The Lake George Gem and Mineral Club -

Club News, June 9, 2007

Meeting Time 9:00 AM!

Silent Auction:
There will be a silent auction of donated items, the proceeds of which will go to support the club. For the silent auction, please bring items you are willing to contribute to the club, and a few dollars to buy things with. There will be some real goodies this month!

Field Trip for the month:
A good gem and mineral club offers its membership a nice balance of field trips between old classic localities and new ones. We are doing both this summer! The menu for the June field trip will have a choice of two new entrees, never before visited by our club. Both springboard from the same general parking area, on opposite sides of a picturesque valley near Trout Creek Pass. This is about 50 miles from Lake George.

There is a contrasting difference in degree of difficulty in hiking to the two localities. One involves an easy hike to Andy Weinzapfel's claims where jasperized orthoquartzite breccia - an unusual, attractive cutting material - can be found. The other is a relatively short but steep hike to a pegmatite dike containing biotite crystals of an extreme size!

You can choose to go on one or both of these trips in the same day. However, *do not attempt the biotite trip unless you are in good physical health*! This hike is not technical, but it will get your heart rate up at this fairly high altitude. There is also some rather thick undergrowth at one point on the route to this site, so pants, not shorts, are recommended.

This valley is popular with campers and ATV'ers on summer weekends, and parking may be limited. Therefore, where possible, plan on car-pooling with others. If insufficient parking is available a short hike may turn into a longer one. Parking preference will be given to those who are not physically able to walk far.

Tools:
1) Jasper breccia claims: the good stuff is on the surface so few tools are required, other than to occasionally pry a rock loose out of the dirt. There is no need to dig exploration holes. A rock hammer will work fine. For those who insist on hard-core hammering, wear safety glasses. The breccia is full of quartz and can produce sharp chips.
2) Big biotite: bring a chisel or something to split the biotite from outcrop. Andy has found masses 3 feet across but because of its cleavage, good specimens will likely be limited to 6-8 inches. Biotite is heavy! A 5 gallon Home Depot bucket full of biotite will be difficult to carry off the mountain. Bring a bag or something convenient to carry specimens.

Safety: You should be aware bears are known to frequent this valley. For the biotite site, it will be imperative that we go and return as a group, and use a buddy system. We will be walking through some thick woods, and don't want anyone to get lost. Don't forget to bring a picnic lunch, plenty of water, a hat and sunscreen.

Coming Events

Lake George Gem and Mineral Club … **June 9, 2007**

Monthly meeting, 9:00 AM at the Lake George Community Center. The meeting will be followed by a field trip (details elsewhere in this newsletter)

Field Studies In Paleontology … **June 16, 2007**

Starting from Cripple Creek Parks & Recreation, 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. Instructor: Steve Veatch Registration is $69. 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.

The Creede Rock, Mineral & Fossil Show … **Aug. 3-5, 2007**

10a-5p with free admission will be held at the Creede Underground Mining Museum with proceeds going to benefit the Creede Community Center. It is being sponsored by Rare Things Gallery and you may contact them at 719-658-2376 or you can call the Creede Chamber at 719-658-2374.

Annual Pikes Peak Gem & Mineral Show … **June 23-24th**

Hosted by the Colorado Springs Mineralogical Society, with exhibits, programs, jewelry, door prizes, swap tables, and gold panning. Sat: 10am - 5pm, Sun: 10am - 5pm. Admission: $4 for adults; $1.50 for children under 13.
Location: Phil Long Expo Center, 1515 Auto Mall Loop (I-25 and N. Academy Exit) Colorado Springs, CO. Contact: Kay Thompson at (719) 636-2978, Roger Pittman at (719) 683-2603 or prpittman@netzero.net, or e-mail csmsshow@cs.com

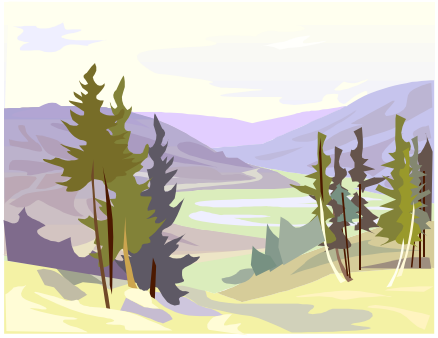
"Contin-Tail" Swap Meet … **August 9-12th**

Buy/Sell/Swap rocks, minerals and fossils! Sponsored by the Colorado Federation of Mineralogical Societies and hosted by the Columbine Gem & Mineral Society (Salida, CO). Buena Vista Rodeo Grounds/Fairgrounds, Buena Vista, CO

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.

Florissant Fossil Beds Field Seminars 2007



In addition to the events listed above, The Friends of the Florissant Fossil Beds has announced its annual summer seminar series, which includes the following earth science seminars. These seminars may be taken with or without college credit.

GLOBAL CHANGE AND ITS IMPACT ON COLORADO (1/2 CREDIT) June 16, 2007, 9 am to 5:00 pm, Bob Raynolds, PhD. This presentation will place Colorado in the context of some of these world-wide changes. While a long way away from sea level, and in a setting where slightly warmer winters might be welcomed by many, Colorado has already been dramatically impacted by recent changes that may be tied to global patterns.

CENOZOIC GEOLOGY AND HAPPENINGS RECORDED AT SELECTED SITES IN SOUTHWESTERN SOUTH PARK, COLORADO (1/2 CREDIT) June 23, 2007, 9am - 5pm, Don Rasmussen PhD. This field trip will examine various diverse aspects of the surface geology in the region southwest of Hartsel, Colorado. Rocks and strata in the area range in age from Precambrian to Recent., and include marine and non-marine sedimentary rocks, folded rocks, igneous rocks, roots and flanks of Eocene volcanoes, Miocene basalt and cinder cone, shoreline of an ancient lake, mineral deposits, gemstone sites, fossil beds, catastrophic ash-fall deposits and lahars, fens and peat beds.

THE EOCENE LIFE OF FLORISSANT: PALEONTOLOGY OF THE PLANTS, INSECTS, MAMMALS, AND DIATOMS OF THE FLORISSANT FORMATION (1 CREDIT) July 28-29, 2007* Herb Meyer PhD., Dena Smith PhD., Jaelyn Eberle PhD., Mary Ellen Benson, PhD. This seminar presents a complete overview of the ancient life that lived at Florissant during the late Eocene about 34 million years ago. Using fossil plants, insects, mammals, and diatoms, the instructors will recreate this hugely diverse warm temperate ecosystem that is preserved in the rocks of the Florissant Formation and discuss its implications to the broader regional and global picture of paleontology.

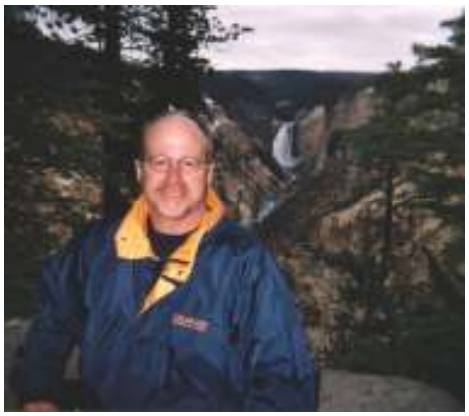
GEOLOGY OF THE CRIPPLE CREEK MINING DISTRICT (1/2 CREDIT) August 4, 2007, 9am - 5pm, Steven Veatch, M.S. and Tim Brown, M.S. The Cripple Creek Mining District is one of the most interesting geologic regions in the country. In this field-oriented program, you will learn about the local geology and tour current operations at the Cresson surface mine. This seminar will include a field trip to the Cripple Creek and Victor Mine with a tour of the mine and a presentation of the history and geology of the Cripple Creek District.

To register and for more information (including tuition rates for college credit, call the Florissant Fossil Beds National Monument at 748-3253. A flyer with a more complete description is available from the Editor, and will be forwarded to all Lake George members with e-mail addresses.

Fees: $50.00 fee for each 1 day seminar; $65.00 fee for each 2 day seminar (must attend both days, no split fees). Discounts are available for members of Friends.

Fossil Stories: Windows to the Past

By Steven Wade Veatch



When I was in the 4th grade, I explored the bluffs behind what is now the University of Colorado at Colorado Springs on the weekends and during summer vacations (this was more than 40 years ago). During these exciting times, I would investigate ravines and gullies eroding into the bluffs and bring home specimens of jasper, sandstone, and other rocks. This was the start of my rock collection and my interest in the earth sciences. Next year I bought a rock tumbler and joined the Colorado Springs Mineralogical Society (CSMS). At that time the club met at the International Brotherhood of Electrical Workers Local 113 building across from the Coca Cola plant on Pikes Peak Avenue. I was a "pebble pup." I also made a number of visits to the Denver Museum of Natural History (now the Denver Museum of Nature and Science: DMNS). To me this huge museum was a temple to science and the incredible dinosaur exhibits made a central shrine. By attending the programs of the CSMS and visiting the DMNS, I became a confirmed rockhound and developed an interest in the earth sciences that continued to grow and stays with me to this day.

Almost from the very beginning of my school days I went out into the field and collected rocks, minerals, and fossils. I especially enjoyed collecting trips to the commercial operations at the Florissant Fossil Beds before a national monument protected these resources. The excitement of fossil hunting strongly appealed to me. Since Colorado has a treasure trove of plant and animal fossils, there is much to find and collect. Fossil bones reveal prehistoric animals that once roamed a landscape of meadows, forests, and meandering rivers that flowed past conifers, gingko trees, ferns, and cycads.

Fieldwork is the best part of paleontology. It is hard work, but has all of the attraction of digging for crystals. A weekend in the field usually is a time of many adventures—sometimes great. Although the collecting of fossils is interesting to the public, it is just the beginning of a long sequence of paleontological disciplines. The hard part of preparing and studying fossils is often not known.

Prospecting is a matter of scrambling up steep slopes looking for signs of fossil bones. Sometimes you will see a bone protruding from a cliff, sometimes just bits and pieces of bones in the dirt. Rich Fretterd took me to Garden Park for my first real exploration of a paleontological site. Rich had connections with a local rancher where we could explore exposures of Morrison Formation sandstones, shales, and clays on his ranch. We found many bones from the Jurassic during those fieldtrips.

Why the fascination with fossils? Just think of it—they reveal strange and long lost worlds. The aim of working with fossils is simply to piece together these fragments of the fossil record in order to tell larger stories of ancient inland seas, dinosaurs, Ice Age mammoths, and other vanished worlds and their denizens. The focus is on the mystery of life and how it changes over time. There are two approaches to paleontological research: 1)find new ways to interpret fossils already collected or 2)engage in fieldwork where you find new fossils.

John Harrington, also a member of the CSMS, knows many great locations of paleontological interest. He has, over the years, taken me to some of his best sites. Each visit ends up taking at least two years of research and study, and then the hard work of writing a paper. Most recently, John showed me a dinosaur track south of Colorado Springs that has now expanded into a huge project with a paper being submitted to the Society of Vertebrate

Paleontology for their annual meeting this fall. Martin Lockley, a celebrated dinosaur track specialist, is a co-author of the paper.

John once took me to the Teepee Buttes, which resulted in a poster and abstract written for one of the first Western Interior Paleontological Society's Founders Symposiums. John also showed me a site behind Garden of the Gods that is rich with ancient sea urchin fossils. Another published paper followed after more than a year of research on these sea urchins. The exploration of this site was followed by a trip to the interior of the Garden of the Gods park where we studied and imaged a Ute petroglyph panel hidden behind scrub oak. This paper was presented at a Colorado Archaeological Society meeting in Pueblo. Even though this is not paleontological work, but rather archaeological, it was just as much fun. While working in fossil beds one commonly encounters archaeological artifacts and features, and knowing something about them is useful.

Today not much has changed. I am still a member of the CSMS (life) and I am still going on or conducting field trips. I later joined the Lake George Gem and Mineral Club, in order to participate in even more rock, mineral, and fossil activities. I am looking forward to more adventures in the field and unraveling the secrets that fossils hold. Fossils, as windows to the past, have much to reveal.

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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, 1992; Flint and Rankin, 1991; Rankin and Flint, 1992). According to Parker and Flint, 2005) the Upper Bridgewater Formation is a middle to late Pleistocene 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 *Leptopius duponti*, a medium-size, soil-inhabiting weevil or snout beetle of the family

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.
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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.

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

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.

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 with permission.

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.

SEDIMENTARY ROCKS: PART I *by John F. Sanfaçon*

Sedimentary rocks make up only 10% of the Earth's crust by volume, but they cover 75% of the 48 states, most of Western Canada, and most of Mexico immediately south of Texas. Such rocks can be divided into two groups: *sedimentary* rocks per se, and *diagenetic* rocks. There is some overlap between the two categories, but geologists insist on differentiating them, because with these kinds of rocks, their mode of formation, rather than their chemical composition, is crucial. Such rocks are surprisingly restricted in their chemical components: carbonates (calcite, aragonite, dolomite), sulfates (anhydrite, gypsum, barite), halides (halite, sylvite) and silicates (quartz, mica, feldspar). Less common components are *pyrite, pyrrhotite* and *hematite.*

Diagenetic rocks are those which have undergone some *recrystallization* or *precipitation* of their mineral constituents *after* the materials were *lithified*, or turned into stone, in horizontal beds or strata. These processes occur close to the Earth's surface, at low-temperature and pressure. For example, the conversion of massive *calcite* to *aragonite* and vice-versa, forms the rock *travertine* in caves. The so-called "Mexican onyx" coming out of Pakistan these days as spheres, pyramids, bookends, etc. is but the latest example of a seemingly limitless decorative rock being exploited on a large scale. Similarly, the transformation of *silica gel* into *chert* and *flint* involves low-temperature changes in crystal form. *Jasper*, another decorative material, often occurs in *geologically significant deposit as thick beds,* and can therefore be considered a rock. On a much smaller scale, *agate* and *opal*, although usually *not* considered rocks, but crypto- or microcrystalline varieties of the mineral quartz, are also products of surficial changes in silica. Another important re-crystallization process creates the massive *apatite* rock, exploited for its phosphate content, and bears little resemblance to the prismatic apatite crystals we know so well. The mineral is aptly named --- from the Greek "to deceive" --- because it occurs in so many colors and crystal habits, let alone its massive forms.

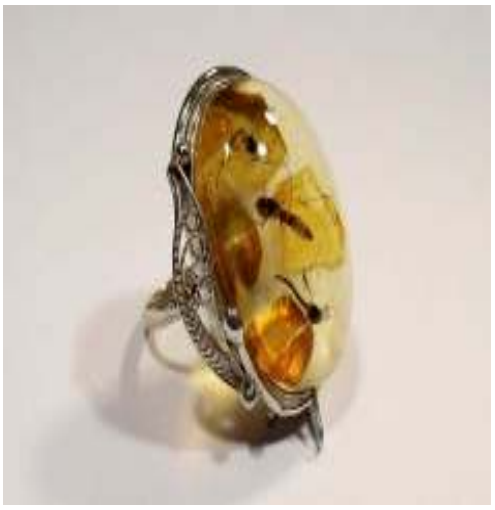
Sedimentary rocks, strictly speaking, are those formed from layered and compacted mineral detritus which has not been essentially changed after stratification. Both *diagenetic* and *sedimentary* rocks may later be warped, folded or intruded by hot igneous bodies, creating new mineral species nestled in distinctly different rocks which we call *metamorphic*, a subject we will save for future issues.

For the time being, let's consider the *texture* or *grain size* of sedimentary and diagenetic rocks, since the chemical composition of such material is usually not difficult to determine. Particles larger than 256 mm are considered *boulders,* between 64 and 256 mm in size are called *cobbles,* and fragments between 2 and 64 mm are called *pebbles*. A rock made up of the above materials, cemented together, would be called a *conglomerate.*

On a finer scale, *quartz* particles between 1/16 and 2 mm in size cemented together gives us *sandstone,* and within that range geologists use 5 subdivisions to distinguish a *very coarse* to a *very fine* texture. *Silt* is the term used for even finer *quartz* particles, between 1/256 and 1/16 mm in size, which, when compacted, give us *siltstone*. The finest of all, at less than 1/256 mm in diameter, would be the *clay minerals (*montmorillonite, kaolinite, illite, etc.) which produce *shale*. Given the limitations of the naked eye, it is difficult to distinguish in the field between *siltstone* and *shale*. Clay minerals, usually missing in most mineral collections, require the use of electron microscopes for identification, as color is an unreliable guide, because of the possible contamination of the altered original mica and/or feldspar by organic material (plant and animal matter). ***Reprinted by permission of The MORRIS MUSEUM MINERAL SOCIETY, Morristown, New Jersey***

Age Of Ambers

Amber has long been appreciated and traded by the Syrians, Phoenicians, and even the Vikings. The Greeks believed it was solidified sunshine, considered it a precious stone, a jewel, but called it Elektron for its ability to attract bits of material if rubbed on cloth. Nero, emperor of Rome, sent expeditions to buy Baltic amber, to cut as gemstones or to powder for medicine to treat inflammations and muscle spasms. Amber is a polymerized compound of hydrogen, oxygen, and carbon and contains varying ratios of succinic acid, several resins and brown volatile oil (amber oil). Polymerization is the process wherein the molecules of sticky resin are linked into larger molecules. This is unlike the fossilization or lithification process of other organic materials. Amber has a hardness of 2, a specific gravity of I and can be melted at 100 degrees C. It can be cooked down to black colophony, or amber pitch. Amber varies in color, being found in blue, red, black, green and honey-colored. The trees, *Pinus succinifera,* producing amber-resin existed through the Miocene Age, but not all amber is the same age. Amber occurs in sedimentary rocks, or is weathered out of them.



- Bavarian - 225 million years old
- Lebanese - 115 to *135* million years old
- Siberian - 80 to 11 5 million years old
- British Columbia - 100 million years old
- New Jersey - 90 million years old
- Alaskan - 80 million years old
- Canadian - 70 to 80 million years old
- Arkansas - 60 million years old
- Dominican Republic - 25 to 40 million years old
- Baltic - 40 million years old

(From many sources via Lapidarian 11/ 99 and THE BENITOITE, 11/99)
via T-Town Rockhound 10/01