



EARTHQUAKE

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

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March 2019
Volume 8, Issue 3

ESM Outreach Update:

By Mardy Zimmermann, Outreach and Education Coordinator

March began with an Outreach project for the Museum of Natural History's Summer Camp for pre-school children. Because I will be living at our cabin for the summer, I put together the Egg Carton Program materials they will need for 50 young campers and their staff will help the students assemble them. Museum staff has picked up the materials. The ESM Outreach program also displayed the Volcanoes exhibit and did the Egg Carton Program at the Pinal Geology Museum in Coolidge. Each of the programs served 44-50.

We received a large donation of rock and mineral material from the Greenthal estate, and have moved it to Apache Junction. This material included very nice fossils, including large coral from the mostly depleted area near Payson, and oysters from Utah. Items from Mexico included garnets and agate nodules. The azurite from the Stoddard Mine near Prescott is appreciated as it is hard to find.

Last Sunday afternoon we moved ESM Outreach materials from our storage shed in Tempe to our garage in Apache Junction. Getting all of ESM's material organized will continue to be a big priority.

We recently received another request to supply 20 sets of our Teacher Kits (Rocks and Fossils, and Minerals) for an in-service for 4th grade teachers in Tucson at the end of April. ESM is also coordinating with the

Apache Junction Gem and Mineral Club's school outreach efforts by providing materials and teacher kits.



Terry Dyer at a Webeloree in Mesa on March 2, where 70 Webelos and 29 adults attended
Photo by Lynne Dyer

On March 9, the Pinal Gem and Mineral Club held their 4th Annual Pinal Gem and Mineral Show featuring Dr. Carleton Moore, first director for ASU's Center for Meteorite Studies. Dr. Moore had on hand meteorite specimens from the Moon, Mars, Vesta, Apache Junction, Arizona and Allende, Mexico.



Diane and Dr. Carleton Moore (left) with visitors



Allende meteorite, a carbonaceous chondrite, fell on February 8, 1969, in Allende, Mexico.
Dr. Carleton Moore collection
S. Coté photos

The Allende meteorite is often described as “the best-studied meteorite in history as two tons of meteorites were recovered from this fall. With so many samples available, a large number of scientists were able to study this scientifically-important chondrite class.



Apache Junction meteorite showing Widmanstätten patterns



Mardy Zimmermann, ESM Outreach & Education Coordinator, helped visitors choose material for their egg carton collections, while Harvey Jong, ESM president, explained volcanoes and the volcanic samples to a young visitor.



A piece of the Moon on a picture of the Moon
S. Coté photos



Lynne and Terry Dyer representing the Mineralogical Society of Arizona’s Education Outreach were also in attendance with their popular displays of rocks, minerals and fossils.



A piece of Mars on a picture of Mars



Arizona Rocks 70

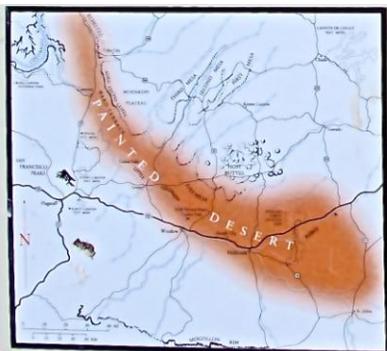
Text and photos by Ray Grant

Looking back over the list of Arizona Rocks, I found that I have not covered the Arizona state fossil (petrified wood - species *Araucarioxylon arizonicum*), the Petrified Forest, and the Chinle Formation. So these will be the next subjects for Arizona Rocks.

I will start with the Chinle formation. This is the formation that makes up the Painted Desert and the formation with the petrified wood. It is Triassic in age and deposited about 225 million years ago. The part of the Chinle in the Painted Desert is clay rich mud deposited in streams, flood plains, and lakes. The clay is referred to as bentonitic which is a mixture of clays but mainly montmorillonite. This clay swells when wet and shrinks on drying and this discourages plant growth. As you look at the clay hills you can see that there is almost no vegetation present in the area. This clay also presents a problem for construction in the area as the swelling and shrinkage tends to break up roads, foundations, and other structures.

There were volcanoes to the south and west and volcanic ash was deposited with the mud. Ground water dissolved the silica rich ash and this solution was carried to the buried logs to form the petrified wood (more next month).

Sign with Painted Desert at Petrified Forest National Park.



Extending in a broad arc from east of Grand Canyon southeastward towards St. Johns, Arizona, the Painted Desert was exposed by the erosional force of the Little Colorado River



Painted Desert, Chinle formation north of Petrified Forest, red color from iron in the mud



Painted Desert, Chinle formation north of Petrified Forest, red color from iron in the mud.



Chinle formation in Petrified Forest National Park, note the lack of vegetation



AZ Mining, Mineral & Natural Resources Educational Museum Update March 2019

<http://tinyurl.com/SupportMM-NREmuseum>

by Catie Carter and Shirley Coté

cscarter@email.arizona.edu

703.577.6449

March has been a busy month in preparation of the relocation of our “Boneyard” where our excess rock, mineral and mining equipment is stored.

On Tuesday, March 12, Chuck Messersmith, Dick & Mardy Zimmermann, Doug Duffy, Shirley Coté, Roger Camplin, Bill Yedowitz and Catie Carter met with David Raring and Jim Geil from the Superstition Mountain Museum (SMM). We all met at the boneyard to determine which pieces of mining equipment will be on loan to SMM and which will be returned to our museum grounds. Catie along with Mardy also determined which containers of rocks and minerals will be retained for museum use. Lots of pictures of the equipment and containers of rocks and minerals were taken for documentation. Due to worsening weather conditions, the group moved to the museum for further discussions. After seeing all the containers of rocks and minerals, David from SMM offered to store all the containers we wish to keep in reserve at SMM which was a great relief for all concerned. A target date for moving the material was set for late March and several days for yard clean up and amethyst/clear quartz sorting were discussed.

On Saturday, March 16, we held a cleanup day at the Boneyard lot at 12th Ave. and

Jefferson St. We had 8 people total, including 7 volunteers: Dick and Mardy Zimmermann, Bill Yedowitz, Doug Lindsay, Denny Zeutenhorst, and two new people: Marge and Austin Lindenbaum. Thank you guys for coming out. It was a busy weekend and we appreciate you taking time to help us. Each volunteer worked for 3 hours from 9am-noon and Bill Yedowitz logged 3.5 hours. These were the activities we completed:

Trash Cleanup

Volunteers picked up trash around the Boneyard and filled 6 large bags with trash and debris, including that pesky thorned Palo Verde bush, finally gone!

Container Organization

Denny Z. walked the aisles and sorted rocks into their correct containers. This will not only make it easier to walk around, but will help when moving the rocks and when offering to volunteers and educators.

Amethyst Sorting

Mardy led the effort to empty the numerous 55 gallon containers and separate the purple amethyst from the colorless quartz. These containers were filled with sawdust and it was a simple but messy activity. We now have two carboys almost completely full of colorless quartz. Mardy was assisted by Dick, Doug L., Bill, Denny, Marge and Austin. We still have many containers to sort out, and will continue this activity next week.

NEXT WORKDAYS: 3/22 and 3/23: We will be hosting another amethyst sorting day (and cleanup if necessary), March 22nd & 23rd, again from 9-noon. Any volunteer who can help out is invited to take home a bucket's worth of rocks and minerals for their own purposes (BYOBucket!). I've been told there's an MSA field trip on Saturday but do not dismay, we will be holding an open house for all volunteers, local club members, and stakeholders to take home remaining

material AFTER the mining equipment and priority material is moved to Apache Junction. That will be at the end of March or early April.



Volunteers at the end of their morning's work March 16th

Bill Yedowitz also spent Thursday morning working at the Boneyard and on Friday, March 22nd Bill Y. and Denny Z. cleaned up the above pile of drill cores left from the week before. A short while later, Doug Duffy, Shirley Coté, Bill Lytle, Bob Evans, Ron and Austin Lindenbaum arrived to tackle the remaining barrels of amethyst/clear quartz although one barrel contained a mixture of rocks and minerals. At the bottom of the mixture was a couple of buckets worth of beautiful pyrite specimens.



Mortar box

When Charlie Connell and Rick Herrem arrived a little later, they set to work sawing

off the bolts to the 5-stamp mill mortar box in preparation for its move.



Many of the barrels were half to three quarters full of water which made the sorting of amethyst packed in sawdust a very dirty job. We filled the above carboy with quartz and started on another.



Doug D. added another barrel. The empty barrels were stacking up!



The work crews at the end of Friday morning's labor.

The March 23rd scheduled workday had a slight glitch as there was a half marathon, 5 & 10K runs in downtown Phoenix making getting to the Boneyard somewhat difficult. But, Catie Carter, Mardy & Dick Zimmermann, Doug Duffy, Shirley Coté, Marge and Austin Lindenbaum, Patrick Howley, Charlie Connell, and later Bill Yedowitz did find their way around the maze of closed streets to the yard.

Since Friday's work crew completed emptying the last of the 55 gallon drums of clear quartz/amethyst, Saturday's group worked on transferring the contents of the many dilapidated 5 gallon plastic buckets (below) into new buckets and transferred them to the concrete slab on the museum grounds (right).



Mardy & Dick loaded up the amethyst that was set aside from Friday's sorting along with some clear quartz (below) into their truck to take home, clean and box up for the museum.



Charlie brought some wire fencing and he and Catie made covers for a few of the carboy totes that will be sent to the Superstition Mountain Museum for storage. Charlie will need to buy more fencing to complete this project.



Buckets of rocks returned to the museum.



This was the scene on March 12th before the start of yard cleanup and emptying the drums.



The March 16th work crew and Bill Yedowitz's Thursday foray had made a big dent in the job so that after Bill and Denny moved the pile of drill cores, this was the scene Friday morning.



As we could not reach into the bottom of the barrels, the quartz needed to be emptied onto the ground, put in buckets and dumped into the totes.



Getting down to the last barrels!



Friday as another barrel's contents gets dumped.



The job is complete with all the barrels emptied and the ground raked. Well done everyone!



Clearing the ground getting another tote ready to fill



Catie Carter, happy to have all the barrels emptied!

Thanks to everyone who helped!

Photos by S. Coté, Doug Duffy and Catie Carter

If you are interested in volunteering at the next museum workday, please contact Charlie Connell at minercon@aol.com or Catie Carter at csarter@email.arizona.edu.

Support the Museum

<http://tinyurl.com/SupportMM-NREmuseum> your donations are appreciated!

Help bring back the educational exhibits!

AZ Rock & Gem Shows



Verde River Rockhounds

April 27, 2019

Sat. 9-5

Free admission

Windmill Park

9950 E. Cornville Road

<http://www.verderiverrockhounds.com>



Mohave County Gemstoners

May 4-5, 2019

Sat. 9-5, Sun. 9-4

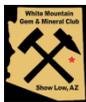
Free admission

Kingman Academy of Learning

3420 N Burbank

Kingman, AZ

www.gemstoners.org



White Mountain Gem and Mineral Club

July 6-7, 2019

Sat. 9-6, Sun. 10-4

Adults \$2.00

Free admission for children under 16

Hon-Dah Casino and Resort

777 Highway 260

Pinetop, AZ

www.whitemountain-azrockclub.org



Prescott Gem and Mineral Club

15th Annual Show & Sale

August 2-4, 2019

Adults \$5.00

Seniors 65+, Vets, Students \$4.00

Children under 12 FREE w/paid Adult

Findlay Toyota Center

3201 N. Main St.

Glassford Hill & Florentine

Prescott Valley, AZ

Payson Rimstones Rock Club Inc

Annual show

September 20-22, 2019

Fri. 4-8, Sat. 9-5, Sun. 10-4

Admission \$3

Free admission for children 12 and under

Event Center Mazatzal Hotel & Casino

Highway 87, Mile Marker 251

Payson, AZ

Email: paysonrimstones@aol.com



Huachuca Mineral and Gem Club

Annual show

October 12-13, 2019

Sat. 9-5, Sun. 10-4

Free admission

Cochise College

901 N. Colombo Ave.

Sierra Vista, AZ

huachucamineralandgemclub@info.com

Rock & Gem Clubs



Apache Junction Rock & Gem Club

Meetings are on the 2nd Thursday
Next Meeting: April 11, 2019, 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
(unless a Holiday then 2nd Tuesday)
Next Meeting: April 2, 2019, 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
(unless a Holiday then 2nd Monday)
Next Meeting: April 1, 2019, 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
(February meeting on the 3rd Thursday)
Next Meeting: April 11, 2019, 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 17, 2019, 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 9, 2019, 6:30 pm

www.westvalleyrockandmineralclub.com

@ Painted Desert Academy

2400 S. 247th Ave., Buckeye, AZ



White Mountain Gem & Mineral Club

Meetings are on the 1st Sunday
(unless a Holiday then 2nd Sunday)
Next Meeting: April 7, 2019, 1:00 pm

www.whitemountain-azrockclub.org

@ VFW Hall

381 N. Central, Show Low



Wickenburg Gem & Mineral Society

Meetings are on the 2nd Friday
(February & December on the 1st Friday)
Next Meeting: April 12, 2019, 7:00 pm

www.wickenburggms.org

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



Pinal Geology & Mineral Museum

Pinal Museum and Club News

351 N. Arizona Blvd., Coolidge, AZ

Next Pinal Gem and Mineral Club meeting

Wednesday, April 17, 2019

www.pinalgemandmineralsociety.org

"Collecting at Searles Lake, California" by Joey Philpott

The Museum is open on Fridays and Saturdays from 10 a.m. to 2 p.m. (September - May). We always need volunteers to open the Museum on those days if you can spare one day a month or more to help us please let me know at raycyn@cox.net. If we have more volunteers, we will try to open more days. Otherwise, tours are possible by calling (520)723-3009 (Coolidge Chamber of Commerce) to schedule a time.



The Mud Run to collect hanksite crystals

ESM's Meeting Notice

ESM's next meeting will be at North Mountain Visitor Center, 12950 N. 7th St., Phoenix, on Tuesday, April 23, 2019, at 6:30 p.m.

BECOME A MEMBER!
Join the Earth Science Museum's



IS IT 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.msaz.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
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www.staplesfoundation.org
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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.

We're on the Web!

Visit us on  and at:
www.earthsciencemuseum.org

NOTICE:

ESM's next meeting will be at North Mountain Visitor Center, 12950 N. 7th St., Phoenix, on Tuesday, April 23, 2019, at 6:30 p.m.

THANK YOU FOR YOUR CONTINUING INTEREST & SUPPORT!!!

**EARTH SCIENCE MUSEUM
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