Friends of the Florissant Fossil Beds

Volume 2004, Issue 1 March, 2004

Inside this issue:

'Twas a Bug's Life

By Beth Simmons

An interesting tale of Late Eocene life was entrapped in its tracks in the small upland lake that existed at Florissant, Colorado 35 million years ago. Insects that lived around the lake differed very little in characteristics and life styles from modern insects.

A tiny little female parasitic wasp, not much bigger than a pencil eraser, flew about, intent on a mission. One of the original researchers of bees and other fossil wasps, Charles Brues, originally named the little fossil insect Limnerium consuetum in 1910. Modern taxonomy research now places the bug in the genus Olesicampe.

The female wasp finally found her target, a larva of an Elm Sawfly, *Cimbex americana*. This fleshy predator of elm leaves chews upon Elm leaves as it develops from the 'caterpillar' stage into a large winged insect. The female parasitic wasp gently set down upon the unsuspecting larva and drilled a little hole into the fifth segment back from the head, just over the caterpillar's 'heart.' Through her ovipositor, she laid an egg just under the hide of the caterpillar. The egg developed as the caterpillar chewed the edge of the elm leaf.

A storm came over the lake and dashed the leaf of the ancient version of elm tree, *Cedrelospermum*, from its mooring. The leaf, complete with its passengers, fell onto the lake, coated with a diatom mat. There the 'trio' died, and when the mat sunk into the water, they were preserved for 35 million years. Pat Monaco of the Dinosaur Depot in Cañon City found the specimen as part of a collection made during the Park Service's research dig of 1995.

Anywhere there are modern day versions of Elm trees Ms. *Olesicampe* can be found, bent on her mission to control infestations of Elm Sawflies. Life hasn't changed much in the hyperparasitic insect world since the days of the Eocene Pompeii at Lake Florissant. Each of the thousand insect species found in the Florissant Fossil Beds tells a similar tale. When finally researched and revealed, the thousand stories will help unravel the tangled web of life in the famous ancient lake.

Limnerium consuetum, sp. nov. Type.

From Brues, Charles, 1910, The Parasitic Hymenoptera of the Tertiary of Florissant, Colorado: Bull. Mus. Comp. Zoology, V. 54, #1., Fig. 59

A Painless Contribution

DID YOU KNOW?

Did you know that 70% of the $50 purchase fee for a 2004 National Parks Pass goes directly to Florissant Fossil Beds National Monument, *provided the purchase is made directly at the Fossil Beds?*

Your 2004 National Park Pass provides admission to any National Park requiring an entry fee. It is valid for one full year from first use in a National Park. Where a per vehicle fee is required, it will admit you and any accompanying passengers in your vehicle. For those Parks where a per visitor fee is required—like Florissant Fossil Beds National Monument—the pass will admit your spouse, parent, and children.

Consider giving a 2004 National Parks Pass to a friend. What better way to help them stay in shape, provide educational experiences, and bond with the exceptional natural settings our National Parks provide!

Florissant Regional Geology Skarn Deposits

by Andy Weinzapfel, geologist

When rocks are exposed to heat and pressure, a variety of physical, chemical, and structural transformations occur. These metamorphic rocks inherit certain characteristics of their parent, but also may be quite different. Metamorphism over large areas may be caused by deep burial of rocks below the surface of the earth, since there is considerable heat stored within the earth. The rate of increase of temperature with depth is called the geothermal gradient, which differs from place to place. Hot igneous bodies intruding from below can also produce local metamorphism. The intensity of metamorphism, determined by the degree of change from the parent rock to the new rock, is referred to as metamorphic grade. For example, conversion of shale, a fine-grained sedimentary rock, to slate would be low-grade metamorphism, but continued alteration to garnet-sillimanite schist would be high-grade metamorphism. The presence of certain key minerals can readily establish the metamorphic grade. When sedimentary rocks such as sandstones or shales are metamorphosed, original layering, or bedding, is usually not completely obliterated. This relict bedding is referred to as foliation.

In Park, Fremont, and Chaffee Counties, tungsten and copper-zinc deposits are widespread (see figure 1) within high-grade metamorphosed, pre-1700 million year old Precambrian rocks, loosely termed the Idaho Springs Formation. These mineralized occurrences are collectively referred to as skarns, an old term derived from the Swedish mining industry. Today skarns are defined as coarse-grained granoblastic (massive, non-foliated) assemblages of calcium-bearing silicate rocks. Prior to intense metamorphism, these were typically sedimentary rocks containing limestone (calcium carbonate) or dolomite (calcium magnesium carbonate). Both rock types recrystallize to form marble during metamorphism. Limestone and dolomite-rich rocks are often chemically reactive, especially with various common elements such as silicon, aluminum, iron, and magnesium introduced with hot fluids during metamorphism. This process, where new minerals are formed due to exchange of ions (electrically charged elements) in solution, is called metasomatism.

Skarns usually contain significant amounts of garnet and epidote, colored red and green respectively. These sometimes brilliant and contrasting colors are often the first clue in the field that one has encountered a skarn. They should always be examined carefully, as a variety of interesting minerals can develop, sometimes in large beautiful euhedral (smooth-faced) crystals.

In our region, copper/copper-zinc skarns are much rarer than tungsten skarns. The dimensions of the former, however, are usually much larger than those of the latter. Copper-zinc skarns occur primarily in metamorphic rocks called amphibolites, while tungsten skarns prefer calc-silicate gneisses.

The most famous copper-zinc skarn in the region is the Sedalia Copper Mine, located about 4 miles northwest of Salida. The mineralized unit is about 1000 feet long at the surface, having a maximum width of 150 feet. This deposit was found in October, 1881, and operated intermittently until 1923.

(Continued on Page 4)

Florissant's Sequoias: Redwood Giants of the Eocene

By Steven Veatch

During the late Eocene large *Sequoia* (redwood) trees grew on terraces along an ancient river valley near present-day Florissant. Among these trees was the extinct *Sequoia affinis*, closely related to the modern redwoods (*Sequoia sempervirens)* that are now restricted to a narrow coastal region in northern California (Tidwell, 1998).

The "Big Stump" is the largest petrified redwood stump exposed in the Monument. It measures 3.6 m tall and is 3.7 m in diameter at breast height. This stump is all that remains of a tree that was more than 90 m tall when the mudflow buried its base. Image date Nov 2003 by S. Veatch.

More than 34 million years ago a lahar or volcanic mudflow, coming from a nearby volcanic center, flowed into the once peaceful valley. The mudflow was up to 5 meters deep and quickly surrounded these giant trees. The upper section of the redwoods decayed and rotted away while the lower 5 meters were protected by the silica-rich mudflow. The unhurried progression of petrification—through a process known as permineralization—preserved the remains of these ancient trees with incredible detail, including tree rings.

Fossil branches of the Florissant redwood, Sequoia affinis. Specimen FLFO-4858 from the collection of Florissant Fossil Beds National Monument. Image date Oct 2003 by S. Veatch.

Tree rings, which record annual growth, also reveal the growing conditions of trees. A researcher at the Florissant Fossil Beds National Monument carefully measured tree rings in fossil wood (*Sequoioxylon pearsallii)* and noted a larger (40%) average tree-ring width than the modern redwoods (*Sequoia sempervirens)* and giant sequoia (*Sequoiadendron giganteum) growing along the northern California* coast (Gregory-Wodzicki, 2001). The significant difference in mean ring width between modern and extinct redwoods suggests the ancient redwoods in the Florissant Valley were growing under more favorable conditions than their modern counterparts (Gregory-Wodzicki, 2001). It is likely that increased precipitation from moist Pacific Ocean air reached the western interior as the Sierra Nevada mountains of California had not yet been uplifted to block the flow of the moist air (Axelrod, 1986). More precipitation, resulting from these moist air masses, would have fallen during the growing season. Precipitation at Florissant during the late Eocene is estimated at about 50 – 80 centimeters of annual rainfall, greater than the modern precipitation of 38 centimeters (Meyer, 2003). A higher level of atmospheric $CO^{2,}$ perhaps twice that of modern levels, may have contributed to the favorable growing conditions in the Florissant Valley of the late Eocene (Cerling, 1991).

A subsequent volcanic mudflow moved across the ancient paleovalley, forming a dam of mud, rocks, boulders, and associated debris. A stream, running over earlier mudflows, began to back up behind the mud dam, eventually forming a large lake—Lake Florissant. Leaf and insect fossils were preserved in this lake.

Not only are the *Sequoia* stumps preserved, but *Sequoia* cones and foliage are also represented in the fossil record at Florissant. *Sequoia affinis* cones are found as fossils in the thinly bedded shales of ancient Lake Florissant. The ovoid cones are made of spirally arranged scales and tend to be smaller (about two-thirds the size) than the modern coast redwood cones (Meyer, 2003).

Sequoia affinis cones. Specimen FLFO-4717 from the collection of Florissant Fossil Beds National Monument. Image date Oct 2003 by S. Veatch.

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Skarn (Continued)

Some ores were treated in Salida, but most were shipped to the U.S. Smelting Company in Canon City. Copper ores included chalcocite, chalcopyrite, azurite, and chrysocolla. At least 100,000 tons of ore were produced; some estimates are much higher. A small pocket of native silver was also discovered on a lower mine level. The Sedalia Copper Mine has long been famous for its large dodecahedral (12 sided) crystals of almandite garnet (iron aluminum silicate), some as large as 6 inches across. These prized specimens occur within green chlorite mica schist. The body trends northeast and dips 50-70 degrees southeast. Other interesting metamorphic minerals at this locality are tremolite, actinolite, and epidote. Permission must be obtained to collect at this site.

Northwest of Lake George, numerous tungsten skarns are present (fig. 1) in high-grade metamorphic rocks. The tungsten ore can best be recognized under black light, as scheelite (calcium tungstate) fluoresces blue. Some skarns in the area contain copper and uranium mineralization also. Remnants of many abandoned mines and prospect pits in Pike National Forest present many opportunities for mineral collecting. These are mostly concentrated in the area north of highway 24, and west of Tarryall Road 77. Numerous forest service roads provide excellent access to the area. The most interesting metamorphic minerals are massive apple-green epidote, snow-white wollastonite, green vesuvianite,and pink thulite. Numerous garnet-bearing skarns are present, but the garnets are generally massive, rarely forming euhedral crystals showing perfect faces. This is probably because, unlike at the Sedalia Copper Mine, chlorite rims do not develop at the garnet borders. The many and varied skarn deposits west of Lake George represent an overlooked collecting opportunity for the Lake George Gem and Mineral Club, due to their proximity, relative ease of access, open lands status, and interesting mineralogy.

Selected References

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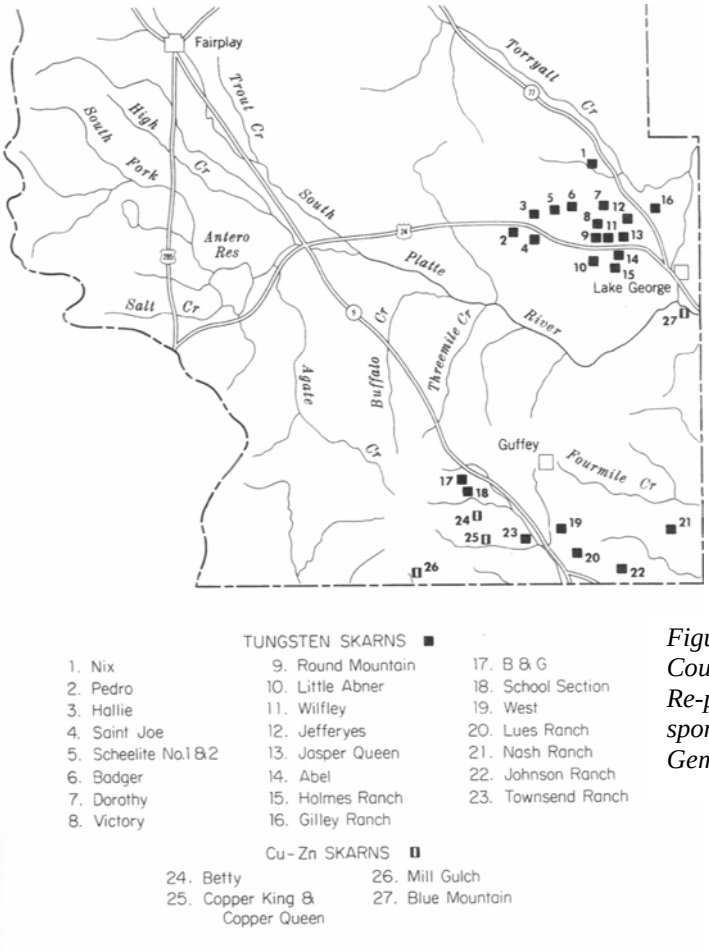

Figure 1: Skarn Deposits of Park County
Re-printed from a field trip guide sponsored by the Lake George Gem and Mineral Club.

Freeze-thaw cycles produce Frost-Shattered Rocks at Hornbek Homestead

By **Steven Veatch**

Geology and geomorphology are both components of complex Earth systems that produce Colorado's spectacular landscapes. Geomorphology is the study of surface landforms on the earth and how they are influenced by:

View of exposed Wall Mountain Tuff, a pyroclastic flow that covered much of the Eocene landscape over 36 million years ago. Photo date 3/03 by D. Atkins.

1) process, 2) structure, and 3) time. One geomorphic process, a persistent freeze-thaw cycle, continues to seasonally act (time) on exposed rock known as Wall Mountain Tuff (structure or local geology). This seasonal freeze-thaw cycle is breaking apart the Wall Mountain Tuff that forms some of the hills and ridges near the Hornbek homestead site (part of the Florissant Fossil Beds National Monument).

Rocks and minerals exposed at the surface are subjected to weathering, a process of disintegration and decomposition from physical and chemical action—generally a slow process. Mechanical weathering simply breaks up rock by physical processes without any changes in chemical or mineral composition of the original rock. Chemical weathering, on the other hand, decomposes rocks by surface processes that actually change the chemical composition of the original rock.

Fields of weathered angular rock fragments, formed by frost shattering, mantle certain slopes near the Hornbek homestead. Photo date 3/03 by D. Atkins.

Most substances expand when heated and contract when cooled. Water is an exception, it expands as it gets colder, and when water transforms to ice (0°C), it expands about 9 per cent—the driving force behind the kind of mechanical weathering known as frost wedging, frost action, or freeze-thaw. This type of mechanical weathering process is basically expansion with little contraction. Here is how it works: Frost wedging requires a supply of water and many alternations of freezing and thawing. During the day warmer temperatures and sunlight melt snow, allowing water to seep into cracks and crevices in the rock. During the night, when the water turns to ice, the expansion of the ice causes wedging of the rock. Repeated freezing and thawing cycles will result in the shattering of the affected rock. Over time rocks subjected to this diurnal cycle will be reduced to a layer of angular rubble.

Over thousands of years freeze-thaw cycles have broken up the surface rock producing a scree. Under the shattered rock rubble is a layer of permanently moist soil. Photo date 3/03 by D. Atkins.

This type of mechanical weathering at the Hornbek site may have intensified during the last Ice Age when colder, wetter environments prevailed and frost action dominated the Florissant landscape. At that time climatic conditions generated a range of temperatures that produced an intense freeze-thaw episode over longer seasons, creating a large volume of frost-shattered rocks. Today small fields of weathered angular rock fragments form mobile layers of loose rocks on slopes—the result of gravity erosion.

View of Hornbek homestead. The frost-shattered rock site is at the end of the ridge just the north of the homestead. Photo date 9/01 by C. and J. Dickey.

Locally, the Wall Mountain Tuff— a 36.7-million-year-old extrusive rock—forms the angular rock

(Conntinued on Page 6)

Frost Shattered Rocks (Continued)

Frost shattered rocks at the site have an extensive lichen cover, indicating these rocks have been exposed for a long period of time. The lichens contribute to chemical weathering. Photo date 3/03 by D. Atkins.

fragments within the Monument (McIntosh and Chapin, 1994). The Wall Mountain Tuff contains small cracks and crevices produced by the cooling of the once molten rock.

In past winters, just as it does today, water entered these cracks during the day and expanded as it turned to ice at night, exerting great pressure against the sides of the cracks—up to 30,000 lbs/in^2 (2,100 kg/cm$^{2)}$, enough to crush granite (Brace et al. 1972). The process starts again as the ice melts and water seeps deeper into the expanded cracks and other fractures—then during the next cycle of freezing stress is applied further down each crack. The freeze-thaw cycle continues until a piece of the rock breaks away. The size of the rock fragments formed in this fashion are based on lithology, permeability, pore size, freezing intensity, and water content (Lautridou, 1988). There may be a small degree of capillarity within the pore spaces which help water rise within the rock. The mechanical weathering process of frost wedging creates more surface area that is attacked by other weathering (including chemical) and erosional agents.

Mechanical weathering by freezing and thawing is most effective when moisture is abundant (melt water from snow patches) and when there are extreme diurnal temperature fluctuations around the freezing point of water. Photo date 3/03 by D. Atkins.

Field observations were used to study the frost-shattered rocks near the Hornbek homestead. Elevation of these features is variable, ranging from 8,280 feet to 8,523 feet. The frost-shattered rocks share a common southwestern exposure, forming a scree. The non-northern aspect produces many alternations of diurnal freezing and thawing in the winter. There is sufficient solar radiation to warm the rocks and thaw the ice during the day. At night, when the temperatures drop and ice returns, the rocks are broken into fragments.

This point, fashioned from Wall Mountain Tuff, was found on the Monument. The high silica content of this material makes it an excellent source for lithics. There has been human occupation at the Florissant Fossil Beds National Monument for at least 9,000 years. Florissant Fossil Beds National Monument Specimen. Photo date 8/03, © S. Veatch.

A number of archaeological remains have been found in the area, mainly lithics (stone tools). Many of the lithics were fashioned from Wall Mountain Tuff, the same rock subjected to frost shattering that formed steep taluses.

The high silica content of Wall Mountain Tuff and the fact that it is welded suggests high temperatures. The glassy nature of some of the artifacts indicates immediate cooling. Florissant Fossil Beds National Monument Specimen. Photo date 8/03, © S. Veatch.

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Board Diggin's

A big thank you to Marilyn Callan, a member of the Friends, who has volunteered to serve as our Historian.

A big thank you to all who made our January Community Series at Colorado College a huge success. David Atkins got the speaker. Steven and Sally did the arrangements. Laine, Sally, Bill, Andy, and Jack did the refreshments and set-up.

A welcome to Jeff Brandt, a new Board member. Jeff lives in Woodland Park and is the editor of our new newsletter which members will be receiving 4 times a year. Thank you Jeff!

Harold Kaelin has completed preliminary arrangements for the 35th Anniversary dinner for the Monument. Mark your calendars for Friday, August 27th at 7 p.m. at Pine Crest in Florissant. Tickets will be $25.00. More info will be available soon. Thank you, Harold!

The Seminar committee of the Board is busy working with the Monument staff to arrange the Summer Seminars. This will be the 10th Anniversary of the seminars and the 35th Anniversary of the Monument, soooooo, watch for a great schedule of offerings. Four members of our Board will be doing some of the offerings. Schedule should be out in May.

On February 8 and 9, 2 members of the Board, Steven Veatch and David Atkins, attended the Colorado Historic Preservation Seminar in Denver. The purpose for going was to gain information about grants available from the Colorado Historical Society. Thank you to all who attended for giving your time. We thank the Cripple Creek and Victor Gold Mining Company for paying for the registration.

Andy Weinzapfel will be presenting a program for the Colorado Springs Gem and Mineralogy Society in February. His is also going to do a presentation in April in Dallas at the conference of the American Association of Petroleum Geologists. Andy is co-chair of the conference. Good luck Andy!

Steven Veatch will travel to Denver and present the Princeton Scientific Expedition of 1877 to Florissant at the March meeting of the Friends of Mineralogy. The program will be at the Denver Museum of Nature and Science.

President's Message

Our first community program was a terrific success. All the seats were filled at the Tutt Science Center at Colorado College with Friends members and the general public listening to a fascinating program. This program was so good it made the headlines of the Gazette the next morning.

We have a fantastic series set for the rest of the year. You do not want to miss them. Our exciting summer seminar series will soon be finalized and a brochure describing will be sent to you. I am looking forward to seeing all of you at our programs, seminars, hikes, and other adventures planned this year.

School of Prospecting

The Cripple Creek School of Prospecting held a 2-day workshop taught by FoFFB's President Steve Veatch. The course was attended by about 30 students. Topics included present day mining techniques, where and how to find "pay dirt" and staking your own claim and how best to work it.

Shelly Veatch on a 300-ton ore truck!

Advertising Rates:

Business Card Size:	$6.00
¼ Page	$12.00
½ Page	$24.00
Full Page	$48.00

You may submit advertisements to: Steven Veatch, P.O. Box 5938, Woodland Park, CO 80866 or via email: sgeoveatch@att.net

The Friends of the Florissant Fossil Beds, Inc. newsletter is published quarterly by the Friends and is governed by the by-laws of the organization.

Managing editor: Jeff Brandt (jeff@thebrandts.org)
Contributing and Science Editor: Steven Veatch (sgeoveatch@att.net)

Paleo Events Calendar

February 28, 1:30 p.m.

The Princeton Scientific Expedition to Florissant

Speaker: Steven W. Veatch, President of the Friends of the Florissant Fossil Beds. Over 125 years ago a group of remarkable college students mounted an expedition to Colorado. Steven Veatch has uncovered the expedition diaries, journals, and photographs documenting this remarkable journey that explored the area, collected natural history specimens, and noted mining operations. Don't miss this rare opportunity to join Veatch and other museum staff members of a special tour of the Western Museum of Mining and Industry following the lecture. Location: Western Museum of Mining and Industry, 1025 North Gate Road, Colorado Springs. Cost: regular museum admission. Reservations required: 719-488-0880, 1-800-752-6558.

March 9, 11:30 am and 7: p.m.

Mammoths on the Bering Land Bridge: Cave Paleontology on St. Paul Island.

Dr. Russ Graham, chief curator, Collections and Research Branch, at the Denver Museum of Nature and Science, and a team from the University of Alaska spent some time last summer in a cave excavating a site where a mammoth tooth was unexpectedly discovered. Travel to the remote Pribilof Islands and hear for the first time what his team discovered and what implications their discovery may have.

Daytime: 11:30 a.m. to 1 p.m. $10.00

Evening: 7 p.m., $13.00

Both lectures: Ricketson Auditorium, Denver Museum of Nature and Science.

March 20 & 21

Unwrapping the Past

Alberta Paleontological Society, Eight Annual Symposium

Presented in conjunction with the Mount Royal College Geology Department and the Canadian Society of Petroleum Geology, Paleontology Division. This year's APS symposium focuses on showcasing paleontology to the general public, with lectures and family activities. Planned talk topics include sauropod dinosaurs, British Columbia's first dinosaurs, and Leonardo (the mummified dinosaur of Montana). Location: Mount Royal College Science Wing (Lower Level), 4825 Richard Road S.W. Calgaryz, Alberta. Free lectures, minimal workshop fees.

Info: www. ablertapelaeo.org

Board Challenge Grant Met!

THANK YOU!! THANK YOU!!

We deeply appreciate the donations given

by the following members. We are able to add $1,200 to the film fund because of your generosity! A thank you to:

Clara Duer
Kay Bard Gray
Warren Hill
Maggie Johnston
Sally Maertens
Richard Oakes
Noel Poe
Col. J.L. Ryniining
Richard Taylor
Steven Veatch
Steven Wilkinson
Rick Wilson

Superintendent's Message

2004 has begun with quite a bit of positive media attention regarding our fire management program, the new administration building, roadwork along Teller County 1, and the Friends of Florissant Fossil Beds. Hopefully the media attention results in an increased awareness about the monument, new members for the Friends, and potentially increased donations. Much of this success was due to the generous support of the Friends who funded the publication of the environmental assessment and assisted with our open house in Florissant. Thank you Friends.

Jeff Mow, Superintendent Florissant Fossil Beds National Monument

Friends of the Florissant Fossil Beds, Inc.

Presents Colorado's Colorful Geology

March 25, 2004

7:00 p.m.
Tutt Science Center (Lecture Hall)
1112 North Nevada Avenue
Colorado College

The Colorado Geological Survey's new publication, *Messages in Stone: Colorado's Colorful Geology*, not only offers stunning photography of the state's many unique geologic oddities and beauties, but explains why, when and how they came to be. This beautiful book contains more than 400 color photographs and images. It is filled with information about the rocks of Colorado, their history, and their impact on humans in the form of resources and hazards. The book is aimed at the general public, but will also be of interest to professional earth scientists and students.

The rainbow of colorful rocks in Colorado is a reflection of the diverse and spectacular geology throughout the state— from the Switzerland of America in the San Juan Mountains, to Aspen's Maroon Bells, to the Black Canyon of the Gunnison, to the Book Cliffs, to Dinosaur National Monument, to Glenwood Canyon, to Rocky Mountain National Park, to Pawnee Buttes. Each has its unique geology that creates a landscape with a totally different look from the others.

Exciting geologic events affected Colorado for the past three billion years. Locked within the rocks are wonderful stories of these events. Colorado has glaciers, sand dunes, earthquakes, volcanoes, immense mineral wealth, significant petroleum reserves, and the highest average elevation in the country with 58 peaks over 14,000 feet above sea level. Colorado's geology includes sandstones, batholiths, shales, conglomerates, algal mounds, evaporites, regional metamorphic rocks, laccoliths, salt anticlines, granites, shoshonite flows,hundreds of different minerals, dikes, hogbacks, terraces, sills, chalks, world class fossils, geologic hazards, caves, natural arches, rock glaciers, sackung features, calderas, unconformities, rift valleys, migmatites, thrust faults, normal faults, grabens, horsts, basalt flows, rhyolite flows, basement-cored anticlines, refolded folds, mesas, buttes, u-shaped valleys, moraines, debris flows, landslides, contact metamorphism, carbonatites, monoclines, and much more. What does all this gibberish mean? This book attempts to make all of this understandable and enjoyable.

Senior Editor, Dr. Vince Matthews, will present a slide-show sampling of Colorado's world-class geology that creates our world-class scenery. Vince will also be available for signing books after the presentation.

Admission: there is no charge for this program

Location: Tutt Science Center (Lecture Hall), 1112 North Nevada, Colorado College. Located in Colorado Springs. Take I-25 to the Uintah Street Exit (143); go east, turn right (south) and you are there. Parking is available on the west side of the building and along the curb on Nevada Avenue.

Pikes Peak Historical Society Calendar

Sun 15 Feb.-2:00 p.m.
"Poetry of the West" Gary Knighting, host
Historic Florissant School House

Sat 6 Mar-12:00 p.m.
Pikes Peak Historical Society Annual Meeting
Historic Florissant School House

Sun 18 Apr-2:00 p.m.
"Charlotte Hill: Victorian Mistress of Fossils"
David Atkins, at Historic Florissant School House

Sun 16 May -2:00 p.m.
"Rocks: Windows of the Past"
Andy Weinzapfel at Historic Florissant School House

Sat 5 June-8:00 a.m.
Florissant Community Clean Up
Florissant Fire House

Sun 13-June 2:00 p.m.
"Princeton Scientific Expedition of 1877: Florissant Segment"
Steven Wade Veatch, location to be announced

Sat 24 July
Heritage Day and Mayor's Election
FVFD Pancake Breakfast Florissant Fire House

Sat 14 Aug-7:00 p.m.
Tabeguache Utes Dance at Florissant Fossil Beds National Monument

Sat 11 Sept-11:00 a.m.
PPHS Volunteer Brunch
Location to be announced

Sat 16 Oct- 2:00 p.m.
PPHS Annual Auction
Location to be announced

Sun 21 Nov -2:30 p.m.
"Dinosaurs: Prehistoric Life"
Bill Dexter, Location to be announced

Sat 4 Dec-12:00 p.m.
PPHS Christmas Party
Twin Creek Ranch, Florissant

Membership Renewal

If there is a red dot on your address label your membership has expired and this will be your last newsletter.

Please renew today!
Renewal Information

Membership Categories (choose the membership level that is right for you and renew your membership).

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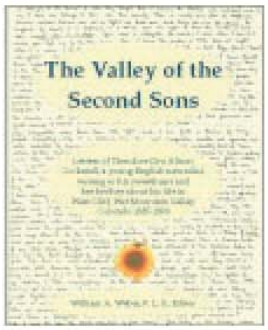

The Valley of the Second Sons: Letters of Theodore Dru Alison Cockerell, a young English naturalist, writing to his sweetheart and her brother about his life in West Cliff, Wet Mountain Valley, Colorado 1887-1890, William A. Weber, F. L. S., Editor. ISBN 0-9710609-9-1. 592 pages. $39.95. **A vivid account by a master naturalist.**

"I was taking notes part of today from Scudder's paper on fossil insects. He gives a graphic description of the place (Florissant) where they are found. It is near Pikes Peak. It is strange and impressing to read all about it. In Eocene times, long before the advent of man, was a lake at Florissant, and on the borders of the lake were oaks, poplars, willows, walnuts, palms, elms, and flowers. In the lake were fishes. Birds flew about, and insects were in myriads. Everything indicated a warm and genial climate. Volcanic action was fierce in the neighbourhood. Insects would die, fishes and birds would die, leaves would fall into the soft mud at the sides of the lake, and volcanic ash would cover them up and preserve them for the long ages to come.

"Now there is no longer any lake, but one can go there and take out insects, leaves, even sometimes birds and butterflies, all in the most beautiful state of preservation! Hundreds of species, perhaps, have been found. Is it not strange, to dig up so living a memory of the times before there was man atall?" *The Valley of the Second Sons*, page 479

"Cockerell speaks to us from not only the frontiers of Colorado and the Victorian era, but also from the spirit of one galvanized by a passion for nature, beauty, and understanding." **Dr. Michael S. Engel, University of Kansas**

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Please provide us with feedback on the newsletter or any topic you are interested in. We would also like to know who is interested in serving on various committees or on the Board. You can reach us at the address to the left or by email at fossilbeds@yahoo.com.

In 1987, the Friends of the Florissant Fossil Beds, Inc. was organized by a group of dedicated individuals interested in assisting the National Park Service in its mission to preserve and protect our national treasures. As a non-profit organization, the Friend's mission is to secure resources to help preserve the fossils and promote programs activities that enhance the Monument's educational, research, and scientific objectives.

Friends' groups help many of the National Park service areas in a variety of ways. Membership fees and donations to the Friends of Florissant Fossil Beds are used for:

- Environmental education programs
- Field seminars
- Year-round interpretive programs
- Jr. Ranger programs
- Paleontological and geological resources
- Natural history resources
- Publications

Past accomplishments and ongoing support by the Friends of Florissant Fossil Beds includes:

- Major funding of the yurt shelters
- Travel and research funding for the Monument's paleontologist
- Assistance in the purchase of an all-terrain wheelchair for handicapped visitors
- Financial support for the University of Denver's (fossil data) Digitization Project
- Purchase of furniture for the seasonal rangers and intern housing
- Planning, funding, and coordinating the Monument's 30th Anniversary Celebration (1999)
- Funding for other special Monument related celebrations and special events (such as the dedication of the new stump exhibit area May 11, 2002)
- Funding for one Monument newspapers annually
- Funding and coordination of annual Summer Educational Seminars Program

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