Friends of Mineralogy, Colorado Chapter
Newsletter – March 2015

November Meeting – Thursday, March 12, 7:30 pm  (Board meeting 6:30-7:30)
Denver Museum of Nature and Science – VIP Room  Enter the Museum through the
Security/Staff entrance to the left of the main entrance.

March Program:
Amethyst from Thunder Bay, Ontario:  
A 1970s–1980s Perspective

Daniel Kile, Littleton, Colorado

The March 12 meeting will feature a presentation on amethyst from Thunder Bay, Ontario. This talk is essentially a continuation of Ian Merkel’s excellent January presentation which focused on recent mining and collecting activities in the Thunder Bay area. Kile’s talk complements Merkel’s presentation; it will emphasize the amethyst crystallography and chemistry and discuss the historic collecting conditions that existed there during the 1970-80s. The extended abstract, which follows, is also being published in the FM Midwest Chapter newsletter.

Left: Amethyst, Thunder Bay Amethyst mine, 9.5 cm across
Right: Hematite-included amethyst from the Diamond Willow mine, 8 cm wide
Located along the North Shore of Lake Superior just across the Canadian border, several amethyst mines in Ontario have provided fine specimens for more than 50 years. Crystals from this district generally show both positive and negative rhombohedral termination faces with little or no prism development. Specimens are often rounded, forming aesthetic three-dimensional clusters. Much of the amethyst from the Thunder Bay area is distinctive from that found in other worldwide localities – signature red subsurface iron oxide inclusions set it apart especially from the seemingly infinite supply of specimens from South American localities. The area is heavily wooded, and infested in the summer with legions of mosquitoes, black flies, and other biting creatures. Accordingly, many amethyst veins have been discovered via road construction. In past years, amethyst from Ontario has been scarce on the collector market; it has, however, in recent years become somewhat more prevalent.

Historical:
The town of Thunder Bay and Fort William started in the early 1800s to support the fur trading industry. Silver mining (e.g., Silver Islet) took hold by mid-century. Amethyst has long been known in the area, but large-scale mining efforts did not commence until the late 1960s. Although amethyst collecting and associated tourism has become a mainstay in the local economy that continues to the present, mine ownership and collecting opportunities have changed in the past 40 years. In earlier years, the two principal mines producing amethyst were the Thunder Bay Amethyst mine, now known as the Thunder Bay Amethyst mine Panorama, and the Diamond Willow mine, now called the Blue Point mine.
Geology:
The amethyst deposits occur in the Algoman Formation, a Precambrian quartz monzonite (a plutonic rock predominantly composed of plagioclase, orthoclase, and quartz) that is overlain by sedimentary rocks of the Animikie and Sibley groups; a late episode of basaltic flows conspicuously comprises the area landscape. Faulting via late Precambrian igneous activity provided the structural control (fault planes and brecciation) necessary for mineralization.

General Mineralogy:
Amethyst forms at relatively low temperatures, from 80 to 285 °C. (Dennen and Puckett, 1972). The color is due to the substitution of trivalent iron (i.e., Fe$^{3+}$, in an oxidizing environment) for silicon (Si$^{4+}$). The charge imbalance, together with post-crystallization radiation, results in an unpaired electron that creates a color center that in turn gives a light absorption spectrum that results in a characteristic amethyst color.

Thunder Bay amethyst contains as much as 500 ppm Fe$^{3+}$ (Kustra, 1969), in contrast to Bolivian amethyst which varies from 19 to 40 ppm (Vasconcelos et al, 1994). In contrast, citrine in Bolivian ametrine contains ca. two to four time more Fe$^{3+}$ than that in the amethyst sectors (Vasconcelos et al, 1994). The amethyst color is destroyed at temperatures above 500 °C.

Subsurface inclusions of various iron oxides (FeO$_x$) including goethite, hematite and presumably other amorphous and hydrous Fe-oxides, create the distinctive red to red-brown coloration for Thunder Bay amethyst, readily differentiating it from other worldwide occurrences. The underlying amethyst tint (particularly from the Thunder Bay mine) is also often much darker than that in crystals from Brazil and Uruguay, as would be expected from the higher Fe$^{3+}$ content, and also from the frequent presence of internal zones of smoky coloration (the latter color due to Al$^{3+}$ substitution for Si$^{4+}$). In contrast to amethyst from South American localities, Thunder Bay specimens often show damage, ranging from minor to moderate, from post-crystallization tectonic activity and resultant pocket collapse.

Amethyst from worldwide localities is commonly Brazil-law twinned, which is an intergrowth of right- and left-handed quartz. The commonplace twinning in amethyst is likely a result of unit cell distortion caused by the substitution of Fe$^{3+}$ that has a different atomic radius than Si$^{4+}$. Such twinning is evidenced only by examination under polarized light. It results in sectors which, when viewed in a slice cut near the crystal termination perpendicular to the c-axis, show symmetrical trigonal patterns of dark bands known as Brewster’s fringes, which were described by him in 1823 (!). These fringes arise in areas where the thicknesses of the two overlapping twins are equal, giving bands of zero retardation (not extinction).
In Bolivian ametrine, these fringes are found only in the alternating amethyst sectors, and not in the citrine sectors, reflecting the different levels of Fe$^{3+}$ in the positive rhombohedral amethyst sectors.

**Thunder Bay Amethyst Mine**

Activity at this mine commenced ca. 1967 following the discovery in the early 1960s of an amethyst deposit during construction of a road to a fire tower. The vein is over a mile long, extending under Elbow Lake. At that time, Rudy Hartviksen operated the mine as a commercial venture to extract building stone, landscaping rock, and to a lesser extent, catering to tourists. The vein was blasted (evidenced by numerous holes in nearby building roof tops!) and flushed with a monitor (one could visualize amethyst crystals flying yonder into the adjacent lake) to expose amethyst-bearing cavities; the debris was removed via a front-end loader and placed near the parking lot for tourists to comb through. At that time, a nearby “bench” was available for more serious collectors to prospect for *in-situ* veins. One pocket, found in this area in 1978, was 3 x 4 x 9 feet in dimension and yielded more than 900 pounds of crystallized amethyst. The cost at that time was (thankfully!) only 75¢/pound, for crystals or rough.
Crystals from the Thunder Bay Amethyst mine range in colors from a very dark purple to light purple to red and reddish brown. Amethyst from this mine is usually darker in color than those at the Diamond Willow mine; crystals are, on average, larger than those found in the Diamond Willow mine, with 6-to-8 inch diameter individuals not uncommon. Smaller crystals tend to have fewer FeO inclusions, whereas larger crystals (4-6 inch diameter) tend to have more inclusions and overgrowths of a later-generation quartz, imparting a rough or mottled exterior. All cavities collected by the author at this mine were completely filled with clay, rendering crystal extraction very time consuming.

In addition to subsurface iron oxides (mostly as minute platelets or spherules), microscopic inclusions of goethite (as acicular sprays), pyrite (cubic) and chalcopyrite have been noted. Macroscopic crystals of calcite (as doubly terminated scalenohedra) have been found, often with microscopic sulfide inclusions.

The mine changed hands in the early 1980s when Rudy Hartviksen passed away. Steve Lukinuk assumed ownership, and active mining was then scaled back, with an increased emphasis on tourism. Collecting in-place veins was also generally not permitted, however, in 1982 we were afforded the opportunity to collect a large pocket in the main quarry, with crystals averaging 10 cm across and clusters weighing as much as 350 pounds.

The current collecting status at this mine, judging from Internet commentary, is limited to searching on piles of mine tailings, and tools are limited to a hooked probe. Fees have, as expected, considerably escalated since the 1970s. The cost of self-collected crystal specimens in 1975 was 50¢/pound for crystal specimens or mine rough; in 1982 it was $4.00/pound for crystals and $1.00/pound for dump material (entry fees at that time were $1.00/person). In recent years the prices for dump-collected material has risen to $3.50/pound with an entry fee of $8.00/person; crystallized specimens are available in the store and priced individually.
Diamond Willow Mine
Our first visit to this mine, near Pearl, was in 1982, when the mine was owned by Gunnard Noyes and operated intermittently by lessees. Due to active mining by lessees at that time, collecting was limited to searching various dumps, but numerous small amethyst clusters could nonetheless be found with patience and good mosquito netting. We returned again in 1984, and were able to collect in inactive parts of the quarry, whereupon we found a large, approximately 3 foot long, pocket containing lustrous red crystals in groups to 12 inches across. The fee for either crystal specimens or rough was ca. $2.00/pound; a truckload of crystals from the aforementioned pocket was exceedingly reasonable.

The mine transferred to family members when Gunnard passed away some years ago. Renamed the Blue Point mine, it is now owned and operated by Lyndon Swanson; permission to collect in-situ cavities in the quarry has been given on at least an occasional basis (Merkel, undated). Prices have risen to $20 per 2-gallon bucket of either crystals or rough amethyst.

Amethyst at the Diamond Willow trends toward more pastel and pale lavender tints, brighter red colors, and smaller crystals than those from the Thunder Bay mine. Massive calcite is common here, with barite being occasionally noted (well-crystallized bladed barite was, however, noted at the Ontario Gem mine, located ca. 5 miles northeast of Pearl).

References and Additional Information:
Brewster, D. (1823) On circular polarization, as exhibited in the optical structure of the amethyst, with remarks on the distribution of the colouring matter in that mineral. *The Transactions of the Royal Society of Edinburgh*, V. 9, 139-152.


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Speaker Dan Kile’s background

Dan Kile and his wife Dianne have been collecting minerals for more than 42 years; their experiences in the Thunder Bay district in Ontario date back to the mid-1970s. He has interests in the topographical mineralogy of Colorado, and the mineralogy, geology, and crystal formation in noteworthy occurrences, in addition to historical optical mineralogy, with numerous articles published in magazines and professional journals. He is a past president of the Colorado Chapter of Friends of Mineralogy, and is presently Scientist Emeritus with the U.S. Geological Survey and Adjunct Faculty at the Hooke College of Applied Sciences in Illinois where he teaches a course in Optical Crystallography.
Important notes about FM this month:

Our Chapter’s **Annual Silent Auction** will take place **Saturday, May 9, 12:00 noon-3 p.m., at the Clements Community Center, 1580 Yarrow St., Lakewood, CO. Please put the date on your calendar, remind all your friends, and start thinking about rounding up specimens to bring to the auction!** Some of our members will be speaking to local mineral dealers, asking them to donate a few special specimens to the auction. _We greatly appreciate all the past donations from dealers and individuals!_ Full information about the upcoming auction with be in our next newsletter; or, please contact Mark Jacobson, [markivanjacobson@gmail.com](mailto:markivanjacobson@gmail.com), for an advance copy of bidding sheets for auction specimens. Seller setup will begin at 11 a.m. that day.

**FM Colorado Chapter members have been invited to join the RAMS (Mile-Hi Rock and Mineral Society)** for a picnic and field trip to their pegmatite claim in the Crystal Peak area, **Saturday, July 18, 2015**. We appreciate this nice offer! Full information about the trip is on a following page of this newsletter. You must be a current paid-up member of FMCC to participate in this trip.

**Annual Dues to Friends of Mineralogy, Colorado Chapter** are $13.00; this includes membership in the national organization, Friends of Mineralogy, Inc.. You may pay your dues now for 2015, please see our website, [http://friendsofmineralogycolorado.org](http://friendsofmineralogycolorado.org), or send a check for $13 to FM-Colorado Chapter, P.O. Box 254, Littleton CO, 80160-0254.

See our Colorado Chapter website: [http://friendsofmineralogycolorado.org/](http://friendsofmineralogycolorado.org/)
A considerable archive of past newsletters and symposium abstracts, and other material about the history of the organization, as well as current meeting information, is posted here.

**Dates for upcoming FM Colorado Chapter activities:**
Meetings are normally held at 7:30 p.m. on the 2nd Thursday of alternate (odd-numbered) months, at the VIP Room in the Denver Museum of Nature and Science. (Subject to change depending on conflicts.) Visitors are _always_ welcome at our meetings! Our planned 2015 meeting dates are:

- **Mar. 12** FM meeting – Dan Kile, “Thunder Bay Amethyst”
- **May 9** FM Silent Auction, Clements Community Center, Lakewood CO
- **May 14** FM meeting – Mandy Hutchinson, “Carbonatites”
- **July 18** Field trip & picnic together with RAMS club at their pegmatite claim
- **Sept. 18-20 2015 Denver Gem and Mineral Show**
- **Sept. 24** FM meeting – John Hurst, “Dryhead Agates”
- **Nov. 12** FM meeting – Dan Wray, “Cave Minerals in 3-D”

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**Symposiums upcoming**

**Mar. 14-15, 2015, “Fossils and Flight”** will be the semi-annual “Founders Symposium” sponsored by the Western Interior Paleontology Society. It will be held at the Green Center, Colorado School of Mines campus, Golden, CO. “The symposium will explore “what the fossil record reveals about how life conquered the skies” and will include over a dozen speakers, half-day fossil workshops, a field trip, a poster session, exhibits, and a gallery of paleontology-related art displays. For more information see [http://westernpaleo.org/symposiums/2015_pages/about-2015.html](http://westernpaleo.org/symposiums/2015_pages/about-2015.html).

**July 10-13, 2015**, a mini-symposium on the mineral occurrences of the Gunnison, Colorado area is being planned by the Friends of the Colorado School of Mines Geology Museum, to include both lectures and field trips. The meeting HQ will be on the Western State Colorado University campus in Gunnison; there will be a welcoming party Friday evening, July 10, and optional field trips will continue on Monday, July 13. The symposium is still in the planning stages; more information will be available soon.

**2016 Colorado Mineral Symposium**
The topic will be *Colorado Pegmatites* and the symposium will be cosponsored by the Friends of the Colorado School of Mines Geology Museum and the Colorado Chapter, Friends of Mineralogy. Location of the lecture programs and of the field trips is still to be determined; probable dates will be a weekend in August, 2016.  Stay tuned for more information to come!

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**Our January 8, 2015 FMCC meeting:**
Ian Merkel gave an excellent presentation about his amethyst collecting experiences and the geology of the amethyst deposits, at and around the Blue Point mine, Pearl, Ontario. Come to our March 12 meeting for another view of the Thunder Bay amethyst deposits, by Dan Kile!

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**FMCC 2015 Officers:**  President, Mark Jacobson, markivanjacobson@gmail.com, 1-337-255-0627  Vice-President, Jim Hurlbut, jthu@earthlink.com, 303-757-0283  Treasurer, Gloria Staebler, gastaebler@aol.com  Secretary, Alan & Norma Keimig, alan.keimig@gmail.com, 303-755-9604  Directors:  Bill Chirnside (2015-16), billdozer@mho.com, 303-989-8748  Don Bray (2014-15), don-bray@copper.net, 303-681-3646  Larry Havens (2014-15), lghavens@aol.com, 303-757-6577  Chairpersons:  Newsletter, Pete Modreski, pmodreski@usgs.gov, 303-202-4766  Preservation, Jeff Self and Donna Ware, selfawareminerals@gmail.com  Liaison for DMNS, Alan Keimig  Liaison for RMFMS, Jim Hurlbut  Membership/Hospitality - ? (open!)
Each year the Mile Hi Rock & Mineral Society (RAMS) has an annual picnic at their claims near Crystal Peak. We usually invite another club to join us at the claims and picnic. At our January meeting, we decided to invite the Friends of Mineralogy, Colorado Chapter to our claims and picnic this year, which will be at noon on Saturday, July 18th. The RAMS club provides the following items for the picnic: meat (hamburgers, hot-dogs, maybe other meat for the BBQ), all the fixings for the BBQ (catsup, mustard, pickles, relish, etc), chips, and drinks (pop, iced-tea, lemon-aide, etc). We request each person or family attending to bring a potluck dish to be shared with the group. The picnic is held rain or shine. Some years we have had rain, but with sufficient tarps strung from trees and a nice fire, we have had an enjoyable time. Your club is invited to dig for minerals (smoky quartz, amazonite, fluorite, goethite, etc.) on both Saturday and Sunday. Camping is welcome at the claims; however, there are no water supplies or toilet facilities. We consider this a social event to get to know the members of the FM, Colorado Chapter better, have a great picnic, and an opportunity to explore for mineral specimens. Please reply to the invitation soon so we can begin planning the weekend. We are currently creating our schedule for field trips for 2015 and would like to schedule the picnic with you this year. If planning to attend, please indicate approximately how many will come to the picnic, so we can plan accordingly.

Ronald N Knoshaug
Ron Knoshaug
Picnic coordinator & Newsletter Editor
303-423-2923
jrknoashaug@comcast.net

All our FM Chapter members are welcome to attend this picnic, camping, and collecting trip. If you are interested in coming, please reply to Mark Jacobson, markivanjacobson@gmail.com, as far in advance as is convenient for you. Directions to the claim, which is located about 5 miles north of Lake George, will be supplied to those who sign up to go. A high clearance vehicle is preferable to get to the claim; Ron Knoshaug from the RAMS club writes:

“The road into the RAMS claim as far as the picnic area has always been doable by 2 wheel drive vehicles. Very low-clearance vehicles, such as sportcars, etc. is not a very wise choice. Beyond the picnic area is a road that may require 4-wheel drive due to steep sections. However, walking from the picnic area to do mineral exploration is possible since the picnic area is in within the claims. Since each year the road changes due to erosion during the spring runoff, I will not know the current road conditions. If the road changes, I will certainly let you know.”
Numerous are the surprising views and unaccustomed scenes that greet the traveler in the Rocky Sierras. More than once during his journey must he hesitate, and recall to his memory the explanation of phenomena he has been familiar with from books only. The very character of the country he traverses, the singularly somber and melancholy aspect of the scenery that he so frequently meets, must leave the impression upon him, that he has seen more there, than perhaps after many months travel in other countries. While crossing the plains, that great lake of the Tertiary period, the siren of the desert, the beautiful fata morgana, presents itself. Where nought but sand and sage-brush can thrive, where even the fleet antelope passes hurriedly, he sees the most invitingly cool lake, the often fatal reflection produced by that heat which he seeks to avoid. At other times, as in Tantalus’ trials, a shady brook will appear, a few miles distant only to his eye, but the day may be spent before it is reached. A small projection, a bush, or a slight elevation of the ground, may be pictured to him as a house or some other place of comparative comfort. Leaving the plains he leaves the mirage. No dangerously treacherous pictures of beauty in nature, will cause him to regard every slight change of surface with suspicious curiosity. The mountains are stern and forbidding, but they are true; they look uninviting, and they are so. The orographical aspect, however, changes greatly with the geognostic formation, and true to her own laws, nature herein furnishes some clue to the secrets she so carefully guards with her most invincible army, her mountains.

These lines shall speak mainly of the ranges that traverse Colorado; ranges that thus far geographers have tried in vain to reduce to some definite series of systems. Taking a very general view of the mountain chains, it may be observed that two directions predominate, the one parallel to the longitudinal axis of our American continent, the other crossing it at almost right-angles. Geological research will eventually clear up to a great extent conflicting questions relative to these systems, and until then geographers must content themselves with that knowledge gained superficially only. It seems that the North-South systems mainly owe their formation to an older upheaval of the granitoid and schistose rocks, while the transverse systems were produced by the younger volcanic eruptions. Volcanic eruptions, from old associations, are always accompanied by the idea of more or less local phenomena. This will hold good until the explorer reaches the North American West, where thousands of square miles in continuous areas are covered by rocks that have burst forth in a molten, liquid state.

To nothing can the character of these mountains, the result of enormous changes in the interior portions of the earth’s crust, be better compared, than to the fearfully grand spectacle of a stormy sea—monotonous in the repetition of similar forms, yet impressive and subduing when viewed as a whole. Chiefly dark shades are found here, varied at times by local alterations presenting the most beautiful modulations from white to yellow, orange, red, brown, and then deepening again into colors more in conformity with the general aspect. Above a certain line of altitude (varying with latitude) nothing will be found, save the loose debris of those formations that have been gradually crumbling under the destructive hand of long-continued atmospheric
influences. Certain localities show grassy plateaus above timber-line, but these must be regarded as exceptions.

It was while traveling through regions of this description that electric phenomena were observed, novel as dangerous in character, but possessing a fascination, apart from their scientific interest, that was increased perhaps by the uncertainty attending their final development. Circumstances combine at the locality of observation (South-western and Southern Colorado,) singularly favorable to the study of condensation of vaporous and concentration of electric elements. To the West and South broad plains, slightly corrugated by narrow bluffs and ridges, stretch along the base of the mountains. East and North lower hills, with interpolated valleys and plains, help to complete the isolation of a dense mountain group, covering nearly 5,000 square miles. While the neighboring plains are hot and dry, permitting the clouds to float at a considerable elevation above them, which, although exceeding 4,000 to 5,000 feet, will barely reach the summits of the adjoining peaks, condensation and precipitation will take place shortly after they have reached the colder, mountainous regions. Under conditions so well adapted to the study of the formation and progress of storms, the rainy season was spent by a party of three during 1874 [in the San Juan Mountains].

Ascending high peaks may be invested with a charm that was born and bred in highly-civilized Switzerland; but there, where mountain climbing is reduced to almost a science, the rough and ready ascent of a western explorer might not be appreciated. Nevertheless, although not executed in perfect accordance with the established rules of carrying ropes, hooks, ladders and other cumbersome appliances, our pioneers do succeed in reaching the summit of many a peak that would require almost an army of guides for the Swiss tourist. Where the circumstances of either travel or work of a definite character demand the least possible delay in executing all the physical labor required, the talent of these adventurous men shines in its brightest light.

Early in the morning, long before the sun had risen, the cheery "roll out," "roll out," of the cook is heard, and one hour later the tents have disappeared, the mules are saddled, and armed with surveying and other instruments a small party of three set out for their day's trip. Some neighboring peak is their destination. No delay that can possibly be avoided is indulged in, and usually by ten o'clock the members of that party find themselves at a point where riding animals can go no further. The remainder of the ascent is on foot. After the summit has been reached, frequently an elevation of more than 14,000 feet above sea-level, a hasty survey of all in view is taken, the familiar points recognized, the instruments are arranged and adjusted, and the occupied station located. Should the weather appear sufficiently favorable, no hastening of the work is required. But from a distance there appears a dark cloud approaching, every moment growing larger and darker. Soon the sound of thunder can be distinctly heard, and the characteristic falling of rain is seen, as if the cloud were drawn down in shreds by invisible hands. Soon a few scattering flakes of snow or small hailstones begin to fall, and the surface over which the ominous cloud has passed is perfectly white. This is an opportunity for studying the progress of storms, together with their lateral limits. Little time remains, however, before the observer will be enveloped in a mass of impenetrable mist, and every moment becomes precious.

While in a reclining or sitting posture, no apparent demonstration of the presence of
electricity in considerable quantities may be felt. During the earlier portion of the season such demonstrations—as described below—were so frequent, however, that no reliance was placed upon negative evidence of that character. As soon as an erect position is assumed, the rising of every hair on the head and face, accompanied by the unmistakable tingling sensation, apprises the observer of the beginning of a phenomenon that might terminate to his serious disadvantage. The proverbial "rising of the hair" is carried on to an uncomfortable degree, and soon stinging pain, not unlike the illegitimate application of a pin, will be felt in various portions of the head and the back of the neck. Holding the hand up into the air will then usually give rise to a buzzing sound, which resembles—although by no means an aesthetic comparison—the noise produced by frying bacon. Should only one finger be extended from the hand, and the sound be weak, it will frequently cease altogether upon holding up two, provided their points are placed some distance apart. This is the case also with more than one or two fingers. If the exchange of electricity is not a severe one, the lowering of the hand may create a complete cessation of the noise. The cloud that has been the scene of frequent discharges of electricity already in the distance, is approaching before the wind, the quantity of the fluid present becomes greater, and its effects more decided every moment. Soon every projecting object upon the person of the observer will begin to hum, every button and instrument he may have about him joins in the monotonous concert. The pencil with which he is taking notes sings a song of its own, but can be persuaded to stop by removing it from its approximately vertical position. Thus far there is no danger. Before long, though, the situation becomes more uncomfortable; the quantity of electricity present increases, and with it the annoying musical (?) performances. All the pointed rocks in the vicinity of the summit and along the sharp ridges leading from it, every hair, begins to buzz with a sonorous voice. That which is usually regarded as dead, suddenly appears to have come to life. Any object of certain length, such as a tripod or rifle, when held upwards, serves as a lightning-rod, and frequently the holder receives a shock that he rarely desires to have repeated.

Were the conditions at hand to produce perfect insulation, the experiments would be by far more interesting; but even with only a partial one, produced by placing clothing under the feet of the electrician, sparks of two inches in length could be obtained from a rifle. At this point of progress it becomes necessary to watch the storm closely, if possible. The amount of electricity increases to such an extent that it becomes almost unbearable, and a more cumulative discharge may be expected momentarily. Single puffs of wind increase the strength both of the humming and the shocks, so its direction serves as a guide. When the intensity has reached a very high point, to measure which was impossible under existing circumstances, a discharge of lightning, striking probably a very near peak, takes place, and with it temporary relief. As soon as the flash has occurred, the noise ceases, the tingling in head and hands is no longer perceptible. But this calm is by no means stable. If the wind continues from the direction where the last visible discharge was observed, it may be deduced with great probability that the next one will reach either a point in close proximity to, or even the one occupied. Very soon a repetition of the accumulation of electricity takes place, manifesting itself as described above. Should the conditions regarding the direction of wind and progress of storm be fulfilled as given before, it is high time to leave the peak, and more than once the observers barely escaped without the loss of their instruments. As soon as the time for departure has come,
everything is taken up in haste, and the descent accomplished in less time than under many other circumstances. In preference to any other direction, the steepest side of the mountain is chosen, avoiding ridges, because there—next to the summit—the discharges are heaviest. It will rarely he necessary to climb down more than thirty or fifty yards, and upon arriving at a point where the humming is no longer accompanied by the stinging pain, halt is made. Along a sharp ridge large quantities of electricity have been noticed more than 400 feet below the summit. Often all the unwelcome effects may at the halting place be obviated by lying down, remaining in such a position until the storm passes beyond the immediate vicinity. While thus waiting for the further development of events, either a very near point, or the one just abandoned, will be "struck," and the main quantity of electricity is carried on further. Again the ascent is made, the instruments once more put up, and the retreating cloud watched from a position that may now be considered safe. Excepting a dull headache, that generally lasts for several hours, no serious effects are felt by the observers. Before long, all the evidence of one of nature’s most beautiful but dangerous phenomena has vanished in the distance, save the white stripe that marks the storm’s course.

Not at all times, however, are the conditions thus favorable to the three explorers: the storm may not continue its onward course, and the station must be abandoned either for the day, or for the season, if time does not permit a second ascent. If comparative familiarity with these fascinating demonstrations of electrical action enables the observer to predict with a considerable degree of accuracy the desirable time for leaving, there is no, or little danger. On the other hand, it might result in the loss of life.

On the tops of high mountains, the bare rocks may not unfrequently be found to exhibit numerous glazed portions, resembling in shape the inner half of an irregular, compressed tube. Analogous to the "lightning tubes" of our sandy plains, and other similar localities, this glazing has been produced by the electric discharge, melting the surface of the rocks. Such evidences were found to be quite numerous at certain points, and show that the summer of 1874 was not one unusually rich in the occurrence of phenomena just described.

During 1873 a number of high peaks were ascended by the same party, and three times electricity of this character was encountered, while in 1874, during the months of July and August, it was observed five times, mostly inducing the members to leave their station. Frequently the presence of electricity was noticed when the main storm passed within a short distance of the occupied point. Identical and similar observations have been made both in the Rocky Mountains and in other regions, and abroad,—more particularly, in the latter case, at artificial elevations; but they do not seem to reach the intensity of those from which the above description is taken.

The ordinary traveler, unless especially favored, will rarely have occasion to confirm by personal observation, the details that were so frequently noticed. In cloudy or unpleasant weather the professional tourist will scarcely attempt the ascent of a mountain from which he can promise himself a grand view on a clear day. Unless he be surprised by one of those storms that often hover for days over some very compact group of peaks, and suddenly turn with the rising wind, he will miss the most novel and interesting experiences that the western explorer enjoys.
A fine article describing the outstanding 2012 find of sherry-colored topaz by Rich Fretterd and Jean Cowman appeared in issue #9 of the “Minerals” publication, published by Tomasz Praskier, Spirifer Minerals (see spiriferminerals.com). This fine quality newspaper/magazine was distributed free of charge at the 2015 Tucson Show. We’ll bring a copy to the March FM meeting, and “with luck” copies may be available at the Spring Colorado Mineral & Fossil Show, or at the Fall Denver Show. The article, by Jean Cowman and Philip Persson, extends through some six pages, p. 1 + pp. 6-10, and includes a great many superb photographs of the topaz crystals as well as a full description of how this occurrence was researched and discovered. The specimens are being sold principally by Joe Dorris, and some can be seen at his room at Colorado mineral shows. Of course, there are several other very good articles in this issue of “Minerals” too, including “The Afghan Pocket, Pederneira mine (Brazil)” by Daniel Trinchillo and Federico Pezzotta. Issue #6 (2013) of Minerals featured an article about Joe Dorris’ Lucky Monday Pocket.
Presents

“The Colors of Minerals” Workshop
By Dr. George Rossman
Saturday, March 21, 2015, 9 a.m. to 5 p.m.
Berthoud Hall, Colorado School of Mines Campus
Announcing an Amazing Mineral, Fossil and Book Sale!

CSM Museum
1310 Maple Street, Golden, CO

Saturday and Sunday,
April 25+26, 2015
9 A.M. - 4 P.M.

Thousands of minerals, rocks, books, fossils, maps, journals, etc.

Prices will vary by item or box. Most prices will be reduced throughout the event.

Information: 303-273-3815
Calendar of Coming Events

Fri.-Sat.-Sun., Feb. 27, 28, Mar. 1, Denver Gem and Mineral Guild Show, Jefferson County Fairgrounds. 10-6 Fri. & Sat., 10-5 Sun.; no admission or parking charge.

Tues., Mar. 3, 10:30 a.m., USGS Rocky Mountain Seminar, James Jones (USGS Anchorage), Late Cretaceous through Oligocene magmatic and tectonic evolution of the western Alaska Range. Building 25 auditorium (entrance E-14), Denver Federal Center. Visitors are welcome.

Wed., Mar. 4, 7:00 p.m., "Dinosaurs", at Dinosaur Ridge: "Join us for an evening lecture on dinosaurs! Have you ever needed to beef up your information on what a dinosaur is and how it’s different than other animals that lived in the past? Come on over this evening to see a presentation done by Erin LaCount on what dinosaurs are and how we know what we know about them! FREE! 7PM-8:30PM located at the Dinosaur Ridge Visitor Center (C470 and Alameda Parkway). This presentation has been rescheduled to March 4, after it was snowed out on February 25.

Thurs., Mar. 5, 7:00 p.m., "Whither the Rio Grande Rift", by Dr. Vince Matthews
"The Friends of the Colorado School of Mines Geology Museum lecture series continues on Thursday, March 5th, with Dr. Vincent Matthews, former State Geologist, speaking on "Whither the Rio Grande Rift?" CSM Geology Museum Conference Room (201), 1310 Maple Street, Golden, CO 80401. Socializing and munchies begin at 6:30 PM; the talk will start at 7:00. ABSTRACT: “The Rio Grande Rift cuts through Central Colorado and is undergoing measurable extension today. The northern terminus of the Rio Grande Rift has puzzled many. Some suggest it ends at Leadville on the northern end of the Upper Arkansas Valley, some suggest it continues northward to Kremmling, some suggest it continues into North Park, and some have even suggested it continues on to Yellowstone. Others proposed that the Rift wraps around the Aspen Anomaly, or continues out through northwestern Colorado.
““This talk reviews the evolution of thinking on the Rio Grande Rift and presents data that its extension form the eastern and northern boundary of the "structural" Colorado Plateau. The northeastern corner of the structural Plateau is located just south of Steamboat Springs, Colorado. The northern boundary of the Plateau is defined by a broad zone experiencing north-northeast extension which is defined by a distributed zone of Late Cenozoic faulting, numerous stress indicators, and basaltic volcanism. The entire system can be explained by a clockwise rotation of the Colorado Plateau away from its northeastern corner."
For more information, please contact Mike Smith (303.530.2646, m_l_smith@earthlink.net)

Mon., Mar. 9, 7:00 p.m., Shallow Marine Hydrothermal Systems in Volcanic Ares, by Dr. Thomas Monecke, Colorado School of Mines; at the monthly meeting of DREGS, Berthoud Hall Room 241, Colorado School of Mines, Golden; all are welcome. See http://www.dregs.org/index.html.

Thurs., Mar. 12, 3:00 p.m., VIP Room, DMNS Earth Science Seminar, David Krause, SUNY Stonybrook, "Bizarre and marvelous dinosaurs and other vertebrates of Madagascar: Insights into the southern end of the world". All are welcome to attend; DMNS admission not required.

March 12, FM Colorado Chapter bimonthly meeting; Dan Kile, “Thunder Bay Amethyst”.

Thurs., Mar. 19, 7:00 p.m., Colorado Scientific Society monthly meeting, two presentations by Don Becker, U.S. Geological Survey: The 1923 Surveying Expedition of the Colorado River in Arizona, a 30 min. video presentation; and, Documenting changes in the landscape and glaciers of Glacier Bay National Park by recreating historical photography. Shepherd of the Hills Church, 10500 W. 20th Ave. (at Simms St.), Lakewood; all are welcome.

Saturday, Mar. 21, 9 a.m. – 5 p.m., The Colors of Minerals workshop, featuring Dr. George Rossman, of Caltech; Berthoud Hall, Colorado School of Mines, sponsored by the Friends of the CSM Geology Museum. Please contact the Museum or see the Friends facebook page for details.

March 27-29, Fort Collins Rockhounds Club Gem & Mineral Show, at McKee 4-H Building, Larimer County Fairgrounds, I-25 exit 259.

April 24-26, Colorado (Spring) Mineral and Fossil Show, Ramada Plaza Hotel (formerly Holiday Inn- Central Denver), 4849 Bannock St, Denver, CO; 10-6 Fri. & Sat., 10-5 Sun.; see http://www.mzexpos.com/colorado_spring.html

April 25-26, Mineral, Fossil, and Book Sale, Colorado School of Mines Geology Museum, 1310 Maple St., CSM campus, Golden; 9 a.m. – 4 p.m.

May 9, Friends of Mineralogy Silent Auction, Clements Community Center, Lakewood CO

May 9-10, Grand Junction Gem & Mineral Club, 68th Annual Gem Mineral, & Jewelry Show; Two Rivers Convention Center, Grand Junction

May 14, FM Colorado Chapter bimonthly meeting; speaker, Mandy Hutchinson, Carbonatites

June 5-7, Pikes Peak Gem and Mineral Show, at Western Museum of Mining & Industry, Colorado Springs

July 10-13, Gunnison Mining & Minerals Symposium, sponsored by Friends of CSM Geology Museum; hosted at the Western State Colorado University campus, Gunnison CO. “Presentations on the mining history, geology, and minerals of the Gunnison Basin and surrounding mountains. Multiple guided field trips and opportunities for mineral collecting!” To be added to the symposium mailing list, please contact Mike Smith, 303-530-2646, m_l_smith@earthlink.net.

July 16-18, Rocky Mountain Federation of Mineralogical Societies Convention and Mineral and Gem Show, Cody, Wyoming

July 31-Aug. 2, Creede Rock & Mineral Show; 10 a.m. – 5 p.m., free admission; at the Underground Mining Museum, Creede, CO. See www.creederocks.com.

Aug. 13-16, Contin-Tail Rock Swap/Gem & Mineral Show, Buena Vista, CO

Aug 21-23, Lake George Gem and Mineral Show (sponsored by the Lake George Gem and Mineral Club) and the Woodland Park Gem, Mineral, and Jewelry Show

Sep. 13-20, Colorado (Fall) Mineral and Fossil Show, Ramada Plaza Hotel (formerly Holiday Inn - Central Denver), 4849 Bannock St, Denver, CO; see http://www.mzexpos.com/colorado_fall.html.
Sep. 18-20, Denver Gem and Mineral show; theme, “Minerals of the American Southwest”

Sept. 24, FM Colorado Chapter bimonthly meeting; speaker, John Hurst, Dryhead Agates

Nov. 12, FM Colorado Chapter bimonthly meeting; speaker, Dan Wray, Cave Minerals in 3-D

Nov. 14-15, New Mexico Mineral Symposium, Socorro, NM; see https://geoinfo.nmt.edu/museum/minsymp/home.cfm for details.

Nov. 20-22, Denver Area Mineral Dealers Show, Jefferson County Fairgrounds.

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For other lecture series during the year see:

CU Geological Science Colloquium (Wednesdays, 4 p.m.) see http://www.colorado.edu/geolsci/colloquium.htm
CSU Dept. of Geoscience Seminars (Fridays, 4 p.m.), see http://warnercnr.colostate.edu/geo-news-and-events/department-seminars
Van Tuyl Lecture Series, Colorado School of Mines, (Tuesdays, 4 p.m.) see http://inside.mines.edu/GE_Lecture-Series
Denver Mining Club (Mondays, noon), see http://www.denverminingclub.org/
Denver Region Exploration Geologists Society (DREGS; 1st Monday, 7 p.m.), http://www.dregs.org/index.html
Western Interior Paleontology Society (WIPS; 1st Monday, 7 p.m.), http://westernpaleo.org/

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Special exhibits continuing in 2015:


Steps in Stone: Walking Through Time, at the University of Colorado Museum of Natural History, CU campus, Boulder. “A new exhibition that features real fossil tracks and trackways from the University of Colorado Museum of Natural History collections”. Open 9-5 weekdays, 9-4 Saturdays, 10-4 Sundays; closed on university holidays. Exhibit runs through December 2015; see http://cumuseum.colorado.edu/.

Brilliant: Cartier in the 20th Century continues at the Denver Art Museum through March 15. “The DAM will host the world-exclusive exhibition of Brilliant: Cartier in the 20th Century, featuring stunning jewelry, timepieces, and precious objects created between 1900 and 1975. This exhibition highlights Cartier’s rise to preeminence—and the historical events pushing the brand’s evolution—as it transformed itself into one of the world’s most prestigious names in jewelry and luxurious accessories. Organized by the DAM, the exhibition will be on view in the Anschutz and Martin and McCormick galleries on level two of the Hamilton Building. See: http://www.denverartmuseum.org/exhibitions/brilliant-cartier-20th-century
Friends of Mineralogy, Colorado Chapter--Silent Auction

Saturday, May 9, 2015

Friends of Mineralogy is having its silent auction of mineral specimens, rocks, fossils, books, faceted stones, jewelry, lapidary pieces and mining memorabilia. Please bring your auction materials for setup beginning at 10:30 AM. All (members or not) are invited to bring specimens to sell, and to participate as bidders/buyers. Items brought to the auction may be designated as a 20%, 50%, or 100% donation to FMCC.

Time: Our auction will be Saturday, May 9; setup will begin at 10:30 a.m., auction to begin at 12 noon, finished (including a live auction of special items) by 3:00 p.m., checkout to be finished by 4:00 p.m.

Location: Clements Community Center, 1580 Yarrow St., Lakewood, located one block northwest of the intersection of West Colfax Ave. and Wadsworth Blvd. The entrance and parking lot are on the south side, facing Colfax.

Auction bid slips are attached on a separate page, and will also be available at the auction during setup. Sellers can get copies of our bidding slips at our website: www.friendsofmineralogycolorado.org

Any questions about the auction should be directed to Peter Modreski, pmodreski@aol.com, 720-205-2553, or Mark Jacobson, 337-255-0627), markivanjacobson@gmail.com .

Please tell all your friends about the auction, bring some specimens, and all are invited to help bring food or beverage items to share for refreshments at the auction. A selection of special items, donated by local dealers, will be included in the “live” auction.
Silent Auction: Friends of Mineralogy
Colorado Chapter

Seller to complete first 3 items below
And fill in specimen description at top &
bottom of slip.
1. Minimum Bid __________
2. Seller # __________
   (assigned at check-in)
3. Amount donated to FM (circle one)
   20%  50%  100%

Description: ____________________________

______________________________

Final bid $ __________

To FM $ __________ to Seller

$ __________

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Buyer’s receipt
Description of auction item: ____________________________

______________________________

Final Bid Amount $ __________
New book about the Tucson Show, published by John Lufkin (Golden Publishers)

John Lufkin (a past speaker at FM meetings) has just published this book, based on interviews with a selection of dealers from the Tucson mineral shows, about them, their specimens, and how they obtain them. The dealers that John covers in the book—readers will recognize many of them, listed in the table of contents, below—include some who specialize in: Australian rocks; “Sonora sunset” cuprite + chrysocolla; Arkansas quartz; Colorado amazonite; Australian gold nuggets; Finnish Spectrolite; Indian zeolites; Green River fish; Kansas fossil fish and reptiles; Fairburn agates; Adelaide mine crocoite, and more. To quote from the author:

“Golden Publishers is proud to announce the publication of their latest book, Tucson Mineral Show: Dealers, Minerals & Fossils. For the first time in one book, 12 dealers from around the world describe their business practices, and present some of their favorite specimens. Features of this book include 88 pages perfect bound with soft cover, and over 275 colored photographs taken by the author of some of the most spectacular minerals, gemstones, and fossils from around the world. The book sells for the wholesale price of only $25.00, plus shipping. To order, please contact Dr. Lufkin, President of Golden Publishers, at lufk3@comcast.net. “

Gem, Mineral & Jewelry Show
68th Annual
Grand Junction Gem & Mineral Club's
May 9th - May 10th
Saturday 9:00 a.m. - 6:00 p.m.
May 11th - May 12th
Sunday 9:00 a.m. - 4:00 p.m.

Grand Junction Gem & Mineral Club
360 Ninth Street, Grand Junction, CO 81501
Phone: 243-4655

Show Hours:
Saturday 9:00 a.m. - 6:00 p.m.
Sunday 9:00 a.m. - 4:00 p.m.

Show Features:
- Jewelry & Beads
- Minerals & Fossils
- Meteorites
- Decorative Items
- Art & Crafts

Children under 12 are free with adult admission.
Free parking at all locations.

Our 2015 Show!
Fun for the Whole Family!

www.jewelryshow.com
Show Home Page:
970-270-9988 Cell • dougkells@ymail.com
Complimentary Admission
For the Public
449 Broadway Street, Denver, CO 80206
Mon-Sat 10-6
Sun 10-5

Free Admission
Open to the Public
Show for Retail, Wholesale & Hobbyists
Trade show for jewelers, collectors, and dealers.

April 24 - 26, 2015
DENVER
2015 RMFMS Convention & Mineral and Gem Show

July 16 - 18, 2015 ★ Cody, Wyoming

Hosted by
Wyoming State Mineral and Gem Society
Cody 59ers Rock Club   Shoshone Rock Club

Reasons to Attend

★ Convention schedule will allow time to explore museums, entertainment, and varied dining within walking distance.
★ You can drive or fly commercial airlines to Cody.
★ Convention meals will be buffets - your choice.
★ Mineral and Gem Show will feature multi-state dealers, demonstrators, speakers, kids corner, & field trips.
★ Your family will want to come with you.
★ Only 50 miles to Yellowstone.
★ Be a Cowboy/Cowgirl for a few days:

Let ‘er buck!

Check out Cody: http://www.codychamber.org
Check out WSMGS: http://www.wymineralandgemsociety.org

2015 RMFMS Convention Contact: Stan Strike (307-250-1244)
wsmsgpres@wymineralandgemsociety.org