

PRESIDENT'S VIEW

I hope everyone is enjoying the holiday season and is looking forward to Christmas and the promise of the New Year, just around the corner. For our club, 2016 has been a very good year. There is every reason to believe that 2017 will be even brighter and more rewarding. This first edition of our club Newsletter says a great deal about where our seven-year-old club is headed. On the one hand, it tells me that without a newsletter we have missed out on an opportunity to share our thoughts, hopes, and experiences these past years, and at the same time it tells me we are coming of age. We all owe a debt of gratitude to Susan and Stan Celestian, for making this newsletter possible.

The reasons we have grown steadily over the past years are many. We have enjoyed a solid base of leadership, our members are great ambassadors for the club, and the North Valley population is hungry to learn more about the world we live in, and the geology that surrounds us. Now we are experiencing a changing of the guard, that is bringing us new ideas and benefits and with it the promise of continued growth.

In November we enjoyed the first overnight field trip in five years. The field trip to Nevada, and the Yellow Pine Mine, was a great success. That trip is a culmination of a lot of hard work in building up our field trip committee under Bob Salter. Bob has served us untiringly as our Vice President, and for that we give him well deserved thanks. He is leaving the Vice Presidency and moving to a Trustee position. It is because of Bob's efforts that our monthly field trips have taken us over a great deal of our fascinating state. As a result people from all over the North Valley have been drawn to us and joined. The trip to the Yellow Pine Mine in Nevada showed we are stretching our wings and going further afield.

In the coming year we will hold our fourth Rock and Gem show. Our show is respected and welcomed in the Arizona rockhounding community. Those feelings are due to the openness of our membership, and their willingness to walk the extra mile to give assistance to vendors and attendees alike. Every year we have seen the club gain financially, as well as add a substantial number of members after a show. With Victoria Peterson heading up our membership committee that growth in good

President continued on page 3....

ATOMIC STRUCTURE & FLUORESCENCE

By Susan Celestian; Text & Diagrams based on a PowerPoint by Stan Celestian

Since our upcoming field trip is to the Purple Passion Mine, for fluorescent material, I thought I would summarize the phenomenon in this first newsletter article.

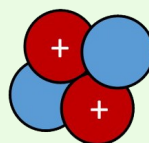
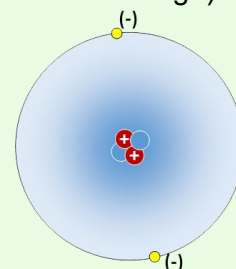


Figure 1 This is the nucleus of a Helium atom. It is fairly simple, with 2 positively charged protons (red) and 2 neutrons (blue with no charge).

Figure 2 Atoms are typically electrically neutral, so the Helium nucleus with 2 positively charged protons requires 2 negatively-charged electrons, in order to achieve that neutrality.



The electrons in an atom will be found in specific orbits (spherical shells) around the nucleus, and those orbits will lie at specific distances from the nucleus. The number and spacing of electrons is unique for each element.

As the number of protons (+) and neutrons within the atomic nucleus grows, the number of electrons (-) surrounding the nucleus also grows.

It is the number and orbital spacing of the electrons that controls fluorescence (as well as many other properties).

Fluorescence continued on page 5....

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Meeting Minutes — November 1, 2016

President Ed Winbourne called the meeting to order at 6:35 p.m.

Meeting Speaker:

Ed introduced Stan Celestian, who is a Geologist and Professor, as our guest speaker. Stan spoke about rock collecting in Arizona.

Board Vacancies and Nominations:

Ed stated it was the time of year to nominate Board of Directors positions for the 2017 year. The following were nominated for Board positions: President – Ed Winbourne; Vice President – Stan Celestian; Secretary – Victoria Peterson; Treasurer – Cynthia Buckner; Board Members – Bob Salter; Jennifer Gecho; Tiffany Poetsch; and Jim Reed.

Motion: Motion made that the positions and candidates listed above be nominated for those positions. Upon motion made, seconded, and carried those listed above, were nominated to the listed positions on the Board for the 2017 Year to take office January 1, 2017.

Voting to take place during the December 6th meeting; 6:30 p.m.

President Ed stated the positions of Secretary and Treasurer need to be filled immediately as the present Secretary/Treasurer position filled by David Favaro is open, due to David being unable to continue in the position.

Motion: Motion made that the Secretary position be filled by Victoria Peterson and Treasurer position filled by Cynthia Buckner effective immediately. Upon motion made, seconded, and carried Victoria Peterson was elected to serve the position of Secretary effective immediately and Cynthia Buckner was elected to the position of Treasurer effective immediately.

Both Victoria and Cynthia will meet with Dave Favaro to obtain the necessary member records and banking records.

March Gem and Mineral Show

Ed stated Jim Reed has accepted coordination of the show, and that Jim has contacted our vendors and has 100% agreement to participate in this year's show. Boulder Creek High School has again been reserved for the show. Ed stated we need a Marketing Committee for the show. Deb McDermott, Kathie Marvin, and Dahlia have agreed to serve on the committee.

Field Trips:

Bob Salter gave an update on the Nevada field trip in November, stating the hotel is the Silverton Hotel

and Casino. November 18 and 19 are the dates.

The planning for the December trip is moving forward. We will be visiting the Purple Passion Mine in the Wickenburg area.

The October trip was one of the best attended, and everyone collected lots of great samples. Thanks to Robin for finding this great area!

Wire Wrapping Class:

Robin Shannon spoke about the Wire Wrapping Class which is facilitated by Jennifer Gecho. All are welcome, and the class begins at 4:30, before our monthly meetings. Ed added that this has been a real success. Everyone (women and men as well) are welcome, and many have produced beautiful pieces of jewelry, from rocks and minerals they have collected. \$5 donation for the class is appreciated.

STEM Presentation:

Ed spoke about the STEM (science, technology, engineering, and math) program. Our club has provided volunteers at Anthem Elementary School each year for the past few years, to share information about rocks, minerals, and fossils, etc. This has been a big success; the children really enjoyed it. Past volunteers have been Ed Winbourne, Bob Salter, and Bill Smardo. We again will be having a presentation on January 26 from 5:30 to 7:30 p.m. and we will need volunteers. Anyone interested, please contact Ed, Bob or Bill for information. They had a great time volunteering and want to share in the fun!

DMRMC Web Site:

Ed stated we are in need of a web coordinator. Evelyn Lawson has volunteered to assist. This will be followed up.

General Information:

Dave Haneline informed the meeting about the Black Canyon show November 5 and 6, which will be outdoors and should be a nice show.

The Arizona Mining and Mineral Museum is holding a meeting Saturday, November 5th at 10:30 a.m. in Phoenix, Cynthia Buckner reported. This meeting is continuing dialog relative to the possibility of, maintaining the Museum.

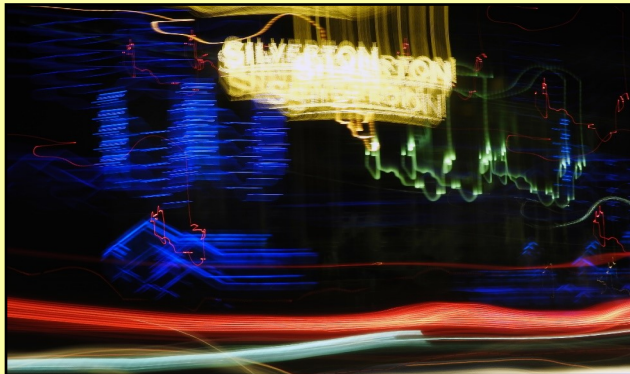
There being no further business, the meeting was adjourned by President Winbourne at 8:20 p.m.

Respectfully submitted by,
Victoria Peterson, Secretary

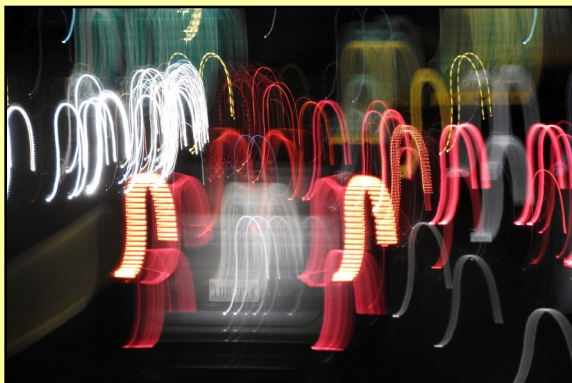
DMRMC next meeting – Tuesday, December 6,
6:30 p.m., Anthem Civic Center; Wire
Wrapping Class – before meeting at 4:30 p.m.

YELLOW PINE MINE FIELD TRIP

On November 19 and 20, 2016, the club sponsored an overnight field trip to the Yellow Pine Mine, an abandoned lead-zinc-silver-copper-gold-mercury-antimony mine near Goodsprings, Nevada, south of Las Vegas. Most stayed at the Silverton Casino Hotel. Most met at Mi Casa Grill Cantina for dinner on Friday night. I know some folks spent quite a bit of time (and money ☺) in the attached Bass Pro Shop! Saturday morning, a string of cars caravanned to the mine. There is a fairly large mine dump, and a couple of other nearby mines. The hills are tilted limestone. Hydrozincite, smithsonite (Robin found a good one!), some malachite, kaolinite after orthoclase crystals (see page 9), galena, rosasite, and interesting calcite coatings soon filled buckets. For lunch, some members met at Pioneer Saloon -- at over 100 years old, purported to be one of the oldest saloons in Nevada -- for "Ghost" BLTs. That evening many club members met at Twin Creeks for steak and seafood. Food and Fun -- a great combination!



Silverton Casino Hotel at night
Photo by Susan Celestian



Nighttime traffic in Las Vegas
Photo by Susan Celestian

Yellow Pine continued on page 3.....

President continued from page 1....

hands, and has been better organized and consolidated than at any time in the past. Cynthia Buckner now has assumed the duties of Treasurer, putting our finances in good hands.

We will continue to have educational speakers at our monthly meetings. As well educational work at our meetings we will continue to do outreach at schools in the area. Bob Salter, Bill Smardo, Nancy Gallagher and others have been generous in giving their time in carrying out that important work. As for our speakers, in December we are fortunate to have had Gary Carter from Surprise, AZ offer to address us. Gary has made presentations on the Vulture Mine, in Wickenburg, to clubs and organizations throughout the Valley. His talk will address not only the mine's discovery, but a number of myths that surround it's storied existence. In addition to educational work we will continue to explore and collect on monthly field trips. In December we are going to the Purple Passion Mine, one of the greatest fluorescent collecting spots in the western United States.

What about a lapidary facility? Let's face it we all want to do more than just collect piles of rocks in our yards and around our homes. To that end, we have established a successful wire-wrapping class, under Robin Shannon and Jennifer Gecho. This is a step in the right direction. Setting up a full-fledged lapidary shop is a goal many of us share. My feeling is we need to evaluate what it will cost to set up such a facility, and how much it will be used by the membership. To rent a space in Anthem, and install equipment without a clear idea as to how much it will serve the interests of the membership and not be a drag on our resources, both financial and human, would be a mistake. We have looked at space, and will continue to explore opportunities as they arise. A lapidary facility and retail outlet is a risk, but I feel it is one that we will take. The question is timing and a clear understanding of what we are getting ourselves into.

I want to offer special thanks to Dave Favaro for all the work he has done on behalf of the club. Dave has been both our Treasurer and Secretary, and has done outstanding work as the head of the marketing committee for our show since its inception. Dave is stepping aside from those tasks, and for all his hard work he is owed hearty thanks from all of us.

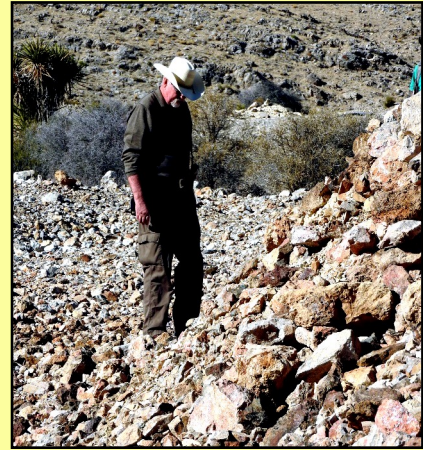
I wish all of you a Happy and prosperous Holliday season.

Ed Winbourne, President

....Yellow Pine continued from page 3



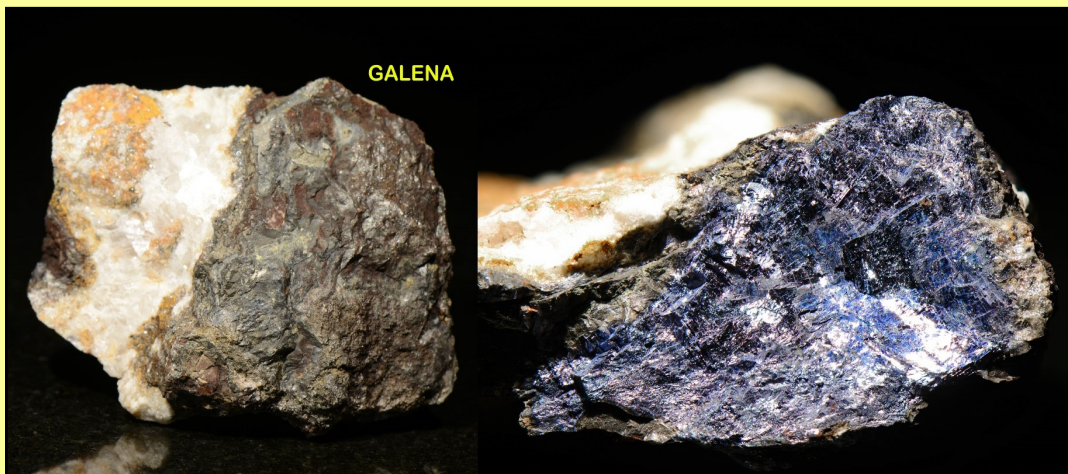
Most of the gang met in Goodsprings -- ready and raring to go!
 Photo by Ed Winbourne



Ed Winbourne hunts for minerals.
 Photo by Susan Celestian



Yellow Pine Mine near Goodsprings, Nevada Photo by Susan Celestian



GALENA Weathered and Fresh

Rough masses of galena (PbS - lead sulfide) were fairly common on the mine dumps. This specimen (on left) shows the very dark gray weathered appearance of the mineral. Simply by looking at the specimen, you may not think first of it as galena. However, once

you pick it up its superior density (high specific gravity of ~7.5) -- it is heavy -- gives a clue to its identity. To further test its identification, breaking it (right picture) shows the bright metallic luster associated with the mineral galena. However, this is not "classic" galena. These cleavage planes are somewhat irregular, and the color is a bit off from the normal steel gray of galena - it is slightly bluish. Most likely these departures from the classic physical properties are due to minor amounts of silver within the crystal structure. Photo by Stan Celestian

Yellow Pine continued on page 7....

....Fluorescence continued from page 1

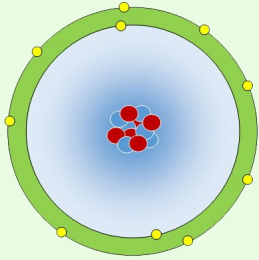


Figure 3 While in reality, electrons swarm within a shell around an atom's nucleus, their paths may be depicted as circular orbits.

The atom depicted here has two shells of electrons. The first shell has 2 electrons, and the second one has 8 electrons.

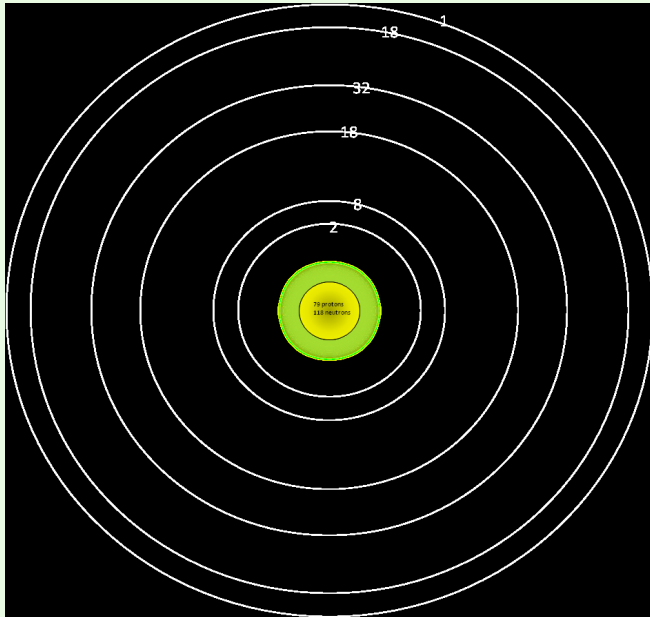


Figure 4 Depicted above is the more complex atom — of GOLD.

Gold always contains 79 protons in its nucleus, and most commonly 118 neutrons.

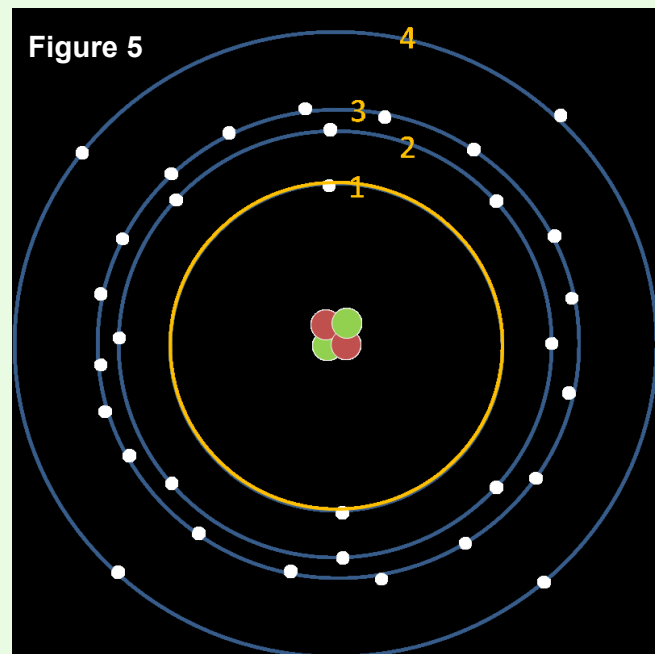
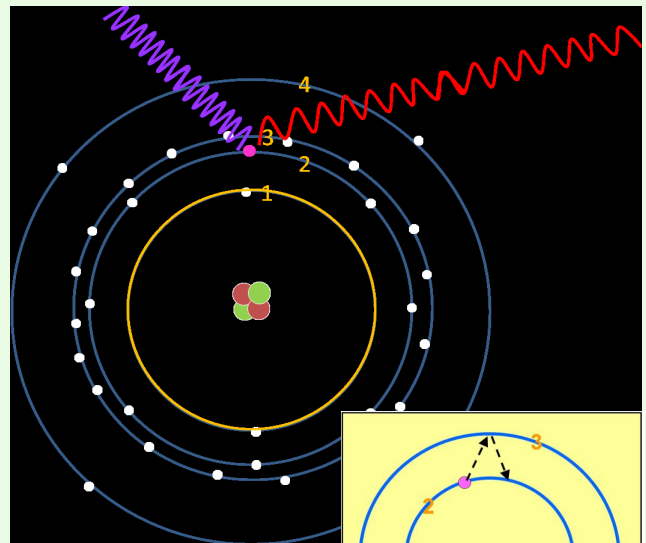


Figure 5

Figure 5 For the discussion of fluorescence, we will refer to this hypothetical atom, with 4 electron shells. NOTE: This atom is not drawn to scale. In fact, if the nucleus was the size of a golf ball, the first electron shell would be 1.5 miles away!

Note that the shells are not equally spaced. Some shells are closer (or farther away) than others. Shell 1 is called the **ground state**. And Shells 2,3,and 4 are at increasingly higher energy levels. It takes energy to lift an electron to a higher energy level.

Figure 6 An electron must absorb a discreet amount of energy to jump up from one orbit to a higher orbit (that is why not just any old energy source will excite electrons to instigate fluorescence). The amount will depend on the spacing of the energy level (how big is the jump) and the strength of the positive charge in the nucleus. The jump from level 2 to 3 requires less energy than from 2 to 4, or from 3 to 4. **The bigger the jump, the more energy is required.**



In this illustration (Figure 6), the electron, colored pink, is given enough energy to jump from level 2 to 3 (See yellow inset). That energy is in the form of ultra-violet light (violet wave). The electron is unstable, and the positive of the atom's nucleus pulls the electron back toward the ground state. **That drop releases energy.** And in this case, the energy released is in the visible light spectrum (red wave). The larger the gap between energy levels and the more energy levels that are jumped by the electrons, the greater the energy released and the longer the wavelength of light emitted. **The release of visible light is called FLUORESCENCE.**

Fluorescence continued on page 6....

....Fluorescence continued from page 5

There is another photo-luminescent phenomenon that is oft-associated with fluorescence. With fluorescence, when excited electrons immediately return to their 'home' energy level, they also immediately emit visible light — and stop emitting that light as soon as the energy source is terminated. On the other hand, when excited electrons return to their 'home' energy level slowly and in incremental steps, the material will emit a lower-intensity light over a long period — even after the energy source is terminated. **This prolonged release of visible light is called PHOSPHORESCENCE.** Maybe your children or grandchildren have “glow-in-the-dark” stars and planets on their bedroom ceilings. These objects are phosphorescing.

NOTE: There are numerous elements that are more easily activated by ultra-violet light. When these are present as essential components of, or as accessory elements, in minerals, they will cause those minerals to fluoresce. Some of them are: antimony, bismuth, chromium, copper, dysprosium, europium, lead, manganese, silver, terbium, thallium, tin, titanium, tungsten, uranium, vanadium, yttrium. It is usually accessory uranium that causes Arizona's chalcidony desert roses to fluoresce bright green (See Figure 7).



Figure 7 Chalcidony desert rose collected west of Palo Verde Nuclear Power Plant. Uranium impurities result in a green glow under short-wave UV light. *Photo by Stan Celestian*

<https://www.flickr.com/photos/usageology/albums/72157639084594745>

ULTRAVIOLET WAVELENGTH RANGE

SHORT WAVE (SW) 100-280 nm

MID-WAVE (MW) 280-315 nm

LONG WAVE (LW) 315-400 nm

You may purchase lights that emit or filter for specific ranges of wavelengths of ultra-violet light. These make it easier to hunt for fluorescent minerals — or scorpions, who glow brightly under LW ultraviolet light. SW lights are more expensive, because their filter is more expensive.

UPCOMING FIELD TRIPS

WHERE: Purple Passion Mine (a now closed underground Silver-Lead-Gold-Copper-Molybdenum mine)

WHAT: Fluorescent rocks, wulfenite - tabular & epitaxial (Full mineral list: anglesite, aragonite, barite, calcite, cerussite, chlorargyrite, fluorite, galena, gold, hydrozincite, kaolinite, mimetite, quartz, silver, smithsonite, sulfur, willemite, wulfenite)

WHEN: Saturday, December 10, 2016

MEET: 7:30 at Anthem Community Center (NOT site of club meetings) on Freedom Way OR 8:30 at McDonalds in Wickenburg

FEE: \$10 per person

See Figures 7-9 below for recently collected material.



Figure 7 A specimen from the Purple Passion Mine, in plain (left) and ultraviolet light (right). *Photo by Stan Celestian*



Figure 8 Blades of wulfenite in a vug, found at the Purple Passion Mine. *Photo by Stan Celestian*



Figure 9 Dendritic growth of manganese oxide on the surface of a light-colored rock at the Purple Passion Mine. *Photo by Stan Celestian*

.... Yellow Pine continued from page 4



Hydrozincite in plain light (left) and in short-wave UV light (right).
Photo by Stan Celestian.



Like cave popcorn, these calcite coatings on rocks at the nearby Prairie Flower Mine will make good yard rocks! Similar rocks came from the Yellow Pine and nearby dumps. Dave, we hope your springs survived the load ☺ *Photos by Bruce Courson*



(Above photo) Jennifer Gecho, Joe Gecho (hat and right arm), Tiffany Posch, and Bob Salter; (Lower photo) Joe Gecho, Jennifer Gecho, and Gary -- all enjoying a day at the Yellow Pine Mine. *Photos by Ed Winbourne*



Sparkly calcite crystals line vugs in a rock from the Prairie Flower Mine.
Photo by Bruce Courson.

Yellow Pine continued on page 8.....

Yellow Pine continued from page 7



Smithsonite ($ZnCO_3$ - zinc carbonate) with white calcite and very small spheres (seen in the close up view on the right) of what is probably rosasite ($(Cu, Zn)_2(CO_3)(OH)_2$). The pieces of smithsonite were fairly common on the dumps. Most were brownish in color and could be identified by their fairly high specific gravity of 4.4, which is high for a non-metallic mineral. *Photos by Stan Celestian*

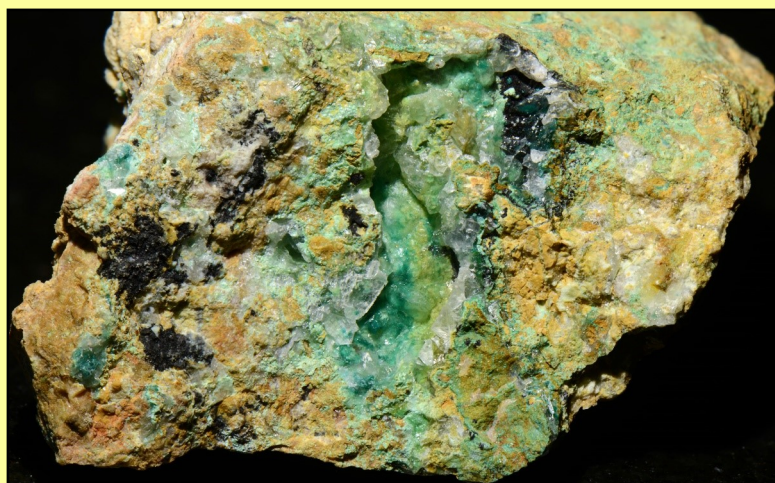


Another interesting rock that is primarily smithsonite. The layering of minerals that make up this rock is fairly common in vein deposits. *Photo by Stan Celestian*

Q: Why did the geologist take his girlfriend to the quarry?

A: He wanted to get a little boulder.

A veritable potpourri of petrological pleasantries packed into this palm-sized package. It includes galena (black), calcite (white), rosasite (blue), and smithsonite (brown). This beauty boasts a beguiling bounty! *Photo by Stan Celestian*



Yellow Pine continued on page 9.....

...Yellow Pine continued from page 8

PORPHYRITIC GRANITE



Photo by Stan Celestian

This piece of porphyritic granite was collected near the Yellow Pine Mine. In this picture you can see a few large, blocky crystals in an otherwise fine-grained rock. This granite is an example of an igneous rock that formed deep beneath the Earth's surface. The larger crystals formed first, and relatively slowly. This slow growth over a long period of time allowed them to grow larger than the crystals in the rest of the rock, which formed faster and at a later stage. This difference in crystal size (two distinct crystal sizes in this specimen) is what distinguishes this granite as a porphyry, or "porphyritic granite". (A *porphyry* is an igneous rock that contains two distinct crystal sizes.)

To make the rock even more interesting, the blocky feldspar crystals (**orthoclase** feldspar to be more specific), were replaced by the mineral **kaolinite**. Kaolinite is a clay mineral and is a common product created when orthoclase feldspar is weathered. But because the

kaolinite still retains the shape of the orthoclase crystals, they are called **pseudomorphs** (*pseudo* - false, and *morph* - form). Below the porphyritic granite are several individual crystals of the **kaolinite pseudomorphs after orthoclase** that were easily released from the rock. (Note: The Yellow Pine Mine sits along Porphyry Gulch.)



Can you find the 2 kaolinite after orthoclase crystals in the gravel? Photo by Susan Celestian



Kaolinite after Orthoclase crystals from the Yellow Pine Mine. Photo by Stan Celestian

.....Yellow Pine continued from page 9

This limestone is full of lumpy chert nodules. It is an example of differential weathering -- the limestone dissolves readily, the chert is much more resistant. This specimen is from the Columbia Mine, however similar rocks graced the slopes around the Yellow Pine Mine. Photo by Bruce Courson

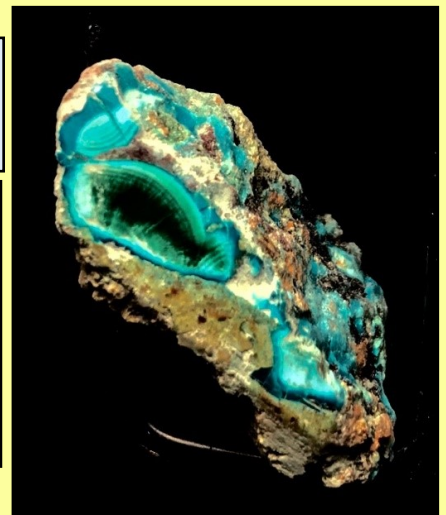


Saturday night dinner at the Twin Creeks restaurant in the Silverton Casino. Photo by Ed Winbourne

Pretty cacti grew on the hillsides. On the right -- Grizzleybear Prickly pear (*Opuntia polycantha* variety *erinacea*), and below -- Mountain Ball Cactus (*Pediocactus simpsonii*). Photos by Susan Celestian



This is a picture of some underground workings at the Columbia Mine, a nearby abandoned Copper-Silver-Zinc-Gold-Cobalt mine, visited by Bruce Courson. To the right is some pretty malachite. Photos by Bruce Courson



TRASH-TREASURES from the Yellow Pine Mine Dump These are some of the findings of noted dumpster diver Stan Celestian. These beautiful relics are from the “good ole days”.



“One man’s trash is another man’s treasure”, the saying goes. At the Yellow Pine Mine lots of treasures remain to be found. This first relic is the lid of a Copenhagen Snuff can. Miners had lots of bad habits and evidently, snuff was one of them. Lots of these cans were scattered about. While the club was looking for mineral treasures, a man from Las Vegas was at the mine looking for artifacts. He mentioned that miners would store their tokens in Prince Albert cans, so if you found a complete can (lid and bottom), check inside for these valuable items. None were found that day on the dump.

Photo by Stan Celestian



Another interesting relic is this carbide lamp part. The can that holds the carbide and water is missing. It attached to the right of the lamp in this view. The reflector is also missing. It would be placed on the part of the lamp that is the base in this picture. Nevertheless, a wonderful find that depicts the old days of mining without electricity and a lot of other useful items we would deem necessities. *Photo by Stan Celestian*



Also recovered from the dump were narrow-gauge rail spikes. The tracks upon which the ore cars travelled were fastened down to the wooden ties with these spikes. After being tossed out onto the dump, they are now in various stages of decay. Although no longer functional as fasteners, each is a work of art that could be displayed in the finest art galleries of the world. Included in the picture is a ceramic insulator. The story it tells is one of the

electricity in the mine. The insulators were simply nailed (hole in the center) to the timbers that ran throughout the mine. An insulated wire was wrapped around the concave neck of the insulator and bare bulbs were placed along the adits in the mine. In most cases, carbide lamps were still used to illuminate the side adits and remote areas of a mine.

The dump was also loaded with old nails, wires, oil, tar, splintered wood, broken glass. All-in-all, a great area to paw through on a beautiful day at the Yellow Pine Mine. *Photo by Stan Celestian*

UPCOMING AZ MINERAL SHOWS

Monthly - Tempe, AZ Gallery TCR , 906 S Priest, #107; Sat 9-6; Free. For dates, go to: https://www.facebook.com/pg/gallerytcr/events/?ref=page_internal

January 1 - February 29 - Quartzsite, AZ For show schedules <http://www.desertusa.com/cities/az/quartzsite.html>

January 6-8 - Mesa, AZ Flagg Foundation; Mesa Community College, Dobson, north of US 60; Daily 9-5; free.

January 20-22 - Globe, AZ Gila County Gem and Mineral Society; Gila County Fairgrounds, 900 E Fairgrounds Rd, Globe, AZ 85501; Sat 9-5, Sun 10-4; \$3/person, \$5/couple, students and children free.

February 9-12 - Tucson, AZ Tucson Gem and Mineral Society; Tucson Convention Center, 260 S Church St; Thurs-Sat 10-6, Sun 10-5; Admission: \$13, under 14 free with adult.

February 18-19 - Apache Junction, AZ Apache Jct Rock and Gem Society; Skyline High School Gymnasium, 845 S Crismon Rd; Mesa, Arizona 85208; St 9-5, Sun 10-4; \$3/adult, \$1 students, children under 12 free. http://www.ajrockclub.com/About_Who_We_are_AnnualShow.html

March 25-26 - Anthem, AZ Daisy Mountain Rock and Mineral Club; Boulder Creek High School Gym,

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

NO ELECTRONS WERE HARMED

in the creation of this newsletter.
However, they may have been terribly inconvenienced.



Aragonite (Plain and SW UV light) from Santa Eulalia, Chihuahua, Mexico *Photo by Stan Celestian*



Halite (Plain and SW UV light) crystallized on a plant branch from the Salton Sea. *Photo by Stan Celestian*

Officers and Chairpersons

- President:** Ed Winbourne.....ewinbourne@gmail.com
- Vice President:** Bob Salter
- Secretary:** Victoria Peterson
- Treasurer:** Cynthia Buckner
- Publicity:** Kathy Marvin
- Membership:** Victoria Peterson.....
g.victoriapeterson@yahoo.com
- Editors:** Susan & Stan Celestian.....
azrocklady@gmail.com
- Field Trip:** Bob Salter
- 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 the summer — **no meetings in June, July or August.**

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.

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

Meeting Dates for 2017

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

**Dues are
past due!**

Featured Mineral

JAROSITE $\text{KFe}^{3+}_3(\text{OH})_6(\text{SO}_4)_2$

A basic hydrous sulfate of potassium and iron

INTERESTING LINKS:

<http://mars.nasa.gov/mer/science/goal1-results.html>

<https://www.sciencedaily.com/releases/2015/02/150219211724.htm>



JAROSITE is a secondary mineral formed by weathering, commonly in and around mine dumps that have sulfides, like the Yellow Pine Mine, from which this specimen was collected. (Note: this specimen has not positively been identified as jarosite.) Normally the mineral forms yellow to amber colored crusts of very small crystals along cracks in rocks. Although the mineral does not usually form crystals bigger than sand grains and most collectors do not have a specimen, the mineral is significant to planetary geologists, especially those searching for life on Mars. In 2004, jarosite was identified on Mars by the Opportunity Rover. The presence of this mineral on Mars strongly suggests large quantities of water as well as some oxygen. On Earth, the acidic waters that can produce jarosite can also support bacterial life.

In 1852, August Breithaupt identified the new mineral jarosite from the Barranco del Jaroso area in Spain. The name is derived from the Jara, a Spanish name of a yellow flower. *Photo by Stan Celestian*

Uses of Fluorescence in Ultraviolet (UV) Light

- ◆ Thwart counterfeiting: UV-sensitive inks and threads in passports, currency, driver's licenses and other
- ◆ Criminal ID: UV dyes may be added to pepper spray and other liquids expelled on the 'wrong' person
 - ◆ Forensics: Locate semen, blood, urine, bile....
 - ◆ Hunting: Hunters may use UV lights to track a bleeding animal
- ◆ Pest control: Scorpions glow under LW ultraviolet light; Pest control technicians may use UV light to track urine trails of rodents
- ◆ Sanitary compliance: Used in the hospitality industry to detect pet and human bodily fluids to gauge life cycle of mattress and carpet restoration
- ◆ Analysis and authentication of minerals, gems and collectibles: Similar materials may look alike in ordinary light, but fluoresce differently under UV light; Identification and sorting of ore minerals, such as tungsten-bearing Scheelite: fluorescent doping of synthetic gemstones; blue fluorescence used in grading of diamonds
- ◆ Chemical markers: Green Fluorescent Protein used in genetics and biochemistry