

PICK&PACK

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GO WEST, YOUNG MAN, GO WEST. THERE IS HEALTH IN THE COUNTRY.*

BY DR. MIKE NELSON, CSMS

As a kid growing up in rural Kansas I spent most of my time “outdoors” with the rest of the local “gang” doing all sorts of interesting activities. However, I was also a voracious reader (and still love the activity) and consumed about anything I could lay my hands upon. Perhaps one of my favorite books was *The Adventures of Tom Sawyer* since Twain could instantly put me in a dreamland of new places that I had never visited—floating down the Mississippi River, wandering through caves, building campfires. Of course the logs that I lashed together for a raft and tried to float down the mighty Saline River usually were failures, and the local caves were non-existent, but what an experience and the thoughts remain vivid in my mind today. Perhaps that is what aging is all about—remembering the experiences of a childhood. Even perhaps those childhood experiences led me to a career in geology where I did get to sit around a campfire, explore caves (not much though since I developed claustrophobia), and float down the Mississippi (in a boat).

Since that time so many years ago I have carted around, in the recesses of my memory, one Twain’s quotes: *There comes a time in every rightly-constructed boy's life when he has a raging desire to go somewhere and dig for hidden treasure.* I sometimes wonder how many of the CSMS members have experienced that *raging desire*? I suspect most of us not only had that desire, but still have it!

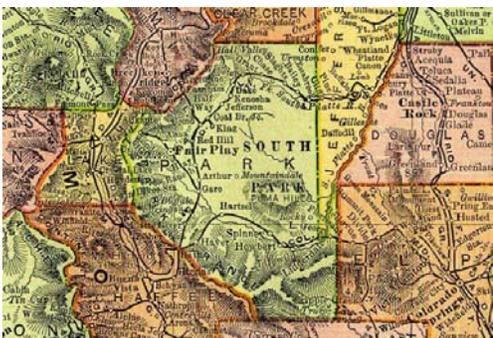


Fig. 1. Park County and South Park Colorado – 1895. U. S. 24 generally follows the route of the Colorado Midland Railroad from Colorado Springs to Hartsel and then southwest to Buena Vista. Photo and map courtesy of Park County archives.

It turned out that one of my favorite

ate students, to the Intermountain West (Utah) in the summer working on a variety of projects. But most of all, I enjoyed the chance to examine rocks “in the field”. Western Kansas has a section of Cretaceous rocks, most with spectacular vertebrate fossils, that was right out our front door. And, with the price of fuel somewhat less expensive, we spent much time in the mountains of Colorado. It seems as if we had the best of both worlds.

The early part of my professional career (21 years) was spent in western Kansas teaching geology courses at Fort Hays State University. My reasons for choosing Fort Hays were numerous but included: being a small school where one could have close contacts with students, the presence of a well-established paleontological museum, the ability to head “to the field” with students in tow, and the reasonable proximity of a wide variety of geological features. The Sternberg Memorial Museum (George Sternberg was still alive in 1970) has a world-class assemblage of vertebrate fossils and I was able to add to the research collection, and for 21 years I headed, with my undergraduate and gradu-

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CSMS is an incorporated nonprofit organization with these goals:

- To promote and disseminate knowledge of the earth sciences, especially as they relate to mineralogy, lapidary, and fossils.
- To encourage study, collection, and fashioning of minerals.
- To accomplish the same through social meetings, lectures, programs, displays, shows, and field trips.
- The Pick & Pack is published 10 times each year to assist and promote the above.

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places to explore was the land beyond Wilkerson Pass—a very special place called South Park (Fig. 1). This topographic and structural basin, along with North Park and Middle Park, owe their existence to the major mountain building event in the area, the Laramide Orogeny (late Cretaceous to Eocene). Generally termed Intermontane Basins, North, Middle and South Parks are large synclinal basins that are compliments to the large anticlinal mountain ranges surrounding them.

The eastern boundary of South Park (Fig. 2) is the Front Range (and its numerous subdivisions) and that demarcation is generally a large thrust fault (Elkhorn Fault). In some localities along the eastern edge of the basin the Precambrian rocks of the mountains have been thrust about seven



Fig. 2. Satellite view of South Park. The graben valley of the Arkansas River is west of the Mosquito Range while the mighty Sawatch Range is west of that river. South Park contains three, large man-made impoundments--Elevenmile Canyon and Spinney Reservoirs (east side) and Antero Reservoir (west) on the South Platte River system. Photo courtesy of maps.live.com

miles over the basin rocks (McGookey, 2003). The western boundary of the basin is the Mosquito Range with a variety of Paleozoic rocks dipping under the basin-fill rocks. Near the south end of the Mosquito Range are two peaks that seem quite prominent and very visible—Buffalo Peaks



Fig. 3. Buffalo Peaks, home of the Buffalo Peaks Wilderness Area located in the Pike-San Isabel National Forests. The peaks exceed 13,000 feet in elevation and seem to dominate the view of the southern part of South Park. Hiking trails will take visitors to the summits, and a stand of very ancient Bristlecone Pines.

Photo courtesy of Sangres.com.

erected in a paleovalley during the Eocene-Oligocene. Today, because of erosion, these old valleys are now high moun-

tains and are an example of topographic inversion. The north boundary of South Park includes several intrusive stocks of Laramide (late Cretaceous to Eocene) age. The south boundary is perhaps the most interesting because of the large volcanic centers, including the Thirtynine Mile and Guffy volcanics (part of the Central Colorado Volcanic Field: CCVF). Eruptions from these centers blocked the south outlet of the Basin and created a large lake and finally forced an eastward flowing outlet that was superimposed across the Front Range (McGookey, 2003).

At, and near Hartsel, the traveler has a travel choice as the roads diverge to the southwest and Buena Vista (U. S. 24), to the northeast and Fairplay (CO 9), and south to Guffy and Canon City (CO 9). All have quite interesting geological features available for viewing. In the “old days” we always tried to make Fairplay at sundown for a stop in the Fairplay Hotel (with a beautiful back bar). Life was good.



Fig. 4. Hartsel bath house and springs/lowlands.

The most prominent geologic landforms at Hartsel are hogbacks related to the dipping Dakota Formation (Cretaceous). In the south part of Hartsel is a now abandoned building that

once housed the bath house of the Hartsel Hot Springs (Fig. 4). The springs have a long history of being developed by Sam Hartsel in the 1860’s and 1870’s as a healing spa and continuing well into the 20th century. The springs are radioactive and that fact may have contributed to their demise; the current springs and lowlands are off limits and surrounded by a fence.

Traveling northwest toward Fairplay on CO 9 for about 7 miles one comes to the former community of Garo, now represented by a single unoccupied commercial building. Geologically, the area is interesting as complexly faulted sandstone beds in the Maroon Formation (Permian-Pennsylvanian) along the Garo Anticline have been “impregnated with uranium, vanadium, and copper minerals”. Mining for radium commenced in 1919 while uranium, vanadium, and copper were mined in 1951 and 1952 (Wilmarth, 1959). Today, rockhounds prospect the area for blue agate and blue chalcedony; however, Wilmarth (1959) stated that the chert (is this the blue chalcedony?) was highly radioactive. It would be interesting to check these specimens!



Fig. 5. Gold dredge once located south of Fairplay, CO. Photo courtesy of U. S. Geological Survey.

The town of Fairplay is near the junction of CO 9 and U. S. 285. Gold was rediscovered in the Alma-Fairplay District around 1859 and numerous gold camps, including both hard rock and placer mining, were established in the area. Approximately 1,550,000 troy ounces of gold were recovered from the district (Koschman and Bergendahl, 1968). Perhaps the most interesting geological aspect about Fairplay, and sites for visitors to observe, are the immense piles of gravel along the local streams, especially south of town. These debris piles are the legacy of large floating dredges that worked the area in the early part of the 20th century (Fig. 5). The largest dredge operated until 1952 but was still floating in the mid-1970 when I had a chance to observe the structure. It is my understanding that the dredge was dismantled shortly thereafter and moved to South America.



Fig. 6. Mt. Princeton (14,197 ft) rising from the valley of the Arkansas River near Buena Vista. Photo courtesy of Nholifield at Wikipedia.com.

U. S. 24 continues southwest from Hartsel toward Trout Creek Pass and the town of Buena Vista where the mighty Sawatch Range rises out of the valley of the Arkansas River (Fig. 2). That valley is, in itself, another story as it represents an extension of Basin and Range faulting in the Rio Grande Rift System. The scenery on the way to Buena Vista is spectacular with several 14ers rising over 7000 feet from the river valley (Fig. 6).

A couple of miles down the road from Hartsel on U. S. 24 is an unmarked turn to the south leading to what



Fig. 7. CSMS field trip participants digging through the mine tailings and hunting for barite at the Hartsel Barite Mine. The largest specimens are several inches in diameter (~9 inches) while nickel sized specimens litter the ground. South Park and the Mosquito Range are in the background.

famed Colorado mineralogist Richard Pearl called “one of the main mineral localities in Colorado”—the Hartsel Barite Mine (Fig. 7). The barite source is from a limestone/clay horizon in the Permian-Pennsylvanian Maroon Formation. The Maroon was depos-

ited in the Central Colorado Basin, a somewhat restricted circulation basin between Frontrangia and Uncompahgria, the major Colorado uplifts of the Ancestral Rockies. However, the barite itself is a secondary mineral that was deposited via: 1) hot water solutions of magmatic origin; or 2) meteoric waters concentrating the mineral leached from saline waters in the redbeds of the Maroon (Howland, 1936). Barite was mined from the area as early as the 1930’s but for the last several years has only been mined by collectors of the beautiful blue crystals. Small, “nickel-size” specimens litter the ground while large crystals secured by “digging” are several inches in length, and at times clustered together in large groups. Most prospecting today is on the old mine dumps disturbed and distributed by bulldozers. Howland (1936) believes the blue color is due to radioactive waters since the area is near the Hartsel Hot Springs and the Garo uranium deposits. Exposure to sunlight deepens the blue color.

The mine is privately owned; however, Dave and Lark the owners, who also operate a rock/mineral/coffee/ice cream shop in Hartsel (Bayou Salado) have been very generous in allowing collecting field trips by local rock and mineral clubs (Fig. 7).

And finally, CO 9 and Park County 53 head south from Hartsel toward the small community of Guffy (CO 9) and the Thirtynine Mile Volcanic Area, a small remnant of the much larger CCVF. Ash and other eruptive rocks from the CCVF cover an area of approximately 8500 sq. mi. including most of the “Sawatch Range, southern Front Range, Wet Mountains, northern Sangre de Cristo Range, and the areas between. Outflow aprons extended onto the High Plains to the east, merged with the San Juan volcanic field to the southwest, and overlapped the

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Colorado Mineral Belt on the north and west” (McIntosh and Chapin, 2004). The major volcanism came from at least 10 calderas or eruptive centers with dates over a 10 million year span in the late Eocene into the Oligocene (38-29 Ma); however, volcanic activity continued into the Miocene (Wallace and others, 1999). Post depositional faulting, dissection and erosion have produced the current landscape. The Colorado Springs Mineralogical Society has peridot claims located in the Gribbles Park Quadrangle (off Park County 53) and the club sponsors several



field trips to the
Fig. 8. Assume the position. Members of the CSMS proceed up the basalt hill looking for gemmy olivine (peridot) at the CSMS claim.

area each year.

Most of the olivine crystals (peridot when gemmy) are small but some may be, and have been, faceted (Chet Wallace, personal communication, 2008). The claims are in an area mapped as Wagon Tongue Formation (Miocene) unconformably overlain by “Tertiary Basalt (Miocene)” (Wallace and others, 1999). The basalt is the source of the peridot and specimens are quite numerous as they have weathered out of the host rock in “large” quantities. Although prospectors will note “fresh” peridot in the basalt, the crystals are almost impossible to remove. It is much easier to simply examine the soil for crystals (Fig. 8). Most crystals are small and it seems anything over a couple of carats would be considered large—at least among the specimens in my collections!

Thirty six years after my first field trip to South Park, I resettled in Colorado Springs (too cold in the winter to resettle in the Park!). Today I still love the area and spend much time camping and hiking in the Collegiate and Mosquito ranges, following Yam to the peridot claim, and drinking coffee at Bayou Salado. Fairplay is still a funky little town and adult beverages are readily available.

Time to get out the old disk and listen again to John Denver:

*Colorado Rocky Mountain high
I've seen it rainin' fire in the sky.
The shadow from the starlight
is softer than a lullaby.
Rocky Mountain high - Colorado.*

*Attributed to Horace Greeley

Portions of this article appeared previously in the RMFMS Newsletter.

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CSMS Constitution Amended for Junior Members

In the March meeting a change to our constitution was motioned and seconded. This would change our definition of Junior Members from: "Article III - MEMBERSHIP B. JUNIOR MEMBERS -Those who are between their twelfth (12th) and eighteenth (18th) birthday." to “Article III - MEMBERSHIP B. JUNIOR MEMBERS - Those who are under eighteen (18) years of age. “ Submitted by Roger Pittman

A Fossil Hunting Trip to the Glen Rose Formation, Texas

By Jack Shimon, CSMS Pebble Pup

(As told to his Mom, Julie Shimon, February 2011)

I got to go fossil hunting in Texas with “fossil Grandpa” and my dad last summer. I gave my Grandpa that name because he’s a geologist and he likes to collect rocks and fossils (not because he’s as old as one!). He’s done a lot of rock and fossil collecting trips here in Colorado with me, and also some Earthcaching at Garden of the Gods. Fossil Grandpa lives in Austin so we started out early in the morning for the Glen Rose formation in Central Texas.



An indication of the scale of the geologic formations on site.

The Glen Rose Formation is made of limestone which is quite easy to break apart with a rock pick. It’s a shallow marine to shoreline geologic formation and it really did look like a reef bed except it was very dry and very hot and there was no water anywhere. I can imagine all the lower Cretaceous creatures living and

swimming here though and dinosaurs walking along the shore, although we didn’t get to see any of the footprints in the area we were at (*The rudists*, 2011).

Can you see how big the chunks are with fossils in them? It was amazing. As I have since learned, rudist bivalves comprise much of the reefs in this formation. Check out the molds of them in the photo below. They can be only a few centimeters long or grow to over one meter (“Rudists,” 2010).



The author, now age 6.

We found a lot of fossils which include bivalves, echinoids (sea urchins), crab carapace (outer shell), ammonites, gastropods (snails) and clams. The ammonite sections we found are molds of the real animal and are huge although we didn’t find a complete ammonite but I did piece some sections together and the diameter is over 12 inches! I didn’t know ammonites could get so big.



A section of the formation on site showing a large segmented rudist mold, top middle, and channels where clusters of small rudists were attached.

The neatest part of our collection was our mystery fossils which turned out to be rudist bivalves (mostly internal molds). Fossil



Some of the smaller specimens we collected, sea urchins and snails.

Grandpa didn’t think they were coral but they were all over the place so we knew they had to be some sort of reef building organism (*The rudists*, 2011). Glen Rose has bivalves and coral, but after taking our fossils to the



University Museum in Austin, the Rock and Fossil Show in Denver, and on a special visit with Logan Ivy, Collections Manager of Earth Sciences at the Denver Museum of Nature and Science, it was confirmed that we had a very nice collection of rudist bivalves. Now we are trying to learn all about them.

Some of the larger specimens we collected, chunks of limestone containing rudist molds and big ammonite sections.



Here are some segments from the ammonites. Even though they are not intact, the fossils are in good condition.



The quarter shows the scale of the segmented rudist.

Rudist bivalves are a marine creature and it seems they competed with the coral and in this area were more prolific (“Rudists,” 2010).

We saw a lot of rudist fossils that have what we think are growth plates. In the picture above (right) notice the large central fossil, and you can just make out where individual tiny rudists were by the striated patterns (*The rudists*, 2011). There doesn’t seem to be any logic to the direction they were growing but we think shallow water rudists might have been horizontal in the water, often clustered, either due to mechanical action of the water or because it was more efficient to feed that way. It is very fun to find a fossil and try to learn and guess what it might have been like when it was alive.



Above, another angle on one of our rudist specimens.

Continued on Page 6

Another part of the mystery did get solved with help from Logan Ivy with the Denver Museum of Nature and Science (personal communication, 2011). Below you can see two rudist valves and two crab carapaces. My mom and I talked about the top valve being hooked so it could hinge open and shut; however, what you are actually seeing is the bottom valve that attaches to the sea floor. The top valve is a flat lid. These valves are so big and heavy, the size of my hand, that at first we thought they might be some type of oyster ("The Aptian Age"). Since they are so big it makes sense they would anchor the animal.



Two rudist valves and two crab carapaces

It was a very, long hot day exploring and collecting at Glen Rose and we came home with many boxes of heavy fossils. In fact they were so big we had to leave most of them in Texas until Fossil Grandpa and Baga (Grandma)

could drive them here for us. I'm hoping to display some of them with Fossil Grandpa and my dad at the Rock Fair in Colorado Springs this June so other Pebble Pups and kids can see how fun it is to go fossil hunting.

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Comments from CSMS Pebble Pup teacher, Steven Veatch:

I have the privilege and honor to teach a group of the most talented group of Pebble Pups/and juniors I have ever worked with in my 15 years of leading Pebble Pups. During the past three years I have a multitude of diverse research projects I have assigned to the Pebble Pups and received them back. A number of Pebble Pups are waiting now or me to release more assignments. In some cases I am pairing them up. Others will work independently. Their work is being published in newsletters across the nation.

Recently, some of their work was published by a British rock in gem magazine. I am working with several local newspapers to carry their research.

The author of this paper, Jack, is determined to keep up with the older kids, and so he recites his thoughts, musings, and findings to his mother (he is just learning to read and write). The author has produced an excellent article on rudists. At the last Pebble Pup meeting he was so interested in our session on micro-photography, I had to help him stand up on a chair so his little fingers could work the mechanisms of the camera. Jack Shimon's paper, his dedication to the Pebble Pup program, and his desire to learn has renewed my dedication to the program. Thanks, Jack, for a beautiful paper and for your inspiration to me and others.

A Primer on Lacewings and a Quick Look at a Prehistoric Lacewing Captured in Florissant's Prehistoric Lake Shales

By Kurt Lahmers, CSMS Junior

The order Neuroptera (Greek "neuron" meaning new and "petra" meaning wings) consists of the suborders Planipennia, Megaloptera, and Raphidoidea. The suborder of Planipennia includes lacewings and antlions, which have membranous wings. Megaloptera includes dobsonflies and alderflies, which have large, distinctive mandibles. Raphidoidea consists of snakeflies, which are characterized by long prothoraxes. This article is an introduction to the insect order of Neuroptera and will describe the structure, development, and behavior of the common families of green lacewings (Chrysopidae) and brown lacewings (Hemerobiidae). A fossil lacewing specimen from the ancient lake shales of the Florissant Formation will also be discussed.

The identification on lacewings starts out with taxonomy. Lacewings and antlions are in the same order and suborder because they have certain similarities. Exhibit 1 provides an overview of the taxonomy of lacewings and antlions.

Green lacewings and brown lacewings are different because of their size and color. The brown lacewings are smaller than the green lacewings, yet the brown lacewings have larger wings.

Each lacewing has two pairs of membranous wings, which have widespread patterns of veins and cross veins. These wings can have a span that ranges between 5 and 150 mm, but they are weak fliers. While

Continued from Page 6

Taxonomy	Green Lacewings	Brown Lacewings	Antlions
King-	Animalia	Animalia	Animalia
Phylum	Arthropoda	Arthropoda	Arthropoda
Class	Insecta	Insecta	Insecta
Order	Neuroptera	Neuroptera	Neuroptera
Suborder	Planipennia	Planipennia	Planipennia
Family	Chrysopidae	Hemerobii- dae	Myrmeleonti- dae
Genus	Chysoperla		
Species	Chysoperla rufilabris		

Exhibit 1: Taxonomy

resting, lacewings fold their wings over their abdomen.

Adult lacewings have large compound eyes. This means that their eyes consist of thousands of photoreceptor units, which gives them a wider view of their surroundings. Their ability to see at wide angles helps them hunt prey and avoid predators.

Another feature of lacewings is their antennae, which are long and can sometimes be clubbed at the end.

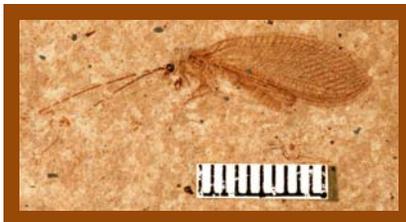


Figure 1. Fossil lacewing from the 34 million-year-old Florissant lake shales. Two of the three suborders of Neuroptera, Raphidoidea (snakeflies) and Planipennia (lacewings), are found in the Florissant shales. Fossil Beds National Monument specimen number 4194A. Photo by Russell Wood.

A fossilized lacewing specimen (Figure 1) from the late Eocene (34 million years ago) Florissant fossils beds has captured an example of the long antennae. This fossil specimen shows in excellent detail the well-preserved and relatively large

membranous wings held above the fossil insect's body (Meyer, 2003). The ancient lacewings fed on aphids and other insects, and helped some of the prehistoric plants growing in the Florissant area from being consumed by aphids and other harmful insects (Meyer, 2003).

Lacewings have soft, elongated bodies that can be up to 50 mm long. Larvae lacewings have thin, hollow food channels, which they use to inject enzymes into its prey's body. These enzymes liquefy they prey's interior so that the remains are sucked through the hol-

low food channels. Their larvae have large sickle-shaped mandibles that form pincers (Bessin & Newton, 2004). The larvae also do not have wings.

Lacewings are omnivorous insects, whereas antlions and snakeflies are carnivorous. Lacewings will eat honeydew, pollen, sap, and other insects. On the other hand, larvae lacewings are carnivorous and voracious eaters. Lacewing larvae have been observed eating up to 20 aphids per day or up to 30 to 40 mites per day

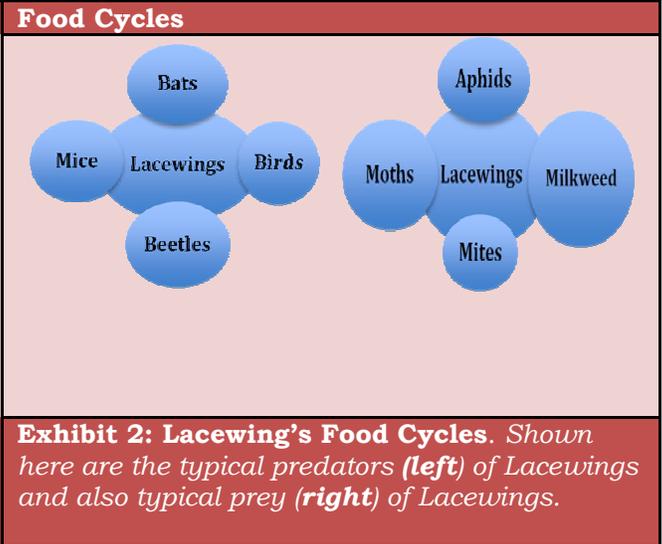


Exhibit 2: Lacewing's Food Cycles. Shown here are the typical predators (left) of Lacewings and also typical prey (right) of Lacewings.

helping farmers control these pests.

Larvae lacewings will catch small insects and suck their insides out. Both larvae and adult lacewings hunt for they prey. A lacewing will find aphids because aphids have an odor that attracts predators. Exhibit 2 shows both the lacewing food cycle relationships between its predators (left) and its prey (right) (Pfeiffer & Hogmire; and "Green lacewing: bene-

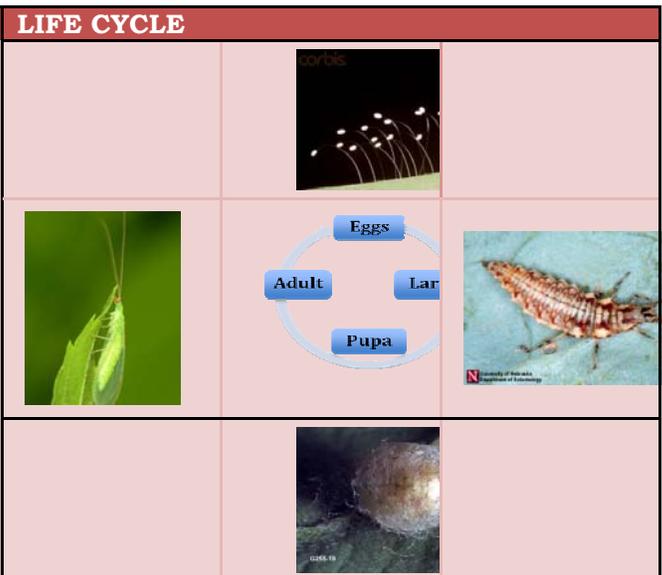


EXHIBIT 3 Lacewing Life Cycle: The Lacewing's life is similar to other insects

Continued on Page 8

ficial.”)

The life cycle of a lacewing is similar to that of many other insects as shown in Exhibit 3. Lacewings have an overall rapid development. Some species in warm climates can have several generations a year. Other species that survive in colder climates will take several years to cycle through one generation (Mahr, 1994). The first stage in the lacewing lifecycle is the egg.

The female can lay between 400 and 500 eggs each. Eggs are laid on the end of thin stalks created by the female lacewing, which are attached to wood, leaves, and other surfaces. Sometimes eggs are laid on hard surfaces or light soil.

The next stage is the larvae, which is when the lacewing prepares to go into metamorphosis. The larvae are fat, hairy, and have big jaws, which is a significant distinction from the adult lacewing. During this larvae stage in the lacewing lifecycle, the larvae will molt from three to five times before spinning a cocoon. When the larva spins a cocoon and under goes metamorphosis, it becomes pupate. Inside the cocoon, the lacewing will slowly change into an adult.

After breaking out of the cocoon, the lacewing pupate is an adult. The features that set apart the adult from the larvae are that the adults have wings, a longer, thinner body, and change their diet. Adult lacewings also have the ability to mate. The lacewings will mate directly. ("Green lacewing”).

Lacewings are nocturnal insects and are active at dusk. Green lacewings are found all throughout North America (U.S.A., Canada, and Mexico), Asia, and Europe. Most green lacewings are common in northern temperate zones. Green lacewings live in gardens, fields, and forest edges, where they can camouflage leaves and stems. (Pfeiffer & Hogmire; and "Green lacewing: beneficial"). Green lacewings are often attracted to lights, so they are found more near homes. Brown lacewings are found in the western part of North America, where they live in forested areas. When a lacewing is disturbed, it will release a strong smelling liquid. Lacewing larvae are terrestrial so they do not live in lakes or rivers.

Lacewings might seem like dangerous insects, but they are not harmful to humans. Lacewings help people by eating aphid in farms and gardens. Since the Permian era, lacewings have always played an important role in the food chain and they have remained fascinating insects.

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Unusual Columnar Jointing in Rocks Revealed at the Cresson Surface Mine, Cripple Creek, Colorado

By Steven Wade Veatch

An extraordinary display of rock columns, formed from prehistoric magma (molten rock) that cooled underground, has been recently exposed by mining operations at the famous Cresson Mine. The Cresson Mine is located between Cripple Creek and Victor, Colorado. The Cripple Creek and Victor Gold Mining Company unearthed these magnificent rock columns while conducting routine mining operations at the surface mine.

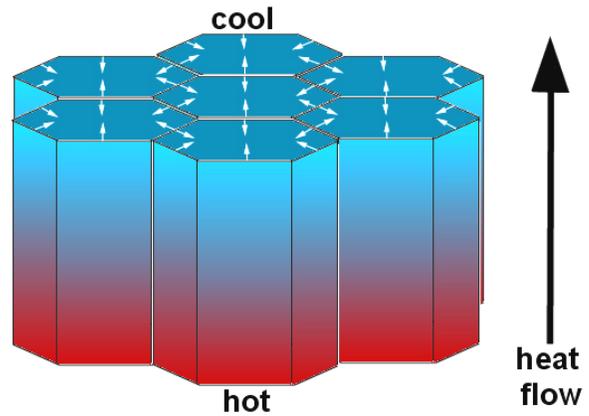


Mining operations at the Cresson Surface mine exposed the geometric design of columnar joints, formed by a cooling mass of magma over 32 million years ago. The mine is located north of Highway 67 between Victor and Cripple Creek, Colorado.

About 32 million years ago a volcanic complex, with several eruptive vents formed along a deep break in the surface, was emplaced near Cripple Creek. Following the emplacement of the volcanic complex, mineral-rich fluids moved up from great depths and seeped into the fractures and fissures created by the violent volcanic upheaval, and cooled into hard, ore-bearing veins. This process formed a low-grade ore body of microscopic native gold attached to pyrite. Narrow, high-grade gold veins bearing quartz, pyrite, and fluorite were also formed. Most of the gold mined in the early days of the mining District came from the high-grade gold veins.

The historic Cresson Mine began operations in 1906 with fair results. In 1914, the Cresson vug, or cavern, was discovered 1,200 feet below the surface of the mine. The room-sized vug was a rich strike—yielding over 60,000 troy ounces of gold in less than 4 weeks of frantic mining.

The potential of the Cresson deposit as a surface mine was recognized in 1990, and modern surface mining began in December 1994 to recover low-grade gold.



As molten rocks cool below ground, they may shrink, forming joints.

The first gold ingot was poured in February 1995, and by the end of the year gold production was 76,500 ounces. The Cripple Creek and Victor Gold Mining Company continue mining operations at the Cresson surface mine. More than 250,000 troy ounces of gold were mined in 2008.

Recently, a remarkable display of columnar jointing was unearthed at the mine. The columnar jointing was formed as part of a body of magma that cooled underground into a rock known as phonolite.

The columnar joints found at the mine are parallel, prismatic columns that had formed in shallow magma at the mine. When these molten rocks cooled rapidly from the outside toward the center, they contracted. As a consequence, the shrinkage produced cracks or joints, generally in a hexagonal pattern that relieved stress. Once the cracks or joints developed, they continued to grow, generally forming straight columns with parallel sides.

Columns typically form at right angles to the cooling surface where the molten rock makes contact. The size of columns depends on the rate of cooling of the rock—the faster the cooling, the smaller the columns.

Anywhere rocks that were once molten occur is a likely place for columnar jointing to develop: Devils Postpile in California, Sheepeaters Cliffs in Yellowstone National Park, and Devils Tower in Wyoming are good examples of these features.

Although such rock formations are often linked with legends of fearsome giants or the devil, there is nothing supernatural about them; they are simply geometric expressions of natural rock forming processes and are another example of the many geologic features in the Pikes Peak region.

Continued on Page 10

References:

Best, M. G., 1995. *Igneous and Metamorphic Petrology*. Blackwell Science, Cambridge, MA 360 p.

Hall, Anthony, 1987. *Igneous Petrology*. Longman Scientific and Technical, New York, 573 p.

Skinner, B.J. and Porter, S.C., 1987. *Physical Geology*. John Wiley and Sons, New York, 750 p.

Buying Stones & Gems Weight Dilemma by T. Stoiber, CSMS Member

If you have ever tried purchasing stones, gems, specimens, etc. at a show or on-line, perhaps it seems to you, as it used to me, that everyone weighs the stones differently....and how much is one gram or one carat, compared to one ounce?

So that you may compare similar products, I have designed this chart, which I use anytime I am purchasing rough, cut stones, etc.:

Weight Conversion Chart		
Ounces	Grams	Carats
1	28.3495	141.7476
.03527	1	5
.00705	.2	1

This gives me a general way to figure out what the best deal is—who wants to pay too much for their materials?

One more bit of information that may help you in deciding where to purchase from: one ounce is approximately 2 tablespoons, but, of course, this varies depending on stone type (i.e., it takes more lighter weight stones to make up the one ounce).

Good luck and happy hunting!

CSMS FIELD TRIPS

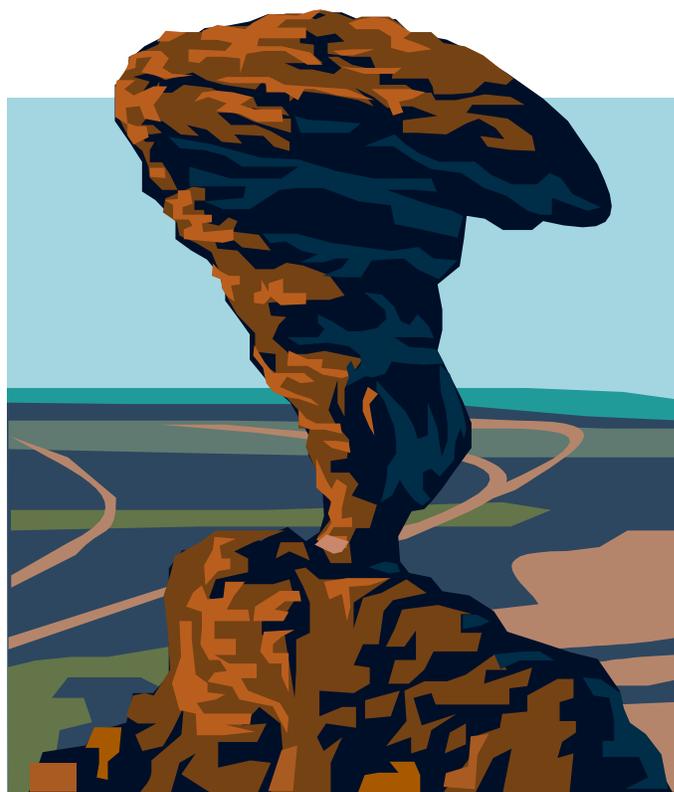
April 30, 2011—8:45 a.m. in Portland, CO—the Holcim Cement Quarry. Calcite Crystals, Marine Fossils, and Pyrite “Balls” may be collected. Safety equipment required, check csms.us for details about this & other details. Confirm with Yam, yamofthewest@gmail.com

Oct. 15-17, 2011—Yellow Cat/Cisco UT & Grand Junction Mineral Show Field Trip. Collecting will be done on Oct 17. Confirm with Marg Regel by Oct. 1, 2011, by calling 719.650.8148 or emailing at Margory.regel@yahoo.com. More details will be posted at csms.us.

We are also busily planning a number of Field Trips in conjunction with our June Shows. These Field Trips are part of the package offered to attendees of the Rocky Mountain Federation of Mineralogical Society Conference, so they will get first shot. If all of the slots are not filled by the assigned deadline, these Field Trips will be opened up to CSMS members.

We will be adding more Field Trips throughout the season so please check the website (csms.us) often for new opportunities. Also, if you wish to lead a Field Trip please contact Yam at YAMOFTHWEST@gmail.com and share your thoughts so we can provide more opportunities for our fellow members to visit more sites.

We are looking for ideas and leaders for the 2011 Field Trip Season!



Picks & Pans

From Pikes Peak Courier View:

http://coloradocommunitynewspapers.com/articles/2011/03/09/courier_gold_rush/lifestyles/16_wp_pebble_pups.txt

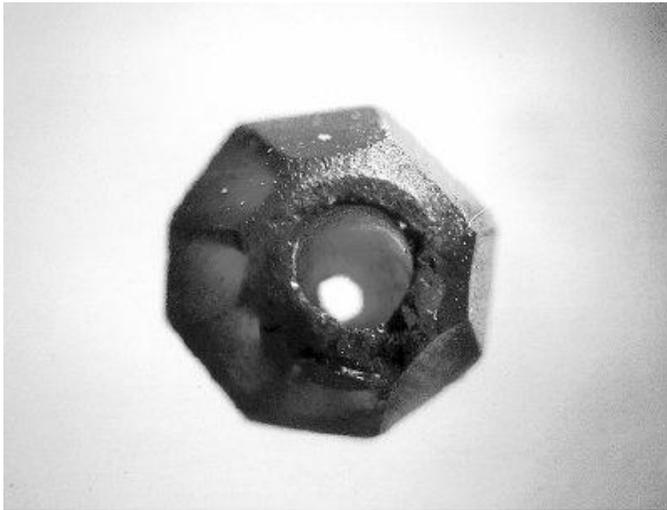
Pebble Pups Achieve Scientific Recognition:

By [Pat Hill](#)

Published: 03.09.11

Their passions unleashed for gems from ancient Egypt, students of Steve Veatch are published authors as well as authorities on the geology and history of the North African county.

In an article in the spring issue of "Deposits," a British



A garnet bead within a garnet stone. Courtesy photo | Auston Mammenga, Lake George Gem and Mineral Club

publication, students from 10-to 14-years-old wrote about their research into garnets, copper, lapis lazuli and chalcedony — gems removed from 3,000-year-old tombs and discovered more than a century ago.

"The editor said he'd never seen a group of people take artifacts and combine them with rock hunting and geology and produce an article," Veatch said. "And what was more phenomenal — they were children."

While the gems are illegal today, Veatch scored the purchase from a trader before the Egyptian government initiated laws protecting ancient artifacts. "The kids just went out of their skins with excitement," Veatch said.

After weighing and measuring the rocks, the students took photographs under a microscope to include in the article, which delves into the ancient culture.

"The use of beads goes far back into antiquity and is an expression of behavior unique to man," reads a passage from the article. "In ancient Egypt beads were worn for both decorative and sacred purposes. There is evidence that they had symbolic meaning, had a spiritual and magic dimension and were believed to have a link with supernatural powers. Beads were fashioned by craftsmen and were chiefly for necklaces."

In unearthing the untapped resources of the youthful scientists, Veatch has a two-fold purpose. "We take these rock clubs very seriously — it's to get kids outdoors," he said.

For Teller County's prime earth scientist, however, there's just nothing like awakening a passion for the earth's bounty to get him as energized as his students, the Pebble Pups. "If you show kids cool things and cool equipment and a teacher to guide them, there's nothing they can't accomplish," Veatch said.

With such visible success, Veatch has a bag full of earthly treasures, among them, dinosaur bones and Florissant fossils, to stir the imagination of his students. "I can keep this going on until either I give out or the kids give up," he said. "But they love this stuff, they just go nuts. And so do their teachers."

Always on to something else, Veatch secured a \$500 grant to study dinosaur footprints in Red Rock Canyon.

Stemming from a few kids in a gem/mineral club who have reached readers across the globe, Veatch has a grand vision for the future. "If you can get kids interested in nature and science, they can study climate change, rocks, minerals, fossils, caves, meteorites, artifacts (and more)," he said.

The Pebble Pups are junior members of the Lake George Gem and Mineral Club and the Colorado Springs Mineralogical Society. To read the article they wrote in the spring edition of "Deposits," go to www.depositsmag.com.



Steven Veatch Appointed to Serve as Commissioner on the Cripple Creek Historic Preservation Commission for a One Year Term

Steven Veatch, a member of the Colorado Springs Mineralogical Society, has just been appointed by the Cripple Creek City Council to serve as a member of the Historic Preservation Commission. The Historic Preservation Department operates programs that address the needs of historic residential and commercial structures; processes requests for Certificates of Appropriateness; develops education programs, events, exhibits and products that interpret the Cripple Creek Mining District; addresses the needs of city-owned Mt. Pisgah Cemetery; and participates in public improvement projects that relate to the Bennett Avenue Historic District. The Historic Preservation Commission conducts public hearings on historic issues. It consists of seven members appointed by City Council and meets twice a month as needed.

Mission Statement:

To improve, maintain and promote the Cripple Creek community through the preservation and protection of the city's historic built environment and its National Historic Landmark status.

Goals and Objectives:

- Develop educational programs, events, exhibits and products that interpret the history of the Cripple Creek Mining District.
- Process development requests efficiently and effectively.
- Participate in public improvement projects that enhance and provide better access to and understanding of the historic resources of the Bennett Avenue Historic District.
- Continue to provide a diligent program to address the needs of historic residential, commercial and non-profit structures.
- Continue to address the needs of the Mt. Pisgah Cemetery.
- Pursue the leveraging of all expenditures of historic preservation funds by requiring matching funds and/or grant funds from other sources.
- Pursue designation of a regional area as a National and/or State Heritage Area.

Summer Geocaching Club for Kids

What is Geocaching?

Geocaching is a high-tech treasure hunting game played throughout the world by adventure seekers equipped with GPS devices. The basic idea is to locate hidden containers, called geocaches, outdoors and

then share your experiences online. Geocaching is enjoyed by people from all age groups, with a strong sense of community and support for the outdoors. You can find more information at geocaching.com and geocachingcolo.com

Club Details:

Club will meet on Friday mornings at 10am at the designated location. Parent participation is required unless arrangements have been made.

June 24: Fox Run- pick a team name, learning about geocaching, find geocaches; **July 1:** Black Forest Regional Park- hide a team cache with a travelbug we can track online, find some geocaches; **July 8:** Woodmoor- multi caching with a local highschool geocacher as our guide; **July 15:** Res Rock Open Space Preserve- Earth caches; **July 22:** Mt Herman- puzzle cache, possibly virtual cache and benchmarks too;

July 28 (THURSDAY) Pulpit Rock Park- Caching at night with a local highschool geocacher as our guide. Club will meet at dark and not Friday morning;

August 5: no meeting; **August 12:** TBD- local park for some caching favorites; **August 19:** Fox Run- club "cache and dash" event, potluck

Contact Information and Requirements:

- Organized by a Kilmer Elementary Mom with help from local geocachers
- No experience necessary and you do not need to own your own GPS device
- Space is limited and sign ups for the entire 8 weeks is requested
- Hosted by Julie Shimon, geocaching.com name "thebobcats", julieshimon@yahoo.com

Editor's Note **Geocaching will get kids outdoors and they will learn about GPS technology. Steven Veatch, the CSMS Pebble Pup chair, has stressed in many of his classes the importance of taking a camera with you when you go on rock hunting adventures. Steven Veatch is requesting that all CSMS Pebble Pups/Juniors that go geocaching to take their camera and obtain good images of the landscape, rocks, rock outcrops, and other items of geologic interest. Steve requests that the pups bring the images on a flash drive during the first fall class or to email one or two to him**

steven.veatch@gmail.com). These images will most likely be the start of a geologic investigation that the kids can start. Also, the CSMS Pups should invite their friends to join the Pebble Pups.



Greetings!

Mark Jacobson, author of "Antero Aquamarines" is doing a lot of research about Crystal Peak. Dr. Beth Simmons and I are members of the Florissant Scientific Society, and she forwarded this transcription of an article written by Abram Randall in 1876 from "The Centennial," a short-lived newspaper that his son, Jesse Summers Randall, published in Georgetown. It is also one of the earliest known accounts from the Crystal Peak pegmatites. It is very interesting reading, and I am submitting it for publication in our newsletter. Steven W. Veatch

The article below was published by Jesse. S. Randall after he resigned as printer of the Georgetown Miner in 1875 but before he started publishing the Georgetown Courier in 1877. There are only two issues known of "The Centennial." The article below was written after J. S. Randall had during 1872-73, completed an 8 part "Glossary of Colorado Minerals" which he had published in the "Weekly and Daily Miner" of Georgetown.

This article is also the only known mineralogical article written by his father. It is also one of the earliest known accounts from the Crystal Peak pegmatites. Square brackets in the transcribed article is used to identify clarifying additions by Beth Simmons, PhD.

1876 February

The Centennial [newspaper] Vol 1, no. 2, page 1, col 3 and page 2, col 1 and 2.

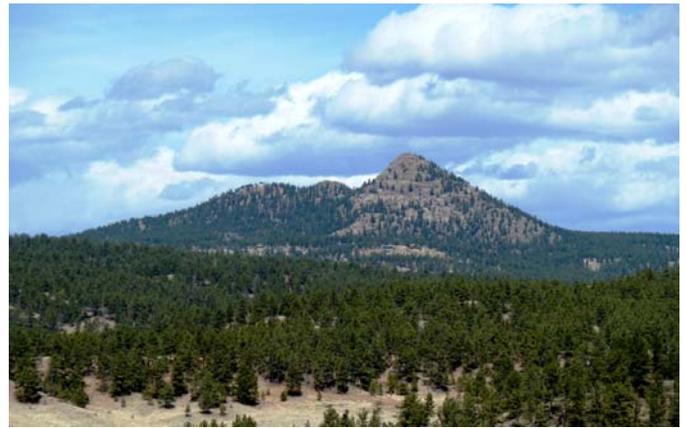
Published by Jesse Summers Randall, Printers' Alley, west of the Miners' Assay Office,

Georgetown, Colorado

Article written by Abram Joshua Randall (J. S. Randall's father)

A Fruitful Field for the Specimen Hunter

Florissant, in El Paso County, 35 miles west of Colorado Springs, is celebrated for the great variety and abundance of geological and mineralogical specimens found in its vicinity; and it has become a noted resort for tourists passing through that portion of the Territory. Until about three years ago [1873], the locality went by the name of The Petrified Stumps, there being within a circuit of about a mile in diameter 15 or 20 of, probably, the largest petrified stumps of trees in the world; the species, a cedar, apparently the same as the big trees of Calaveras Co. California. The largest one,



View of Crystal Peak, Colorado near the town of Florissant.
Photo by S. Veatch

six years ago, measured twenty-two feet in diameter, but each succeeding year it became less owing to the depredations of specimen hunters. One of them, the most beautiful of this group on their first discovery, and one that should have been left as a monument of the Tertiary Period, during which it flourished, was about fifteen feet in height, but it was demolished by the hand of some vandal and now nothing but a few scattering fragments remain. The land on which these mammoth stumps stand, is now principally occupied by settlers, and efforts are being made to preserve these remnants of a former age.

In the immediate vicinity of the stumps are numerous beds of argillaceous shale abounding in beautiful impressions of the leaves, fruits, flowers and insects of a former age. In the lower strata are many perfect impressions of ganoids, and other kinds of fish. Calcareous Satin Spar occurs in seams in some of these shale banks, but the color generally is not good, being stained by other minerals. Petrified bitter, or swamp hickory nuts, are found near, not only showing the external form of the nut, but the shape of the kernel is also preserved complete. About a mile west of the stumps is a vein of Kaolinite, very pure, but not in sufficient quantities to pay for working.

Eight miles north-east of Florissant are the ragged peaks of the Crystal Mountains. A range of rocky peaks, so named from the amount of crystals there found. In the last two years [discovery of locality circa 1874-5] many thousands of pounds have been taken out, the greater part of which have been sold in Manitou, Colorado Springs and Denver, but many have also been shipped east. The crystals formed there, are Smoky Quartz, Orthoclase, Adularia, Amazonstone, Green, Purple and White Fluor Spar, Specular Iron and also a few specimens of Amethystine Quartz, but these last are rare. The Veins containing these crystals usually, like our silver veins, have a general trend N.

Continued on Page 14

E. and S. W. the metal they carry being iron; they open out at indefinite distances into pockets filled with red oxide of iron and the crystals mentioned above. These pockets contain from a single handful to several hundred pounds of crystals. From one pocket opened last September [1875], by Mr. Anthony, about 4,000 pounds were taken. Some of the Quartz crystals are of immense size; one taken out last spring by Mr. Disbrough, was about 4-1/2 feet in length, and 10 inches in diameter at the base, and is now in [Reverend Lewis] Hamilton's Museum, in Denver [formerly of Central City in 1869]. During the summer [of 1875], several were found from 20 to 30 inches long.

The surface indications of these pockets, or in miners' parlance, the blossom-rock, is usually a graphic granite, called by the crystal miners rice rock, from its resemblance to a conglomeration of the grains of that cereal. The upper wall, called the caprock, is lined with crystals of feldspar, with sometimes a few small quartz crystals disseminated, but it is on the lower wall that the finest cabinet specimens are found, the crystals being larger and finer. Sometimes the associated feldspathic crystals are Amazonstone.

Crystallized Fluor Spar is usually found at or near the bottom of the larger pockets, sometimes in isolated cubes, and sometimes an aggregation of large and small cubes. The prevailing color is green, although purple and white are sometimes found. One unique specimen found here, is worthy of note. It was a cube of transparent green Fluorite; four inches square, and on two of the opposite faces the corners of two small cubes projected and crossed each other in such a manner as to form an almost complete representation of the masonic symbol, the Square and Compass. Specular Iron [geothite?] is sometimes found in nodules in these cavities, from an ounce in weight to 15 or 20 pounds. These nodules are rough and unsightly outside, but on breaking, they often display a mass of splendid radiated crystallization.

The best Amazonstone is most frequently found in veins of white quartz, associated with crystals of mica and but few quartz crystals. A vein of this kind was opened last spring [of 1875] by Messrs. Disbrough and Powell, which has since produced some of the finest crystals of the kind on Record. In September [1875] the amount quarried was over 1,000 pounds. Many of the crystals are rectangular prisms, a form of crystallization which (according to Prof. Foote, of St. Louis [soon to be Philadelphia]), has heretofore never been found, except in South Africa. The largest taken out was a prism 18 inches in length, with a base six inches square.

These deposits of crystals extend over an area of about 16 square miles, nearly all of which has been pretty thoroughly prospected. Last Summer and Fall [of 1875] there were from 25 to 30 miners here constantly, besides some thousands of tourists and excursionists. Deer were plentiful in the neighboring hills, the scenery grand and picturesque, thus inviting the hunter as well as the curiosity seeker to spend a few days among the sylvan shades of these everlasting hills. A.J.R.[Abram Joshua Randall]



Smoky Quartz crystals on Albite crystals. Photo by Russell G. Rizzo on Mindat.org website.

Amazonite specimen. Photo on Google.



Fluorspar. Photo by chemirex.com

Andularia (moonstone). Photo by jewelsforme.com



Angiosperm fossil. Photo by gigantopteroid.org.



MINERAL SALE

May 7th & 8th
Saturday & Sunday

9 AM - 4 PM

In our barn at

7513 Tudor Rd, CS. CO
EXIT 1-25 #149

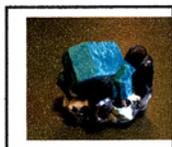
**Selected from
our collection and trade stock.**

**Hundreds of crystals to choose
- Most are \$1 to \$50**

Ray & Eloise Berry

719 598-7877

rayber@q.com



Save Rockhound State Park

Submitted by Marg Regal, CSMS Member

Attention all rockhounds:

The New Mexico State Parks Division (NMSPD) has proposed to disallow rockhounding in Rockhound State Park near Deming, New Mexico. Rockhound State Park is best known for its fantastic thundereggs, some with multicolored agate in addition to well-formed quartz crystals. Also scattered about the park are rocks and minerals of volcanic and hydrothermal origin; including quartz, chalcedony, agate, common opal and banded and brecciated rhyolite. The 1,100 acre park was established in 1966 as the first in the United States that allowed collecting of rocks and minerals for personal use. Pictures of the park and some rocks collected there may be seen on the following web page: <http://www.mcrocks.com/ft09-1/StreeterApril09Page2.html>

The NMSPD's proposed plan may be read at the following web site: <http://www.emnrd.state.nm.us/PRD/documents/RockhoundPMPPublicReviewDraftMarch2011.pdf>

But, to save you time, the following is the pertinent part of the plan about rockhounding:

Rockhound State Park was originally established as a destination for rock collectors. At the time, in 1966, rock collecting was a popular pastime. Visitors were encouraged to visit the Park in order to collect rocks, and were allowed to take home up to 15 pounds of rocks.

Today the Division promotes a respect for the natural environment through interpretive and educational programs. Not only does rock collecting in a public park contradict the principle of natural resource protection. There is only one state park in the United States that permits rock collecting: Crater of Diamonds State Park in Arkansas, which has a 38-acre plowed field set aside for collecting. Nearly all municipal, state, and national parks prohibit the removal of natural artifacts from parks. The practice of rock collecting at the Park would need to comply with NMSA 1978, Section 16-2-32:

"A person who commits any of the following acts is guilty of a petty misdemeanor and shall be sentenced in accordance with the provisions of Section 31-19-1 NMSA 1978:

A. cut, break, injure, destroy, take or remove a tree, shrub, timber, plant or natural object in any state park and recreation area, except in areas designated by the secretary and permitted by regulations adopted by the secretary, such regulations shall only permit the removal of a tree, shrub, timber, plant or natural object

for scientific study or for non-commercial use by an individual as a souvenir, the quantity of material authorized for removal from any area shall be strictly regulated by park personnel in order to minimize resource damage."

If the Division were to continue to allow the public to collect rocks at the Park, the EMNRD Cabinet Secretary would designate a specific area and adopt rules pertaining to the collecting of rocks on Park property (such as the amount and location).

The once popular hobby of rock collecting has declined significantly since the 1960s. There are local businesses that cater to rock collectors and can guide or direct them to similar opportunities outside of the Park. Safety is also a concern with the public collecting rocks in the Park, as there are steep and unstable slopes that are becoming more hazardous as the collecting alters the stability of the hillside. There is also a concern that some visitors may go beyond the Park boundaries in their quest for rocks.

Park staff has already begun the transition away from rock collecting and will need to educate the public about the need to respect the natural resources. One crucial step is to modify all Park information (signage, brochures, website), so that this activity is no longer encouraged. All materials need to state that it is a prohibited activity. The namesake theme can continue through educational programs and interpretive information about the rocks that occur in the Park and the geology of the region. Revise written materials by removing all mention of rock collecting and add a reference to the state statute which prohibits rock collecting on Park property.

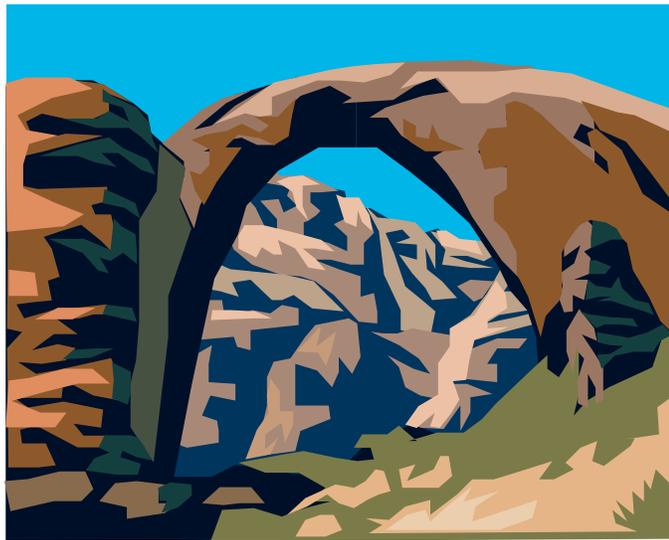
Written and oral comments on the plan will be accepted. Comment letters can be dropped off at the park; mailed to P.O. Box 1147, Santa Fe, NM 87505; e-mailed to nmparks@state.nm.us or faxed to (505) 476-3361.

PLEASE, everyone reading this message, email, snail mail or fax a written comment in opposition to the proposed plan to discontinue rockhounding in Rockhound State Park. You have until April 18, 2011 to make comment, so please get on it today.

Let's show the NMSPD personnel that rockhounding has not declined since the 1960s and the park should remain true to its namesake. Also, all you club members and officers out there, please let everyone in your club know about this by mass email so we can get all rockhounds throughout this country engaged in the battle to save yet another of our fleeting freedoms. This may be in far away New Mexico now, but in your backyard tomorrow. **PLEASE HELP NOW BECAUSE THERE IS NO TIME TO WAIT!**

Mike Streeter www.McRocks.com

SFMS North Carolina Director



**Colorado Springs Mineralogical Society
Second Annual Silent Auction & Bake Sale**

April 23, 2011 10 a.m. to 2 p.m.

At the WMMI

225 North Gate Blvd. (I-25 Exit 156A)

Colorado Springs, CO

Lots of fun for the entire family! We will have an assortment of mineral specimens, slabs for lapidary work, fossils, and finished pieces for folks to bid on. There will also be some special items of interest to capture your attention and earn a bid. Club members will be donating an assortment of homemade goodies to purchase. Come see the Museum, have fun bidding on favorite items, and take home a few goodies to eat later.

Admission: Standard WMMI Admissions apply. CSMS members and other WMMI supporting clubs admitted free.

**COLORADO MINERAL &
FOSSIL SHOW-SPRING
APRIL 22-23-24, 2011**

**Holiday Inn-Denver Central, 4849 Bannock St.
(Retail and Wholesale)**

Friday & Saturday, 10 a.m. – 6 p.m., Sunday, 10 a.m.
to 5 p.m.

Free Admission – Free Parking – Open to the Public
Minerals, fossils, gems, jewelry, beads and lapidary
Local, national, and international dealers.

31st Annual Gem & Mineral Show in SD

The Gem and Mineral Show Committee would like to invite other rock hounds to the 31st Annual Gem and Mineral Show on June 18 and 19, 2011. Why not make it a family vacation? Mt Rushmore, Crazy Horse and many other tourist attractions located within a hour of Rapid City. Feel free to contact me for more information. Looking forward to seeing you in June.

Hazel Morgan-Williams

Jewelry Designs by Morgan

2415 Judy Avenue, Rapid City , SD 57702

605-431-5491

WMMI HAPPENINGS

225 Northgate Blvd.

Colorado Springs, CO 80921

Main: 719.488.0880/Toll Free:
800.752.6558

info@wmmi.org

Hours: 9 a.m.-5 p.m., Monday-Saturday (June-August)
9 a.m.-4 p.m., Monday-Saturday (September-May)
Daily Guided tours at 10 a.m. and 1 p.m. (included in admission).

The Western Museum of Mining and Industry is a private, nonprofit museum founded in 1970. We educate over 8,000 school children a year on the importance of mining in the American West.

Heritage Lecture - Political Nature of Energy

Thursday, April 7, 7 p.m.

Robert E. Ebel presently is Senior Advisor to the Center for Strategic and International Studies (CSIS) and is co-director of the Caspian Sea Oil Study Group and of the Oil Markets Study Group. For CSIS, Ebel offers his views on world oil and energy issues, with particular emphasis on the former Soviet Union and the Persian Gulf. He has also been project director for a number of nuclear-related reports and has authored books related to energy and Geo-politics. A widely acclaimed speaker, Ebel is a frequent commentator on national and international radio and television and his views on energy issues appear regularly in U.S. newspapers and abroad. CSIS is a nonprofit, nonpartisan organization located in Washington D.C., which provides strategic insight and solutions to decision makers in government, international institutions, the private sector, and civil society. **Free and open to the public. To reserve your spot, call [719-488-0880](tel:719-488-0880) or e-mail rsvp@wmmi.org.**

Keep What You Find Gold & Gemstone Panning

Saturday, April 16, 9 a.m.—4 p.m.

Take a tour of the museum to learn how to pan for real gold and gemstones just like the prospectors of the 1800's. Each visitor gets to keep whatever treasures they find! Daily tours begin at 10:00 a.m. and 1:00 p.m. No reservations required. Museum located just off I-25 at the North Gate Exit 156A. Visit our website at www.wmmi.org for more information.



Admission: \$8 adults, \$7 Military/AAA, \$6 Seniors & Students, \$4 Children 3-12, Free to Children under 3 & Museum Members.



THINGS TO DO FROM CSMS

MEMBER PETE MODRESKI

April 22-24, Colorado Mineral and Fossil Spring Show, Holiday Inn-Denver Central, 4849 Bannock St, Denver, CO 80216; free admission and parking. For more info see http://www.mzexpos.com/colorado_spring.htm

A last P.S., just "FYI", have you seen this video about a 100-ounce gold nugget recently found in California? http://geology.com/news/2011/giant-gold-nugget-the-100-ounce-washington-nugget.shtml?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+Geologycom+%28Geology.com%29

CoCoRaHS, Community Collaborative Rain, Hail & Snow Network: all year; <http://www.cocorahs.org/>
"CoCoRaHS is a unique, non-profit, community-based network of volunteers of all ages and backgrounds working together to measure and map precipitation (rain, hail and snow). By using low-cost measurement tools, stressing training and education, and utilizing an interactive Web-site, our aim is to provide the highest quality data for natural resource, education and research applications. It's easy to join, takes only five minutes a day and is a fun way to learn about this wonderful natural resource that falls from the sky. We are striving to have 30,000-40,000 active observers by the end of 2013. COCORAHs is now in all 50 states (as well as the District of Columbia)!" Participants must register and order a high-capacity (4" diameter) rain gauge, which they will read and submit data from at approximately 7 a.m. each day. The CoCoRaHS web-site is a great source for daily measurements of local rainfall and snowfall in each community within your state or around the country; anyone can log in and access the daily data. [Let me put in an extra plug for this project; I participate, and it's a GREAT community effort! Please also check out their 2011 Rain Gauge Calendars—you can help the project by ordering one.]

Colorado RiverWatch: all year <http://wildlife.state.co.us/landwater/riverwatch/>

A program that, "...started with six schools on the Yampa and grew to cover all watersheds in Colorado and 350 schools. Since 1989 we have involved over 60,000 individuals in Colorado, provided data on 3,000 stations covering over 300 rivers. We have also grown to include individuals, watershed groups and other entities, besides schools, in our program. River Watch is a statewide volunteer water quality-monitoring program operated by the non profit 501©3 Colorado Watershed Assembly in cooperation with the Colorado Division of Wildlife (CDOW). Our mission is to work with voluntary stewards to monitor water quality and other indicators of watershed health and utilize this high quality

Continued on Page 19

Continued from Page 18

data to educate citizens and inform decision makers about the condition of Colorado's waters. Volunteers agree to monitor on a monthly basis. Samples are collected which the volunteers analyze for hardness, alkalinity, dissolved oxygen, pH and temperature. Additional samples are collected to be analyzed for total and dissolved metals..." Volunteers must register, receive training and equipment, and agree to conduct regular water monitoring in a selected local stream. All the data collected and archived are publicly accessible via their website.

Project BudBurst: springtime (and fall too); <http://neoninc.org/budburst/>

Anyone can participate. Familiarize yourself with certain native plants from a list of those growing in your geographic area, then observe and report dates you observe for first leafing or flowering of these plants. "Project BudBurst has targeted 97 native trees, shrubs, wildflowers, and grasses for you to monitor throughout the year! With your help, we will be compiling valuable environmental information that can be compared to historical records. By recording the timing of the leafing and flowering of native species each year, scientists can learn about the prevailing climatic characteristics in a region over time."

Globe at Night 2011: Feb. 21 – Mar. 6 and Mar. 22 – Apr. 4 "GLOBE at Night is an annual citizen-science campaign that encourages people all over the world to record the brightness of their night sky. For two weeks every March, when the Moon is not out during the early evening and the constellation of Orion can be seen by everyone everywhere, children and adults match the appearance of Orion with 7 star maps of progressively fainter stars found on the website, www.globeatnight.org. They then submit their measurements (e.g., which star map they chose) on-line with their date, time and location. This year the GLOBE at Night 2010 campaign (which took place March 3-16) set a record high of over 17,800 measurements from people in 86 countries."



Cripple Creek Parks and Recreation Department

Earth Science Field Classes

All of the classes are outdoor-based adventure type classes designed for people of all ages and interest levels, led by Steven W. Veatch. These field classes do carry Colorado School of Mines credit for a small fee, but that is entirely optional. The fees have been kept very low due to the poor economy.

These classes are for **everyone** interested in rocks, minerals, fossils, and geology. For teachers or others needing college credit, each field class carries 0.50 semester hours of Colorado School of Mines graduate level credit. If you desire college credit, you may register with the instructor during the start of the class and pay a small Colorado School of Mines tuition fee. If you don't need the college credit, come and spend a fun day out in the field. Register today with the Cripple Creek Parks and Recreation Department (**719/689-3514**) as these classes are very popular and fill up fast.

Field Studies in Geology: The Greater Alma Mining District (K-12)

Credit 0.50 semester credit hours

Date July 10

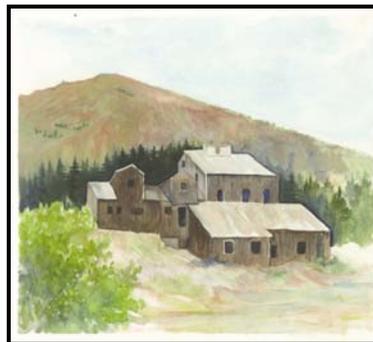
Time: 8:00am-5:45pm

Instructor: Steven Veatch

Tuition Fee: (payable during workshop for Colorado School of Mines credit—entirely optional): \$ 35.00.

Registration Fee (payable to Cripple Creek Parks and Recreation Dept., can pay by VISA via phone): **\$ 49.00.**

Registration Contact: Cripple Creek Parks and Recreation, **719/689-3514**. Registration fee includes field guide and snacks.



Explore the history of the Greater Alma mining district -- how it accelerated the settlement of the West, and the contributions the district made to the economic growth of Colorado. Life in frontier mining camps, early prospecting methods, and lode mining adapted to high elevations will be presented. Area

geology will be reviewed, including recent mineral exploration and production. Transportation from Cripple Creek to Alma and a field guide will be included.



Continued on Page 20

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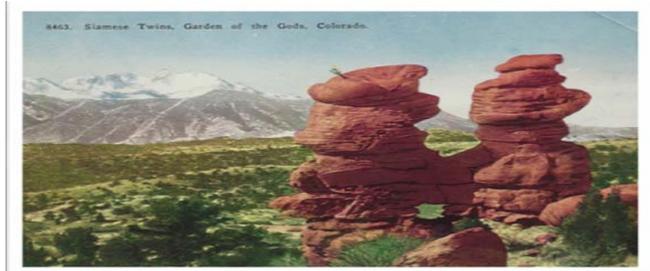
Date August 20

Time: 7:30am-6:30pm

Instructors: Steven Veatch, Lucy Bell

Tuition Fee: (payable during workshop for Colorado School of Mines credit—entirely optional): \$ 35.00

Registration Fee (payable to Cripple Creek Parks and Rec, can pay by VISA via phone, 719/689-3514.): \$ 25; cost of movie at



the Garden of the Gods is \$5. Registration fee includes field guide and snacks.

Bus will pick up participants in Cripple Creek, Divide, Woodland Park. Those who are not coming from Teller County can meet the class at the Garden of the Gods visitor center. The Cripple Creek Park and Recreation bus will provide convenient transportation to all of the sites in the park and take us to a very special place to view “injectites”—rocks formed from violent earthquakes. This is the only place in the world where “injectites” (sandstone injected into Pikes Peak Granite) occur.

This field trip focuses of the rocks at Garden of the Gods. We will start on the west side of Manitou Springs where we will look at the oldest rocks in the Pikes Peak region and then explore the magnificent rocks of the Garden of the Gods (the Fountain Formation and the Lyons Sandstone). The park's geologic history includes Colorado's "disappearing" mountain range, evidence of ancient oceans and deserts, dinosaur bones, and the uplift of the modern-day Rocky Mountains.

Field Studies in Paleontology: Dinosaur Ridge Paleoeology (K-12)

Credit 0.50 semester credit hours **Field Studies in Geology:**

Garden of the Gods (K-12)

Credit 0.50 semester credit hours

Location Cripple Creek Parks and Recreation Dept., Garden of the Gods

Location Trip begins and ends in Cripple Creek

Date October 1

Time 6:15am-5:45pm

Instructor Steven Veatch, Gregory Kats, Beth Simmons

Tuition Fee (payable during workshop for Colorado School of Mines credit—entirely optional): \$ 35.00

Registration Fee (includes transportation, lunch, and resource CD) : \$ 53.00

Registration Contact: Cripple Creek Parks and Recreation, 719/689-3514

Paleoecology relies on the use of fossils to study relationships among organisms and environments of the past. Paleontologists interpret clues to reconstruct not only what extinct animals and plants looked like but also when and where they lived and under what environmental conditions. The focus will be on the late Jurassic and Cretaceous ecology of Dinosaur Ridge and the dinosaur tracks preserved there. In the afternoon we will visit the Colorado School of Mines Museum.



INSTRUCTOR BIOGRAPHIES:

Steven Wade Veatch is a geoscientist and an adjunct professor of Earth Science at Emporia State University in Kansas where he received an MS in Earth Science. He has an MA from Webster University, St. Louis, MO. Steve is from a pioneering mining family from Cripple Creek. He lives near the Florissant Fossil Beds in Colorado.

Lucy Bell is a retired teacher and writing consultant. Lucy is a naturalist at Cheyenne Mountain State Park and a certified guide (National Association for Interpretation). Lucy Bell lives in Colorado Springs.

Gregory Kats is an interpretive ranger with Dinosaur Ridge. He volunteers working with youth and getting the outdoors. He holds a B.S. in outdoor recreation. Greg lives in downtown Denver.

Beth Simmons, PhD, is an instructor at Metro State College in Denver where she teaches geology. Beth has authored and contributed to a number of books and has made countless presentations on history and geology across Colorado. Beth has made major contributions to our understanding of the Florissant Fossil Beds National Monument and Dinosaur Ridge.



COLORADO SPRINGS MINERALOGICAL SOCIETY
“Colorado’s Mining Heritage”
Rocky Mountain Federation of Mineralogical Societies Convention
Academy Hotel
8110 N Academy Blvd.
Colorado Springs CO 80920
June 24-25-26, 2011

ADVANCE REGISTRATION FORM

(Please print or type)

NAME(S) _____ PHONE _____

ADDRESS: _____

NAME OF CLUB/SOCIETY _____

Check all that apply:

FEDERATION: AFMS ___ RMFMS ___ SCFMS ___ CFMS ___ NFMS ___ MWF ___ EFMS ___

OFFICE: Officer ___ Chairman ___ Delegate ___ Alternate ___

Editor ___ Exhibitor ___ Judge ___ Clerk ___

Other _____

ADMISSION FEES: (Children under 12 admitted free)

One Day \$ 5.00 # _____ Total \$ _____

Three Day \$15.00 # _____ Total \$ _____

* BREAKFAST with the EDITORS \$25.00 # _____ Total \$ _____

FEDERATION BANQUET \$41.00 # _____ Total \$ _____

Headquarters Hotel is the
Academy Best Western.

Total Amount Due: \$ _____

Deadline for advanced registration will be May 24, 2011. Remittance must accompany registration form.
 Make all checks payable to: **Colorado Springs Mineralogical Society**

Return to:	Attn: Editors
CSMS	
Kaye Thompson	
1830 Mesita Ct.	
Colorado Springs, CO80906	Bring your ideas or questions for a brief discussion period at the end of the Breakfast.

FORM MAY BE REPRODUCED—MAKE COPIES AS NECESSARY

COLORADO SPRINGS MINERALOGICAL SOCIETY
“Colorado’s Mining Heritage”
Rocky Mountain Federation of Mineralogical Societies Convention
Academy Hotel
8110 N Academy Blvd.
Colorado Springs CO 80920
June 24-25-26, 2011

Junior Cash Award Entry Form

This completed entry form MUST be *signed, dated and received* by the opening day of the show. Send the entry form and specimen with anyone attending the show. We will have special display space waiting for you.

Name:

Age:

Name of Club:

Exhibit space required

Example: If the specimen is mounted on a piece of plastic that is 4 x 5 inches and the label is 2 X 4 inches then the footprint of the exhibit will be 6 x 5 inches. The Junior Chairman will know that this exhibit plus margins will require somewhere around 10 x 9 inches and will arrange the exhibits in cases for the best fit.

Certification: I certify that I collected and preformed all work on this specimen and that I am a member of a RMFMS club

Signature:

Please complete all information on this sheet pertaining to your Exhibit.

**Mail to: Kaye Thompson, 1830 Mesita Court,
Colorado Springs, CO 80906
(719) 636-2978**

FORM MAY BE REPRODUCED—MAKE COPIES AS NECESSARY

COLORADO SPRINGS MINERALOGICAL SOCIETY
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PRESIDENT'S CORNER

by Roger Pittman, CSMS

Spring has sprung! April is here and that means there are only two months 'til our show. We still need helpers in all areas and both locations. Kaye is receiving applications for space and reservations for the awards banquet and editors breakfast. We'll need hosts at both of these events to set up table favors. Table favors are an RMFMS tradition and we are planning a favor that corresponds with our theme "Colorado's Mining Heritage" We won't publish what they are to keep it a surprise - another RMFMS tradition. We'll need help with the kids' area, security, hospitality, tickets, set up and tear down. You can work an hour or the entire event. Yam is planning field trips for our guests and there may be a need for drivers, especially if 4WD is needed.



Our program for April is "Pegmatites Around The State of Colorado or 23 Pegmatites in Five Days" put on by USGS's Pete Modreski. This is a program developed by Pete and Louis Sanchez-Munoc in 2010. We are looking forward to seeing and hearing about this adventure.

Our drawing will be for Mexican Quartz crystals.

FROM THE LIBRARY

by Joni Peterman, CSMS

While Frank and Ellie are on the adventure of a life time to the land down-under, Joni Peterman is staffing the CSMS library. Remember this is your library, so CSMS members take advantage of the extensive learning resource data available.

Be sure to look at CSMS website to make your selection then Email Joni at rp_colorado@hotmail.com We greatly appreciate donations from everyone. We don't accept only books; bring in DVDs, videos, and magazines, anything relative to CSMS.

This is your library. We encourage all CSMS members to take advantage of our fairly extensive inventory of reading material. Check the CSMS website to make your selection then Email or call Frank or Ellie to make your request. We appreciate all mineralogical book donations



RMFMS PRESIDENT'S LETTER

By BILL SMITH, RMFMS



We welcome the Cody 59ers Rock Club of Cody, WY, a new club in our Federation. I look forward to meeting some of their members at the Colorado Springs Show and Convention.

It is time to start getting ready for the RMFMS Colorado Springs Show and Convention. You will find Credentials for Delegates and Alternates and Proxy forms printed in this (RMFMS) newsletter (email only). We need to have all clubs represented by either having delegates attend or sending in a proxy form. If you submit a proxy form, make sure you have listed two members who will be attending the Delegates Meeting.

All executive board members and committee chairs need to get your yearly reports sent to Debbie, our Secretary, for inclusion in the Delegates Meeting packet.

I have just been informed that Dan Lingelbach, our Finance Chair, has passed away. Our deepest sympathies to his family; Dan was a long-time volunteer for RMFMS. I have placed Bob Haines on the Finance Committee. Bob is a member of the Wichita Gem and Mineral Society.

All roads lead to Colorado Springs in June!

Until next month,

Bill



ASK A GEOLOGIST

BY MIKE NELSON, CSMS



Katherine writes: *last summer we drove through Thermopolis, Wyoming, stopped for a cold drink and noticed the hot springs. Do you know anything about these? Have you visited the springs. We want to revisit this summer.*

Great question Katheine, and yes I have visited the area a couple of times, but have not “taken the cure”. In summer 1968 I was working for Texaco and examined the geology of the area in our search for black gold. Two years ago I drove through Thermopolis on the way home from Yellowstone National Park and stopped to see some of the springs; they are impressive.

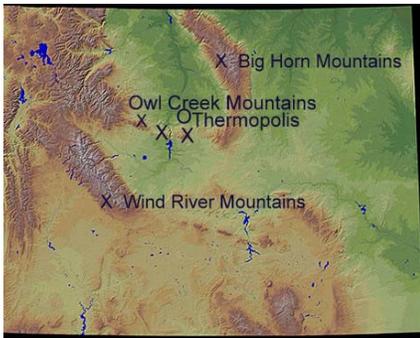


Fig. 1. Location and relief map of Wyoming. Thermopolis (denoted by O) is located on the Big Horn River north of the Owl Creek Mountains (denoted by X's). Map adapted from U. S. Geological Survey.

Thermopolis is an interesting city (pop. ~3200) located at the southern end of the Big Horn Basin on U. S. 20 (Fig. 1). The city was named after the Pass of Thermopylae, famed in Greek history as the Spartan battle ground. The word is combined from the Greek derivative which is literally translated

“City of Hot Mineral Baths” ([www.wiki.wyoming placenames.org](http://www.wiki.wyoming.placenames.org)). The Big Horn River runs through town and carves the beautiful Wind River Canyon as it cuts across the Owl Creek Mountains to the south (Fig. 2). As an interesting side-light, the Wind River changes names (to Big Horn) as it leaves the canyon flowing north! Thermopolis is a common rest stop on the way to/from Yellowstone National Park and has a



Fig. 2. Wind River Canyon south of Thermopolis (looking south as river flows north) as the river cuts through the Owl Creek Mountains and exposes formations that range in age from Precambrian through Triassic. Relief in the canyon reaches 2500 feet.

long history of thermal spring use by Native Americans and later settlers. Most of the springs were, at one time, located on the Shoshone Reservation (ceded to the



Fig. 3. Travertine “terraces” at Hot Springs State Park.

1868 Fort Bridger Treaty) but were acquired, through purchase, by the U. S. Government in 1896. The city now bills itself as home to “The World’s Largest Mineral Hot Springs” and also is home to Hot Springs State Park. In addition, there are at several other hot springs or wells in or near the city.

As the great conservationist Aldo Leopold once said, *everything is connected to everything else*. So it is at Thermopolis where all of the springs and vents are connected to the same thermal system with total discharge perhaps over three million gallons per day (Breckenridge and Hinckley, 1978). However, to a geologist, or even causal traveler, the most interesting aspect of these wells/springs may well be the related travertine deposits (Fig. 3).

The springs at Hot Springs State Park are those most visited by travelers, especially visitors wanting to “take a soak”! Most of these related waters have high concentrations of Calcium, Magnesium, Sodium and Potassium ions and make human consumption somewhat problematic. I can personally attest to gastric discomfort (especially in 105°F summer weather) after consuming similar water while working in South Dakota! The thermal springs also have fairly high concentrations HCO₃ (bicarbonate ion), SO₄ (sulfate), and Cl (chlorine). The pH usually is calculated as between 7-8 (basic), about the same as sea water.

White Sulphur Springs is one of the largest springs in the park with a temperature of ~127°F and flowing at a rate of about 200 gallons per minute (gpm) (Breckenridge and Hinckley, 1978). The name most likely comes from its content of Hydrogen sulfide (H₂S), a compound notorious for the foul smell of rotten eggs. At one time sulphur was mined from deposits near the spring.

Black Sulphur Spring in the park is now inactive but does form a pool in bottom of a 20 foot cavern with bubbling mud high in sulphur. Dye tests indicate the spring now has Terrace Spring as its outlet (Breckenridge and Hinckley, 1978).

The spring in the park that most visitors are familiar with, and the largest, is Big Spring with a temperature of ~133°F and a flow of over

Continued on Page 27

~2900 gpm (Breckenridge and Hinckley, 1978). The spring water enters a 25-foot pool and then feeds the State Bathhouse pools and pools/tubs of five commercial establishments. The commercial entities vent their water vapors via a standpipe and this action has created a really interesting phenomenon known as Teepee Fountain (Fig. 4). This feature is a 20-foot high cone of travertine streaked with algal growth, a very impressive piece of artwork.



North of town is

Fig. 4. Teepee Fountain, travertine forming around a water vapor vent pipe. The colors are produced by various algae and bacteria.

another interesting thermal feature—Sacajawea Well (Figs.5 & 6), first drilled for oil in 1918. Evidently at the 900 foot level the well hit artesian pressurized hot water that blew the drilling rig off the casing! Travertine began forming around the pipe and continues today. The well flows at 1.37 million gallons per day at ~130°F.

Travertine is a sedimentary rock, a type of chemical limestone, that usually precipitates from carbonate-rich waters associated with springs (especially thermal springs), streams (especially waterfalls), and caves.

Both calcite (CaCO₃, forms in trigonal crystal system; most stable of

calcium carbonate polymorphs) and aragonite (CaCO₃, a polymorph of calcium carbonate forming in orthorhombic crystal system; is metastable and alters to calcite) are found in travertine with the former usually found in cooler waters and the latter in



Fig. 5. Sacajawea Well located north of town at Payne's Fountain of Youth RV Park and is, according to the park, the "third largest hot mineral pool in the World". Photo courtesy of www.city-data.com

hot water (Pentecost, 2005). Travertine commonly forms when dissolved carbon dioxide (CO₂) in percolating groundwater, in this case the springs, creates a weak carbonic acid (H₂CO₃) that then reacts with limestone (CaCO₃) to form soluble calcium acid carbonate



Fig. 6. The soaking pool at Payne's RV Park. Photo courtesy of the park

[CaH₂(CO₃)] which then precipitates when the water evaporates at an exposed surface (Rogers, 2011). Pure travertine is generally white but impurities commonly impart a brown/tan color to the rock. However, the bright colors at Thermopolis are due to thermophilic (heat loving) organisms: Bacteria (Schizophyta), Blue-green Algae (Cyanophyta), and Green Algae (Chlorophyta). The algae are photosynthetic in nature and contain green chlorophyll and impart a green color to the travertine. In addition, the Blue-green Algae have a blue pigment, phycocyanin. Some, such as those at Thermopolis also contain red, yellow, brown and orange pigments (Terrell, 1978).

The Bacteria lack a cell nucleus and are non-photosynthetic but may use sulfur in the water as part of their food production. They may impart colors from white to pink/purple to yellow (Terrell, 1978).

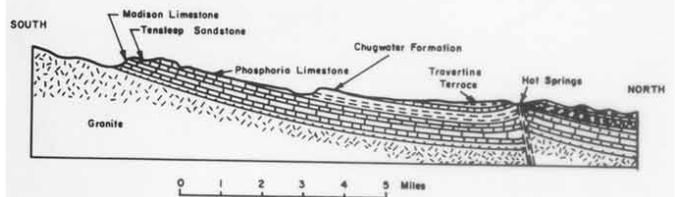


Fig. 7. Geologic cross-section through Hot Springs State Park. Sketch from Breckenridge and Hinckley (1978).

Breckenridge and Hinckley (1978) described the geohydrology of the artesian Thermopolis thermal system as follows (Fig. 7): water enters the Paleozoic rocks (all are aquifers but especially the Madison Limestone) exposed in the nearby Owl Creek Mountains. These rocks are capped by the Jurassic Chugwater Formation, a rather impervious caprock, and dip away from the mountains toward the Big Horn River. At Thermopolis a large fold, with a crest fault, appears and bring the Paleozoic rocks to the surface and the water is released under pressure. The solution conduits of the Madison Limestone are thought to be the major source of the water. The next major question involves the source of the heat. Most thermal springs are related to either water heated at great depths in the earth's surface, or heat generated from nearby igneous activity. At Thermopolis "the water has become heated because it has circulated to great depths" (Whitehead, 1996).

Continued on Page 28

Thermopolis is a great little town to visit and I plan on going back and “taking to the waters”. The price is right---free at Hot Springs State Park! In addition, the Wyoming Dinosaur Center in town is an interesting museum, and the nearby Wind River Canyon has some spectacular geologic outcrops.

Certainly travel is more than seeing of sights; it is a change that goes on, deep and permanent, in the ideas of living.

Miriam Beard

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Breckenridge, R. M. and B. S. Hinckley, 1978, Thermal Springs of Wyoming: Wyoming Geological Survey Bulletin 60.

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Terrell, T. T., 1978, Vegetation of Wyoming Thermal Springs Outside of Wyoming in Breckenridge, R. M. and B. S. Hinckley, Thermal Springs of Wyoming: Wyoming Geological Survey Bulletin 60.

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Independence Gems Spring 2011 Jewelry and Gems Show

April 10, 2011 1 p.m. to 4 p.m.

6189 Lehman Dr. Ste. 200 C/S CO 80918

Genuine sterling silver jewelry; unset genuine faceted and cabbed stones; some rough; carved stones; and much more—something for everyone. Come see some of the latest & greatest stones being introduced on the market: Ethiopian opals, Ebony opal, Red Topaz, and many more. Watch for us at CS farmers' markets!

COLORADO MINERAL & FOSSIL SHOW

~ Spring

Holiday Inn-Denver Central,

4849 Bannock Street (*where I-25 meets I-70*),

DENVER CO

April 22-24, 2011

65 top quality mineral and fossil dealers!! Minerals—Fossils—Meteorites—Gems—Beads—Decorator Items

Open to the Public * Free Admission

Free Parking * Wholesale * Retail * Delivery

Show Hours: Fri. & Sat. 10-6 /Sun. 10-5 Martin Zinn Expositions, L.L.C., P.O. Box 665, Bernalillo, NM 87004, Fax:(303)223-3478, mzexp@aol.com, www.mzexp.com

31st Annual South Dakota Gem & Mineral Show!

Hosted by the
**WESTERN DAKOTA GEM AND
MINERAL SOCIETY**

**Saturday, June 18, 9 a.m. - 6 p.m. and
Sunday, June 19, 10 a.m. - 4 p.m. at the**

**Pennington County Fairground Events
Center
Campbell & Centre St
Rapid City, South Dakota**

ADMISSION: \$3.00 adults; 12 and under free

**Camping Spaces available: Contact the Fair-
ground Office**

FOR MORE INFO CALL:

605-484-3754

605-685-4847

605-431-5491

OR EMAIL: edtilley@msn.com

Continued from last month: Courtesy of Richard Lackmond:



Sunstone Preform

Here the sunstone has been preformed into its briolette shape. You can see where there is a long natural indentation that I will develop into a curving groove in the final piece. The preform weighs 26.72 cts.

CARVING THE COMMISSIONED SUNSTONE

by Sherris Cottier Shank



Preform Side View

This photo shows the side view of the sunstone preform. The long white line that is visible on the side is the edge of a flat plane inclusion that penetrates about 2 mm into the gem. I will carve through this inclusion and incorporate it into the final design.

Marking the Carving Pattern

Here the carving is marked with the carving pattern. You can see I was working around the large indentation and using that as a design focal point.



Carving Pattern Reverse

This is the carving pattern marked on the other side of the sunstone preform. The two sides are quite different from one another. This side has several inclusions that still need to be removed. The pattern that I have chosen will carve through those inclusions while saving the best parts of the gem.



Diamond Tool Preparation

In this photo I have lightly sketched in the pattern for the carving with diamond tools on the first side of the briolette. I have also drilled the hole at the top.



Diamond Tool Sketching Continued

This photo shows the carving pattern lightly sketched in with diamond tools on the other side of the briolette. From this point on it is a matter of opening up those grooves, refining the design, sanding and polishing.



Finished Briolette

Here is the finished briolette that weighs 16.27 cts. You can see that all of the grooves are fluid and graceful and the carving circles the entire circumference of the briolette moving gracefully from side to side. The briolette style of carving allowed me to retain more of the gem weight than I originally thought possible, and to show the beauty of the gem from all angles.



Finished Briolette – Reverse

This is the other side of the briolette where you can see distinct schiller in the upper right quadrant. Schiller is caused by copper inclusions within the sunstone that shimmer and glow in the light. This side is distinctly different than the first side and the briolette can be worn to display either direction.



The clients were very pleased with their sunstone briolette, commenting “Wow-We-Wow! We’re so impressed with your work. Thank you very much.” They note that sunstone mining is very hot, but they now have the bug to do it again.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
APRIL 2011 — CSMS CALENDAR					1	2
3	4	5 7 p.m. Fossil Group	6	7 7 p.m. Board Meeting	8	9
10	11	12	13	14 7 p.m. Micromounts	15	16 10-4 p.m. Lapidary Group— 6811 Mission Rd., Sharon Holte's place.
17	18	19	20	21 7:30 p.m. General Assembly 5:20 p.m. Pebble Pups & 6:30 p.m. Juniors	22	23 12 p.m. Jewelry Group
24	25	26	27	28 7 p.m. Crystal Group 7 p.m. Faceting Group	29	30

REFRESHMENTS FOR GENERAL ASSEMBLY MEETINGS		
Feb—Crystal	Mar—Faceting	April—Fossil
May—Jewelry	June—Lapidary	July—Micromounts
Aug—Picnic	Sept—Projects	Oct—Board

Area Code 719

PRESIDENT	Roger Pittman		
VICE PRESIDENT	Kay Thompson		
SECRETARY	Joni Peterman		
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Locations

Board Meeting: 1st Thursday @ 7:00p. Senior Center, *David Olsen: 495-8720*

Crystal Study Group: 4th Thursday of the month @ 7:00p, Senior Center; *Kerry Burroughs: 634-4576*

Faceting Group: 4th Thursday @ 7:00p, Senior Center, *Paul Berry, 578-5466*

Fossil Study Group: 1st Tuesday @ 7:00p, Senior Center, *Mike Nelson, csrock-guy@yahoo.com*

Jewelry Group: 3rd Saturday @ 12:00p, 15610 Alta Plaza Circle, Peyton, *Bill Arnson, 749-2328*

Juniors & Pebble Pups: 3rd Thursday @ 5:15p & 6:30p, Senior Center, *Steven Veatch, 748-5010.*

Lapidary Group: 2nd Saturday @ 12:00p, 6811 Mission Rd., Sharon Holte.

Micromounts Group: 2nd Tuesday @ 7:00p, 1514 North Hancock, *Phil McCollum, acc@frii.com, Moyra Lyne, 442-2673*

Project Group: Meeting time TBD, *Ron "Yam" Yamiolkoski*

MARCH 17, 2011 GENERAL ASSEMBLY MINUTES

BY JENNIFER BEISEL, CSMS SECRETARY

· MEETING CALL TO ORDER

- o Call to order at 7:35 pm by CSMS President Roger Pittman

· APPROVAL OF DECEMBER MINUTES

- o Accepted and seconded as printed in Pick and Pack

· TREASURER'S REPORT

- o Presented by Ann Proctor

· LIBRARIAN'S REPORT

- o Updated by Frank and Ellie Rosenberg – the library duties will return to them in June, in the meantime the materials are kept with Joni Peterman

· VISITORS, GUESTS, NEW MEMBERS

- o No guests or new members present

· SATELLITE GROUP REPORTS

- o CRYSTAL STUDY – Ray Berry – Mar. 24th, 7 PM at Sr. Center, presenting video of Tucson Show
- o FACETING – Mar. 24th, 7 PM in Sr. Center
- o FOSSIL STUDY – Tues, April 5th, 7PM Sr. Center, open invitation to all members
- o MICROMOUNTS – Second Thurs. of the month, 7 PM at the Sr. Center, open invitation to all members
- o LAPIDARY – Sharon Holte – 2nd Sat. of the month, starting @ 10 AM ending at 4 PM, 6 machines running, new belt needed for band saw
- o JEWELRY – Third Sat. of the month, Wire Wrapping (for beginners) noon til 4 PM
- o PEBBLE PUPS – Meetings during school year – 5:20 to 6:15 PM, grade schoolers 6:30 to approx. 7:15 PM

· SCIENCE FAIR /MARCH 12

- o Winners:
 - § 1st Place - Robin Beechwood-Lefae, 8th Grade at West Middle School, Topic “Crystallized”
 - § 2nd Place – Jackson Lessig, 6th Grade at North Middle School, Topic – “The Acidity of Lichen”
 - § 3rd Place – Tyler Houston, 7th Grade at West Middle School, Topic – “Historical Preservation”
- o Roni Poteat, Jack Knoll and Roger Pittman

judged Fair

§ Also served as judges for the Assoc. of Women Geoscientists, recognizing Aleesa Muir for the topic of “Analyzing the Deteriorating Effects of Acid Precipitation on Natural Landscaping”

§ And for the Western Museum of Mining and Industry, recognizing Sophia Schneider, 9th Grade at Palmer High school on the Topic of “Can Geosequestration and Geothermal Energy Can Work Together?”

§ Also for WMMI, Daniel Garnhart, 8th Grade at Peyton Middle School, on the Topic of “The Spongiest, Hairiest, Hayiest, Oil Absorbing Experiment”

· SHOW UPDATE/ JUNE 24, 25, & 26

- o Entry forms available for competitive and non-competitive displays
- o Will be competing for cash prizes
- o Expecting display from each satellite group
- o Go to RMF website for show packets

· NEW BUSINESS

- o Planning field trips for Pebble Pups
- o Steve working with on-line Pebble Pups who are without a local club
- o Dues are need to be collected
- o Review of constitution wording for age of youngest members (amendment to constitution motion made and seconded – to be published according to by-laws in Pick and Pack)

· OLD BUSINESS

- o Call for dues, memberships must be updated and current

· NEW BUSINESS

- o Call for volunteers to assist snack lady while she is on travel – please contact Ann
- o Presentation for evening, Bob Landgraf discussed setting up show cases

· ADJOURNMENT

- o Meeting adjourned approx. 8:20 PM prior to program

Joan L. Peterman
CSMS Secretary 2011



Our Staff...

Teri Stoiber and Ann Proctor
Editors

CSMS Members Reporters

We encourage everyone to submit articles, photos, illustrations or observations.

Share your experiences, trials and tribulations, your new finds, or simply your experience at our last field trip.

The ability to write well is NOT a requirement. We will fix the grammar while keeping the author's voice, style, and work intact.

Handwrite it, type it, or email it. Format does not matter. All submissions are welcomed.

DEADLINE for items to be included is the Saturday after the General Assembly every month.

To submit an item, please use the following:

For hardcopy photos or articles, mail to the address below or bring them to the General Assembly Meeting. All hardcopy photos remain the property of the submitter and will be returned. Electronic photos should be submitted at resolutions above 200 dpi in TIF, BMP, JPG, or PIC format.

All articles not shown with an author are provided by the Editor.

Mail or email to:
blacklabaccounting@gmail.com

Pick & Pack Editors
PO Box 2
Colorado Springs, CO 80901

The PICK&PACK is published at least ten (10) times per year; 350-375 copies e-mailed/mailed per month (no issues in January or August).

Unless otherwise marked, materials from this publication may be reprinted. Please give credit to the author and CSMS PICK&PACK.

Wow, what a wonderful month—contributions from many, many talented individuals have made this a fantastic P&P to read! We have two Pebble Pup articles, a long anticipated submission from Steve Veatch, and two articles from Mike Nelson, as well as several informational pieces from various sources (many thanks to Dick Lackmond and Marg Regel, among others). This is what the P&P is all about—members sharing their interests and experiences! Please note the various events coming up, as well as member sales and more. This P&P will definitely get you wanting to get out there and start looking. That's one of the wonderful things about Colorado—winters aren't all that long, and definitely not that cold! And even in the winter, there are abundant places to find beautiful specimens, whether you're into cabbing, fossils, or any of the other myriad satellite group activities. We have one new field trip added so far, and are looking for more FT leaders. Oh, and just another reminder, we need your updated Satellite Group info and Board Member info. Please enjoy this edition of the P&P, and have a wonderful Easter. Thank you, once more. Teri & Ann

CLASSIFIEDS . . .

NOTICE—Items listed for sale in the Pick & Pack are displayed only as an informational service to our members and advertisers. CSMS and/or the Pick & Pack do not promote nor warranty any item displayed. The sellers and buyers are responsible for the condition and ownership of any item shown.

CSMS T-Shirts, Badges, and Pins are available for sale at each meeting. See Store Keeper, Ann Proctor.

Have You Picked Up Your Membership Award Pin?

If you celebrated a CSMS anniversary in 2007, 2008, 2009, or 2010, your year pin award is available from the Storekeeper, Ann Proctor. Last call for 2007 pins.



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www.csms.us

APPLICATION FOR MEMBERSHIP

- All memberships run from **January 1 to December 31**.
- Any person or corporation joining the CSMS as a new member after June 30th shall pay half of the yearly rate. Corporate Membership grants up to five (5) Individual Memberships. Any person or corporation joining as a new member after October 1st receives membership for November and December plus the following year beginning January 1. The partial year membership shall not apply toward the 25 year Lifetime Membership.
- Anyone who has previously been a member **MUST** pay the full rate each year **REGARDLESS** of the time of the year they pay their dues.
- Members who have paid their dues for 25 years will be awarded a Lifetime Membership on their 26th year. Lifetime Members receive all of the CSMS benefits and no longer have to pay the annual dues. Individual Memberships provided by Corporate Membership are excluded from Lifetime Status.
- Corporate membership grants up to 5 individual memberships and one Yearly (10 issues) 3.5 x 2" advertisement in the CSMS Pick & Pack.
- Members in good standing receive the following benefits: 10 electronic issues of the CSMS *Pick&Pack* newsletter, right to participate in all field trips (additional fees may be required on some field trips and members are responsible for all transportation to and from), participation in one or all Satellite Groups (some groups may request additional fees to help cover resource costs), free admission to the Western Museum of Mining and Industry, a year of learning and enjoyment, plus a lifetime of memories.

LAST	<input type="text"/>	FIRST	<input type="text"/>	MIDDLE	<input type="text"/>
SPOUSE	<input type="text"/>				
STREET	<input type="text"/>				
STATE	<input type="text"/>	ZIP	<input type="text"/>		
PHONE	<input type="text"/>		EMAIL *	<input type="text"/>	
	<input type="text"/>		CELL	<input type="text"/>	

HAVE YOU PREVIOUSLY BEEN A MEMBER OF CSMS NO YES WHEN

YOU ARE PAYING FOR THE YEAR

Each year the Colorado Springs Mineralogical Society publishes a Membership Directory. The directory is distributed **ONLY** to CSMS members.

Your dues **MUST** accompany this application Check if you do NOT want your name & address included

* Will and can you receive the newsletter via email? YES NO

	All Members		New Members Only	
	Before Jan 31	After Jan 31	After June 30	Oct 1 – Jan 31
<input type="checkbox"/> Junior Membership (12 –17 years old and parent is not a member)	<input type="checkbox"/> \$10.00	<input type="checkbox"/> \$15.00	<input type="checkbox"/> \$ 7.50	<input type="checkbox"/> \$10.00
<input type="checkbox"/> Individual Membership (18 and over)	<input type="checkbox"/> \$25.00	<input type="checkbox"/> \$30.00	<input type="checkbox"/> \$15.00	<input type="checkbox"/> \$25.00
<input type="checkbox"/> Family Membership (parents & dependents under 18)	<input type="checkbox"/> \$35.00	<input type="checkbox"/> \$40.00	<input type="checkbox"/> \$20.00	<input type="checkbox"/> \$35.00
<input type="checkbox"/> Corporate Membership (entitles up to five (5) Individual Memberships)	<input type="checkbox"/> \$95.00	<input type="checkbox"/> \$100.00	<input type="checkbox"/> \$50.00	<input type="checkbox"/> \$95.00

YOUR INTERESTS <i>Please check ALL that apply</i>			
CRYSTALS <input type="checkbox"/>	MICROMOUNTS <input type="checkbox"/>	PROJECTS <input type="checkbox"/>	Sometimes knowing where our members are employed or retired from helps us when we are looking for special information or guidance in our activities. This information will not be published or accessible except by the CSMS Board of Directors.
FOSSILS <input type="checkbox"/>	FACETING <input type="checkbox"/>	YOUTH ACTIVITIES <input type="checkbox"/>	
LAPIDARY <input type="checkbox"/>	SILVERSMITHING <input type="checkbox"/>	OTHER <input type="checkbox"/>	
JEWELRY <input type="checkbox"/>	PHOTOGRAPHY <input type="checkbox"/>		
METEORS <input type="checkbox"/>	FLUORESCENTS <input type="checkbox"/>		
VOLUNTEER CAPABILITIES <i>Clubs are made up of volunteers!</i>			
ARTIST <input type="checkbox"/>	CLUB OFFICER <input type="checkbox"/>	EDITOR <input type="checkbox"/>	List any other things you may be willing to do:
MAILING <input type="checkbox"/>	LOCAL SHOWS <input type="checkbox"/>	WRITING <input type="checkbox"/>	
PROGRAMS <input type="checkbox"/>	FIELD TRIPS <input type="checkbox"/>	LIBRARY <input type="checkbox"/>	
PUBLICITY <input type="checkbox"/>	WEB SITE <input type="checkbox"/>	REFRESHMENTS <input type="checkbox"/>	

I hereby agree to abide by the Constitution and By-Laws of the Colorado Springs Mineralogical Society.
 CSMS Constitution and By-Laws are available at our website: www.csms.us

Signature of Primary Applicant _____

Application Date _____

Mail this form and your payment to:

Colorado Springs Mineralogical Society
 PO Box 2
 Colorado Springs, CO 80901



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Joining the Colorado Springs Mineralogical Society (CSMS)

General Assembly meetings are held the third (3rd) Thursday of each month, except January & August, beginning at 7:30 p.m. at the Colorado Springs Senior Center, 1514 North Hancock Blvd., Colorado Springs, CO. **Visitors are always welcome.**

CSMS also offers Satellite Group meetings that allow more focused attention in specific areas of our members' interests. Our current Satellite Groups consist of the following: Crystal Study Group, Faceting Group, Fossil Group, Jewelry Group, Lapidary Group, Micromounts Group, and Pebble Pups/Juniors. For details on Satellite Group meetings, see page 30.

Yearly dues include 10 issues of the *PICK&PACK*, all field trips (additional fees may be required on some field trips, and members are responsible for all transportation to and from), participation in all Satellite Groups (some groups may request additional fees to help cover resource costs), free admission to the *Western Museum of Mining & Industry*, a year of learning and enjoyment, plus a lifetime of memories.

Individuals—\$30 Family—\$40 Juniors—\$15 Corporate—\$100 Application is on page 33.

If you are interested in joining CSMS or would like more information, we encourage you to attend our next General Assembly meeting or visit our web site: www.csms.us.