

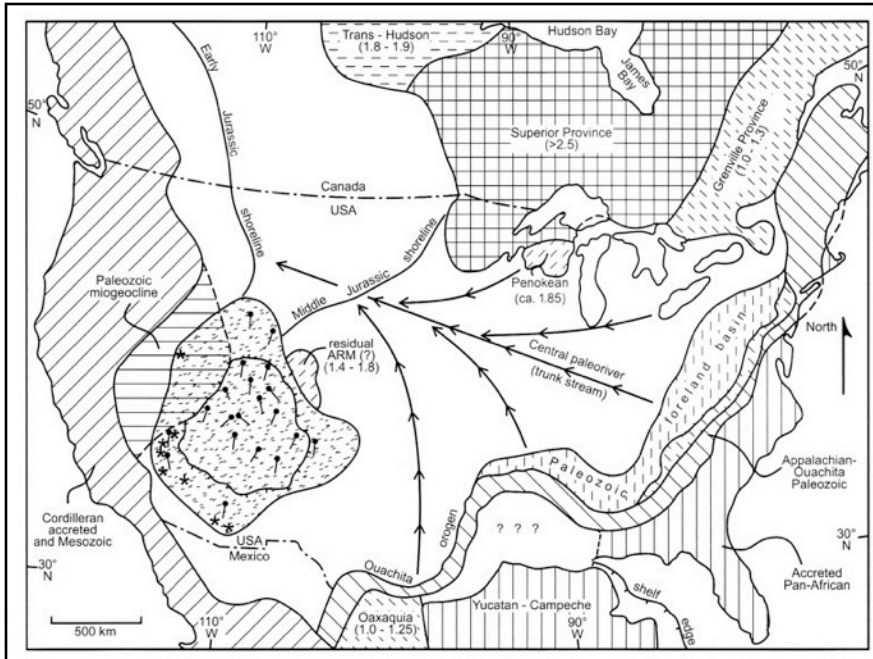


Volume 62 ◊ Number 07 ◊ July 2016 ◊ A monthly newsletter for and by the members of MAGS

The History of the Mississippi River

Dr. Roy B. Van Arsdale

July Program



When looking at a map of the United States we assume that the Mississippi River has always been draining the central United States. Our research indicates that the Mississippi River did not exist prior to about 100 million years ago. In fact, drainage was to the north and west—just the opposite

of today's river flow. We also assume that the headwaters of the Mississippi, although modified by Pleistocene (ice age) continental glaciers, has always been along the American-Canadian border. That too is not correct. Join us for a new look at an old river—the Mississippi River. *Continued, P. 3*

In this issue

- The History of the Mississippi River P. 1
- Picnic and Rock Swap P. 1
- MAGS And Federation Notes P. 2
- MAGS Celebrates Agates P. 3
- Displays P. 3
- New Members P. 3
- Puzzling Mineral On Mars P. 3
- July Birthdays P. 4
- In The AFMS Newsletter P. 4
- Fabulous Tennessee Fossils P. 5
- April Board Minutes P. 6
- April Meeting Minutes P. 7
- May Board Minutes P. 7
- May Meeting Minutes P. 8
- Homo naledi P. 8
- June Meeting P. 9
- Can You Dig It? P. 9
- MAGS At A Glance P. 10

MAGS SUMMER 2016 PICNIC AND ROCK SWAP

August 12, 2016 Stay cool and trade your collection with us INDOORS at our August Meeting. We will be having a Potluck dinner as well (*details on P. 4). So, load up selections from your collection to sell/trade and your own table to display them on, pile your friends and family in the car, bring along a food dish



to share, and join us as we swap some rocks, minerals and knowledge.

Members and non-members, welcome! If you know someone who is a "closet" rockhound, bring them along! This event is free and a great opportunity to show everyone what we do! We will have games, door prizes and, as usual, *Continued, P. 4*

MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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

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MAGS AND FEDERATION NOTES

What's Coming?

Adult Programs

July 8: "The History of the Mississippi River"

August 12: Indoor Picnic and Rock Swap

Field Trips

July 9: Jonesboro (meet at 8:00 A. M.)

August 20 and 21: North Carolina

Details: Contact information in list on this page.

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

MAGS Show Website: www.theearthwideopen.com

We aren't kidding when we say this is a newsletter for and by the members of MAGS. If an article has a byline 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.

July DMC Field Trip

WHERE: Ross Creek, Gruetli-Lager, Grundy Co., TN

WHEN: Saturday, July 9, 8:00 A. M.

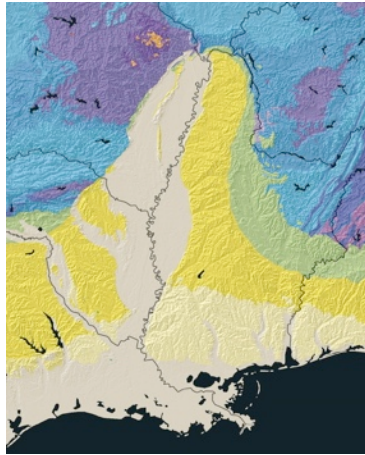
COLLECTING: Pennsylvanian and Mississippian plant fossils

INFORMATION: Charlie Jones, (423) 842-6441 or (423) 653-4479

Links to Federation News

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

*The History of the Mississippi River
Continued from P. 1*



Editor's Note: *Dr. Van Arsdale is in the Department of Earth Sciences, University of Memphis*

MAGS Celebrates Agates

July 8-9

Agate Days and Agate Ways in Memphis, Tennessee

W. C. McDaniel



Last month we took a trip up north to visit the agate days and agate ways in Moose Lake, Minnesota. This month we return to the south to celebrate agates Memphis style. "Agate" is one of MAGS Members' favorite words, most collected and most appreciated rock in our hobby and nomen-

clature. Why? The most basic and simple answer—not sure if you need a complex geological or psychological answer—is that they are plentiful in this area and throughout the world, their colors and shapes are varied and wide, and they can be polished, shaped in a variety of ways, or just left alone. Note: Memphians argue over wet or dry ribs and we can argue over wet (enhanced) or dry agates. In the end, just as with ribs, it is left up to the owner and everybody is right. MAGS will celebrate the agate with a display at the July 8 MAGS membership meeting, followed by an agate collecting field trip to Arkansas on Saturday, July 9.

- **July 8-Agate Displays, featuring:**
- Agates of the south-banded, fortification stream, gravel bars, and pits
- Lake Superior
- Lace Agates
- Botswana
- Brazilian
- Lots of other agates and displays
- My favorite agate-Members are requested to bring and show off their agates. Also one or more tables will be devoted to MAGS Members displaying their single favorite agate. It can be collected, purchased, gifted, or its source is yours to keep. There are no bad agates.

July 9-Agate Field Collecting

- Collecting in gravel pit in Northeast Arkansas
- Abundant and large agates
- Rarely collected at this site
- MAGS Members only

Displays

Debbie Schaeffer

I hope everyone had a fun and productive trip to 20 Mile Creek, Marion, Kentucky, or wherever your rock hunting adventures have taken you. Don't forget to bring displays of your new finds or old favorites to share with the club. Remember, everyone who brings a display will be entered to win a special prize at the end of the year. Happy hunting!

New Members

- Danny Alexander and Cree Morphis, and children Tyler, Zach, and Brooklynn Alexander

Puzzling Mineral

On Mars



At the American Geophysical Union Meeting in December 2015, the Curiosity (the NASA Mars Rover) science team announced the discovery of a mineral never before found on Mars. (Scientists in the Astromaterials Research and Exploration Science [ARES] Division at NASA's Johnson Space Center in Houston led the study. Subsequently, the research was published in the *Proceedings of the National Academy of Sciences.*)

Continued, P. 4

MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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

Puzzling Mineral On Mars The mineral in question is tridymite, a flavor of quartz that forms under low pressures and very high temperatures. On Earth, it's found near volcanoes.

Curiosity found it with a CheMin (Chemistry and Mineralogy instrument) analysis of a sample drilled at a site called Buckskin. How exactly the tridymite got there is a puzzle that is yet to be solved; as far as mineralogists know, there's no way that scientists currently know of to make it under the kinds of conditions that prevailed in the ancient lake environment in which the Murray formation was laid down.

Either Mars can make tridymite in a way that Earth doesn't, or (more likely) the

tridymite was carried there from some other location. But even that doesn't solve the riddle, since the kinds of environments in which tridymite gets made on Earth are not found on Mars.

On Earth, tridymite is formed at extremely high temperatures in an explosive process called silicic volcanism. These volcanoes form as a result of plate tectonics. But as far as we know, Mars doesn't have water, or dynamic plates hidden beneath the surface, and its average temperature is pretty frigid. So where did this tridymite come from?

The next step, lead scientist Richard V. Morris said, is for scientists to run experiments and reexamine terrestrial systems in more detail to look for evidence of tridymite. "I always tell fellow

planetary scientists to expect the unexpected on Mars," said Doug Ming, ARES chief scientist at Johnson and co-author of the *PNAS* paper cited below. "The discovery of tridymite was completely unexpected. This discovery now begs the question of whether Mars experienced a much more violent and explosive volcanic history during the early evolution of the planet than previously thought."

Ref: *Richard V. Morris et al, Silicic volcanism on Mars evidenced by tridymite in high-SiO₂ sedimentary rock at Gale crater, Published online before print, June 13, 2016, doi: 10.1073/pnas.1607098113 PNAS June 13, 2016. Available online at www.pnas.org/content/early/2016/06/07/1607098113.full.*

Picnic and Rock Swap LOADS of fun! There will also be information on joining our club available for those interested.

**Potluck Dinner*—To make sure we have a variety of food options, please bring a dish corresponding to the letter your last name begins with. Feel free to bring more if you wish!

A-G Appetizers/Side Dishes
H-N Main Course Dishes
O-Z Desserts

Check out the event on Facebook! Simply search for: MAGS Summer 2016 Picnic and Rock Swap. Share to invite all your friends! Post it on your Timeline and earn an extra chance to win one of our excellent door prizes!

See you there!

July Birthdays

- | | |
|----|------------------------|
| 1 | Patrick Cooper |
| | Fred Solang |
| 2 | Bobbi Heger |
| 3 | Dr. Brian Marcantel |
| | Wayne Williams |
| 5 | Susan Goossens |
| | Clay Crumpton |
| 8 | David Day |
| 10 | Nannett McDougal-Dykes |
| 11 | Michael Day |
| 12 | Harrison Marcantel |
| | Bill Behnke |
| 13 | J. D. Little |
| 14 | John Daffron |
| | Sue Nicholson |
| 21 | Susan Vaughn |
| | Angelina Wang |
| 22 | Paige Christenson |
| | James Johnson |
| 25 | Lacey Sipsey |

- | | |
|----|-------------------------|
| | Jenny Vaughn |
| 26 | Kathleen Smith |
| | Devin George |
| 29 | Laurence Nuelle |
| 30 | Misty Morphis |
| | Leslie Davis |
| 31 | Jhanelle Mendel-Blewett |

In The AFMS Newsletter

The latest *AFMS Newsletter* available online (May 2016 issue) has an article on a drawing to raise money for the AFMS Endowment Fund. The interest from the monies generated is used for the AFMS special projects, such as junior badges, judges training and digitizing slideshows, to name a few. And there are some great items in the drawing. MAGSters who would like to learn more will find the link on P. 2 of this (and every) issue.

Fabulous Tennessee Fossils

Dr. Michael A. Gibson,

University of Tennessee at Martin

Biostratigraphy Part 2



Editor's Notes:

1. The MAGS library now has a notebook that contains all of the previous "Fabulous Tennessee Fossils" articles. New installments will be added as they become available.

2. A technical glitch caused Figure 1 in last month's "Fabulous Tennessee Fossils" to be displayed incorrectly. The figure at right is the way the diagram should look, with additions for this month's article.

In the first part to this series of essays, I laid out the beginnings of the diagram in Figure 1. We learned that the FAD (First Appearance Datum) is the location in both time and geographic space where a new species is first found (which is also hopefully the actual first occurrence of the new species, but not always). Once a new species evolves it begins to expand its geographic range. This phase is called "dispersal" and is the initial migration of a species exploiting new niches. Of course, migration takes time, depending upon the mobility of a species, so we see that the pattern in Figure 1 is of a sloping line expanding away from the FAD and it makes a vee-shape (cone in three dimensions). The slope of the vee reflects how rapid the species migrates to new territory. If the vee is very shallow (wider than tall; X in Figure 1) then migration was rapid – the species covered the distance in a short period of time and appears at nearly the same time in many

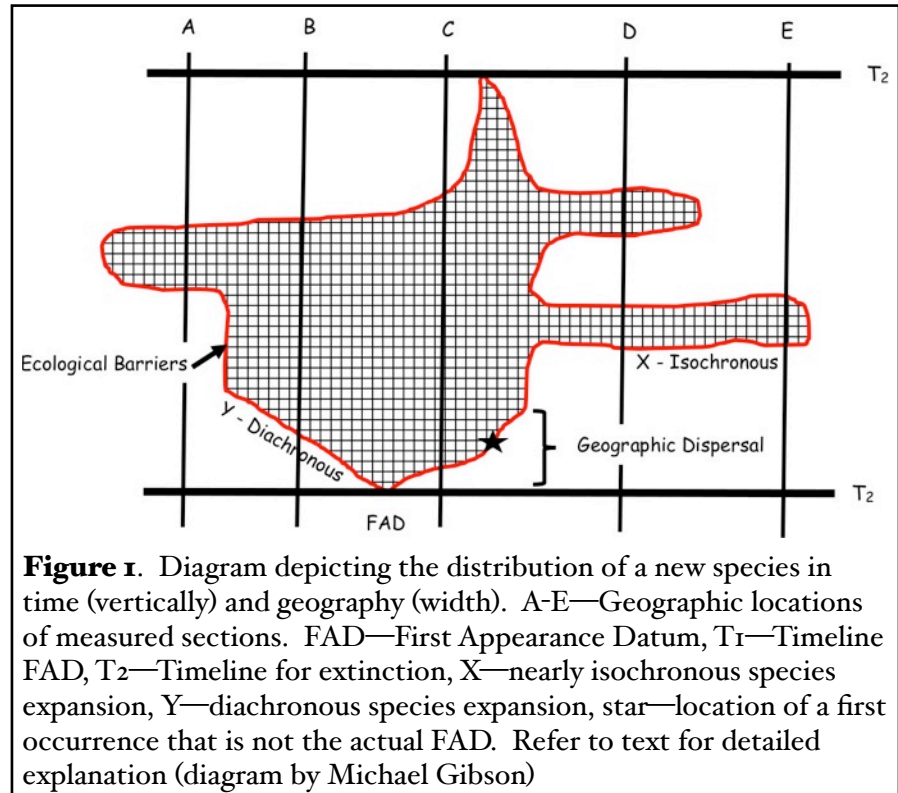


Figure 1. Diagram depicting the distribution of a new species in time (vertically) and geography (width). A-E—Geographic locations of measured sections. FAD—First Appearance Datum, T1—Timeline FAD, T2—Timeline for extinction, X—nearly isochronous species expansion, Y—diachronous species expansion, star—location of a first occurrence that is not the actual FAD. Refer to text for detailed explanation (diagram by Michael Gibson)

places. If the vee is tall and narrow (Y in Figure 1), then initial geographic migration is slower and occurred over a longer period of time. For a fossil to be useful for biostratigraphy, it should have a wide, flat initial geographic dispersal pattern like X (meaning it migrated to new areas quickly in a geologic sense). The best fossils are ones in which the FAD and the initial dispersal to new areas are closer in time to one another.

The bounding line for the cloud represents the "ecological barrier" of the species. Inside the ecological barrier line represents the "paleobiogeographic range" of the species; outside the line, the

organism cannot survive. All organisms have adaptations and physiology that allows them to function and live long enough to reproduce viable offspring. Environments have parameters that limit the distribution of a species and prevents them from surviving in certain places or under certain conditions. These "limiting factors" can be combinations of temperature, salinity, sediment type, water availability, migration barriers, or many more. Think of the line as a wall preventing the organism from migrating into that a new area or as the set of environmental conditions that would make the organism

Continued, P. 6

Fabulous Tennessee Fossils unfit in
Continued from P. 5 the new
area and
more likely not to survive. It
defines the paleobiogeographic
distribution of the organism.
Environments change over time,
so ecological barriers can shift
position over time as well. Thus
the cloud in Figure 1 would vary for
any species and change shape
vertically as environments change
through time. When the barriers
widen (like in Figure 1 so far),
migration into new areas occurs;
when they narrow, populations
become restricted in distribution
(like the restriction above the
rapid expansion at X).

Notice the star in Figure 1. At
this locality, it represents the first
appearance of the new species at
that location. If we did not have
the FAD that occurs between
localities B and C, then this occur-
rence would appear to us as the
earliest occurrence (hence a FAD),
even though it is in reality not the
earliest occurrence of the species.
This happens often in biostratig-
raphy, someone finds an older
(stratigraphically lower) occur-
rence of a fossil and the FAD
moves backwards in time as a
“stratigraphic range extension”,
which usually results in a pub-
lished paper describing the new
occurrence in terms of time and
geography. If the migration rate is
slower, then the stratigraphic
position of a new species (the star
in Figure 1) occurs higher than the
actual FAD itself.

Notice that in Figure 1 the
ecological barrier line containing
the star is sloped and cuts across
time. Biostratigraphers refer to

this type of first occurrence time-
line as being “diachronous” from
the Greek “dia” meaning through
and “chronos” meaning time). The
best fossils for use in biostratig-
raphy are those that have the flat
pattern, like at B, and are then
said to be “isochronous” (“iso”
meaning same) and can be treated
as time planes (like T1 and T2). Of
course there are no perfect time
planes in biostratigraphy, all are
diachronous to some degree, but
by using multiple fossils groups,
we can minimize the degree of
diachroneity. This may seem like a
major shortcoming for using
fossils to tell time, but in reality,
migration rate is generally very
fast when compared to geologic
time resolution, so the problem of
diachroneity is minimal on the
local to regional geographic scale
(but does become greater at larger
geographic scales). Fossils that are
useful in biostratigraphy for time
purposes are often called “index
fossils” and we now have two of
the characteristics of a good index
fossil: (1) cosmopolitan distribu-
tion (wide spread) and (2) rapid
dispersal ability to reach that
cosmopolitan distribution.

The dispersal phase of an
organism’s existence is critical to
its survival and later use to estab-
lish time in the fossil record. For
example, nearly all marine organ-
isms have a larval stage that is very
small and mobile, hence they are
part of the plankton in the water.
Currents can carry them great
distances away from the site of
reproduction to new environ-
ments, sometimes across entire
ocean basins. Single individuals
often produce thousands of larvae
during reproduction and most will

not survive their journey, but there
is success in numbers. The larvae
settle on a hard substrate and
metamorphose into what they will
be as adults. Land plants start out
as pollen or spores that are carried
by wind, water, or other organisms
to new locations. In both cases, if
the larval form finds itself outside
the ecological barrier (in areas
where the conditions do now
allow for survival) the individual
will not survive and become part
of the fossil record. In other
words, they are on the outside of
the cloud in Figure 1. Next time
we will look at the factors that
result in expansions and contrac-
tions during the new fossil’s time
on Earth.

April Board Minutes

Mike Baldwin

Present: W. C. McDaniel, Bob
Cooper, Bonnie Cooper, Debbie
Schaeffer, Karen Schaeffer, Mike
Baldwin, Carol Lybanon, Matthew
Lybanon, Marc Mueller, James
Butchko, Kim Hill, Leah Gloyd.

Secretary: Minutes accepted with
one correction.

Treasurer: We overpaid SFMS dues;
under review. Mike paid for laptop
purchase. Report accepted.

Membership: 4 renewals, 4 new
Members.

Field Trips: Missouri trip this
weekend. Reelfoot Lake trip
rescheduled to May.

Agenda temporarily suspended for
Nonconnah Conservancy presenta-
tion by Marvin Nutt and others. Carol
asked the Board to allow the Conser-
vancy to have a table at the Show. The
Board agreed. W. C. spoke for the
Board in saying that we definitely
want to be involved. After the Show
we can see what additional support we
can provide.

Continued, P. 7

MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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

April Board Minutes *Continued from P. 6*

Adult Programs: May, Dr. Robert Connolly. June, George Phillips. July, Dr. Roy Van Arsdale. Ashley Allen in the Fall.

Junior Programs: May, Rock Cycle. June, Minerals & Electricity.

Rock Swaps/Historian: W. C. presented a summary of how rock swaps work. May 15 rock swap will be at Jimmy and Hisami McNeil's.

Library: Jimmy McNeil has several books available.

Web: 15 pages have been updated. Waiting for the newsletter.

Newsletter: Mike has sent in two book reviews. Leah will write an article about the McNeil rock swap.

Show: Agricenter rent paid. Memphis Stone & Gravel is a sponsor. Carol will have volunteer list sign-up at the Membership Meeting. We will try to sell membership badges. Carol showed a baculite pendant that she thought would be a good \$2 prize for Rocks Around The Clock. April 11 will be show meeting at W. C.'s. Show insurance is covered.

Old Business:

- Purchase of the club laptop is complete. Bob Cooper will load software and prepare it for club use.
- SCS Science & Engineering Fair will be next Wednesday. Matthew, Leah, Nannett, and Mike will judge general projects and earth science projects. MAGS will present monetary awards for the top three earth science awards.
- The Show postcard and the Show agenda have been printed as posters.
- Mike will talk to scouts at the Webelos Encampment, Camp Currier, in Eudora, Mississippi, the week after the Show.

New Business:

- PA System will be nice to have. Carol and Mike researched.

Samsung speaker for \$200. Up to \$300 was approved to spend by Carol, Mike, and Leah.

- Robert Connolly's presentation piece should be something better since he is retiring.
- Add excitement to Summer June-August: June meeting will feature an auction; July will feature an agate exhibit.

Adjourn at 8:07.

April Meeting Minutes

Mike Baldwin

Called to order at 7:08. Bob Cooper introduced new Members; no visitors tonight.

Reports from Library, Web, Newsletter, and Rock Swap. Charles Hill reported on a great field trip to Missouri. The next trip will be to Reelfoot Lake; MAGS will pay half the fee. 20 Mile Creek will be in June. October DMC trip will be to the new quarry in Mississippi.

Program: Matthew showed a special video to introduce members to a great Show that will happen at the end of this month. Jim Butchko reminded members to help fill grab bags on Thursday. We need volunteers. SignUp Genius will be sent out again on Sunday. There's a signup sheet for Friday night for needed food. Kathy Baker designed the Show Postcard. Rocks Around the Clock brought in about \$900 last year.

Displays by Leah Gloyd, Kim Hill, Thomas Jones, and a new Member. Adjourn at 8:20.

May Board Minutes

Mike Baldwin

Called to order at 6:31. Present: W. C. McDaniel, Bob Cooper, Bonnie Cooper, Mike Baldwin, Carol Lybanon, Matthew Lybanon, Charles Hill, Paul Sides, Debbie Schaeffer, Marc Mueller, James Butchko, Leigh Scott.

Secretary: Minutes approved.

Treasurer: Taxes have been filed. We've closed out old CDs and opened two new ones. Report approved.

Membership: 27 new Members have been added since April (22 new and 8 renewals at the Show).

Field Trips: Reelfoot Lake and 20-Mile-Creek are coming up. July has three possibilities: Cumberland Furnace, Crow Creek, or Jonesboro. August 19-22, 4-day trip to NC. September 10, fluorite near Batesville, AR. October 14, new mine in Mississippi. November 19-20, Ledbetter's and Cove Creek. December 17-18, Parsons Vulcan Quarry.

Adult Programs: May, Dr. Connolly. June, George Phillips. September, Brian Hicks.

Junior Programs: May, rock cycle. June, electricity. July, space rocks.

Rock Swaps: Leah will check supplies at church. Members bring all food items for the swap.

Library: No report.

Web: Website updates have been made and USPS newsletters have been mailed.

Newsletter: We would like someone to write a book review. W. C. will rewrite his agate article for July.

Show: Attendance was up by about 100 from last year. Matthew distributed the Show financial report which recorded \$10,570 net sales for the Show. Account balance is about \$19,700 but we have several large invoices to pay. After transactions we should have about \$15,000. 2016 was consistent with last year's income.

Old Business:

- Several MAGS Members will volunteer at the GSA Camporee on April 16: Herb Nicholson, rock talk. Sherri Baldwin, geode cracking. Mike Baldwin, fluorescent minerals. Carol and Matthew Lybanon, rock ID and information table.
- BSA Encampment will be on April 30. Mike will talk

Continued, P. 8

May Board Minutes about rocks and help them fulfill Geology Badge requirements.

- SCS STEM Fair will be at the Great Hall in Germantown on April 20. Leah Gloyd, Mike Baldwin, Matthew Lybanon, and Nannett McDougal-Dykes will be judges. Earth science winners will receive cash awards.
- Carol and Mike will meet about purchasing a microphone and sound system.
- Office 2010 has been loaded on the new MAGS laptop. It will be at the May meeting.
- At the June meeting we will have an auction. July meeting will feature agate displays.

New Business:

- W. C. is doing an event at Farmington School, presenting rocks every 15 minutes.
- A lady from Germantown asked us to have hands-on activities on May 21. W. C. asked her to contact us next year.
- We will create committees to improve our marketing. W. C. would like to put together an educational program which is compact and ready-to-go.
- We need to look into banner stands, digital signs or other means of promoting the club and the Show.

Adjourned at 7:25.

May Meeting Minutes

Mike Baldwin

Called to order at 7:13. Bob Cooper reported that 6 adult visitors, and 24 Members are present.

Reports from Show, Field Trips, Rock Swaps, Adult Programs. July meeting will include an auction and a special exhibit of agates. August is our annual indoor rock swap--food, rocks and air-conditioning.

Programs: Adult program, Dr. Robert Connolly, C. H. Nash Museum at Chucalissa. Junior program, rock collection and rock cycle talk.

Adjourned at 8:45.

Homo naledi

Paleoanthropologists have pieced together fossil evidence that shows the ancestry of humankind and our relatives begins about six million years ago, moving from *Sabelanthropus* to *Ardipithecus*, and from *Australopithecus* to *Homo*, of which *Homo sapiens* is the last surviving species. All early human remains are scientifically valuable, but those dated in the vicinity of two million years are especially prized, because they fall near a key point in the fossil record: the origin of *Homo* ("Lucy," the fossil discovered by Donald Johanson in Ethiopia, is 3.2 million years old).

Hominins fossils have been discovered in South Africa since the 19th century, when prospectors started blasting for lime, which is used in refining gold. In the first half of the 20th century, this region of South Africa produced so many fossils of our early ancestors that it became known as the Cradle of Humankind. In September 2013, Steven Tucker and Rick Hunter, a pair of recreational cavers (amateurs!), entered a cave called Rising Star, 30 miles northwest of Johannesburg.

Working their way through the cave, Tucker and Hunter got to a cavity with a floor that got their attention right away. There were bones everywhere. The cavers first thought they must be modern. They weren't heavy, like

most fossils, nor were they encased in stone—they were just lying about on the surface, as if someone had tossed them in. They noticed a piece of a lower jaw, with teeth intact; it looked human.

This is the 21st century, so they had a video camera. They photographed the scene and went to see Lee Berger. Berger is an American, born in Sylvania, Georgia, an hour northwest of Savannah. Berger was living in Savannah (where he had worked as a TV-news cameraman) when Johanson, the discoverer of Lucy, came to Savannah to give a lecture. Berger offered to drive him around and put him up at his parents' beach house, on Tybee Island. This meeting led to field work in Kenya. Then Berger decided to attend graduate school, and got a Ph. D. at the University of the Witwatersrand in Johannesburg. Now he's a research professor there.

Berger could see from the pictures that the bones didn't belong to a modern human being. Certain features, especially those of the jawbone and teeth, were far too primitive. Other details convinced him that he needed to get into that chamber before some other amateurs did. With funding from National Geographic (the NOVA/National Geographic Special, "Dawn of Humanity," premiered Sept. 16, 2015, and is available online), he gathered some 60 scientists and set up an aboveground command center, a science tent, and a small village of sleeping and support tents.

The team found more than 1,500 bones, from *Continued, P. 9*

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Homo naledi not just one but at least 15 individuals, from infants to elderly adults. Analysis indicated that the bones represented an animal “right on the cusp” of the transition from *Australopithecus* to *Homo*. It was a new species, which they named *Homo naledi* after the cave where the bones were found (in the local Sotho language, “naledi” means “star”).

They found virtually nothing but hominin bones. They were drawn to the improbable conclusion that bodies of *H. naledi* were deliberately put there by other *H. naledi*. They interpreted what they saw as disposal of the dead, a practice that was known to have been employed by *Homo sapiens* and possibly archaic



humans such as the Neanderthals. To say that this conclusion is controversial is putting it mildly. (The reference cited below is by another scientist who questions the body-disposal claim.)

All that we can say for sure now is that fossils of a new species were found, and there are some intriguing features about the discovery. A web search will turn up a long article on the National Geographic site, and a number of other reports (Google found 504,000 results).

Ref: Val, A., *Deliberate body disposal by hominins in the Dinaledi Chamber, Cradle of Humankind, South Africa?* *Journal of Human Evolution* (2016), <http://dx.doi.org/10.1016/j.jhevol.2016.02.004>

June Meeting

Carol thanked George Phillips for his interesting presentation, with a MAGS Speaker Award.



One of several people with questions for George.



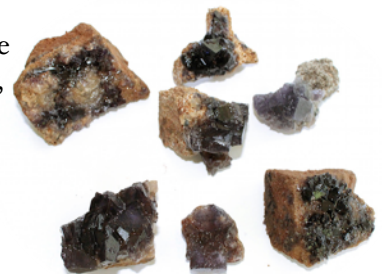
Can You Dig It?

A few photos from the Ben E. Clement Mineral Museum's June dig.




MAGS Member James Johnson (top left photo, red cap) supervised the Eureka Mine dig.

The light was better for James's picture of fluorite crystals at the mine (below), but some nice specimens came out of there. A few are shown at right.



MAGS At A Glance

July 2016

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
26	27	28	29	30 Board Meeting, 6:30 pm, St. Francis Hospital	1	2
3	4 	5	6	7	8 Membership Meeting, 7:00 pm, "Geology of the Mississippi River"	9 MAGS Field Trip, Jonesboro, 8 am/ DMC Field Trip, Ross Creek
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6
Indoor Picnic and Rock Swap, August 12						

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