Jade State News

Wyoming State Mineral & Gem Society, Inc.

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WSMGS OFFICERS

President: Jim Gray
pres@wsmgs.org

Vice President: Linda Richendifer
vpres@wsmgs.org

Secretary: Leane Gray
sec@wsmgs.org

Treasurer: Stan Strike
treas@wsmgs.org

Historian: Roger McMannis
hist@wsmgs.org

Jade State News Editor:
Ilene Olson
jsn@wsmgs.org

RMFMS State Director:
Stan Strike
wydir@wsmgs.org

Webmaster Tech: Marlene Sibley
webmaster@wsmgs.org

The WSMGS conducts meetings quarterly and as special events require.

AUTHENTIC SEA GLASS

Or creating your own frosted or polished glass

By STAN STRIKE
RMFMS Wyoming State Director

Recently, my wife and I had the opportunity to travel and tour Nova Scotia. As a rock hound, my collecting opportunities were greatly restricted, as most of this area is underlain by the Canadian Shield, which is made up of Precambrian crystalline rocks that were modified by the movement of continental glaciers.

The only "rocks" that appeared for sale were sea glass. Authentic sea glass — that found along the beaches or shorelines and semi-polished by natural processes — was being sold by the piece at a price that made me delay any purchase for a better deal later in our trip. I found that deal later in Cape Cod, USA — a whole bag for under $6.00!

Authentic sea glass / Photo by Jonna, Beachlust.com

After returning home, I researched on the internet and determined my purchase may not have been authentic sea glass, but was, perhaps, produced by lapidary processes instead. I had several pieces of craft glass on display in my workshop, and oftentimes visitors would inquire about it because of its vibrant

Table of Contents

Authentic Sea Glass (Continued from Page 1)

colors. In addition, on my trip to the 2019 Rocky Mountain Federation of Mineralogical Societies convention in Prescott, I stopped at a rock shop that featured a rainbow of landscape-sized pieces of colored glass. Combined, these exposures spiked my interest in creating this article.

What is Sea Glass?

Sea glass is formed from pieces of broken glass that originated as bottles, jars, glassware, tableware or even as the result of shipwrecks. The most common source of glass is from companies that sell beer, juice and soft drinks. Not as common, is glass that comes from clear plates and glasses, windshields, windows, and bottles. Other sources are soda bottles, ink bottles, and fruit jars from the late 19th to early 20th centuries.

Prior to the environmental movement, it was very common for people to dispose of their unwanted glass into bodies of water. Dumping still occurs today but is more restricted by some countries. Still, it is apparent that some ocean vessels are still dumping their garbage (including glass) into the sea, as evidenced by the accumulation of plastic.

Sea glass can be clear, white, green, blue, jade, aqua, amber and brown, but never shiny. The slick and glossy appearance of glass is slowly transformed over the years into its special, frosted look, especially when saltwater leaches into the glass and when it is exposed to sunlight. Sea glass also has no sharp edges, unless it has been broken.It can take as little as 5 years to form, but on average, it takes about 20 to 30 years.

The length of time to form sea glass from broken glass depends upon how much mechanical abrasion the glass is exposed to as it erodes and is deposited near beaches and shorelines. For sea glass to acquire its appearance, the most important ingredient and factor is time. There's just no substitute for authentic sea glass — unless "forgeries" of it are created using lapidary techniques.

Sea glass may be found along the beaches of the northeast United States, California, northwest England, Mexico, Hawaii, Puerto Rico, Australia and Italy. However, sea glass is getting harder to find, for a few reasons. One of them is positive: There is less dumping in the oceans today. Less trash, less glass, which leads to less sea glass. Additionally, many glass items have been replaced by plastic. Also, more people are now searching for sea glass along beaches and shorelines and are collecting it.

If you are lucky enough to find sea glass, its surface will have a "frosted" luster (the surface has fine scratches), which is characteristic of sea glass. Larger pieces of sea glass can be used to make pendants, while smaller pieces can be drilled and strung together as beads.

Rock hounds who cannot get to a beach or shoreline to search for authentic sea glass, or who are perhaps not satisfied with finding singular pieces, you may want to create your own sea glass or polished glass using the following suggested lapidary techniques.

Polishing Glass: Information, Precautions and Hints

Assorted colored glass/Stan Strike's collection

If you have experience at tumbling rocks, there are a few things you should know before tumbling glass.

- **Glass is softer than most rocks.**

Glass is much softer than agate, jasper and most other rocks that are typically processed in a rock tumbler. Glass has a hardness of between four and six on the Mohs Hardness Scale while agates and jaspers have a hardness of about seven. Glass is softer than agate. Therefore, It will take less time to tumble. We usually skip the coarse grit step.

- **Glass is not as tough as most rocks.**

Glass is not as "tough" as jasper or agate. (Toughness is the resistance of a material to chipping and breaking.)

(Continued on Page 3)

Polishing Glass: Information, Precautions and Hints (Continued from Page 2)

So, when you tumble glass, it is very important before starting to tumble. If there is not enough material in the barrel, the glass will be tossed violently around in the barrel and your pieces of glass will be chipped or broken. In addition to filling the barrel properly, it is important to have a range of particle sizes in the barrel. If your load consists mainly of large pieces of glass (greater than 1 inch in diameter), small "used" should be added to the load (new pellets will scratch the glass). Pellets will fill the spaces between the glass particles, cushion the glass-to-glass impacts, and increase the amount of grinding and polishing that occurs.

Add 3 or 4 heaping tablespoons of used ceramic pellets per pound of glass — enough to fill most of the spaces between the pieces of glass. Use these pellets for both rotary tumblers and vibratory tumblers. Plastic pellets should not be used in a vibratory tumbler because they bounce.

• **Polishing glass produces gas.**

Glass — whether man-made or natural (obsidian) — produces gas during the tumbling process. Check your barrel at least daily, and "burp" it by removing the lid if it shows any sign of swelling. Another suggested method is to drill a very small hole in the lid of your tumbler which is covered with duct tape. The tape can be removed to burb the tumbler and then a new piece of tape can be applied. You may also try adding a small amount of baking soda to your mix to minimize the gas production, though not during any final polishing step.

• **Common household glass should not be tumbled.**

Broken household glass is usually so thin that it tumbles to nothing, or to pieces that are so thin that they are fragile and dangerous because of sharp edges. To get nice pieces of tumbled glass you need to start with pieces that measure at least ½ inch across their minimum dimension. Most rock hounds may find it easier to purchase glass that is already the desired size, color, shape, and luster.

• **Sources of Colored Glass for Polishing**:

Whatever source you use to obtain your glass, be careful! Glass is very sharp and will cut you. Wear gloves and protective clothing. Safety glasses and a dust mask should always be worn when handling, sorting, or breaking pieces of glass! Instead of breaking glass yourself, it is recommended to purchase landscape glass or nice, thick pieces of craft glass. You can often find these for under one dollar per pound.

Landscape Glass: "Landscape Glass" is sold at some building supply, home improvement and garden supply stores. It is made from recycled glass and used as a ground cover in shrubbery, planters and gardens. It is sold in a range of sizes. Thicker, rounded pieces between ¼ inch and 2 inches are great for tumbling. You can usually purchase landscape glass at reasonable prices, the price depending upon the quantity and colors purchased. Some colors are much more expensive than others: blue, green and amber glass can be inexpensive but red and orange usually cost a lot more.

Tumbler barrel full of medium-sized, colorful landscape glass/rocktumbler.com

• **Craft Glass:** Craft/hobby stores, such as Michael's, Joann Fabrics and Hobby Lobby usually sell mesh bags of rough glass that are chunky pieces ranging in size between ¼ inch and 1 ½ inches. This glass isn't expensive and usually sells for a few dollars per pound.

• **Internet Glass Suppliers**: Use an internet search engine to locate bulk glass suppliers, such as American Specialty Glass or Bourget Brothers. Large pieces of glass can be purchased from these sources.

(Continued on Page 4)

Polishing Glass with a Lapidary Tumbler

Landscaping glass, polished by Gary Olson of Powell
Photo by Ilene Olson

Many rock hounds may have tumbled a natural glass without realizing it. Apache Tears and obsidian are volcanic rocks and natural volcanic glasses. Man-made glass can be tumbled using the same techniques used for polishing these natural glasses.

Achieving a "frosted" sea glass finish on your glass is much easier than tumbling to achieve a high polish. A rotary tumbler is recommended, as a vibratory machine won't give you the soft curves that are part of the sea glass look. Using a cushioning agent — plastic or ceramic pellets — will reduce chips and fractures.

Weigh the glass to be polished. Put the glass into the tumbler barrel. As a cushioning agent. add 3 to 4 heaping tablespoons of pellets per pound of glass, until your tumbler barrel is two-thirds to three-fourths full. (Add more pellets, if necessary, to reach the desired level in barrel.) Add water until it just covers the broken glass and pellets. Add one level tablespoon of #1, #2, OR #3 silicon carbide grit for each pound of glass (see below).

Check the tumbler contents daily, which will relieve any gas build-up in your barrel. When satisfied with the look of your glass, rinse the glass, pellets, and the barrel into a large bucket and dispose of the contents outside.

IMPORTANT: Never wash the leftover contents of a tumbler down a drain. The sludge will set up like concrete and clog the pipe.

For each new grit, use the same tumbling procedures as listed previously. To avoid scratching during the tumbling process, be certain to only use cleaned glass and pellets when proceeding to the next-finer grit.

For a Frosted Glass Look:

#1— Course Grit: If the glass has lots of sharp edges, start with one level tablespoon of coarse grit (60-90) per pound of glass. Check daily to observe when the sharp edges become rounded but run for only two to four days. When the glass edges become rounded, or if the glass has no sharp edges, proceed to the next step.

#2 — Medium Grit: Add one level tablespoon of 120-220 silicon carbide grit for each pound of glass. Check the tumbler contents daily, which will relieve any gas build-up in your barrel. Every day, observe piece of glass from the barrel (clean and dry it first) to see if it has the desired frosted "sea glass look." Medium grit should only be used two to five days to achieve your imitation sea glass look.

For Polished Glass:

If starting with a new batch of glass, repeat steps for frosted glass, then proceed to step three:

#3 — Fine Grit: Use 500-600 silicon carbide grit (1tablespoon grit/pound of glass) and cushioning pellets. Check the load level in the barrel. If it's getting below 2/3 full, add additional pellets. Check the contents of the tumbler daily but run only three days total. Rinse the contents of your barrel as in previous steps.

#4 — Polish Grit: Don't skip this step with glass! Use TXP (600 grit aluminum oxide) rather than silicon carbide, as this polish will smooth scratches left by the silicon carbide.

Add 2 tablespoons of TXP/ pound of glass and run for five to seven days. Use cushioning pellets, to bring your load up to the proper level in the tumbler, and check progress daily.

(Continued on Page 5)

Polishing Glass with a Lapidary Tumbler (Continued from Page 4)

Run for five to seven days. Rinse the glass and barrel as in previous steps. [If a vibratory tumbler is used to polish, use ½ tablespoon TXP or Rapid Polish/pound of glass for 1-2 days. NOTE: Load in tumbler is limited to only ceramic pellets and glass that is dipped in water and put in tumbler, then polish added.

#5-Burnishing: Burnishing usually improves the shine of tumbled glass. After polishing step #4, tumble the clean glass and pellets about thirty minutes in water containing about one level tablespoon of shavings from a bar of plain Ivory soap per pound of glass. After rinsing in clean water, let dry and enjoy your polished glass!

Adapted Internet References:

1. https://beachlust.com/sea-glass-color-complete-guide-to-origin-and-rarity/

2. www.mamasminerals.com/How-To-Tumble-Polish-Glass_ep_155.html

3. www.mamasminerals.com/How-To-Polish-Glass-with-a-Vibratory-or-Rotary-Tumbler_ep_157.html

4. https://rocktumbler.com/tips/tumbled-glass/

5. https://rocktumbler.com/blog/polishing-colored-glass/%5D

6. https://beachlust.com/how-is-sea-glass-formed/

Lapidary Hints: Aluminum Oxide Polishing Compounds

Aluminum oxide has become the most popular polish for rock tumbling and most lapidary activities, for two reasons.

First, aluminum oxide does a fantastic job at polishing agate, jasper, quartz, petrified wood and most of the other materials that are polished in a rock tumbler.

Secondly, aluminum oxide polishes are inexpensive. They cost less than half as much as cerium and tin oxide, the other all-time favorite polishes.

Aluminum oxide has a chemical composition of Al2O3, the same as the mineral corundum. It also has a Mohs hardness of 9.

TXP Polish

TXP is a best-selling rock-tumbler polish, and it is the polish that can be used in almost all rock tumbling. It can be used in rotary tumblers and vibratory tumblers. It is used for these reasons: performance, price, and particle size.

Even though "TXP" means "the experimental polish," it has proven itself over many years of use. It is an aluminum oxide powder with a particle size distribution that centers around 3 microns. It makes a great lapidary polish and produces a bright shine on almost any rock, mineral or glass that have hardnesses between 5 and 8 on the Mohs hardness scale.

TXP is used for its superior polishing abilities, but also because of its particle size. Its 3-micron size is large enough to keep it out of most of the tiny fractures and cleavage planes that exist in many tumbling roughs, making it unnecessary to spend time trying to extract polish out of fractures.

Rapid Polish

Another best-selling lapidary polish is #61 Rapid Polish. It has a particle size distribution that centers around 0.3 microns. Its primarily-intended use is in a vibratory tumbler. That tiny particle size allows it to produce a brighter shine than TXP on some materials. Some rockhounds use a 1,000-grit step before using Rapid Polish, but great results can occur going straight from 500 or 600 grit to Rapid Polish.

Rapid Polish was developed for polishing jade (a very tough stone to polish) in a vibratory tumbler. It worked so well on jade that the developers tried it on other types of rock and discovered it produced excellent results.

Rapid Polish can be used to tumble fracture-free materials without cleavage layers in a vibratory tumbler. It is a favorite polish for Apache Tears and snowflake obsidian. It can also be used to polish cabochons on a lapidary wheel covered with felt. It results in a super-bright polished surface.

Using TXP and #61 Rapid Polish

In rotary tumblers, use 2 tablespoons of TXP polish per pound of material (rocks plus ceramic media) in the barrel. In a vibratory tumbler, use 1/2 tablespoon of either TXP or Rapid Polish per pound of material in the bowl.

Run TXP for a maximum of one week in a rotary tumbler. When using TXP or #61 Rapid Polish in a vibratory tumbler, check the polish daily and continue if the shine can be improved. Most of the time, a great polish can be obtained within 48 to 72 hours.

Adapted Reference Source: https://rocktumbler.com/polish/aluminum-oxide/

Jurassic Dig Uncovering Hundreds of Dinosaurs in Wyoming's Big Horn Basin

WYOMING – A massive dino dig in north-central Wyoming is expected to eventually uncover hundreds of prehistoric monsters, including some never before cataloged.

Geologists have long known about the dinosaur-rich Morrison Formation. Stretching from New Mexico to Montana, the sedimentary rocks, stones, and conglomerates hide thousands of dinosaur fossils dating from the Kimmeridgian and early Tithonian ages some 148 million to 155 million years old ago.

What has scientists especially excited lately is the discovery of a particularly prolific patch along the Morrison Formation dubbed "Jurassic Mile." The exact location of the excavation is kept highly confidential for fear of fossil thieves. Reporters headed to the area to cover a news story must agree to switch off geotagging on their phones and avoid taking photographs that feature the horizon.

Paleontologist Jack Turnbull is one of hundreds of scientists taking part in the $27.5 million project that's taken on the name "Mission Jurassic." The site is a treasure trove of Jurassic fossil bones, trackways, and preserved plant life from millions of years ago that will undoubtedly lead to never-before-told stories about the Jurassic Period.

Dinosaur fossil skeleton (for illustration purposes only).
Photo courtesy of Rocky Mountain Federation of Mineralogical Societies — rmfms.org.

So far, Mission Jurassic has definitively identified at least four mighty sauropods. There are some meat-eating allosaurs, too, waiting to be transported off-site. The fossil records in this prolific square mile of treasure trove could keep a thousand paleontologists happy for a thousand years, according to one such scientist, Phil Manning.

"What makes the Morrison so rich in fossils is the ancient environment it reflects. One hundred and fifty million years ago, Wyoming was anything but arid. It was semi-tropical and featured big rivers that meandered across vast plains," wrote Jonathan Amos for a BBC story that is the most exhaustive reading we've ever seen on the Wyoming dinosaur dig.

Source: Buckrail Publication, Jackson, WY — August 22, 2019 issue

Video Report: https://www.youtube.com/watch?v= TSVm0yIuSoY - action=share

We're looking for news from your rock clubs! Send news and photos about your meetings, gatherings or upcoming events to jsn@msmgs.

Geology of Keyhole State Park

A publication of the Wyoming State Geological Survey

Introduction

Keyhole State Park, home to Keyhole Reservoir, is in the Black Hills region of northeastern Wyoming. The rocks in and around the park record more than 150 million years of Earth history and preserve evidence of a large inland seaway that once covered much of the state.

Geologic History

More than 100 million years ago, during a geologic timespan known as the Cretaceous Period, the North American plate deformed as the Farallon plate subducted under the continent.

This created a low-lying area that stretched from Canada to Mexico, and from what is now Wyoming east through the Great Plains. Sea level also began rising around this same time, and ocean water flooded onto the continent over millions of years, forming an inland sea.

Geologists named this ancient sea the Western Interior Seaway, and at its largest, it connected the Arctic Ocean to the Gulf of Mexico. As sea level rose and fell through time, the Keyhole State Park area alternated between being beneath and above water. The variety of rocks now exposed along the shore of Keyhole Reservoir are remnants of this sea level fluctuation. About 70 million years ago, near the end of the Cretaceous Period, the seaway began retreating toward the edges of the continent, and the modern-day Rocky Mountains began to form.

Hydrogeology

Keyhole Reservoir sits behind an earthfill dam constructed in 1952 on the Belle Fourche River. The reservoir is the largest body of water in northeastern Wyoming, covering approximately 13,700 acres, or 85

For more information, visit: wyoparks.state.wy.us/index.php/places-to-go/ keyhole

Wyoming State Geological Survey • P.O. Box 1347 Laramie, WY 82073-1347

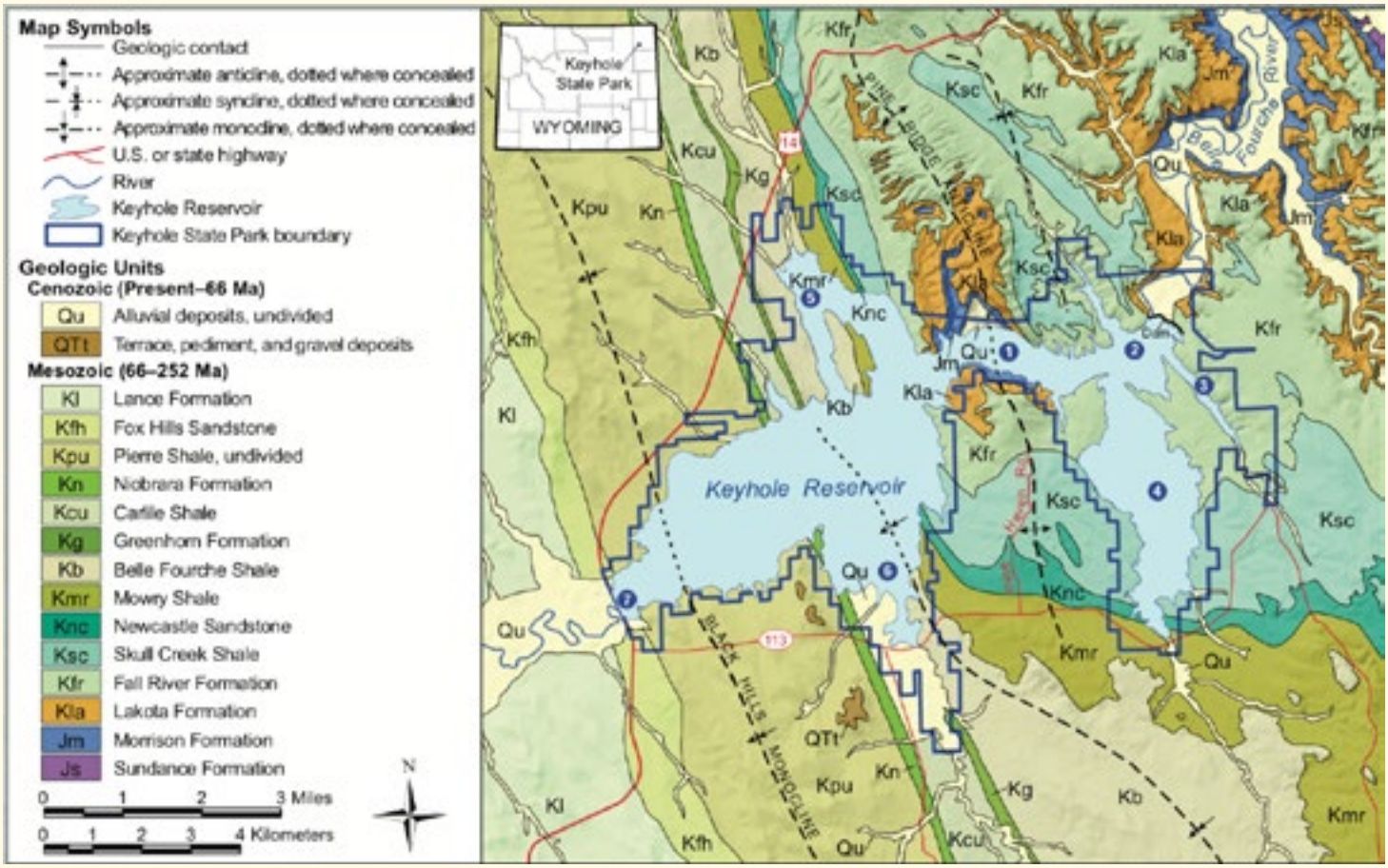
www.wsgs.wyo.gov • phone: (307) 766-2286 • email: wsgs-info@wyo.gov

Geology of Keyhole State Park (Continued from Page 7)

percent of the park's area. Most of its water is from regional surface runoff.

Keyhole Reservoir and the local groundwater form an integrated hydrogeological system. This means water moves between aquifers and the reservoir through pore spaces between sand and mineral grains. Similar water levels in the reservoir and nearby groundwater wells are evidence of this integrated system. The Lakota and Fall River formations and the Newcastle Sandstone serve as important aquifers throughout northeastern Wyoming. Many wells completed in these formations provide water for irrigation and watering livestock.

A typical outcrop of the Cretaceous Fall River Formation in Coulter Bay. Modern-day erosion causes the large sandstone blocks to tumble into the reservoir. Photo by Cory Reeves



Bedrock geologic map of Keyhole State Park. Age ranges of rock are in millions of years (Ma). Blue circles with numbers correspond to locations described in the text and in the geologic column. See graphic on page 9.

Geology of Keyhole State Park (Continued from Page 8)

The Rocky Mountains, including the Black Hills, developed during a mountain- building event known as the Laramide orogeny, which faulted, folded, and tilted the originally flat-lying rocks in the park. This event exposed older strata near the eastern end of the reservoir and younger strata near the reservoir inlet. Two major folds—the arch-shaped Pine Ridge Anticline and the step-like Black Hills Monocline—are visible between the dam and inlet.

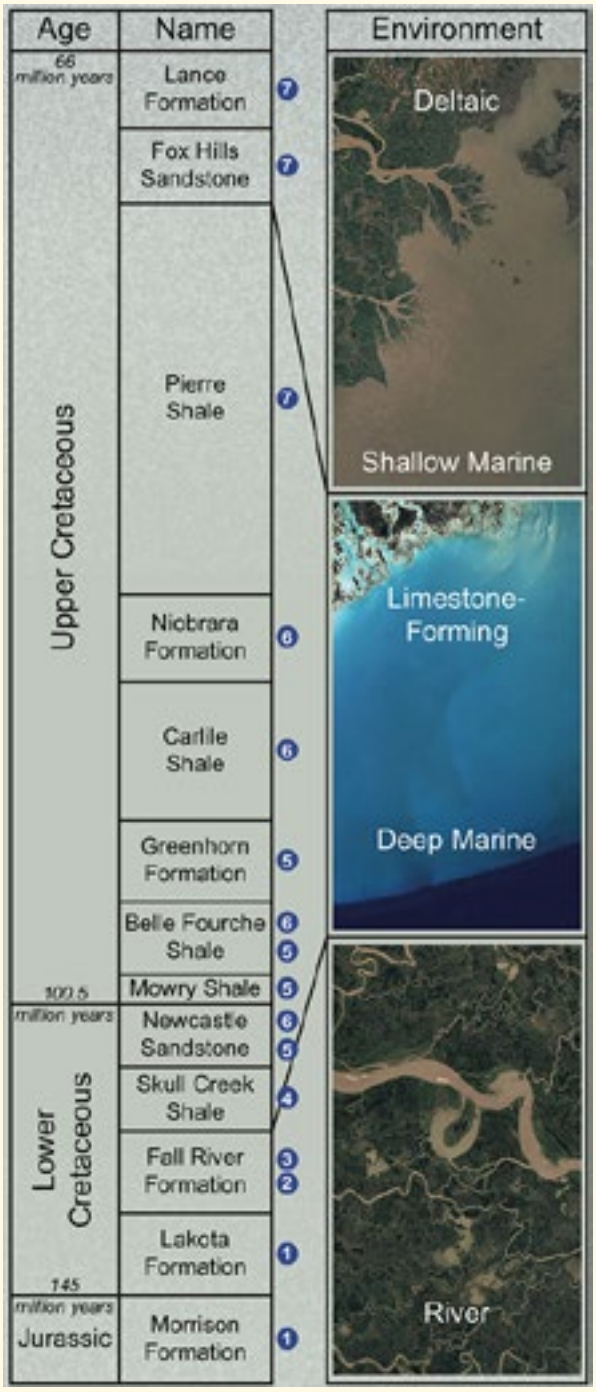
The Rocks of Keyhole State Park

When rock layers fold into the shape of an arch, the oldest layers are in the middle of the fold. The oldest rocks found in Keyhole State Park—the Morrison and Lakota formations—are in the core of the Pine Ridge Anticline (1) on the geologic map and geologic column). These formations existed before the Western Interior Seaway and were formed by ancient rivers that coursed across the landscape 150 million years ago.

The large tan, blocky sandstone cliffs above the Lakota Formation near Coulter, Eggie Creek, Cottonwood and Mule Creek bays (2) (3) are part of the Fall River Formation. Shallow ocean waters deposited this sediment as the Western Interior Seaway moved into the region. As the seaway deepened, it left behind the dark-black Skull Creek Shale and light-gray Newcastle Sandstone that are now exposed in Mule Creek Bay. (4)

Around Wind and Deep Creek bays (5), (6) the remnants of deep marine waters are preserved in the Mowry, Belle Fourche, and Carlile shales. As the Western Interior Seaway warmed, hard-shelled organisms like oysters and clams left behind the limestones of the Greenhorn and Niobrara formations found west of the bays. Limestone is a rock composed of calcium carbonate, the same material found in the shells of these organisms.

The Pierre Shale, exposed west of Wind Creek Bay near U.S. Highway 14 (7) records the deepest waters of the Western Interior Seaway. Much of the oil and gas exploration west of the park is in the Pierre Shale. The youngest rocks in the area—the Fox Hills Sandstone and Lance Formation— are exposed west of U.S. Highway 14. These formations record the retreat of the Western Interior Seaway across the continent and the early uplift of the Black Hills and modern-day Rocky Mountains.



The geologic formations exposed in Keyhole State Park range in age from Jurassic (Morrison Formation) to Upper Cretaceous (Lance Formation). Blue circles with numbers correspond to locations described in the text and on the geologic map. Rivers deposited the oldest formations, later flooded by ocean waters of the Western Interior Seaway. The seaway retreated at the end of the Cretaceous, allowing shallow-water deltas and rivers to return to the area.

Navigation and Rockhounding — Part 2

By Wayne Brantley, August 2007
http://mcrocks.com/ftr07/WayneNavigation.html
(WayneBrantely@hotmail.com)

[6] Application

Now that you are familiar with all the navigation tools, I will show you how I apply each to find and locate prospects, old mines, and mineral deposits.

Procedure A

Over the years, I have found that the following method has proven to be an accurate way to navigate and save valuable time and steps while out in the real world. While it is not the only way to navigate to and from a location, it is the one that I have come to rely on after many years of beating the bush for corundum.

I use four different "tools" each time we go to the field to prospect a new location, and the key word here is "NEW."

These tools include: 1) Road map. 2) Topozone.com (topographic mapping) 3) GPS and 4) Compass. If you have gone to the same area many times, or it is a simple location, you may not need to depend on any navigation tools to walk the area. Knowing how to navigate and use coordinates will make your adventure safe and time saving, and who knows, you may even find the mother lode!

I use two GPS units in the field: one is an old Eagle that I bought when they were first made in the 1980's and the other is a small Garmin Etrex that I use as a backup and to make sure the Eagle doesn't lie. Both units are set to use UTM coordinates. But, are they accurate? You want to test them. Open up another web page in separate window and perform do the following:

1. Go to TopoZone's web site at topozone.com
2. Go down to Universal Transverse Mercator (UTM) and enter the following numbers.
3. In the first block put the number "16", this block is marked "UTM Zone".
4. In the block marked "Easting" put the numbers " 0704245".
5. In the block marked "Northing" put the numbers "3892128".
6. Then click on the circle next to "NAD27" where it says "Coordinate datum".
7. Now, hit "MAP".

If this was a smart bomb, you just removed my house from Tennessee! You should see an "X" located on York Road – this marks the exact location of my house.

Now, look at the top of the page; do you see "USGS East Cleveland (TN) Topo Map"? This tells you the name of the topographic map on which the coordinates are located. REMEMBER THIS! This is an easy way to find which topographic map you will need when you do your own map planning.

Be sure to save the Topozone website to your "favorites" list, as it will save you time trying to locate a topographic map on a state topographic map index.

If you want to see what difference the "Coordinate datum" makes, go back and change the "Coordinate datum" to the "WGS84/NAD83" setting, then hit "MAP." You will see that the mark is off by 250 yards to the south! The datum for the USGS East Cleveland (TN) Topographic Map is datum "NAD27." I will show you where to locate this info in the next part.

This is what the coordinates looks like on my two GPS units.

Notice the slight difference between the two. Both

units were used today under heavy cloud cover on my back deck. On the Eagle, the "Easting number" says "0704245" and on the Garmin Etrex the numbers are "0704248." This is a difference of 3 meters to the east, or about 10 foot difference.

On the Eagle, the "Northing number" says "3892128" and on the Etrex the numbers are "3892127." This is a difference of 1 meter to the south, or a little over 3 feet.

(Continued on Page11)

Navigation and Rockhounding (Continued from Page 10)

By using this test to a known location, it checks the GPS and maps to see if everything is in working order before I hit the woods.

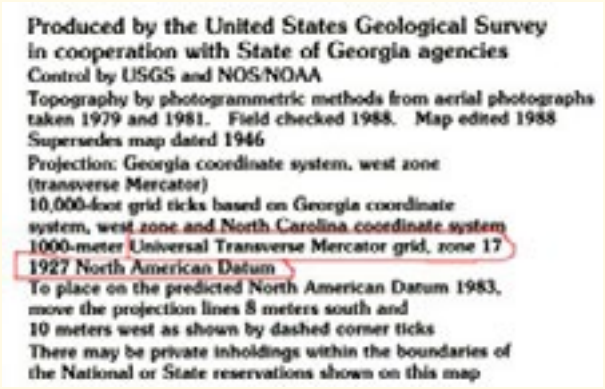
Good idea, aye?

In the next part, we will see how to find and plot your coordinates on a map. Who knows, we might even find the Old Man's Ruby Mine!

Procedure B

Each topographic map has the "UTM Zone" number printed in the lower left corner of the map. This will be the first number you will see when UTM coordinates are shown, either in print or on a GPS display. The map "Datum" will also be printed in the same location.

The datum of the map MUST match the datum set in your GPS. Your instructions will tell you how to set the GPS to UTM coordinates and datum you need to match the map you'll be using.

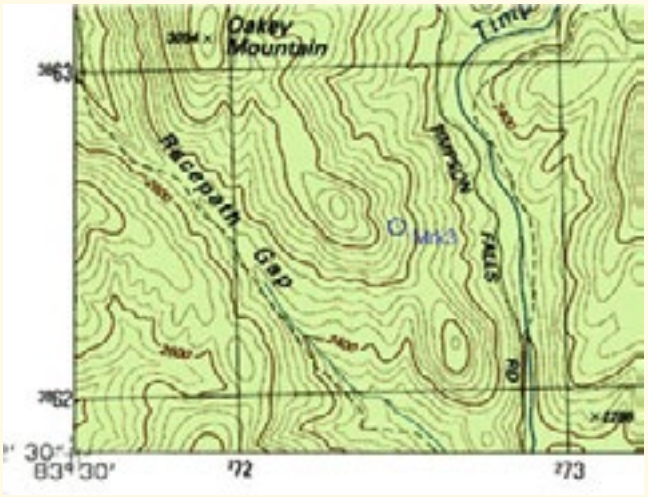

Produced by the United States Geological Survey
in cooperation with State of Georgia agencies
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial photographs taken 1979 and 1981. Field checked 1988. Map edited 1988
Supersedes map dated 1946
Projection: Georgia coordinate system, west zone (transverse Mercator)
10,000-foot grid ticks based on Georgia coordinate system, west zone and North Carolina coordinate system
1000-meter Universal Transverse Mercator grid, zone 17
1927 North American Datum
To place on the predicted North American Datum 1983, move the projection lines 8 meters south and 10 meters west as shown by dashed corner ticks
There may be private inholdings within the boundaries of the National or State reservations shown on this map

You may see the datum written, 1927 North American Datum, or NAD27.

To see the different UTM Zones, you can go to this website: Farmworks.com.

This next picture shows the bottom left corner of the Dillard, GA-NC topographic map. This map was made in the year 1988 and has the UTM coordinate lines printed on the map. If the map you are using is a pre-1986 map, you will need to draw the grid lines on your map yourself from top to bottom and from left to right using a ruler and pen.

The same numbers are printed on opposite sides, so all you need to do is draw you lines to the same number on the other side of the map. Sometimes a number will be deleted and only a "blue tic mark" will be shown to indicate where the number is located.



The circle on the map marked "Mrk3" is half-way between both sets of grid lines. We also know that this map is in UTM Zone 17.

The coordinates for this location are: 17 0272500 E, 3862500 N. The "17" is your UTM Zone number.

The next four numbers (0272) you'll see at the bottom and top edge of your map and will increase every 1.000 meters going to the right, or "Easting." If the first number is a 0, it may not be shown on the map (could be 272 instead of 0272).

The last three numbers (500), represents the distance in meters from number (0272) to the next number (0273). You will need to use the scale marked "METERS", which is located bottom/center of each topographic map, to determine the location of the last three numbers used with the UTM system. With "Mrk3" being half-way between both grid lines, both coordinate numbers end in 500 (meters).

The next set of numbers will be the "Northing" numbers (3862) and are printed on the left and right edge of your topographic map and will increase going from the bottom of the map to the top. The last three numbers are the distance between these number in meters, the same way the last three numbers are used in the Easting numbers.

You can buy a ruler, or scale, that matches the topographic map at most map dealers or on the web. This way you can measure and plot the last three numbers in the coordinates and also the distance between different locations on your topographic map. The scale that's printed at the bottom/center of each topographic map is

(Continued on Page12)

Navigation and Rockhounding (Continued from Page 11)

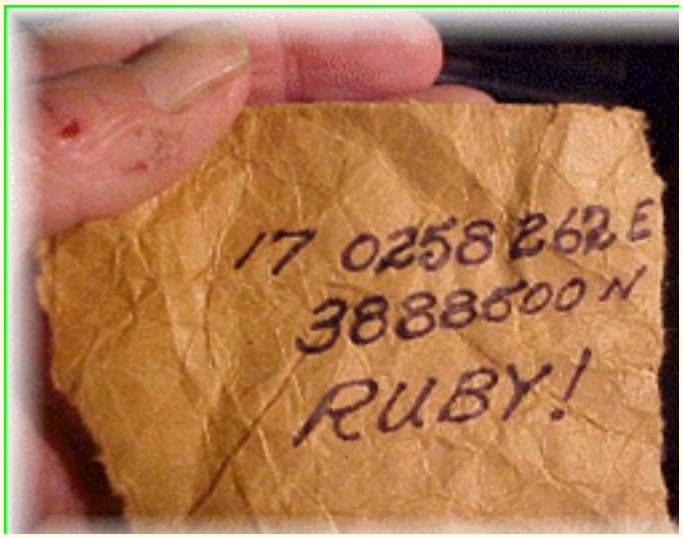
marked in both "Kilometers/Meters" and "Miles/Feet," which make it easy to convert either way.

Procedure C:

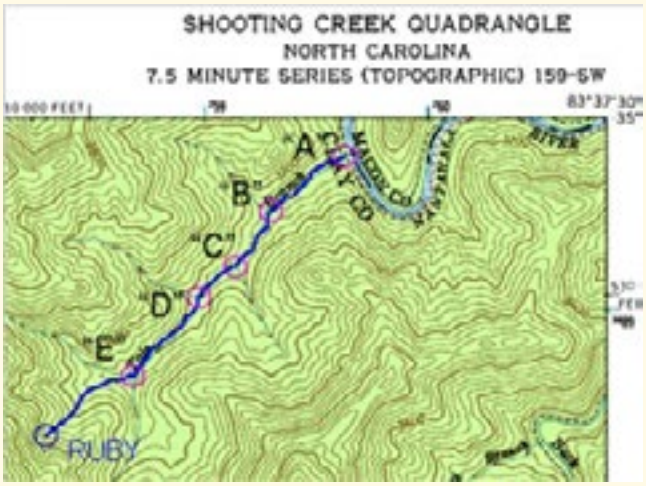
A GPS will give you a fast and accurate way to find your present location, and this is important because you must know this to establish the direction that you must travel to get to your final destination. It isn't always possible to travel in a straight line from your present position to your destination; for this reason, I will check my location several times along the way and correct my bearing to bring me back on course.

The basics of navigation will tell you to pick a tree or other object at a far distance and walk to that point and then look for another on your bearing to walk to. The purpose of this is to minimize you veering off course as you try to maintain a true heading. In many of the areas I have hunted, this is just not possible! I have found out that the best way for me to navigate to a site is to go in a "general direction" rather that try and maintain a true compass bearing. I will correct my direction many times along the way after taking the easiest route around the many obstacles that I encountered in the forest. Walking a creek, logging road, or game trail will often be much better than trying to go through a thickly wooded area if it is going in the general direction of a bearing — although I have to be careful to not continue to follow a road when it appears to be heading off course — just because it is easier than bushwhacking. I have had to backtrack many times to get back on course when a road has veered off in the wrong direction.

You may remember this from the McRocks' message board?



Are you ready to go? This will be a simple trip just to show you the steps that are taken before I even leave the house. I will try to plot the easiest path to a location from reading the map, I will note all junctions of road, water, or natural features on the maps I will be taking to the field. Many times, I have found roads and other man-made items are no longer at the locations I go to. The road you planned to walk may be nothing but a path after many years. Most topographic maps are outdated and things change; you can miss a turnoff or fork in a creek real easy!



The coordinates tell us that this is on the Shooting Creek Quadrangle (North Carolina), and is in UTM Zone 17, and the Datum is NAD27. This trip is in the Chunky Gal Mountain area, in the middle of the Nantahala National Forest.

This walk will be mostly along Tate Branch, which has many water run-offs that are not shown on the map and many that don't have water during the summer, but we will use the forks as a reference for our location and distance traveled. This area is extremely thick, and the branch is the best route and a good way to check for rocks and minerals that may have washed in from the sides of the cove. Each distance beside each coordinate is the distance from the starting point; this will let you time your travel. Oh, the time on your GPS will make a Rolex seem cheap!

All info that will be needed is written down and taken on your trip. It's a good idea to make an extra copy to leave with someone so you can be located if you don't

(Continued on Page 13)

Navigation and Rockhounding (Continued from Page 12)

return at a set time. This is a "black area" — cell phones don't work. The point of entry is the road that runs beside the Nantahala River.

Finding a road near your site is the first step, then backtrack it until you locate the best way in.

The coordinates where the creek crosses the road ("A") are noted below.

An easy way to find this point is to turn on your GPS, and when you see "3880720N," you are there. If you note where a road will cross either an "Easting" or "Northing" line, it will make it easy to find your turnoff or entry.

Notes for the trip: "A" 0259624E 3889720N Start — "B" 0259285E 3889480N 1,695' — "C" 0259122E 3889228N 2,965' — "D" 0258951E 3889094N 3,880' — "E" 0258655E 3888750N 5,840' (1.106 mile) — "R" 0258262E 3888500N 7,920' (1.5 mile) — General direction: compass bearing 227deg.(SW) — Climb: 560', 5% grade.

If you aren't following a creek or road, you will need to plot your coordinates as you go, about every 100 yards, or sooner in thick cover. When you get to location "E," you will need to take a compass bearing and stay to the right side of the hill with a check on your coordinates every 100 yards or less.

Before you take a trip to an area such as this one, practice in a small area that you know real well.

The Search and Rescue will thank you!

Why Do Rockhounds Collect Rocks?

*** As adapted from a *Rock & Gem* article by Bob Jones, June 2010, pp. 76-77, and a March 2010 article by Steve Voynick, p. 40; then adapted by Stan Strike.**

There have been psychological studies done about why some people collect — and the reasons are as varied as the collectors' personalities themselves.

"Collecting" can be defined as the selecting, gathering, and keeping of objects of "subjective" value — thus the term "leaverite" (leave 'er right there) is applied to some rockhound finds. A "collector" can be defined as an enlightened amateur preserver of many good earthly things, although great are oftentimes not recognized by society.

It is known that it took thousands of years of rockhounding by early man to accumulate today's knowledge that is classified within the various branches of the geological sciences. Thus, the most noble reason that some people collect may be to gain more information about rocks and to educate others with their writings and displays.

A second reason that rock hounds collect may be for the "aesthetic value" — by finding pretty or unusual rocks and putting them on display to look at and appreciate the varying colors and shapes.

Other rock hounds search out rocks for a third reason — as a unique and valuable collection to gain recognition and distinction from others.

Some rock hounds get "high" with their special rock finds, and each of these pleasurable experiences demands that they keep collecting to sustain their exhilaration and excitement. Thus, the fourth reason some rock hounds collect is to get the "fix" by repeating the act of collecting as an enjoyable experience.

A fifth reason may be purely social. These rock hounds enjoy other people and just being outside, but they collect because everyone else in their group is doing it.

A sixth reason that a few collectors have to collect is solely to profit themselves financially. These collectors aren't really rock hounds. They tend to collect in larger quantities, oftentimes by purchasing or with permit, and are called commercial dealers or collectors that sell to the public. Commercial collecting is controlled by laws.

The final reason some rock hounds collect is the "physical security" of possessing something no one else has. If this is done in limited amounts, it is a valid reason to collect. But if the rock hound collects excessive amounts of the same "rock" at any cost to themselves or others, it indicates a flawed personality that may vary from a packrat or hoarder to greed and mental illness.

Finally, you should realize that collecting is only a small part of rockhounding. It is important that you get your best finds out of the box and, if necessary, use lapidary techniques to shine them up, then put them on display for yourself and others to enjoy.

Maybe your collection will be like that of the school custodian in Arizona who willed his collection to the University of Arizona, and it was later valued at several million dollars. Or your collection could begin like that of James Smithson with his mineral Smithsonite, and his other geochemical contributions, which allowed his fortune to be melted down and reminted in U.S. coins worth $508,318 — an amount used to start the Smithsonian Institution, the world's largest museum complex.

So why do you collect rocks? Hopefully for all of the right reasons. Probably, we all have collected rocks for several different reasons as we have matured as rock hounds. By reminding ourselves of the American Federation of Mineralogical Societies Code of Ethics, we can leave a legacy of rockhounding that others will be able to participate in and enjoy in the future.

WSMGS Electronic Board Meeting — October 2019

I. Electronic Meeting Instructions to Board Members:

As a WSMGS Board Member, I would ask you to read this Electronic Meeting email and VOTE on all Action Items by selecting "Reply All" after typing your name and indicating a "Agree or Disagree"; vote for each numbered Action Item. The Deadline for your responses by "Reply All" email will be due Friday, October 4, 2019. If you have questions about any item call or text me at 307-260-6442 or pres@wsmgs.org Board members are encouraged to submit old or new business items that have not been included in this meeting and a special attachment will be sent out for the entire WSMGS Board's consideration.

II. President's Report by Jim Gray:

I would like to welcome the board members who have been elected for the next 2 years.

The WSMGS show was hosted by the Cody 59ers Rock Club and the Shoshone Rock Club, June 2019. Thank you all.

C. The Fossil Basin Mineralogical Society has dissolved their club because of issues that could not be resolved.

D. The annual WSMGS gem and mineral show is regulated by the WSMGS by-laws. These by-laws include:

Section 2. Duties of Host Club: WSMGS member clubs hosting the WSMGS State Show will sign a WSMGS State Show Agreement Form and are expected to utilize the guidelines and practices of WSMGS to provide a quality experience for the public, dealers, and club members. The WSMGS Club hosting the WSMGS State Show is responsible for, but not limited to, the following duties:

(a) contracting a suitable location with set-up locations for all dealers/demonstrators

(b) securing liability insurance listing the WSMGS as additional insured during the show dates and providing security covering the set up through final show dates.

(c) sending and receiving dealer/demonstrator contracts

(d) providing all WSMGS member clubs with State Show information and forms for entering club & individual display cases with judging criteria

(e) statewide and local promotion of the show.

• Section 3. Profits. WSMGS member clubs hosting the WSMGS State Show will provide a financial statement of the income, expenses, and resulting profit associated with sponsoring the WSMGS State Show. A check equaling 20% of the Total Profit should be written to WSMGS and included with the show's financial statement and sent to the WSMGS Treasurer. (Income, expenses, and profit associated with food sales or items sold via a club table should not be included in the financial statement required by the WSMGS.) Financial losses or liabilities incurred during or as a result of sponsoring the WSMGS State Show will be the sole responsibility of the WSMGS member club hosting that State Show.

Section 4. Dealers. No less than five (5) and no more than (12) commercial dealers are to be contracted for any WSMGS State Show unless approved by the WSMGS Board of Directors.

Section 5. Competitive Displays: The WSMGS member host club for the WSMGS State Show will adhere to the following guidelines concerning individual and club competitive displays: A. The registration forms, competitive display rules and forms shall be sent to the WSMGS member club members at least 90 days in advance of the WSMGS State Show.

B. All cases shall be assigned an identifying number.

C. No name or other personal identifying marks shall be visible during judging.

D. Judging shall be done by at least 2 qualified persons who are not members of any WSMGS member clubs.

E. Each WSMGS member club may enter one display case to be judged by the public for the People's Choice Award. These cases should be grouped together and labeled such as that the public can easily view and vote for one of the Club Display Cases. Votes will be counted by the WSMGS Board of Directors who are present. The People's Choice Award is a "traveling trophy" and is the temporary property and responsibility of the winning club. The winning club is responsible for having the plaque on the trophy properly engraved, keeping the award trophy secure, and returning it to the next WSMGS State Show. When a club wins the People's Choice Award three consecutive years, said club may permanently retain the trophy and is responsible for replace-

(Continued on Page 15)

WSMGS Board Meeting — October 2019 (Continued from Page 14)

ment of the next People's Choice Award traveling trophy.

Section 6. Jade. Wyoming State Gemstone. The official Wyoming gemstone, Jade, shall be prominently displayed in as many colors and types as possible, at all WSMGS State Shows. The host club is responsible for the security of the WSMGS Jade case during the set up and duration of the State Show.

Section 7. Wyoming State Heritage Showcase. The WSMGS Wyoming State Heritage Showcase will be displayed at each WSMGS State Show. The host club is responsible for the security of the WSMGS Wyoming State Heritage showcase during the set up and duration of the State Show.

E. WSMGS has historically given a gift of appreciation to the webmaster Marlene Sibley a $50 gift certificate twice a year. We need to vote on this.

F. I would like to thank Ilene Olson for becoming the new Jade State News editor; she did a great job on the first newsletter.

G. Clarification of Club insurance through RMFMS on Field trips. Individuals who are members of the RMFMS or AMFMS will be covered by that group insurance on any of the State's clubs' field trips without having to become a member of the hosting club.

H. 2020 WSMGS Show and the RMFMS convention will be hosted by the Sublette County Rock Hounds June 19, 20, 21, 2020.

I would personally like to ask all the WSMGS clubs to be part of this event.

I would like to see every club in Wyoming have a showcase displaying rocks from their area.

I. The Sublette County Rock Hounds have volunteered to build two new showcases for the WSMGS's Jade display and the Wyoming Heritage display, at an approximate cost of $600 each for an estimated total cost of $1,200.

III. Vice President's Report by Linda Richendifer:

IX. Old Business:

Has Cody 59ers paid for the smaller cargo trailer?

Has Cody 59ers donated the $500.00 for the purchase of the new cargo trailer?

Has Riverton Mineral and Gem Society paid the $500.00 donation for the new cargo trailer?

X. New Business:

Elections for WSMGS Board Members, 2 year terms

New board members are as follows:

President: Jim Gray

Vice President: Linda Richendifer

Secretary: Leane Gray

Treasurer: Stan Strike

Historian: Roger McMannis

Jade State News Editor: Ilene Olson

*** **VOTE** Action Item #1- WSMGS should award webmaster Marlene Sibley a $50 gift certificate in October 2019?

Agree Disagree

APPROVED

***VOTE Action Item #2 – Vote for Roger McMannis of the Sublette County Rock Hounds as Historian for the remaining months of the current 2-year term?

Agree Disagree

APPROVED

***VOTE Action Item #3 – Vote for the Sublette County Rock Hounds to build two new showcases (one for the Jade display and one for the Wyoming Heritage display) for an approximate total cost of $1,200.

Agree Disagree

NOT APPROVED

[DISCUSSION WAS TO FIND ORIGINAL HERITAGE CASE AND REBUILD CASES DONATED BY REX YOUNG CLUB TO WSMGS.]

***VOTE Action Item #4 – Vote for purchasing stickers to go on the sides of the WSMGS cargo trailer: Wyoming State Mineral and Gem Society, and the names of each of the Clubs that donated toward the purchase of the trailer. As of today Sublette County Rock Hounds and Natrona County Rock Hounds are the only ones that donated.

Agree Disagree

APPROVED

XII. MEETING ADJOURNED

WSMGS Treasurer's Report — October 2019

I. WSMGS BANK CHANGES- After a study to determine which banking firm would best serve the WSMGS Board and its affiliated clubs, it was determined to concentrate our banking with the Bank of the West.
Presently Bank of the West has a presence in the following Wyoming Communities: Big Piney, Casper, Cheyenne, Cody, Douglas, Evanston, Gillette, Green River, Jackson, Kemmerer, Lander, Laramie, Lusk, Meeteetsee, Rawlins, Riverton, Saratoga, Sheridan, Wheatland, and Worland. Bank of the West should best facilitate the financial transactions needed as the Wyoming State Mineral and Gem Show is hosted by our affiliated clubs and for our present and future WSMGS president and treasurer.
WSMGS affiliated clubs should be aware that because the WSMGS is approved as a 503(c)(3) nonprofit organization it was eligible and approved to be exempt from paying Wyoming sales tax. Therefore as clubs are approved to sponsor the Wyoming State Mineral and Gem Show, a separate show account can be set up at the Bank of the West with show income deposits sheltered from paying any Wyoming Sales Tax. NOTE: Clubs are responsible for paying WY sales tax on income from sales made at their club table or for food sold by the club.

II. For the 2019 WSMGS Mineral and Gem Show held in Cody, a separate WSMGS account was established at the local Valley Credit Union. This account was closed and WSMGS's 2019 20% show income of $1,283.89 was transferred to a newly established account at the Bank of the West.

III. Presently, the WSMGS's account at the Wyoming Community Bank in Riverton has not been closed and transferred to the Bank of the West To close this account the WSMGS president or treasurer must appear in person for personal identification.

IV. WSMGS Current Balance as of October 31, 2019

Bank of the West:	$3,363.89
WY Community Bank	$ 583.86
TOTAL INCOME	$3,947.75

WSMGS Rock Clubs

Riverton Mineral & Gem Society

P.O. Box 1904
Riverton, WY 82501

rivertonmgs@wsmgs.org
www.RivertonMGS.com

Meets 2nd Mon. 7 p.m.
(Jan.-May, Aug.-Nov.)
Senior Center, 303 E. Lincoln, Riverton

President: ..... Linda Richendifer
Vice-President: ..... Stan Grove
Treasurer: ..... Cristy Quinn
Secretary: ..... Holly Skinner
JSN ..... Kim Brown
Historian..... Rob Baltes
Field Trips ..... Ted Knowles

Cody Fifty-Niners Rock Club

P.O. Box 1251
Cody WY 82414

cody59ers@wsmgs.org
www.Cody59ers.com

Meets 4th Thursday (Sept-May) 6:30 p.m.
Park County Courthouse, EOC room,
1002 Sheridan Ave., Cody

President: ..... Nella Flurkey
Vice-President: ..... Roger Lyons
Treasurer: ..... Aubrey Smith
Historian: ..... Stan Strike

Shoshone Rock Club

P.O. Box 256,
Powell, WY 82435

shoshonerockclub@wsmgs.org

Meets 2nd Tuesday 7 p.m.
Powell Library
317 E. Third St., Powell

President: ..... Dorine Strom
Vice-President: ..... Mary Vogel
Treasurer: ..... Linda Thomas
Secretary: ..... Linda Jennings
JSN: ..... Ilene Olson
Historian: ..... Linna Beebe
Field Trips ..... Open

Cheyenne Mineral & Gem Society

P.O. Box 21412
Cheyenne, WY 82001

cheyennemgs@wsmgs.org

Meet 2nd Wed. 7 p.m. (August-May)
IBEW Union Building
810 Fremont Street-Cheyenne

President: ..... Donna Arnold
Treasurer: ..... Jan Shively
Field Trip..... Mark Shivel

Rex Young Rock Club

112 East 3rd
Lingle, WY 82223

rexyoungrockclub@wsmgs.org

Meets 2nd Wednesday 7:00 p.m.
Senior Center
216 E. 19th Ave., Torrington

President: ..... Kim Nielsen
Vice-President: ..... Sherman Lenhart
Treasurer: ..... Helen Vogel
Secretary: ..... Joyce Trowbridge
JSN: ..... Joyce Trowbridge
Historian: ..... Joyce Trowbridge
..... Dale Tikalski

Natrona County Rockhounds

P.O. Box 123,
Casper, WY 82644

natronarockhounds@wsmgs.org

Meets 1st Monday 7 p.m. (April-Dec)
Shop Open 6-8 p.m. Tue & Fri at
Clubhouse, 5211 Rambler, Mills

President: ..... Mac Goss
Vice-President: ..... John Hine
Treasurer: ..... Kenny Platte
Secretary: ..... Danny Hill

Sublette County Rock Hounds Club

P.O. Box 1351
Big Piney, WY 83113

subletterockhounds@wsmgs.org

Meets 1 p.m. 3rd Saturday (March-Dec)
The Bench Grill
415 Winkleman, Marbleton

President: ..... Jim Gray
Vice-President: ..... Mike Schaffer
Treasurer: ..... Leane Gray
Secretary: ..... Deb Jess

Northeast Wyoming Rockhounds

2107C N. Hwy 14-16
Gillette WY 82716

newyrockhounds@wsmgs.org

Meets odd # months
Check email for dates

President: ..... Jeff Hulings
Vice-President: ..... Dennis Brown
Treasurer: ..... Beth Raab
Secretary: ..... Vanessa Grove