BEEHIVE ROCK & GEM CLUB
DAVID HARRIS, EDITOR
2208 NORTH 700 WEST
OGDEN, UT 84414

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BEEHIVE BUZZER

BEEHIVE ROCK
AND GEM CLUB

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MEMBER OF UTAH FEDERATION OF MINERALOGICAL SOCIETIES
ROCKY MOUNTAIN FEDERATION OF MINERALOGICAL SOCIETIES
AMERICAN FEDERATION OF MINERALOGICAL SOCIETIES

The Beehive Rock & Gem Club began in April of 1970.
The purpose of our club is: To collect, cut and polish rocks, to gather fossils, mineral specimens, to discuss and impart our knowledge of the different phases of collecting, polishing and displaying-

To promote, organize and hold meetings, outings, trips, and similar events. To enjoy and protect our natural resources.

USUAL DATE FOR MEETING - FOURTH THURSDAY - 7 PM OGDEN-HINKLEY AIRPORT TERMINAL, 3900 S. & AIRPORT ROAD
November, December have changes. Maybe others.
Call any Board member for current information.

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DUES

Due: October 1
Single - $11
Couple or Family - $16
Junior - $5
Overdue: January 1

From the Rockhound Dictionary:

- **Findings**: Stuff you find.
- **Faceting**: A complex way to ruin a good mineral.
- **Friend**: One who can see the star in your sapphire.
- **Geode**: A poem to G. (often written in hollow verse)
- **Grinding Wheel**: A bearing going out on your old truck.
- **Fortification**: Two twenty fications; a large gulp of good whiskey.
- **Gentleman**: A man who holds the door open for his wife to carry the rocks in.
- **Diamond**: The hardest stone known to man to get back from his old girlfriend.

Strata Gem, July/Aug 2005

Silent Night?

Little Johnny ran up to his uncle's chair. "Uncle, tell me again - what do you want for Christmas?"

The uncle smiled and repeated, "I just want some peace and quiet."

Johnny's face drooped a bit as he replied, "I know, but I just came back from the mall and they're out of it!"

Santa's Surprise

By Sandy Lynn from Cobb-L-Stones, Dec. 1992

'Twas a cold Christmas Eve and Santa came calling,
The stars were all atwinkling, the snow had stopped falling.
Next house on his list didn't run normally,
Rockhounds lived here, (they lived quite Informally).

First thing he did as he came in the den,
Was trip over a tumbler, he took quite a spin.
On to the kitchen for cake and a coke,
What he saw in the window almost made him choke.

Lining the window sills, strange little rocks,
He let out an "OUCH" (he had one in his socks).
Went to the living room sat in a chair,
But he was up like a bullet, more rocks down there.

Cars in the driveway, covered with snow.
The garage? Full of rocks (wouldn't you know).
Mom and Pop's room was the strangest by far,
Big rock, little rocks, rocks in a jar!

The rocks on the dresser someone had marked "Super",
Santa stared for awhile, then left in a stupor.
He went to the john and turned rather pale,
No one would believe this incredible tale!

He looked around warily, scratched his white beard.
No doubt about it, these people were weird.
Rocks in the sink, rocks on the floor,
But in the bathtub? He couldn't stand it anymore.

He looked rather shaken, he stopped by the tree,
A doll for sweet Susie, a guitar for Lee.
For Mom and for Pop he just left a short note.
Put it under a rock this he hurriedly wrote:

"I'm sure you're not bad folks, just hopeless", It said,
"I honestly think, you've got rocks in your head!"

GEMS FROM THE KITCHEN

With the holidays upon us, it seemed a good time to try a different candy recipe.

PEANUT BUTTER FUDGE
2 cups sugar
1/2 cup milk
1 tablespoon butter
Mix together and bring to a boil.
Boil 3 minutes exactly.
Add 1 teaspoon vanilla and a large scoop of peanut butter.
Stir until starting to cool and pour into greased pan.

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And a different kind of brownie

BUTTERSCOTCH BROWNIES
2/3 cup butter or margarine
2 cups light brown sugar
2 eggs, unbeaten
1/2 teaspoon salt
1 1/2 cups flour
2 teaspoons baking powder
1 teaspoon vanilla
1 cup broken nuts (optional)
Melt butter, add the other ingredients and mix together.
Pour into 13"x 9" pan
Bake at 350 degrees for 30-35 minutes

NAPA GEMS 12/04

"Rock gives reality to the otherwise abstract notion of transhuman time."

Edward Abbey

Feeling Minerals

Dr. Bill Cordua, U. Wisconsin- River Falls
2002

Most of us are sight oriented when we study rocks and minerals. Once, though, I was asked to give a program on minerals for the Minnesota Society for the Blind. As I was preparing this, I was impressed by the number of properties minerals have that can be sensed with the hands. It's worthwhile reviewing some of these as they are good identification tools for any one.

Density

Density (or specific gravity) is one of the more familiar ones. This is the mass per unit volume. As an example, think of suitcases. They have a certain volume. When they are empty, they have little mass, thus a low density. Put clothes in them and they get heavier for their volume. If you're a typical rock collector, you have probably put rocks in your suitcases and increased their density immensely, much to the annoyance of airport luggage handlers.

Mineral densities can be evaluated the same way - by "hefting" them. If they have a medium density, they will feel about normal in mass for their size. If they are low density, like pumice or muscovite, they will feel light. If they are higher density, like garnet, galena, copper, barite or magnetite, they will feel heavy for their size. There are, of course, many ways to measure this density precisely, but "the heft test" still is a useful field test requiring no expensive instruments. You can fine-tune your approach by practicing hefting known minerals.

Tenacity

Another property that can be appreciated with the hand is tenacity - the resistance of a mineral to mechanical crushing or bending. Brittle materials will break when stressed. Most minerals are brittle.

Malleable minerals, such as copper or gold can be flattened into sheets. Those who collect on the old copper mines in Michigan's Keweenaw Peninsula are aware of the resistance of copper-bearing rocks, and the spiny feel of the broken copper edges.

These minerals are also **ductile**, meaning that they can be drawn out in the form of a wire.

Some minerals like chalcocite or gypsum are **sectile**, meaning they can be cut with a knife. Gypsum is soft enough to be cut by a fingernail. Some minerals, like the micas, are **elastic** and can return to their original shape after being bent. Some mineral like talc are **flexible**. Once bent, these minerals stay bent after the pressure is released.

Smoothness

The smoothness or slipperiness of a mineral's surface can also be used as a tool. Talc feels slippery. Serpentine feels greasy. The fibrous character of splintery or asbestiform minerals can also be sensed.

Wettability

Other minerals have distinct surface properties related to their wettability. This has to do with the way particular atoms on the surface of a mineral interact with water or other materials. Chrysocolla becomes sticky when moist, as do many clay minerals. Some clay minerals, such as those in the smectite group, actually swell when they absorb water and lose their strength. This is one reason why so many Western roads (where smectites are common in the soil) are good when dry, but become slippery mud holes after a rain.

Diamonds do not wet with water. If a pile of crushed minerals is saturated with water to become a slurry, then run over a grease (such as Vaseline) the uncoated diamonds will stick to the grease while the well-wetted minerals will slide right by. Beryl, corundum, rutile, spinel, topaz and zircon are other minerals *gangue** that wet with difficulty.

The capacity of dirt to slide off of mineral surfaces also affects their cleaning. People who remark to me that datolites can be recognized on the mine dumps of the Keweenaw by the way the dirt seems to slide off of them are observing this property.

Minerals are great to look at, but the enjoyment of their properties spans all the senses.

References:

Frye, Keith, 1993, Mineral Science, An Introductory Survey, MacMillan Pub., 360 p.

Hurlbut, C. S. and W. E. Sharp, 1998, Dana's Minerals and How to Study Them, 4th Ed., John Wiley and Sons Pub., 328 p.

★

[Gang or gangue= worthless rock or other matter occurring in a vein or deposit within or alongside a valuable material. Say *gang*.] VIA BRECCIA

NAPA GEMS 12/04 12/02

Happy Holidays !!!
Happy Rockhounding!

SHOW DATES

Jan 1-31 – Desert Gardens Int'l Gem & Mineral
1064 Kuehn St.
Quartzsite, AZ
Free Admission
www.desertgardensrvpark.net

Feb 10-13 – Tucson Gem & Mineral Show
"Minerals of California"
www.tgms.org

Feb 26-27 – Idaho Gem & Mineral Show
Idaho Gem & Mineral Club
Expo Idaho Fairgrounds
5610 Glenwood & Chinden
Boise, ID
Charlie Smith, 208-628-4002

Mar 5-6 – 57th Annual Rock & Gem Show
Owyhee Gem & Mineral Society
O'Conner Field House
Canyon County Fairgrounds
2200 Blaine
Caldwell, ID

I woke up with two feet of snow at the end of my driveway!

BIRTHSTONES - Garnet for Constancy, a group of aluminum silicates. Hardness 7-7.5.
"Garnets, for convenience, have in the past been grouped according to composition. Garnets containing Al in the B position in the formula are widely called `pyralspites' (acronym for PYRope, ALmadine, SPessarine) and garnets with CA in the A position are called `ugrandites' (Uvarovite, GRossular, ANDradite). -- 14 different garnets chemically speaking -- This accounts for the huge range of colors seen in the family as a whole. --" From The Bulletin via Rockhound Rambling 12/95.
The "pyralspites" produce the best known red to red-purple/violet shades.

Onyx - Stone of Sadness - a variety of white & color banded agate or calcite travertine.
Hardness of 7. Laid in layers by hot water from deep springs.
"From ancient times the onyx has been regarded as an ominous stone. In Arabic its name (el Jaza) means sadness. Admirers of the onyx were advised to wear the orange stone, sard, with it because this would neutralize its malignant influence. In ancient China, the onyx was so dreaded that some were even afraid to enter the mines, and those who dared wear it were pronounced to be bereft of their senses."
From Gems via Drywasher's Gazette & Staurolite 3-4/95.

Anniversaries - Garnet, 18th.

Flowers - Carnation or Snowdrop. BEEHIVE BUZZER 12/96

Diamond cutters look for garnets. When they find garnets near the surface, they say, they'll probably find diamonds buried a little more deeply nearby.
ROCK TRAILS 3/98 via others & THE ROCKY READER 4/00.

QUARTZSITE ROCKHOUND VACATION

BY LLEWELLYN ALSPACH, SHAWNEE GEM & MINERAL CLUB, OKLAHOMA

The "Mother of All Trips" for a Rockhound has to be going to Quartzsite in January. We decided to write a little article to let folks know how to get the most out of their visit and make it a learning experience, as well as a spending experience. So, don't make the mistakes we did.

The first thing you need to do when you get to Quartzsite is to go to the QIA building and join the Roadrunner's club. It cost $15.00 per person; they have no family plan. Hopefully you will arrive on a Wednesday, because the club meetings and orientation are on Thursday. The orientation is an absolute must if you want to enjoy the use of the equipment and attend any of the many available classes and field trips that the club offers. The mistake we made was to go to the meeting on Thursday afternoon and finding out that the orientation was once a week at 8:00a on Thursday. So we had to wait a week before we could do any of the activities in the club.

This club, like most, has the 1% of military dictator-type folks who will discourage you before you get your foot in the door. Just ignore them, because 99% of the folks in the club are beautiful people who are more than willing to help you and make your experience with the club a positive one.

There is a bulletin board in the hallway of the club house and another on the outside wall where you can sign up for the classes. Field trips are every day (choice of two locations actually) during the pow-wow and weekly after that. Most are within 50 miles of Quartzsite. There are classes on every aspect of lapidary. The only thing I notice that was totally absent were rock tumblers. Guess that is a long-term operation that could not be accomplished in a short visit. There are classes for doping and making cabs, which takes you from the slab to the finished cab. Then you can take wire wrapping classes, both beginner and intermediate, to wrap your cab if you choose.

Rock carving and sculpturing classes are available. The art of silversmith is also taught with all the necessary tools and equipment. There is a complete building for the faceting classes equipped with numerous faceting machines. Regular members are not allowed to use the big saws, only the trim saws. There is someone available to slab the rocks you have found or purchased. They charge 15 cents an inch for cutting on the big saws.

There is a $2 fee for 1/2 day of use club equipment or for classes. If you are a complete beginner, they will supply tools for your use and materials for an additional cost. One wire wrap class I attended cost $20 for material and looked like enough for more than one or two projects. I had my own tools and wire, so the class only cost me $2.

Visiting Quartzsite in January would be the ideal vacation for a beginning rockhound and is definitely family oriented. By joining the Roadrunner's you could try all the various lapidary arts and see which one would be the most fun for you to pursue without having to purchase all of the needed equipment yourself.

Also the adventure of field trips and seeing rocks from all over the world in one area is a real eye-opening experience. And, if you want a rock from Madagascar, Afghanistan, South Africa or Australia you can get it in Quartzsite without having to travel to remote shores and try to get a piece through customs. There are enough shows and vendors in the area that you can walk every day, all day long, for a month and not make a dent in all there is to see in Quartzsite. You can even dry camp in the desert for free of charge if you want to rough it a bit. I highly recommend a trip to Quartzsite in January.

Rocky Mountain News, Dec 2010

Sedimentary Structures and Trace Fossils

by Lawrence H. Skelton, Wichita, KS

What are they?

Sedimentary structures and trace fossils are two of the more interesting geological phenomena encountered in the field and yet we often ignore and walk over them. Confined to sedimentary rocks (usually limestone, sandstone and shale), they provide information about the circumstances of deposition: Was it in a stream? A sand dune?

Had it rained recently – or frosted? Weather and conditions varied in the geologic past just as they do at present and left their marks in sediments. These now lithified sediments tell us a story of the past.

Primary sedimentary structures are features created in sedimentary rocks by wind, flowing water, drying, etc. at the time of deposition. Secondary structures such as nodules and concretions form after deposition. Trace (or ichno) fossils are traces of past life. They may be footprints, drag marks left by a creatures tail, coprolites (fossil dung), wormholes, burrows, etc. Note that they are not the fossil animals themselves but are only an indication that "something" alive had been here and moved on its way. Examples of primary sedimentary structures include layering or stratification, ripple marks, cross bedding or cross-stratification, raindrop, hail and frost marks. Secondary structures include mud (or desiccation) cracks, "tool" marks, soft sediment deformation such as slump or "slurp" structures and dewatering structures.

Why are they important?

In a tectonically undisturbed area such as Kansas, Iowa and much of the Midwest. Interpretation of layered rocks is easy: the top is the youngest, the bottom is the oldest and the in-between layers are in proper order. However, in mountainous areas, rock layers may be faulted and overturned or tilted at steep angles, creating a problem in determining which way was originally up or how much tilt has occurred? Perhaps the problem is what was the direction of flow in an ancient, now buried stream?

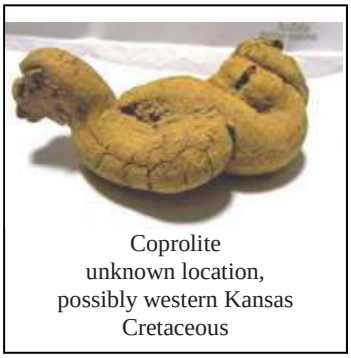
Such questions may be of economic importance. Placer gold could be present in an ancient stream channel exposed on a rock bed. Knowing the original direction of current flow could lead to additional gold or other valuable minerals such as diamonds.

Oil and gas deposits usually are contained in traps formed either by tectonic means or by changes in rock grain size, direction of dip, etc. Ability to distinguish "tops" from "bottoms" of sedimentary layers in a structurally complicated area may help a petroleum geologist locate an oil or gas trap or to determine which direction the oil migrated in the event that the trap is empty.

Trace Fossils

All of us have seen footprints showing that some creature; deer, dog, another person, that has walked the same route we are taking. We know that such features are merely traces of what passed that route previously. So it is with ichnofossils or trace fossils: they are not the fossils of once-living organisms but the track or trace of where such organisms once passed. The veryprefix "ichno" is from the Greek word "ichnos" which means track or footprint. Excavation in your garden will usually reveal small round burrows which are the tracks of earthworms. Close examination along bases of grass stems often will show minuscule trails beat into the soil by legions of ants marching to and fro. A lizard scurrying across sand leaves a "tail trail" with footprints or indentations on both sides. If such tracks and trails are covered with sediments and preserved, they become trace fossils.

However, determining what made the tracks presents a problem in the case of extinct creatures. There are trails labeled *Cruziana* found world wide in Paleozoic strata. They resemble parallel trails of fish bones on both sides of a small trench. After many years of study, and some luck, it was learned that *Cruziana* are the tracks of trilobites. The trench was formed by their ventral thorax dragging over a muddy sea bottom while their leg like pleures left tracks as they pushed the creature along its way. A more amazing discovery was made in Germany in 2007 when the fossilized skeleton of an advanced 290 million year old amphibian was found at the end of a footprint track way. Study of the foot bones showed they indeed had made the prints. Such prints had been known for years from many places but their makers were unknown until 2007.



Coprolite
unknown location,
possibly western Kansas
Cretaceous

Coprolites are the fossilized dung of once living land or marine animals. Their utility is that when sliced into thin sections and examined with a microscope, they provide clues to the diet of whatever creature deposited them. These clues may be pieces of bone or plant seeds and spores in the case of herbivores. Any plant fragments give an idea of vegetation at the time and in the surrounding area where the creature lived.

Many creatures living or that lived on the bottoms of water bodies "make their living" by burrowing through the sediment and filtering out whatever they find to be edible. Some dig in and stay below the mud surface for protection, leaving only a tube projecting above the bottom surface to circulate water. Such burrowing creatures include worms, mollusks and crustaceans. Sedimentary beds sometimes have been so intensively burrowed that any evidence of depositional bedding has been erased. Burrows are sometimes filled in with sediment either washed in or excreted by the creature making them and a telltale burrow cast is left. An oval cast with one sharp edge is sometimes found in the Topeka Formation in eastern Kansas. It probably was a clam burrow, possibly made by a representative of the genus *Aviculopinna* that was looking for food in the Pennsylvanian era sea which then covered the area. Trace fossils are another tool that help earth scientists interpret the environs and environment that existed in past ages.

Sedimentary structures

In a manner similar to trace fossils, sedimentary structures tell us the story of past environments. For example, salt casts are cube-shaped molds of salt crystals which formed in tropical orarid regions where sea water evaporated faster than it was replenished. Modern examples of salt crystals forming under such circumstances can be found along the Salton Sea in California, Great Salt Lake in Utah, the Dead Sea and the Persian Gulf. If such crystals are buried by blowing sand or silt, they usually later dissolve in ground water leaving cube-shaped molds. A mold filled by infiltrated clay particles makes a cast or replica of the original salt crystal.

Some casts replicate "hopper" or hollow-faced crystals. Hopper salt crystals form because the crystal edges have greater electric attraction than the faces causing more dissolved ions to be attracted there, so building up the rims. Such evidence of fast crystal growth of evaporites indicates extreme climatic conditions. Salt casts can be found in the upper part of the Permian age Wellington Formation in Sedgwick and other counties along its eastern outcrop edge in Kansas. These formed along the shore while to the west, massively bedded salt was being deposited in the drying Permian Sea.

Load casts are interesting features which indicate the presence of a stream bed or shore line feature where sand is deposited on unconsolidated mud. Portions of the heavier sand sometimes sink into the mud until equilibrium is attained. The result is a pendulous lump of sand hanging in mud. Sometimes, sinking continues and the lump breaks loose and forms a freehanging pseudo-nodule of sand. If the whole feature – mud and sand – is lithified, preserved load casts of sand in shale result. Since the "load" is on the bottom of the sand layer, such featurescare useful to distinguish which way originally was "up" in a complex structure and to determine stream beds or other shallow water environments from deeper water deposition.

Symmetrical ripple marks probably formed in a shallow lake. Lower Cretaceous Age, Kootenenai formation near Livingston,

Ripple marks are wavy forms made by wind, water currents or waves acting on unconsolidated particles. Such marks often are preserved in rock, usually sandstone, siltstone or limestone, of all ages. Ripples produced by water or wind currents most often are oriented at right angles to the direction of the current or wind current that made them. Such ripples are asymmetrical; that is, one side of the "ridge" is longer and less steep than the other. At the time of forming, the shorter, steeper side always faces downwind or downstream of the flow. Close examination allows distinguishing wind ripples from their water made counterparts: wind-made ripples tend to concentrate coarser grains at their crests and water-made ripples concentrate the coarser grains in their troughs. Wave produced ripples are symmetrical; both sides of each ripple are about the same length and slope from the crest at the same angle. Wind made ripples frequently accumulate in cross-cutting wedges because of frequent changes in wind direction. Such wedges are referred to as "cross-bedding" or crossstratification." A little careful observation can allow us to ascertain water current and wind directions millions of years in the past.

Mud cracks or shrinkage cracks appear in mud puddles as the mud dries and shrinks. A substance such as a clay layer of equal composition and thickness throughout may shrink evenly in all directions and part into equal-sided polygons. That usually isthe case in nature where mud polygons commonly display three to eight sides. Examined in crosssection, the cracks are seen to be "V" shaped with the pointy side at the bottom. Such cracks rarely penetrate the entire thickness of the mud layer. The cracks often fill with blowing dust, silt or after the cracked

Mud Cracks, Belt Series Strata, Montana, Precambrian

layer is covered by newer layers of mud, or ground water deposited minerals. Mud cracks preserved in rock thus tell a story of ancient drying of lakes or shores or perhaps rolonged drought and lowering of water tables. As with other sedimentary structures, they can tell geologists which side of a formation is "up" when the direction of the "V" shaped cracks is observed.

Calcareous cone-in-cone structures are minor structures in some beds of shale. Generally occurring in one to six inch thick layers, they are formed of packed circular cones, stacked one inside another, which have their wide or open ends upward.. They are oriented with the long axes of the cones at right angles to the shale bedding. The sides of the cones usually are ribbed or grooved with those features becoming finer toward the pointed end of the cone. Cones usually are made of fibrous calcite but dolomite, siderite and gypsum cones are known and one pyrite cone has been reported. The method of forming is problematic but cone-in-cone is thought to be formed in brackish, shallow water where shale is not yet completely lithified. Such shale is intruded by land-sourced carbonate-laden ground water moving down slope in an aquifer. Head pressure may force it upward through the yet unhardened shale where it spreads in cones and crystallizes. Pieces of cone-in-cone superficially resemble petrified wood or horn coral and have been mistaken for both. The utility of cone-in-cone is that is provides another means of determining the lower or upper surfaces of rock beds and hints at locations and physical conditions at the time of deposition.

Raindrop and hailstone pits are infrequently preserved as sedimentary structures. Precipitation on flat non-vegetated soil such as that on a baseball field, stream floodplain or muddy beach typically leaves a small pit or crater. If the rainfall is inadequate to wash away such marks, they may be covered by sediments and so preserved. A characteristic of all pits formed by the impact of falling objects, including a raindrop or hailstone, is the presence of minute rims around the edges. Rims surrounding hailstone pits frequently are washed away by subsequent melting of the hailstone. Finding such pits tells us a story about a storm that happened millions of years past and helps determine the original top of an exposed sedimentary rock layer. A related feature is the preserved prints of ice crystals formed in wet mud and covered by more mud. They provide an indication of climate – if ice was there, it was cold enough to freeze.

Top (tan): recent (20 yr old) raindrop pits from a quarry i Leavenworth, KS
Bottom (gray): Triassic Age Raindrop marks, Connecticut River Valley, Massachusets.

Quarry Quips, Aug 2010