



# Daisy Mountain Rockchips

The purpose of Daisy Mountain Rock & Mineral Club is to promote and further an interest in geology, mineralogy, and lapidary arts, through education, field experiences, public service, and friendship.

**VOLUME 2, ISSUE 9**

**OCTOBER 2017**

## FINE-GRAINED CLASTIC SEDIMENTARY ROCKS — Siltstone and Shale

Siltstone and shale are fine-grained clastic sedimentary rocks, with silt-sized grains (.0039 and .063 mm diameter — very small, but still marginally visible by the naked eye) and clay-sized grains (less than .002 mm diameter). Both can be considered “mudstones”, but there are some textural differences. The composition of both rock types is a mixture of clay minerals, mica, quartz and feldspar. A quick field test is to “chew” on some of the sediment with the front teeth — it will feel gritty, if mixed silt grains predominate (though this test should be used judiciously, as it can be hard on the teeth!); and it will feel slippery, if clay minerals predominate. See Figure 1.

### CLASTIC SEDIMENTARY ROCKS

Coarse-grained (pebbles, cobbles, boulders)	Medium-grained (sand)	Fine-grained (silt, clay)
<b>BRECCIA</b> - large, angular fragments, with fine matrix	<b>QUARTZ SANDSTONE</b> - mostly quartz sand; looks sandy; may shed loose grains of sand	<b>SHALE</b> - composed of clays, which lead to fine layers; dull luster; soft
<b>CONGLOMERATE</b> - large, rounded fragments, with fine matrix	<b>ARKOSE</b> - assorted sizes, with visible feldspar; often reddish	<b>SILTSTONE</b> - composed of fine particles of quartz and feldspar; massive; gritty feel
	<b>GRAYWACKE</b> - assorted sizes, with mica and rock fragments; dark gray or greenish-gray	

**FIGURE 1** *Clastic Sedimentary Rock Chart*  
Chart created by Susan Celestian

**Siltstone** has a variable composition, with a generally larger proportion of clay minerals and micas than that found in sandstone, but with a predominance of equi-dimensional grains of quartz and feldspar — hence the grittiness. It tends to be massive to thinly-bedded, and is usually gray, tan, or reddish-brown (although depending on the minerals present in rock or cement, and the effects of weathering, they may be black, red, white, purple...) See Figure 2.

*Siltstone/shale continued on page 4....*

## MEMBERSHIP SURVEY

In case you did not, or forgot to, fill out the Membership Survey posted in the September newsletter, I have attached it to this one. Bring it with you to the next meeting -- or email to [DMRMCLUB@GMAIL.COM](mailto:DMRMCLUB@GMAIL.COM), or Mail to: P.O. Box 74215, Anthem, AZ 85086

## NOVEMBER NOMINATIONS

As the year comes to an end, please consider running for an office. The club is extremely grateful for the hard work of current and past officers, but it is important to an organization’s vitality that members share the load.

In addition, club committees need active participants: social media, website, mineral show, field trips, membership...

## DRAGON MINE FIELD TRIP

On Saturday, October 28th a group from the club met in Wickenburg, and drove 2 miles up San Domingo Wash. Climbing out of the wash at “the windmill”, another 2 miles saw them arriving at the Dragon Mine. This is an old gold, vanadium, lithium, beryllium pegmatite deposit. It has also been called the Union Group, United Vanadium, and the Lu Ann.

After an hour or so at the Dragon, many of the members followed Stan across the stream at the foot of the hill, and headed east to a hill of thundereggs and geodes.

*Dragon continued on page 6....*

### INSIDE THIS ISSUE

Siltstone & Shale	1, 4-6
Dragon Mine Field Trip	1, 6-8
Minutes	2
Wire-wrapping Class	3
Upcoming Field Trips	9
Show list, Club Information	10
Minerals in Our Everyday Lives - Siltstone & Shale	11
Club Membership Survey	12

### Board Meeting Minutes — October 3, 2017

The meeting was called to order by President Ed Winbourne at 5 p.m. Those present were, Ed, Stan and Susan Celestian, Tiffany Poetch, and Cynthia Buckner. A quorum was established.

*Motion:* made by Ed, seconded by Susan and unanimously carried to name Tiffany Poetch as Acting Membership Committee Chair.

General discussion ensued relative to lapidary facility, field trips, and fall gem and mineral show.

*Motion:* made by Stan, seconded by Cynthia, and unanimously carried to adjourn the meeting.

Meeting adjourned at 5:51 p.m.

Respectfully submitted,  
Cynthia Buckner, Acting Secretary



### General Meeting Minutes — October 3, 2017

The meeting was called to order by President Ed W. at 6:36 p.m. The guest speaker for the meeting was Jay Yett who spoke on the various uses for abandoned mines.

A raffle of donated items was held. The donations were received from: Stan and Sue Celestian, Fire Mountain Gems, Dave Haneline, and Clark Little. Recipients of raffle items were: Bob Evans, Jeanne Smardo, Fiona Panza, Nancy Gallagher, Rona Panza, Arabella M., and Ed Winbourne.

The meeting adjourned at 8:15 p.m.

Respectfully submitted,  
Cynthia Buckner, Acting Secretary



Jay Yett's talk at the October meeting was about post-mining uses of mining sites. One he mentioned was Bouchart Gardens on the island of Victoria, B.C. Beginning in 1909, the limestone quarry exhausted, the Boucharts commissioned Isaburo Kishida of Yokohama to install Japanese gardens within the quarry site -- and they have been evolving ever since. You can see wall of the old quarry behind some of the plantings. *Photos by Susan Celestian*

# Wire Wrapping Class

## November -- Weave Wrapping

Club member, Jennifer Gecho, volunteers to teach a wire wrapping class. Before each club meeting, those interested can join her to twist some wire, and tell a tale or two. The classes are free, although we ask for a donation (suggested at \$5-10).

**WHAT:** Wire wrapping: November style again is Weave Wrapping

**WHERE:** Anthem Civic Building, 3701 W Anthem Way, Anthem, AZ  
(Same building in which the club meetings are held.)

**WHEN:** 4:30 on the 1st Tuesday of the month (same night as club meeting)

### BRING WITH YOU THE FOLLOWING:

- ◆ 20 gauge wire
- ◆ 24-26 gauge wire
- ◆ A stone, larger than a quarter
- ◆ Tools - pictured below:
  - Round nose pliers
  - Needle nose pliers
  - Side cutters
  - Metal spring clamp

**DONATION:** \$5-10, for expenses



A geometrically whorled ammonoid fossil makes the perfect subject for this weave wrapping by Jennifer Gecho.

As an aside: ammonoids can be pictured as a squid-like creature in a shell (closest living relative is the Pearly Nautilus).

The animal occupies only the outermost chamber. There is a tube (*siphuncle*) that connects each chamber, and through that, the animal can pump gas in and out, to regulate its buoyancy in the water column. To move horizontally, there is a nozzle (*hypostome*), out of which the animal can shoot a water jet. They were surely aggressive, clever, and agile predators, dominating the seas during the Mesozoic. The largest ammonoid had a shell about 6 feet in diameter! (Note that in the right-hand image, you can see the rainbow colors of the nacreous (mother-of-pearl) layer of the shell.



Pliers and clamp needed for wire wrapping



...Siltstone/shale continued from page 1



**FIGURE 2 Bedded Siltstone** This is a view of rocks exposed within Capitol Reef National Park. The lower red beds are siltstones of the Triassic Moenkopi Formation. Note how the various beds weathering differently, revealing the thin layers.

*Photo by Susan Celestian*

**Siltstone Environments of Deposition:** The small grain size of siltstones indicate a low-energy environment, such as may be found on deltas, floodplains, lakes, marine shelves, tidal flats, and protected stream environments. Fossils, mudcracks, ripple marks, cross-bedding, and salt casts are often associated sedimentary structures. See Figures 3-5.



**FIGURE 3 Siltstone of the Moenkopi Formation (Coconino County).** The cubic 'bumps' are salt casts — salt crystals formed, were buried, dissolved, and replaced by sediment. The salt casts and the reddish color denote an arid terrestrial environment, such as a floodplain. *Photo by Stan Celestian*



**FIGURE 4 Siltstone** This siltstone has prominent mudcracks, an indication of an environment that is alternately wet and dry.

*Photo by Stan Celestian*



**FIGURE 5 Siltstone nodules** This nodule is out of the Pennsylvanian-age Francis Creek Shale of the Mazon Creek fossil area. The leaves were deposited on a large delta. Decomposition created a chemical environment that caused siderite (an iron carbonate) to precipitate out and fortify the sediment around the fossils, forming concretions. *Photo by Stan Celestian*

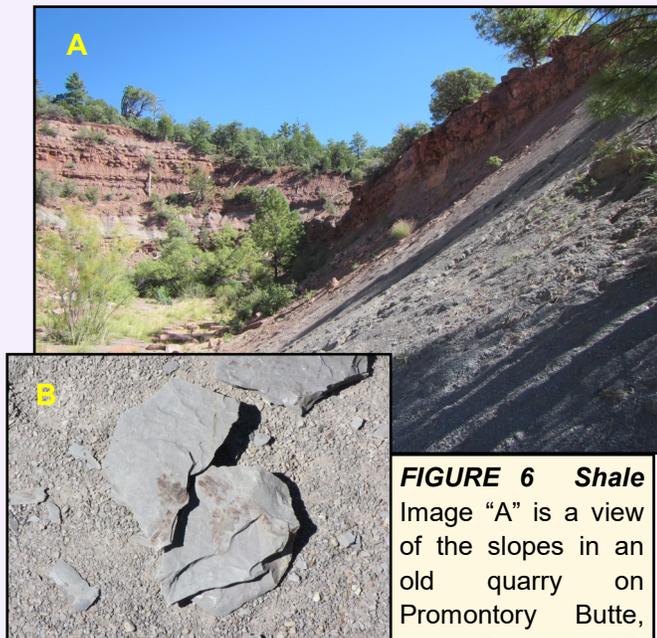
**Shale** is a very fine-grained rock variably composed of silt and clay minerals, with clays generally predominating. Since clays are a primary product of the weathering of most rock-forming minerals, they are very abundant, and shale is the most abundant sedimentary rock — perhaps as much as 75% of the sedimentary rocks in Earth's crust.

Clay minerals (that are also generally clay-sized) comprise a large group of different silicate minerals that are built of hexagonal sheets — making the minerals platy. These platy grains settle out of water in an arrangement that is very roughly parallel to each other. Under compaction, water is squeezed out of the sediment, and the mineral grains are attracted to each other, lithifying the

*Siltstone/shale continued on page 5...*

..... Siltstone/shale continued from page 4

sediment into rock. As a result, shales exhibit and break along very, very thin layers (called laminae), and are considered *fissile* (i.e. they split into thin pieces). See Figures 6-7.



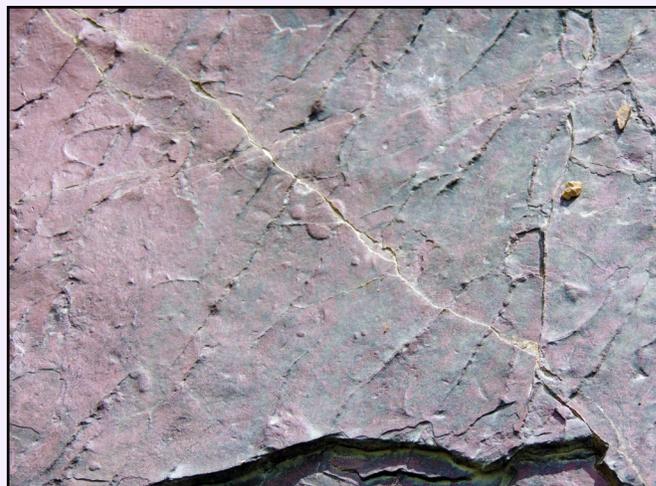
**FIGURE 6 Shale**  
Image "A" is a view of the slopes in an old quarry on Promontory Butte, near Payson, AZ.

The gentle slope in the foreground formed by weathering of the Pennsylvanian-aged shales (part of the Naco Formation). Image "B" is a close view of the shale and slope material. Note the laminae visible in the larger chunks of rock, and the small, thin bits of shale resulting from the weathering of the fissile, fragile rock. Such slopes are typical of shales.  
*Photos by Susan Celestian*



**FIGURE 7 Shales in the Grand Canyon** This is a view of the Grand Canyon, with Isis Temple prominent in the center. Notice that the walls of the canyon form a series of vertical cliffs and more gentle slopes. The gentle slopes are underlain by shales, while the steeper cliffs are underlain by sandstones and limestones.  
*Photo by Stan Celestian*

**Shale Environments of Deposition:** Clay minerals are platy, and are easily kept in suspension. Therefore, water or air carrying them must be extremely quiet, before the mineral grains can settle out. These extremely quiet environments include the very deep ocean basins, swamps, marshes, lakes, and lagoons. See Figures 8-10.



**FIGURE 8 Shale of Precambrian Belt Supergroup**  
This very thick series of muds and sands were deposited over 1.4 billion years ago, as stream and lake deposits within a rift fault basin. This exposure reveals round bumps, that are raindrop imprints (we are looking at the underside of the layer).  
*Photo by Susan Celestian*



**Figure 9 Mud Concretion** This fantasmical lump of mud (now shale, or maybe more appropriately mudstone) is often called a "fairy stone". Concretions like this are found along the Harricana River, Abitibi, Quebec, Canada. They formed when calcite precipitated out around sedimentary grains, and proceeded to cement the sediment together. Some geologists have proposed that they formed in unconsolidated muds, beneath a glacier, only a few thousand years ago. Others have proposed formation in the muds of peri-glacial lakes.  
*Photo by Stan Celestian*

..... Siltstone/shale continued from page 5



Photo by Stan Celestian

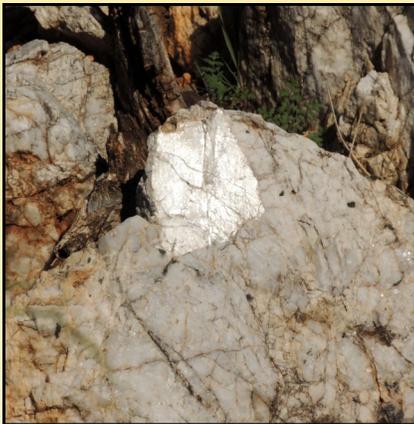
**FIGURE 10 Shale of Promontory Butte** This dark gray shale was collected at the Promontory Butte location, in Gila County. The dark color of the rock and fern fossil indicate an organic-rich environment, such as a swamp.

Photo by Stan Celestian

**S**tan Celestian will be the guest speaker for the November 7th meeting. He will be speaking about the collection he and his fetching wife, Susan, have amassed over their collective 112 years of collecting rocks, minerals and fossils. Both Stan and Sue are retired, but currently teach Geology part-time through online classes for ASU and Rio Salado Community College. Being teachers of the basic introductory Geology classes, their expertise is far-ranging and their collection represents a diversity of items related to the topics discussed in lecture as well as lab classes. Just as an example, within their collection are various types of sand, trilobites as well as other fossils, actual “rock” collection (Igneous, Sedimentary and Metamorphic rocks), meteorites, faceted stones, lapidary slabs and rough, pseudomorphs, teaching collection that illustrates the various physical properties of minerals, thumbnails, synthetic crystals, mining lamps and artifacts, and, of course, an outstanding collection of crystals from around the world.

Stan and Sue are active field collectors and often get out to collect their own specimens, but, most of the exquisite specimens in their collection were acquired by purchases, especially at the Tucson Gem and Mineral Show. Stan will give a PowerPoint Presentation about some of the significant pieces of their collection. There will be something for everyone at this fun, “Must See” talk at the next meeting.

....Dragon continued from page 1



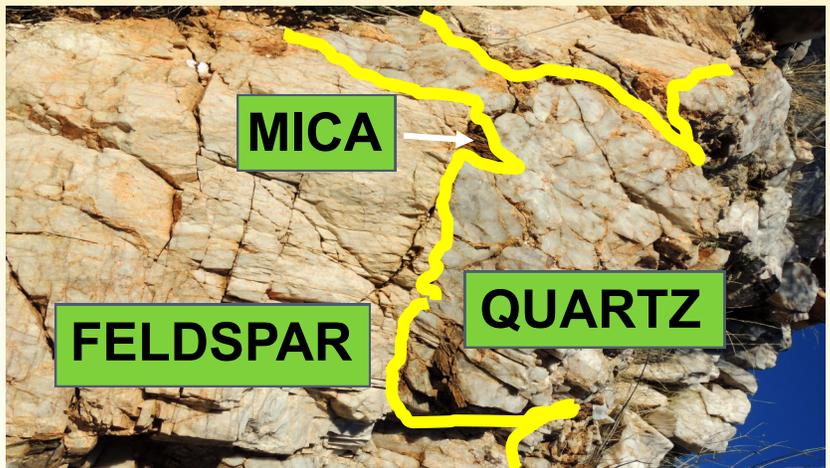
Big shiny cleavage plane on Feldspar crystal amidst a sea of Quartz Photo by Susan Celestian

**The Dragon Mine Pegmatite**

Reminder: A pegmatite is a hydrothermal deposit characterized by very large crystals -- crystals measured in inches. Many exotic elements are often associated with pegmatites.



Triangular cross-sections of Schorl (black tourmaline) crystals. Tourmaline is in the Trigonal Class. Photo by Susan Celestian

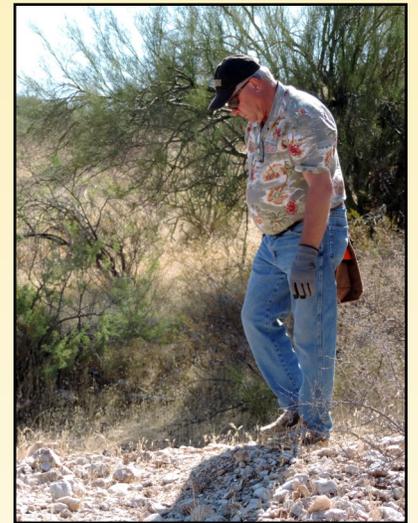


Dragon continued on page 7....

....Dragon continued from page 6



The hills are alive with rockhounds -- eyes on the ground, and hammers, buckets, and backpacks at the ready!



Suddenly his shoes fell apart and we taped the soles onto both of his boots with electrical tape today. *Lesson of the day:* Never leave home without tape (duct is best)!!

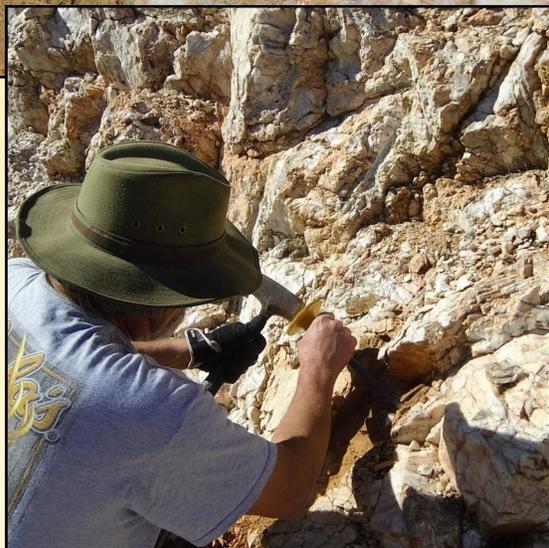


Photos by Stan and Susan Celestian

Dragon continued on page 8....

...Dragon continued from page 7

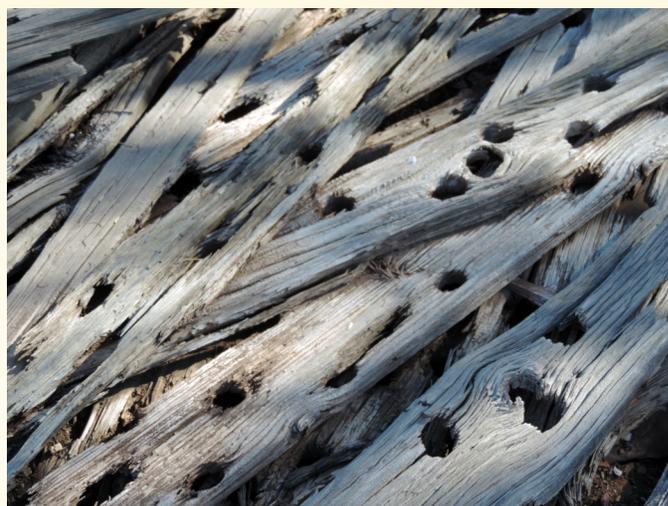
Dave Haneline encourages some pink-ish tourmaline to go home with him. Left-hand photos by Susan and Stan Celestian The photo on the right are his two best, cleaned up. Photo by Dave Haneline



Bill Smardo found a very attractive specimen of fibrous, radiating tourmaline crystals, near the geode parking area. Photo by Stan Celestian



Stan hauled a 78 pound quartz boulder full of green-ish tourmaline. A great yard rock!!! I don't think Joseph Gecho went home with one that big this time ☺ Photo by Stan Celestian



Sue Celestian always has an eye out for unique textures. Those can't all be knot holes! Photo by Susan Celestian

## UPCOMING FIELD TRIPS

**WHEN:** October 28, 2017

**WHERE:** Dragon Mine

**WHAT:** Pegmatite minerals; thundereggs

**MEET:** 9:00 am at the McDonald's in Wickenburg, leaving at 9:15

**LEADER:** Stan Celestian

**BRING:** lunch, chair (if desired), sturdy shoes, rock pick, any other rock-breaking tools, bag or bucket

---

**WHEN:** November 11, 2017

**WHERE:** Yellow Pine Mine and area, near Las Vegas, Nevada

Make your own hotel reservations. Silverton is well situated, and probably several club members will be staying there.

**WHAT:** Lead-zinc minerals, feldspar pseudomorphs, travertine

**LEADER:** Dave Haneline

**BRING:** Sturdy shoes, lunch, chairs (if desired), rock pick, any other rock-breaking tools, bag or bucket, wrapping paper (TP or other)

---

**WHEN:** November 18th, 2017

**WHERE:** New River

**WHAT:** Yellow jasper

---

**WHEN:** December 9, 2017

**WHERE:** Purple Passion Mine

**WHAT:** Fluorescent minerals, wulfenite

---

**WHEN:** January 20, 2018

**WHERE:** Aguila

**WHAT:** Geodes, Apache tears

---

**WHEN:** February 2018 (TBA)

**WHERE:** Tucson Gem & Mineral Show

**WHAT:** Minerals, jewelry, artifacts for sale

**WHEN:** February 17, 2018

**WHERE:** Seven Springs/Red Rover Mine

**WHAT:** Jasper, copper minerals, travertine

---

**WHEN:** March 2018 (TBA)

**WHERE:** Pete the Miner

**WHAT:** Gold mine tour (fee)

---

**WHEN:** April 2018 (TBA)

**WHERE:** Peridot Mesa

**WHAT:** Peridot in basalt (fee)

---

**WHEN:** May 2018 (TBA)

**WHERE:** Payson area

**WHAT:** Zebra agate, peach agate, Pennsylvanian fossils

---

**WHEN:** June 2018 (TBA)

**WHERE:** Jerome

**WHAT:** Fossils, possible Gold mine tour (fee)

*DATES SUBJECT TO CHANGE*

*Stan Celestian has created a page in Flickr where he is posting photos from club field trips. If you have some photos that could be added to the albums, send them to [stancelastian@gmail.com](mailto:stancelastian@gmail.com).*

*Post field trip pictures on the club website.*

*His site can be found at: [https://](https://www.flickr.com/photos/149654042@N02/albums/with/72157682683515735)*

*[www.flickr.com/photos/149654042@N02/albums/with/72157682683515735](https://www.flickr.com/photos/149654042@N02/albums/with/72157682683515735)*

*Don't forget to also post good trip pictures on the club's Facebook page!*

## UPCOMING AZ MINERAL SHOWS

**November 3-5 - Black Canyon City, AZ** High Desert Helpers Rock-a-Rama Gem and Mineral Show; High Desert Park, 19001 E Jacie Ln; Fri 9-4, Sat 9-5, Sun 9-4; Admission: free.

**November 18-19 - Payson, AZ** Payson Rimstones Rock Club, Inc.; Payson H.S./Longhorn Gym, west of Longhorn Rd., east of McLane; Sat 9-5, Sun 10-4; Admission: \$2, children 12 and under free.

**November 25-26 - Wickenburg, AZ** Wickenburg Gem and Mineral Club; Wrangler Event Center, 251 S. Tegner St.; Sat 9-5, Sun 10-4; Admission: free.

**January 5-7 - Mesa, AZ** Flagg Mineral Foundation -- Flagg Gem & Mineral Show; Mesa Community College; 1833 W Southern Av; Fri-Sun 9-5; Admission: free.

**January 12-14 - Globe, AZ** Gila County Gem & Mineral Society; Gila County Fairgrounds; Hwy 60, 3 miles north of Globe; Fri-Sat 9-5, Sun 9-4; Admission: \$3 indiv, \$5 couple, students/children free.

**January 19-February 11- Tucson, AZ** There will be many separate shows throughout Tucson during this period. For a general schedule, go to: <http://www.tucsongemshows.net/coming.html>

**February 8-11 - Tucson, AZ** Tucson Gem and Mineral Society; Tucson Convention Center; 260 S Church Av; Thur-Sat 10-6, Sun 10-5; Admission: \$13, children 14 and under free.

**February 8-11 - Mesa, AZ** Apache Jct Rock and Gem Club; Skyline High School, 845 S Crimson Rd.; Sat 9-5, Sun 10-4; Admission: \$3 adults, \$1 students, children 12 and under free.

**March 24-25 - Anthem, AZ** Daisy Mountain Rock and Mineral Club; Boulder Creek High School Gym, 40404 N Gavilan Peak Pkwy; Sat 9-5, Sun 10-4; Admission: \$3 adults, \$2 seniors and children, children 12 and under free.

If you are travelling, a good source AND clubs is <http://www.the-vug.com/vug/vugshows.html> or <http://www.rockngem.com/ShowDatesFiles/ShowDatesDisplayAll.php?ShowState=AZ> For out-of-the-country shows: <http://www.mindat.org/shows.php?current=1> A good source for a list of Arizona Mineral Clubs and contact information is [http://whitemountain-azrockclub.org/Public\\_AZ\\_Clubs\\_Links.html](http://whitemountain-azrockclub.org/Public_AZ_Clubs_Links.html)

## NOTE FROM THE EDITORS

Have a geological interest? Been somewhere interesting? Have pictures from a club trip? Collected some great material? Send us pictures -- or write a short story (pictures would be great). We encourage topic suggestions also.

[Deadline for the newsletter is the 22nd of the month.](#)

Mail or Email submissions to:

Susan Celestian  
6415 N 183rd Av  
Waddell, AZ 85355  
azrocklady@gmail.com

## Facebook

Visit the club website periodically. See what is happening, and boost our visibility on the web. Go to: The Daisy Mountain Rock and Mineral Club. It is set up so you can post photos of outings or related items.

This is a new site. Join The Daisy Mountain....., and Unjoin Daisy Mountain Rock and Mineral Club. To Unjoin, go to The Daisy Mountain Rock and Mineral Club, click on Groups (in bar at page top). Both the new and old sites should come up with option to Join and Unjoin.

## Officers and Chairpersons

**President:** Ed Winbourne.....[ewinbourne@gmail.com](mailto:ewinbourne@gmail.com)

**Vice President:** Stan Celestian

**Secretary:** Victoria Peterson

**Treasurer:** Cynthia Buckner

**Publicity:**

**Membership:** Victoria Peterson

[g.victoriapeterson@yahoo.com](mailto:g.victoriapeterson@yahoo.com)

**Editors:** Susan & Stan Celestian.....

[azrocklady@gmail.com](mailto:azrocklady@gmail.com)

**Field Trip:** Stan Celestian

**Show Chair:** Ed Winbourne

Meetings are held the **1st Tuesday of the month** at the **Anthem Civic Building**, 3701 W Anthem Way, Anthem, AZ 85086. Business meeting at 6:30 pm. We **do not meet in July or August.**

DMRMCLUB@GMAIL.COM

**Membership Dues: \$20.00 Adults per Person  
\$25.00 Family**

**Meeting Dates for 2017**

Jan 3, Feb 7, Mar 7, Apr 4, May 2, June 6, Sept 5, Oct 3,  
Nov 7, Dec 5

**MINERALS IN OUR EVERYDAY LIVES****USES (AND USEFULNESS) OF SILTSTONE (\*) & SHALE (◆)**

- \* **Building, Facing stone, Curbing**
  - \* **Aggregate**
  - \* **Raw material for Mortar**
    - \* **Sculpture**
    - \* **Soil conditioner**
    - \* **Cement Manufacture**
- ◆ **Component of cement:** When the limestone used to make cement exceeds 79% calcium carbonate, a low-carbonate material — clay — must be added; also contributes silica, alumina, and iron oxide.
- ◆ **Source of oil:** Colorado/Wyoming/Utah oil shales are thought to hold about 3/4 of the recoverable oil shale reserves, in the world.
- ◆ **Source of oil & oilfield capstone:** The organic components of many shales act as the initial source of oil and natural gas. Shale is very impermeable, so the light oil and gas migrate upward, out of the 'parent' shale, and will continue upward, until stopped by another impermeable layer — usually shale.
- ◆ **Manufactured clay:** Shale is very finely crushed, and mixed with water, to create a substance similar to natural clay.

**DMRMC MEMBERSHIP SURVEY**

As the Club membership has almost doubled in the last year, the Board wishes to ascertain what particularly members enjoy and appreciate about our Club as well as what items you would like to see us provide. To that end, we are providing this survey and would appreciate your completing it to assist us in making our Club enjoyable for all members. Please fill out and bring to October meeting, email to [dmmclub@gmail.com](mailto:dmmclub@gmail.com), or mail to PO Box 74215, Anthem, AZ 85086

**Meetings:**

Do you attend monthly members meetings? If so, what would you change about the content? If not, why not?

**Rock and Mineral Show:**

Have you attended the show? Have you volunteered at the show? What do you like and/or would change about the show, ie. facility, dates of show, vendors, food, admission costs, marketing?

**Volunteering:**

For our club to continue to be successful, we depend upon volunteers; we have no paid staff. In what areas are you willing to volunteer? Board, Committees (ex. Social Media, Publicity, Membership, Field Trip, Website...), Show;

**Field Trips:**

Have you attended field trips? What did you like and dislike?

**Other Group Activities:**

The Club generally holds a holiday party in December and a picnic in the spring . Have you attend one or both of these? What other types of group activities would you like to see provided?