

# PICK&PACK

THE BULLETIN OF THE COLORADO SPRINGS MINERALOGICAL SOCIETY Published Since 1960

**February  
2012  
PICK&PACK  
Volume 52 Number 01**

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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American Federation of Mineralogical Societies (AFMS)  
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Colorado Federation of Gem & Mineral Societies (CFGMS)

## **Colorado Springs Mineralogical Society**

*Founded in 1936*

**Lazard Cahn**

*Honorary President*

## **Articles in this Issue:**

<b>A Petrified Cone</b>	<b>Pg 1</b>
<b>Calendars—Feb &amp; Mar</b>	<b>Pg 2</b>
<b>WMMI Happenings</b>	<b>Pg 3</b>
<b>Pebble Pups—Year End</b>	<b>Pg 4</b>
<b>District 11 Honors Pebble Pups</b>	<b>Pg 5</b>
<b>Installation of Officers</b>	<b>Pg 6</b>
<b>The Student Paleontologist</b>	<b>Pg 6</b>
<b>PEOM: GEOLOGY</b>	<b>Pg 7</b>
<b>PRESIDENT'S CORNER</b>	<b>Pg 7</b>
<b>My Interest in Colorado Geology</b>	<b>Pg 9</b>
<b>Traveling the Blue Highways: Black Hills</b>	<b>Pg 8</b>
<b>General Meeting Minutes—November</b>	<b>Pg 15</b>
<b>Silent Auction</b>	<b>Pg 16</b>



## **A Petrified Cone from the Cretaceous Defies Enormous Odds to Become Fossilized**

**By Victor Gordillo—Colorado Springs Mineralogical Society Junior Member**

The fossilization of organisms is quite an incredible process, and only occurs during exceptionally rare occasions—just as in the case of this tiny cone (Figure 1). When the conditions were perfect some 67 million years ago, this small, delicate part of a giant prehistoric tree became a part of the fossil record ("Science Olympiad: Virtual"). This prehistoric cone comes from the Metasequoia or dawn red wood tree and is one of the oldest species of seed-bearing plants.

The scientific name this fossil cone is *Sequoia dakotensis*, and goes back to the Cretaceous period. Although the genus is extant (still in existence), the species is extinct (Blume, 2007). This particular specimen was found in the Hell Creek Formation in North Dakota, a heavily studied formation containing a variety of upper Cretaceous organisms; the Hell Creek Formation is primarily in Montana and stretches into portions of North and South Dakota and into parts of Wyoming ("The virtual fossil"). The fossil cone depicted in Figure 1 is approximately ten centimeters across and is three grams in mass.

This tiny cone dropped to the ground one day long ago in the Cretaceous Period and likely rolled into a depression of some sort and remained there just a short time. This cone was then buried under sediment from an event that caused mud and sand to be washed into a depression that permitted rapid covering and burial of the cone. Over eons of time, water—infused with minerals, especially silica—penetrated the cone and slowly began to replace the organic matter of the cone with these minerals (Hamilton C & R.).

*Continued on Page 3*

## February 2012 CSMS Calendar

Thurs., **Feb 2**—*Board Meeting*, 7 p.m., Senior Center. **CANCELED DUE TO WEATHER** Tues., **Feb 6**—*Fossil Group*, . Nelson, Leader, csrockguy@yahoo.com

Sat., **Feb**—*Lapidary*—RSVP please. If you would like to cut stones, call Sharon Holte at 217.5683 for an appointment.

Thurs., **Feb 16**—*Board Meeting 6:00 p.m. General Assembly*, 7:00 p.m., Senior Center. **PARTY!!! PARTY!!!**

5:30 p.m. to 6:15 p.m. *Pebble Pups & Juniors*. Steven Veatch, Leader, 719.748.5010

Thurs., **Feb 23**—*Crystal Group*, 7 p.m., Senior Center. Kerry Burroughs, Leader, 719.210-6389

*Faceting Group*, 7 p.m., Senior Center. Paul Berry, Leader, 719.578.5466

*Project Group*—**TBD**—contact Ron “Yam” Yamiolkoski, yamofthewest@gmail.com

Tues., **Feb 7**—*Fossil Group*, 7 p.m., Senior Center. Mike Nelson, Leader, csrockguy@yahoo.com

Tues., **Feb 14**—*Micromounts*, 7 p.m., Senior Center. Dave Olsen, Leader, 719.495.8720

Sat., **Feb**, *Jewelry Group*, By reservation only. Please call, 15610 Alta Plaza Cir., Peyton. Bill Arnson, Leader, 719.749.2328

*Camera Club* is looking for a leader and meeting place, date and time. Interested? Contact Roger Pittman.

*For more information on any of the sub-groups, meetings, and other CSMS valuable information, go to our website, csms.us*

The Senior Center is located at **1514 North Hancock** in Colorado Springs.



## March 2012 CSMS Calendar

Thurs., **Mar 1**—*Board Meeting*, 7 p.m., Senior Center.

Sat., **Mar**—*Lapidary*—RSVP please. If you would like to cut stones, call Sharon Holte at 217.5683 for an appointment.

Thurs., **Mar 15**—*General Assembly*, 7:00 p.m. –9:00 p.m., *Giuseppe's Depot Restaurant*

6:30 p.m. to 7:15 p.m. *Pebble Pups & Juniors*. Steven Veatch, Leader, 719.748.5010

Thurs., **Mar 26**—*Crystal Group*, 7 p.m., Senior Center. Kerry Burroughs, Leader, 719.210-6389

*Faceting Group*, 7 p.m., Senior Center. Paul Berry, Leader, 719.578.5466

*Project Group*—**TBD**—contact Ron “Yam” Yamiolkoski, yamofthewest@gmail.com

The Senior Center is located at **1514 North Hancock** in Colorado Springs.

Tue., **Mar 6**—*Fossil Group*, Nelson, Leader, csrockguy@yahoo.com

Tues., **Mar 13**—*Micromounts*, **CANCELED / ???** Will discuss at November meeting.

7 p.m., Senior Center. Dave Olsen, Leader, 719.495.8720

Sat., **Mar**, *Jewelry Group*, By reservation only. Please call, 15610 Alta Plaza Cir., Peyton. Bill Arnson, Leader, 719.749.2328

*Camera Club* is looking for a leader and meeting place, date and time. Interested? Contact Roger Pittman.

*For more information on any of the sub-groups, meetings, and other CSMS valuable information, go to our website, csms.us*



Draft: Victor Gordillo Page 3 Although today North Dakota's ancient Cretaceous forests are long gone, they have left behind amazing badlands and stunning landscapes containing petrified tree trunks and fossil cones.



Taxonomy	
Domain	Eukaryota
Kingdom	Plantae
Subkingdom	Viridaeplantae
Phylum	Tracheophyta
Subphylum	Euphyllophytina
Infraphylum	Radiatopses
Class	Pinopsida
Order	Pinales
Family	Cupressaceae
Genus	<i>Sequoia</i>
Specific epithet	<i>Dakotensis</i>
Botanical Name	<i>Sequoia dakotensis</i>

Figure 1. A 67 million-year-old petrified *Sequoia dakotensis* cone from the Hell Creek Formation. The matrix covering this delicate fossil has been carefully removed. S.W. Veatch specimen. Photo by S. W. Veatch.—Oct 2011.

#### References Cited:

Bluemle, J. (2007, July 27). *North Dakota's Petrified Wood*. Retrieved from [https://www.dmr.nd.gov/ndgs/ndnotes/ndn3\\_h.htm](https://www.dmr.nd.gov/ndgs/ndnotes/ndn3_h.htm)  
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 Science Olympiad: Virtual petrified wood museum. (n.d.). Retrieved from <http://petrifiedwoodmuseum.org/soconiferophyta.htm>  
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The End

### WMMI Happenings

**Senior Mondays** --- February - March

Seniors age 60+ will be admitted to the museum for just \$2.50 (reg. \$6) every Monday for the months of February and March. Museum tours begin at 10:00 a.m. & 1:00 p.m. Group tours are available upon request. For more information contact us at 719-488-0880 or [info@wmmi.org](mailto:info@wmmi.org).

#### Military Appreciation Month

February 1 - 29, 2012 & Monday - Saturday - 9:00 a.m. - 4:00 p.m.

We are showing our thanks to our Military by offering free admission to active duty military that show their Active Duty ID. The rest of the family will receive \$1.00 off per person in honor of their family member.

**Heritage Lecture - Hydraulic Fracturing Panel Discussion:** Thursday, February 23, 2012

7:00 p.m. - 8:30 p.m., doors open at 6:30 p.m.

The museum is hosting a panel discussion on hydraulic fracturing. Hydraulic fracturing is a process where pressurized liquid is pumped into underground formations, causing fractures in the formation in order to release oil or gas for extraction. Representatives of industry, environmental concerns and the media will be represented.

Free and open to the public. To reserve your spot, call 719-488-0880 or e-mail [rsvp@wmmi.org](mailto:rsvp@wmmi.org).

**Western Museum of Mining & Industry / [info@wmmi.org](mailto:info@wmmi.org) // Phone: 719-488-0880**

**Fax : 719-488-9261**



## The Colorado Springs Mineralogical Society Ends the Year with Record Group

By Steven Wade Veatch

Over 27 Pebble Pups and Juniors attended the December class. Zach Sepulveda, who is interested in paleontology, joined our group as a junior member. Two junior members of the Lake George Gem and Mineral club attended to demonstrate a volcanic eruption showing how gases are an important and often overlooked part of an eruption. There were several stations set up for the Pebble Pups and Juniors to work on a variety of projects during the class. A highlight of the class was breaking open geodes to see what is inside of them. The class also looked at several fossils, including a variety of dinosaur teeth and claws.



Betty and Bill Cain provided a box of beautiful calcite specimens. All of the pebble pups were able to take home a fossil, a beautiful piece of calcite, and a geode. Jack Shimon earned his merit badge on Earth resources. It is believed that Jack has earned more merit badges than any pebble pup in Colorado.



Several Junior members and Pebble Pup Jack Shimon

It was also announced that the CSMS Pebble Pups were going to visit the Denver Museum of Nature and Science in January and meet Dr. Ian Miller, who would provide a behind-the-scenes tour of the paleontological section of the museum. Steven Veatch conducted a tour of the paleoworld and the mineral hall. This field trip to the museum is a special joint venture of the CSMS, the Lake George Pebble Pups, the Boulder Pebble Pups, and the WIPS Fossil Kids. **Photo credits:** Frank Rosenberg.



Pebble Pup Leaders Steven Veatch and Julie Shimon announced the Family Geology Day at the Western Museum of Mining and Industry in



January. The CSMS Pebble Pup table needed helpers from 10 am to 3 pm. to help with setting the table up, conducting various experiments, demonstrating exciting activities, and then packing everything up.

*The End*

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A Note From Dr. Steven Veatch

Congratulation to these very excellent students from all of us at CSMS! Their paper was published by an international magazine! Way to go, gals and guys!!



THE WORLD IS  
CHANGING.  
MEET THE FUTURE.

Nicholas M. Gledich, Ed.D. Superintendent

Linda Sanders

K-12 SCIENCE FACILITATOR

Instruction, Curriculum & Student Services

Colorado Springs School District 11

1115 North El Paso Street

PHONE: (719) 520-2034 FAX: (719) 520-2165 E-MAIL: SANDELM@D11.ORG

Jan 10<sup>th</sup>, 2012

Dear Parents and Honored Students,

Congratulations on your excellent work last year in science as you competed in the 2010-2011 Bulletin Contest for the American Federation of Mineralogical Societies! During the fall, we received word that your work with "Ancient Artifacts: Ornamental Beads from Egyptian Tombs" received a 3<sup>rd</sup> Place award in the Junior Articles bracket (Ages 12-17). Your collaborative group also won 1<sup>st</sup> Place in the Junior Articles bracket (Ages 12-17) from the Lake George Gem & Mineral Club/Colorado Springs Mineral Society!

On February 8<sup>th</sup>, Colorado Springs School District 11 Board of Education would like to recognize your group's efforts and superior work. The Board would like to announce the names of the students who participated in this competition and hand out your awards as part of the "Good News" celebration at the beginning of the Board of Education meeting.

I have received Certificates of Participation, medals, and plaques from the American Federation of Mineralogical Societies to distribute to you all. We would like to ask that all award winners arrive **no later** than 6:15 at the Central Administration Building. The Central Administration Building's address is 1115 N El Paso St, Colorado Springs, CO. 80903. The Board of Education meeting begins promptly at 6:30.

Please invite your friends and family to support your fine academic accomplishments and join us at the meeting. This is the first event of the Board session and you are free to leave after the awards have been given.

Because many of you have moved throughout the district, Mrs. Jenny Carrico from Doherty High School is helping me find you and get you this message. Mrs. Rose Tinucci will be locating students at Jenkins Middle School who were a member of this team.

Please call me if you have any questions **and let me know by February 8<sup>th</sup>** if you will be able to attend this brief awards ceremony. You may call my office phone, leave me a message, or email me of your intentions of attending on February 8<sup>th</sup>.

Thank you very much and Congratulations!

Sincerely,

Linda Sanders

Colorado Springs School District 11

Science and Health Facilitator

719-520-2034

[linda.sanders2@d11.org](mailto:linda.sanders2@d11.org)



## CSMS 2012 ANNUAL BANQUET

Thursday, January 19, 2012,  
CSMS held its Annual Banquet during which Bob Landgraf led the installation of CSMS Officers for 2012. The festive occasion was held at Giuseppes Depot Restaurant. Those attending were treated to Jack Thompson's very interesting and informative presentation of "JUST QUARTZ". Joan Peterman, who retired from the board, was presented with a plaque in appreciation of her services as the 2011 CSMS Secretary and Al Zelenak, also retiring from the board, was presented with a plaque in appreciation of his services as the 2011 CSMS Treasurer. The elaborate plaques were carved by our President, Roger Pitman. We thank Kay Thompson for organizing a very enjoyable evening.

## The Student Paleontologist: on the Pathway to Discovery

By Steven Wade Veatch

Ancient worlds, long lost and hidden behind the murky mists of time, wait for students to discover new answers most sublime—to inspect, reconstruct and peer into an ancient, primordial world: allowing student paleontologist's answers to be inexorably unfurled.

The light of knowledge burns with passion by young scholars so enthused as the exciting tools of these new scientists are imaginatively used to study fossil bones, petrified trees and cones, and an impression in shale, pollen and spores, tree ring's revelations, even a trace fossil dinosaur trail.

The fossil materials are brought back carefully in jackets to the paleo lab, where workers clean and stabilize fossils such as the impressive petrified crab. Carefully examined with a microscope and viewed on a digital screen; observations are made, hypothesis created—all based on what is seen.

Only a very small part of the fossil world has been currently uncovered—while many more fossils of all sizes and shapes are waiting to be discovered. Now it's the student's turn to work and ponder the pieces of data and reconstruct these ancient worlds and add their findings to science that will eternally instruct.



Kay Thompson organizes CSMS 2012 Banquet



President, Roger Pitman awards Joan Peterman a plaque in appreciation for her service as CSMS 2011 Secretary



Bob Landgraf conducts the Oath of Office



Jack Thompson presents "JUST QUARTZ"

Continued on Page 15





## Geology

by Jack Shimon, CSMS Pebble Pups Age 7

I like geology, geology, geology

I like geology because:

finding rocks and  
crystals and  
fossils

I like geology, geology, geology

I like geology because:

things I do like sitting in dinosaur tracks and  
climbing rocks and  
having fun with friends

I like geology, geology, geology

I like geology because:

places I go like rivers and  
gold panning and  
lots of field trips

I like geology, geology, geology

I like geology because:

using cool tools like picks and  
hammers and  
measuring tapes

I like geology, geology, geology

Geology is fun to do. Maybe you should try it too.

## PRESIDENT'S CORNER

by Roger Pittman, CSMS



### February 2012 Presidents Message

We start the New Year off with many of our members heading down to Tucson to see some of the best mineral and fossil specimens on the planet. Some of us will even purchase something to bring home. I will not be going to Arizona as I have used up my vacation time at Disney World. I hope those of you that go will share your pictures with those of us that have to stay here.

I have begun preparations for our 2012 Pikes Peak Gem and Mineral Show that will take place on June 22<sup>nd</sup>, 23<sup>rd</sup> and 24<sup>th</sup>. We will need as many helpers as possible in order to provide a quality educational opportunity for the community.

I must share some general comments about an incident that occurred during our December Jr./Pebble Pup meeting. A member approached a young man and asked him some inappropriate questions, and gave him a T-shirt also inappropriate. When I was informed of this incident I went to the police station to find out what I as CSMS President am required to do. I was required to file a police report and told to take steps to protect our children from any contact with this person. The person involved had **NOT** committed any crime! The board voted to not accept this person's application for membership for the year 2012. Under our agreement with the Senior Center all our general meetings are open to the public so this person cannot be banned from attending these meetings. Satellite meetings under our bylaws only open to members so we can prevent this person from attending those. We have informed this person that there cannot be any contact with our youth. I have talked with relatives and a friend of this person and feel in my heart that this person did not intend any inappropriate actions but may suffer from an inability to comprehend appropriate social behavior. The name of this person will be kept confidential; if you are one of the people familiar with this incident please do not gossip about it. The board will take the actions necessary to provide a secure learning environment for our youth.

*The End*

# TRAVELING THE BLUE HIGHWAYS: BLACK HILLS

Mike Nelson [csrockguy@yahoo.com](mailto:csrockguy@yahoo.com); [www.csmsgeologypost.blogspot.com](http://www.csmsgeologypost.blogspot.com)

The last two contributions to the Pick & Pack (November and December) followed my trip on Blue Highways through northern Colorado and eastern Wyoming. Blue Highways is a term coined by William Least Heat Moon, for secondary roads, often printed in blue color on Rand McNally maps. I have always been a Blue Highway sort of person, partially due to my geology interests and partially due to my general inquisitiveness of all things natural. It has been a good life.

The Black Hills of South Dakota (and some in Wyoming) (Fig. 1) have enough Blue Highways present to last most travelers a lifetime! The Hills, as they are affectingly known within the State, remain one of my favorite localities since I “discovered them” way back in 1965. As a student at the University of South Dakota I was on a field trip designed to collect mammals; however, I spent much time looking at the rocks, picking up minerals, and trying to determine when and how I could return. Since those youthful days I have returned and collected and hiked and fished and traveled Blue Highways many times. Virtually any road you chose to travel through the Hills is a Blue Highway and offers potential collecting sites at many road cut (assuming you are not in a park where collecting is prohibited). In addition, the Hills contain untold numbers of mines ranging from small glory holes to the massive Homestake. Some of these old mines are claimed; some are open. Rockhounds should do their homework before heading to the Hills and try to determine potential collecting sites. Information also may be secured from local rock shops (I found the shops in Custer and Hermosa to be very helpful), the U. S. Forest Service (USFS) office (especially Custer), and the local rock and mineral clubs in Custer and Rapid City. At any rate, check on land ownership and never enter a shaft without appropriate equipment and supervision.



Fig. 1. Satellite view of the Black Hills, South Dakota and Wyoming. The “detached” portion northwest of the main mass is in Wyoming and often termed the Bear Lodge Mountains. Note the Cretaceous hogback especially encircling the eastern flank. Image courtesy of NASA.



Fig. 2. Sketch map showing landforms of the Black Hills. Map courtesy of A. Strahler, 1987,

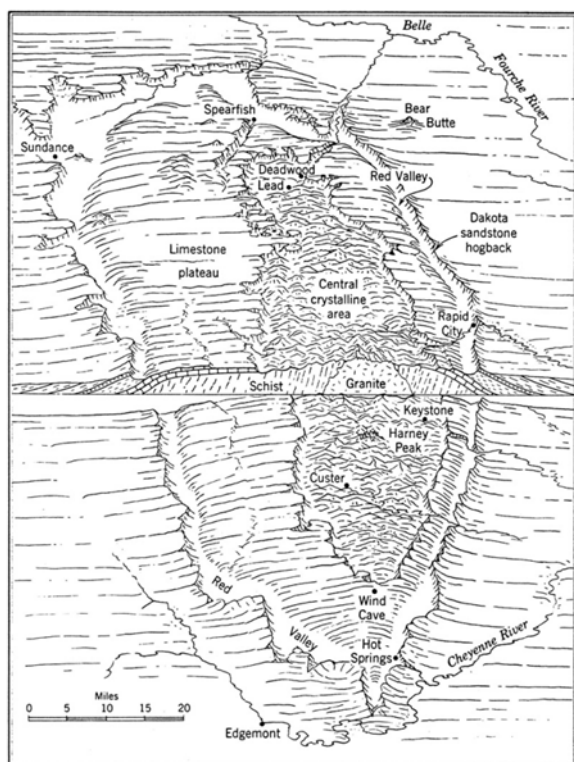


Fig. 3. The Racetrack (eroded Spearfish Formation) near Sundance, Wyoming. Note outward dipping

The Hills are a wonderful example of a Laramide (refers to the Late Cretaceous–Early Tertiary uplift of the Rocky Mountains) anticline with Precambrian rocks in the center (Fig. 2) and a nice contingent of Paleozoic and Mesozoic rocks tilting up and encircling the central core. Unlike the Laramide ranges in Colorado (for example the Front Range) and other western states, the Hills are compact with few large scale faults to “mess up” the dome. The peaks, with Harney Peak at 7244 feet, are the tallest in the lower 48 east of Fisher Peak (near Trinidad, Colorado). On the plains east of the Hills are fabulous outcrops of early and middle Tertiary rocks collectively known as the “Badlands” while the fossiliferous Cretaceous Pierre Shale crops out along many of the drainages leading away from the high hills. In addition to great exposures of rocks of many ages, the Hills have produced tremendous values of metallic ores and industrial minerals. Certainly the best known of the metals is gold (perhaps because of the ubiquitous Black Hills Gold Jewelry), first discovered by members of the George Custer army expedition near what is now Custer City in 1874. This discovery, of course, created numerous conflicts with the Native American population and many individuals on both sides of the argument lost their lives.

As one approaches the Black Hills there are two signature landforms that stand out: 1) the Precambrian rocks of the high peaks; and 2) the outer hogback standing about 400 feet higher

Continued on Page 10



My name is Luke Sattler, I am thirteen, and I live in Colorado. I have lived in Colorado my entire life and love living here because of its beauty, geology, and history. I've been interested in rocks and fossils since the age of three, and by the age of five, I had a small collection (cool rocks) that I knew nothing about.

I didn't really get interested in geology and paleontology until the age of about seven when I went to my first rock shop, "Digger's Den" in Cañon City, Colorado. While I was there I bought a few rocks and fossils that were the real start of my collection. After that day I was stuck on collecting fossils and minerals. Every time I went somewhere I would try to go to the local rock shops in town. Eventually over time my small collection grew from a dozen or so rocks and fossils to around 50 specimens. By the age of ten I was a serious collector and my allowance



**Luke Sattler, CSMS Junior Member**

The summer of 2008 was what really got me hooked on geology when I visited Yellowstone National Park in Wyoming—I was fascinated by the geological phenomena and fantastic formations. Then, in the summer of 2010, I went spelunking at the Glenwood Caverns in Glenwood Springs, Colorado and was spellbound by the caverns and how they were formed and are still forming. Of course, while I was there, I had to visit the only rock shop in town. It was in that rock shop where I bought my first Colorado rock hounding book; and that started yet another obsession—buying rock, mineral, and fossil books.



**Luke Checking out the Glenwood Caverns**

The next day I went on my very first rock hounding trip to Dotsero, Colorado to look for scoria (lava), gypsum, and selenite at the Dotsero crater (cinder cone) which was one of the last volcanoes to erupt in Colorado, around 4000 years ago. From that day on I have been going rock hounding whenever possible. My knowledge in geology increased just from going on rock hounding trips and rock shops, but by the age of 12; I acquired many geology books. From reading them I am on track to know almost all of the rocks, minerals, and some fossils.



I have since joined the Colorado Springs Mineralogical Society (CSMS), and that has helped me learn even more about rocks, minerals, and fossils, and how they form. Through a joint project with the CSMS youth program (Pebble Pups and Juniors) and the Lake George Gem and Mineral Club's youth program, I was part of a research team that studied ancient Egyptian artifacts. I co-authored an article about these artifacts made of garnets, lapis lazuli, chalcedony, and copper that appeared in the well-known *Deposits* magazine that is published around the world. The article on the Egyptian artifacts won first place in a writing contest sponsored by the Rocky Mountain American Federation of Mineralogical Societies.

I would not be able to co-author the article without the help of my CSMS youth leader Steve Veatch,

Continued on pg 10



as he is the one who gave us the chance of being published authors. Without Steve, we would not have been published authors or be so interested in geology. He has kept us interested and engaged in geology by making the meetings fun, full of hands-on activities, and interesting. Steve also makes CSMS awesome by taking us on field trips to the museums and taking us rock hounding at very good sites.

I also have to thank my parents and grandparents for helping my interest in geology stay alive. They were the ones who were willing to drive out of their way just to go rock hounding, and they also partially funded my collection. I can thank my grandparents for also going rock hounding and taking me to CSMS meetings and field trips.

*The End*



**Luke's writing awards from the AFMS and**

Traveling the Blue The Blue Highways: Black Hills Continued from Page 8

than the surrounding plains (Fig. 2). The latter is composed of an erosion-resistant Cretaceous sandstone unit termed the Lakota Formation capping the hogback with the Fall River Sandstone forming the front dip slope (away from the hills, remember the Black Hills are a large anticline or dome). Inside of the hogback is a feature known to many travelers—the Red Valley or the Racetrack (Fig. 3). This feature is a strike valley in the Permian-Triassic Spearfish Formation. That is, the redbeds of the Spearfish have eroded away between the outer (dipping away) Cretaceous hogback and the inner, massive Paleozoic Minnekahta Limestone (also dipping away). The Racetrack was an “easy” place to build railroads as well auto roads. The Spearfish Formation represents deposition of the “drying up” and receding great Paleozoic seaway. The waters became quite saline and redbeds and gypsum were left behind. Today the massive gypsum (alabaster) is quarried at several localities, and a few selenite crystals are sometimes located. It is easy to collect alabaster, especially in exposures along I-90 between Rapid City and the Wyoming state line (where the highway travels through the Racetrack).



Fig. 4. Satellite image of Mt. Rushmore and Harney Peak Granite. Note intersection joint patterns in granite. Image courtesy of Flash Earth.

Perhaps the best known of these Precambrian units are: 1) the Harney Peak Granite that contains the presidential “faces” at Mount Rushmore (Fig. 4) and the Needles Highway (make a loop on Blue Highways US 16a, SD 87, SD 244); and 2) the Precambrian rocks exposed at the Homestake “open cut” in the town of Lead (Blue Highways US 85; US 14a). The latter site is a fascinating place to visit and is easily accessible in the “middle” of Lead (Fig. 5). A small museum next to the cut offers information. And, for history buffs, Lead is next door to Deadwood (remember Saloon #10 and a “Dead Man’s Hand”) where modern-day miners are usually successful in removing gold from the visitors (in the numerous casinos).

For rockhounds exploring the Hills, the Harney Peak Granite is a paradise since in excess of 20,000 pegmatites have been identified in and surrounding the intrusion, and these units contain at least

The Central Black Hills, the high peaks, have several different Precambrian units exposed with dates on the major terranes as follows (Gosselin and others, 1988; Hark, 2009): the Little Elk and Bear Mountain Terranes ~2.5 Ga (Archean) and are part of the Wyoming Craton (see December Pick & Pack); the Little Elk also has some radiometric dates of ~1.85 Ga (Proterozoic) associated with the Trans-Hudson orogenic event; the Boxelder Creek metaconglomerate with a date of ~2.5 Ga has detrital zircon dates of up to ~3.37 Ga (indicating the zircons came from older rocks); the Bogus Jim intrusive rocks with a date of around 2.0 Ga and represents is a maximum age for the Homestake gold; and the Harney Peak Granite is ~1.7 Ga.



Fig. 5. The Homestake Mine open cut at Lead. Precambrian rocks (dark) are cut by Tertiary rhyolite dikes (light).

Continued on Page 11



175 mineral species (Gries, 1996)! I have collected in the Hills, off and on, since my graduate school days at the University of South Dakota in the mid 1960's. My collection is not large, but I find the specimens fascinating (I am easy to please) and will describe a few.

One of the most spectacular mines in the Black Hills is the Etta Mine near Keystone, now in private hands and off limits to visitors. The Etta, originally a mica mine in a pegmatite, has produced monster crystals of spodumene, a lithium aluminum silicate. Hess (1939) noted that *huge crystals of spodumene are mixed at every possible angle like toothpicks in a translucent gel* (quartz). In 1904, a crystal 42 feet long and 3 feet by 6 feet in cross section was found...The crystal weighed about 65 tons. On a field trip I collected a nice piece of spodumene with a green sheen but it was not gemmy.

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Of greater interest to rockhounds is the source of three gemstones—kunzite, hiddenite, and triphane, although the latter name is not in common usage. Kunzite is pink to lilac in color due to small amounts of manganese. Hiddenite, perhaps best known from the mines in NC, is the emerald green variety with the color coming from chromium. Triphane, the colorless to pale yellow variety, receives any color from iron. Roberts and Rapp (1965) reported all three gems from pegmatites in the Hills. I have kunzite, very pale pink, from the Tin Mountain Mine and a clear variety from the Helen Beryl Mine. The specimens are all small cleavage pieces and were collected in the 1960's (Fig. 6).

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The Tin Mountain Mine is located about seven miles west, on US 16, of Custer, then north on a Forest Road 287 (.25 mi) and east on FDR 265 (.5 mi). The mine may or may not be available for collecting the dumps; check with the local USFS office. The mine commercially produced several lithium minerals, plus the "rare cesium mineral pollucite", from a complex pegmatite Gries, 1996).

US 16, between the city of Custer and the Wyoming state line is a wonder scenic road with several areas available for collecting, including perhaps, if available, the Tin Mountain Mine.

In road cuts immediately south of Custer, are some really nice tourmaline-mica pegmatites. The host pegmatites are speckled with black (iron-rich) prismatic crystals of schorl tourmaline (Figs. 7, 8) and large books of muscovite and biotite (Fig. 9). In fact, I believe the pegmatites of the Black Hills may be the "easiest" place to collect fine crystals of these minerals, as well as large books of biotite.

Between miles six and seven on US 16 are fantastic exposures of a wavy, shimmering micaceous schist along the west side of the road (Fig. 10). At the seven mile mark and west along FDR 287, the schist produces "gemmy, transparent, ruby-red modified dodecahedral crystals of almandite [almandine garnets]" (Roberts and Rapp, 1965). These garnets are the iron-rich end member of a solid-solution series with pyrope garnets having magnesium substituting for the iron. They may be collected in the schist host rock or loose in the sediment.

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Fig. 6. Gemmy spodumene with pale pink kunzite and two fragments that are clear.

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Continued on Page 12

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Brian Paterson, Webmaster

To contact an officer or chairperson, go to [csms.us](http://csms.us), click on Board Members, and, if their name is underlined, click on it.

### Sub-Group Responsibilities for Refreshments for

Feb.— Crystal	Mar.— Faceting	Apr.—Fossil
May— Jewelry	June— Lapidary	July—Micromounts
Aug.—Picnic	Sept.—Projects	Oct.—Board

rich end member of a solid-solution series with pyrope garnets having magnesium substituting for the iron. They may be collected in the schist host rock or loose in the sediment.

The Teepee Canyon agate locality, in the Paleozoic Minnelusa Formation, is located west of Custer along U. S. 16 about two miles west of Jewel Cave National Monument, or perhaps 14 miles from Custer. The agate diggings are very evident since prospectors must quarry out large pieces of limestone and then break out the cherty nodules, some large and some small. Large crack hammers, pry bars, leather gloves, and eye protection are required. The agate localities, both in Hell Canyon and Teepee Canyon, are located on USFS land and are open to collectors, at least during my last visit. I found some really “poor excuses” for agates (mostly due to lack of time, I think) so ended up at the local Custer rock shop. However, I will return!

The Bob Ingersoll Mine near Keystone is “a mine with more varieties [minerals] than Heinz has pickles” (Johnson, 1989). I once saw miners “highgrading” nice beryl crystals, most likely for the beryllium since the mineral is a beryllium aluminum silicate, or perhaps for their aesthetic value since they were beautiful six-sided crystals. They actually gave me a small hexagonal crystal that has small patches that are close to green (probably colored by chromium) gemmy. In the early 1900’s, a large beryl crystal was exposed at the Ingersoll, a nearly perfect hexagon 46 inches across the face. In 1933, another crystal was found that measured nine feet high and over eight feet wide and produced 24 tons of ore (Loomis, no date). The Ingersoll also was an important producer of lepidolite, another lithium mineral (potassium aluminum lithium silicate and a “mica”).

Another interesting specimen from the Bob Ingersoll, collected decades ago, is a large piece of muscovite with a crystal of tourmaline enclosed. This crystal does not appear 3-dimensional, but almost flattened (Fig. 11). It is tough to tell the variety of tourmaline (without taking apart the muscovite);



Fig. 7. Pegmatite exposed south of Custer showing tourmaline (schorl) crystals enclosed by host rock. Photo represents about six feet, top to bottom.

Continued on Page 13



however, I believe it is el-  
At any rate, a 'weird'

As previously stated, al-  
tites in the Black Hills have  
mica (both muscovite and  
Custer, immediately across  
ter, currently mines potas-  
ceramics and tile. During  
close looks at their large  
essing both for feldspar and  
pressive (Fig. 12).

Microcline feldspar is one  
in the Black Hills; however,  
greenish-blue amazonite  
Pikes Peak pegmatites. I do  
13) collected in 1966 from, I  
near the Etta Mine near  
diately after World War II the Black Hills were the second leading producer of feldspar (NC was first). And, at one time, the Black Hills produced about one-third of the mica in the United States (Loomis, no date).

The State Mineral of South Dakota is rose quartz, and the Black Hills of produced  
"millions of tons". In fact, collectors from "around the world" head to the Hills when  
looking for specimens (Fig. 13). The Scott Rose Quartz Mine, southeast of Custer, has



Fig. 10. Micaceous, garnetiferous schist collected near Custer.

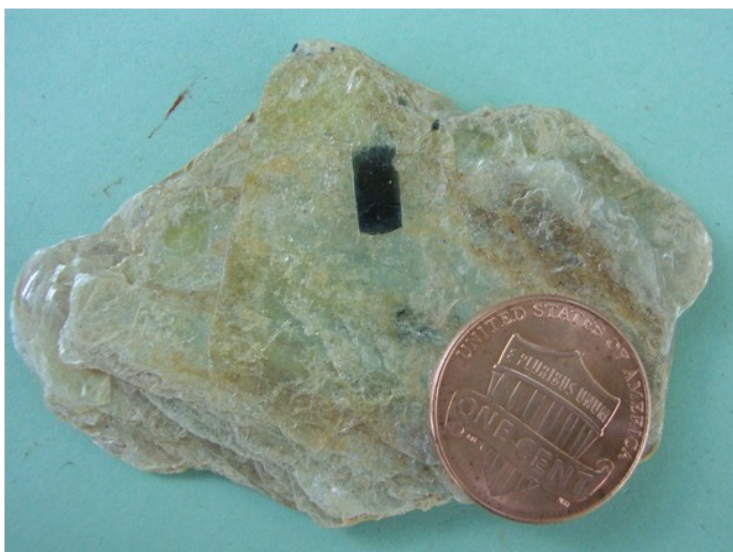


Fig. 11. Muscovite crystal with enclosed tourmaline. Bob Ingersoll Mine.



Fig. 8. Well developed tourmaline, schorl, crystals from

produced more rose  
quartz than any other  
mine in the world  
(Roberts and Rapp  
(1965).

Gold is still located in  
the Black Hills and in  
2010 two prospectors  
found a 5.7 oz. (troy)  
nugget. My panning  
find last year consisted  
of three flour flakes of  
the mineral from a  
stream near Custer!  
However, be aware that  
most gold panning in the  
Hills is done at "fee"  
sites.

In summary, the Black  
Hills are a paradise for  
mineral collectors and  
Farrar (2002) noted they  
contain approximately  
390 different minerals.

Many of these come from  
the hundreds of mapped  
pegmatites, with accom-  
panying mines and dumps, that are scattered throughout.  
Nice road cuts are abundant and produce a wide variety of  
really nice specimens. The Hills have a network of roads,  
most are Blue Highways that will take the rockhound into the  
inner depths. But, collectors should be aware that many/most of the  
old mines are on private property and/or have active claims. My ad-  
vice is to visit the local rocks shops and the Custer office of the USFS.

baite (faint pink-red color).  
specimen.

most all outcrops of pegma-  
nice crystals of feldspar and  
biotite). Pacer Minerals at  
from my campground in Cus-  
sium feldspar that is used in  
my evening hikes I took some  
bounders brought in for proc-  
muscovite and they were im-

of the most common minerals  
very few of the specimens are  
such as collected in the local  
have a very nice crystal (Fig.  
believe, the Hugo Mine (very  
Keystone. During and imme-



Fig. 9. Books of biotite collected from near Custer.

Continued on Page 14



# REFERENCES CITED AND OTHERS

A short article like this cannot begin to list all of the collectable minerals or localities, so I would suggest the following references prior to visiting (or just for a great learning experience):

Dakota Matrix Minerals: [http://www.dakotamatrix.com/Black\\_Hills\\_pegmatites.asp](http://www.dakotamatrix.com/Black_Hills_pegmatites.asp)

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Johnson, A. I., 1989, Western Mining in the Twentieth Century, Oral History Series: University of California, Berkeley, California.

Roberts, W. L. and G. Rapp Jr., 1965, Mineralogy of the Black Hills: South Dakota School of Mines Bulletin 18.

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Zeitner, J. C., 1998, Midwest Gem, Fossil and Mineral Trails: Prairie States: Baldwin Park, CA. Gem Guides Book Company.



Fig. 12. Small boulder of pegmatite almost completely compose of muscovite. From near Custer.



Fig. 13. Well developed crystal of microcline, var. amazonite. From Hugo Mine.



Fig. 13. Rose quartz collected near Custer

*The End*



### Colorado Springs Mineralogical Society

#### Minutes 11 November 2011

The meeting was called to order at 7:30 pm. The business portion of the meeting was postponed until after the presentation.

Richard Parsons provided an interesting presentation on Micromounts. [He educated us on collecting and studying skills.] His contact information is

[www.rocky-mountaini-micromineral-association.com](http://www.rocky-mountaini-micromineral-association.com).

A feast of refreshments were provided by all and enjoyed by all.

Business: Call to order at 8:30 pm.

Introduction of new members and guests.

Club President Mr. Roger Pittman announced that Mr. Ray Berry had won an award for \_\_\_\_\_. Congratulations were demonstrated by happy applause although Mr. Berry was not there to enjoy the praise.

Mr. Pittman announced that the December meeting will feature a simple (wrapped) gift exchange and all are asked to bring a food item to share.

The January installation banquet will be held on Thursday, 19 January 2012, at 6pm at Giuseppe's. The menu will feature an Italian buffet.

Treasurer Ann Proctor reported that she has received some refund money from the Cripple Creek Gold Mine.

Ms. Proctor reminded members to pay their 2012 due by 31 December 2012. If dues are paid after that date the rate will increase approximately [ \$ ] per category.

Ms. Sharon Holte, co-editor of the Pick and Pack, explained that newsletter submissions are accepted most easily in 9 or 9.5 point size. The type face itself does not matter. (Note: There are 72 points in a one-inch text letter. Although 9-point type might be difficult to see on your computer screen it is the best for file portability. Ms. Holte also requests that authors indicate where pictures and graphics should be placed within the text. Submissions may be sent in .pdf format.

The crystal study group will not meet in December but will resume its meetings in January 2012.

The Fossils study group will not meet in December, 2011 and will resume its regular meetings on the [first Tuesday of each month] recommencing January, 2012.

The Faceting club will meet next in January, 2012.

The Jewelry group will meet next at \_\_\_\_\_.

The Pebble Pubs group meets on the 3<sup>rd</sup> Thursday of each month, and will reconvene in January, 2012. This group is targeted for children ages 6-12. Field trips are not yet scheduled for this group.

Sharon Holte and Kim \_\_\_\_\_ hope to offer a wire-wrap jewelry class sometime in December 2011. Information will be sent in a Blast-o-gram. For more information contact Sharon Holte at [Sholte@csu.org](mailto:Sholte@csu.org).

The 2012 CSMS Executive Board Ballot was voted on and approved as follows:

Continued on Page 16

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President	Roger Pittman
Vice-President	Kaye Thompson
Secretary	Jean Miller
Treasurer	Ann Proctor
Editors- Pick n Pac	Sharon Holte, Ellie Rosenberg
Membership Secretary	Veronica "Roni" Poteat
Member-at-Large	Mark Lemesany
Member-at-Large	Jack Thompson

Mr. Mike Nelson has created an interesting survey designed to solicit and encourage leadership for planning interesting meetings and activities.

Many thanks to member Mark Lemesany for bringing an interesting display of lab-created minerals, including

Thanks to the generous individuals who provided interesting raffle items.

Mr. Mike Nelson commended Ms. Holte and Ms. Proctor for their outstanding work with the Pick n Pac and recognized Ms. Teresa Stroebel for her previous valuable contributions.

### ***Sub-Group Briefing***

Crystal Sub-Group:

*Minerals of El Paso County*, is a power point presentation developed by and presented by Kerry Burroughs at our last sub-group meeting. Kerry literally talked for two hours and could have kept us listening for another two hours. Did you know that there are 117 confirmed minerals in El Paso County and possibly at least 17 more that have yet to be verified?

**We sure could use more articles for this page. Sub-group leaders have you appointed a scribe?**

## THE THIRD ANNUAL **CSMS SILENT AUCTION & BAKE SALE AT WMMI**

**Sponsored by the Colorado Springs Mineralogical Society**

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# PICK & PACK

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Sharon Holte & Ellie Rosenberg—  
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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. Articles are preferred in word. Editors will correct font and type.

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

E-Mail to: preferred  
SHolte@CSU.org & Sharon-RocksCo@gmail.com

Mail to:  
Pick & Pack Editors  
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Colorado Springs, CO 80901



CSMS 2012 BOARD OF DIRECTORS FROM LEFT TO RIGHT: Ellie Rosenberg, Co-Editor; Jack Thompson, Member at Large; Sharon Holte, Co-Editor; Kay Thompson, Vice President; Ron Yamiolkoski, Past President; Mark Lemesany, Member at Large; Roger Pitman, President; Ann Proctor, Treasurer; Roni Poteat, Membership Secretary, Jean Miller, Secretary The End

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.

## Classifieds

### CSMS

#### T-Shirts, Badges, and Pins

are available for sale. See Store Keeper, Ann Proctor.

### Hurry! Hurry!! Hurry!!

#### Have You Picked Up Your Membership Award Pin(s)?

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

More advertisements please!!

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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 and at [csms.us](http://csms.us)