The Lake George Gem and Mineral Club -

Club News, May 11, 2007

Meeting Time 9:00 AM (Summer Hours)!

Silent Auction:

There will be a silent auction of donated items, the proceeds of which will go to support the club's educational activities. For the silent auction, please bring items you are willing to contribute to the club, and a few dollars to buy things with.

Field Trip for the month:
Steve Veatch will lead field trip to Clare's Florissant fossil quarry. This is a really enjoyable collecting locality, just 3 miles from the Lake George Community Center. There will be a small fee for access to this private site ($7.00/person, in the Editor's understanding).

This is the ultimate in easy-access collecting and is great fun for kids. Participants will be provided with flats of thin shale slabs, tools (putty knives) to use to split the shale, and picnic tables where you can sit and work. Nice leaf fossils are fairly common, and fossils of insects, spiders, fish and even birds have been found. You will need to bring your own food and water.

The Annual Show:
The sad news for the month is that it has been necessary to cancel this year's show, owing to the uncertainty about availability of the show site. It is our understanding that all work on and around the lake that has potentially affected the show site should be completed well before next year's show date.

Newsletter:
The good news is that the newsletter is now available in full as a PDF document. This offers the advantages of faster delivery, fewer trees cut, postage saved, and it's in full color when we have articles, photos, etc. with color content. E-mail and web-site links included in the electronic version are also "live". Anyone receiving the electronic version may continue to get the paper version may do so by contacting the Editor.

Coming Events

Lake George Gem and Mineral Club … **May 11, 2007**

Field Studies In Paleontology … **June 16, 2007**
Starting from Cripple Creek, this field class offers an unsurpassed opportunity to explore the geological and paleontological wonders along the Shelf Road. Follow the old wagon roads used to haul dinosaur bones from Garden Park to Canon City, visit a dinosaur quarry, and explore nearby dinosaur tracks. 8:30am-5:30 PM, Cripple Creek Parks & Recreation. Instructors: Steve Veatch The registration Fee is $69. A tuition fee of $30 (**payable during workshop**) provides 0.5 semester credit hour atColorado School of Mines. To register or for more information, contact **Cripple Creek Park & Recreation, 719/689-3514**

NEW MEMBER ORIENTATION, Lake George Gem and Mineral Club … **June 30, 2007**

Steve Veatch and Loren Lowe are generously giving of their time and talent to present a free basic introduction to rockhounding - tools, equipment, methods, maps, places to look, and an overview of the geology of the Pikes Peak Region. 9 AM to Noon at the Western Museum of Mining and Industry just north of Colorado Springs. Attendees should bring lunch to enjoy a private tour of the museum after lunch. You must be a member of the Lake George Gem and Mineral Club or CSMS to attend. Bring your Lake George membership card to get into the museum free! The museum is located at 225 North Gate Blvd. Take exit 156A (Gleneagle) just north of Colorado Springs and turn East onto North Gate Blvd.

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. The Symposium will include talks at the National Mining Hall of Fame and Museum in Leadville and tours of the Museum, the Climax Mine and other mines and mineral localities around Leadville. Symposium events will start Friday evening and last into Sunday afternoon. For more information contact Richard Parsons, FMCC President, at tazaminerals@att.net or 303-838-8859.

Biggs Jasper Cabochons

Ancient Weevil Pupal Cases: Trace Fossils From Australia's Pleistocene

By Steven Wade Veatch

Curious pupal cases made by prehistoric weevils, together with worm burrows, are found as trace fossils in rock exposures of the Upper Bridgewater Formation along the western coastline of the Eyre Peninsula in South Australia (Flint, 1991; 1992; Flint and Rankin, Flint, Rankin and Flint, 1992). According to Parker and middle 2005) the Upper Bridgewater Formation is a to late Pleistocene aeolian calcarenite (a wind-blown, consolidated gritty calcareous sandstone). These trace fossils are found inland from the coast for a distance of about 40 km. Microscopic analysis of these ancient pupal cases shows they are made of gritty sand and gravel that were cemented by calcite over thousands of years. These cases are thought to have contained the pupae of *Leptopius duponti*, a medium-size, soil-inhabiting weevil or snout beetle of the family Curculionidae. The Curculionidae are one of the largest families of organisms with at least 44,000 described species (Grimaldi and Engel, 2005). Adults of most species of this family have a characteristic elongate snout or *nostrum*. At the end of the well-developed snout is a small pair of mandibles for biting and chewing food.

Fossil pupal cases from the Bridgewater Formation resemble small elongated eggs. These cases have a hole where the fossil organism exited. These trace fossils are characterized by their strong cementation and a hollow interior. Specimen from the S. W. Veatch collection. Photo by S. W. Veatch.

The adult female *Leptopius duponti* not only relishes the foliage of acacia trees as food but also carefully lays her eggs on the leaves. When the larva hatch they move about underground to feed on roots and when ready to pupate, they form a chamber or pupal case out of the soil. After their metamorphosis, they cut a hole near one end of their pupal case to leave and then burrow to the surface, and where they quickly climb the acacia trees to feed.

The pupal cases are usually too delicate to survive for any length of time, but occasionally some of the empty cases remain underground where they become petrified by calcite. (Tilley, et. al., 1997). Some of these pupal cases in the Upper Bridgewater Formation are estimated to be 40,000 to 100,000 years old.

Lake George Gem and Mineral Club May, 2007

Classification:	
Kingdom	Animalia
Phylum	Arthropoda
Class	Insecta
Order	Coleoptera
Suborder	Polyphaga
Superfamily	Curculionoidea
Family	Curculionidae
Subfamily	Leptopiinae
Genus	*Leptopius*
Species	*duponti*

Leptopius duponti is common in Australia where they are called “wattle pigs.” The body length of *Leptopius duponti* averages 20 mm. These slow moving weevils are plant eaters. Photo by David Nelson, used

References cited:

Flint, R.B., 1992. Elliston, South Australia, Sheet SI3-6, South Australia Geological Survey, 1:250,000 series, explanatory notes.

Flint, R.B. and Rankin, L.R., 1991. Kimba, South Australia, Sheet SI53-7, South Australia Geological Survey, 1:250,000 series, explanatory notes.

Grimaldi, D and Engle, M. S., 2005, The evolution of insects: New York, Cambridge University Press, 689 p.

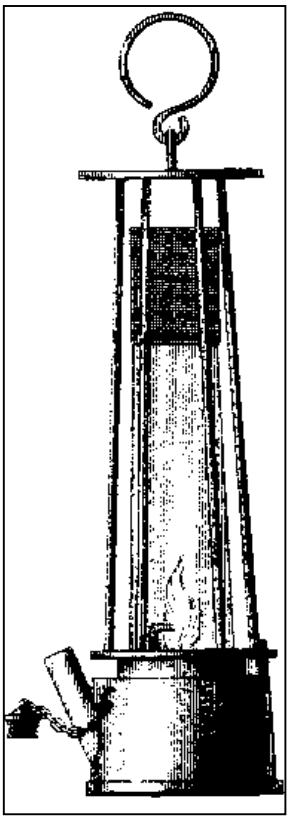
Parker, A.J. and Flint, R.B., 2005. Yardea, South Australia sheet SI53-3, Geological Survey of South Australia, 1:250,000 series, explanatory notes

Rankin, L.R., and Flint, R.b., 1992. Streaky Bay, South Australia Sheet SI53-2, South Australia Geological Survey, 1:250,000 series, explanatory notes.

Tilley, D. B., Barrows, T.T., and Zimmerman, E.C., 1997. Bauxitic insect pupal cases from northern Australia. Alcheringa 21, p. 157-160.

A Reminder about Safety…

It's great to see the days getting longer and the weather warmer! As we begin our field season, let's remember that ***safety is everyone's responsibility***. Our club is committed to having fun in the field, while doing it safely.



Have you ever met someone you consider accident-prone? Over the years, I have witnessed many unsafe practices while doing fieldwork. Once, I was studying an outcrop close up when another approached only a couple of feet away and smacked my object of interest with a rock hammer. The thick glasses I wore to correct poor eyesight sustained a direct hit with a chip, scratching the lens. I have often wondered what would have happened if I wasn't wearing glasses that day. For those of you fortunate to have good eyesight, I recommend having safety glasses available and wearing them when the situation warrants.

From time to time we are all guilty of unthinking acts. If you see unsafe behavior, I suggest you point it out to the violator first. If it continues, bring it to the attention of a club officer or field trip leader. Remember, if you are a hazard to yourself, you are probably a hazard to others.

Fill in your prospecting holes when you are done. Don't leave them for someone else to fall into after vegetation growth disguises them years later. Point out any unexpected hazards you find to others, like snakes, ticks, nails at mine dumps, etc.

We are developing a menu of interesting field trips this summer. Not all are on flat terrain next to a road. A few will involve rocky, hilly ground. In Alaska, statistics show the most common way to die in the field is not from a grizzly, but by drowning. In arid Colorado, serious rockhounding injuries usually involve falls. A light walking stick is a good investment in your safety, no matter how nimble-footed you are.

It is always a good idea to have a buddy system in the field. Don't wander off from the group. As summer approaches, food is nice but water is absolutely essential. It is especially easy to get dehydrated at high altitude. Gage your physical health and don't attempt anything too strenuous. Bring along sunscreen. Get in the habit of having a first aid kit wherever you go.

When driving to a location, use common sense and obey the law. Don't go through a "stale yellow" light just to keep up with the group. OK, there's not too many traffic lights where we go, but you get the point!

Happy collecting this summer, and BE SAFE!

Andy Weinzapfel
President

IGNEOUS ROCKS:

Diorite, Gabbro, Anorthosite and Ultramafic Rocks

by John F. Sanfaçon

We conclude our survey of igneous rocks this month with a look at the deep-seated ("plutonic") rocks which are *mafic* (rich in ferromagnesian minerals) and *phaneritic* (in which the individual mineral grains are identifiable to the naked eye), viz. *diorite, gabbro, anorthosite* and the *ultramafic* rocks. Such rocks are dark-colored and relatively poor in free silica (silicon dioxide, or quartz), since all of the available silica is already tied up in various silicate minerals: biotite mica, plagioclase feldspar, pyroxenes and amphiboles. These rocks do not play host to a wide variety of minerals, just those that are chemically compatible with Fe and Mg at great heat and pressure deep in the Earth.

Diorite is the name given to that igneous rock which is intermediate in composition between the light-colored *granites* and the dark-colored *gabbros*. In fact, diorite truly has a balanced, "salt-and-pepper" appearance. The lack of or near absence of quartz per se distinguishes diorite from granite; the low content of *alkali* feldspar distinguishes diorite from *syenite. Diorite* consists largely of a *light-colored plagioclase* and the amphibole *hornblende,* along with some biotite mica and the pyroxene *augite*. On the other hand, *gabbro*, a word of Italian origin, is composed primarily of a *dark-to-bluish-gray plagioclase* and *augite*. *Gabbro* is also likely to contain significant amounts of *olivine*, a mineral which usually tells us that the accompanying plagioclase is probably *labradorite*. The rock that carries this tendancy further is *anorthosite*, in which *labradorescence*, with its beautiful play of colors, superficially resembles the decorative facing stone *larvikite*, which owes its bluish flashes of color not to *labradorite feldspar,* but to an intergrowth of *alkali feldspar,* e.g. *albite,* and *oligoclase feldspar*. When dealing with the feldspar group, one must keep in mind that the various "phenomenon" stones such as *moonstone* and *sunstone* can be produced by more than feldspar variety. In the field it is very difficult to differentiate the various feldspar species, let alone to try to distinguish the bewildering variety of amphiboles and pyroxenes. This is why field terms like *dioritoid* and *gabbroid* are useful as tentative labels until more definitive identifications can be made back in the lab.

As we noted above, only a small suite of minerals are found in these chemically limiting conditions, especially under the great heat and pressure of such a deep-seated environment. *Diorite* and *gabbro* are home to *native copper, native silver, magnetite, ilmenite*, and various *pyroxenes*, most notably in the Lake Superior region. *Anorthosite* is the setting for the same species, plus, of course, *labradorite*. The best-known locales are Iron Mountain, Wyoming and Nain, Labrador, where the classic and best labradorite was first found.

The *ultramafic rocks* include *dunite*, made up of 90-100% *olivine*, whence the gemstone *peridot*. Sometimes called *peridotite,* this rock is also the setting for *chromite, various nickel minerals, spinel, platinum, magnetite, pyrrhotite,* and other species formed under great heat and pressure. The vast nickel deposit of New Caledonia is the best-known example; closer to home, the *chromite-magnetite*-rich serpentine bodies of the Pennsylvania-Maryland border provide wonderful examples of the serpentine variety *williamsite*, a translucent deep-green lapidary material in which chromite and/or magnetite grains are visible. *Serpentines* in part result from the hydrothermal alteration of such rocks rich in magnesium silicates: olivines, amphiboles and pyroxenes.

The most important of the ultramafic rocks, at least from an economic viewpoint, are *kimberlite,* and *lamprophyre,* the host rocks in "diamond pipes" and the diamond-indicator minerals such as *pyrope garnet, ilmenite* and *chrome diopside*. *Kimberlite* is a fine- to medium-grained bluish

colored *mica peridotite,* whereas *lamprophyre* has a somewhat shiny luster, due to the reflections from its porphyritic mica (mica crystals significantly larger than the fine-grained groundmass in which they lie). The great diamond deposits of South Africa reside in *kimberlite*, while the vast diamond-rich Argyle Mine in Western Australia was found in *lamprophyre*. Diamond crystals *in matrix* are eagerly sought by collectors and command very high prices when available.

Sources, and Suggestions for Further Reading:

- Dietrich, R. and Skinner, B. ***Rocks and Rock Minerals***; New York: John Wiley and Sons, 1979
- Kemp. J. ***A Handbook of Rocks***; New York: D. Van Nostrand & Co., 1906
- Sinkankas, J. ***Mineralogy for Amateurs***; New York: Van Nostrand Reinhold, 1964
- Sinkankas, J. ***Prospecting for Gemstones and Minerals***; New York: Van Nostrand Reinhold, 1970

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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).

Our Officers for 2007 are:

Andy Weinzapfel, President
315 Crystal Peak Road
Florissant, CO 80816
719-748-3356
acwein@gmail.com

Maury Hammond, Vice President
PO Box 549
Woodland Park, CO 80866
719-687-2702
mauriac@mywdo.com

Mary O'Donnell, Treasurer
P.O. Box 31
Cripple Creek, CO 80813
719-689-7209

John Rakowski, Secretary
PO Box 608
Florissant, CO 80816
719-748-3861
rak873john@centurytel.net

Richard Parsons, Editor, 13249 Taza Lane, Pine, CO 80470
303-838-8859 *or* e-mail at richard.parsons@att.net

Lake George Gem and Mineral Club May, 2007