EARTHQUAKE

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

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ESM Plans for the Coming Year 2013-14

By Shirley Coté, Ray Grant and Harvey Jong

This month represents the start of a new fiscal year for the Earth Science Museum (ESM). Many challenges and opportunities lay ahead as we continue on our journey to build a new innovative museum dedicated to the earth sciences.

Our efforts will focus on three key areas:

1. Building the ESM membership with a membership drive
2. Planning and implementing an Earth Science Education Center
3. Expanding the ESM Outreach Program

Growing our membership is critical to the success of the ESM. Members not only help in providing the much needed financial resources to fulfill our mission but can also assist with various planning, development, or educational activities through volunteer efforts.

We have not actively promoted memberships before since the current program and associated benefits were geared more towards an established museum. For this drive, however, we will be revising memberships to be more affordable and to better reflect the early start-up phase of the museum. While we can't offer benefits beyond a newsletter and a membership card at this time, we can point out that the valuable support of members helps in delivering educational outreach activities today and in bringing exciting, engaging and exceptional museum visitor experiences for tomorrow. So, please help spread the word about our membership drive and invite family, friends, neighbors, or anyone who shares a passion for earth science education to become a member!

As noted in an earlier newsletter, the second development phase of the museum is proceeding slower than planned. The importance of having a "bricks and mortar" presence, however, cannot be overstated. So, the ESM is looking for a place to call home in order to expand its Outreach Program into the community and to raise funds for the future museum.

To accelerate the transition to a physical facility, the ESM is planning an Earth Science Education Center (ESEC) that scales down the size of the Phase 2 museum. A smaller facility will help reduce financial requirements and overall time to market, while still providing opportunities for school students and the general public to learn about the earth sciences through classes and exhibits.

The education center will feature a multi-purpose room which can serve as a classroom for children and adults, a meeting space for clubs or events, or a gallery for prototyping new exhibits. This flexibility will involve the use of modular furniture and display cases that can be readily moved and setup for different uses. To help fund the center, a small gift shop will also be included and will sell rock, mineral, and fossil specimens; books; and other earth science related products.

The third area of activity involves building on the great success of the ESM Outreach Program. Program activities will be expanded to encompass a wider audience across the state and include disadvantaged groups. In addition, advanced classroom resource kits will be developed to address higher grade levels. These new kits will focus on mineral properties and the underlying science and math concepts. Mineral hardness will be the first kit created in this series.

The year ahead promises to be a very busy one, and we can definitely use some help. If you happen to have a free-standing building or space in a strip mall, we would certainly welcome the opportunity to discuss how we can work together on the education center. Or if you would like to help with something a bit smaller, such as donating samples of corundum for the hardness kits, please contact one of our board members. Thanks for your continuing interest and support of the ESM!!

ESM Outreach "Club Hubs"

The ESM Outreach Program not only provides educational programs at schools but has reached out into the community by partnering with several of Arizona's rockhound clubs to provide programs at city libraries and other community events this summer.

Lynne & Terry Dyer, members of the Mineralogical Society of Arizona and Earth Science Museum outreach program volunteers, set up a display of their rocks, minerals & fossils for the Mesa Public Library Summer Reading Program. 334 adults and children participated over a three-day period in July.

In May, Cathy Palm-Gessner, Lynne Wheeler-Benker, and Linda Loschke, all members of the Prescott Gem and Mineral Club, addressed two third-grade classes at the Chino Valley library. After being introduced to rocks and minerals and their uses, the students played "Rock and Mineral Uses Bingo" with samples of the items discussed given as prizes. At the library in June, Lynne Wheeler-Benker, and Linda Loschke provided a "show and tell" style presentation in which they discussed the uses of rocks in buildings to pre-school and kindergartners and their parents.

Jim Van Wert, Lynne Wheeler-Benker, Ted and Barb Schultz, Tom Peterck and Dennis Peterson, all members of the Verde River Rockhounds, Inc. in Cottonwood, participated in the Cottonwood library summer program by providing a "show and tell" presentation on rocks, minerals, and fossils to participants. Those attending were given free specimens of fossils and geodes.

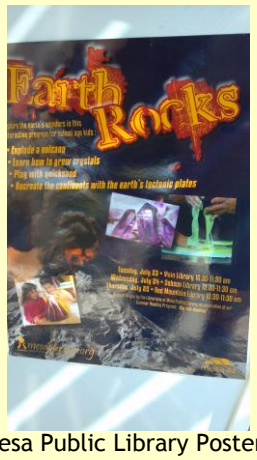
Lynne Wheeler-Benker reported "My favorite students were a girl who as a 3rd-grade student last year did a report on Plate Tectonics and a 4-year old that got nose to nose with me and we discussed volcanoes!"

Mardy Zimmermann, member of the Arizona Leaverite Rock and Gem Society and VP of Education and Outreach Coordinator of the Earth Science Museum, and her husband Richard, devised a free, fun rock and mineral activity called "Lucky Thirteen" for the Forest Lakes 4th of July festivities.

Mardy also gave two rocks and minerals presentations at the Arizona Museum of Natural History in Mesa at their summer camps for young children.

In June, Robin Evans, Maricopa Lapidary Society member and ESM Treasurer, demonstrated panning and Mardy Zimmerman gave a talk about rocks and minerals for the City of Phoenix's Summer Programs for kids at Heritage Square.

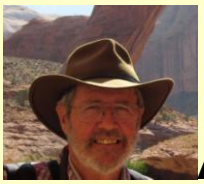
Representatives of the Payson Rimstones Rock Club offered a Rocks and Minerals presentation at the Payson Public Library for 33 young students on July 10th. After viewing a video, the students were divided into six groups and participated in hands-on activities at six different tables: sedimentary rocks, igneous rocks, metamorphic rocks, minerals, mining, and fossils.



Mesa Public Library Poster


Robin Evans demo's panning

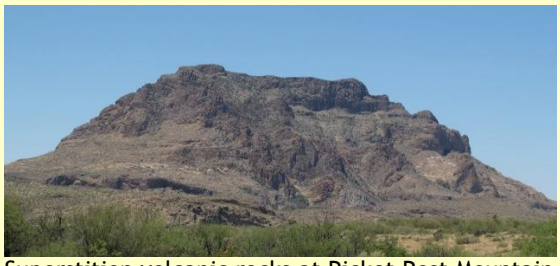

Terry Dyer set up and ready for participants at the Mesa Public Library



Arizona Rocks 2

Text and photos by Ray Grant

Keeping with volcanic rocks, the next most common volcanic rock in Arizona after basalt is felsite. The term felsite is used here for a fine-grained light colored volcanic rock. The main minerals present in felsite in varying amounts are quartz, potassium feldspar and plagioclase. In the geological literature names such as latite, quartz latite, dacite, rhyodacite, and rhyolite, will be found. These rock names depend on the quantity of the minerals present and/or the rock chemistry, since this usually can't be told visually, the name felsite is used as a more general term. Rhyolite is also sometimes used as a general term for these light colored volcanic rocks. When the rocks are composed mainly of ash from explosive eruptions, they are referred to as tuff, and sometimes more specifically as felsite tuff or rhyolite tuff.



Superstition volcanic rocks at Picket Post Mountain, Superior, AZ

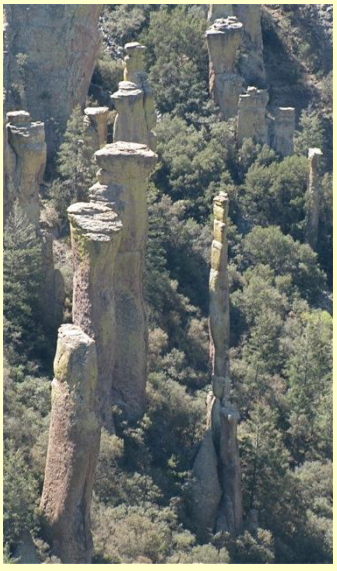
The Supersitition, Chiricahua, Kofa, Galiuro and many other mountain ranges in Southern Arizona are composed of felsite or tuff. These volcanoes were active from about 30 to 15 million years ago, and unlike the fluid basalt eruptions, these volcanoes had very violent eruptions.

Typical explosive tuff showing ash and rock fragments, Superstition Mountains

The magma came from melting of the crust or from melting of subducted sedimentary rocks and was very viscous. Some eruptions occurred as lava flows, but the magma was often rich in gas and would explode violently on reaching the surface; erupting as ash flows that formed the tuff we see today.

The Superstition volcanic field covers 3,000 square miles. Tuff is the common volcanic rock here and because it is resistant to erosion it forms the cliffs seen all around the Superstitions. The volcanic eruptions that formed the Superstitions must have been something to see, from far enough away! When this silica rich magma cools quickly such as under water, obsidian would form like the Apache tears from Superior.

Obsidian Apache tears from Superior



Spires of eroded tuff, Chiricahua National Monument

EXPLORE YOUR WORLD!

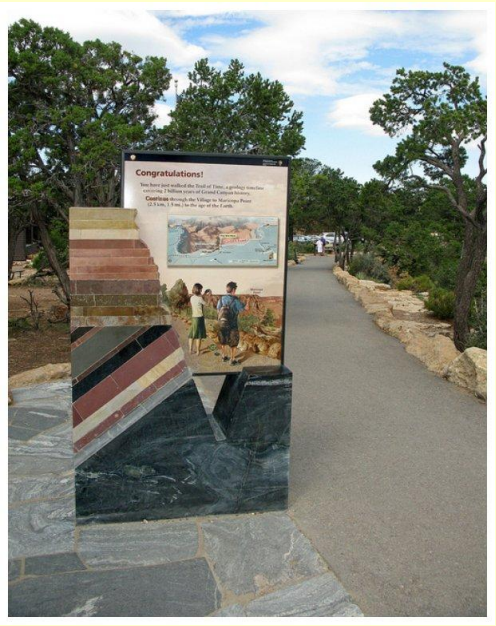
A Geology Exhibition
The Trail of Time at Grand Canyon

Photos and text from Trail of Time.org

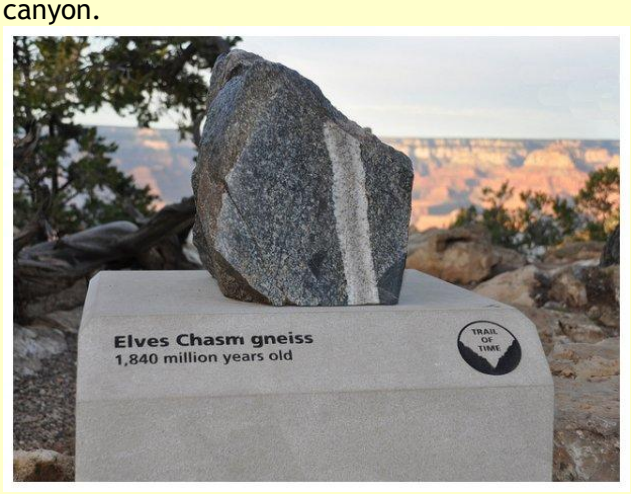
GC visitors interacting with exhibits along the Trail of Time
All photos by Mike Quinn, NPS

The Trail of Time is an interpretive walking timeline trail that focuses on Grand Canyon vistas and rocks to guide visitors to ponder, explore, and understand the magnitude of geologic time and the stories encoded by Grand Canyon rock layers and landscapes.

The Trail of Time is a 4.56 km (2.83 mile) long geologic timeline. Each meter walked on the timeline trail signifies one million years of Grand Canyon's geologic history. Walking the trail gives you a viceral appreciation for the magnitude of geologic time. Bronze markers mark your location in time; every tenth marker is labeled in millions of year! Along the timeline trail are a series of rocks and exhibits that explain how Grand Canyon and its rock formed.



Portal signs welcome visitors to the exhibit at the entry points to the trail, Yavapai Point and the west end of Grand Canyon Village. The rock column holding up this sign show Grand Canyon's rock actual layers, brought up from deep in the canyon.



Placed at their "birthdays" along the trail are about 50 samples of Grand Canyon rocks brought to the rim from deep in the canyon. Many show spectacular features like, 1.7 billion-year-old folds, 1.2 billion-year-old mud cracks, 800 million-year-old algal reefs, or 270 million-year-old fossils.

The "Million Year Trail", located at the Yavapai Point end of the Trail of Time, serves as an introduction or "on ramp" to the Trail of Time. Along it the first million years is stretched out to link human timescales (e.g. visitor's birthdays and key events in early Grand Canyon explorations) with geologic timescales (e.g. climate change and Grand Canyon's recent volcanic eruptions).

ESM's Upcoming Meeting

The Earth Science Museum's next scheduled meeting is August 14th at the Burton Barr Library, located south of McDowel on Central in Phoenix at 6:30 p.m. in Rm. B. Everyone is welcome to attend.

Earth Science Museum Website

Check out our new "Name that Mineral!" interactive quiz on our website using the following link.
http://www.earthsciencemuseum.org/node/130
Please let us know what you liked or didn't like about the quiz. We are aware that the pictures could be of better quality. Would you like to provide some better pictures? Do you have an idea for another interactive (or non-interactive) quiz with pictures that we could add to our website? If so, please e-mail us at info@earthsciencemuseum.org.

Guest Authors Wanted

The ESM is looking for guest authors to write earth science themed articles for its "Explore Your World!" segment of the ESM newsletter. Have you been to Lowell Observatory in Flagstaff or Kitt Peak near Tucson and would like to write an article? Earth science themes include anything to do with astronomy, the atmosphere, the oceans, and, of course, rocks, minerals, fossils, deserts, glaciers, earthquakes, mountain building, plate tectonics, geologic time, etc. Please submit your article(s) and some pictures to scote@earthsciencemuseum.org. Guest articles will be held in a file and periodically an article will be selected from the file for publication in one of our future newsletters.

ESM "Club Hubs" Expansion

Would you like to help the ESM provide earth science education in schools or libraries in your area? Help promote your rock and gem club and the ESM by becoming part of our Outreach Program. For more information contact Mardy Zimmermann at 480-839-6390.

MANY THANKS TO OUR MAJOR DONORS!

AZ Leaverite Rock & Gem Society
www.azleaverite.org

Flagg Mineral Foundation
www.flaggmineralfoundation.org

Friends of the AZ Mining & Mineral Museum

Maricopa Lapidary Society

Mineralogical Society of AZ
www.mineralogicalsocietyarizona.org

White Mountain Gem & Mineral Club
www.whitemountain-azrockclub.org

Wickenburg Gem & Mineral Society
www.facebook.com/pages/Wickenburg-Gem-and-Mineral-Society/111216602326438

Staples Foundation
www.staplesfoundation.org

Stan & Susan Celestian
Russ Hart
Debbie Michalowski
Dennis & Georgia Zeutenhorst

ESM Plans Earth Science Day

Stay tuned for information on the ESM's plans for Earth Science Day on October 19th.

October 13-19, 2013
"Mapping Our World"

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We're on the Web!

Visit us on *and at:*

www.earthsciencemuseum.org

Mission
Establish an innovative, world-class destination museum in the Phoenix area dedicated to inspiring all generations about earth sciences.

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 Wednesday, August 14, 2013, at the Burton Barr Library in Phoenix at 6:30 p.m. Rm. B.

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