



# 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 3, ISSUE 2**

**FEBRUARY 2018**

## NON-CLASTIC SEDIMENTARY ROCKS — Diatomite & Coal

By Susan Celestian

The last two primary sedimentary rock types are diatomite and coal -- both with organic origins. In other words, neither rock is composed of minerals. Refer to Table 1.

**Coal** occurs in coal beds or coal seams. While coal formed during most geologic periods, the Pennsylvanian Period is characterized by coal deposits across the northern hemisphere. In fact, the span of time called the Mississippian and Pennsylvanian Periods in the U.S., was dubbed the Carboniferous Period in Europe, due to the prominence of coal deposits.

Coal is brown to black, and composed of plant debris -- and hence, the primary component of coal is carbon, with varying quantities of sulfur, hydrogen, nitrogen, and oxygen. The various types of coal are produced through various stages of

*Diatomite & Coal continued on page 3.....*

### NON-CLASTIC SEDIMENTARY ROCKS

**LIMESTONE** - composed of precipitated crystals of calcite; will fizz in acid

- \* **Crystalline Limestone** - fine to sugary calcite crystals, without fossils
- \* **Fossiliferous Limestone** - fine calcite crystals, usually marine fossils
- \* **Oolitic Limestone** - composed of small spheres of calcite
- \* **Coquina** - composed of nearly only shells and shell fragments
- \* **Chalk** - composed of the microscopic calcite shells of planktonic animals (coccoliths, foraminifera)
- \* **Travertine** - coarsely crystalline calcite (very sugary), often banded in various colors (browns, reds, blacks)

**DOLOSTONE** - similar to limestone, but composed of dolomite; will fizz weakly after powdered; generally devoid of fossils

**CHERT** - microcrystalline quartz; conchoidal fracture; waxy luster; any color

- \* varieties include flint, chert, jasper, chalcedony, agate, opal (although chalcedony, agate, opal do differ a bit from flint, chert, jasper)

**ROCK SALT** - composed of halite; cubic cleavage; salty taste

**GYPSUM** - composed of gypsum; easily scratched by fingernail

- \* varieties include: alabaster (massive, sugary); selenite (generally clear); satin spar (fibrous)

**DIATOMITE** (aka diatomaceous earth) - composed of the microscopic silica shells of diatoms; similar to chalk, but will scratch glass will not fizz in acid, and is less dense.

**COAL** - composed of the carbonized remains of plant debris; brown-black; low density

- \* varieties include: peat (loose visible plant debris), lignite (brown, with some visible plant remains), bituminous ("soft coal", black)

**TABLE 1 Non-Clastic Sedimentary Rock Chart**

## FIELD TRIP

**SATURDAY, FEBRUARY 17, 2018  
RED ROVER MINE**

Photos by Nancy Gallagher



Owner, Cynthia Buckner speaks to the club about her mine



*Field Trip continued on page 5.....*

### INSIDE THIS ISSUE

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### Board Meeting Minutes — February 6, 2018

The meeting was called to order by Vice President Stan Celestian at 5:10 p.m. Those present were: Tammy Early, Claudia Marek, Joe Gecho, Bob Salter, Victoria Peterson, Stan and Sue Celestian, Cynthia Buckner and Howard Roose. Bob Evans and Ed Winbourne entered the meeting at 5:35 p.m. A quorum was established.

**Past Meeting Minutes:** The January Board meeting minutes were unanimously approved with no corrections or additions.

**Financial Report:** Cynthia presented the financial report which was filed for audit. Cynthia reported on the just completed audit by Dave Haneline (attached to hard copy of minutes). She stated as a result of the audit, she will require receipts for all expenditures before reimbursement is made. Gratitude was expressed to Cynthia for her work as Treasurer.

**Motion:** Made by Ed, seconded by Cynthia and unanimously carried to approve the audit completed by Dave Haneline.

#### **Old Business:**

**Projector:** Discussion ensued relative to purchasing a new projector and screen for the club to be used for presentations by the club, for use of our speakers and for educational presentations.

**Motion:** That a projector and screen will be purchased by either Ed or Cynthia with approximate cost of \$549.

**Walkie Talkie:** There was discussion as to whether Dave Haneline has walkie talkies that may be used by the Club and/or whether he has purchased same for Club. Ed will discuss this with Dave.

**Trustee Term Rotation:** The following Board members terms will be fulfilled in December of 2018: Bob Salter, Bob Evans and Susan Celestian. Claudia, Whit, and Jennifer's terms will be up the end of 2019, and Joe's will end in 2021.

There was discussion relative to Board members' attendance at meetings. The ByLaws state that two absences from meetings by a member constitute removal from the Board by the President, unless the President has been informed of and approved a member's absences.

*Board minutes continued on page 3...*

### Membership Meeting Minutes - February 6, 2018

The meeting was called to order by President Ed Winbourne at 6:32 p.m. There were 33 people in attendance.

**Speaker:** Ed announced Susan Celestian as the speaker for the evening. Susan spoke about meteorites.

Refreshment Break.

A raffle of following donated items was held: copper from Ray Mine, celestite, fern fossil, beads, garnet in rhyolite, rhyolite with dendrites.

**Financial report:** Cynthia gave the financial report.

**Tucson Gem & Mineral Show:** Ed announced that for those attending the February 10th Gem Show in Tucson, that a group of Club members who are attending will meet in Tucson for lunch. Time and place to be determined.

**Daisy Mountain Gem & Mineral Show:** There will be a sign up sheet for the Anthem Gem & Mineral Show volunteer opportunities including, but not limited to: Admissions table, raffle ticket sales. Howard Roose discussed the show posters and marketing zones (posters to be placed two weeks before the show). He discussed the use of social media, internet, websites. He mentioned signs are effective and we will use TV this year with ten 15 second ads plus an interview on Channel 12, six Harkins Theater public service announcements. Jeff discussed expansion of poster zones to 21.

Jeanne Smardo talked about the Kids' Corner.

**Adjournment:** There being no further business, the meeting adjourned at 8:05 PM.

Respectfully submitted by:  
Victoria Peterson, secretary  
Notes taken by Bob Salter



The very crystalline Nandan Meteorite, a nickel-iron octahedrite, observed to fall in May, 1516, between Lihu and Yaochai, Guangxi Zhuang Autonomous Region, China

...Board minutes continued from page 2

**Potential Lapidary Facility:** There was general discussion of sharing the North Mountain facility. No decisions or recommendations at this point.

**New Business:**

**Education:** Ed discussed the costs which are incurred by Education Committee members in presentations to schools. He further discussed the Club is being asked more regularly to give presentations to STEM, STEAM nights and the club members are personally providing materials, transportation, fuel, etc. Ed thanked all those who assisted with the Stem/Steam presentations.

Ed suggested that Bob Salter and Bill Smardo present information to the Board on the costs of these presentations and to provide a budget for the Education Committee.

Consensus was the Education Committee members should be reimbursed for their costs.

**Youth Membership:** Howard Roose stated that other clubs have programs for youth; he further stated he is not suggesting a Youth Membership Category but having a group for youth. Stan suggested this be brought up at this month's membership meeting and ascertain if there is interest in a youth group of some type. Bill Smardo and Claudia Marek agreed to take the lead in forming a DMRMC Youth Program.

**Membership:** Tiffany reported that the Club presently has 77 paid members.

**March Gem & Mineral Show:** Ed reported on a TV marketing direction for the show rather than print and that this year TV Channel 12 has been approached relative to the Club presenting information on the show. We will need a script for the show which airs at noon each day. This will be discussed in detail at the Marketing Committee Meeting.

**Adjournment:**

There being no further business, the meeting adjourned at 6:07 PM.

Respectfully submitted,  
Victoria Peterson, Secretary

...Diatomite & Coal continued from page 1

change. The precursor to the process is *Peat*, which is unconsolidated, boggy, partially decomposed plant material. Burial and pressure will lead to the formation of *Lignite*, a very soft, brown coal, in which plant fragments remain evident. Continued burial/pressure will produce *Sub-bituminous*, and then *Bituminous Coal* (60-80% carbon). The latter is soft, black, and high in bitumen. Ultimately, a higher grade of coal is produced, called Anthracite Coal. However, it is generally considered a metamorphic rock.

Because of its organic origins, coal is referred to as a "fossil fuel". See Figure 1.



**FIGURE 1**

**Bituminous**

**Coal** This soft, black coal is abundant in the coal deposits of the world, and is often high in sulfur.

*Photo by Stan Celestian*

**Coal Environment of Deposition:** Throughout geologic time, small to extensive low-lying wetlands have formed, such as the coastal swamps that characterize the Pennsylvanian Period. These areas supported persistent plant life for very long periods of time. Plants flourished, died, and were buried. Over time, the water-logged and accumulated plant debris subsided, and was covered by clastic sediments, such as sand, silt, and clay. With subsidence the pile of debris became thicker and thicker, and thus came compaction and an increase in temperature. Additionally, burial protected the deposits from oxygen, and aerobic bacterial decay was severely slowed. Those higher temperatures and pressures "cooked" the plant debris, driving off volatiles (such as methane), and increasing the relative carbon content.

**Diatomite or Diatomaceous Earth (DE)** is an accumulation of fossil diatoms. Diatoms are microscopic (mostly) aquatic algae that produce two overlapping lacy shells (valves) of silica (opal). They generally float, are photosynthetic, and are found in

*Diatomite & Coal continued on page 4.....*

...Diatomite & Coal continued from page 3

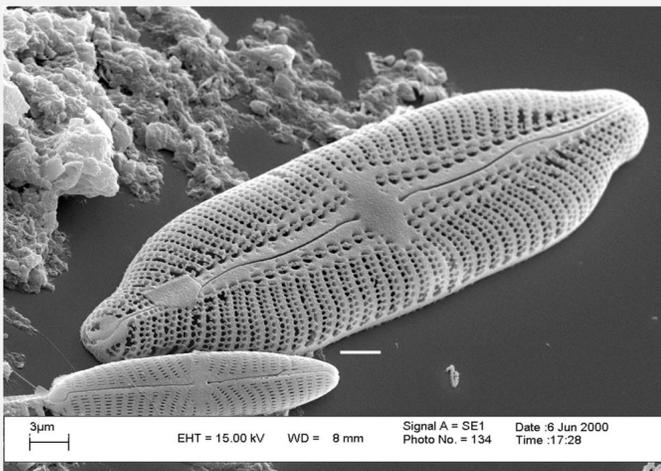
marine water, freshwater, in soil, and damp areas.

Diatoms may be small, but they make up almost of the organic mass found in Earth's oceans. See Figures 2-3.

Diatomite is a soft -- though abrasive -- generally white rock, that can be easily powdered. See Figure 4.



**FIGURE 2 Diatom** This is a living diatom. Note the lacy skeletal framework, and the radiating pseudopodia (extensions of the organism that facilitate movement and entrap food). Image courtesy of NOAA PMN, Photo by Dr. Steve Morton

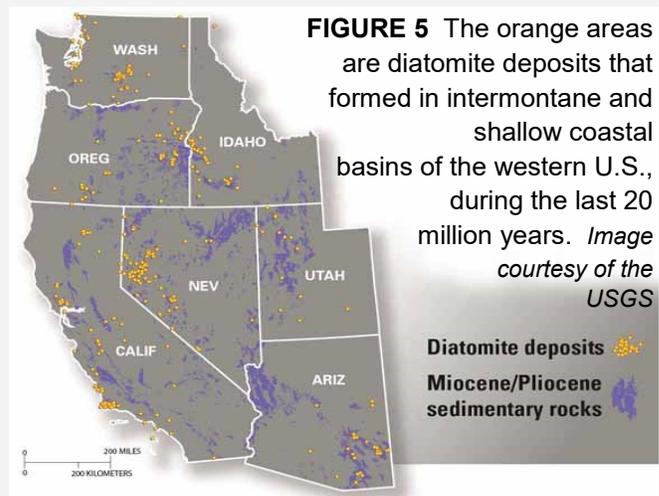


**FIGURE 3 Diatom Aneumastus sp.** This scanning electron micrograph clearly reveals the beautiful shell of this diatom. Image courtesy of NOAA, Photo by Sarah Spaulding



**FIGURE 4 Diatomaceous Earth (Diatomite)** This soft white chalk-like rock was mined near San Manuel, Arizona. The diatoms were deposited in a Upper Miocene-Pliocene lake environment. Photo by Stan Celestian

**Diatomite Environment of Deposition:** Diatoms generally live in relatively shallow water (less than 30 feet deep), due to their need for sunlight for photosynthesis. When the chemistry of the water is ideal -- pH, infall of siliceous volcanic ash, influx of the vital nutrient phosphorous, from the weathering of volcanic rocks, diatoms will 'bloom'. As diatoms die, their siliceous framework sinks to the bottom of ocean or lake basins. See Figure 5. There they may accumulate to great thickness. In many basins, there may be a minimum of clastic sediments, and diatoms may compose in excess of 30% (by weight) of the sediment, That sediment is called a *siliceous ooze*. And it is this ooze that will become lithified into a relatively pure deposit of porous silica, called *diatomaceous earth*. Imagine how many trillions of these creatures must die to form a mineable deposit -- especially when you consider that on the way 'down', many of the shells may dissolve!



**FIGURE 5** The orange areas are diatomite deposits that formed in intermontane and shallow coastal basins of the western U.S., during the last 20 million years. Image courtesy of the USGS

**Diatomite deposits** (orange dots)  
**Miocene/Pliocene sedimentary rocks** (purple areas)

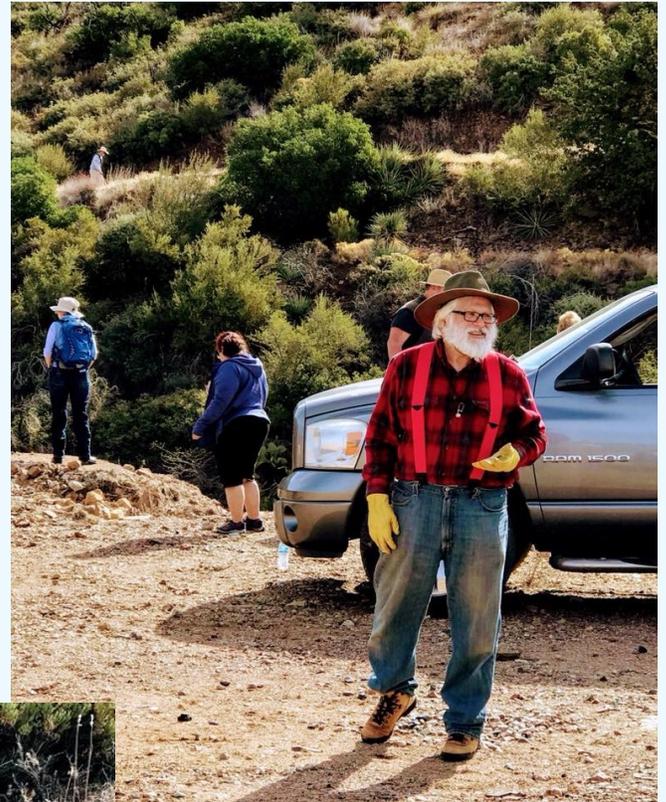
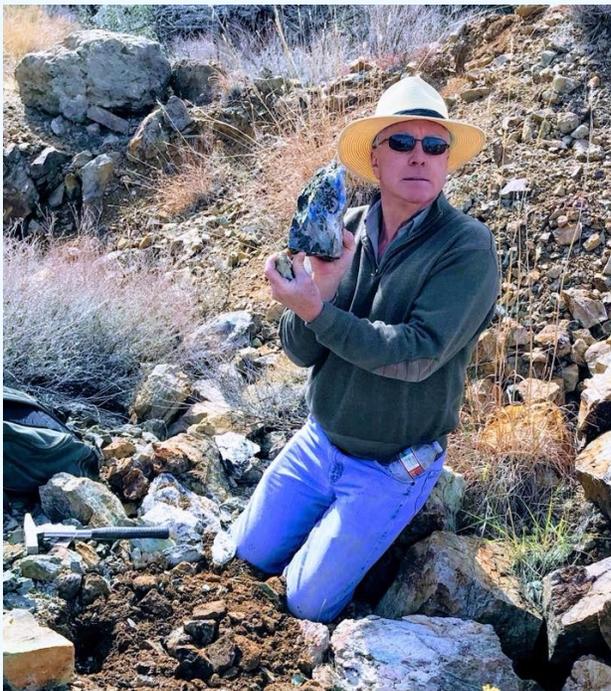
...Field Trip continued from page 1



Ground littered with drill cores



Remnants of the stamp mill



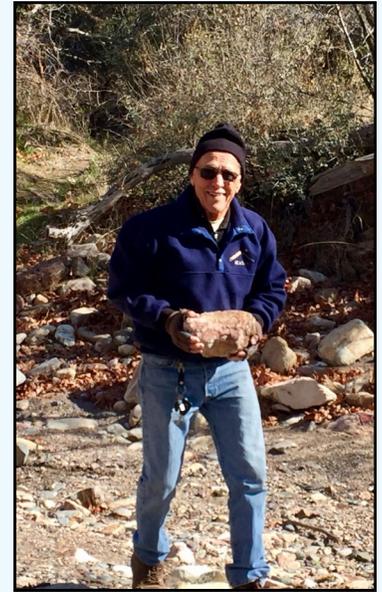
The Thrill of the Hunt!

Field Trip continued on page 6....

...Field Trip continued from page 5

**SATURDAY, FEBRUARY 24, 2018  
SYCAMORE CANYON**

*Photos by Howard Roose, Patrick Howley, Tiffany Poetsch, Sue/Stan Celestian*



EUREKA!



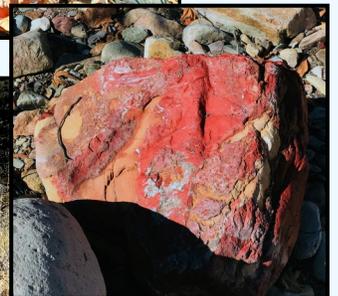
In the end, it was just too big.



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**RED Jasper!!!!**



**GREAT  
LAPIDARY  
&  
YARD  
ROCKS**

## UPCOMING FIELD TRIPS

**WHEN:** February 24, 2018

**WHERE:** Sycamore Canyon

**WHAT:** Jasper (bright red)

**MEET:** 9:30, depart at 10 am Take 87 north toward Payson, .75 mi past MP222, turn left at sign for Sycamore Canyon, go 1.2 miles to parking area where we will group before heading in. The road to the site should be suitable for any vehicle. Maps and directions will be emailed by Stan.

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**WHEN:** March 24, 2018 (tentative)

**WHERE:** Copper Chief Mine

**WHAT:** COALITION TRIP - Siderite in Quartz

**MEET:** 9:00 am Get to Cottonwood, Arizona. Proceed to the intersection of Main Street and U.S. Route 89A. This is a major intersection with a Walgreens Drug on one corner and a Bank of America on the other. Turn left (south) on 89A, towards Prescott, and go 1.7 miles to west Mingus Avenue. There is a Maverick station on your right if you need fuel or snacks before heading up the mountain. From 89A, turn left on Mingus Avenue and go 3 miles to a fork. Continue on the pavement another .8 miles to a cattle guard where the pavement ends. This is the meeting place.

Any car can reach the meeting place; 4 WD is required to get to the collecting site

*See image to right*

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**WHEN:** March 24, 2018

**WHERE:** Pete the Miner

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

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**WHEN:** April 2018 (TBA)

**WHERE:** Peridot Mesa

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

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**WHEN:** April 28-May 1, 2018

**WHERE:** Topaz Mt., UT

**WHAT:** Topaz

This trip will necessitate one day of travel to the site, camping overnight, at least one day of collecting, and camping one more night.

**NEEDED: QUALITY MINERAL (or OTHER) DONATIONS WITH LABELS** -- for monthly raffle prizes, and for raffle and door prizes for the annual show. If you have specimens to donate, please see Robin Shannon. The Daisy Mountain Rock and Mineral Club is a 501(c)(3) non-profit organization, and will gratefully acknowledge your donation with a Tax Deduction Letter. Thank You!

**WHEN:** May 2018 (TBA)

**WHERE:** Payson area

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

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**WHEN:** June 2018 (TBA)

**WHERE:** Jerome

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

*DATES SUBJECT TO CHANGE*



Siderite in Quartz from the Copper Chief Mine, near Cottonwood, Arizona.

*Image by permission of Claude Yoder;  
www.crystalhabits.com*

## UPCOMING AZ MINERAL SHOWS

**March 10 - Coolidge, AZ** Pinal Gem and Mineral Club; Artisan Village of Coolidge, 351 N Arizona Blvd.; Sat 10-4; Admission: 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 over 12, children 12 and under free.

**April 28 - Cornville, AZ** Verde River Rockhounds; Windmill Park, Cornville Rd; Sat 9-5; Admission: free.

**May 5-6 - Kingman, AZ** Mohave County Gemstoners; Kingman Academy of Learning (H.S. Gym), 3420 N Burbank; Sat 9-5, Sun 9-4; Admission: free.

**June 1-3 - Flagstaff, AZ** Coconino Lapidary Club; Silver Saddle Outdoor Market, 9001 US 89 N (US 89N & Silver Saddle Rd); Fri-Sat 9-5, Sun 9-4; Admission: free.

**July 7-8 - Pinetop, AZ** White Mt. Gem and Mineral Club; Hon-Dah Casino & Resort, 777 Highway 260; Sat 9-6, Sun 9-4; Admission: \$2.

**August 3-5 - Prescott Valley, AZ** Prescott Gem and Mineral Club; Prescott Valley Event Center, 1301 Main St.; Fri-Sat 9-5, Sun 9-4; Admission: Adults \$5, Seniors/Students \$4, children under 12 free with paid adult.

**October 13-14 - Sierra Vista, AZ** Huachuca Mineral and Gem Club; Cochise College, 901 N Colombo Av; Sat 9-5, Sun 10-4; Admission: Free.

If you are travelling, a good source of shows 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>

## 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 page 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.

## WEBSITE

<http://www.dmrmc.com/>

Here you will find photos highlighting field trips, activities/classes, and our show, links to rockhounding regulations, newsletter archive, geologic articles, and links to geologic resources.

If you have comments, contact webmaster, Nancy Gallagher.

## Officers and Chairpersons

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

**Vice President:** Stan Celestian

**Secretary:** Victoria Peterson  
[g.victoriapeterson@yahoo.com](mailto:g.victoriapeterson@yahoo.com)

**Treasurer:** Cynthia Buckner

**Publicity:** Howard Roose

**Membership:** Tiffany Poetsch [tnpoetsch@gmail.com](mailto:tnpoetsch@gmail.com)

**Editors:** Susan & Stan Celestian.....  
[azrocklady@gmail.com](mailto:azrocklady@gmail.com)

**Field Trip:** Stan Celestian [stancelastian@gmail.com](mailto:stancelastian@gmail.com)

**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 (2 people)  
\$ 5.00 Additional children

**Meeting Dates for 2018**

Jan 2, Feb 6, Mar 6, Apr 3, May 1, June 5, Sept 4, Oct 2, Nov 6, Dec 4

# MINERALS IN OUR EVERYDAY LIVES

## USES of DIATOMITE\*

- ◆ Filtering agent: beer, wine, motor oil, swimming pool water, pharmaceuticals
  - ◆ Additive/Filler:
    - paint (modifies gloss/sheen, whitener, adds bulk/strength, enhances adhesion....)
      - plastics (helps in the consumer separation of plastic bags, & parts during manufacture);
      - strengthens dental composite fillings; matches, lacquers, sealants, paper
        - makes cement, plaster, stucco & mortar lightweight
        - asphalt shingles, rubber, paper
  - ◆ Absorbent: industrial spills, waste remediation
- ◆ Soil amendment: holds water in soil, loosens hard soil, improves root growth, improves permeability of water and air
  - ◆ Growing medium: hydroponics, bonsai
- ◆ Insecticide: glassy diatoms scratch insect exoskeleton & absorb waxy coatings -- leading to dehydration and death (This works great -- and no chemicals!)
- ◆ Seed coatings additive: binds seed to soil, provides leverage for root growth, increase seedling stability
  - ◆ Explosives: absorbs & stabilizes nitroglycerin used in dynamite
  - ◆ Abrasive (mild): metal polish, facial scrub, toothpaste

## USES of COAL\*

- ◆ Fuel: original coal, fuels formed through coalification & liquefaction, and refined coal
  - ◆ Coke, used in steel-making and other industrial processes
  - ◆ Activated carbon: filter for water, air, kidney dialysis
  - ◆ Carbon fiber: strong, lightweight material for bike, tennis rackets, golf clubs.....
- ◆ Additive in foundry sand & mold wash (as ground coal heats up it releases reducing gases, preventing liquid metal from penetrating the foundry sand or mold)

\*Some of the references used regarding diatomite and coal are:

[http://www.ima-na.org/?page=what\\_is\\_diatomite](http://www.ima-na.org/?page=what_is_diatomite)  
<http://www.mtsylviadiatomite.com.au/product/diatomite-granular>  
[https://en.wikipedia.org/wiki/Diatomaceous\\_earth](https://en.wikipedia.org/wiki/Diatomaceous_earth)  
<http://geology.com/rocks/diatomite.shtml>  
<http://docs.azgs.az.gov/OnlineAccessMineFiles/S-Z/WhitecliffsPinal561-2.pdf>