MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

MAGS Rockhound News

Volume 62 ◊ Number 02 ◊ February 2016 ◊ A monthly newsletter for and by the members of MAGS

Power from the Earth

Patricia Podzorski, University of Memphis *February Presentation*

***Editor's Note**: At the February Membership Meeting Dr. Podzorski will talk about stones and minerals used in ancient Egyptian ritual.*

Although many people are aware of the wealth in gold of ancient Egypt, they may not know that the Egyptians had access to a broad range of valuable stones and minerals. Value, of course, is relative, made meaningful by the cultural and technological circumstances of a particular people and point in time. For example, in ancient Egypt, silver was more valuable than gold, be-

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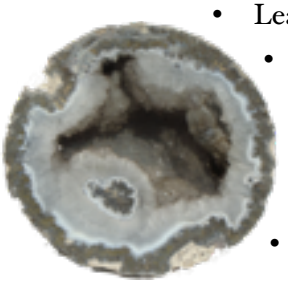
In this issue

MAGS QUICKIES

☞ Amber Shields won this geode in the drawing held at the January Membership Meeting. The contest was open to all who renewed their MAGS membership for 2016 no later than the January 2016 meeting. Congratulations, Amber!



☞ New Members include:

- Aaron Shelley
- Leah Gloyd
- Tricia Spence and Shawn Herrington (their children, Amelia and Spence Herrington, were previously Junior Members under the sponsorship of Randa Spears)
- Cecilia Hemme is now a Family Member (husband Fred plus dependents)

2015-2016 MAGS BOARD

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MAGS AND FEDERATION NOTES

President's Message

29 is a rare number for a February calendar, occurring every four years. 2016 is one of those years. I was originally going to write a message incorporating the number 29 in things associated with rocks and the club. Instead, I decided to use my imagination, stretched to wishful fantasy, and write what I would like to find if I went rock hunting on the 29th.

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MAGS General Membership Meetings and MAGS Youth Meetings are held at 7:00 P. M. on the second Friday of every month, year round. The meetings are held in the Fellowship Hall of Shady Grove Presbyterian Church, 5530 Shady Grove Road, Memphis, TN.

MAGS Website: memphisgeology.org

We aren't kidding when we say this is a newsletter for and by the members of MAGS. If an article has a by-line the author is a MAGS Member, unless explicitly stated otherwise (we welcome articles by nonmembers). If there is no byline, the article was written or compiled by the Editor (a MAGS Member). 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.

February DMC Field Trips (2 Trips)

Trip 1

WHERE: Fort Drum Crystal Mine, Okeechobee, FL (formerly Ruck's Pit; fee site)

WHEN: Saturday, February 6, 10:00 A. M.-3:00 P. M.

COLLECTING: Calcite crystals, shells, fossils, etc.

INFORMATION: Darryl Taylor, (772) 633-4423 or rockhound531@yahoo.com

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Links to Federation News

- AFMS: www.amfed.org/afms_news.htm
- SFMS: www.amfed.org/sfms/
- DMC: www.amfed.org/sfms/_dmc/dmc.htm

Power from the Earth Continued from P. 1

cause they had access to vast amounts of the latter, but the former was rare in Egypt. As in the modern world, rarity often created value for a material, but other considerations—color, texture, place of origin, or historical and/or religious association—might also have conferred value on a substance.

This presentation will discuss the geologic origins of the stone and mineral resources available to the ancient Egyptians before focusing on specific examples of stones and minerals that were employed in Egyptian religious practice. Archaeological, artistic, and written sources will all be used to help us understand the practices and possible reasons behind the ancient Egyptians' use of certain stones and minerals.

***Photo Credits**: Both of the images on P. 1 are in the public domain, from Wikimedia Commons. The Mask of Tutankhamun is in the Egyptian Museum in Cairo. The small amuletic pair of Ramses II as a child and a goddess is in the Walters Art Gallery, Baltimore, Maryland.*

February DMC Field Trips Continued from P. 2

Trip 2

WHERE: Stoney Bluff, Girard, GA

WHEN: Saturday, February 27, 9:00 A. M.

COLLECTING: Savannah River Agate

INFORMATION: Jim Maudsley, (706) 353-1792 or jamesm24@charter.net

SFMS/DMC Field Trips

After close to 20 years, SFMS Field Trip Chair and DMC Program Coordinator Jim Flora is passing the torch to Charles and Lori Carter. As well as assuming this responsibility, the Carters are officers in the Georgia Mineral Society, an SFMS club. And they are also MAGS Members!

Jim Flora has done an outstanding job, and MAGS is more than happy to thank him for his good work. The Carters are already known to other MAGSters, having joined us for several field trips. Lori Carter presented the program at our September 2015 Membership Meeting. Charles Carter has served as the Georgia Mineral Society's field trip chair for some time. Both of them have good credentials for organizing field trips, so we look forward to continued success of the DMC Field Trip Program.

MAGS Wins Again

Congratulations to Webmaster Mike Baldwin. TheMAGS website, memphisgeology.org, won 6th place in the 2015 SFMS Website Contest. The complete list is in the January 2016 issue of *SFMS Lodestar*.

Show Update

Jim Butchko, Show Chairman

Dealer space is sold out once again for the MAGS April Show, The Earth Wide Open. This year's dates are April 23 and 24 at the Agricenter in Memphis. Check out our website, TheEarthWideOpen.com, for a list of this year's dealers. Bebe Buck has volunteered to be in charge of the big dinner Friday, April 22. Mark your calendar for Thursday, April 21st, at 5:00 or 6:00 P. M., to fill grab bags. We have lots of good material but can always use more. Pick up the new notepads at the February meeting to distribute to your friends. The postcards will be printed soon.

February Birthdays

1	Caleb Crawford
2	Peggy Davis Christy Patterson
3	Larry Armstrong Lupe Suarez
5	Beverly Schaefgen
9	Vincent Mayer
12	Louis White
13	Kiri McMann David Von Boeckman
14	Gayden Schwartz
15	Barry R. E. Taylor
16	Brady Mendel Darren Mendel
17	Terri Dean
19	David Vaughn
20	Kim Hill
21	Bella Hill Ray Lovelady
22	Tyler Gilmore Nicole Phillippo
23	Julia Bailey
24	Adin Marker Daniel Kuc
25	Dan Schultz Cecilia Hemme
26	Harrison Parks
27	Leigh Butchko

President's Message
Continued from P. 2

•29 inch long Grade A quartz crystal point from Arkansas
•29 pound Grade A quartz crystal cluster from Arkansas

- 29 Pound Grade A calcite cluster from Black Rock
- 29 pound Lake Superior agate from Richardson Landing
- 29 fossilized teeth such horse, bison, or mastodon from Richardson Landing
- 29 foot long petrified wood log from any Mid-South Creek
- 29 inch long Crinoid stem from Vulcan Quarry
- 29 pound matrix covered with Blastoids from Northern Alabama
- 29 pound banded agate from Nonconnah Creek
- 29 shark teeth in a single scoop from 20 Mile Creek

W. C. McDaniel

Fabulous Tennessee Fossils

Dr. Michael A. Gibson, University of Tennessee at Martin

Dinorthis holdeni

Kingdom Animalia
Phylum Brachiopoda
Class Rhynchonellata
Order Orthida
Family Plaeisomyidae Schuchert 1913
Genus *Dinorthis* Hall & Clarke, 1892
Species *holdeni* (Willard, 1928)

The Valley and Ridge physiographic province of East Tennessee and the floor of the Central Basin in Middle Tennessee are largely composed of limestone and shale beds from the Middle Ordovician Period (470-458 million years ago). These deposits record a shallow tropical carbonate shelf across Tennessee that was abundantly fossiliferous, especially with brachiopods, crinoids, trilobites, and bryozoans. When I first arrived at the University of Tennessee Knoxville in 1984 to begin my dissertation research for my doctorate, I took a paleoecology class under Dr. Kenneth R. Walker (now professor emeritus). Ken introduced me to many new fossil taxa in the several courses I had under him, but the brachiopod *Dinorthis holdeni* (Figure 1) was to become a close and constant companion in my courses at UTK. We do not see this fossil in West Tennessee as our strata are generally younger, but it is a common collector item to the east. While the genus *Dinorthis* was named in 1892 by the great James Hall and James M. Clarke of New York for fossils in New York, the species *D. holdeni* was originally described as *Plectorthis holdeni* in 1928 by Lehigh paleontologist Bradford Willard (1894-1973) while he was at Brown University in *The brachiopods of the Ottosee and Holston formations of Tennessee and Virginia*, published in Harvard University's Bulletin of the Museum of Comparative Zoology (Vol. LXVIII, No. 6, pages 255-292); Willard's fifth publication of his career. Later in 1956 Smithsonian paleontologist G. Arthur Cooper (1902-2000) reassigned the species to the genus *Dinorthis*. Willard's specimens were collected as part of an earlier and highly historic Shaler Memorial Expedition (Nathaniel Southgate Shaler, 1841-1906, was a Harvard paleontologist in the late 19th century) through Virginia and Tennessee, which ran from 1917-1919.

Dinorthis holdeni (Fig. 1) is a small (rarely larger than 1 cm) slightly

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Fabulous Tennessee Fossils
Continued from P. 4

biconvex orthid brachiopod without a strong fold and sulcus, but with well-developed radial ribs. In the Ordovician of Tennessee it occurs in shaly limestone as individual specimens or in clumps of individuals reflecting the species' gregarious nature. In life position, *Dinorthis* was most likely tethered to the substrate by a thin pedicle that allowed the animal to orient its shell upwards on edge to filter-feed from the water column, making it an "epifaunal sessile suspension-feeder".

Dinorthis holdeni is usually found in abundance and easily erodes out of the matrix, making it possible to collect them by the hundreds for statistical studies. Dr. Walker used *Dinorthis* to teach students how to statistically study aspects of the "life history" of fossil organisms. One activity he devised was to generate growth and mortality graph curves by measuring the relative sizes of the shells and count growth lines visible on the shell surface as a way to gauge the age of an individual shell. Often the width of shell from one line to the next varies with wider areas representing faster or longer growth periods. When graphed as a histogram (bar graph), patterns emerged showing a series of rising peaks, much like a series of humps. The peaks of each hump would reflect optimum growth time. If we assume that each rise to peak and then fall to trough of growth increment represented one growing season (perhaps a year, but not necessarily so), then we can use this to determine an "age" of a fossil shell. We now know that counting external growth lines on shells doesn't precisely equate to seasons or years per se, but they represent periods of growth and do record the life history stages (often called ontogeny) of an individual, so by using hundreds of specimens, we can elucidate patterns of growth and death history for species. *Dinorthis* appears to have lived from 1-5 years using this method.

As an educator, I am always looking for ways to teach my students the value of mathematics in studying fossils and this activity remains useful for honing mathematical skills. Additionally, it takes a long time to sit and count nearly microscopic lines of growth on dozens of fossils, requiring lots of patience (something the younger generation has less of than my generation). Much of science is tedious data collection, but the rewards of understanding an ancient ecosystem from the fossil organism's perspective always makes me feel good. *Dinorthis* is such a prolific fossil in the Middle Ordovician of middle and east Tennessee, that stopping at most any fossiliferous limestone outcrop should yield a few. Happy hunting!

High Tech{ish} Top 10

Carrie Siems

Part 2 of a 2-parter

***Editor's Note**: This concludes Carrie Siems's article about her list of the top 10 high tech inventions.*

#5: Waterproof Gloves

Sometimes you collect in the cold because you're a die hard. Sometimes because of opportunity. And sometimes just plain

ignorance. Whatever the reason, those of you who brave the weather for your hobby know the only thing worse than being cold is being cold AND wet. The first organized rock collecting trip my family took {classified under "just plain ignorance"} was to the Crater of Diamonds in Arkansas in November. And it was raining. For those of you who have been there, you'll get a very vivid image here. At the site, I grew an inch with each step I took. I am still unaware of any way to pan things in water and not get wet. And, I'm *that* person that simply looks at dirt and am instantly covered in it. When we left that day, I had my husband pressure wash me down with the hoses at the exit. I'm sure I made a wet cat look good by that point. It wasn't a mild November. If I knew then what I know now, I'd certainly have had these gloves with me. {And at least pondered ordering enough of them to make an entire body suit!}

Waterproof gloves are nothing new. Actually they've been around for quite some time, but these aren't your typical cheap latex gloves, or even the rough and tough rubber gloves. Nope. These are fabric.

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High Tech{ish} Top 10 *Continued from P. 5*

Fleece-lined with an outer layer of nylon and Lycra sandwiching a layer of Polartec fleece that wicks away moisture. Not only do these gloves keep you dry, but also warm down to -30 degrees Fahrenheit. These gloves conform to your hand, come to the wrist, and have texture to provide an optimal grip. Available in four sizes, they retail for $59.95 on hammacher.com. If they're good enough for the U.S. military, they're good enough for rockhounding. {Oh, and they make waterproof socks too!}

#6: Air Conditioned Shirt

Made of 65% polyester and 35% cotton, this shirt, produced by Kuchofuku, will help keep you cool! Sold through Japan Trend Shop, this shirt is available in sizes small-5X large and retails for $206. Though called an "Air Conditioned Shirt", that's technically not accurate. The shirt has two fans, with adjustable speeds that provide air flow to cool your body. Install 2 AA batteries, and you're ready to go. {This store also sells a hard hat based on the same principle to keep your head cool!}

THE BEST IS YET TO COME...

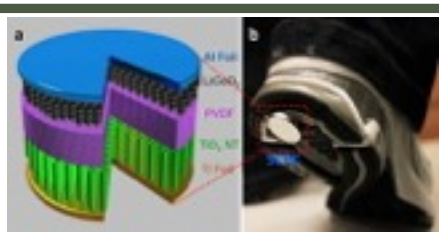
#7: Cell Phone with X-Ray Vision

Between microwaves and infrared light, the terahertz band of electromagnetic spectrum can be

found. Expensive to utilize, the terahertz band of the electromagnetic spectrum is most commonly associated with medical imaging and security measures. Researches have recently combined it with chips made from Complementary Metal-Oxide Semiconductor technology. Who cares? Use this chip with your phone, and you'll be able to see through things! Drywall, masonry, wood, even skin can be seen through using this technology.

What good would it do a rockhound? It could help you work smarter instead of harder when looking for pockets and vugs. There would be no uncertainty in finding that coveted hollow space where crystals come to full termination. Or what about those times when perhaps your aim missed the chisel, and hit your hand instead? Now you'll know if you can continue and work on your recent find, instead of heading to the hospital for an X-ray to see if you've broken any bones. Of course your investment wouldn't be limited to just rockhounding. You could use it to find studs in your house, monitor tumors, or track down loose change.

This technology isn't available for purchase yet. Currently the researchers are busy trying to address privacy concerns by limiting the distance you can see to 4 inches. {But if you're tech savvy, you could probably find a way to increase that!}



#8: Motion Charging Battery

Ranked as one of the top ten physical science breakthroughs by *Physics World* magazine in 2012, is a lithium battery that is fueled by motion. Portable electronics can now be powered simply by wearing these small disks while you're moving. The batteries harvest your physical motion, and allow them to store that power until used by an electronic device. Think how many batteries you could charge with all that hard work collecting rocks! {And simultaneously fix that pesky problem of a dead cell phone at the end of your trip.} Created by scientists at Georgia Tech, it's anticipated to be on the market near 2017. Who knows, perhaps you can use this to charge your x-ray vision phone...

#9: TX54 Thumb Watch

A watch you wear on your thumb. Who thinks of this stuff?!? Apparently the runner up of Timex and Core77's contest 2154: the future of time design. A control bar allows the user to change display mode, text color, glow function, or deactiva-

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High Tech{ish} Top 10 *Continued from P. 6*

tion. This translucent timepiece is visibly subtle, and meant to be disposable. This is perfect for those who prefer a minimalist approach when collecting in the field, yet still value punctuality.

February Field Trip

Charles Hill

The February 13 field trip should be to Pickwick Lake. We will be hunting three sites for Upper Cretaceous fossils on the lake. We will also hunt one site on the Tennessee River. At the river site we should find fossils, agate, petrified wood, jaspers, and whatever else the river washes up.

The only reason we might be unable to make this trip is the water level of the lake. The Tennessee Corp of Engineers is struggling to get the water level down to winter pool. Winter pool is the ideal level because we can get to the beach with all the trilobites. I will be watching the lake level closely.

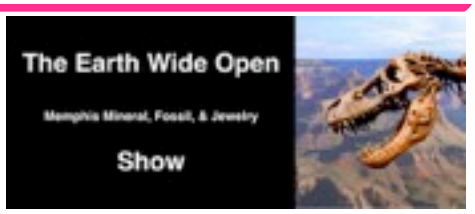
I have a back-up place just in case the TCOE loses its battle with Mother Nature. The alternative site will be Sugar Creek. I took a quick look at Sugar Creek on January 17th, and the water was down. I saw new material all over the place. I will bring what I found to the club meeting on February 12th.

Charles

Show Volunteer Time Again

SignUp Genius

Carol Lybanon



Every Member with email will receive an invitation to sign up as a Show volunteer with SignUp Genius. This is a good way for me to keep up with those people who volunteer to help at the Show. All you need to do is click on the link in the email message and follow the directions on the SignUp Genius website.

You will need to create a login with your name, email address, and a password. Very simple! Then you can add your name to the list in as many places as you would like. SignUp Genius will send you a reminder two days in advance of your signup times.

Still have questions? Call Carol at (901) 757-2144.

Please volunteer to help on Thursday, April 21, through Sunday, April 24.

Field Trip Report

Charles Hill *Photos by Leah Gloyd*

Hello, all. We had a field trip to Ron Coleman's Crystal Mine in Arkansas on Saturday, January 16. We drove down Friday afternoon after work and got a room at a motel in Hot Springs. The trip takes about three hour from Memphis. The leg between Little Rock and Hot Springs is mountainous and fun to drive. It is beautiful, rocky country with scenic views around every other curve. When we drove up, night was falling, so we didn't see a lot; but we did get a good view on Sunday morning when we came home.

I got up at 7:00 A. M. because the trip meeting was slated for 9:00 A. M. at the mine. I got there first, but not by much. Not everybody got there by 9:00; but we had 10 people for this hunt, so we got a group discount. The air was cold, and we didn't see the sun all day; but we had fun. Hunting for treasures by digging in the dirt is a primal form of stress relief, but it still works for me. Even if we only dig in tailing piles, we still find lots of crystals. One of our newest Members, Leah Gloyd, did not get there until almost noon, but she enjoyed herself and found crystals.

The personnel at Coleman's were

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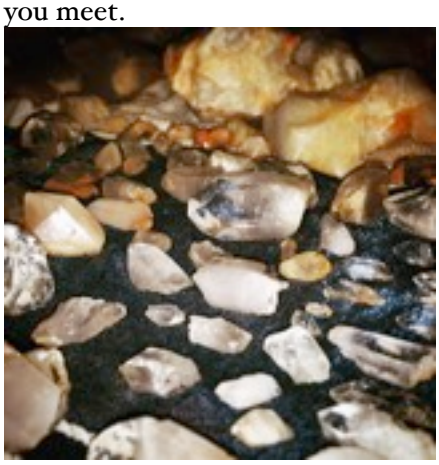
Field Trip Report *Continued from P. 7*

friendly and accommodating. Later in the day John Berry, who lives across the way, came over and helped us find a better spot. Before departing I went to his place to talk a while, and realized that this is another great resource person for us. Going on field trips is not always about what you find; sometimes it is about the people you meet.



See you there,

Charles

Please Volunteer: Hospitality 2016

W. C. McDaniel

1. Before Meeting—Arrive around 6:30; help set up and organize tables. All items are located in a cart
2. During Meeting—Monitor food/drinks etc.
3. After Meeting—Clean-up, all items back to cart

Date	Member(s)
January 8	Cornelia McDaniel
February 12	Bebe Buck
March 11	Kathy Baker
April 8	DeeDee Goossens
May 13	Mildred Schiff
June 10	Sherri Baldwin
July 8	Open, please volunteer
August 12	Rock swap—Team effort
September 9	Leah Gloyd
October 14	Kim Hill
November 11	Peggy Barbee
December 9	Holiday Party—Team effort

Reelfoot Lake Field Trip

Carol Lybanon

Bill Lawrence, the State Archaeologist for Reelfoot Lake, will talk to us on March 11. On March 12 he has arranged to take MAGS Members on a field trip to the lake. We will get onto a pontoon boat and have a guided tour of Caney Island Indian Mound. The cost for this boat ride is $10 a person. The trip is scheduled for 1:00-4:00 P. M.and is limited to 15 people. So please let me know as soon as possible if you plan to attend. You can email me at sgcarol@earthlink.net, or call (901) 757-2144.

December Board Minutes

Mike Baldwin

Meeting called to order at 6:32 pm. Present: Mike Baldwin, W. C. McDaniel, Michael Montgomery, Jane Brandon, Kim Hill, Carol Lybanon, Matthew Lybanon, Leigh Scott, James Butchko, Bonnie Cooper, Bob Cooper, and Marc Mueller.

Secretary: PDF copies of the November minutes were distributed earlier this week via email. Several hard copies were provided. Minutes approved with one revision.

Treasurer: Copies of November financial statements were distributed earlier this week via email. Several hard copies were made available to Members. November statement not available. Bonnie will pay 6 months rent plus $61 for our part of the projector screen. Federation paperwork and insurance will be completed in January. W. C. will submit several receipts at the Membership Meeting. Financial report approved subject to audit.

Membership: 12 renewals and 3 new members since the last Board Meeting.

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December Board Minutes
Continued from P. 8

Field Trips: DMC trip this weekend to northwest Georgia. Charles is working on Coleman, Potosi, and Reelfoot. Kim reported on the Richardson's Landing field trip.
Programs: December—holiday party. January—"Reelfoot Lake Geology" with Alan Parks. February—"Semi-precious Stones" with Dr. Podzorski. March—"The Archaeology of Reelfoot Lake" with Bill Lawrence followed by a field trip to Reelfoot Lake the next day. April—"The Earth Wide Open" with W. C. McDaniel and James Butchko.
Juniors: January—DeeDee Goosens talking about quartz.
Historian: The position is open.
Library: Marc found *Krakatau*, a 1883 book, at a library sale. Marc ordered *Lake Superior Agates and How They Are Formed* for $17. January meeting, Marc will be out of town. Marc will give Jane the keys at the party.
Newsletter: Lybanons will be away late December and early January, so material for the January issue will need to be submitted early. Newsletter should be published early.
Show: 5 more dealers have contracts signed. Next Show meeting is this Monday. W. C. added that we are looking for volunteers for the Show Committee. More space will be available in the RockZone because the dinosaur display will not be going up this time.
Old Business:

- Next Board Meeting should be on December 31. Decision to not have this meeting. Instead, all Board Members will send reports to secretary, who will compile into one document and send them out.
- Party December 11. All gifts have been purchased and W. C. will wrap them. The gifts will be a surprise to everyone, including the Board. Several Board Members volunteered to come early and help set up. Board Members will bring garbage bags.
- Hospitality: Board will discuss duties, responsibilities, and procedures for taking care of the tables and clean up after the meetings.

Meeting adjourned at 7:06 pm.

December Meeting Minutes

Mike Baldwin

Members arrived early to prepare for this evening's holiday party. Meeting called to order at 7:00 pm.
Membership: 65 Members and 6 visitors present. Bob reminded Members that dues are due. All those who have dues paid before January 1 will be included in a drawing for a geode.
Field Trips: The January 16 field trip will be to Coleman's Mine in Arkansas.
Editor: Matthew announced the results of the AMFS and SFMS Newsletter competition. Bill Gilbert, Charles Hill, Dr. Nina Baghai-Riding, Kim Hill, Matthew Lybanon, and W. C. McDaniel won article awards. MAGS Rockhound News won 6th Place for Small Bulletins from AFMS.
Programs: Carol appealed to Members to come to meetings, especially when we have speakers from out of town. She reminded Members that the January program will be "Reelfoot Lake Geology", by MAGS Member, Alan Parks.
W. C. adjourned the meeting at 7:20 pm and announced party time.

Jewelry Bench Tips by *Brad Smith*

SHARP KNIVES FOR CUTTING MOLDS

Cutting molds is easier and more precise with a sharp blade. A new Xacto blade is sufficient for cutting RTV molds but is usually not sharp enough for vulcanized rubber. For that it's best to use scalpel blades available from most jewelry supply companies.

The #11 blade is triangle shaped, and the #12 is hawksbill shaped. I find the hawksbill is particularly nice for cutting the registration keys of the mold.

USE YOUR THUMB

When using multiple bits in a Foredom, we often have to deal with several different shaft sizes—the usual 3/32 inch burs, the larger 1/8 inch shafts sizes, and of course the many different sizes of drills. For some reason I really dislike having to turn the key multiple times to open or close the jaws of the handpiece chuck.

So I have two ways to speed up that task. For opening up the jaws, I just remember "four", the number of turns I have to make to open the chuck just enough from the 3/32 bur shaft size to the larger 1/8 bur shaft size.

For closing the jaws around a smaller shaft, there's a neat trick. Hold the new bit in the center of the open jaws of the chuck, put your thumb lightly onto the outer toothed collar of the chuck, and gently start up the Foredom. As the chuck turns, it will naturally tighten the jaws around the bur shaft or the drill

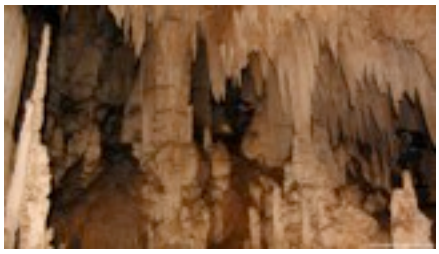
Continued, P. 10

Jewelry Bench Tips bit. Then all
Continued from P. 9 you have to do is a final tightening with the key.

Bench Tips for Jewelry Making and *Broom Casting for Creative Jewelry* are available on Amazon.

Stalagmite Unlocks Ancient Secrets

Why did the Maya civilization decline about 1100 years ago, after flourishing for hundreds of years? Recent research suggests a primary cause may have been climate change.



A team of scientists came to that conclusion by combining data obtained from an ancient stalagmite with information gleaned from Mayan artifacts. It all began in 2006, when Douglas Kennett, an archeologist at Pennsylvania State University, led a team of researchers into the jungles of Belize to explore a cave known as Yok Bolum. According to Sebastian Breitenbach of Cambridge University, another member of the team, the cave contained evidence of rainfall patterns on the Yucatan Peninsula, in the form of large numbers of stalagmites.

Stalagmites form over the course of hundreds of years by water dripping onto the ground. "Much like the rings of a tree, stalagmites can be used to reconstruct past climate patterns," Breitenbach said. Using a process known as radiometric dating, the scientists were able to determine that the upper section of the cave formation was 2,000 years old, and had been growing continuously from the years 40 BC to 2006 AD.

The researchers were able to compile a 2,000-year record of rainfall. Their data showed how wet and dry patterns had impacted life on the Yucatan Peninsula over hundreds of years. This allowed the team to compare the geochemical information with the archaeological evidence in the field.

The data set included a detailed record of rainfall for the Classic Period, an era lasting from 250 AD to 900 AD and considered by historians to be the height of Maya civilization. When scientists compared Maya archeological records with core samples from the stalagmite, they registered a correlation between rain and the rise and fall of the civilization. Between 820 and 870 AD, for example, there was 40% less precipitation than in prior decades, leading Kennett to suspect that drought was to blame for the collapse of the monumental Maya world.

It's theorized that the Maya flourished between 440 AD and 650 AD, when ample rainfall produced sufficient crops to support the region's fast-growing urban centers and rising population. According to Kennett, the wet years were followed by a drier period, punctuated by severe droughts in the 9th and 10th centuries. But drought was not the only problem facing the ancient Mesoamerican civilization.

Because they had grown accustomed to steady rainfall and had farmed the land too intensively to insure high crop yields, they moved off the lowlands to terrace the surrounding hillsides. They had to clear the forests and undergrowth, and relied on marginal land to feed a growing population.

In order to appease Chaac,the Maya rain god, rulers ordered the construction of massive temples and sacrificed the kings of opposing city-states. This bloodletting and warfare continued when the dry period took hold, resulting in an escalating cycle of violence and retaliation. But ultimately, it seems sustained drought was what the Maya elite were unable to defeat. And so, their civilization staggered to an end, with those who had been a part of it fleeing the cities for the forest, or dying of starvation.

You can read more details about this research on the Penn State website, at www.psu.edu/dept/liberalarts/sites/kennett/pdf/Kennett-AOC-NSF.pdf.

***Editor's Note**: Thanks to David Day for finding this.*

SFMS Quarterly Meeting

***Editor's Note**: This is a slightly edited version of an article published in the January 2016 "Lodestar," the newsletter of the Southeast Federation of Mineralogical Societies.*

The SFMS first quarterly meeting will be hosted by the Mississippi Gem and Mineral Society (MGMS) on February 26 and 27, 2016. This will be in conjunction with the MGMS Annual Gem, Mineral, Fossil and Jewelry Show scheduled for February 27 (9-6) and 28 (10-5) at the Trade Mart on the State Fairgrounds in Jackson, Mississippi.

A block of rooms is being held at the Hampton Inn, Richland, Mississippi, for this meeting. (Richland is located just south of the capital city of Jackson on US 49 South.) The block rate is $99 (plus 9% tax) for the reserved double queen rooms. This is a non-smoking hotel. Amenities include free wi-fi and free hot breakfast. (Breakfast is the only meal served on premises.)

Arrival and departure dates are flexible to accommodate individual schedules:

- Arrival: February 25 or 26
- Departure: February 27 or 28

Individuals are responsible for making their own reservations. The deadline to receive the block room rate is February 18. For your convenience, a web link has been established to make reservations. The reservation link also provides complete information about hotel amenities and directions to the hotel. Your HiltonLink Link is: hamptoninn.hilton.com/en/hp/groups/personalized/J/JANRDHX-MGS-20160225/index.jhtml.

Delegates may also phone the Richland, Mississippi, Hampton Inn directly at (601) 398-2116 to make reservations and receive the block rate, referencing Southeast Federation of Mineralogical Societies.

NOTE: Individuals wishing to receive the meeting rate if the block is sold out or after the block reservation deadline should contact the front desk at Richland Hampton Inn directly to determine room availability.

The meeting room at the Hampton Inn will be available:

- February 26—2 pm to 9 pm
- February 27—8 am to 2 pm

Mississippi Gem & Mineral Society members will be hosting a potluck dinner on Friday night for the show vendors and MGMS show setup workers. SFMS delegates are invited to join the group at the 6 pm meal. If you will be attending the dinner, please contact MGMS member Carol Harrison at charrison1980@aol.com so MGMS can plan accordingly.

Displays-Special Prize

Debbie Schaeffer

This year, in addition to giving a prize at each meeting to the Junior and Adult club member who get the most votes for their display, every person who brings a display will be entered to win a special prize at the end of the year. The prize winner will be drawn at the Holiday Party in December. You will be entered in the drawing each month you bring a display. I am looking forward to seeing lots of interesting displays at the upcoming meetings.

Touchdown!

The college football season may be over, but construction crews digging in the north end zone at Reser Stadium, on the Oregon State University campus, found evidence of a running back who would have been hard to stop. They found a mammoth femur bone, plus more bones from several extinct mammals.

Crews were digging as part of an expansion and renovation project. A worker digging in the area made the initial discovery and immediately stopped work. OSU officials brought in experts to examine the bones and the site.

You can get more details on this story, plus links to more pictures, on the Oregon State University website: oregonstate.edu/ua/ncs/archives/2016/jan/mammoth-makes-final-touchdown-reser-stadium-end-zone-construction-reveals

MAGS At A Glance

February 2016

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
31	1 Show Committee Meeting, 6:30 pm, Agricenter	2	3	4 Board Meeting, 6:30 pm, St. Francis Hospital	5	6 DMC Field Trip, 9:00 am-2:00 pm, Ft. Drum Crystal Mine
7	8	9	10	11	12 Membership Meeting, 7:00 pm, "Power from the Earth"	13 MAGS field trip, Pickwick Lake
14 	15	16	17	18	19	20
21	22	23	24	25	26 SFMS Quarterly Meeting, Jackson, MS	27 SFMS Quarterly Meeting/DMC Field Trip, 9:00 am, Stoney Bluff, GA
28	29	1	2	3	4	5

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