EARTHQUAKE

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

Earth Science Museum, 3215 W. Bethany Home Rd., Phoenix, AZ 85017
www.earthsciencemuseum.org, scote@earthsciencemuseum.org, 602-973-4291

February 2017
Volume 6, Issue 2

ESM Outreach Update:

By Mardy Zimmermann, Outreach and Education Coordinator

February was another good month for ESM Outreach to Schools. We served a mixture of first time schools and repeat ones which is good.

At the end of Feb. the School Program had served 5,439 students, which is an indication that the program is important to our schools and science students. The exciting news is that we are proceeding with the Roosevelt School District with the ESM lending Library. This will be a joint effort with participation from Catie Carter of AZGS. Catie and I met with Cassandra Kellaris, the Roosevelt District Science coordinator last week to finalize the plans. In the next few weeks we will be assembling the materials and kits and getting them to the District.

I also have had an opportunity to discuss AZGS's plans to become active in the Valley and especially in assisting schools in outlying areas where needs are not being met. The Mining and Mineral Museum had this kind of Outreach Program and it is encouraging that it can come back, and, hopefully be an important part of the new museum. We are also seeing more interest in the Payson and Rim Country areas. Lynne Wheeler, our ESM presenter in that area will be serving Heber Elementary School in April. Lynne Dyer and her husband will be spending time running a scout camp in Pine starting in April and running through September. We will miss their very successful "Mini Museum" and if anyone is interested in helping with it in their absence, please contact the Dyers.

Lynne Dyer with 25 participants at Rio Salado Rise Learning for Life in Surprise, AZ - Terry Dyer photo

Lynne and Terry Dyer will display their "Mini Museum" of rocks, minerals and fossils at the Mesa District Cub Scout Webeloree on Saturday, March 4th at Schnepf Farms, 24610 S Rittenhouse Rd, in Queen Creek and at the Pinal Gem and Mineral Show, March 11th, 351 N. Arizona Boulevard in Coolidge.

TGMS Show Highlights

Our own Chris Whitney-Smith, ESM Board Member and President of the Mineralogical Society of AZ, received a second place ribbon at the TGMS Show this year.

Arizona Rocks 45

Text and photos by Ray Grant

Unconformities are gaps in the geologic record; there are no rocks present for some period of geologic time. In most cases uplift and erosion occur before the deposition of new rocks on the eroded surface. There are three major types of unconformities. Nonconformities where the rock on the bottom is igneous or metamorphic rock that has been uplifted and eroded down and sedimentary rocks are deposited on the top. Angular unconformities where a sequence of sedimentary rocks is tilted or folded and later sedimentary rocks are deposited on the eroded surface so there is an angle between the sets of layers. Disconformities are where the sedimentary layers are parallel but there is a time gap between the depositions of the layers. Disconformities are the hardest to recognize and usually fossils are needed to date the parallel layers to determine the time gap between the layers.

Unconformities are found throughout Arizona. The state has a long geologic history with many periods of activity and erosion followed by deposition of sediments. All three types of unconformities can be seen in the Grand Canyon. The amount of time difference across the unconformity varies from location to location. The unconformity between the Precambrian rocks and younger sediments has been called the "Great Unconformity". Clarence Dutton first used the term and J. W. Powell uses that term in his book *The Exploration of the Colorado River and its Canyons*. The time gap at the Great Unconformity can vary but in many places it is over a billion years hence the name great. At some places in the Grand Canyon the Vishnu Schist that is about 1.8 billion years old is overlain by the Tapeats Sandstone that is about 500 million years old, so the time gap is about 1.3 billion years. So any rocks deposited during that 1.3 billion years have been eroded away. Next month the really great unconformity in the Phoenix area.

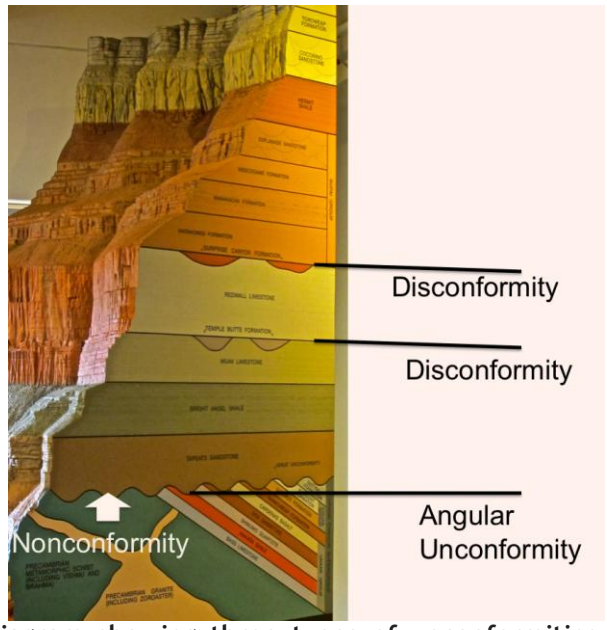


Diagram showing three types of unconformities in the Grand Canyon

Some unconformities in the Grand Canyon

The "Great Unconformity" in a road cut on route 86 north of Payson, the granite is about 1.6 billion years old and the sandstone about 500 million years so the time gap is about 1.1 billion years. During those 1.1 billion years the area was uplifted into mountains and they were eroded down to a relatively flat surface.

AZ Rock & Gem Shows

Pinal Gem & Mineral Show
2nd Annual Show
March 11, 2017
Sat. 10-4
Free Admission
Pinal Geology and Mineral Museum
351 N. Arizona Ave.
Coolidge, AZ

Cottonwood Annual Show
March 18-19, 2017
Sat. 10-5, Sun 10-4
Admission $3
Children under 12 free
Mingus Union HS
1801 E. Fir St.
Cottonwood, AZ

Daisy Mountain Rock and Mineral Club Annual Show
March 25-26, 2017
Sat. 9-5, Sun. 9-4
Admission
$3 adults, Students/Seniors $2
Children under 12 FREE
Boulder Creek High School
40404 N. Gavilan Peak Pkwy.
Anthem, AZ

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
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

Rock & Gem Clubs

Next Meeting

Apache Junction Rock & Gem Club
Meetings are on the 2nd Thursday
Next Meeting: March 9, 2017, 6:30 pm
www.ajrockclub.com
@ Club Lapidary Shop
2151 W. Superstition Blvd., Apache Jct.

Pinal Gem & Mineral Society
Meetings are on the 3rd Wednesday
Next Meeting: March 15, 2017, 7:00 pm
www.pinalgemandmineralsociety.org
@ Artisan Village
351 N. Arizona Blvd., Coolidge

Daisy Mountain Rock & Mineral Club
Meetings are on the 1st Tuesday
Next Meeting: March 7, 2017, 6:30 p.m.
www.dmrmc.com
@ Anthem Civic Building
3701 W. Anthem Way, Anthem

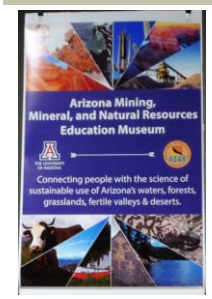
West Valley Rock & Mineral Club
Meetings are on the 2nd Tuesday
Next Meeting: March 14, 2017, 6:30 pm
www.westvalleyrockandmineralclub.com
@ American Legion Post #53
402 E. Narramore Ave., Buckeye

Maricopa Lapidary Society, Inc
Meetings are on the 1st Monday
Next Meeting March 6, 2017, 7:00 pm
www.maricopalapidarysociety.com
@ North Mountain Visitor Center
12950 N. 7th St., Phoenix

White Mountain Gem & Mineral Club
Meetings are on the 1st Sunday
(unless a Holiday then 2nd Sunday)
Next Meeting: March 5, 2017, 1:00 pm
@VFW Hall
381 N. Central, Show Low

Mineralogical Society of Arizona
Meetings are on the 2nd Thursday
Next Meeting: March 9, 2017, 7:00 pm
www.msaaz.org
@ Franciscan Renewal Center,
5802 E. Lincoln Dr., Scottsdale

Wickenburg Gem & Mineral Society
Meetings are on the 2nd Friday
Next Meeting: March 10, 2017, 7:00 pm
www.wickenburggms.org
@ Coffinger Park Banquet Room
175 E. Swilling St., Wickenburg



AZ Mining, Mineral & Natural Resources Education Museum Update Feb. 11, 2017

By Michael Conway

SB1415 – **Transfers the Mining & Mineral Museum** to the University of Arizona permanently.

Earlier this week, AZGS Director Phil Pearthree and I met with Univ. of Arizona lobbyists and Sen. Gail Griffin and her chief aide to discuss SB1415, which transfers the Polly Rosenbaum Building and assets of the former Arizona Mining and Mineral Museum to the University of Arizona.

The chief purpose of SB1415 is to, 'Transfers the Mining, Mineral and Natural Resources Educational Museum (Museum) to the University of Arizona (U of A) **permanently.** The original 2016 bill placed the museum with the AZGS and returned the museum to the Arizona Historical Society by July 2018, in the event AZGS had not opened the museum. The new bill specifies the University of Arizona as the primary institute for operating, maintaining, and managing the building and its assets. UA administrators assure us there is still a large role for AZGS to play in developing content and channeling museum design. We anticipated this change in language, we embrace it, and we are ready to go forward with UA committed to the task.

*UPDATE 2-28-17: **SB1415** passed in the Arizona Senate with a vote of 30-0 on February 23rd, and was transmitted to the House.*

MMNREM at Tucson Gem & Mineral Society Show (TGMS)

On 9 February, we unveiled our TGMS exhibit, 'Minerals of Arizona's Historic Mining Districts'. TGMS provided us with prime real estate, placing us just inside the entryway. The exhibit received a great reception and MMNRE curator Catie Carter was there to answer questions about the display and the museum. Thanks to our friends from the Flagg Mineral Foundation, Phil Richardson and Bill Yedowitz, in assisting us in dressing out the exhibit case. Thanks, too, to TGMS for providing space and a $300 grant for materials.

Minerals of Arizona's Historic Mining Districts
Photos by Mike Conway

MMNRE Advisory Committee – Stalled

Our hope for appointments to the MMNRE Advisory Committee came to naught in January. We were on the agenda of the Office of the Arizona Boards & Commissions but they cancelled their January meeting due to staffing issues. Not to worry, we'll continue to call and e-mail Boards and Commissions weekly to get back on their schedule.

As SB1415 progresses in the House, Mike will keep us informed.

SB1184 - Arizona Geological Survey; appropriation

Sen. Griffin also introduced SB1184 to reinstate AZGS' state allocation of $941,000 for FY 2018. You may recall that our budget was zeroed out in FY 2017, and we were transferred from state government to the College of Science at the University of Arizona.

Please let us know if you have any questions or concerns.

Mike Conway, Rowena Davis, Catie Carter (Curator); AZGS – MMNRE Team

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fmconway@email.arizona.edu

http://www.azgs.az.gov
repository.azgs.az.gov

Late Breaking News

SB1184 passed in the Senate with a vote of 28-2 on February 23rd and was transmitted to the House.
(Italics – S. Coté, Editor)

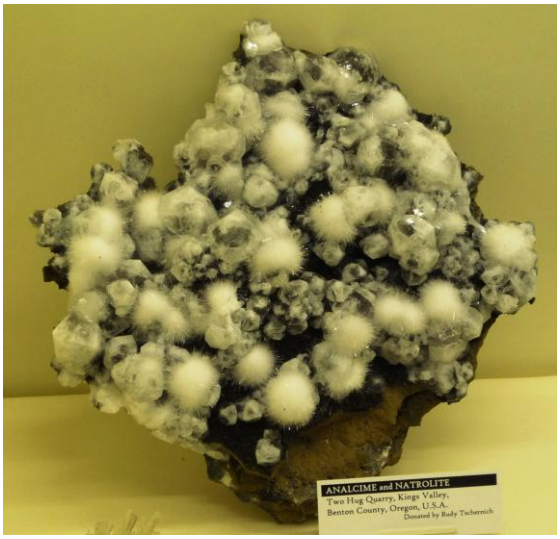
Tucson Gem & Mineral Society 2018 Show Theme

A hint as to the 2018 TGMS show theme

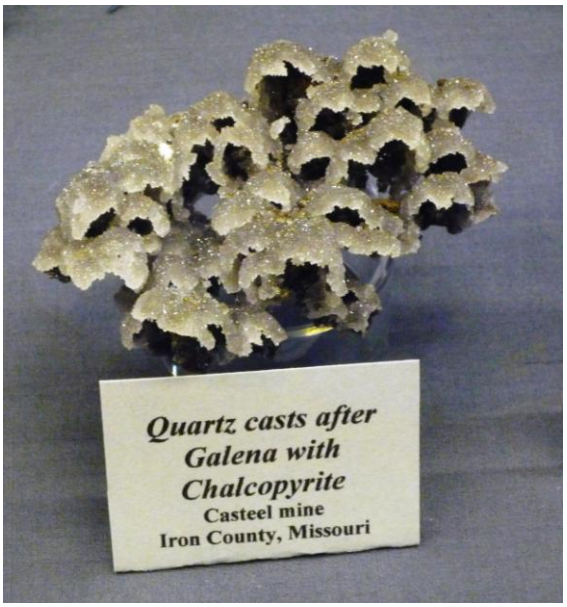
S. Coté photos

TGMS Highlights Cont'd

Rhodochrosite
A manganese carbonate



Analcime and Natrolite (both are sodium aluminum silicates) Kings Valley, Oregon



A stunning display of lapidary materials from all over the world

Susan Celestian, former AZ Mining and Mineral Museum Curator, and her husband Stan's display at TGMS - S. Coté photos

Minerals of Arizona
Twenty-Fifth Annual Symposium
Friday March 31, Saturday April 1, and Sunday April 2, 2017

Friday Program:
Open House: 2 to 4 PM –Open house at the **Arizona-Sonora Desert Museum mineral vault**. You must RSVP by email to Anna Domitrovic by March 24 if you want to attend this event. (AnnaMD84PA@aol.com)
Dealers: 5 PM to 10 PM there will be a mineral sale at the Holiday Inn Express with dealers selling from rooms. There will also be a portable XRF available for analyzing gold and other minerals for their chemistry and a micro-mineral area.

Saturday Program:
Coffee at 8 AM, talks from 8:50 AM to 4:00 PM at the **Arizona-Sonora Desert Museum** followed by a Dinner at 6:30 PM at the Holiday Inn Express. Dealers may also sell after the Saturday dinner.

Topics/Speakers

8:00 - 8:40 – Registration and Coffee
8:40 – 8:50 – Welcoming Remarks and Introductions
8:50 – 9:30 – Piedmont Mine, Yavapai County – Barbara Muntyan
9:30 – 10:10 – Agates of the United States – Pat McMahan
10:10 – 10:40 – Break
10:40 – 11:20 – Silver and Gold in Arizona, the Mining History and the specimens that resulted Les Presmyk
11:20 – 12:00 – Heavy Metal: Gold, Silver, and Tungsten Mineral Collecting Opportunities Around Quartzsite, AZ - Erik Melchiorre
12:00 – 1:00 – Lunch
1:00 – 1:40 – Geology of the Tucson Mountains – Jan Rasmussen
1:40 – 2:20 – Genesis of a limestone Cave and Associated Mineralogy- Anna Domitrovic
2:20 – 2:40 – Break 2:40 – 3:20 – Arizona Cerussite – Mark Hay
3:20 – 4:00 – What's New in Arizona Minerals – Ron Gibbs

Sunday Program:
Field Trip: 10 AM – Field trip to CalPortland Cement Quarry. You must register for the symposium to attend the field trip.

Holiday Inn Express
The Holiday Inn Express at Cortaro/I10 (8373 North Cracker Barrel, Tucson, AZ 85743) will be the host hotel, with dealers selling Friday night and location of the Saturday night dinner. Directions: Take Interstate 10 to Cortaro Road exit. Go west on Cortaro Road, turn north on North Cracker Barrel. Reservations at 1-520-572-4777. They're reserving a block of 15 rooms for dealers. Reservations for the block need to be made individually by 3-1-17, say you want a dealer room if you plan to sell. Rooms at symposium host Holiday Inn Express - $95+tax; also Super 8 - $55+tax, Comfort Inn -$90-$130+tax; all provide hot AM breakfast starting at 6:30 AM.(Super 8 adjacent to Holiday Inn 1-855-799-6862; Comfort Inn 1-866-925- 7881.)

Go to flaggmineralfoundation.org for the latest information.

Minerals of Arizona
Twenty-Fifth Annual Symposium

Registration Form:

Please mail this form with the $45.00/person registration fee before March 25, 2017, so lunch and other food can be ordered. Banquet cost is an additional $20 per person.

Mail to: Flagg Mineral Foundation
P.O. Box 41834
Mesa, Arizona 85274

Make checks payable to: Flagg Mineral Foundation

Enclosed is $ _____ for _____ registrations and ____x $20 for Saturday Dinner.

Name(s):

_____

Address:

_____

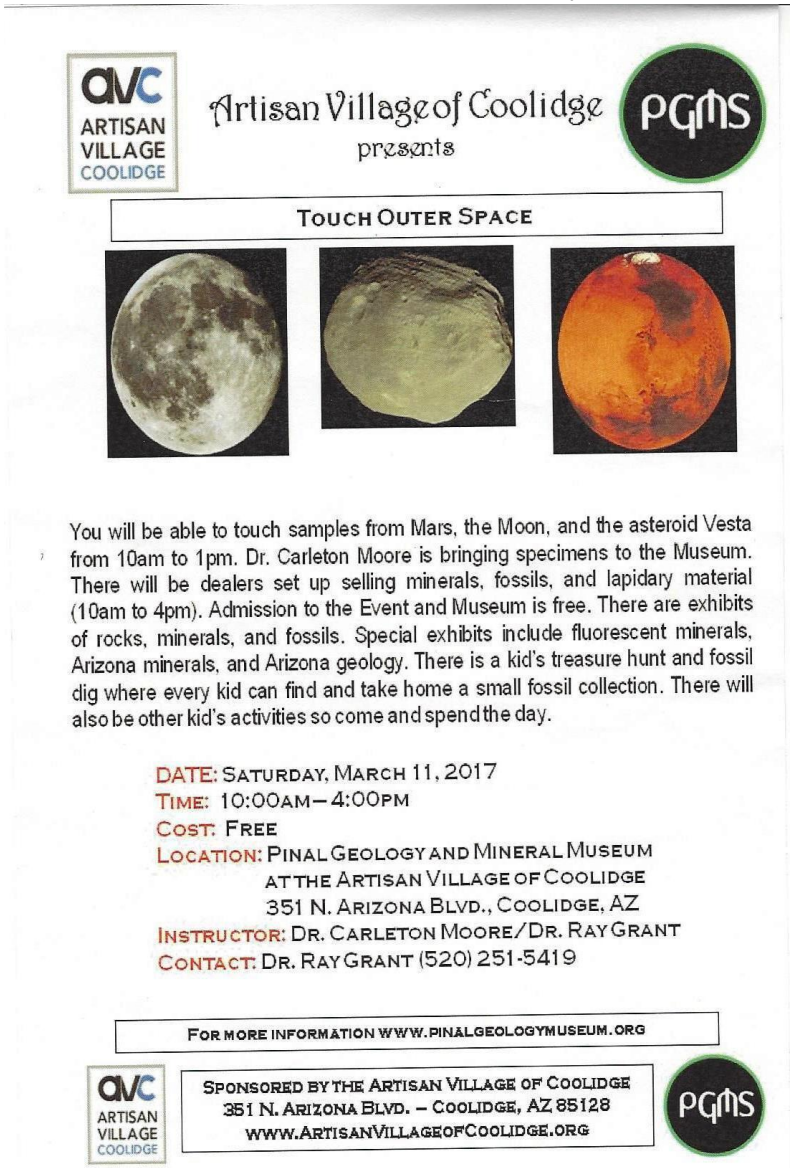
E-mail:

_____

The Fossil Mammals of Pinal County exhibit has been finished along with a shark's teeth exhibit in the museum.

SPECIAL EVENT SPECIAL EVENT SPECIAL EVENT

Saturday, March 11, 2017



ARTISAN VILLAGE COOLIDGE

Artisan Village of Coolidge presents

PGMS

TOUCH OUTER SPACE

You will be able to touch samples from Mars, the Moon, and the asteroid Vesta from 10am to 1pm. Dr. Carleton Moore is bringing specimens to the Museum. There will be dealers set up selling minerals, fossils, and lapidary material (10am to 4pm). Admission to the Event and Museum is free. There are exhibits of rocks, minerals, and fossils. Special exhibits include fluorescent minerals, Arizona minerals, and Arizona geology. There is a kid's treasure hunt and fossil dig where every kid can find and take home a small fossil collection. There will also be other kid's activities so come and spend the day.

DATE: SATURDAY, MARCH 11, 2017
TIME: 10:00AM–4:00PM
COST: FREE
LOCATION: PINAL GEOLOGY AND MINERAL MUSEUM AT THE ARTISAN VILLAGE OF COOLIDGE 351 N. ARIZONA BLVD., COOLIDGE, AZ
INSTRUCTOR: DR. CARLETON MOORE/DR. RAY GRANT
CONTACT: DR. RAY GRANT (520) 251-5419

FOR MORE INFORMATION WWW.PINALGEOLOGYMUSEUM.ORG

ARTISAN VILLAGE COOLIDGE

SPONSORED BY THE ARTISAN VILLAGE OF COOLIDGE
351 N. ARIZONA BLVD. – COOLIDGE, AZ 85128
WWW.ARTISANVILLAGEOFCOOLIDGE.ORG

PGMS

Pinal Geology and Mineral Museum

Location: Artisan Village of Coolidge, 351 N. Arizona Blvd., Coolidge, Arizona

Hours: Friday and Saturday, 10 am to 2 pm
Free Admission

Our dinosaur – Allie Sharpie

More information at:
Pinalgeologymuseum.org
Phone(520)723-3009

The Earth Science Museum will be represented at this 2nd Annual show by Lynne and Terry Dyer with their displays of rocks, minerals and fossils along with Mardy Zimmermann with the egg carton program where you can pick from 30 different specimens and make your own rock/mineral/fossil collection. Several dealers will be on hand including Joey Philpott, Jr. from the Mineralogical Society of Arizona.

UPDATE

Campaign to Make Wulfenite State Mineral of Arizona

HB2092

Dear Fellow Pinal Gem & Mineral Society Members:

With Rep. Mark Finchem repeating as primary sponsor, joined by three co-sponsors (Rep. Clodfelter, Rep. Norgaard, and Rep. Nutt), HB2092 was introduced in the House and received its first reading on January 12th to have wulfenite become Arizona's official state mineral.

Following discussions in the Environment, Energy and Natural Resources Committee (EENR), the bill came out of committee with a 9-0 vote in favor of passage on January 24th. This sent HR2092 to the consent calendar with no objections.

On February 6th, the Rules Committee voted 8-0 to pass it to the House.

The same day both the Majority and Minority Caucus of the House gave their support for the bill.

When the second reading of the bill on the House floor was scheduled for Tuesday, February 7th, I attended the House session along with young Future Rockhounds of America and members of the Mineralogical Society of Arizona (MSA) who included students and their parents, and the society's President, Chris Whitney-Smith, to watch the proceedings.

MSA is the oldest gem and mineral society in the United States, founded in 1935. It also happens to have wulfenite in the center of its logo, which students proudly pointed out to Rep. Finchem before he explained the bill on the House floor to his colleagues.

While Rep. Finchem introduced the bill on the floor and asked all of us to stand up so members of the House could see us in the galley as he read the names of everyone into the record in support of the bill. Later that afternoon he told the students that some day they can tell their children and grandchildren that if they look into the records of the House on this day they will see their names and the role they played in having wulfenite become the official state mineral! You should have seen the students and parents faces when they heard this.

Before the session began, the students stood at the two entrances to the House floor and handed a 2017 calendar to each member of the House that featured a number of Arizona wulfenite's for each member to see what a wulfenite looks like. The calendar featured some spectacular photos of a Red Cloud wulfenite's, including Evan Jones great specimen on the cover, and another Red Cloud for the month of February, along with a stunning photo of red mimetite balls on red-orange wulfenite's from the Rowley mine that rivals those produced by the San Francisco mine in Sonora, Mexico.

Handing out those calendars to House members made a real difference once the bill came up for a vote on February 10th when the House voted to pass HR2092 by a decisive vote of 57-1.

News of the bill's passage in the House came to us on Sunday, February 12th, from Rep. Finchem when he came to the TGMS Show with his wife, Janice, to inform us in front of the wulfenite display (photo attached) of the good news. Also, attached is a photo of Peter Megaw conversing with Rep. Finchem and Janice about the show, the exhibit, and historical information on mine locations along the border related to the history of borders stretching from California to Texas.

Peter Megaw, Rep. Finchem and Janice, Dr. Alex Schauss

TIME FOR ACTION

We expect Sen. Steve Smith, my District-11 senator, to be the sponsor of the bill in the Senate. A vote by the Senate should come up during the week of February 28th.

We need continued support for the bill to get through this crucial hurdle. If it passes in the Senate, it goes to the Governor's office to be signed into law. I expect would that to happen about 10 days after it's received from the Senate.

Please let Senator Smith know of your support. You can email him at: Stsmith@AZleg.gov or call his office: 206-926-5685.

To locate your Arizona State Senator, go to: https://www.azleg.gov/MemberRoster/?body=S where you will find their email address along with a phone number.

Thank you!!

Dr. Alex Schauss

AZ House of Representatives

Wulfenite case at Tucson Gem & Mineral Society Show

MSA members at House of Representatives - February 7, 2017

ESM's Upcoming Meeting

The Earth Science Museum's next scheduled Board meeting on March 14, 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.msaaz.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

_ _ _ _ _ _ _ _ cut here _ _ _ _ _ _ _ _ _

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Address: _____

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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, March 14, 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

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