

# 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 5, ISSUE 10

OCTOBER 2020



*Triarthrus eatoni* out of the Upper Ordovician Frankfort Shale Formation, Beecher's Trilobite Bed, near Rome, Oneida County, New York. Size: 0.83" from the tip of the antennae to the end of the pygidium (tail).

The Beecher's Trilobite Bed is known for pyritized trilobites. The replacement by pyrite resulted in the preservation of soft parts, not usually preserved. (In 2017, eggs were discovered!) In this photo, you can see the many legs, and the antennae. X-ray studies of specimens from these beds have revealed details of the digestive system, musculature, and exoskeletal elements (segments, legs, gills, and so forth).

Photo by Stan Celestian

# IN MEMORY of DAVE HANELINE

September 30, 2020

*Photos by Nancy Gallagher*

Too soon, our friend and fellow club member, Dave Haneline, died on September 30, 2020. He will certainly be missed. Our condolences go out to his fiancé, Robin, his son, daughter, and extended family.

Dave was so excited about the recent club purchase of the Blue Owl Mine, and was embracing the position of Claim Manager. The DMRMC Board is planning on changing the name of the mine to something like the "Dave Haneline Memorial Mine" or "Haneline's Amethyst Hill Mine".

Remembrances can be found on pages 3-4. You may leave your remembrances/condolences for the family at <https://www.dignitymemorial.com/obituaries/phoenix-az/david-haneline-9386183>

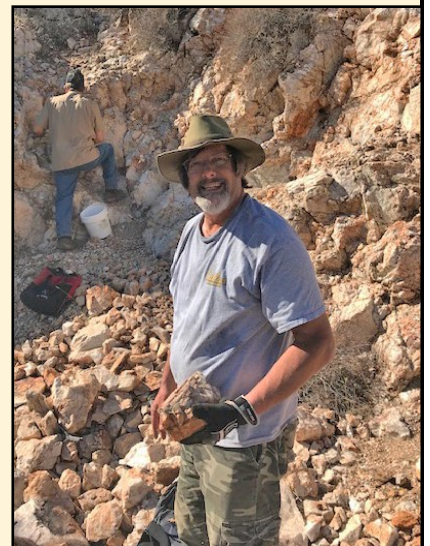
Arrrrrrggggg me hearty! Dave, the swashbuckling pirate, with his best wench, Robin.



**Dave Haneline**

Dave's enthusiasm was instrumental in the success of the club's annual gem and mineral show. And he thoroughly enjoyed getting out on outdoor adventures with his friends.

Collecting at the Purple Passion Mine was a passion for Dave, in pursuit of wulfenite and fluorescent rocks.



## Remembering Dave Haneline.....

*Dave touched and influenced almost all of us. Some of us remember him as the anchor of the fluorescent display at our Rock and Gem shows, others have been on field trips that Dave organized to sites from Yuma and the Red Cloud mine, to Las Vegas and the Good Springs area. Most recently Dave was influential in the Club purchasing the Blue Owl mine in Wickenburg and had volunteered to be the mine's steward and wrote up a protocol on use of the mine.*

*Dave was our first Club Treasurer and had continued to conduct audits of our books. He was also our trip coordinator early on. I will always remember him for his urging caution when we decided to hold our first Show. Despite our disagreements he pitched in and the Show was a great success, because of his hard work and suggestions. Dave introduced me to the wonder of Fluorescent minerals, something I will always be in his debt for.*

*Dave and Robin Shannon met and became friends through our Club. I grieve for her and for Dave's children. He was a strong-willed man, who left his mark everywhere he went. He will be missed.*

**May He Rest In Peace.  
Ed Winbourne, President**

Dave was my friend and part of our fun group of friends. He is going to be greatly missed by so many of us.

When I heard his name... I always thought of Spaghetti! He made the BEST spaghetti! When he and Robin would invite us over I always would ask if he was making his famous spaghetti. He had a secret ingredient that I could never figure out what it was. It was delicious and I sure hope he passed the recipe on to Robin.

He was also known for his incredible Halloween display outside his home. He built most of it and decorated his yard perfectly for Halloween. We enjoyed many Halloween parties at his home. He and Robin were the perfect Pirates.

I heard about Dave even before I arrived in Arizona. Bob was living out here in AZ and Bob would tell me all about their adventures into the desert when we chatted on the phone or through email. I remember when Dave and Robin got engaged ... because Bob told me all about it in an email.

When I finally arrived in AZ, Dave gave me a big hug and Welcomed me to AZ and to our gang.

I saw Dave at many Rock Club activities and he was one of the "go to guys" if we needed a rock identified.

Like I said... Dave will be missed by many. He left this earth way too soon. We'll miss you Dave. Rest In Peace my friend.

~Nancy Gallagher

Remembering Dave... Dave and I met through the Rock Club, we were charter members and went on nearly all of Herb's field trips, learning about rocks and what a Herb Mile really was. We became close friends and went at least once a week in my War Wagon to mines that Dave found on Mindat. Those were memorable trips into the mountains around us. On one trip, we spotted an unmarked cave entrance. Dave got out of the car first and walked up to the entrance and peered in, decided we weren't going into the mine and turned to me and said as much. At that time, I saw a mountain lion emerge from the cave. She looked at Dave who was about 15 feet away and me about 30 feet and decided we weren't worth the effort. She meandered up the slope for maybe 5 minutes. We both were in awe and forgot all about pictures. What an experience. We collaborated on many projects, outings, dinners and adventures as friends and later as couples as we found our soul mates Robin and Nancy. Hard to accept that a friend is gone. ~ Bob

Thoughts of Dave Haneline take me back to the early years of the clubs inception when he became a great friend. Later when Jeanne and I were on a mission to get as many rock and mineral specimens as possible for the kids corner of the rock show, I asked him if he had any specimens to donate where as he told me we could take as many as we wanted. He had previously carried many 5 gallon buckets from our club field trips, enough to fill his side yard ---(Over the next 10 years, he became more selective with what and how much he carried home.) It is fair to say that the rocks and minerals for the first two rock shows were donated in large part by Dave. To say that the Kids Corner was enhanced by Dave's generosity is an understatement! Dave seemed to very much find enjoyment in sharing his passion in rocks and minerals with others around him.

I was at his house when we had our first fund raiser---a garage sale. At that very garage sale Dave sold me two 3 ½ ft long intricate models of U.S. WWII battle ships that he had assembled and the plywood carrying boxes they rested in for \$25. ( a real gift) which were later gifted to a neighbor John Ravita, a WWII Navy vet, who had served on one of the ships, "The Weaver". John has them on display in his war room to this day in his home.

Dave was a "very giving person" and we were the benefactors of his generosity. Later I mentioned that I was becoming interested in fluorescent minerals and asked him if I could buy some from him to start a collection. It was not long after that he gave me a care package that he culled from his collection and yet later he asked the director of the fluorescent mine in New Jersey to send me some beautiful colored samples---which he did! After all of this Dave gifted me with a fluorescent field flashlight, carrying case with extra battery and charger. What a friend! He also gave me a large multicolored specimen from an area he recently uncovered.

It wasn't always about rocks, Jeanne, to this day finds it hard to believe Dave's love for hot dogs to which he could and did ingest with gusto. In fact he would start with three dogs, buns + condiments and repeat this actually three more times for a total of 9 dogs in one sitting!

Dave's yard Halloween decorations and party were always extraordinary. His great costume was that he was dressed as Black Beard the pirate. (A long split-tailed maroon velvet coat with large cuffs, gold studded buttons and a black 3 cornered hat). His costume complimented a full front yard with a large bow sprit with jib sheet sail, a large black cannon, skeletons and other strange looking animals.

On yet another occasion, Dave reinforced his "sharing like" interest with people that found pleasure in some of the activities he enjoyed---Again I received a call asking me to meet him in his garage— (We shared the love of woodworking---not to say I was in his league as he was a woodworker extraordinaire! He at one time made large wood models to reflect the different crystal shapes—with the correct angles of minerals for a museum display.) When I arrived, he had waiting for me a large, like new electric cut off saw. Needless to say I was pumped. What a gift!

Dave seemed to very much find enjoyment in sharing his passion in rocks and minerals, along with his many other varied interests with others around him. He will be truly missed by us and all the others he touched in his life.

This came as a shock to us, and we are very much saddened with his passing.

~ Bill and Jeanne Smardo

Dave is the reason Sue and I joined the Daisy Mountain Club. We were vendors at the show a few years ago and Dave made us feel very at home and welcomed. He invited us on a club field trip and his enthusiasm for mineral collecting and friendship were winning factors. Since then we have been on several field trips with him and other club members. He was knowledgeable about minerals and collecting and was always willing to learn more. He was a friend that will be missed. ~Stan Celestian



# OKENITE

Okenite was first described in 1828, by Lorenz Oken, at Disko Island, Greenland. Like natrolite, described in the September 2020 DMRMC Newsletter, okenite commonly occurs in vugs within basalt. But unlike natrolite, it is not a zeolite; although it is a common associate of zeolites.

**Chemical Formula** -  $[Ca_3(Si_6O_{15}) \cdot 6(H_2O)]$

**Crystal System** - Triclinic (3 axes of unequal length and no 90° angles).

**Growth Forms/Habits** - Fibrous, radial

**Hardness** - 5

**Color** - White, yellowish-white, bluish-white

**Luster** - Pearly

**Streak** - White

**Specific Gravity** - 2.31

**Cleavage** - One good direction

**Fracture** - Conchoidal

**Other** - Okenite is "pettable" -- the fibers are somewhat elastic, and can be very tenderly petted, without damaging the crystals.



Okenite from a vug in the famous flood basalts of the Deccan Plateau, Maharashtra, Poona, India.

*Photos by Stan Celestian*



**PLEASE PAY SOON.**

**WE NEED YOUR DUES BEFORE  
DECEMBER 1<sup>ST</sup>, SO CYNTHIA CAN PAY  
THE FEDERATION DUES ON TIME.**

**IN-PERSON:** Tiffany will be at the November 10 in-person meeting

**MAIL:** Daisy Mountain Rock & Mineral Club,  
P.O. Box 74215, Anthem, AZ 85087

Single Renewal: \$20; Couple/Family: \$25

**CHARGE:**

Single Renewal: \$20.62 (\$20.00 + Processing Fee)

<https://checkout.square.site/buy/7EEGK4KWPY7J7MV5IYMSGT3P>

Couple/Family Renewal: \$25.75 (\$25.00 + Processing Fee)

<https://checkout.square.site/buy/XFZ4VTH3KUMJKQ67TRXG4PJD>



sa href="https://fyclpart.com/thank-you-card-thank-you-png-402909">Thank You Card - Thank You PNG>ap

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## FOSSILS: PART XII

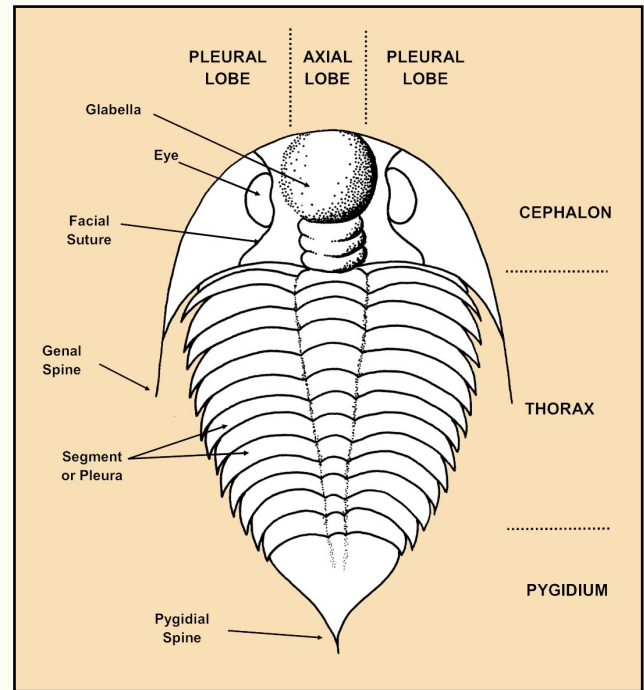
Kingdom: Animalia  
 Phylum: Arthropoda,  
 Sub-Phylum - Trilobitomorpha  
 By Susan Celestian

Arthropoda is a large group, encompassing many different organisms. Included in the 5 sub-phyla are: velvet worms, shrimp, crabs, spiders, scorpions, eurypterids, ticks, mites, centipedes, millipedes, trilobites, ostracods and insects. Some of the most fantastic are the now-extinct trilobites -- the subject of this month's newsletter's fossil column.

General trilobite characteristics are as follows:

- ▶ The geologic record of the trilobites extends from the Early Cambrian (520 mya) to Late Permian (250 mya). However, the number of families peaked during the Late Ordovician through Early Silurian, and dwindled toward the Late Permian. <https://trilobites.info/geotime.htm>
- ▶ The body plan is tri-lobate -- which gives the group its name. See Figure 1.
  - Typically fossils are of the exoskeleton -- a phosphatic and chitinous body covering.
    - ◊ Like modern arthropods, trilobites molted periodically during their lives, as they outgrew their exoskeleton. The exoskeleton split along the outer edge of the cephalon, and/or at the facial sutures (Figure 1). In fact, most trilobite fossils are probably molts.
  - The body is divided lengthwise into head (*cephalon*), thorax, and abdomen (*pygidium*). See Figure 1.
  - The body is divided across into three lobes.
  - The thorax and pygidium, are segmented (although the pygidial (tail) segments are usually fused), with up to over one hundred segments. The thoracic segments are articulated, so the body is flexible. Some species could enroll (roll up into a ball) for protection.

Each segment supports 2 limbs, on the right and on the left -- a leg for walking, and a gill structure. [See Figure 2.](#)



**FIGURE 1 TRILOBITE MORPHOLOGY** The tri-lobate body divisions are reflected in the pleural and axial lobes.

- \* The glabella is a dome, underneath which sat the stomach or digestive chamber.
- \* The facial suture is a line along which the exoskeleton could split, during molting.
- \* Different spines probably served multiple functions: protection, adornment, stabilization, sensory. camouflage, and who knows -- maybe they could use that pygidial spine to help right themselves, should they be turned over.
- \* Each segment supports a biramous appendage, on the right and on the left. (See Figure 2)

*Graphic by Susan Celestian*

- A pair of antennae acted as sensory organs. (Cover photo on page 1)
- The eyes were typically compound, with 70-15,000 lenses - each a single, oriented calcite crystal. [See Figure 3.](#)
- Size: Adult trilobites range in size from .04" (1mm) to 28" (72cm)

Interesting fact: 3 states have made trilobites their State Fossil -- Ohio, Wisconsin, and Pennsylvania.

*Trilobita continued on page 10....*

## Zoom Board Member Meeting Minutes October 6, 2020

In attendance: Bill F., Claudia M., Cynthia B., Deanne G., Don R., Jessica C., Rebecca S., Stan C., Susan C., and Tiffany P.

- Cynthia B. discussed the financials
  - ◇ Club still in good standing
  - ◇ Will investigate civic building billing status
    - We did not use the room as much as intended when we prepaid
  - ◇ Dues sent out in email
    - You cannot attend field trips if dues are not up to date
- Claudia M. updated us on the scholarship
  - ◇ She has included 2 more things on the application
  - ◇ Is on the website if you would like to look at it
  - ◇ Will send out to schools for next scholarship soon
- Bill F. talked about the claims committee
  - ◇ We recently purchased the Blue Owl Mine for \$5,000
  - ◇ Approx. 8 people will be allowed there at a time
  - ◇ Will have a field trip there in November
  - ◇ **We will need a new 'Mine Supervisor'** for the claim
  - ◇ Road conditions there are good until last 2 miles
    - High clearance needed
  - ◇ No other clubs will be allowed there until at least March
  - ◇ Members can visit the site, but please:
    - Contact Bill F. as of now if you would like to go
    - Pay \$10 non-sanctioned entry fee
  - ◇ New name for claim will be discussed in subcommittee

*Claim name will be in memory of Dave Haneline – he is no longer with us, but worked extremely hard to help make this claim a reality for the club – our condolences go out to his family in this tragic time*

- Tiffany P. updated us on the wire wrapping class
    - ◇ The survey was answered by 18 ppl about 10% of club
      - Tuesday, Wednesday, and Thursday suggested as days to schedule
      - Will only have one class a month
      - First class back took place 10/6/2020
      - Emails from Jennifer G. will follow with upcoming classes
  - Bill F. discussed the field trips
    - ◇ Payson geode field trip went well
    - ◇ End of October field trip scheduled to Stone World Co.
      - West of Flagstaff
      - Commercial building, will allow us to go through scrap pile
        - \* Great price, foreman will open shop for us
      - Meeting with Verde River Rockhounds
    - ◇ November field trips will be finalized soon
      - Emails will be sent out
    - ◇ December trips will be investigated
      - To Red Cloud and another undetermined location
    - ◇ Photos of field trips are uploaded to website to view
  - Christmas Party was questioned
    - ◇ Clark L. (usually coordinates the party for us) was not on call
      - someone will update with more information later
    - ◇ Unless we can find a large venue, the party might be cancelled
      - Or at least the gift giving might be cancelled
  - Bill F. discussed the November general meeting
    - ◇ The room has a max of 30 people – sign up will be necessary
      - Check email to sign up
    - ◇ T-shirts will be for sale at meeting
    - ◇ Dues can also be paid at meeting
      - By check, cash, or through square
- ▶ Please remember to wear your name tag at every club function including field trips. It will help us get to know each other and let others know you are an official member.

Respectfully submitted,  
Rebecca Slosarik, secretary

# FIELD TRIP TO THE BRONZESMITH

Saturday, October 8, 2020

Photos by Bill Freese

Field Trip Committee chair, Bill Freese led a field trip to the Bronzsmith Fine Art Foundry and Gallery, in Prescott Valley. Several of their castings are installed around Arizona, in roundabouts, memorials and elsewhere. Artists from around the world avail themselves of the talented staff at Bronzsmith. This is a favorite field trip, but tours are limited to 10 people, so be sure to reserve a spot the next time.



The artist will carve the fine details into the plaster cast, in preparation for reproducing it in bronze.



It's always fun to watch molten metal....



The studio/gallery has many beautiful -- and funky -- pieces for sale

For a summary (with photos) of the casting process, see the October 2019 issue of *Rockchips*, available on the club website.

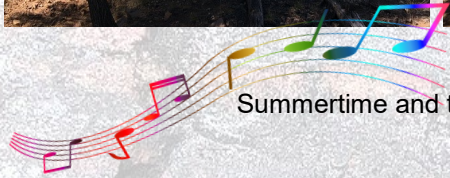


# FIELD TRIP TO MINGUS MOUNTAIN

## Saturday, October 17, 2020

Photos by Bill Freese

Once again, Bill Freese, our fearless friar of field trips, led a fantastic foray forth into the forest for ..... BIF or Banded Iron Formation -- in this case the Precambrian (about 1.8 billion years old) Pike's Peak Iron Formation, on Mingus Mountain. The rocks hunted are composed of sharply defined, and alternating, layers of black hematite and bright red hematite-rich chert. The source of the silica and iron was probably submarine volcanism (or upwelling from deep water). The rocks very likely were deposited in a shallow water, intertidal environment, where bacteria facilitated the precipitation of the iron. And as stromatolites (remember cyanobacteria? -- Rockchips Dec 2019) produced oxygen, iron was oxidized to produce the red layers (the black layers represent low-oxygen periods).



Summertime and the living is easy.....and so is the collecting.....

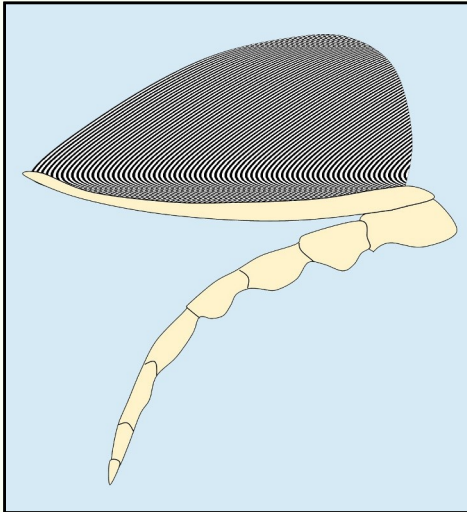
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Welcome back  
Victoria and Bob!



...Trilobita continued from page 6

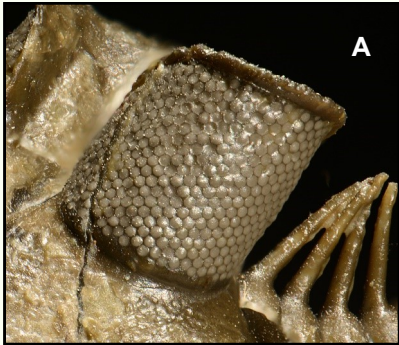


**FIGURE 2  
BIRAMOUS  
LEGS**

At each pleural segment of a trilobite, there was a biramous (2 branches) leg -- one part used for walking, and the other a gill structure for respiration.

This illustration is one variation, although there were some morphological differences between the species.  
Graphic by Susan Celestian

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**FIGURE 3 EYES  
OF TRILOBITES**

(A) - The eyes of *Erbenochile erbeni* have up to 560 lenses, arranged to give it 360° of vision (along the horizontal plane). The lenses were in contact with each other, and a single cornea covered them. Also they sit high enough to allow the individual to see behind it, over the thorax. Note the sun shade at the top, indicating that this species was out in the daytime.



(B) The lenses of *Drotops megalomanicus* were separated by relatively thick walls (each lens had its own cornea). The turret-like eye structure also afforded the trilobite a 360° view.

Both eye types were excellent for motion detection, and the lens structure allowed pretty good depth of field. Good eyesight was an advantage in catching prey, and avoiding predation.

For more information, go to <https://www.trilobites.info/eyes.htm>

Photos by Stan Celestian

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► Trilobite habitat:

- Trilobites were exclusively marine.
- Most occupied shallow environments, although it appears some may have survived in deep, low-oxygen, hi-sulfur environments (such as found at modern deep thermal vents). In the latter instance, sustenance was probably dependent on symbiotic sulfur-reducing bacteria, housed on their gills.

► Trilobite habit: .

• Feeding habits:

- ◊ It is thought that most trilobites were predators, feasting on worms or other bottom-dwellers.
- Some may even have buried themselves in the soft sediment, with only their eyes extending into the water -- ready to pounce on a tasty treat that their way came.
- ◊ Other habits included: scavengers, particle feeders, and filter feeders.
- ◊ Trilobites were so numerous that it is reasonable to visualize evolution trending to many different lifestyles, so they could co-exist without competing for the same food sources and space.

• Mobility:

- ◊ For the most part, trilobites walked along the ocean floor, on their many legs.
- ◊ A few trilobites were probably free-swimmers -- some may have been quite fast.
- ◊ And some, such as the tiny (<math>< 1/4''</math>) may have been planktonic, either as hovering swarms or hitching a ride on algal strands.

• Reproduction:

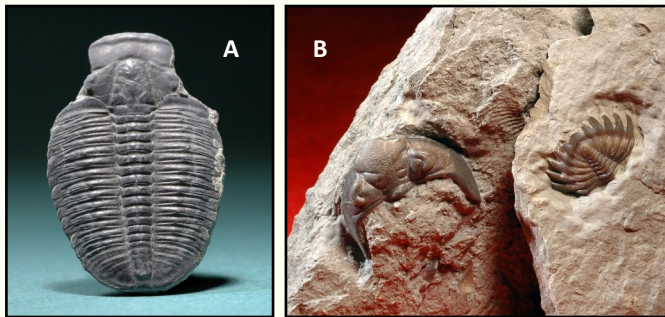
Not much is known about trilobite reproduction, but trilobites probably were egg layers. They may have congregated and then eggs and sperm were

Trilobita continued on page 11....

...Trilobita continued from page 10

fertilization occurred. The eggs may have then been left in/on the substrate, or protected in brood pouches under the cephalon. The latter is indicated by those *Triarthrus eatoni* eggs discovered in New York State (cited in the caption to the cover page). For a couple views of that egg discovery, go to: [https://blog.everythingdinosaur.co.uk/wp-content/uploads/2017/01/trilobite\\_eggs.jpg](https://blog.everythingdinosaur.co.uk/wp-content/uploads/2017/01/trilobite_eggs.jpg) or [https://www.sciencemag.org/sites/default/files/styles/article\\_main\\_image\\_-\\_1280w\\_no\\_aspect\\_public/14195\\_6199\\_1\\_16x9.jpg?itok=sF8JxJEW](https://www.sciencemag.org/sites/default/files/styles/article_main_image_-_1280w_no_aspect_public/14195_6199_1_16x9.jpg?itok=sF8JxJEW)

Images of trilobite fossils and special features follow, in Figures 4-31.



**FIGURE 4 MOLTING** Since trilobites molted multiple times during their lives (maybe 2-3 times per year), a majority of the fossils we find are probably molts. In fact, molting is a very vulnerable time, as the removal of the hard exoskeleton leaves the body soft, until the new exoskeleton hardens. (Ever eaten soft-shelled crab?)

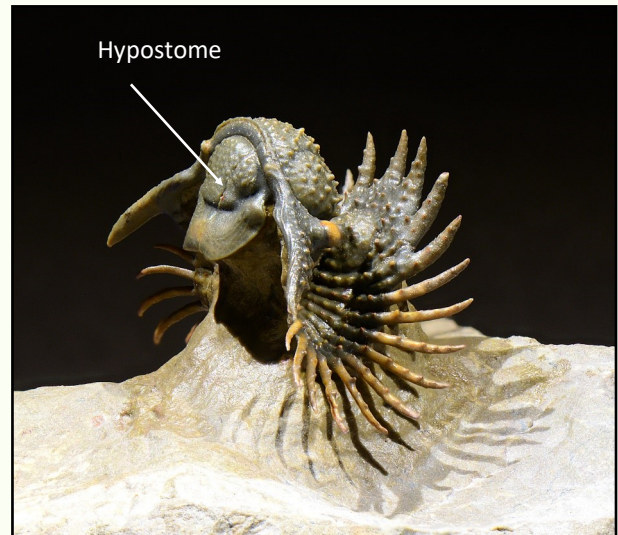
The process involved the splitting of the exoskeleton, at various points (such as along the free cheek suture, or outer edge of the cephalon). That often resulted in the separation of exoskeleton components, so many fossils are incomplete. (A) is *Elrathia kingii*, missing its free cheeks; and (B) is a *Greenops boothi* cephalon and a pygidium -- maybe, or maybe not, from the same individual.

Random trilobite parts are not unusual in the fossil record. *Photo by Stan Celestian*



**FIGURE 5 ENROLLED TRILOBITE** Many trilobites could roll up into a ball (Sow Bug-style) when in danger. This position did protect the soft underbelly. However, it seems to me that it makes an easy snack for a larger predator. This trilobite is *Paciphacops birdsongensis*.

*Photo by Stan Celestian*



**FIGURE 6 HYPOSTOME** This is a relatively rare look at a hypostome, which is a hollow "flap" on the underside of the cephalon. It houses the mouth and digestive system.

*Photo by Stan Celestian*

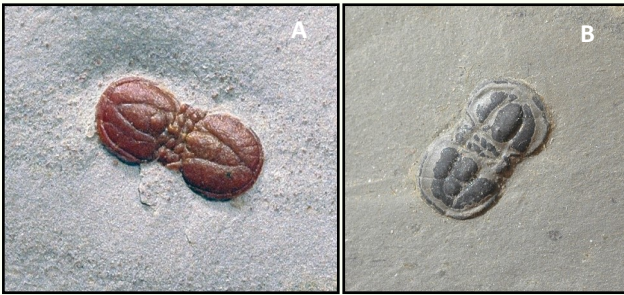


**FIGURE 7 TRILOBITE RESTING TRACE or RUSOPHYCUS**

When a trilobite hunkered into the sediment, it excavated a bilateral pit with its legs. Note

the striations left by the scratching. When the pit fills in and is preserved -- this is what we see -- basically a mold or "negative" of the trace.

*Photo by Stan Celestian*



**FIGURE 8 AGNOSTID TRILOBITES** These small trilobites are without eyes, about 1/4"-3/8" long, and were extinct by the end of the Ordovician. These two are both Early Cambrian in age: (A) *Ptychagnostus cuyanus* from Utah's Marjum Formation, and (B) *Perenopsis interstricta* from Utah's Wheeler Shale.

Photo by Stan Celestian



Photo by Stan Celestian

**FIGURE 9 Dalmanites limulurus** (Silurian), Rochester, New York. Each trilobite is about 2.5" long



Photo by Stan Celestian

**FIGURE 10 Asaphicus wheeleri** (Middle Cambrian), Wheeler Shale, Utah. 2.5" long

Photo by Stan Celestian



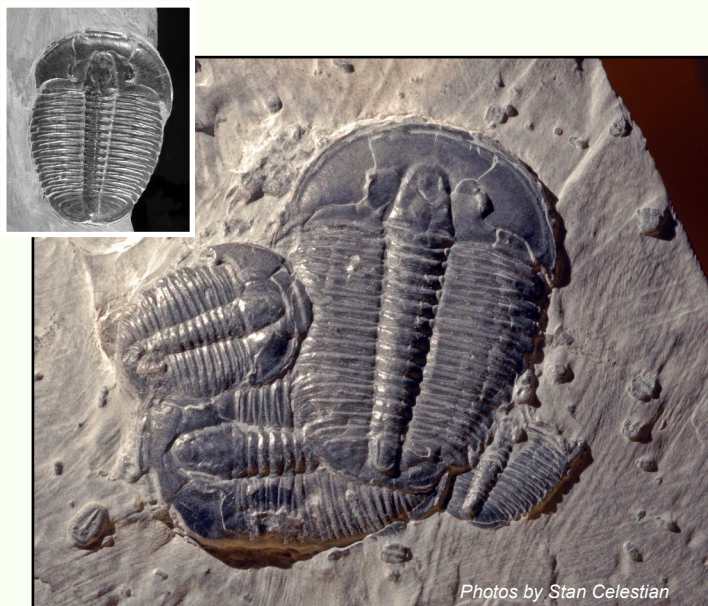
**FIGURE 11 Flexicalymene niagarensis** (Ordovician, Hartung Quarry, Milwaukee, Wisconsin. Each trilobite is about 2" long. *Flexicalymene* and related trilobites are recognizable by their "beady" eyes.



Photo by Stan Celestian

**FIGURE 12 Griffithides bufo** (Mississippian), Salem Limestone at Spergen Hill, Washington County, Indiana

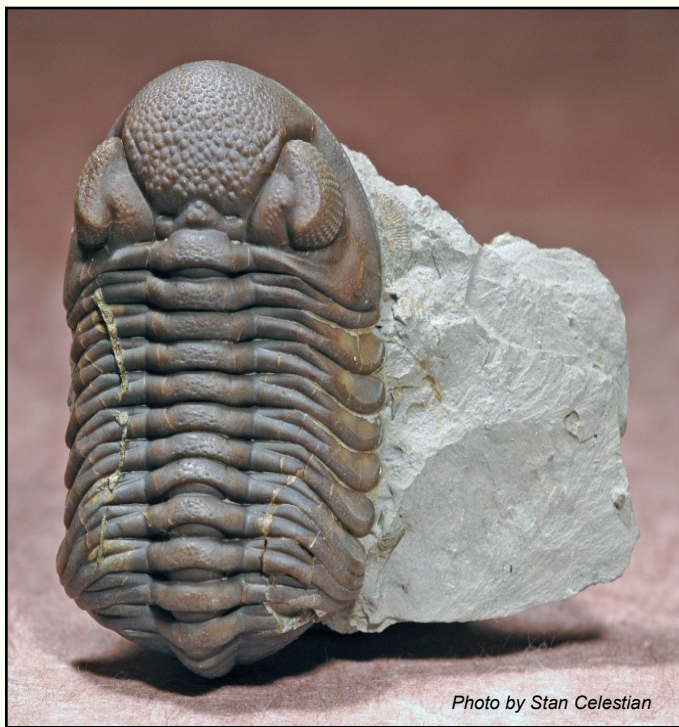
...Trilobita continued from page 12



**FIGURE 13** *Elrathia kingii* (Middle Cambrian),  
Wheeler Shale, Utah



**FIGURE 15** *Asaphus punctata*  
(Ordovician), Russia. 3" long  
Note the tall eyes. Some species of *Asaphus*  
have eyestalks over 1" long.



**FIGURE 14** *Phacops rana milleri* (Devonian), Ohio  
3" long



**FIGURE 16** *Asaphus* sp. (Ordovician),  
Russia. 3" long

...Trilobita continued from page 13

The remaining images of trilobites are all from Morocco -- trilobite Mecca, especially during the Devonian. For whatever reason, the crawling creatures were very abundant -- and abundantly preserved -- in Northern Africa.

I know I'm getting carried away, but as Stan says, "I'm only inconveniencing a few million electrons."



**FIGURE 17** *Acanthopyge* sp. (Middle Devonian), Djebel, Issoumour, Atlas Mts, Morocco. 2.8 " long.



**FIGURE 18** *Declivolithus titan* (Upper Ordovician), El Kaid Errami, Morocco Specimen is 1.5 ".



**FIGURE 19** *Basseiarges mellishae* (Middle Devonian), Jorf-Sahara, Morocco. 1" long.



**FIGURE 20** *Paralejurus* sp. (Devonian), Morocco 2.4" long.



**FIGURE 21** *Harpes perradiatus* (Early Devonian), Hamar Laghdad Formation, Atlas Mts., Morocco. 2.1" long.



**FIGURE 22** *Foulonia* sp. (large) and *Colpocoryphe* sp. (Middle Devonian), Ouled Slimane, Zagora, Morocco.

...Trilobita continued from page 14



Photos by Stan Celestian



**FIGURE 23** *Quadrops flexuosa*  
(Early Devonian), Maider area of Morocco. 3.1" long. Do you suppose that frontal fork was used to disturb the substrate and encourage food to emerge?



Photo by Stan Celestian

**FIGURE 26** *Scutellum* sp. (Devonian), Hamar Laghdad Formation, Ashard, Morocco. 3.75" long.

**FIGURE 27**  
*Zilchovaspis* sp.  
(Middle Devonian), Laatchana, Alnif, Morocco.



Photo by Stan Celestian



Photo by Stan Celestian

**FIGURE 24** *Dicranerus monstrosus*  
(Early Devonian), Maider, Morocco. 2.7" long.



Photo by Stan Celestian

**FIGURE 25** *Drotops armatus* (Devonian), Jbel Issemour, Morocco.

This is a biggish one at 4.5" long.



Photo by Stan Celestian

**FIGURE 28** *Delocare rostrate* (Devonian), Tafraout, Morocco. 2.75" long.

...Trilobita continued from page 15



Photo by Stan Celestian



Photo by Stan Celestian

**FIGURE 29** *Bojoscutellum* sp. (Devonian), Jebel Garael Ziguilma Fom, Zguidarea, Morocco. 2.5" long.

SMILE!



Photo by Stan Celestian



Photo by Stan Celestian

**FIGURE 30** *Chyphaspis eberhardiei* (Early Devonian), Fom, Zguid, South Morocco. 1.3" long.

Now try your had at viewing the stereo pair below. Remember to center the images, stare until the images are crossed, concentrate on the center image, and it should pop into 3D.



Time to cross your eyes again!  
(Go out of focus)



...Trilobita continued from page 16



Photo by Stan Celestian

**FIGURE 31** *Cambropallas telesto* (Cambrian), Jebel Ougnat, Sahara Desert, Morocco. 6.9" long.

#### GENERAL RESOURCES FOR TRILOBITA

[https://foreninger.uio.no/ngf/FOS/pdfs/F&S\\_04\\_p045.pdf](https://foreninger.uio.no/ngf/FOS/pdfs/F&S_04_p045.pdf)

<https://www.wikiwand.com/en/Triarthrus>

<https://www.trilobites.info/ontogeny.htm>

<https://trilobites.info.htm>

<https://en.wikipedia.org/wiki/Trilobite#Morphology>

<https://www.mentalfloss.com/article/68881/10-terrific-facts-about-trilobites>

# THE GREAT JUPITER AND SATURN CONJUNCTION

DECEMBER 21, 2020

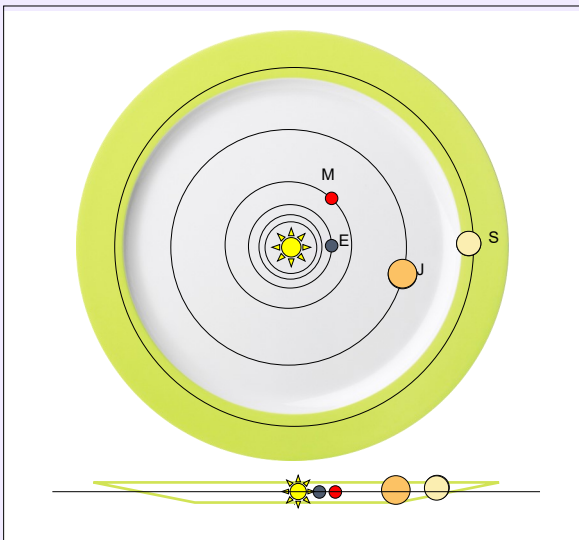
by Stan Celestian

During October, November and December, look to the south and southwestern skies after sunset for an astronomical wonder - the drawing together of the two largest planets in the solar system. As the days progress, the two gas giants will appear closer and closer together in sky, and be at their closest on the evening of December 21. Their precise astronomical conjunction will take place on December 21 at 13:30 UT (6:30 AM MST). Unfortunately, at that precise time, they will not be visible in the morning sky. We will have to wait until shortly after sunset to see them low in the western sky. But, at that time, Jupiter will be  $0.1^\circ$  south of Saturn. How far apart is  $0.1^\circ$ ? As a reference, the full moon is about  $0.5^\circ$  wide. So, Jupiter and Saturn will be very close together. In fact, this is their closest approach since the year 1623! The next time they will be this close will be in 2080, so get out to see the show this year.

A picture of how the two planets appear now in the southern, evening sky is on the next page. But first -- a little astrophysics.

The planets all orbit the Sun in the same direction. Looking from above the Sun, they orbit in a counterclockwise direction, the same direction that the Sun spins on its axis. Planets close to the Sun make an orbit faster than those further away. For example, Mercury completes one orbit in 88 days, Earth in 365.25 days and Mars 687 days. Further out is Jupiter taking 12 years, and Saturn (even further out) takes 29 years. And, just for fun, Pluto (an ice dwarf planet) takes 248 years.

The planets all lie in a fairly flat plane. That is, if you were to make a model of the solar system, you could use a plate to hold all the planets. In this model, a plate is shown with the first six planet orbits included.



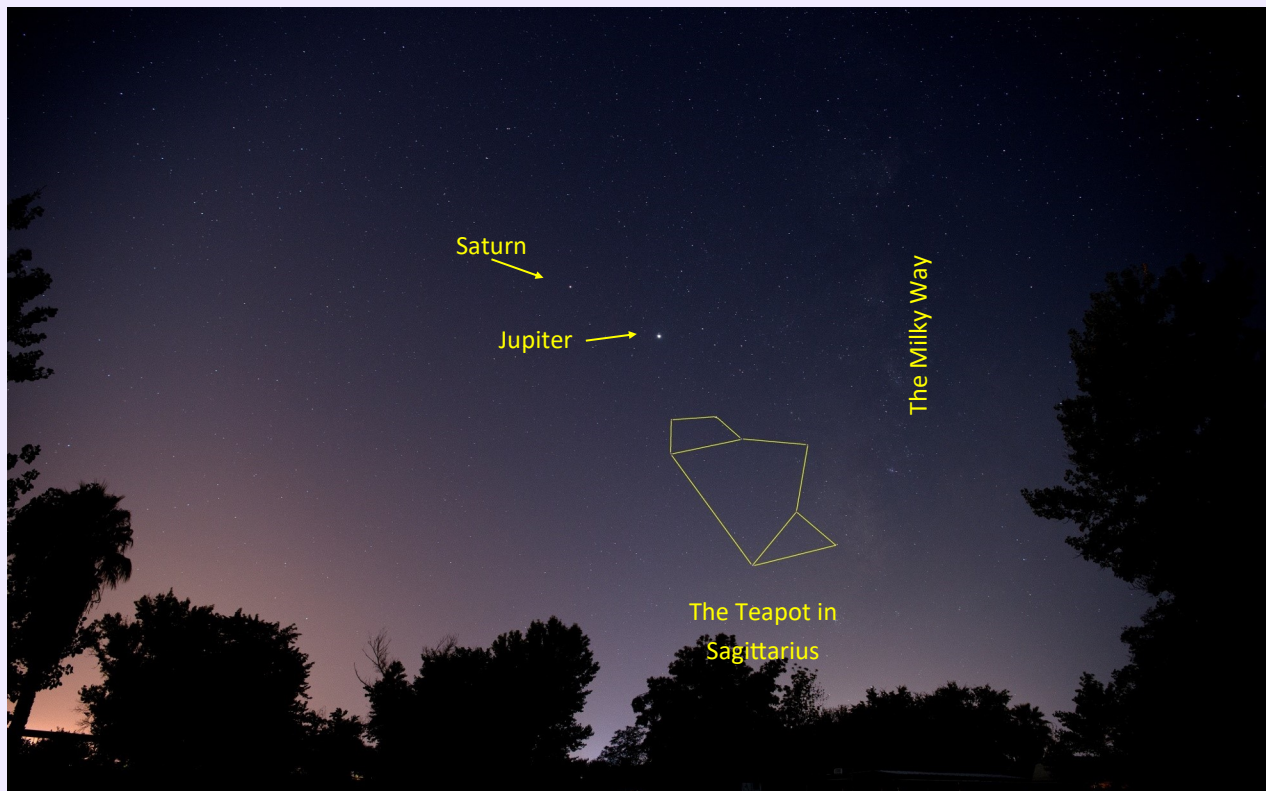
The Sun is shown in the center with the orbit of Mercury around it, followed by Venus. The Earth is the blue dot, Mars is the Red dot, Jupiter is the light orange dot and Saturn is the cream colored dot.

Below the top view of the plate is a side view. The center of these - very not to scale - planets are all on the same horizontal line. For the most part, the solar system is very flat.

As a result of this "flatness" of planetary orbits, the planets do not stray very far from an imaginary line in the sky. This line is called the ecliptic. The Sun travels exclusively on the ecliptic and, in fact, defines it. The planets and the Sun travel along the ecliptic. The constellations they pass through are the zodiac constellations.

As seen in our night sky, Jupiter and Saturn are both in the constellation Sagittarius. With reference to the background stars, they are both moving to the east (left in the following images). But, Jupiter is moving faster, because it is closer to the Sun, and it takes less time to make a complete orbit. For these reasons -- the relative speed of the planets, and the flatness of their orbits -- the two planets are drawing closer and closer together, and will be very, very close on the evening of December 21, 2020. BUT, don't wait until that evening to see them. Get out soon and recognize where they are. Watch them over the next few weeks, and see them drawing closer together.

...Conjunction continued from page 18



This picture was taken on Sunday, October 11, 2020. The view is looking south, with glow of Phoenix to the east (left). In the top image I have drawn a common asterism for the constellation Sagittarius. An asterism is a modern day, unofficial stick figure that people use because it is easy to recognize. The Big Dipper is an asterism in the constellation Ursa Major. This asterism, in Sagittarius, is the Teapot. *Photos by Stan Celestian*

*Conjunction continued on page 20...*

...Conjunction continued from page 19



To add a little extra fun to your evening viewing of Jupiter and Saturn, MARS is making a close approach to Earth. About every two years, Earth (in its faster orbit) swings past the “Red Planet”. This time, the distance between the two was only 38.6 million miles, on October 6. This picture was also taken on October 11, and the view is looking east, at about 7:30 pm. The glow low in the sky is light from Phoenix. Mars is easily seen, even in light-polluted city skies. It appears very bright and “orangish”.

*Photo by Stan Celestian*



**IT'S BACK!!!**

**WIRE-WRAPPING CLASS**

4:30-6:30 pm  
Anthem Civic Building

**Bring:** cab or stone, about quarter-sized or larger; 26 and 18 or 20 gauge copper-based wire; round nose pliers and flush wire cutter, beads (optional), little clamps, masking tape, E6000 jewelry glue.

Free, but donations are appreciated.  
Questions? Contact Jennifer at [Jennifer@eliteshuttersandblinds.com](mailto:Jennifer@eliteshuttersandblinds.com)

**THE CLASS SIZE IS LIMITED, SO YOU WILL NEED TO SIGN UP. LOOK FOR AN EMAIL FOR SIGNING UP FOR THE NEXT CLASS (1st Tuesday of the Month -- although November will probably be on the 2nd Tuesday, due to Voting Day) -- FIRST COME, FIRST SERVED. Make sure to check your Promotions Folder, as all emails from DMRMC have been going into mine lately (you can change that).**

**BRING PAPER & A PEN TOO!**



Beautiful work ladies!

October's Class was lightly attended, but that means Marie and Bernice had lots of attention from "The Teach", Jennifer.

Ed received a very nice letter from the father of one of our past scholarship recipients. It is good to see our outreach supporting academic success!

Ed,

I wanted to follow up and also say thank you again. Three years ago Jack Kollings, my oldest son, received your scholarship here in Anthem. I am grateful as well as Jack. Jack is now a Junior at ASU and has used his ambitions to go into research. Then it grew to the medical field. He does a lot of lab work and has not received anything less than an A in his studies.

Moving forward to the present, Jack has been focused on one task for the past year. He is approaching his MCAT test to get into medical school. His endeavors and aspirations have been supported by people like you and your organization. Jack received your award for what he had done and for what he could also be. Recognition like yours builds confidence that they can really do anything. Thank you again...

Jack is on the left in the Arizona State sweatshirt. He took the time to come back home, last fall, to see his younger brother (Luke #22) on senior night for Boulder Creek Soccer. Sincerely,

Dave Kollings – Jack and Luke's Dad



**UPCOMING FIELD TRIPS & MEETINGS**

**WHERE:** Chilito Mine  
**WHEN:** Saturday, November 14, 2020  
**WHAT:** Chrysocolla (beautiful yard rocks)  
**LEADER:** Bill Freese

**WHERE:** Blue Owl Mine  
**WHEN:** Sat/Sun, November 21 & 22, 2020  
**WHAT:** Barite, Cerussite, possible Galena & Amethyst  
**LEADER:** Stan Celestian

**WHERE:** Red Cloud Mine  
**WHEN:** Saturday, December 5, 2020  
**WHAT:** Wulfenite

**WHERE:** Cave Creek area  
**WHEN:** Saturday, December 12, 2020  
**WHAT:** Jasper

**POSSIBLE PICNIC/HOLIDAY PARTY  
 DECEMBER 12, 2020**

**WHERE:** Blue Cube & Prism Mines  
**WHEN:** Saturday, December 19, 2020  
**WHAT:** Fluorite

**WHERE:** Burro Creek  
**WHEN:** Saturday, January 9, 2021  
**WHAT:** Jasper, Agate

**WHERE:** Purple Passion  
**WHEN:** Saturday, January 16 (evening), 2021  
**WHAT:** Fluorescents

**WHERE:** Quartzsite  
**WHEN:** Saturday, January 23, 2021  
**WHAT:** Mineral Show

**WHERE:** Tucson Show  
**WHEN:** Saturday, February 6, 2021  
**WHAT:** Show & Shopping!

**WHERE:** Dobell Ranch & Grand Falls  
**WHEN:** Saturday, February 13, 2021  
**WHAT:** Petrified Wood

**WHERE:** Brenda area  
**WHEN:** Saturday, February 20, 2021  
**WHAT:** Jasper

**WHERE:** Safford/Black Hills Rockhound Area  
**WHEN:** Fri-Sun, February 26-28, 2021  
**WHAT:** Desert Roses & Fire Agate

**WHERE:** Harquahala Mine  
**WHEN:** Saturday, March 13, 2021  
**WHAT:** Misc Minerals

*Field Trips continued on page 22....*

**FACEBOOK**



Visit and join the club page periodically. See what is happening, and boost our visibility on the web. Go to: [The Daisy Mountain Rock and Mineral Club](https://www.facebook.com/daisyMountainRockandMineralClub/). It is set up so you can post photos of outings or related items. Share with friends!

**AWARD-WINNING WEBSITE**

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

If you have comments, contact Nancy Gallagher.

**INSTAGRAM**



Follow the club on Instagram. Go to <https://www.instagram.com/daisymountainrockclub/> and follow today. Share with friends!

**Officers, Chairpersons, & Trustees**

**President:** Ed Winbourne.....ewinbourne@gmail.com  
**Vice President:** Bill Freese..... bfreese77@cox.net  
**Secretary:** Rebecca Slosarik .. rslosarik1@gmail.com  
**Treasurer:** Cynthia Buckner....Cbuckrun1@q.com  
**Publicity:** Jessie Redmond...  
**Membership:** Tiffany Poetsch tnpoetsch@gmail.com  
**Editors:** Susan & Stan Celestian.....  
 azrocklady@gmail.com  
**Field Trip:** Bill Freese ... bfreese77@cox.net  
**Show Chair:** Ed Winbourne  
**Trustees:**

Cynthia V	Claudia M
Susan C	Tiffany P
Bob E	Jim R
Jennifer G	Witt R
Don R	Howard R
Jessica C.	Rebecca S
Johnaton M	Joe G
Clark L	

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

DMRMCLUB@GMAIL.COM

**Membership Dues:**  
**First year \$30, then \$20.00 Adults per Person**  
**First year \$45, then \$25.00 Family (2 people)**

**Meeting Dates for 2020**

Jan 7, Feb 4, Mar 3, Apr 7, May 5, June 2, Sept 1,  
 Oct 6, Nov 10, Dec 1

**MEETINGS CANCELLED OR BY  
 RESERVATION UNTIL FURTHER NOTICE  
 DUE TO COVID-19 RESTRICTIONS**

# Words of Wisdom

passed along by our own

**Bob Evans**



You know when you buy a bag of salad and it gets all brown and soggy? Cookies don't do that.

**NEEDED: QUALITY MINERAL (or OTHER) DONATIONS WITH LABELS** -- for monthly raffle prizes; and for raffle, door prizes, and sales tables at 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!

## 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).

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

If you are attending the in-person meeting on November 10, bring in any cool stuff you've found or made during your 'isolation'.



Visit <http://rmfms.org/> for news about conventions, events, and associated clubs. If you are travelling, you might want to contact a club local to your destination. Maybe they have a field trip you could join, while in town.

## UPCOMING AZ MINERAL SHOWS

**November 28-29 - Wick-enburg, AZ** Wick-enburg Gem & Mineral Society; Hassayampa Elementary School, 251 S Tegner St; Sat 9-5, Sun 10-4; Admission: Free.

**CANCELLED**

**January 1-3 - Mesa, AZ** Flagg Mineral Foundation; Mesa Community College, Mesa, AZ

**CANCELLED**

If you are travelling, a good source of shows AND clubs is <http://the-vug.com/educate-and-inform/mineral-shows/> or <http://www.rockngem.com/ShowDatesFiles/ShowDatesDisplayAll.php?ShowState=AZ> For out-of-the-country shows: <http://www.mindat.org/shows.php?current=1>

**Show schedules could change due to pandemic-driven policies. Check The Vug (URL above) for announcements, phone numbers, or club websites to confirm that a show will go on.**

...Field Trips continued from page 22

**WHERE:** Bullard Mine  
**WHEN:** Saturday, March 20, 2021  
**WHAT:** Copper Minerals, Slag

**WHERE:** Camp Verde  
**WHEN:** Saturday, March 27, 2021  
**WHAT:** Glauberite Pseudomorphs

**WHERE:** Date Creek  
**WHEN:** Saturday, April 10, 2021  
**WHAT:** Quartz Crystals, Hematite ps Pyrite

**WHERE:** Sycamore Creek  
**WHEN:** Saturday, April 24, 2021  
**WHAT:** Red Jasper

**WHERE:** Christopher Creek area & Fossil Site  
**WHEN:** Saturday, May 15, 2021  
**WHAT:** Zebra Chert, Naco Fm. Fossils

**DATES SUBJECT TO CHANGE**

Bill and the field trip committee will be actively looking for productive spots for field trips. If you have any suggestions, you are encouraged to contact him at [bfreese77@cox.net](mailto:bfreese77@cox.net)