The Lake George Gem and Mineral Club -

Club News, August 11, 2007

Meeting Time 9:00 AM!

Come early for the Silent Auction:
For the silent auction, please bring items you are willing to contribute to the club, and a few dollars to buy things with!

August Field trip:
Following the August business meeting Andy Weinzapfel will lead interested members to a strata-bound copper deposit in Fremont County, about 50 miles (roughly 1 hour and 45 minutes) from Lake George. The copper is found as green malachite in the pore space and fractures of a sandstone. Collecting is easy with a gentle 1/4 mile walk from the vehicles. Carpooling is recommended because of the distance. Also, one stream needs to be forded so low clearance vehicles are not recommended. **There is little or no shade at this location**. Suncreen, hat, and lots of water are essentials. Tools: a rock hammer, safety glasses, and collecting bag are sufficient. While there are excellent specimens all over the dumps, it is possible the better stuff (never highgraded) is below the surface, so shovels, and a pickaxe might be worthwhile.

Last Month's Field Trips:

On the day of the July 14 club meeting, club member Richard Fretterd graciously allowed the club to take a collecting trip to his **Petra Placer Topaz claim.** The trip was a big hit! Rich and Dan Alfrey led this first-time trip for our club, involving a strenuous hike up a winding narrow, rocky trail in the Tarryalls. Forty people signed up the day of the trip, with most making it to the top.

The collecting area, within the Hayman burn area, actually had sufficient shade to make the day comfortable. Showers didn't threaten until late afternoon. As you can see from

the photo, taken in mid-afternoon before the end of the hunt, several topaz crystals had already been found!

John's got one!!

Wow!

On July 21, Jack Null led a trip to **Illinois Gulch**, near Rainbow Falls, north of Woodland Park. According to Jack, "a few decent things were found", As many of the 18 participants were new to paleontology, Jack provided a 4-page handout and spent much of his time helping folks "see" what lived in and what was going on in the early Ordovician era. One of the participants was seven year old Auston Mammenga, who showed real enthusiasm. Maury Hammond found a very nice Leiostegium trilobite and at least everyone found brachiopods and parts of trilobites. Jack reported seeing an interesting trace fossil, a really nice trilobite feeding trail. Hopefully, folks will bring their finds to the upcoming meeting for members to see!

At left is a photo of *Leiostegium*, of the sort Maury and others have found at Illinois Gulch. (Photo courtesy Hal Ewald). For those of you with web access, There is an excellent article on line at

http://home.earthlink.net/~gesuchan/Fossil/Manitou_Park/Field_Trip.htm#Specimen%205, prepared for a joint field trip to this area by the Western Interior Paleontological Society (WIPS) and the Colorado Springs Mineralogical Society in 2004.

Coming Events

Freemont County copper deposit – Lake George Gem and Mineral Club … **August 11, 2007**

Monthly club meeting and silent auction at the Lake George Community center, followed by a field trip to a copper deposit in fremont county. See "Club News" for details.

"Contin-Tail" Rock Swap and Mineral Show … **August 9-12, 2007**

Rodeo Grounds, Buena Vista, CO. A fun and interesting outdoor event to see or buy rocks, minerals, fossils, etc., and hob-nob with other rockhounds. One or more field trips will be led to local areas. No charge; camping available. Sponsored by the Colorado Federation of Mineralogical Societies and hosted by the Columbine Gem & Mineral Society (Salida, CO). See http://www.coloradorocks.org/ or call 303-833-2939 or 720-938-4194 for information.

Leadville Field Symposium … **August 24 - 26, 2007**

Friends of Mineralogy Colorado Chapter will hold a Field Symposium in Leadville, Colorado on the mines, minerals, mining, preservation, and history of the Leadville Mining District. For more information contact Richard Parsons, FMCC President, at tazaminerals@att.net or 303-838-8859.

Lake George Gem and Mineral Club Meeting and Field trip for Hartsel Barite. … **September 8, 2007**

Loren Lowe will lead the field trip to the Hartsel claims of Dave and Lark Harvey to collect blue barite. The barite locality is another non-strenuous travel trip.

Denver Gem and Mineral Show **September 14-16, 20 7**

America's second-largest gem and mineral show at the Denver Merchandise Mart – Expo Hall. The theme of the show is "The Leadville Mining Districrt". Friday 9:00 AM – 6:00 PM, Saturday 10:00 – 6:00, Sunday 10:00 – 5:00. See www.denvermineralshow.com for details

Lake George Gem and Mineral Club Meeting and trip to the Godsend claim … **October 13, 2007**

The Lake George club has been invited to Rich Fretterd's - Godsend claim, where numerous pockets of smoky quartz and amazonite have been found found. This is north of Lake George and requires a high clearance vehicle or carpooling.

Crystal Peak: Memories from an Intern at the Florissant Fossil Beds National Monument By J.J. Huie

The last time I visited the Florissant Fossil Beds was last summer when I was returning from a mountain biking adventure near Buena Vista. Walking across the parking lot to my car, I had to stop and let myself be a part of the tranquil scene: the soft green of the grassland mixed with patches of ponderosa pine forest, and, watching over the evening, Crystal Peak. Perhaps I had gone too long without being in a profoundly quiet place, but in that moment I felt very fortunate to have spent an entire summer as an intern at the park. During the summer of 2003, when I was an interpretive intern at the Fossil Beds, I joined a group of staff, interns, and volunteers for a hike up Crystal Peak. A large part of the mountain is private property, but there is a considerable amount of National Forest land as well, much of it with mining claims; therefore, one has to be careful when treading on the mountain, especially if the signs and claim posts look fairly new and the area appears to have been recently worked. As a group of nature lovers from the Fossil Beds, we too had to get our grubby fingers on some rocks so as to experience what makes

Crystal Peak famous. The pegmatites (coarse-grained granite) of Crystal Peak contain a huge variety of minerals, including albite, biotite, columbite, fluorite, goethite, amazonite, muscovite, onegite, phenakite, milky quartz, and smoky quartz. In many other sites around the world, amazonite develops into anhedral (formless) masses rather than the euhedral (well-formed) crystals of Crystal Peak. The amazonite crystals can range from pale blue to sky blue to dark blue to dark blue-green. While I didn't find any topaz, white and blue varieties have been reported from the area as well. Whenever I see Crystal Peak, I will probably always envision a bunch of adults scattered along a mountainside, some on their hands and knees, searching for pretty rocks. The treasure of Crystal Peak is in the joy of discovery and the feeling of being a kid again.

View of Crystal Peak from the Florissant Fossil Beds National Monument. Crystal Peak is an erosional remnant of a finer-grained, more resistant phase of Pikes Peak granite. The shape of the peak appears to be controlled by jointing in the granite. Photo by S. Veatch

SEDIMENTARY ROCKS: LIMESTONE

by John F. Sanfaçon

Limestone, composed primarily of the mineral calcite ($CaCO_3$), is usually divided into two classes: ***clastic*** and ***non-clastic***. ***Clastic* limestones** are those which have been formed from calcium-carbonate rich fragments *which have been transported since they were precipitated by chemical or biochemical processes*. ***Non-clastic* limestones** are those which *have not been so transported*. In this second group we find such well-known species as *stromatolites, marl (*a loosely consolidated earthy mixture of calcium carbonate and clay), and *travertine*, which gives us the familiar *stalactites, stalagmites* and *dripstone* of our caves, as well as the misnamed "Mexican onyx", the multi-colored, banded ornamental variety which has been flooding the lapidary market recently from vast deposits in Pakistan. (Genuine *onyx* is the black-and-white layered variety of microcrystalline quartz primarily used for centuries to carve cameos.)

It should be noted that in all these limestones, the calcite can be replaced partially or wholly by *aragonite*, also $CaCO_3$ chemically, but crystallizing in the *orthorhombic system,* as opposed to calcite's *hexagonal system*. Such transformations from calcite ↔ aragonite are caused by ever-so slight variations in temperature and pressure. Many limestones are rich in *dolomite*, a calcium-magnesium carbonate of marine origin. Many geologists call such rock *dolostones*, to avoid confusion with *dolomite* proper, the mineral with the formula $CaMg(CO_3)_2$. The Dolomite Alps, which are located along the border of northern Italy and Austria, are made up largely of *dolostone.* The mineral *dolomite* itself was named for the French geologist Dolomieu. *Dolostones*, especially those cemented by microcrystalline silica, take a good polish and are marketed under a variety of trade names: "wonderstone", "hickoryite", etc. Sometimes these

names are applied to banded *rhyolites*, which are microcrystalline varieties of the igneous rock *granite.* Distinguishing rough or polished pieces of these rocks can be tricky, but application of *cold* hydrochloric acid will cause the limestones to fizz; *warm* acid will likewise attack *dolostones*, but not affect silicate igneous rocks such as granite.

Among the clastic limestones, we find *fossiliferous limestone, coquina (*made up of loosely compacted shell fragments), *chalk* (a calcareous powder made up of microrganisms such as foraminiferans and algae, sometimes with minor amounts of *siliceous* diatoms, radiolarians and sponge spicules); *oolitic limestone* (made up of *oolites,* egg-shaped calcitic masses resembling fish roe, between 0.2 and 2.0 millimeters in length) and *lithographic limestone,* a fine-grained light-colored rock which in its best manifestation, a Jurassic formation from Solenhofen, Bavaria, provided not only the best material for lithographic printing, but also the context for the well-preserved remains of more than 500 species, most notably the fossil bird *Archaeopteryx*.

Early man discovered that by heating limestone he could drive off the carbon dioxide to produce *lime*, CaO, which proved to be a fine fertilizer. Since carbonate rocks are very vulnerable to chemical attack, the soils derived from them are often excellent for farming. … Apart from agricultural uses, limestone is vital as a construction stone, and for the production of cement. The Washington Monument, 555-feet tall, is faced with limestone from Indiana, a state whose southern areas shared with Kentucky are honey-combed with a vast cave system whittled out by acidic groundwater attacking the vulnerable limestone. Much of the United States is overlain by limestone formations, reminding us that our continent was, at various times, at the bottom of vast seas whose plant and animal remains became compacted over the millions of years to form such rocks. Leonardo da Vinci, upon finding fossils of marine creatures at the top of mountains, theorized that these mountains were the uplifted ocean beds of long-vanished seas. Just how many tiny organisms came and went must be staggering to contemplate: the calcite/marble body at Franklin-Ogdensburg is *miles* thick!

The chemical vulnerability of limestone allows percolating fluids to carve out cavities and vugs which subsequently play host to a wide variety of secondary minerals derived from metallic sulfides. The sulfides become *carbonates* (e.g. *azurite, malachite, cerussite, etc.*), and, in some cases, *sulfates (e.g. barite, anglesite, etc.*) usually located in the upper reaches of these metallic sulfide veins. Our collections would be incalculably poorer without these brightly-colored secondary species.

Sources, & Suggestions for Further Reading:

- Dietrich, R.V. and Skinner, B.J. *Rocks and Rock Minerals;* New York: John Wiley & Sons, 1979
- Plummer, C.C. and McGeary, D. *Physical Geology;* Dubuque, Iowa: Wm. C. Brown, 1979
- Sinkankas, J. *Prospecting for Gemstones and Minerals;* New York: Van Nostrand, 1970

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Martian Geology

Cavernous Holes on Mars: Pathways to Deep Underground Realms

By Steven Wade Veatch

Images recently released from the Mars Reconnaissance Orbiter included one of a lava field to the northeast of Arsia Mons—the giant Martian volcano. The images included seven black spots thought to be giant holes opening into subterranean caverns rather than impact structures. The holes are so deep that the floors cannot be illuminated by the Sun.

Lake George Gem and Mineral Club July, 2007

One image (figure 1) had an incredible black spot or hole in the center that is about the size of a football field.

The seven black spots or cave openings have been named the “seven sisters” as: Dena, Chloe, Wendy, Annie, Abbey, Nikki, and Jeanne. These deep underground realms may provide a habitat for past and current life on Mars and be capable of protecting Martian life—just as caves on Earth do. These caverns may shield organisms from UV radiation, solar flares, and other environmental hazards associated with a thin atmosphere and virtually no magnetic field.

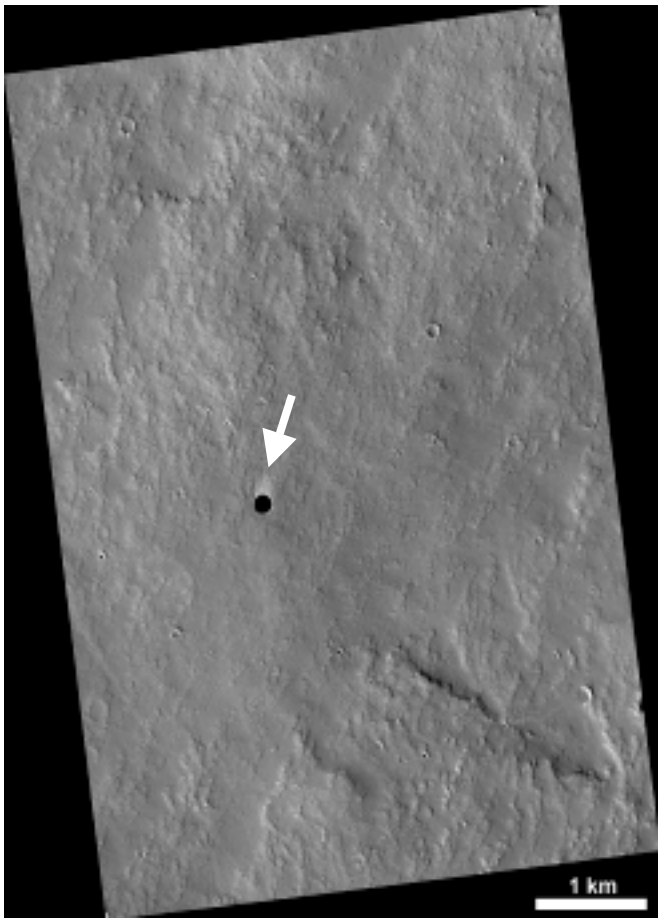

Figure 1. A black hole seen on Martian Landscape from the Mars Reconnaissance Orbiter. Image courtesy of NASA, JPL, University of Arizona.

The High Resolution Imaging Science Experiment (HiRISE) camera onboard the Mars Reconnaissance Orbiter (figure 2) recently obtained these images depicting the curious black spots seen on the Martian landscape. The Mars Reconnaissance Orbiter is currently orbiting Mars and explores this planet by close-up imaging of the Martian surface with the HiRISE camera. Sensitive scientific instruments also analyze minerals, search for subsurface water, look for evidence of ancient seas and lakes, analyze layered rocks, look for underground ice, measure atmospheric dust and water, and monitor Martian weather.

While other Mars missions have imaged features that show water once flowed across the surface Mars. It still remains a mystery whether water once hosted life on Mars. The large holes and underground caves will be targets for future probes and exploration to discover what is down there. Are there mineral crystals, stalactites and stalagmites, ice features, evidence of life, or is it just an open void under the surface of Mars?

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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.

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. Guests are welcome to attend, to see what we are about!

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. The Community Center is located on the north side of US Highway 24 on the east edge of town, sharing a building with the county highway shops.

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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