



Volume 63 ◊ Number 02 ◊ February 2017 ◊ A monthly newsletter for and by the members of MAGS

# The Oseberg Project:

## Vikings in Memphis

Rendy Hunt

February Program



A brief introduction and explanation of the Oseberg burial and the ongoing project to recreate the burial grave goods using materials sourced from Memphis and the surrounding areas.

Rendy Hunt is an Information Systems Specialist from Memphis, Tennessee. In her spare time, she

participates in the Society for Creative Anachronism, (SCA) which has led her on a journey through History. Having researched the Vikings in depth, she is now embarking on a project to recreate the grave goods found in the Oseberg burial. Her research into this

*Continued, P.4*

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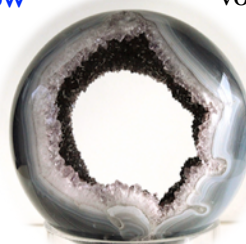
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### COUNTDOWN TO SHOW

#### Memphis Mineral, Fossil, and Jewelry Show

The Earth Wide Open  
Saturday, April 22, 9:00-6:00  
Sunday, April 23, 10:00-5:00

The Show Committee is working hard to make sure our 38th Show will be a great success. We need our Members to



**Grand Prize**

volunteer before, during, and at cleanup. The only way we can put on such a large show is with your help. Let Jim Butchko know if you would like to be part of the Show Committee (next meeting is February 6). Look for the SignUp Genius in March and sign up in as many slots as you can.

**Save the dates.**

# MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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

## 2017-2018 MAGS BOARD

### President—Charles Hill

1070 Park Swain Road, Grand Junction, TN 38039  
♦ (901) 626-4232 ♦ [hunter3006@aol.com](mailto:hunter3006@aol.com)

### 1st VP (Field Trips)—James Butchko

4220 Dunn, Memphis, TN 38111 ♦ (901) 743-0058 ♦  
[butch513j@yahoo.com](mailto:butch513j@yahoo.com)

### 2nd VP (Adult Programs)—W. C. McDaniel

2038 Central Avenue, Memphis, TN 38104 ♦ (901)  
274-7706 ♦ [w.c.mcd@att.net](mailto:w.c.mcd@att.net)

### Secretary—Mike Baldwin

367 North Main Street, Collierville, TN 38017 ♦  
(901) 853-3603 ♦ [mbaldwin05@gmail.com](mailto:mbaldwin05@gmail.com)

### Treasurer—Bonnie Cooper

8695 Baylor Road, Arlington, TN 38002 ♦ (901)  
444-0967 ♦ [rocks4us@hotmail.com](mailto:rocks4us@hotmail.com)

### Director (Asst. Field Trips)—Kim Hill

4755 Royal Elm Cove, Memphis, TN 38128 ♦ (901)  
388-7572 ♦ [earthsis@aol.com](mailto:earthsis@aol.com)

### Director (Asst. Adult Programs)—Dave Clarke ♦

456 North White Station Road, Memphis TN 38117  
♦ (901) 308-0334 ♦ [dclarke@fieldmuseum.org](mailto:dclarke@fieldmuseum.org)

### Director (Youth Programs)—Open

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### Director (Librarian)—Leah Gloyd

2151 Dogwood Creek Court, Apartment 202,  
Collierville, TN 38017 ♦ (270) 847-3170 ♦  
[leahgloyd@outlook.com](mailto:leahgloyd@outlook.com)

### Director (Asst. Librarian)—Jane Brandon

4384 Castle Avenue, Memphis, TN 38122 ♦ (901)  
374-0366 ♦ [jjbrandon@yahoo.com](mailto:jjbrandon@yahoo.com)

### Director (Membership Services)—Bob Cooper

8695 Baylor Road, Arlington, TN 38002 ♦ (901)  
444-0967 ♦ [rocks4us@hotmail.com](mailto:rocks4us@hotmail.com)

### Director (Historian)—Carol Lybanon

2019 Littlemore Drive. Memphis, TN 38016 ♦ (901)  
757-2144 ♦ [sgcarol@earthlink.net](mailto:sgcarol@earthlink.net)

### Newsletter Editor—Matthew Lybanon

2019 Littlemore Drive. Memphis, TN 38016 ♦ (901)  
757-2144 ♦ [lybanon@earthlink.net](mailto:lybanon@earthlink.net)

### Webmaster—Mike Baldwin

367 North Main Street, Collierville, TN 38017 ♦  
(901) 853-3603 ♦ [mbaldwin05@gmail.com](mailto:mbaldwin05@gmail.com)

### Show Chairman—James Butchko

4220 Dunn, Memphis, TN 38111 ♦ (901) 743-0058 ♦  
[butch513j@yahoo.com](mailto:butch513j@yahoo.com)

### Past President—W. C. McDaniel

2038 Central Avenue, Memphis, TN 38104 ♦ (901)  
274-7706 ♦ [w.c.mcd@att.net](mailto:w.c.mcd@att.net)

## MAGS AND FEDERATION NOTES

### Memphis Archaeological and Geological Society, Memphis, Tennessee

The objectives of this society shall be as set out in the Charter of Incorporation issued by the State of Tennessee on September 29, 1958, as follows: for the purpose of promoting an active interest in the geological finds and data by scientific methods; to offer possible assistance to any archaeologist or geologist in the general area covered by the work and purposes of this society; to discourage commercialization of archaeology and work to its elimination and to assist in the younger members of the society; to publicize and create further public interest in the archaeological and geological field in the general area of the Mid-South and conduct means of displaying, publishing and conducting public forums for scientific and educational purposes.

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, Tennessee.

MAGS Website: [memphisgeology.org](http://memphisgeology.org)

MAGS Show Website: [www.theearthwideopen.com](http://www.theearthwideopen.com)

We aren't kidding when we say this is a newsletter for and by the members of MAGS. An article with a byline was written by a MAGS Member, unless explicitly stated otherwise. If there is no byline, the article was written or compiled by the Editor. Please contribute articles or 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).

### February DMC Field Trip

WHERE: Gravel Pit/Coal Mine, Brookwood, AL

WHEN: Saturday, February 18, 8:00 A. M.

COLLECTING: Petrified wood, jasper, agate, oolite, others

INFORMATION: Lou Ann Newell, (205) 482-3234,  
[newell.louann@gmail.com](mailto:newell.louann@gmail.com)

### 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/)
- ➔ DMC: [www.amfed.org/sfms/dmc/dmc.htm](http://www.amfed.org/sfms/dmc/dmc.htm)

President's Message

Hello again, all.

As I promised previously, I will try to keep everyone informed on club news. One immediate need: we are still looking for someone to take the reins with the youth program. So far, we only have January covered. If you can't be chairman, maybe you can pick a month to present a program for our youth. Pick a theme—something you really like—and then show the kids why you like it. They will love it, you will help the club, and you can take that service off your bucket list.

We are also going to restart the hospitality list in 2017. Hospitality volunteers set up the food and beverage tables, fill cups with ice for the drinks, and make sure the chairs get set up. Emily and I will do hospitality duties for January. A list will be passed around, so please sign up if you are willing to help.

Finally, the annual Memphis Archaeological and Geological Society Gem, Mineral, and Jewelry Show will be here in about 87 days. Are you ready?

Charles

New Members

Christine Lemons

Wain and Dorothy Poole

Lawson and Anna Tully, and daughters Sophie, Ivie, Nola, and Gwen

Regina Lindsey and Bob Fletcher

Welcome to MAGS. We look forward to seeing you at monthly meetings and field trips.

Memphis Mineral, Fossil, and Jewelry Show
The Earth Wide Open

Presented by the Memphis Archaeological and Geological Society

Rocks, Fossils, Minerals, Gems, Jewelry, Lapidary Equipment and Beads

Sat. April 22, 9-6 Sun. April 23, 10-5

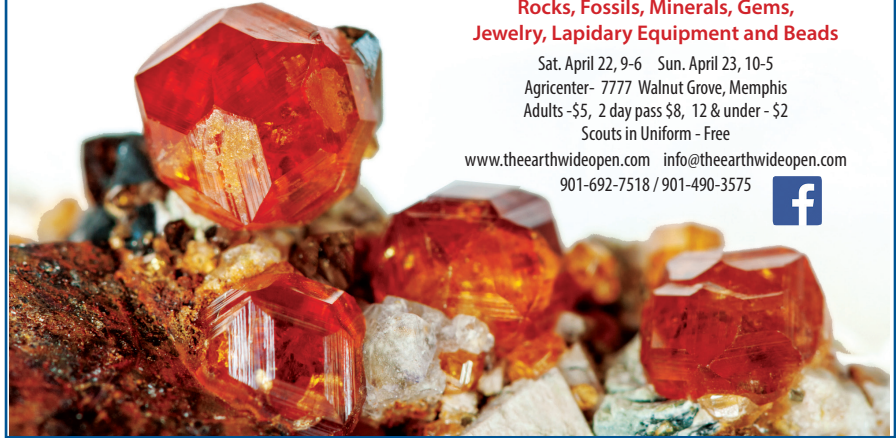
Agricenter- 7777 Walnut Grove, Memphis

Adults - \$5, 2 day pass \$8, 12 & under - \$2

Scouts in Uniform - Free

www.theearthwideopen.com info@theearthwideopen.com

901-692-7518 / 901-490-3575



Membership Renewal Drawing Winner

Bob Cooper



The 2017 renewal drawing was held at the end of the January 13th Membership Meeting and the winner is Richard Arnold. Richard is a MAGS Member living in Barnesville, Georgia, and he has won the fossilized bivalve scallop. Thanks to all who renewed their 2017 MAGS membership.

February Field Trip

The February 11 field trip will go to Blue Springs, between New Albany and Tupelo. Meeting time will be 9:30 A. M. Look for a map and other details at the February Membership Meeting.

Can You Dig It?

Tina Walker

Yes, you can in Marion Kentucky. You can come dig Fluorite and related minerals during the day and fluorescent minerals at night.

Scheduled Digs for 2017

- ★ April 29
★ May 20
★ June 3\* & 4\*
★ June 24
★ July 22
★ August 18, 19, & 20 (Eclipse on August 21)
★ September 23
★ October 21

\*Also, dates of the Ben E. Clement Annual Gem, Mineral, Fossil, & Jewelry Show. There will not be a night dig on June 4th.

Pre-registration is required, so register early as space is limited to the first 30 people per date. Registration forms can be found on our website at www.clementmineralmuseum.org.



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# MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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*The Oseberg Project* area has  
*Continued from P. 1* spanned 15  
years of fact  
finding, as well as hands-on arts  
and sciences practices.

**Editor's note:** The Oseberg ship  
is the oldest known Viking ship,  
having been constructed circa 820  
A. D.

*Can You Dig It?*  
*Continued from P. 3* If you would  
like to schedule  
a private dig,  
please call the museum.

## Contact Information:

The Ben E. Clement  
Mineral Museum  
P. O. Box 391 Marion, KY 42064  
Phone (270) 965-4263

## NASA Loves Lucy

*Matthew Lybanon*

Compiled from press releases

Lucy (named after the Beatles' song "Lucy in the Sky With Diamonds") was found by Donald Johanson and Tom Gray on the November 24, 1974, at the site of Hadar in Ethiopia. She looks pretty good for someone 3.18 million years old—she's the second-oldest hominid fossil yet discovered. Study of Lucy provides clues to our species's origins.

Now NASA has chosen the name for a mission to learn about the formation of the solar system—an early step in the origin of all life on Earth. NASA has selected two missions that have the potential to open new windows on one of the earliest eras in the history of our solar system. The missions, known as Lucy (<http://www.hou.usra.edu/meetings/lpsc2016/pdf/2061.pdf>) and

Psyche (<https://sese.asu.edu/research/psyche>), will launch in 2021 and 2023, respectively.

Discovery Program class missions like these are relatively low-cost, their development capped at about \$450 million. They are managed for NASA's Planetary Science Division by the Planetary Missions Program Office at Marshall Space Flight Center in Huntsville, Alabama. Lucy will launch in 2021 to study six of the Trojans, a population of primitive asteroids orbiting in tandem with Jupiter. It will fly by its targets between 2025 and 2033. Scientists say understanding the differences between the Trojans will provide unique and critical knowledge of planetary origins, the source of volatiles and organics on the terrestrial planets, and the evolution of the planetary system as a whole.

Southwest Research Institute (SwRI) in Boulder, Colorado, is the principal investigator institution for Lucy and will lead the science investigation. NASA's Goddard Space Flight Center, Greenbelt, Maryland, will provide overall mission management, systems engineering, and safety and mission assurance. Lockheed Martin Space Systems in Denver, Colorado, will build the spacecraft.

The Lucy spacecraft and a remote-sensing instrument suite will study the geology, surface composition, and bulk physical properties of these bodies at close range. The payload includes three complementary imaging and mapping instruments, including a color imaging and infrared mapping spectrometer from NASA's Goddard Space Flight Center, a

high-resolution visible imager from the Johns Hopkins University Applied Physics Laboratory (APL), Laurel, Maryland, and a thermal infrared spectrometer from Arizona State University, Tempe. The APL instrument is the next-gen version of the Long Range Reconnaissance Imager, or LORRI, currently flying on the New Horizons spacecraft, which provided the first detailed close-up views of Pluto and its moons.

"This is a unique opportunity," said Dr. Harold F. Levison, Lucy principal investigator from SwRI. "Because the Trojans are remnants of the primordial material that formed the outer planets, they hold vital clues to deciphering the history of the solar system. Lucy, like the human fossil for which it is named, will revolutionize the understanding of our origins."

"Understanding the causes of the differences between the Trojans will provide unique and critical knowledge of planetary origins, the source of volatiles and organics on the terrestrial planets, and the evolution of the planetary system as a whole," said Dr. Catherine Olkin, the mission's deputy principal investigator from SwRI. "The Lucy mission is one of those rare moments where a single mission can have a major impact on our understanding of such fundamental questions," added Dr. Keith Noll, Lucy project scientist from Goddard.

## December Board Minutes

*Bonnie Cooper for Mike Baldwin*

Called to order 6:30 P. M. Present: W. C. McDaniel, Charles Hill, Carol Lybanon, Bonnie

*Continued, P. 5*

# MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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

*December Board Minutes* Cooper,  
*Continued from P. 5* Kim Hill,  
Debbie

Schaeffer, Jim Butchko, Marc Mueller,  
Bob Cooper, Leah Gloyd, Matthew  
Lybanon.

**Secretary:** No report. Mike sent  
minutes via email to all Board Mem-  
bers to review. Approved as read.

**Treasurer:** November bank state-  
ment not received yet. Bonnie sent  
the November checking register and  
checking summary to all Board  
Members via email. Report accepted.

**Membership:** Bob advised we have 2  
new Members and have gotten a  
couple more renewals. Another  
renewal notice was sent out to the  
entire club this week.

**Field Trips:** Charles Hill will lead  
the December 17th field trip to  
middle Tennessee. The January field  
trip to the Vulcan Quarry in Parsons  
is full and has a wait list. This trip will  
be led by Jim Butchko and Kim Hill.  
W. C. discussed renewing our partici-  
pation in the Dixie Mineral Council  
and sponsoring a field trip, probably  
in Oct 2019.

**Adult Programs** No December  
program since we will be having the  
annual Holiday Party. W. C. reported  
programs for next year: January still  
open, February Wendy Burns, March  
David Clarke, April the Show, May  
gem trees, June Mike Howard.

**Junior Programs:** No programs for  
December due to the holiday party.  
Jim can bring in rocks for the kids to  
paint in January.

**Historian** Leah got a rTB hard drive  
for the club. She will continue  
scanning the old club records.

**Library, Web:** No reports.

**Newsletter:** Matthew said the Feb-  
ruary newsletter might have to be  
published early due to travel. If not,  
the newsletter will be published after  
they return.

**Show:** The next Show meeting will

be Monday, December 5, at the Agri-  
center. All Show meetings will be at  
6:30 pm on the Monday after the  
Board Meeting. W.C. said we should  
fill out IRS forms to get discounted  
postage since we are tax exempt.

## Old Business:

- Those Board Members whose  
positions are being taken over by  
someone else should pass notes/  
information about the job to the  
new person.
- Discussed hosting Sandfest 2018.  
Will discuss further later.

## New Business:

- Discussed a donation to a project in  
Peru that Robert Connolly is  
involved in. Motion passed to make  
a \$100 donation. Matthew will do  
and the club will reimburse him.
- Went over the details for the  
Holiday Party and confirmed that  
everything is on schedule. Carol  
advised that David & Beth Day, W.  
C. & Cornelia, and Carol will pro-  
vide handcrafts for the prizes for the  
bingo games. W. C. will check with  
the church to see if we can come in  
early to set up.

Adjourned 7:42 P. M.

## December Meeting Minutes

*Mike Baldwin*

Called to order 7:06 P. M. Over 90  
individuals present, at least 7 of them  
visitors.

Charles Hill gave an overview of the  
January 21 field trip to Vulcan Quarry  
in Parsons, Tennessee. Attending  
Members must be at the quarry, ready  
to collect at 6:00 A. M. Charles  
reviewed safety aspects of the dig. All  
attendees should bring a hard hat and  
safety glasses. Charles also reminded  
Members of the December 19 field  
trip to middle Tennessee.

Meeting adjourned, Holiday Party  
began. Attendees were asked to sign  
up for gifts to be given away at the

end of the evening. There were games,  
door prizes, and gifts for all. New  
Member Leo won a carved wooden  
bowl (he vowed to fill it with polished  
stones from Richardson's Landing).  
Mike Baldwin won the Christmas  
tree, loaded with stone ornaments.

## February Birthdays

Happy Birthday!

1	Mike Blumenthal
	Caleb Crawford
2	Peggy Davis
3	Lupe Suarez
4	Anne Pinkerton
	Brooklyn Coulson
7	Shelia Evans
9	Vincent Mayer
10	Abby Parish
12	Kathleen Ward
	Louis White
13	David Von Boeckman
14	Aaron Van Alstine
15	Mackenzie Reed
	Barry R. E. Taylor
16	Bradley Mendel
	Darren Mendel
18	Sarah McGregor
19	Aaron Shelley
	Ben Hodge
	David Vaughn
20	Kim Hill
21	Manny Childress
	Bella Hill
22	Tyler Gilmore
	Nicole Phillippo-Schultz
24	Anna Tully
	Katie Waddell
25	Dan Schultz
	Cecillia Hemme
26	Harrison Parks
27	Leigh Scott

## Fabulous Tennessee Fossils

Dr. Michael A. Gibson,

University of Tennessee at Martin

### FTF 25

#### Tennessee Namesake Index & Guide Fossils: *Brachiopods* with the *tennesseensis* Epithet



Brachiopods (“lamp shells”) are one of the more commonly encountered and easily recognizable fossil, although often confused for bivalve mollusks due to their “bivalve” nature. To begin with, brachiopods have a high potential for preservation as they have two valves of similar form that each record all growth increments (holoperipheral growth), hence the entire skeleton has only two parts. It only takes one of the two shells to identify the species. Additionally the shells are composed of calcite and thus also preserve well, especially in limestone deposits. Brachiopods are not always useful index fossils because they are bottom dwellers and are thus subject to local environmental conditions that may preclude wide distribution, especially sediment type and energy level. In other words they may be better environmental indicators than they are time indicators (see FTF 21 for a review of the characteristics of good index fossils); however, they often are used to tell time regionally. Shimer and Schrock’s (1944), *Index Fossils of North America* recognized four brachiopods with a *tennesseensis* epithet: *Leptellina tennesseensis* and *Strophomena tennesseensis*, both in the Order Strophomenida, and *Merista tennesseensis* and *Trigonirhynchia tennesseensis*, both in the Order Rhynchonellida.

*Leptellina tennesseensis* Ulrich and Cooper 1936 belongs to the

strophomenid brachiopod order because of its long and straight (Latin “*stroph*”) hingeline. Strophomenids are flat and often have an overall D-shape outline in plan-view. Ecologically *L. tennesseensis* was a stationary epifaunal suspension-feeding brachiopod that rested nearly flat on the sea floor. It would have been susceptible to some sinking or current reworking in higher energy events. The broad flat thin shell was an adaptation to retard sinking, called the “snowshoe effect”. Both the genus and the species were erected by E.O. Ulrich and G. Arthur Cooper, both of the U. S. National Museum (Smithsonian), in 1936 based upon specimens collected about a quarter of a mile east of the town of Friendship, Tennessee, from the Lenoir Limestone of Middle Ordovician age. *L. tennesseensis* is also known from several other Middle Ordovician formations, such as the Tellico and Blockhouse Shale, both of which represented offshore deeper and quieter water settings with lots of mud.

*Strophomena tennesseensis* was first described in 1928 by Lehigh University paleontologist Bradford Willard (1894-1973), who was studying the Ottosee and Holston formations in eastern Tennessee. Several U.S. Geological Survey studies of the Middle Ordovician Tellico and Sevier formations in eastern Tennessee noted the occurrence of *Strophomena*

*tennesseensis* Willard, 1928. In 1956, U.S. National Museum paleontologist G.A. Cooper (1902-2000) revised Chazyan (Middle Ordovician) brachiopoda in a Smithsonian publication *Chazyan and Related Brachiopods* and published an opinion that *S. tennesseensis* should be transferred to the new genus *Rhipidomena* as *Rhipidomena tennesseensis* (Willard) 1956. The new designation extended the species’ known stratigraphic range from Middle Ordovician through Silurian.

*Trigonirhynchia tennesseensis* is a rhynchonellid brachiopod named by J. M. Clarke and James Hall in 1894. Rhynchonellid brachiopods are not flattened like strophomenids. Instead they are more rounded with fatter shells that tapered to a pointed pedicle attachment are with a very small opening for the pedicle. The pedicle allowed the brachiopod to remain attached just above the seafloor and filter feed within light currents. The genus *Trigonirhynchia* gets the “tri” prefix on its name from its roughly triangular shell shape produced by the tapering pedicle region. *T. tennesseensis* occurs in the Brownport Formation of Decatur County, especially the Bob Member, and is thus a Middle Silurian index fossils for the area. It is interesting to also note that there is a reference in the Yale Peabody Museum database to *Trigonirhynchia*

*Continued, P. 7*

*Fabulous Tennessee Fossils*  
*Continued from P. 6*

*tennesseensis* Roemer that was reported by Thomas Amsden from Blue Mound Glade (0.2 miles north of road leading from Cedar Grove Church to Mt. Carmel Church and also from a locality 0.8 miles northeast of Cedar Grove Church, all on the Perryville quadrangle. Notice I wrote Roemer and not Clark and Hall as the namers. There is a chart in Amsden's *Stratigraphy and Paleontology of the Brownsport Formation (Silurian) of Western Tennessee (1949)*, where he lists "*T. tennesseensis* (Roemer), *emended*", as if Ferdinand Roemer was the original namer. Oddly in Roemer's earlier 1860 monograph, *T. tennesseensis* appears as *Rhynchonella tennesseensis*. Roemer had named the species in *Rhynchonella* and Amsden "emended" that description after noting that Roemer had actually mixed fossils belonging to two different genera into his single *R. tennesseensis*, so he amended the Tennessee species to the genus of *Trigonorbynchia* (which had been erected in 1925 by Muir-Wood and Cooper. Just when you might think everything was finally settled, enter Zeddie Bowen, a Ph. D. student at Harvard working on brachiopods. Bowen noticed that the differences of the Tennessee specimens is great enough to warrant them being moved to an entire new genus, which he names *Boucotella* after the great University of Oregon paleontologist Arthur Boucot, a world authority on the Silurian and Devonian. Bowen publishes his findings in 1966 in the *Journal of Paleontology* and the original *Rhynchonella*

*tennesseensis* becomes *Boucotella tennesseensis* (Roemer), where it remains today.

*Merista tennesseensis* was named by the great New York paleontologist James Hall and James M. Clarke in 1894 in their epic tome series *Paleontology of New York* for specimens collected in Perry County. The *Paleontology of New York* series of books are so important to Tennessee geology that they warrant their own article at a future date. *M. tennesseensis* also belongs to the rhynchonellid brachiopod group like *T. tennesseensis* described above. *Merista* is a smooth-surfaced shell with a moderate flexure near the middle of the shell (fold and sulcus) that helped direct currents in and out of the shell. *M. tennesseensis* is the index fossil for the Middle Silurian Brownsport Formation, especially in Perry and Decatur counties. It is sometimes confused with a similar genus of Devonian brachiopod of similar name called *Meristella* (which has much deeper fold and sulcus).

This last series of articles has focused on index fossils with the Tennessee epithet; however, "*tennesseensis*" shows up as the species name for many organisms other than index fossils. Most may be familiar to you today in our modern world, such as: *Echinacea tennesseensis* ("Tennessee coneflower", which is also the Tennessee State Wildflower), *Xyris tennesseensis* (Tennessee Yellow-eyed grass), *Chrosomus tennesseensis* ("Tennessee dace fish"), *Aphaenogaster tennesseensis* ("Tennessee hidden belly ant"), and *Pseudanophthalmus tennesseensis* ("East

Tennessee cave beetle") just to name a few. Are there any genera that memorialize Tennessee? Sure, see if you have *Tennesseillum formica* (spider) around your house?

**Jewelry Bench Tips** by  
Brad Smith

ADJUSTABLE CHUCK FOR  
DREMELS

Many of us have a Dremel motor tool to use at home or when out to a class or workshop. The one thing that makes this tool much more productive is the addition of one inexpensive option, an adjustable chuck.

The basic motor tool as sold typically comes with a collet chuck. This means you have to use a wrench to change every tool bit, you have to switch collets to use different shaft sizes (3/32 or 1/8 inch bits), and you can't use ordinary drills at all—only the special ones that have a 3/32 shaft.

A simple and inexpensive (\$12) adjustable chuck solves all of this. It's available in most large local hardware stores or modelmaking outlets. Tightening the chuck is done easily by hand to any size shaft. No key is required.



IDENTIFYING UNMARKED  
SOLDERS

There are plenty of ways to mark your sheet or wire solders, but suppose you forget and have a couple that you

*Continued, P. 8*

*Jewelry Bench Tips* can't identify. *Continued from P. 7* The answer is to compare the melting temperature of the unknown with that of a known solder. What I do is take a thick scrap of copper or nickel and arrange several solders on it. Ideally, I have a sample of easy, medium, and hard known solders surrounding the unknown solder. Then I heat the plate from the bottom and watch the order in which the solders melt.



See all Brad's jewelry books at [Amazon.com/author/bradfordsmith](http://Amazon.com/author/bradfordsmith).

### February 6 Deadline

*Matthew Lybanon*

An article in last month's issue informed MAGSters of an important issue. The Paleontological Resources Protection Act (PRPA) was signed into law on 30 March 2009, and federal agencies were tasked with writing their own rules for how they would put the law into effect. The rules for the U. S. Forest Service went into effect on 18 May 2015. Now, the Bureau of Land Management (BLM) has finished the draft of its rules, and it is open for comments until 6 February 2017. Go to [www.blm.gov/paleontology](http://www.blm.gov/paleontology).

There is still time for amateur collectors to present their case. PRPA's goal is to prevent commercial interests from going into fossil sites and "stripping" them, thereby preventing paleontologists from

gaining important information and making valuable fossils available for public view. But amateurs have made important discoveries, also. Restricting amateur collecting limits the number of "eyes on the ground."

Scott Foss of the BLM provided these "rules" for making sure your public comments are considered by lawmakers:

- Provide first and last name, city, state, and country. All other fields of information are optional. Keep in mind that much of this information is publicly viewable.
- Comments may be typed in the box provided or they may be uploaded as attachments (Word docs or PDFs only).
- Comments may be brief or in-depth/well-researched. Comments with facts to support them are much more useful (e.g., examples of overlooked scenarios). Keep comments civil and straightforward. Comments using offensive terms, threats, or other inappropriate language will be disregarded.

Regulations on Federal land today may become a precedent for collecting on state or local land in the future, so it is in the interest of all amateur collectors to make their voices heard.

### Parsons Trip Rescheduled

*Matthew Lybanon (Editor)*

Because of dangerous conditions due to the weather, Vulcan Quarry in Parsons, Tennessee canceled the January 21 field trip. The

trip was rescheduled to February 18. There is a limit to the number of people who can attend, so anyone interested should check with field trip leader Jim Butchko concerning possible openings.

### The Collision That Made the Moon

*Matthew Lybanon*

"Core Merging and Stratification Following Giant Impact" sums up the point of this article, but it's awfully long for a title—though it is the title of the scientific paper. Scientists have long hypothesized that the Moon formed when a massive object—something possibly as large as Mars—slammed into Earth about 4.5 billion years ago. The collision, so the idea goes, would have thrown large chunks of Earth's crust into space, where gravity pulled the fragments together to form the Moon.

What's more, geomagnetic and seismic observations have suggested that Earth's liquid outer core has an unexplained stratified layer, about 200 miles thick, composed mostly of iron, oxygen, sulfur, and silicon. How did it get there? Why isn't the outer core a homogeneous molten ball surrounding the solid inner core?

Research led by Johns Hopkins University (JHU) scientists, involving researchers from institutions in two other countries, created a lab simulation that links the so-called high-impact hypothesis with the odd strata in the planet's outer core. To re-create a collision between two large planetary bodies of different sizes, the



researchers repeatedly dropped a liquid "projectile," representing the core of the smaller body, into a target liquid that was a stand-in for proto-Earth, with a top layer of oil simulating Earth's magma and an aqueous bottom layer simulating the core. Observing the turbulence that ensued, they found that the impact created a layer in the target that was strikingly similar to the unexplained layer of the Earth's outer core. That means the enigmatic core layer of Earth could be a result of a collision 4.5 billion years ago that was big enough to form the Moon.

This is very appealing because it provides a common explanation of two mysteries. There is evidence for a stratified layer at the top of the Earth's core, but its origin is not well understood. And the mechanism of the process that created the Moon is speculative. Have both problems been solved?

The research was regarded as sufficiently conclusive to be published in a peer-reviewed journal, *Nature Geoscience*. JHU author Peter Olson said the giant impact argument for the formation of the moon is the most prevalent scientific hypothesis on how the Earth satellite was formed, but it is still considered unproven because there's been no "smoking gun" evidence.

"Our experiments bring additional evidence in favor of the giant impact hypothesis," said Maylis Landeau, the lead author of the paper, who was a post-doctoral fellow in Johns Hopkins's Department of Earth & Planetary Sciences when the experiments were conducted. "They demonstrate

that the giant impact scenario also explains the stratification inferred by seismology at the top of the present-day Earth's core. This result ties the present-day structure of Earth's core to its formation."

Landeau, a Marie Curie Fellow at the University of Cambridge, co-wrote the paper with Peter Olson, research professor in the Department of Earth & Planetary Sciences, Benjamin H. Hirsh, who was an undergraduate at Johns Hopkins majoring in the subject, and Renaud Deguen, of Claude Bernard University in Lyon, France.

**Ref:** Maylis Landeau, Peter Olson, Renaud Deguen & Benjamin H. Hirsh, Core merging and stratification following giant impact, *Nature Geoscience* 9, 786–789 (2016) doi:10.1038/ngeo2808, published online 12 September 2016

## Binomial Nomenclature

Matthew Lybanon (Editor)

In the binomial naming system, every organism is identified by two names, a genus and a species (there are some exceptions). That two-term name, sometimes known as the Latin name, scientific name, binomen, and a few other terms, is how scientists refer to living things—and is the way they should be referred to by people who work with scientific information, whether or not they are professionals.

As with most systems, there are rules, but they aren't difficult.

The genus name is always capitalized, and the species name

or "specific epithet" is never capitalized. Both are always italicized. For example, *Tyrannosaurus rex*. That means that T-rex, T-Rex, Trex, Tyrannosaurus Rex, and all other variations, with or without italics, are wrong. *T. rex*, however, is just fine, and it's common to abbreviate the genus name after an initial use and as long as everyone in the conversation knows what the abbreviation refers to.

The genus and species are followed by the last name of the person who first described the species in a formal, published scientific paper. Next comes the date of that description. The author's name and date are never italicized.

Take, for example, *Bulla striata* Bruguière, 1792, a member of the genus *Bulla*, a marine gastropod that has been around since at least the Cretaceous and still exists today. *Bulla* includes hundreds of species and is one good argument for binomial naming. Trying to refer to all 600 species by their common name alone—"bubble shells"—would be chaos.

The designation above tells us that Bruguière (Jean Guillaume Bruguière, to be exact, a French zoologist and physician) first described *Bulla striata* in 1792.


As mentioned, there are some exceptions. The website listed below gives some examples, as well as common terms and abbreviations.

**Editor's note:** More details on this website:

<https://fourcatspress.files.wordpress.com/2016/09/binomial-nomenclature.pdf>

# MAGS At A Glance

## February 2017

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
29	30	31	1	2 Board Meeting, 6:30 pm, St. Francis Hospital	3	4
5	6 Show Committee Meeting, 6:30 pm, Agricenter	7	8	9	10 Membership Meeting, 7:00 pm, 'Vikings in Memphis'	11 MAGS Field Trip, Blue Springs, MS
12	13	14 	15	16	17	18 MAGS Field Trip, Parsons, TN (rescheduled)/DMC Field Trip, Brookwood, AL
19	20	21	22	23	24	25
26	27	28	1	2	3	4

Memphis Archaeological and Geological Society  
 2019 Littlemore Drive  
 Memphis, TN 38016

