The Lake George Gem and Mineral Club -

Club News, December 2007

Meeting Time 10:00 AM!

Annual Pot Luck!
The club will furnish drinks, plastic utensils, and paper bowls/plates. Please bring a dish of your choice (main or side dish, salad or dessert) to share with the group.

Program for the month:
Steven Veatch, Geologist and long-time member of the Lake George club, will speak about a recent discovery of dinosaur footprints in El Paso County.

Silent Auction:
For those members or guests who would like to go home with a few new specimens, but who might not feel like they have "trade stock" available, we will also have a silent auction of donated items, the proceeds of which will go to support the club's activities. For the silent auction, please bring items you are willing to contribute to the club, and a few dollars to buy things with!

Coming Events

Lake George Gem and Mineral Club … **December 8, 2007**
Annual Pot Luck. There will be a silent auction and another great presentation by Steven Veatch. The meeting will start at 10:00 AM (winter hours).

Changing Mines in America, A Photography Exhibit by Peter Goin … **Continues through Dec. 29, 2007**
Western Museum of Mining & Industry, Colorado Springs. Through the 24 photographs on display at the museum, Goin reveals that mines are more than physical degradations; they are evolving cultural artifacts on the American landscape. 9 a.m. - 4 p.m. daily; customary admission applies. Lake George Gem and Mineral Club members admitted free (must show current membership card). 225 North Gate Blvd. (at I-25 Gleneagle exit #156A); 719-488-0880; www.wmmi.org.

Science and nature writing workshop (K-12) … **February 2, 2008**
9:00 am-5:30pm, Cripple Creek Park & Recreation. Instructors Steven Veatch and Don Miranda, local authors. Registration Fee: $49, includes certificate of completion. To register or for more information, contact Cripple Creek Park & Recreation, 719/689-3514

2008 Tucson Gem, Fossil and Mineral Shows … **February 5 - 17, 200**
Main show at Tucson Convention Center February 14 –17. Largest Gem and Mineral show in the US! For info, go to http://emol.org/tucson/gemshow/

A Big Blue Barite!

Club member Harry Leipold collected this giant on Dave and Lark Harvey's claim near Hartsel, while on a club field trip this summer. Generously, Harry has donated the specimen to the Pikes Peak Historical Society Museum in Florissant.

This exceptionally large bladed blue barite specimen weighs 15.5 lbs!

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GOLD IN THEM THAR STARS

By Kathy A. Stivil

The origin of platinum and gold is every bit as exotic as the metals themselves, says astrophysicist Stephan Rosswog of The University of Leicester in England. These precious elements arise during one of the rarest and most violent events in the cosmos; the cataclysmic merger of two neutron stars, ultra-dense stellar remnants that pack the mass of half a million Earth's into a ball the size of Manhattan.

Astronomers have long understood that nuclear fusion in stars creates middleweight elements such as carbon and oxygen, but these reactions cannot create super heavy platinum and gold. Rosswog therefore started investigating the far more intense conditions that arise when two orbiting neutron stars spiral in toward each other. "In the beginning it is a very slow process, lasting 100 million years or more. But the last 100 kilometers (about 60 miles) before they merge is violent and fast, lasting less than half a second," he says.

New supercomputer simulations devised by Rosswog and his colleagues indicate that a great deal of nuclear alchemy occurs during the last few milliseconds. The merger unleashes so much energy that it briefly outshines anything else in the universe. Most of the material quickly collapses into a black hole, but some of it spews out in a flood of super-hot neutrons and atomic nuclei. The nuclei quickly mop up the stray neutrons, forming heavy elements such as lead, gold, and platinum. Although neutron-star collisions occur just once every 100,000 years in a typical galaxy, that's often enough to account for all of the precious metals on Earth.

From *Earth* Via Hy Grade
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A Good Day at the Godsend Claim!

Townsend Wolfe, Rich Fretterd, and Frankie Wolfe intently collecting amazonite, on the club's October field trip.

Frankie (below) holds amazonite crystals found in this trench.

Rebecca Blair with a rare (for this area), colorless quartz crystal

SCHOLARSHIP GUIDELINES
Lake George Gem and Mineral Club

Many members of our club may not know that the club offers a scholarship to students from Park and Teller Counties. Please share this information with anyone you think may be interested!

Purpose: To fund courses in Geology, Mineralogy or Paleontology at any accredited university or college as part of a course of studies in Earth Sciences.

Amount: Up to $500.00 each. The number of scholarships will be determined by the Board at the October Board meeting based on the funds available as of October.

Eligibility: An eligible applicant may be
(1.) a Senior in any Secondary School in Teller or Park Counties, with a demonstrated history of interest in the study of Earth Sciences or a resident of Teller or Park Counties; or
(2.) a resident of Park or Teller Counties, enrolled and in good standing in an established course of study towards a degree in Earth Sciences at an accredited university or college.

Applicants shall also be members (individual or family) in good standing of the Lake George Gem and Mineral Club. Such membership may include a "gift" membership and sponsorship by a LGG&MC member in good standing.

Reporting Requirements: The recipient shall provide a short written report (which may be published in the Club newsletter) and/or a short oral report given to the general membership at a regular meeting as to what the monies were used for or the results of studies resulting from the scholarship.

Scholarship announcement: The scholarship availability will be announced in the November newsletter the year prior to award, with copies of the newsletter distributed to academic advisors at area secondary schools.

Application Deadline: Applications must be received or post marked not later than the 1st of March of the year to be awarded. Late applications will not be considered. Electronic submissions will be accepted.

Judging of Applications: Applications will be judged by the Education Committee and approved by the board at the March Board Meeting.

Education Committee: The Vice President and two volunteers from the Board or General Membership who have no family ties or financial ties with the applicants.

Scholarship Award: Decisions of the Committee will be announced at the April General Meeting

Application Requirements: Name; Address; Phone Number, and e-mail address (optional). A short -1/2 to 1 page typewritten, single spaced) describing the applicants history in the earth sciences, what the scholarship would be used for (include course costs/expenses), and the applicant's overall goal in this course of study.

Metamorphic Rocks

Part 3: Skarns

by John F. Sanfaçon

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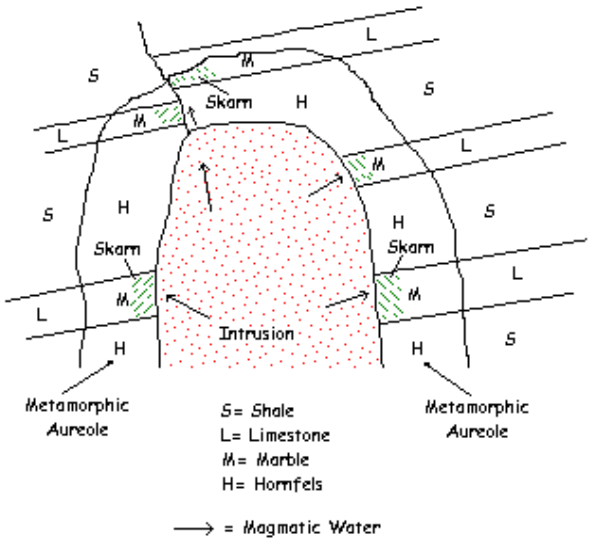
Skarn is a Swedish word that first appeared in scientific literature in 1875 to describe "peculiar dark rocks" which occur "subordinate layers in ...feldspar-poor felsic [i.e., light-colored igneous rocks rich in quartz, feldspar, muscovite and feldspathoid, e.g., nepheline minerals]" which are also "the ore's host rock." In the mid-nineteenth century, Swedish mining and metallurgy were hitting their stride, thanks to the geochemical discoveries made by such Scandinavian giants as Scheele, Berzelius, Gadolin and Kornerup. Sweden's iron and tungsten (Swedish for "heavy stone") deposits made Sweden a world leader in high-quality specialty steels, a role which she enjoys to this day.

According to Dietrich and Skinner, the word "skarn" has been used so loosely for so many years that it has almost become useless. The term has been applied erroneously as a synonym for *all* calc-silicate rocks, but the consensus nowadays seems to be to limit "skarn" to those calc-silicate rocks which are associated with granite (i.e., silicate) intrusions, usually of sedimentary-metamorphic origin, in impure limestone or dolostone (i.e. calcic and magnesic). Skarns sometimes are divided into *exoskarns* and *endoskarns*. *Exoskarns* are the more common type, formed when hydrothermal fluids left over from the crystallization of the granite come in contact with chemically vulnerable carbonate rocks like limestone and dolostone. These hydrothermal fluids, carrying dissolved silica, iron, metals, halides (especially fluorine) and sulfur, react with the carbonate rocks to produce totally new mineral species. This process is called *metasomatism*, which involves *changes in chemical composition,* and not merely *metamorphism*, which involves *changes in the texture* (e.g., banding, foliation, etc.) but no changes in the chemical constituents of the rocks involved, e.g. *granite → gneiss*. *Endoskarns* are much less common, and are created when the granitic fluids are formed in equilibrium with the minerals of the granite are less dilute and less mobile, and are boiled off, creating a highly saline, incompatible-element-rich fluid phase and a highly volatile gas phase. There are also even rarer types of skarns involving granitic intrusions into sulfidic or carbonaceous rocks, e.g. black shales, graphite shales, banded iron formations, and, occasionally, salt domes and evaporites. In these cases, there is less chemical exchange of ions than in the more common limestone-dolostone environments.

Skarns, especially those in a calcite-marble environment, provide us rockhounds with an amazing variety of mineral species. Think of how much poorer our collections would be without specimens from Franklin-Ogdensburg, the Tilly Foster Mine in Brewster, N.Y., and the deposits of Riverside, California. Because each of these settings has its own chemical idiosyncrasies, the number of unique species in these deposits probably surpasses those found in other environments. The *simplified* diagram below gives you some idea of the possibilities for the creation of new species from pre-existing rocks, and, as you might suspect, each of the skarn deposits is unique, and the subject of much ongoing research and exploration. Little wonder, then, that Google lists 134,000 sites for "skarn minerals"!

Simplified Skarn Deposit Model

e.g., Copper Canyon (Nevada), Sarbai Iron Skarns (Former USSR), Trimouns Mine (France)



Adapted from Evans 1997: Ore Geology and Industrial Minerals

There are a variety of skarn types depending on the principal ore that is present. These include copper skarns (chalcopyrite, bornite), iron skarns (magnetite), tungsten skarns (scheelite), zinc/lead skarns (sphalerite/galena) and talc/graphite skarns.

Skarns usually develop in carbonate country rocks at the contact with intrusive plutons, as shown above. They form as a result of metasomatism by silica, aluminum, iron and magnesium bearing fluids originating from the intrusive. A common pattern has been defined in the formation of skarns and involves three stages:

1) The intrusion of hot magma forces out ground, formation and metamorphic waters producing a metamorphic aureole, re-crystallizing limestone to marble, shale to hornfels and sandstone to quartzite.
2) With continued infiltration into the contact rocks by hydrothermal-magmatic fluids, pure and impure marbles are converted into skarns. Initial ore deposition occurs as the pluton cools and some sulfide replacement mineralization may take place.
3) This is the retrograde (destructive) stage, where cooling of the intrusion allows meteoric fluid to infiltrate the intrusion and the skarns, producing sericitization (form-ation of fine-grained mica) in the pluton and hydrous alteration of early skarn minerals. Sulfide replacement bodies also develop at this stage.

Sources & Suggestions for Further Reading:

- American Geological Institute, ***Dictionary of Geological Terms****,* Garden City, NY: Anchor Press, 1976.
- Dietrich, R. and Skinner, B., ***Rocks and Rock Minerals****,* New York: John Wiley and Sons, 1979.
- ***Mineral Zone: Simplified Skarn Deposit Model,*** http://www.geocities.com/ijkuk/ik_skarn.htm
- Sinkankas, J., ***Mineralogy****,* New York: Van Nostrand Reinhold, 1964.
- ***Skarns and skarn deposits***, http://www.wsu.edu:8080/~meinert/about skarn.html

Rare Dickite XIs Found on Lake George Field Trip

By Richard Parsons

On a Lake George field trip to the dumps of the now-reclaimed Sweet Home Mine several years ago, several members found pieces of pretty blue rock, that didn't seem to look like anything reported from the mine. A few months ago, I stumbled across a couple of pieces in a drawer, and decided to take a look at them under my microscope.

There, on the rock, were numerous clear micro crystals, which turned out to be dickite; the blue mineral is most likely chrysocolla.

Most collectors of pegmatite minerals have encountered dickite or other clay-mineral cousins in the form of a stubborn white coating on the quartz and feldspar crystals. Crystals, however are rare.

The photo below is of a piece of this rock, with dickite crystals, that is now in the Denver Museum of Nature and Science's micromount collection. The field of view in this picture is around 3 mm.

Dues are Due for 2008!

It's that time again. In order to keep your membership and all its benefits (field trips, programs, newsletter …) coming, renew now! You can mail your renewal application and check to Mary O'Donnell, Treasurer, or bring it to the meeting.

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).

Our Officers for 2008 are:

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MEMBERSHIP RENEWAL APPLICATION - 2008

Name(s) _____

Address _____City _____State_____ Zip _____

Telephone ( ) _____ - _____ E-mail _____

Names and ages of dependents: _____

_____

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.

I hereby agree to abide by the constitution and by-laws of this club, which I will receive at the next regular meeting following receipt of dues.

Signed _____ Date: ____/____/____

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 _____ The Lake George Show _____
Club Officer _____ Programs _____ Field trips _____ Refreshments _____

Programs or Field Trips I would like to see this year:

_____

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