



EARTHQUAKE

e-Newsletter about what's movin' and shakin' at the Earth Science Museum

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March 2017
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ESM Outreach Update:

By Mardy Zimmermann, Outreach and Education Coordinator

This month we saw much progress toward a new museum and the restoration of the Mining and Mineral Museum (MMM) with the addition of a Natural Resources Museum under the University of Arizona. This will bring change to the very successful ESM Outreach Program which was designed to take Earth Science Education to schools and students as we continued the fight to get the MMM back. The idea that if the students couldn't come to us, we would go to them has been well received. Over the past five years we have served thousands of students and developed hands-on presentations with help from the Staples Education Foundation.

The month of March ended with positive numbers. We reached 767 students and adults bringing this year's total to 6,206, remaining ahead of last year's totals at this time. An additional 135 people were seen at community events.

We have been invited to submit another grant-proposal with the Staples Foundation, and Robin Evans and I will be completing that process. The focus will be to explore serving students with a lending library for the Roosevelt School District, and possibly also with the new museum. We are working with the AZ Geological Survey which will be involved with the new museum and its educational program.

The considerable rock, mineral, and fossil material used for the Outreach Program has been moved and is being organized at the

new property Dick and I have acquired in the Mesa/Apache Junction area.

PINAL GEM & MINERAL SHOW - MARCH 11TH HIGHLIGHTS



Dr. Carleton Moore brought samples from Mars, the Moon and the asteroid Vesta for people to see and touch.



Lynne & Terry Dyer attended the Pinal Gem & Mineral Show and set up their popular hands-on displays of rocks, minerals, and fossils while Mardy Zimmermann set up 30 different specimens for egg carton collections.



One of the many visitors to Lynne's hands-on educational earth science displays.

Photo by Chris Whitney-Smith

March Work Day

By Harvey Jong & Shirley Cote
Photos by Bob Holmes

ESM's Mardy Zimmermann, and Harvey Jong, along with Catie Carter of the AZ Geological Survey joined together in preparation of an ESM work day. Mardy and Catie assembled boxes & filled jars with specimens for students, numbered specimens for teachers, and attached labels that Harvey designed and printed to the boxes and jars.

Mardy Zimmermann organized the work day for March 19th to assemble special kits of Minerals and Rocks & Fossils. These kits are simplified versions of those used for the ESM outreach classroom presentations and will be part of an educational resources lending library program. The lending program is being initially piloted with the Roosevelt School District.

Volunteers for the work day included Shirley Coté, Doug Duffy, Bob Holmes, Harvey Jong, and Dick & Mardy Zimmermann. An assembly line was formed where individually numbered specimens along with a laminated guide sheet were placed into pre-labeled boxes. Books, a magnifying lens, and instructional information were added to the boxes along with a special sticker that recognized the financial contribution of the Staples grant.



Minerals Kit Assembly Line & a boxed mineral kit



Adding the Finish Touches to the Minerals Kits



Rocks & Fossils Kit Assembly Line



Adding the Finishing Touches to the Rocks & Fossils Kits

As part of the hands-on instruction, students are provided their own set of specimens that they use to follow along with the presentation. These specimens are now packaged in separate labeled jars, and the jars are stored in boxes with matching labels.



Jars of Minerals for Students



Jars of Rocks & Fossils for Students



Stacked boxes of jars filled with Minerals and Rocks & Fossils for Students

After about an hour of picking, packing, and sticking, all the kits were put together and ready to “rock n’ roll”!



Stacks of Finished Teacher Kits

MUSEUM CASES RETURNED - 3-31-17



**Unloading one of the cases and a group picture of the volunteers in front of the haul truck mural
Photo by Catie Carter, AZGS**

Two AZGS employees and eight former AZ Mining and Mineral Museum (AZMMM) volunteers returned seven cases to the museum building. These cases had been on loan to the U of A’s Biosphere2 since the AZMMM’s closing.



Arizona Rocks 46

Text and photos by Ray Grant

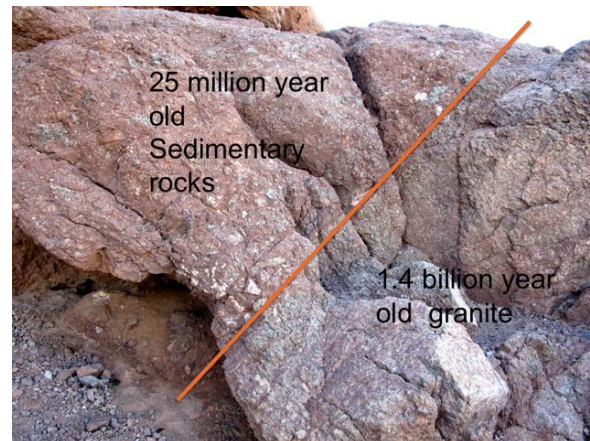
In the Phoenix area there are very old rocks and relatively young rocks so there is a large time gap with no rocks present, the “great unconformity”. Erosion has removed any rocks that were present in the area during the time gap.

A good place to see this unconformity is at Hole-in-the-Rock in Papago Park. If you go on the trail leading up to the hole you start on granite that is around 1.4 billion years old and you cross the unconformity to sedimentary rocks that are about 25 million years old, a time gap of 1.4 billion years.

The rocks making up Hole-in-the-Rock are breccias and sandstones deposited about 25 million years ago as landslides, debris flows and by streams. The breccias contain large angular fragments that were carried down a mountainside as slides and flows. There are a few finer grained sandstone layers representing deposition from flowing water. The same rocks can be seen on Camelback Mountain, the granite is the body and the sediments are the head of the camel. After the deposition of these rocks this area was part of the Basin and Range faulting and the present day configuration of mountains and valleys in the area formed.

The Hole is a geological feature called a tafoni. It forms when one of the breccia fragments falls out leaving a small hole behind. When it rains, water collects in the hole and because it stays wet longer in the hole it weathers faster than the outside and the hole gets larger. There are tafoni at Hole-in-the-Rock, the other hills in Papago Park and the Head of Camelback. The holes

keep getting larger and the Hole-in-the-Rock went all the way through the hill.



Unconformity at Hole-in-the-Rock in Papago Park



Hole-in-the-Rock a tafoni in Papago Park, the unconformity is on the other side



Inside Hole-in-the-Rock, note the large rock fragments in the floor and ceiling

AZ Rock & Gem Shows



Mohave County Gemstoners
Annual Gem & Mineral Show
May 6-7, 2017
Saturday 9-5
Sunday 10-4
Free Admission
Kingman Academy of Learning
3420 N. Burbank Ave.,
Kingman, AZ



White Mountain Gem and Mineral Club
20th Annual Jewelry,
Gem & Mineral Show
May 27 & 28, 2017
Saturday 9-6
Sunday 10-4
Adults \$2, seniors \$1
Hondah Resort and Casino
Pinetop, AZ

Bisbee Annual Show
May 27-28, 2017
Sat. 9-5, Sun. 9-5
Free Admission
Queen Mine
478 N Dart Rd
Bisbee, AZ

Coconino Lapidary Club
Rock, Gem & Mineral Show
June 2-4, 2017
Fri., Sat. 9-5, Sun. 9-4
Free Admission
Outdoor Market
Hwy. 89N and Silver Saddle Road
Flagstaff, AZ



Prescott Gem and Mineral Club
Prescott Gem & Mineral Show
August 4-6, 2017
Friday & Saturday 9-5
Sunday 9-4
Admission \$5, Seniors/Students \$4
Children under 12 Free
Prescott Valley Event Center
3201 N. Main St.
Prescott Valley, AZ

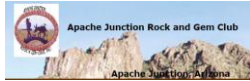


West Valley Rock & Mineral Club
Helzarockin' Gem & Mineral Show
October 6-8, 2017
Fri-Sat 9-4
Sun 9-2
Adult's \$3 kinds under 13 free
Helzapoppin' Arena
802 N. 1st St (Miller Road)
Buckeye, AZ



Wickenburg Gem & Mineral Society
Wickenburg Gem & Mineral Show
November 25-26, 2017
Sat 9-5
Sun 10-4
Free Admission
Wrangler Event Center
251 S. Tegner St.
Wickenburg, AZ

Rock & Gem Clubs



Apache Junction Rock & Gem Club

Meetings are on the 2nd Thursday
Next Meeting: April 13, 2017, 6:30 pm

www.ajrockclub.com

@ Club Lapidary Shop

2151 W. Superstition Blvd., Apache Jct.



Daisy Mountain Rock & Mineral Club

Meetings are on the 1st Tuesday
Next Meeting: April 4, 2017, 6:30 p.m.

www.dmrmc.com

@ Anthem Civic Building

3701 W. Anthem Way, Anthem



Maricopa Lapidary Society, Inc

Meetings are on the 1st Monday
Next Meeting: April 3, 2017, 7:00 pm

www.maricopalapidarysociety.com

@ North Mountain Visitor Center
12950 N. 7th St., Phoenix



Mineralogical Society of Arizona

Meetings are on the 2nd Thursday
Next Meeting: April 13, 2017, 7:00 pm

www.msaz.org

@ Franciscan Renewal Center,
5802 E. Lincoln Dr., Scottsdale

Next Meeting



Pinal Gem & Mineral Society

Meetings are on the 3rd Wednesday
Next Meeting: April 19, 2017, 7:00 pm

www.pinalgemandmineralsociety.org

@ Artisan Village

351 N. Arizona Blvd., Coolidge



West Valley Rock & Mineral Club

Meetings are on the 2nd Tuesday
Next Meeting: April 11, 2017, 6:30 pm

www.westvalleyrockandmineralclub.com

@ American Legion Post #53

402 E. Narramore Ave., Buckeye



White Mountain Gem & Mineral Club

Meetings are on the 1st Sunday
(unless a Holiday then 2nd Sunday)

Next Meeting: April 2, 2017, 1:00 pm

www.whitemountain-azrockclub.org

@ VFW Hall

381 N. Central, Show Low



Wickenburg Gem & Mineral Society

Meetings are on the 2nd Friday
Next Meeting: April 14, 2017, 7:00 pm

www.wickenburggms.org

@ Coffinger Park Banquet Room
175 E. Swilling St., Wickenburg

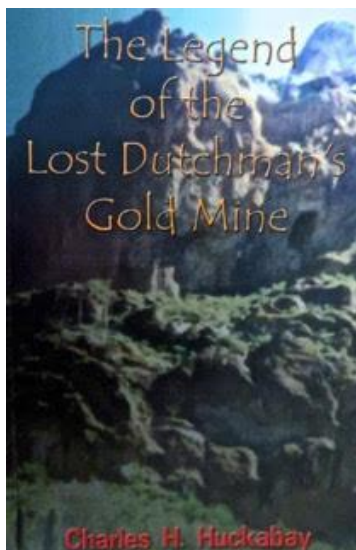


Pinal Geology & Mineral Museum

Pinal Museum and Club News

New Exhibits in the Museum

Two new exhibits, one on trilobites and one on wulfenite, the Arizona State Mineral have been put in cases donated by Steve Bentz.



Next Gem and Mineral Club meeting - Wednesday, April 19, Hoyt Huckabay will have a program on "The Legend of the Lost Dutchman's Gold Mine". He has written a book about it and the book will be available at the meeting. More information will be in the April newsletter.

www.pinalgemandmineralsociety.org

UPDATE

Campaign to Make Wulfenite State Mineral of Arizona HB2092

WULFENITE IS THE OFFICIAL MINERAL OF ARIZONA!

Arizona Governor Ducey signed HB2092 into law on Wednesday, March 22, 2017.

The bill amends Section 1, Title 41, chapter 4.1, and article 5 of the Arizona Statutes, by adding section 41-860.04, to read: Wulfenite is the Official State Mineral.

Dr. Alex Schauss spearheaded this effort in 2016 and with a mountain of support from across Arizona and a Wulfenite Is Love campaign by Mineralogical Society of Arizona, Arizona has a beautiful mineral to add to official symbols of Arizona.

It has been a pleasure partnering with Dr. Alex Schauss and collaborating with Rep. Mark Finchem, Bob Jones, Evan Jones, Lithographie, Don Boushelle, Sen. Gail Griffin, Les Presmyk, Peter Megaw, Bryan Swoboda, Jeff Scovil, Bob Downs, Rob Lavinsky, Paul Harter, Phil Richardson, Bill Yedowitz, Tony Occhiuzzi, Molly Busby, Wyatt Busby, Sam Busby, Jennifer Campbell, Maggie Lyons, John Tibbits, David Tibbits, Stan Keith, Frank Sousa, John Lucking, Mark Hay, Dick Morris, Carole Lee, Pam Wilkinson, Will Wilkinson, Keith Wentz, Danni Sotomayor, Jason New, Imelda Klein, Jim Klein, Anna Domitrovic, and many many more that I apologize if I missed you, but rest assured, Wulfenite would not be Official Arizona Mineral without you and your support. Thank you one and ALL!!!

I shared with Alex and I'll share with you, I will always treasure our journey in igniting a successful Wulfenite Is Love campaign across Arizona, Mineralogical Society of Arizona members visit to Arizona Capitol, installation of historic Wulfenite Exhibition at 2017 Tucson Gem & Mineral Show(R), and a featured segment in 2017 What's Hot in Tucson ... all in awesome support of Wulfenite.

Official Arizona Symbols:

TURQUOISE - State Gemstone
 PETRIFIED WOOD - State Fossil
 COPPER - State Metal
 WULFENITE - State Mineral

Warmest Regards,
 Chris Whitney-Smith



ESM's Upcoming Meeting

The Earth Science Museum's next scheduled Board meeting on April 11, 2017, at the Burton Barr Library, located near Central Ave. and McDowel in Phoenix at 6:30 p.m. in Rm. B. Everyone is welcome to attend.

BECOME A MEMBER!
Join the Earth Science Museum's



IT'S TIME TO RENEW YOUR MEMBERSHIP!
Please renew today! 😊

----- cut here -----
ESM Earth Science Investigation
Team Membership Form
_____ New Member _____ Renewal

Membership levels:
_____ ESI Family \$20
_____ ESI Individual \$10

Membership benefits:

- ◆ Monthly e-newsletter *Earthquake*
- ◆ Official team membership card
- ◆ Knowledge that your contribution is making a difference in earth science education.

MANY THANKS TO OUR MAJOR DONORS!

- AZ Leaverite Rock & Gem Society
- Flagg Mineral Foundation
www.flaggmineralfoundation.org
- Friends of the AZ Mining & Mineral Museum
- Maricopa Lapidary Society
<http://maricopalapidarysociety.com/>
- Mineralogical Society of AZ
www.msaaaz.org
- Payson Rimstones Rock Club
- Sossaman Middle School
- White Mountain Gem & Mineral Club
www.whitemountain-azrockclub.org
- Wickenburg Gem & Mineral Society
<http://www.wickenburggms.org>
www.facebook.com/pages/Wickenburg-Gem-and-Mineral-Society/111216602326438
- Staples Foundation
www.staplesfoundation.org
- Anita Aiston
- Stan & Susan Celestian
- Russ Hart
- Will & Carol McDonald
- Debbie Michalowski
- Dennis & Georgia Zeutenhorst

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We're on the Web!

Visit us on  and at:
www.earthsciencemuseum.org

Mission

Our Mission is to excite and inspire all generations about earth sciences through educational outreach.

Vision

We envision a community where students and the general public have curiosity about, passion for, and understanding of the underlying principles of earth sciences.

For more information about the ESM, how to become a member or how to arrange for a school visit or Community function, go to:
www.earthsciencemuseum.org.

Please join us at the next ESM Board meeting Tuesday, April 11, 2017, at the Burton Barr Library in Phoenix at 6:30 p.m. Rm. B.

THANK YOU FOR YOUR CONTINUING INTEREST & SUPPORT!!!

**EARTH SCIENCE MUSEUM
NON-PROFIT BOARD OF DIRECTORS**

Harvey Jong	President
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Robin Evans	Treasurer
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