show. Nancy did demonstrations of various beading and jewelry making techniques and I was assigned to help the junior members run their bean bag toss and spin and win games. The weather for the weekend turned out to be near perfect and there were good crowds at the show both days. It was fun meeting people and listening to all their different stories of rock and fossil collecting adventures.

We had hoped to stay over until Monday so that we could help Christy pack up all her wares, but the weather forecast was for severe storms to move in Sunday evening. Since pop-up campers don't do well in severe weather, we only stayed until 7 pm. But by working hard, we got Christy pretty well finished and then we headed back to Tennessee, which was about a five hour drive. Along the road north of Jackson, we were amazed at the number of deer grazing on the shoulder right off the highway. The passing cars didn't seem to bother them at all, but they sure made us very nervous, with us never knowing if they might decide to cross the road right in front of our truck. But all went well and we arrived safely home around midnight after a very enjoyable weekend.

## Field Trip Impromptu What a Nice Treat!

NANCY ROBERTS



Those of us who went down to Jackson to set up a display at the fossil road show there, were invited by Keith Peacock and Joy Rushing of MGMS to join them on an impromptu field trip to one of their favorite collecting sites. We were joined on Sunday morning by several other MGMS members too. We all had packed very warm clothing and were a bit concerned as to what kind of a day we'd have, since we actually saw a few snow flakes in Jackson on Saturday and the wind kept the temps pretty chilly, but Sunday turned out to be sunny and actually perfect weather for rockhounding. Our mission was to find some of the Mississippi petrified wood and palm wood that southern Mississippi is famous for. I think everyone got lucky and found at least one piece of each kind and numerous river agates too. We enjoyed being down on the gravel bars there. It was a very serene and picturesque place. I don't think we had ever seen so many rocks in one place, except for the field trips we've had to the Memphis Stone and Gravel facilities! All of us from NMGMS really appreciated the MGMS members taking time out from their busy weekend to let us have a crack at one of their "sweet" spots. That's real southern hospitality for ya! It was a real treat! THANK YOU!



# Meeting Program

## OREN DUNN NMGMS GEOLOGY DAY

FEBRUARY 16, 2013

You guessed it. Another party. It wasn't really a meeting program...or a party technically.



Photos by Jim Roberts, Nancy Roberts, and John Byzet

### You May be a Rockhound if

- You own more pieces of quartz than underwear.
- Your rock collection weighs more than you do.
- Your rock garden is located inside your house.
- You can pronounce the word "molybdenite" correctly on the first try.
- You don't think of "cleavage" the same way everyone else does.
- You have ever uttered the phrase "Have you tried licking it?"
- You think the primary function of road cuts is tourist attractions.
- You find yourself compelled to examine individual rocks in driveway gravel.
- You're planning on using a pick and shovel while you're on vacation.
- Your internet home page has pictures of your rocks.
- You will walk across eight lanes of freeway traffic to see if the outcrop on the other side of the highway is the

- same type of rock as the side you're parked on.
- You can point out where Tsumeb is on a world map.
- The baggage handlers at the airport know you by name and refuse to help with your luggage.
- You have ever found yourself trying to explain to airport security that a rock hammer isn't really a weapon.
- You never throw away anything.
- You have ever taken a 22-passenger van over "roads" that were really intended only for cattle.
- You consider a "recent event" to be anything that has happened in the last hundred thousand years.
- You have ever had to respond "yes" to the question, "What have you got in here, rocks?"

Panama City Gem & Mineral Society, May 2005 (Contributed by Terry Fetzer) via John Byzet

# ROADTRIP!!! Off to the Missouri Hills for Drusy!

NANCY ROBERTS

**Review**  
**March 8-10**  
**Park Hill Missouri**



Photos by Jim and Nancy Roberts.

Jim and I left home Friday around 11 and drove up to Park Hills, MO for our "spring break" NMGMS field trip. We were amazed to see big piles of ice and snow heaped up around town when we got there. They must have gotten it good earlier that week. Thank goodness the ground was clear, so that we were able to collect the drusy quartz specimens on Saturday. We had 11 NMGMS members in all and our trip guide, who was a local MO resident and over 80 to boot, brought several friends and relatives along, so we had a good crowd for the day. Thankfully, the morning light rain quit and the sun came out by the time we got to the site in the forest. The drusy quartz sparkled in the sun and that made the collecting so much easier. We did have to rummage around in the forest leaf debris in some spots, but a lot of it was right on top for the picking up. Jim felt like a pack mule, after helping me haul all of my buckets and large pieces down the hillside. He did a little collecting too. You just couldn't resist picking up those sparkly pieces of quartz and believe me, there were lots of them! Each one was better than the last, as we worked our way across the slope of the hillside. Some of the group collected down in the creek bed and along the banks for awhile, but I think what was up on the slope was the best. A few intrepid rockhounds brought out some monster pieces that they loaded onto a plastic sled and pulled out! Boy, by 3 o'clock that afternoon, was our truck ever loaded! I have plenty of material for door prizes and grab bags for a good long time! Roger and Matthew Lambert managed to haul quite a few bucket fulls down off of the slopes too and both Matthew and Belinda Loyd each loaded up a whopper of a specimen, weighing in maybe close to 50 lbs! Those vehicle tires were groaning!!

Sunday was a very rainy and chilly day, so it was a blessing that we had an indoor tour of the mining museum planned. Oh my gosh, what a fantastic display of Missouri minerals and also minerals from all over the world. One of the museum employees was a retired geologist, who actually worked at the St. Joe Mine when it was in operation and he gave us a really nice guided tour. This particular area has played out, as far as lead goes, but they are still mining lead over near Viburnum and in the western part of MO near Joplin. Barite is being mined in the Park Hills area now.

If it hadn't been such a rainy day and if I hadn't been coming down with a cold, we would have stopped to tour around the historic town of St. Genieve there on the Miss. River, dating from the 1700's. Lots of history in the area!! Caledonia too, was an old historic town from the mid 1800's, with a stagecoach inn, etc. So, if any of you are over that way, there's lots to see and learn about! Of course, the whole time we were there, the thought of the New Madrid fault being right thru the area was haunting us. Wonder how those miners felt about that? They were down several thousand feet!

It poured on us the whole way home, but we did get to see an incredibly beautiful rainbow when we crossed the river near Caruthersville. So now we just have to bite the bullet and unload all of those rocks! Guess I'll have to leave most of them outside and let the rain clean them off! Some have dirt and moss on them!! Hummm, sounds like a rock garden project is looming in the future! LOL!



# Crinoid A&P By Gabriel Ward



Ampelocrinus mundus. St Genevieve limestone. Monteagle. Upper Mississippian. Huntsville, AL. moderately cuneate arms

Crinoids are one of the most incredible and fascinating organisms that live today. Their incredible beauty and cool adaptations (like spines) amaze me. They are members of the phylum *Echinodermata*. This group also includes starfish, sea urchins, brittle stars, and sand dollars. Echinoderms almost always have five-point radial symmetry and are usually made up of calcareous plates with a thin skin covering. Crinoids usually have 3 main structures: the crown, the stem, and the holdfast. There are exceptions to this rule, such as *Agassizocrinus* or modern Comatulids. *Agassizocrinus* doesn't have a stem or holdfast, and comatulids have a lot of cirri extending from the cup, but no stem.

The holdfast anchors the crinoid to a substrate. There are a few different types of holdfasts. Some crinoids, like *Eucalyptocrinus*, from the Silurian have root-like holdfasts. These are very common in some parts of Tennessee. Some crinoids have a tapering stem with a lot of cirri. *Batocrinus* from the Ste. Genevieve limestone has a holdfast like this. Some earlier crinoids were able to attach to small surfaces using small circular bases.

It is common to find these small holdfasts on brachiopods in the Ordovician. There are also crinoids that curl their stem around an object and a few that have encrusting root-like holdfasts. Comatulid crinoids don't have a stem, but they have cirri that are able to grab on to hard surfaces. This structure essentially acts as a holdfast, but also provides mobility for the crinoid.



Holdfasts: root type - *Eucalyptocrinus* sp. Silurian. Near Clifton TN.



cont p.  
1. *Platyrcrinites penicillus*. Ste. Genevieve limestone. Monteagle. Upper Mississippian. Huntsville, AL. Biserial arms



Tapering stem - *Batocrinus persculptus*, Ste. Genevieve limestone. (Monteagle). Upper Mississippian. Huntsville, AL.



## Roger's Pearl Pendant

It is done with a Right Angle Weave stitch. He used fresh water potato pearls and monofilament beading thread.

Directions:  
[http://www.beadjewelrymaking.com/Kid\\_Art\\_Project/Kid\\_art\\_bead\\_project/april2005\\_bead\\_project.html](http://www.beadjewelrymaking.com/Kid_Art_Project/Kid_art_bead_project/april2005_bead_project.html)

How-to video of the RAW beaded bead:  
<http://jewelry.de-cors.com/2008/03/tutorial-crystal-ball.html>

## Bead Soup

A place to share knowledge about the lapidary arts.

## Tips By Nikki

If you have an iPhone, iPod, or iPad, there are apps available from the Apple apps store for "Beading Daily," "Knitting Daily," "Quilting Daily," and "Craftsy." Apps that are intended to work with

iPod or iPhone, will work on iPad, but apps for iPad will only work on iPad. Anyway, check them out. There are video tutorials, pdf instructions, and patterns to be had with the touch of a finger.

Craftsy has lessons on just about anything that might interest you. Some are free. They are complete with all of the above: video, pdf instructions, and interaction with the instructors on paid lessons, and other students on free ones. What fun! I am so excited. I signed up for two free classes, one is on using a micro torch and I'm thrilled with them. I can't wait to see what other classes I can find. I may even pay for a few.

Investigate what apps might be available for tablets and laptops, too.

# Rockheads

"The fossil hunter does not kill, he resurrects."

G. G. Simpson

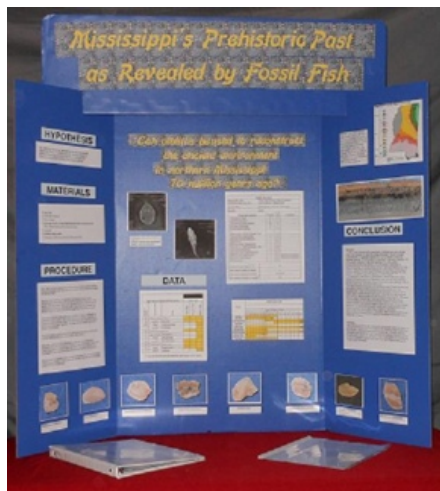
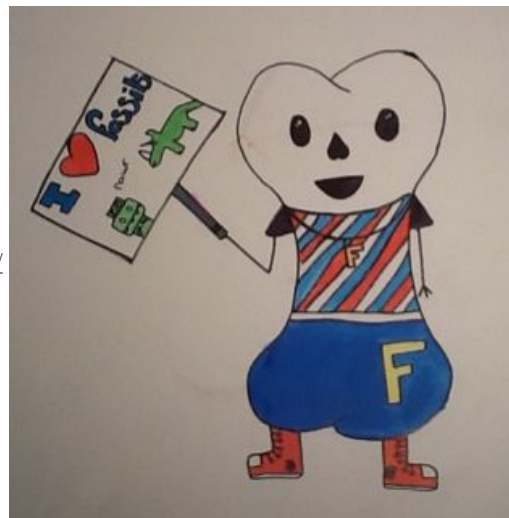
## PRESIDENTIAL STATEMENT

The Rockheads, at their next meeting, will be deciding on the date for the May field trip (either May 4th or 11th) and who will be planning it out.

**MATTHEW LAMBERT**



[www.amfed.org/fra/fra\\_badge.htm](http://www.amfed.org/fra/fra_badge.htm)

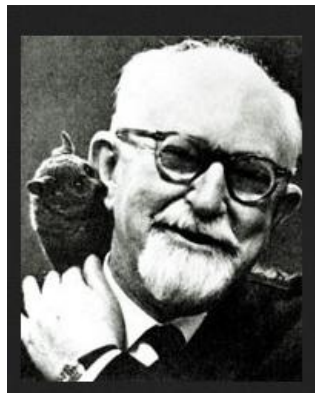


### Matthew's Hypothesis (you know for the Science Fair)

To the fisheries biologist, otoliths from living fishes are one of the most important tools for understanding the life of fish and fish populations. Otoliths, commonly known as "ear stones," are hard, calcium carbonate structures located directly behind the brain of bony fishes. They have a very distinct pattern on them as well as a well-defined shape, which is characteristic of the species of fish. That is different fish species have otoliths that have different patterns and shapes. This project attempted to utilize fossilized otoliths to recreate the ancient environment (paleoenvironment) of the site in which they were collected.

Matthew and his project, photo by Roger Lambert.

Right G.G. Simpson and friend, photo Wikipedia



## Badge Information

As part of the "Rocking on the Computer" badge requirement, Robin Langford has turned in these two websites to be published in the newsletter:

[www.paleozoic.org/paleolinks.htm](http://www.paleozoic.org/paleolinks.htm)

This link is to a list of sites that have been selected to be outstanding websites. Covers paleontology, rocks, minerals, meteorites and science news.

[www.fossilsforkids.com/cool\\_link.html](http://www.fossilsforkids.com/cool_link.html)

This link is to a list of websites that are safe for kids to go on, where you can find information about fossils.

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David Lloyd

### Rockhead Officers

**President**  
Matthew Lambert

**Vice President**  
Robin Langford

**Secretary**

Remy Collins

**Field Trip Organizer**  
Brittany Lambert

# HEAT SAFETY

Things to always remember:

- Drink plenty of water before you get thirsty and bring plenty of water with you.
- Wear light, loose-fitting, breathable clothing.
- Take frequent breaks in the cool shade.

- Eat small, light meals before outdoor activities.
- Avoid sugary drinks, caffeine and alcohol.
- Make sure your medications do not react to sunlight

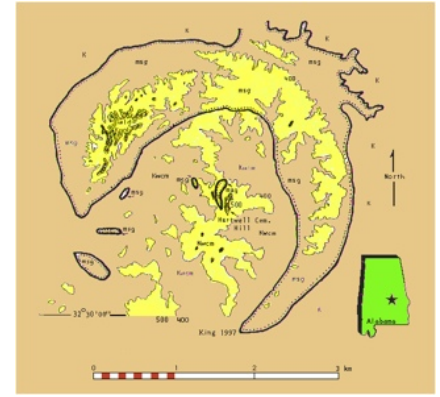
Outdoor adventures are great memories, so don't spoil them with bad ones. Enjoy the summer fun while you can. Remember it will get cold again before you know it.

Safety Chairman  
**David Lloyd**





Wetumpka Crater Alabama  
The only meteor impact site in Alabama.  
[www.cityofwetumpka.com/Default.asp?ID=145](http://www.cityofwetumpka.com/Default.asp?ID=145)



[auburnastro.org](http://auburnastro.org)

Right courtesy of City of Wetumpka.  
Above passc.net



Betcha think you know.  
This used to be something else, and it gave Earth it's iron core in one theory.  
Photo phys.org  
Contact  
[nuggeteditor@gmail.com](mailto:nuggeteditor@gmail.com)



## Mea Culpa



photo above from [packedhead.net](http://packedhead.net)  
photo to the left from [popsci.com](http://popsci.com)  
Left that off last time. Plus.  
They're just awesome photos.

There was so much wrong with the last issue that really it's going to be more like a highlights reel.  
The date and issue in the corner of the pages were wrong. The date for the meeting minutes-wrong.  
There was much more, I deleted the original list.  
So. When it's all found, I'll add it to the list for this issue.

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## Summer is Coming!!

Please remember the summer issues!  
For July- The Jackson Dome Volcano  
Since the volcano was active during the Cretaceous:  
For August- Cretaceous Mississippi  
Of course any idea is welcome.

## Crinoid A&P

The stem (or column) of a crinoid is a thin, flexible, tube-like structure that attaches the crinoid's crown to the holdfast. The stem has many small segments, and these segments are essentially bases for the crinoid that form as the crinoid matures. They would grow by secreting a segment on top of the last segment of stem. That would continue through the life of the crinoid. Like crinoid holdfasts, the stems vary greatly in size, shape, and structure. Some crinoid stems can be very short, while some can be greater than 10 feet in length. In cross section they can be round, pentagonal, or pentastellate. They can also vary in shape and size through the length of the stem. Some crinoid stems are pentagonal at the end nearest the crown and change to round closer to the end. All crinoid stems have a hole in the center called the axial canal. This hole contains the axial nerve of the crinoid. Much like starfish, crinoids have incredible regenerative capabilities, and the only limit to the regenerative power of the crinoid is the axial nerve. Unless the nerve is severed, the crinoid can regenerate anything that was lost, including arms, plates, spines, the tegmen/anal tube, and even the whole crown!

**Mississippi Petrified Forest Celebrates its 50th Anniversary April 6th and 7th, 2013**

We will roll back our admission ticket prices to what they were in 1963!  
\$1.10 for Adults and \$ .55 for Students  
Tax included  
Good for April 6th and 7th only.

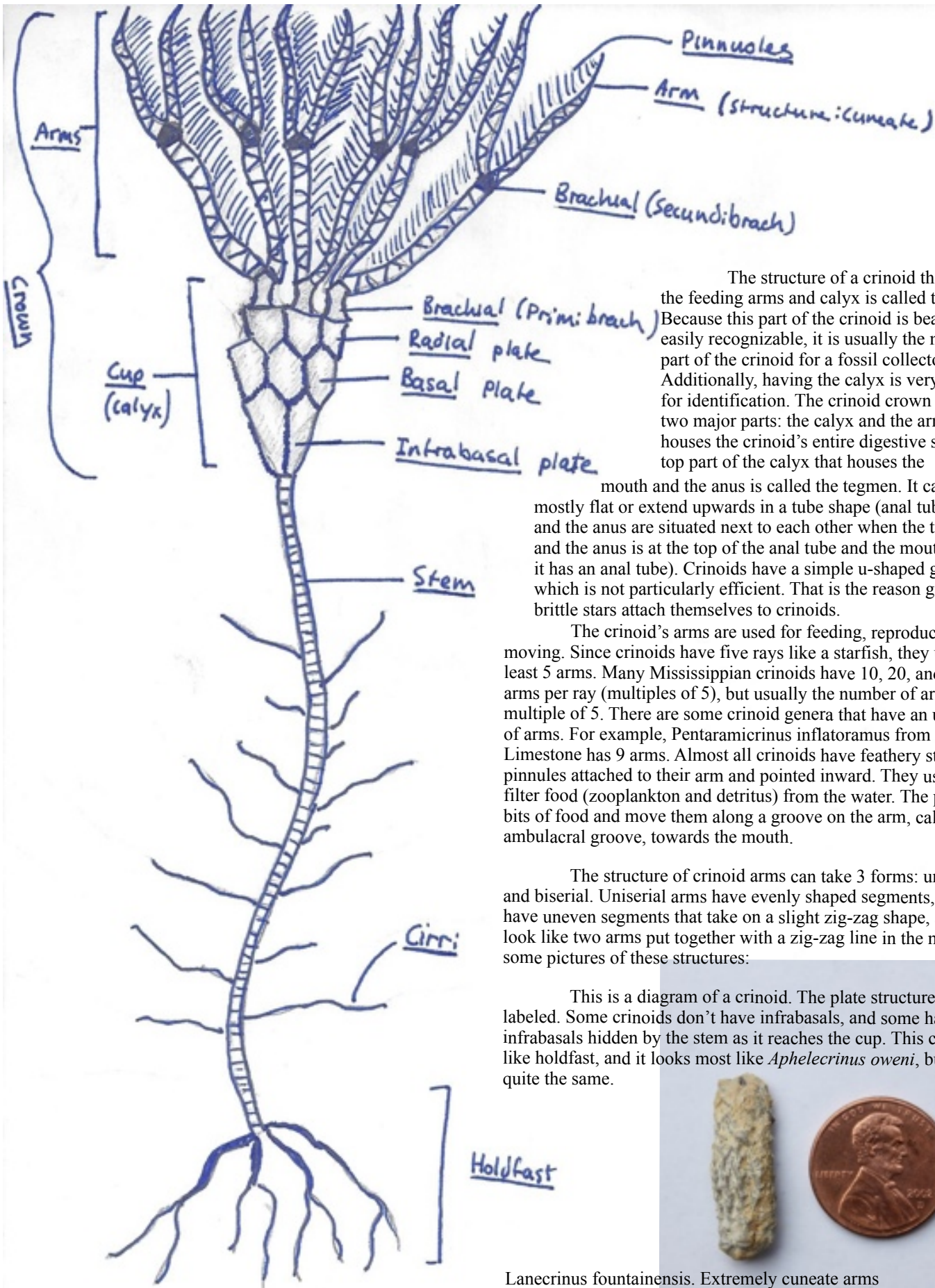
See the Mississippi Mastodon! Make your own Jewelry or gem tree!

**Come to preservation celebration!** Food and Drinks Available

Lots of Fun Activities! Civil War Living History

**Gem Mining** The only Petrified Forest east of the Mississippi!

**BURGERS**  
**HOT DOGS**

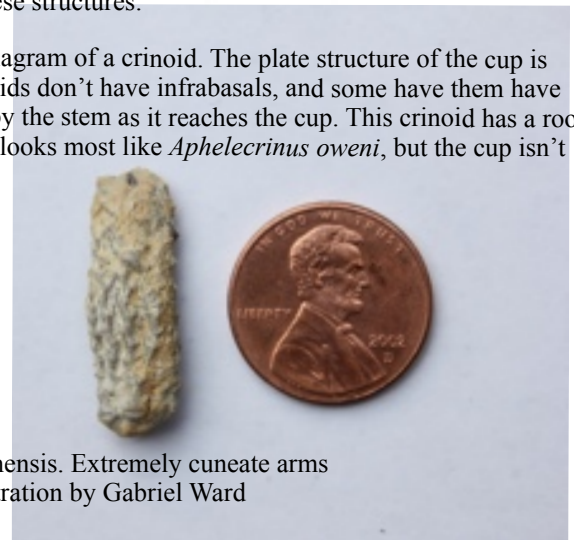


The structure of a crinoid that includes the feeding arms and calyx is called the crown. Because this part of the crinoid is beautiful and easily recognizable, it is usually the most desirable part of the crinoid for a fossil collector. Additionally, having the calyx is very important for identification. The crinoid crown is made up of two major parts: the calyx and the arms. The calyx houses the crinoid's entire digestive system. The top part of the calyx that houses the mouth and the anus is called the tegmen. It can either be mostly flat or extend upwards in a tube shape (anal tube). The mouth and the anus are situated next to each other when the tegmen is flat, and the anus is at the top of the anal tube and the mouth at the base (if it has an anal tube). Crinoids have a simple u-shaped gut for digestion, which is not particularly efficient. That is the reason gastropods and brittle stars attach themselves to crinoids.

The crinoid's arms are used for feeding, reproduction, and even moving. Since crinoids have five rays like a starfish, they usually have at least 5 arms. Many Mississippian crinoids have 10, 20, and rarely even 30 arms per ray (multiples of 5), but usually the number of arms sticks to a multiple of 5. There are some crinoid genera that have an unusual amount of arms. For example, *Pentaramicrinus inflatoramus* from the Bangor Limestone has 9 arms. Almost all crinoids have feathery structures called pinnules attached to their arm and pointed inward. They use pinnules to filter food (zooplankton and detritus) from the water. The pinnules take the bits of food and move them along a groove on the arm, called the ambulacral groove, towards the mouth.

The structure of crinoid arms can take 3 forms: uniserial, cuneate, and biserial. Uniserial arms have evenly shaped segments, cuneate arms have uneven segments that take on a slight zig-zag shape, and biserial arms look like two arms put together with a zig-zag line in the middle. Here are some pictures of these structures:

This is a diagram of a crinoid. The plate structure of the cup is labeled. Some crinoids don't have infrabasals, and some have them have infrabasals hidden by the stem as it reaches the cup. This crinoid has a root-like holdfast, and it looks most like *Aphelecrinus oweni*, but the cup isn't quite the same.



*Lanecrinus fountainensis*. Extremely cuneate arms  
All photos and illustration by Gabriel Ward