MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

MAGS ROCKHOUND NEWS

Volume 71 ◊ Number 01 ◊ January 2025 ◊ A monthly newsletter for and by the members of MAGS

Gemology 101

January 2025 Program *Jane Coop*

Jane Coop got her BA in Art/Art History at Denison University in Ohio. She then got her MBA at Vanderbilt and her MD at the University of Tennessee. She has her Boards in Anatomic and Clinical. Pathology and practiced at the VA Memphis for 26 years.

In retirement, she started taking Gemological Institute of America courses to become a certified gemologist. She got her Applied Jewelry Professional, but COVID delayed the travel required to take the lab courses...so that is next year's goal.

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In this issue

2025 MAGS SHOW DELAYED

The 2025 Memphis Mineral, Fossil, Jewelry Show will be on the first weekend in December, **December 6-7**, rather than the usual April dates. MAGS President and Show Chair W.C. McDaniel has some health issues that would prevent his participation in an April show. The Board decided to delay the Show and the Agricenter made the December dates available. All of the dealers have been informed of the date change.

Medical Update. W.C. has entered into treatment and expects the process to take several months. As he goes through this process he encourages MAGS Members to renew their membership and

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2024 MAGS BOARD

President–W. C. McDaniel
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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 Membership Meetings are at 7:00 P. M. on the second Friday of each month May-October, and 10:00 A.M. on Saturday after the second Friday November-April. The meetings are held in the Fellowship Hall of Shady Grove Presbyterian Church, 5530 Shady Grove Road, Memphis, Tennessee.

MAGS Website: memphisgeology.com

MAGS Show Website: https://earthwideopen.wixsite.com/rocks

Memphis Archaeological and Geological Society

Find us on Facebook. The Memphis Archaeological And Geological Society Page is where you will see accurate information about MAGS events and about the Memphis Mineral, Fossil, Jewelry Show.

Please contribute articles or pictures on any subject of interest to rockhounds. The 20th of the month is the deadline for next month's issue. Send material to mlybanon@yahoo.com.

Go to https://www.southeastfed.org/sfms-field-trips/dmc-field-trip-program for the DMC field trip schedule and other information.

Links to Federation News

- AFMS: www.amfed.org/afms_news.htm
- SFMS: https://www.southeastfed.org/

Gemology 101 *Continued from P. 1*

January's talk will be basic gemology of colored stones, diamonds, and pearls. This will include photos of some rarer stones including colored diamonds and color-change stones. There will be a small display of rough crystals of the less precious stones.

Sultana Disaster Museum

Matthew Lybanon, Editor

On the morning of April 26th, 1865, troopers of the 16th New York Cavalry caught up with John Wilkes Booth, Abraham Lincoln's killer, at the farm of Richard Garrett near Port Royal. His accomplice, David Herold, surrendered, but Booth remained in Garrett's barn which was quickly set aflame by the cavalrymen. One soldier, Boston Corbett, approached the barn and claimed to have seen Booth leveling his pistol at him, so Corbett fired a round from his revolver. The bullet severed Booth's spinal cord and paralyzed him. John Wilkes Booth died three hours later.

That story was front-page news the next morning, eclipsing another story about the greatest maritime disaster in U.S. history. In the early morning hours of April 27, 1865, the steamboat Sultana exploded into a fiery blaze on the Mississippi River, eventually drifting and sinking near the Arkansas banks, close to Marion.

The Sultana was a 260-foot-long wooden steamboat, built in Cincinnati in 1863, which regularly transported passengers and freight between St. Louis and New Orleans. On April 23, 1865, the vessel docked in Vicksburg to address issues with the boiler during a routine journey from New Orleans. While in port, it was contracted by the U.S. Government to carry former Union prisoners of war from Confederate prisons back into Northern territory.

In order to fulfill the lucrative contract, the Sultana's captain opted to patch the leaky boiler rather than complete more extensive and time-consuming repairs. Fearing that his colleagues were taking bribes to transport prisoners on other boats, the Union Army officer who oversaw the operation hastily ordered that all former prisoners at the parole camp and hospital at Vicksburg be transported on the Sultana. Although it was designed to only hold 376 persons, more than 2,000 Union troops were crowded onto the steamboat.

The Sultana steamed north up the Mississippi, but the severe overcrowding and faster river current caused by the spring thaw put increased pressure on its newly patched boilers. Shortly after leaving Memphis on April 27th, the overstrained boilers exploded, blowing apart the center of the boat and starting an uncontrollable fire. Many of those who were not killed immediately perished as they tried to swim to shore. Of the initial survivors, 200 later died from burns sustained during the incident. Researchers indicate that 1,195 (some estimates are as high as 1,800) of the 2,300 passengers and crew died, making the Sultana incident the deadliest maritime disaster in U.S. history.

Memphis attorney Jerry Potter told us about the Sultana disaster at the May 2022 MAGS meeting. Potter first became interested in the Sultana when he saw a painting of the burning ship. Determined that the Sultana should not be forgotten, Potter researched newspaper accounts, the three existing books on the subject, and previously unused original military and government documents. His book about the tragedy, *The Sultana Tragedy: America's Greatest Maritime Disaster*, is (of course) available from Amazon.

A small museum documenting the Sultana Disaster opened in Marion in 2015. It will soon be replaced by a permanent modern museum. Recently, the Sultana Historic Preservation Society, Inc. acquired the 1938 Marion School Auditorium-Gymnasium for renovation as the future home of the permanent Sultana Disaster Museum. A Memphis firm is providing planning, architecture, and exhibit design for the 17,000 square foot state of the art museum. The Society has raised over $10.4 million for the new museum, but construction delays have pushed the opening date to April 2026.

2025 MAGS Show Delayed Continued from P. 1

commit to helping make 2025 a great MAGS year.

Vice-President Christine Anderson is Acting President, and Secretary Josh Anderson is Acting Show Chair. We'll keep you informed of any developments and we wish W.C. well.

Web Tip—Geodes In Tennessee

Matthew Lybanon, Editor

MAGS Members like geodes, and MAGS has made several field trips to the area around Livingston, Tennessee, in Overton County (about halfway between Nashville and Knoxville), to collect geodes. It turns out that there are more places in Overton County to find geodes, and quite a few in other parts of the state.

This information comes from a website called "27 Great Places You Can Find Geodes In Tennessee In 2024" (and presumably in 2025 and later years):

https://rockchasing.com/geodes-in-tennessee/

(The title seems to vary depending on how you get to the page.) The web page gives credit to a geologist named Keith Jackson.

This website gives more than just locations; it serves as an information source on geodes as well as where to find them: how geodes form, different types of geodes found in the U.S., what a rough geode looks like and tips on what to look for to get a good one, where to look in general, tools geode hunters need, and the types of geodes you can find in Tennessee.

"Always Confirm Access and Collection Rules!" is a valuable group of paragraphs. The site also advises "In Tennessee, collecting geodes is permitted as long as you abide by local restrictions. If you're on public property, be sure you abide by all applicable local laws. Make sure you also have permission to collect when you're on private property."

There are also links to where you can find geodes in neighboring states. Check it out.

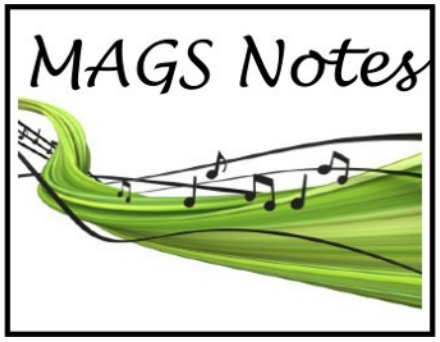
SFMS William Holland Workshops

The 2025 SFMS William Holland Workshop website is up and running! Everything you need in order to register is at SFMS - SFMS Workshops.

Here is a list of the workshops.

- ★ Opals All in One with Jeff Hunter
- ★ Cabs I & II with John Wild
- ★ Intarsia I & II with Bill Boggs
- ★ Faceting with Lance Andrus
- ★ Silver 1 with Barbara Fields
- ★ Silver II-Silver & Stone with Zac Tedrow
- ★ Metal Clay-Metal in Motion with Patricia Lillie
- ★ Soft Soldering with Jodi Miller
- ★ Gem Trees with Jerri Heer
- ★ Soapstone Carving with Ken Valco
- ★ Stained Glass Boxes with Stephanie Danz
- ★ Chain Maille I with Jim Hird
- ★ Junior Jewelers with Debbie Gates
- ★ Wire I with Judi Wild
- ★ Coin Jewelry-Changing Change With Cindy Moore

The workshops will be June 8-14, 2025.



🎵 Adult Programs

January 11: Jane Coop, "Gemology 101"

February 8: Jeremy Veldman, "Eclipse"

March 8: Keith Riding, "Mt. Everest"

🎵 Junior Programs

January-March: TBD

🎵 Field Trips

January or February: Graceland

February or March: Melba Cole's Selenite property

There is NO DMC Field Trip in January.

🎵 January Birthdays

3	John Clower
10	Khloe Webster
16	Francis (Mitch) Mitchell
18	Ricky Waters
20	Robin Ownby
21	Richard Gunter
24	Dr. Jon Stanford
27	Sharon Leicham Migliara
31	Teressa Noyes

Fabulous Tennessee Fossils

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

FTF 118

Mastodon 40DY1

When a discussion of "vertebrate fossils of Tennessee" comes up, the most frequent query I get is about what dinosaurs were in Tennessee? Probably one of the most often recognizable vertebrate fossils in Tennessee, one that is often confused with dinosaur fossils because of their size, are mastodon (or, more rarely mammoth) bones and teeth. Yes, there were dinosaurs in Tennessee, but we will deal with them in a later essay. The marine fossil-rich rocks and sediments that dominate the surface geology of "modern" Tennessee is ancient indeed (mostly Paleozoic in age) and it is upon this uplifted and exposed rocky (or sediment if you are in the west) landscape that the most recent glaciations (last two million years) reached down into Tennessee and turned the Pleistocene Tennessee landscape into a winter landscape dominated by "ice age" animals, including the iconic mastodon. A Pleistocene tourist would have also walked upon uplifted and exposed limestones and shales just as we do today, exposing a Paleozoic fauna of familiar fossil brachiopods, crinoids, and trilobites just like those we collect today (o.k., maybe with a thicker snow cover for much of the year, hence a shorter collecting season), only they would have been collecting within a decidedly colder and more "arctic" climate.

Fragmental mastodon remains are relatively common across much of Tennessee. This may seem odd because most of the other fossil occurrences that I write about come from restricted or specific outcrop belts (e.g., Devonian, Silurian, Cambrian, or the more widespread, but still geographically restricted Ordovician). These outcrop belts occur in restricted locations because they are eroded exposures of ancient strata that have been involved in numerous geologic events of sea level change, deposition, erosion, and mountain building. Mastodons are a "recent" group of animals on Earth comparatively. They walked much the same rocky landscape that we do today; however, their climate was drastically different. In other words, the physiographic provinces of modern Tennessee (e.g., West Tennessee Lowlands, Valley and Ridge, Central Basin, etc.) existed for them as it does for us today. They roamed all of exposed Tennessee as you and I do today. Their remains usually are found in "traps" (e.g., caves, sinkholes, stream deposits, etc.) into rocks of earlier environments that occurred in Tennessee, just as they do today. Only in the West Tennessee Lowlands are mastodons entombed in loess silts that were deposited contemporaneous to the time period. Climate was the major difference (and hence the fauna and flora of these younger "ice age" fossil deposits is different from modern Tennessee, but with some taxonomic similarities). For this essay, think of it this way. Tennessee was a natural home to (now extinct) species of elephants until they went extinct due to a climate change (warming), about 9kya. Today, elephants still live in Tennessee, but as introduced and managed animals (i.e., the Elephant Sanctuary in Hohenwald, Tennessee).

I will be writing a series of articles on mastodons from Tennessee. In this essay, I want to introduce you to the crown of a mastodon tooth that is on display at the Dyer County Historical Society (DCHS) museum (Dyer County Museum, 305 College Street, Dyersburg, Tennessee), which is in the old Dyersburg High School building. I came across this specimen while researching another mastodon tooth and jaw from Lassiter's Corner (near Reelfoot Lake), which will be featured in the next essay.

Mastodon tooth 40DY1, which is only the crown of a single tooth, is not a major discovery by any means, but it has not been documented in any literature until now. Bill Lawrence, a Tennessee Department of Environment and Conservation Cultural Resources Consultant who specializes in prehistoric archaeology, and I visited the museum in April of 2023. DCHS museum staff Nancy Speck and historian Danny Walden met with us to show us

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Fabulous Tennessee Fossils *Continued from P. 5*

the mastodon material on display. As I wrote above, our primary reason for visiting the museum was to gather information for a different mastodon that will be discussed later, so we were also met by Becky Jackson regarding the Lassiter's Corner mastodon. While looking at this material, we noticed the crown of a single tooth on display nearby, so we wondered if this tooth could be part of the Lassiter's Corner mastodon. Upon examination, we determined that it was a different tooth with no association to the Lassiter's Corner specimen. The size, coloring, and other preservation details indicated this was a different specimen altogether.

Figure 1 shows two views of the specimen. Notice that in Figure 1A a specimen designation—40DY1—is clearly visible on the center tooth cap. Bill Lawrence immediately recognized the format of this specimen number as it is used by archaeologists and is a standard cataloging formation based upon the Smithsonian Institution Trinomial System (SITS). The "state trinomial" used in Tennessee consists of a number and letter combination that indicated the state and county where the site is found, 40 for Tennessee and DY for Dyer County, and then a number (1) that identifies the specific site number. In this case, 40DY1 was the first Tennessee site to be cataloged under the new cataloging system. The SITS, and the state trinomials, were part of a new recording system mandated by Presidents Richard Nixon's Executive Order 11593, entitled "Protection and Enhancement of the Cultural Environment." This 1970s-era legislation required recording keeping for all archaeological sites at the federal and state levels.

Figure 1. Mastodon enamel tooth cap 40DY1. A. Occlusal view showing denticles and the 40DY1 designation. B. Undersurface interior of tooth cap. Narrow black and white arrows show locations of fractures indicating that the cap was in three segments at one point. Wide white arrows show gnaw or tool marks around the undersurface edge of the enamel cap. Scale in cm. (Photo by MAG).

The 40DY1 designation for this tooth meant that there should be a detailed site survey record on file with the State of Tennessee about the site and the find, especially since the site number designation suggests it was the first site to be recorded in the new system. So, Bill Lawrence contacted his sources and requested the information be forward to us. Unfortunately the form contains only the most basic information and creates more questions than it answers. There is a notation stating that this form was "filled-out in 1987 from microfilm or paper records on file at MSU or at Chucalissa", so this was a "reconstructed" form. The site was evidently evaluated in the 1970s by (then) Memphis State University students and staff, but they filed no survey report with the State of Tennessee. 40DY1 was originally called the "Finley Site" because it was located just northeast of the Finley community in Dyer County, about 1000m north of Route 20 within floodplain deposits. Most of the rest of the form (except for a map showing the location of 40DY1), is not filled-out, so there are no details about who surveyed the site, artifacts recovered, the tooth, sediments, etc. I am in the process of trying to obtain the original records to see if there is any more information that we can glean from them. The form does indicate that 40DY1 is considered an "open habitation site" of Mississippian-age (archaeological date, not geological period) dating between 1000 - 1540A.D. (no indication on what material was used to provide the date). Several mysteries surround this tooth and the site. When did the site get its SITS designation (was it in the 1970s or 1987)? If it was 1987, then how did it get the "1" designation? Was this the only tooth, or only fossil, found at the site? Were their artifacts associated with the site? Who inked the tooth with a formal site designation and when? How did the tooth end up at the DHS museum and not in the Memphis State University's collections? Why was

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Fabulous Tennessee Fossils
Continued from P. 6

there no recording of the tooth on an official form until 1987? What of any artifacts and field records for the 40DY1 excavation? Who did the actual work? Lawrence wondered if 40DY1 could be a Native American site with other not-recorded artifacts providing the dating context and if these prehistoric peoples might have collected the fossil tooth themselves (making the tooth both a fossil and an artifact of sorts). If so, this might be able to be considered evidence of "paleoamateur paleontology collecting"! Wouldn't that be interesting?

What can we interpret from the fossil? In Figure 1, you can see that only the crown cap is present. Figure 1A shows the "occlusal" surface with cusps and Figure 1B shows the hollow interior of the tooth with the cusps appearing as recesses. This is a typical style of preservation of many isolated mastodon teeth finds and are typical of teeth that have been shed from the jaw prior to burial. The more resistant enamel is the last part of a tooth with roots to be destroyed. The root system is composed of less-resistant, lower enamel, bone making it susceptible to degradation when removed from the protective environment of the bone jaw. The cusps exposed on the crown shows degradation and corrosion as well, supporting the interpretation that the tooth's "occlusal" surface was exposed to weathering processes. Somewhere along the timeline for this fossil tooth, it was broken between the two cusp ridges (narrow black and white arrows). I suspect this happened more recently, perhaps during collection at 49DY1 or during later preparation, based upon one of the fracture being glued (visible in the interior, Figure 1B) and the "fresh", jagged appearance of the other break, and the tight fit of the two fragments along the broken edge. We are trying to get more information on how this tooth ended up at the museum, but this information remains sketchy at this point. I also noted another feature on the undersurface edges of the tooth that give me pause to wonder. Notice the small notches on the very inner edges of the enamel (Figure 1B, wide white arrows)? Could they be gnaw-marks by some small rodent? Could they be tool-marks from amateurish cleaning of the specimen? We do need to ascertain what preserving techniques were applied to the tooth (a) by the collectors and anyone who worked on the tooth after its initial discovery in the 1970s and (b) potentially by the Native Americans who may have collected the tooth as an artifact during the Mississippian period (did they clean rotted bone from the enamel originally (note the interior is very smooth and clean)? The mystery continues ...

Jewelry Bench Tips by *Brad Smith*

DEPTH GAUGE FOR DRILLING

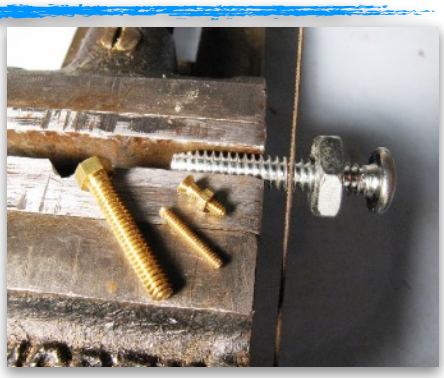
Sometimes you need to drill a number of holes all to the same depth. One quick and easy way to do this is to wind some tape around the drill bit so that the tape just touches the part surface when the hole is deep enough.

You can set the depth either by measuring from the tip of the drill to the tape or by drilling to the correct depth, leaving the bit in the hole, and wrapping tape around the bit at the surface level.

Note that a little extra tape left free on the end will blow away debris from the drilling.

CUTTING A BOLT

Whenever you have to cut a threaded bolt shorter, it's often difficult to get the nut to thread back onto it. And the smaller the bolt, the more difficult it is to restore any distorted threads. The problem is easily solved with the use of a nut. Here's how I do it.



First, screw a nut onto the bolt before cutting it. Grip the bolt by the threaded section that is to be sawed off. Then saw the bolt to the

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Holiday Party

In Pictures

Photo Credits
Christine Anderson
Carol Lybanon
Matthew Lybanon


















Jewelry Bench Tips *Continued from P. 7*

desired length, taper the end with sandpaper or file, and unscrew the nut from the bolt.

Unscrewing the nut over the freshly cut end of the bolt will straighten out any damage that sawing and filing did to the threads. Gripping the bolt by the piece to be sawed off localizes any crushing damage to the piece that will be thrown away.

See More of my Smart Solutions for Jewelry Making Series http://amazon.com/dp/B0BQ8YVLTJ

November Board Minutes

Josh Anderson

Zoom meeting called to order 6:32 P.M. Present: W.C. McDaniel, Christine Anderson, Joshua Anderson, Nannett McDougal-Dykes, Matthew Lybanon, Non-member Carol Lybanon.

Secretary: Presented October's 2024 Board Meeting minutes to Board.. Minutes approved.

Treasurer: No report.

Membership: No report.

Adult Programs: Discussed Facebook event for MAGS Adult Programs to announce our next meeting. Secretary Josh Anderson agreed to make the Facebook event. Schedule: November, Theobald Collection CANCELLED due to health issues with presenter. Cornucopia of Rocks to be topic instead. December, Holiday Party. January, Jane Coop. February, Dr. Jeremy Veldman, Memphis Astronomical Society, Eclipse 2024. March, Dr. Keith Riding, possibly Mt. Everest Adventures.

Field Trips: October, DMC Trip Review. Board votes in favor of staying as a member of the DMC. November & December, open. Jan/Feb, Graceland, Pompeii exhibit.

Youth Programs: No report.

Library: Three new books were added. Book reports will be submitted to Newsletter Editor.

Editor: Requests three months of material and events be given to newsletter editor in advance of publication. The last date to submit materials is the 20th of each month.

Rock Swaps: No report.

Show: Christine working on 2024 show email lists. Due date is February to President. 2025 :W.C. reports we have 7 or 8 contracts already. Things are going smoothly.

New Business: Holiday Party Discussion.Friday December 13th at 7pm–approved by Board. Expenses–confirmed spend from 2023 is approved for holiday spending 2024. Do we have tablecloths?Inventory needed. Activities discussed–Bingo and any other ideas please give to Carol L. Volunteers needed for centerpieces. W.C. confirms door/other prizes are available.

Old Business: None.

Adjourned 7:05 P.M.

Where Did It Go?

Matthew Lybanon, Editor

Around 3.5 billion years ago, scientists think water was abundantly flowing across Mars' surface. Prevailing theories suggest that Mars was once covered in a major liquid water system of oceans, rivers, and lakes, which presupposes a thick atmosphere that could maintain temperatures at which liquid water could exist.

If this is true, where did the atmosphere go? As detailed in a new paper (reference below), the vast majority of the planet's atmosphere might be trapped in sedimentary rocks lining the Red Planet's surface. Recent rover missions detected reduced organic carbon in Martian rocks.

The scientists focused on a clay mineral called smectite, which can trap huge amounts of carbon. Here on Earth, the mineral was likely the result of tectonic activity and responsible for sucking up and storing huge amounts of carbon dioxide, allowing the planet's surface to cool over time.

Smectites (from the Greek word smectos, meaning soap), also called swelling clays, are expansive hydroxyl aluminosilicates containing 2:1 layer clay mineral. These clay minerals exhibit high surface area and high adsorbing ability contributed by their thin layer structure and small particle size. Bentonite is soft clay formed as the result of volcanic ash weathering. It is a soft clayey rock containing Smectite group minerals in abundance.

Due to the abundance of smectite clays on Mars, the scientists suggested that much of the Red Planet's early atmosphere could have been sucked up this way as well. According to their calculations, roughly 80 percent of the carbon dioxide of Mars' ancient atmosphere could be trapped inside carbon-based organic compounds. They speculate that this carbon could be extracted and turned into rocket fuel, facilitating future trips to and from the distant planet.

Ref: *Joshua Murray, Oliver Jagoutz ,Olivine alteration and the loss of Mars' early atmospheric carbon.Sci. Adv.10,eadm8443(2024).DOI:10.1126 /sciadv.adm8443*

MAGS At A Glance

January 2025

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
29	30	31	1 	2 Zoom Board Meeting, 6:30 P.M.	3	4
5	6	7	8	9	10	11 Membership Meeting, Jane Coop, "Gemology 101", 10:00 A.M.
12	13	14	15 	16	17	18
19	20 	21	22	23 NO DMC FIELD TRIP THIS MONTH	24	25
26	27	28	29	30	31	1

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