



# THE MOUNTAIN GEM

## Gem & Mineral Society of Franklin, North Carolina

### June 2020 Newsletter



#### Franklin Gem and Mineral Society

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- Director (2020): Larry Ellert, (828-349-0774)
- Director (2020): Tom Parker, (828-342-3619)
- Director (2019): Diane Mason, (706-379-1718)
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- Membership: Tom Parker and Diane Mason
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- Curator Emeritus: Fred Plesner, (828-349-4224)
- Museum Gift Shop: Nancy Hopp (828-508-0637), Anamay Rossomando (828-349-2807)
- Museum Workshop: Virginia Bennis (631-830-5403)
- Publicity: George Fritz, (828-524-4936)
- Field Trip Coordinator: Marsha Harmon, (828 369-7262)
- Program Coordinator: Kathi Walbridge
- Museum Calendar: Jay Mooney, (678-488-0620)
- Gemborees: Norm Holbert (828-634-0350)
- Education/Tours: Marsha Harmon, (828 369-7262)
- Asst Education/Tours: Ron Rossomando (828-349-2807)
- Web Master: Melissa Barfield (803-724-8312)
- Newsletter Editor: Stacy Walbridge [[fgmseditor@gmail.com](mailto:fgmseditor@gmail.com)]

**The Club is a member of the American Federation of Mineralogical Societies and the Southeast Federation of the Mineralogical Societies.**



**The Gem and Mineral Society of Franklin, North Carolina, is a 501 (c)(3) organization and donations may be tax deductible. Please remember us when planning your estate.**

#### GREETINGS MEMBERS AND FRIENDS

Another month has passed with folks cautiously emerging from quarantine. Masks and social distancing are becoming common, outdoor activities are on the upswing, and summer has finally arrived.

Looking ahead to the summer, the July Gemboree has been cancelled but G&LW is tentatively rescheduled their July show to 6-9 August. It is not definite but we'll keep our fingers crossed.

In this issue of the Newsletter Marsha Harmon provides information for field trips, Diane Mason has some classroom updates, Fred Plesner recalls a previous editor's poem, an article on Shadow and Iris agates, Al Pribble writes about dinosaur fossils, and we are proposing a new feature to hopefully raise funds for the Museum (see the **Members Trading Post** on the last page). Although it is currently closed the utility bills and maintenance are ongoing expenses

And last is my final article on Collecting in the Sonoran Desert.

I hope that you enjoy this issue and I look forward to seeing you all soon.

Stacy Walbridge  
Editor



#### FIELD TRIPS Marsha Harmon

Field Trips if you are interested locally? I know that the DMC has cancelled all trips on their schedule for this year and I have heard nothing about changing this posting. I have ventured out locally and found that Chunky Gal, Brasstown staurolites, Buck Creek, Deep Gap and Standing Indian spots can be found with patience. If anyone is interested in an adventure, I am able to give directions on a totally safe way to do so.



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Instructions for safe collecting:

- Mask on face or in an immediate location like in your pocket,
- No car pools unless you intend to wear a mask throughout the drive and in tight quarters for collecting,
- No sharing of equipment or food,
- No meeting inside the Museum or using its facilities

Going on the weekend has proven to be too crowded to be safe. People can be found in out of the way spots camping, fishing, or just enjoying our National Forest which is now open unless posted otherwise.

I did manage to get out and visit all five locations with two nonmembers using the above guidelines and at no time did we feel unsafe. If you want to get out it can be done and I surely enjoyed the change of pace for three days. Call me if you are interested but please insist as I do, on using the above guidance at a minimum! I can be reached at 828 369 7262 or [monaleaf28734@gmail.com](mailto:monaleaf28734@gmail.com), for questions.

Hope to see you all as soon as it is safe and if anyone needs something, I am a dependable errand gal.

## NOTES FROM THE CLASSROOM

**Diane Mason**

N.C. & S.C. are still in the "climbing numbers" category for covid. In fact, we just had (yesterday) a show in Upper State S.C. tell us that this year's show will not be happening in September. Sorry to hear that because it was one of our biggest and best shows. We are still hoping to do one in Powder Springs September 11-13. They have reached out to us to let us know that they are fencing the area and working on their social distancing. We just do not have much in the positive category yet. Hope the Black Friday Weekend show at Brasstown Resort is still on. It has been voted in the top 20 for the Southeast for the last

5 years and is a really great one.

Since Georgia is trying to enter phase three we are still closed with the business but are starting to get out a little more.(I actually have a group planned to come here for a WIRE III class the first week in November and I am looking at the last week of October for a WIRE II here)

On a POSITIVE note: G&LW is still planning their usual July show for August 6-9. This is not set in concrete but is planned. Jerry and I will not be there buying but do plan to run over and see a couple of people to make orders for next year's May delivery.

## DINOSAUR BONES – ANCIENT & MAGICAL

Adapted by All Pribble from

[www.multicolour.com/gemstones/dinosaur\\_bone.html](http://www.multicolour.com/gemstones/dinosaur_bone.html) web site.



Dinosaurs were one of Earth's most successful creatures. They lived during the period known as the Mesozoic Era (The Age of Reptiles). It is believed they first appeared in the late Triassic Period, about 200 million years ago, evolved and diversified during the Jurassic Period (180-135 million years ago) and by approximately 70 million years ago, at the end of the Cretaceous Period they were extinct.

What is commonly called dinosaur bone is more correctly and descriptively known as silicified fossil of dinosaur bone. Fossils are the remains of prehistoric animals or plants. Silicified means the fossil is quartz (a form of silica). A more common name for this form of quartz is agate.

Usually fossils are some hard skeletal part on an organism, slow to decay, that has been quickly buried in sediment, preserving them more or less intact until petrification begins. Bones, teeth, shells and wood are often preserved in this manner.

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One of the processes involved in petrification is permineralization. The fossils created through this process tend to contain a large amount of the original material of the specimen.

This process occurs when groundwater containing dissolved minerals (most commonly [quartz](#), [calcite](#), [apatite](#) (calcium phosphate), [siderite](#) (iron carbonate), and [pyrite](#)), fills pore spaces and cavities of specimens, particularly bone, shell or wood. (Wikipedia - Permineralization)

**Petrifaction** or **petrification** is the process by which [organic material](#) becomes a [fossil](#) through the replacement of the original material and the filling of the original pore spaces with [minerals](#). In some cases, these mineral bearing groundwater solutions fill the cavity left by the decay of the buried object; in other cases, they replace the porous areas in the buried organic material with another mineral taken from the surrounding sediments, silica in the case of gem quality dinosaur bone

In an optimal case, the most delicate and minute details of the cellular structure of the original bone are reproduced. Molecules of the organic material are removed and replaced bit by bit by inorganic material (silica in solution). The fact that living bone is nourished thru a highway of blood vessels facilitate the petrification process as these same highways now conduct the mineralized water. The colors in agatized fossils result from trace minerals in the silica solution. The vivid and unexpected colors and patterns can be magical and delightful.

Fossilized dinosaur bones are found in many places around the world, from Argentina to Mongolia to Madagascar, however, the highly silicified and beautifully colored dinosaur bone that is sometimes called gem bone, is almost exclusively found in a relatively small area in the United States, the Colorado Plateau. Today it is a semi desert region centered a bit north of the Four Corners area, where Arizona, New Mexico, Utah, and Colorado join. Most of the areas that produce quality bone are in Colorado and Utah. During the time of the dinosaurs it was an area that included both land and water, with swamps, lakes, and shallow oceans bordered by continental shelf, rising into ancient mountains. As geologic time passed the climate changed, becoming more arid. Volcanic activity increased, and with it volcanic sediments, rich in silica were carried by the rivers and deposited as the seas retreated. This

proved to be an ideal environment for the burial and subsequent preservation of the remains of many dinosaurs.

It is now quite difficult to go out and collect dinosaur bone. In fact, it's illegal to do so on government land unless you are a research scientist with permission from the Bureau of Land Management, which manages the public domain. Although private lands occasionally yield a bit of new material, most gem bone was collected long ago. Prospectors searching for uranium discovered lots of it in the 1950's, as bone is sometimes found within sediments containing uranium ore.

Beautiful bone cut and polished to display interesting patterns, especially when it shows high contrast and vivid colors is quite popular with collectors. As is the case with many materials in limited supply, it is especially appreciated and sought after by local collectors, who are more fully aware of its rarity in finer grades and are knowledgeable of its value. The variety of color and pattern is amazing. Some pieces are transparent when cut thin, with the bone marrow cell membrane forming a spider web pattern. Some bones are hollow, with a core of amethyst crystals. The patterns revealed through cutting and polishing vary with the type of bone, the direction of the cutting through the bone, whether across it, or along it, or diagonal across it. Each produces a different look. Between variations in pattern and variations in color, the choices are almost limitless. There is a stone for almost any taste, from those who prefer the subtle and understated to those who want their stones to be bold and unusual. Dinosaur bone is a stone with a certain magical allure, enduring and preserving a bit of our past, from the absolute mists of time, a stone that anyone with a sense of the fleeting nature of time should find attractive and magical.

## Dinosaur Bone Profile

**Refractive Index: 1.535 - 1.539**

**Chemical Composition:  $\text{SiO}_2$**

**Hardness: 7**

**Density: 2.66**

**Crystal Group: Hexagonal**

**Occurrence: Arizona, New Mexico, Utah, Colorado, Madagascar, Mongolia, Siberia, Argentina**

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## Shadow and Iris Agates

By Terry Roberts

1<sup>st</sup> Published in the Rose-N-Rock 11/15; via The Rockhounder 6/2020

When I read "The Beauty of Banded Agates" by Michael R. Carlson several years ago, I was awed by the beauty of these agates. Most rockhounds are familiar with the outstanding patterns and colors exhibited by Laguna, Brazilian, Dryhead, Fairburn, Condor, Queensland and other banded agates shown in the book. However, the author showed two types of agates that I was determined to find. These are the Shadow and Iris agates. Mr. Carlson provides an excellent description of each phenomenon in his book.

**Shadow Agates** display a shimmering optical effect caused by a phenomenon known as parallax. The shadow is caused by regularly spaced bands that are alternately clear and opaque. The opaque band is usually white in low quality agates, but can be bright colors in high quality agates. As light enters the agate at an angle to the surface of the bands, the opaque band will cast a shadow in the clear band since light is not reflected out of it. By moving the stone back and forth, the shadow will move across the bands. This can be seen in the photo where the shadow moves along the upper left side of the cabochon. A word of caution: This is not "chatoyance" which is an optical effect caused by the reflection of light from some fibrous material as seen in Tigereye.



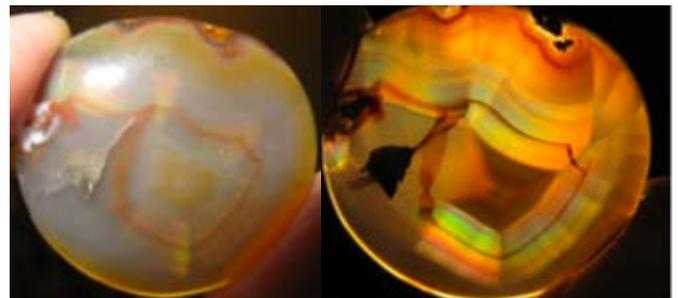
The Iris effect is often, but not always, found in low quality agate that a collector may be tempted

to discard. I finally found a good example of this phenomenon in an ordinary Brazilian agate slab that had no noteworthy patterns and very little color. This can be seen in the photos which show the Brazilian agate in reflected light and again in transmitted light from an incandescent bulb (the cab has pieces of lint on the surface from the polishing cloth that appear to be scratches).

This phenomenon is produced when light passes through a clear agate with extremely fine bands (up to 10,000 bands per inch).

The bands act as a diffraction grating where the edges of the bands have alternately high and low refractive indices which cause the light to break into spectral colors. Since not all agates have evenly spaced bands and refractive indices suitable for separating colors in white light, the iris effect varies in quality and the number of colors that will be displayed.

In order to get the best colors from this cabochon, I had to grind it down to a thickness of about 2.5 mm in the center of the dome and 1.5 mm at the edge. If the agate cab had been any thicker, the colors would not have been noticeable. So, if you find a clear agate slab that appears to have wavy shadows that are caused by microscopic bands, you might try to grind it to a very thin slab. You may be rewarded with a beautiful Iris Agate



Cabochon under normal light (l) and backlit (r)

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## A PRETTY PICTURE ROCK

Fred Plesner, Curator Emeritus

In 2002 the editor of The Mountain Gem, Linda Behr, published a poem by another former editor, Ted Robles. The poem was entered into the Southeast Federations editors contest and placed 3<sup>rd</sup>. Ted had titled his poem “The Rock” but when published the editor had changed the name to “A Pretty Picture Rock” and Ted seemed to like it.

It was a pretty pebble that I found upon the sand,  
I picked it up and dusted it, and held it in my hand.  
It seemed to have a pattern, ‘though I wasn’t certain what,  
So when I got it home, I studied, “where, oh where to cut?”

I finally decided that I’d cut it smack in two.  
So chucked it up and let the diamonds scream their loud way  
through

I looked at what I had; it seemed to be a little scene  
Of bushes, trees, and flowers, and a rabbit on the green.  
I polished it until it shone, and made a Bola tie,

Now, everyone who sees it casts a warm admiring eye  
And offers heartfelt praise to me for cutting such perfection.  
And I accept the compliments, with only mild objection –  
The scene was always hidden there, and all I did was find it;  
I can’t take too much credit; it was nature who designed it!

Having previously described the geology of the area and some of the tools used for collecting I wanted to show some of the sites we’ve visited and the material that can be collected.



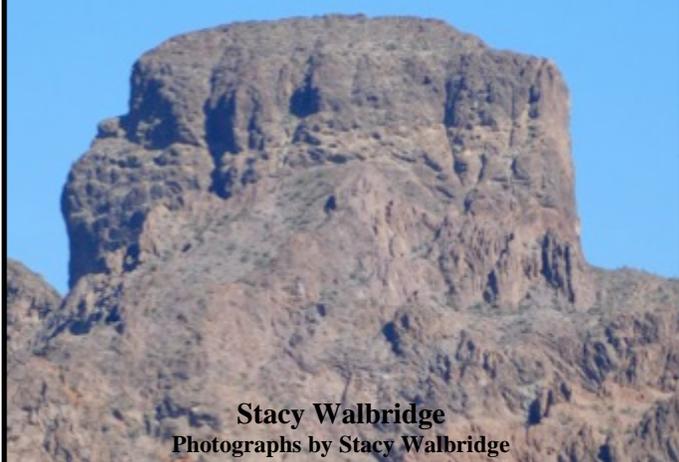
With an almost unlimited number of collecting sites I’ve limited the following descriptions to those shown on the map. Beginning in the west in California and traveling east the first site is Fossil Canyon.

## Fossil Canyon

If you remember from the first article, this area of the country was intermittently flooded over the period of a billion years. During Eocene and Oligocene times, the Atlantic and Pacific Oceans were connected by a passageway somewhere in the region of Central America. After the passage closed the Atlantic coral left in the Pacific became extinct.

In 1916, a study called "The Reef-Coral Fauna of Carrizo Creek Imperial County, California, and Its Significance" was published by Thomas Wayland Vaughn. The study was based on fossils found in Fossil Canyon by Dr. Stephen Bowers which he had sent to Washington for identification. The study revealed that "The Carrizo Creek reef-coral fauna is Atlantic, not Pacific, in its affinities."  
<https://www.desertusa.com/road-side-california/painted-gorge-fossil-canyon.html#ixzz6Po3THOLr>

## Collecting Sites and Results Part 3 of Collecting in the Sonoran Desert



Stacy Walbridge  
Photographs by Stacy Walbridge

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Just north of the small California town of Ocotillo is an area known as Fossil Canyon. On our first trip we saw 2 other collectors and asked them where we might find some shell or coral fossils. They smiled at us and said you just need to look around. After a few minutes we looked at the sandstone walls of the canyon and saw veins of white shells and coral. The shells were everywhere.



**Searching for Shells in Fossil Canyon**



**Collected Shells from Fossil Canyon**

## Hauser Geode Beds



**Hauser Geode Beds**



**Finding the Canyon Walls Covered with Embedded Shells**

The geode beds are named for Joel F. Hauser, who discovered them with the help of his very observant father in the early 1930s. Geodes are found in groups located in volcanic ash beds, which is why they are referred to as geode beds. This area has been pretty well picked over but you still can find golf ball sized geodes either on the surface or by digging down a few inches.

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Small Geodes from Hauser Geode Beds

## Cargo Muchacho Mountains



Abandoned Cyanide Tanks at the old Tumco Mine

Heading east in California to just before the Arizona border are the Cargo Muchacho Mountains. The Spanish were the first to discover the Cargo Muchacho gold in 1780.

"Cargo Muchacho" means Loaded Boy. Legend has it that two Spanish boys discovered gold here and came back to their camp with their pockets full of gold. There are many gold mines in and around the Cargo Muchacho Mountains including the American Girl Mine, the Golden Cross Mine, the Hedges and Tumco Mines, the Padre Madre Mine and the Golden Bee. In 1914, Tumco was the 2nd

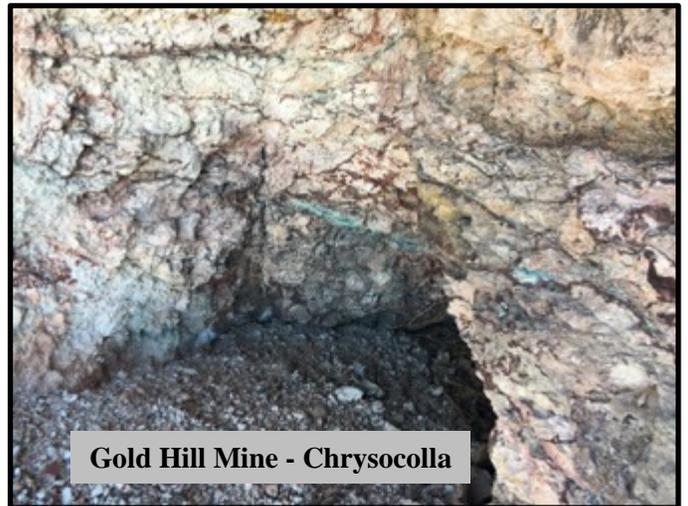
largest gold mine in the US but the gold produced at the American Girl Mine eventually surpassed them all.

With the Colorado River nearby our interests were not in gold but in petrified wood, which can be found on both sides of the river. We were fortunate to find a small area with plentiful wood laying on the surface.



Petrified Wood from the Colorado River Area

## Plomosa Mountains



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Just north of Quartzsite, AZ are the Plomosa Mountains, well known in the area for a variety of numerous minerals. Deposits and placers have been worked intermittently since at least the early 1860's. Estimated and recorded production of base and precious metals from lode mines are 26,000 tons of ore containing about 526 tons of copper, 344 tons of lead, 65 tons of zinc, 7,000 oz. of gold, and 127,400 oz. of silver. Placer production of gold was about 18,000 oz. with 1,800 oz. of silver. Ref: <https://www.mindat.org/loc-33673.html>

In addition to the precious metals that are in the area we have found Malachite, Chrysocolla, loads of good cutting red, green and blue jaspers, and fluorescent Calcite.



Gold Hill Mine Chrysocolla in Quartz



Red, Blue, & White Banded Jaspers

## Hayden

East of Phoenix, AZ is the small town of Hayden. Founded in 1909 by the Kennecott Copper Corp, it is home to the tallest smelter chimney in Arizona, reaching 1,000 feet. Just north of the town there are several abandoned prospects containing lead and molybdate minerals which result in Wulfenite. After 3 years of intermittent searching Kathi and I finally located the Barking Spider Mine, formally known as the Finch Mine.



Closed Entrance to the Finch Mine

After several hours of unsuccessful searching through the tailings I started hammering on a large boulder in my frustration. When it split there were hundreds of orange Wulfenite crystals covered with drusy quartz making the long search worthwhile.



Wulfenite Crystals Found at Last

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## Round Mountain Rockhound Area



Round Mtn Collecting Area Looking East

Moving further southeast is an easy Chalcedony collecting area known as Round Mountain. Although several miles from paved roads the drive can be easily made with 2-wheel drive vehicles. At first glance the area seems void of minerals of any type but a quick glance at the ground shows it covered with all different shapes and sizes of Chalcedony, some of which fluoresces bright green. It is easy load up on buckets of the white material but with patience and searching you can find fire agate among the Chalcedony.



Chalcedony Laced with Fire Agate

## Dragoon Mountains

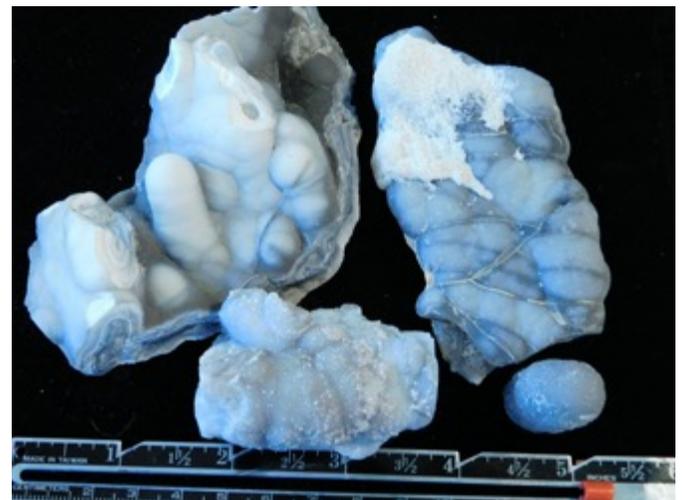
The last area is located southeast of Tucson in a mountainous known as Cochise's Stronghold and

his eventual resting place. At the base of the mountain range is an abandoned marble quarry that offers some collectible material. A few years ago, a member of the local Tucson gem and mineral club was exploring the quarry and found a vein of blue and white banded botryoidal agate. We connected with a couple of members of the club, visited the site and came away with several pounds of the material.



Rockhound Exploring the Agate Vein

After recently visiting the Summerville, GA quarry with DMC I was pleasantly surprised with the similarities and believe the same geologic processes were involved in its formation.



"Elephant Skin" Agate from the Dragoon Mountains

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Hopefully these articles have provided you with a flavor of the numerous opportunities for rockhounds in the Sonoran Desert. In addition to the great collecting found in the area the day and night scenery is also pretty awesome.



Thank You

## MEMBERS TRADING POST (or THRIFT EXCHANGE)

With indefinite closure of the Museum we are experiencing a significant financial shortfall for utilities and maintenance. To help mitigate that we would like to start a new feature in the Newsletter that may raise some additional funds for the club, which I've tentatively called the Members Trading Post.

If you have a piece of hardware, equipment, or mineral/fossil/slab that you were thinking of donating or just getting rid of it and would like donate a portion or all of the proceeds to the Club we will provide you space in the Newsletter to advertise your item for direct sale to another member. We're not sure if this will work but are willing to give it a try over the next couple of months.

What is needed from the Seller; send an email to [fgmsnewsletter@gmail.com](mailto:fgmsnewsletter@gmail.com) by the Newsletter deadline or earlier and include:

- Seller Name
- Seller Contact Information
- Picture of Item for Sale
- Price OBO

For the Buyer:

If you see an item that you would like to purchase then you will contact the seller directly and work out the price and logistics for completing the sale.

Upon Sale Completion:

Once the sale takes place then the donated funds should be placed in an envelope along with the seller's name and placed in the lockbox (*Donations Box*) at the Museum. A receipt for the donation will be provided to the seller at a later date (*if desired*).

Having the buyer and seller directly working together the club will avoid having to store the equipment, manage social distancing, or other logistics matters. We have no idea how successful this new feature will be but are hopeful that it will provide a means for members to have their excess equipment/material go to someone who can use it while benefiting the Museum.

**July Newsletter Deadline is  
Thursday, July 16, 2020**

**JUNE BIRTHSTONES:  
Pearl, Alexandrite & Moonstone**

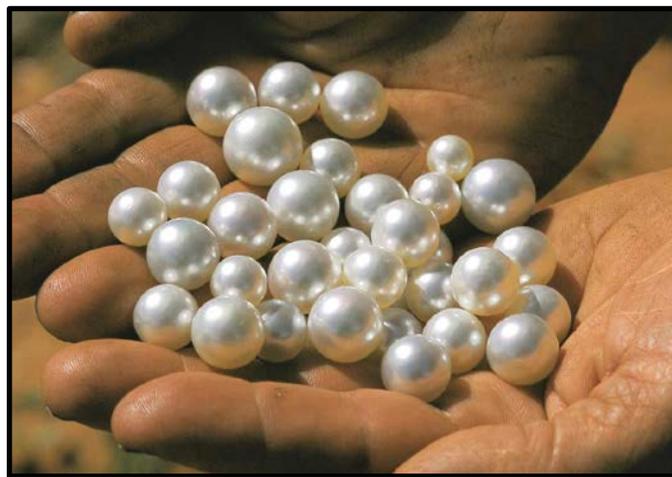


Photo Courtesy of [www.thejewelry editor.com](http://www.thejewelryeditor.com)