The Lake George Gem and Mineral Club -

Club News, March, 2010

Regular Meeting of the Lake George Gem & Mineral Club
Saturday, March 13, 10:00AM
Lake George Community Center

Directions: The Lake George Community Center is in the yellow metal building on the north side of US 24, shortly after you pass the Ferrell Gas yard. Please Note: Dues are Due. If we don't receive your 2010 dues, you will not receive next month's newsletter!

Loren Lowe will present the March program: **"The Elusive Gold of Antelope Springs"**. "In the early 1900s, an eastern mining company claimed over 5000 acres in South Park for the purpose of gold production. Today, the area sits quietly as people drive by not knowing of the mining activity that has taken place. The presentation will talk about the history of the area and the remnants that still exist today, over 100 years later."

Help the Club treasury: Bring your duplicates for the Silent Auction!

Coming Events

International Gem & Jewelry Show, Denver Merchandise Mart, $7 admission	**... March 6-8**
Monthly meeting, Columbine Gem & Mineral Society; 6:30PM, Shavano Manor, 525 W. 16th (at J St.), Salida	**... March 11**
Monthly meeting, Denver Gem & Mineral Guild; 7:30PM, Berthoud Hall, Rm. 109, Colo. School of Mines, Golden	**... March 12**
Free USGS GPS/Map/Compass Class, Bldg. 810, Denver Federal Center, Lakewood; call 303-202-4689 to register	**... March 12**
"What's This Rock?", 7PM, Lookout Mountain Nature Center, Golden; call 720-497-7600 to register (Free)	**... March 12**
Monthly Meeting, Colorado Springs Mineralogical Society: 7:30PM, Colorado Springs Senior Center, 1514 N. Hancock Ave., Colorado Springs	**... March 18**
Monthly Meeting, Pueblo Rockhounds: 7:30PM, Westminster Presbyterian Church, 10 University Circle, Pueblo	**... March 18**
Fort Collins Rockhounds 48th Annual Mineral Show, Lincoln Center, 417 W. Magnolia St., Ft. Collins; $3 adult admission; contact Dave Halliburton 970-493-6168	**... March 26-28**
Silent Auction, 7PM, Flatirons Mineral Club, West Boulder Senior Center, 909 Arapahoe Ave., Boulder; all welcome	**... April 8**

Silent Auction, 6:45PM, North Jeffco Gem & Mineral Club, North Jeffco Senior Rec. Center, 6842 Wadsworth Blvd., Arvada ... **April 9**

"Rocks and Minerals Auto Tour", 9AM, Lookout Mountain Nature Center, Golden; call 720-497-7600 to register (Free) ... **April 20**

Colorado School of Mines Museum Garage Sale, 1310 Maple St., Golden; 9AM-4PM ... **April 18**

Colorado Mineral & Fossil Show, Denver Central Holiday Inn, 4849 Bannock St. (I-25 and I-70), Denver; free admission and parking ... **Apr. 23-25**

Wichita Gem & Mineral Society 57th Annual Show, "Tri-State Treasures", in conjunction with the **Rocky Mountain Federation of Mineralogical Societies Annual Convention** ... **Apr. 23-25**

Gem & Mineral Club New Member Orientation, by Steve Veatch and others, Western Museum of Mining and Industry, 10AM-2PM (Free, bring your lunch) ... **April 24**

Combined Pebble Pups Field Trip at Florissant Fossil Beds N.M. and Florissant Fossil Quarry, by Steve Veatch; Cost is $13; details to follow ... **June 19**

Denver Museum of Nature & Science Lecture Series:

March 3: "Future Discoveries of Exoplanets", by Ka Chun Yu, 12:15PM, Ricketson Auditorium

March 10: "Digital Earth: Explore the World From Space by Ka Chun Yu, 12:15PM, Ricketson Auditorium

April 7-24: "Trace Fossils: Tracks, Trails, Burrows, and Bites", Short Course by Greg McDonald, Wednesdays + Sat., April 24 field trip. Cost: $110 mbrs, 140 non-mbrs. Contact the Museum for more info.

Club News

♣♣ We're saddened to hear of the death of member **Mark Verburg**. The following was sent in by our Secretary, **Marge Breth**:
A former member of the Lake George Gem and Mineral club, Mark Verburg, passed away in Big Rapids Michigan February 8, 2010. He was 46 years old. His funeral service was held in Trinity Bible Church in Croton Michigan February 12th.

He is survived by his wife Diane Verburg of Newaygo, MI, his daughter Stephanie Verburg of Detroit and his Son Arron & Stephanie Dood of Newaygo. Harold Leipold stated his wife packed up his rocks and crystals and buried them with him.

He was a self employed Plaster/Drywall finisher, a member of Trinity Bible Church in Croton, a member of American Legion Post # 381 SAL. Diane Verburg can be reached at: 5827 S. Croton Hardy Drive, Newaygo, MI 49337

♣♣ President **John Rakowski** sent the following information about the Cretaceous-Tertiary boundary layer at Trinidad State Park:
Rock hounds and geology enthusiasts from all over Colorado are aware of the K-T boundary formation at Trinidad Lake State Park. This unique geology has even been the subject of documentaries on the Discovery Channel. If your organization has yet to visit the K-T boundary, this is an invitation to check it out.

Recent upgrades to our camping facilities, including electric sites in our group camping area and a brand new camper services building, can turn a day trip into an even more enjoyable camping excursion focused on the geology of Southern Colorado. A bit of information about the K-T

boundary—located in the Long's Canyon Watchable Wildlife Area at the west end of the park—can be found here: http://www.colorado.gov/parks/trinidadlake/nature/.

To familiarize you with group facilities at our park, I have attached a one-page digital flyer. For more information about our park, including the K-T boundary, feel free to call us at 719-846-6951, send an email to greg.calvert@state.co.us, or visit us on the web at www.colorado.gov/parks/trinidadlake.

Attracting more than 11 million visitors per year, Colorado's 42 State Parks are a vital cornerstone of Colorado's economy and quality of life. Colorado State Parks encompass 242,531 land and water acres, offering some of the best outdoor recreation destinations in the state. Colorado State Parks also manage more than 4,000 campsites, and 57 cabins and yurts. For more information on Colorado State Parks or to purchase an annual pass online, visit www.colorado.gov/parks.

Sincerely,
Greg Calvert
Administrative Assistant
Trinidad Lake State Park

♣♣ **Gerdy and Dave Wyatt** sent me an article from the Bulletin of the Huntsville Gem & Mineral Society that's a bit too long to include here, but that tells about an innocent staurolite collector in Georgia being arrested for collecting in a state park there. The bottom line is "Make sure you know your state's regulations on collecting."

♣♣ Following up on a question at last month's meeting, **Dick Lackmond** sent me a great link for information on flexible sandstone (itacolumite, for you word fans). It's at the Dirtyrockhounds.com website.

♣♣ Vice President **Dan Alfrey** sent me a draft agenda for the "New Member Orientation" by Steven Veatch at WWMMI on April 24. Here's a list of possible topics:
1. Value of belonging to a club
2. Geology of the Pikes Peak region
3. Tools for going out into the field and collecting
4. Gold panning
5. Looking at maps
6. How to build a rock and mineral collection
7. Gold panning
7. How to build a rock, gem, mineral, and fossil collection

I will provide a short tour at the end. Let me know if you have any thoughts about my suggested programming as soon as you can. I need to finalize all of this so I can get advertising out in our newsletters. I am planning this to be more of a conversational / interactive workshop rather than a strict presentation style. I am thinking that a few of our senior members will come to the workshop and help with the discussions. **Steve Veatch**

♣♣ **Dan** also noted that we need field-trip leaders and ideas for this summer. Please bring your ideas to the March meeting.

Pebble Pups Corner

Seven Pebble Pups and their family members came to the February 9 meeting, where **Steve Veatch** talked about the basics of starting a mineral or fossil collection. Steve stressed the importance of labeling specimens, and, in particular, keeping track of where the specimen came from. The kids received free samples and a "starter kit" for getting their collections organized. The March 9 Pebble Pups topic will be "How Do You Drill an Oil Well", by **John Rakowski**.

Thanks to **Al and Sue Barnes** for their donation of a bag of potassium feldspar crystals from Mosquito Pass, above Leadville.

Once again, the Pebble Pups group encourages any members who want to "sit in" to come to the meetings on the second Tuesday of the month, at 6:00PM. We are still looking for specimens to give to the kids at the meetings, so go through that pile of rocks in your garage and see what you can spare. Remember, we're looking for 8 to 10 samples of each.

TES FROM THE EDITOR

Bob Carnein, Editor
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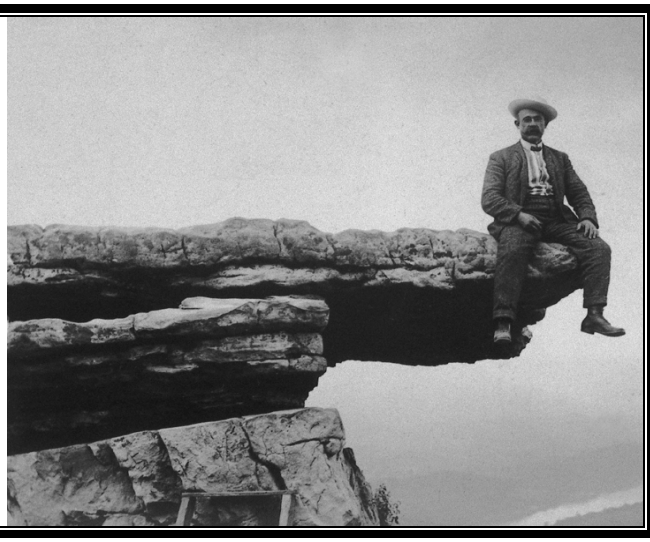

Most of us have drooled over geodes at mineral shows and in museums. I thought it might be worthwhile to put together two articles on geodes for the March and April newsletters. The first is included below. Hope you enjoy it! (P.S., I'm still looking for articles to include in future newsletters. If you have an idea and need help, get hold of me!)

GEODES by Bob Carnein

Introduction. Geodes are one of those things that often jump-start a life-long interest in minerals and gems. Kids and adults get a thrill out of cracking or sawing an ordinary looking rock and being the first to see what's inside. Even advanced collectors can get a kick out of finding some rare mineral nestled among the more common quartz or calcite crystals in a "typical" geode.

Geodes are found at many localities, in both igneous and sedimentary rocks. The two rock types reflect two quite different modes of origin for them. In this two-part paper, I will introduce those origins and summarize the minerals that occur in each.

Here are some things that most geodes have in common:

- Shape: often more or less spherical, but they may be flattened or elongate. Note, however, that fractures or veins lined with crystals are not geodes. For example, the hollow, crystal lined cavities of Crystal Peak are normally called ***vugs***.
- "Hollowness": We usually think of geodes as hollow and lined with crystals. However, at some localities, although they started out hollow, 90% or more of them are completely filled. Some people call such an item a ***nodule***; these may be filled with agate or with intergrown quartz crystals.

An agate nodule (Agate-Nodule.com)

Nodule filled with coarsely crystalline quartz

- Lining: Most geodes are lined with chalcedony (microcrystalline translucent quartz) or agate.
- Mineral Filling: Dozens of different minerals occur in geodes, but the most common are quartz and calcite.

Agate lined geode (Manchesterminerals.co.uk)

Calcite Crystals in Quartz Geode (sfgms.org)

<u>Geodes in Igneous Rocks</u>. Igneous rocks form from ***magma*** (molten material beneath the Earth's surface). Because magma originates beneath the surface, it forms under intense pressure. This allows the hot magma to dissolve various compounds that would convert to gases if they were nearer the surface, where the pressure is lower. These compounds are collectively called ***volatiles*** (pronounced voll'-uh-tills). The volatile compounds remain dissolved as long as the pressure is maintained, much as the carbon dioxide in a bottle of Coke or beer remains dissolved until you pull the tab or pop the cap.

<u>Where do volatiles come from, and what are they made of</u>? The commonest volatile in magma is water. There are three major sources of this water. Unfortunately, this gets a little

complicated, so please bear with me.

(1) Scientists think that, when the Earth formed, it was consolidated from a cloud of rock particles, dust, and frozen gases (called a ***nebula***) that formed from exploding supernovas that went through

their "life cycle" earlier in the history of the universe. Thus, Earth (and the Sun and other planets) probably started out as a homogeneous mass of mixed debris, rather than having the layered structure (crust, mantle, and core) that we see today. As the dust and gas consolidated and compacted to form the proto-Earth, it heated up.

Heating occurred for several reasons. **First**, the nebula contained some radioactive isotopes (as the Earth still does today). These release heat as they break down to form stable daughter products. **Second**, compaction of a cloud of particles causes heating, due to friction. A similar process occurs when you blow up a balloon. **Third**, we think that, within the first 100 million years or so of the Earth's history, a near collision or glancing blow by another planetary body split the Moon off to form a separate body. As the Moon moved away, it would have exerted huge tidal forces that "kneaded" the proto-Earth, adding to the heat generated by compaction and the breakdown of radioisotopes. Eventually, it's estimated that about one-third of the early Earth's interior melted.

During this melting, the originally homogeneous proto-Earth underwent a profound, and maybe catastrophic, reorganization. Molten iron and elements with a chemical affinity for iron (including, probably, sulfur) migrated rapidly into the deep interior, forming Earth's core. While this was happening, other, mainly low density elements and compounds (especially silicon, aluminum, oxygen, potassium, sodium, carbon, water, and others) worked their way toward the surface, forming a primitive crust and atmosphere. At about the same time, the Sun underwent a tremendous ignition and expansion, blowing most of the lightest volatiles (hydrogen, helium) away from the newly forming inner planets (Mercury, Venus, Earth, and Mars). This is why the inner planets have higher densities and a "rocky" composition, compared with Jupiter, Saturn, Uranus, and Neptune.

Some of the water that was present when the proto-Earth formed is still making its way upward and outward from Earth's interior. Such ***"juvenile" water*** can be incorporated into magma bodies. However, there is another, much more important source of magmatic water, and that is the world ocean.

(2) Along the west coast of South and Central America and parts of North America, the crust of the Pacific Ocean floor slowly slides back into the Earth's interior along ***subduction zones.*** As the relatively cold, brittle ocean crust bends and stretches under the edge of the continent, it fractures, causing sometimes devastating earthquakes (think of the recent magnitude 8.8 quake in Chile, for example). Water saturated marine sediments are dragged down with the ocean crust, and the result is that water that originally escaped to the oceans from Earth's interior ends up recycling back into the mantle.

When the subducting plate with its piggy-backed water saturated sediment layer reaches a depth of 250 km or so, it begins to melt. Much of the water and sediment is incorporated into the newly formed magma. Because the magma is hot and water rich, and because it formed partly by melting of sediments (which are rich in light elements), it is buoyant and rises toward the surface, eventually breaking through to form volcanoes. That's why volcanoes line the western margin of the Americas, and why such volcanoes tend to be rich in volatiles (and are especially dangerous to people living nearby).

(3) Subduction is by far the most effective way to get water into magma. However, there is a third way to do this. Water is, of course, a common filling in fractures, pores, and other openings of rocks near the surface of the continents. We call this kind of water ***groundwater***. When we drill a water well, out goal is to reach the zone where the openings are water saturated (the ***water table*** separates this zone from the unsaturated zone above). If magma works its way upward through the crust, it may incorporate some of this groundwater into the other molten materials. Such ***connate water*** is probably a constituent of most volcanic rocks. Its importance varies greatly from place to place.

So, how does all of this relate to geodes? As magma containing water (and other volatile compounds) works its way upward, eventually, the pressure is reduced to the point where the volatiles separate from the rest of the magma. The volatiles may escape rapidly (in Mt. St. Helens, the result was a steam "explosion"), or they may remain entrapped in the crystallizing lava. In the latter case, bubbles (called ***vesicles***) may remain when the rock solidifies. These vesicles may be quite large (an amethyst geode in Pittsburgh's Carnegie Museum of Natural History is more than 5 feet across, and a web search found some up to 12 feet long) and may become "stretched" as the lava moves during solidification. Many of the Brazilian amethyst geodes that one sees at mineral shows are tube-shaped because of this stretching and flattening.

Most scientists don't think such bubbles convert directly into geodes. Instead, a multi-stage process probably is involved. First, as the lava cools and shrinks, cracks may form, providing pathways for groundwater to migrate through the rock. Some kinds of volcanic rock (e.g. tuff) are especially easily dissolved by groundwater, so the circulating water (which may be hot if the volcanism occurred recently) leaches silica and other compounds, carrying them downward. The water and dissolved minerals enter the vesicles either by diffusion or by following fractures that intercept the openings. Within the bubble, silica may first form a gelatinous material that adheres to the interior surface of the space. The silica, along with other dissolved materials and some water, is deposited in layers, first chalcedony and agate and then quartz crystals, eventually sealing the cavity from further invasion by groundwater.

The change from deposition of chalcedony to formation of quartz crystals may have to do with changes in the temperature and silica saturation of the contained solutions. Eventually, the silica may be used up, leaving a water filled opening at the center of the geode. This water drains away or diffuses as weathering and erosion bring the rock closer to the surface. Rarely, geodes may contain residual water and a gas bubble (these are called ***"enhydros"***) when collected.

In next month's newsletter, we'll look at a completely different origin for geodes that occur in sedimentary rocks. For more information, I recommend the following book, which is relatively non-technical and has great illustrations:

Cross, B.L., and J.C. Zeitner, 2006, *Geodes: Nature's Treasures*: Baldwin Park, CA, Gem Guides Book Co., 292 p.

Agate Enhydros (Rocksinmyheadtoo.com)

Large Brazilian Amethyst Geode

Lake George Gem and Mineral Club
Box 171
Lake George, Colorado 80827

2010 MEMBERSHIP APPLICATION

Name(s) _____

Address _____City _____State __ Zip _____

Telephone ( ) _____-_____ E-mail _____

Names and ages of dependent members: _____
_____

Annual membership - dues Jan. 1 through Dec. 31 are as follows:

- Individual (18 and over) …….. $15.00
- Family (Parents plus dependents under age 18) …….. $25.00

Annual dues are due on or before March 31. Members with unpaid dues will be dropped from the roster after this date. **Anyone joining after August 31 shall pay one half the annual dues.**

I hereby agree to abide by the constitution and by-laws of this club.

Signed _____ Date: ____/____/____

I have previously been a member of Lake George Gem & Mineral Club. Yes __ No ___

My interest areas include:
Minerals __ Fossils__ Lapidary __ Micromounts __
Other _____

I would be willing to demonstrate any of the above for a club program or educational activity? If yes, which: _____

Please indicate which of the following activities you might be willing to help with:

Writing _____ Editor _____ Mailing _____ Local shows _____

Club Officer _____ Programs _____ Field trips _____ Refreshments _____

Questions about the club or club activities? Contact John Rakowski (719) 748-3861

www.LGGMclub.org

Lake George Gem and Mineral Club
P.O. Box 171
Lake George, CO 80827

The Lake George Gem and Mineral Club is a group of people interested in rocks and minerals, fossils, geography and history of the Pikes Peak/South Park area, Indian artifacts and the great outdoors. The club's informational programs and field trips provide an opportunity to learn about earth sciences, rocks and minerals, lapidary work and jewelry making, and to share information and experiences with other members. Guests are welcome to attend, to see what we are about!

The club is geared primarily to amateur collectors and artisans, with programs of interest both to beginners and serious amateurs. The club meets the second Saturday of each month at the Lake George Community Center, located on the north side of US Highway 24 on the east edge of town, sharing a building with the county highway shops. **In the winter we meet at 10:00 AM. From April through September, we meet at 9:00 AM, to allow more time for our field trips.**

Our organization is incorporated under Colorado law as a nonprofit educational organization, and is a member of the Colorado, Rocky Mountain and American Federations of Mineralogical Societies. We also sponsor an annual Gem and Mineral show at Lake George, where collectors and others may purchase or sell rocks, minerals, fossils, gems or jewelry. Annual membership dues (Jan. 1 through Dec. 31) are $15.00 for an individual (18 and over), and $25.00 for a family (Parents plus dependents under age 18).

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