

# TABLE MOUNTAIN SHOSHONITE PORPHYRY LAVA FLOWS AND THEIR VENTS, GOLDEN, COLORADO pdf

## 1: Southeast Quarry, North Table Mountain, Golden, Golden District, Jefferson Co., Colorado, USA

*During early Paleocene time shoshonite porphyry lava was extruded from several plugs about 5 km north of Golden, Colo., to form lava flows intercalated in the upper part of the Denver Formation. These flows now form the caps of North and South Table Mountains.*

Tuesday, March 8, Ghosts on the Mountain I have recently had the privilege of being able to hike more days out of the week than not due to our unseasonably warm weather and the fact that I am waiting for some paperwork to go through before I can apply for more therapist positions. What most struck me across these environments was how the geological and ecological past, present, and future of each place seemed to be written in its flora. I would like to visit each of these places in time Christmas Carol-style by looking at evidence for what was, what is, and what yet may be. It is my hope to convey some of that sense in this post. Ghosts of Life Past Honestly I considered not adding anything about this, as it is a thematic departure from past posts. Please hang with me for a moment to delve into the likely non-existent world of amateur paleobotany. West Denver affords some interesting opportunities to a person who is interested in rocks and also in plants. The uplift which created the Rocky Mountains also revealed in a step-wise fashion ancient layers of sediment. A few layers above the Fountain Formation lies a belt of red to white sand and clay which constitutes the famous All three major layers are present in the photo below. The Morrison formation is difficult to see, but is present in the lowest rock strata of the hogback ridge at right Dinosaur Ridge. The Dakota Formation is visible at far right in the crest of white sandstone along the top of the hogback, as well as in the heavily lichenized sandstone in the foreground of the photo. The town is Morrison, Colorado. The cool thing about having these layers readily exposed and nearby is that evidence of ancient life and landscapes can be found with only a little determined rock scrambling. The photos below illustrate some of the more interesting things I found poking around the Dakota Formation near the summit of Mount Glennon, a hogback designated as park land just south of Morrison. The Dakota Formation sat partially submerged in or along the edge of a vast inland sea which is one of my favorite tropes in museum educational films 3. This also meant that much of what is now the Dakota formation was honeycombed with river drainages leading to said inland sea. Charcoal on the West of side of South Table Mountain, across a small valley from Mount Glennon at about the same altitude. Gigantic lava flows formed the caps of each table mountain, sealing the Late Cretaceous Dakota Sandstone under a blanket of igneous rock 4. I have no idea how to go about identifying the species, or whether it is even possible at this point. Presumably the shallow depth and low pressures found below the lava flow disallowed conversion into coal or oil. Two fossils from the Dakota formation exposed near the summit of Mount Glennon. Most of the fossils I saw in this area were plant fossils preserved as red-brown iron oxide in white sandstone. Another bark fossil, this one still embedded in the cliff and covered with a generous coating of lichen. The parallel grooves of the "bark" again seem to suggest Salicaceae. Or I could be way off. A closer look at the fossil with the leaves click to enlarge. Compare these lanceolate leaves with a prominent central vein and pinnate venation to that of a modern willow *Salix amygdaloides*. It would appear that at least part of the Cretaceous landscape bore the familiar, willow-like plants that still grow along streams here today. Ghosts of Life Present Fast-forward about 66 million years the late s, when a fire leveled some of the forest on an expanse of the foothills which is now Mount Falcon Park 6. I thought it would be an interesting place to take stock of "life present" since I feel like the dynamism of the ecosystem is more apparent while recovering from a natural trauma like fire. Winter is actually an interesting season to investigate new growth in a burn scar, as the more year-round organisms such as lichens and bryophytes are not obscured by larger vascular plants. The burn scar as it appears now. The extreme slow return of forest growth underscores the harsh, dry environment of the foothills near Denver. It also demonstrates the need for other organisms to assist in maintaining soil coverage and moisture retention until the trees can provide a consistent canopy. Several species of mosses covered the soil of the sunny, exposed burn scar. One study

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demonstrated an orderly succession of cryptogamic flora development following a fire in a subarctic forest, and it is reasonable to surmise that something similar happens in pine forests of the foothills 7. Mosses also help to modulate important aspects of soil chemistry such as nitrogen levels in arid climates such as ours 8. The same research indicates that such mosses might also have a buffering effect on the destructive effects of climate change on soils. The plant in this photo is actually not a true moss but a lesser club moss, which presumably performs many of the same functions. As members of cryptogamic crusts lichens help to modulate soil temperature and moisture by providing a protective coating on the soil 9. More evidence of the forest regenerating. This tree, felled by fire, demonstrates both cuboidal brown rot deeper into the log and left and white rot superficially on the log across the top and center right. Cuboidal brown rot has a distinct geometric appearance click to enlarge and is an important factor in forest soil regeneration. It is carried out by a variety of fungi which only digest cellulose, leaving the lignin behind White rot is performed by fungi which can digest both cellulose and lignin, leaving behind a brittle white veil. These processes are helping to enrich the soil in the burn scar, and an increase in plant growth and diversity could be seen in the outflow plumes of material downhill from rotting logs. Lichen thalli beginning to re-establish themselves on the wavy granite-based metamorphic boulders in the burn area. Boulders outside the burn area were rife with lichens, but many boulders within the burn scar were either completely sterile or only just now beginning to show signs of life. *Rhizoplaca chrysoleuca* colonizing a scorched boulder face. One study noted that new lichen colonies can take up to 10 years to become established, and that R. The largest thallus in this image is about 7 mm across, which minus a decade of establishment time gives us a ballpark growth rate of. Some boulders in the burn area have yet to recover any lichen flora at all. Ghosts of Life Future Anthropogenic climate change, a. A report for the Colorado Water Conservation Board indicates that average annual temperatures in state are expected to rise by 2. These changes can already be seen, as in studies which demonstrate that the ongoing proliferation of pine beetles is exacerbated by warming temperatures Other studies demonstrate what to look for, such as one that found there are observable temperature-induced changes in the phenology physical gene expression of alpine flowering plants The final "ghost" of what may be is what local species can tell us about our climate and possibly what direction the climate is heading in. Which species are growing where, and when, are useful indicators for how a habitat is doing. Things are growing which should not yet be, owing presumably to this past January being the warmest on record. All the same there are some interesting things afoot in the flora around Denver for those who care to look. However, sometimes science can be done simply by people recording what they observe, which is what I have done. The photos below illustrate some of my observations. *Verbascum thapsus* Mullein and *Linaria dalmatica* Butter and Eggs both showing robust growth in the dead of Winter. This picture was taken on the west-facing slope of South Table Mountain at around 5, ft or so. Both species are classified as noxious weeds in CO. I have noted these two species already sprouting on hikes in several locations, while many native species appear to still be dormant. Another exotic species, *Alyssum simplex*. Note the coin-shaped seed replums replae?? When mature it has tiny clumps of yellow flowers. It is not considered noxious in Colorado, but it is certainly not native, and even in February it is covering the foothills in a fuzzy green blanket. As temperatures warm, it is possible that plants better adapted to a warmer climate such as A. Annuals also tend to be better-suited to toughing out variations in climate than perennials 19, which will give alien weeds like A. A native *Physaria* of some sort also showing extensive growth on South Tabletop Mountain despite the season. It is possible that species such as this are simply well-adapted to the rigors that climate change will bring, but I worry what will happen to those big leaves if we have another hard freeze, or if the perennial root is subjected to excessive heat or desiccation. Again, the concern is that Winter weather may reassert itself and cut this plant back to the ground, or that changing patterns of precipitation may make its perennial habit unsustainable. Note the whitish webbing around the edges of the squamulose areoles and the prothallus review lichen terminology here. I noted that the thalli with noticeable white webbing seemed to be qualitatively mangier and more inconsistent than those without. The white webbing is either a mold or the L. This may become more likely as fluctuations in

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temperature ranges caused by climate change create novel conditions for our front range lichens. The authors of the cited paper created a culturing device called the "Thallinator" to address this problem. These are the gems buried deep in the cryptogam literature. The growth rate of the lichen shown is unknown, but these thalli will have taken a long time to reach these proportions simply by virtue of being a crustose variety. They endured for many, many years until they were abruptly destroyed by this opportunistic white mold when the climate conditions soured. Thank you for reading! I understand that the material here was heterogeneous, but I wanted to share the sense I experienced of seeing time through a botanical lens. Fountain Formation [entry in wiki]. Morrison Formation [entry in wiki]. Dakota Formation [entry in wiki]. Geological Survey Scientific Investigations Report "p. Biocrust-forming mosses mitigate the negative impacts of increasing aridity on ecosystem multifunctionality in drylands. *New Phytologist*, 4 , Lichens of the North Woods. Mushrooms of the Rocky Mountain Region. A comparison of Brown rot and White Rot fungi Lab curriculum [downloaded document]. Lichen trimlines in northern Alberta: Establishment, growth rates, and historic water levels. *Bryologist*, 4 , Statements from organizations such as NASA which do extensive review of peer-reviewed research and data may be found here:

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## 2: South Table Mountain (Colorado) - Wikipedia

*2 Abstract Table Mountain Shoshonite Porphyry Lava Flows and Their Vents, Golden, Colorado By Harald Drewes, Lakewood, Colorado During Early Paleocene time shoshonite.*

Ghosts on the Mountain I have recently had the privilege of being able to hike more days out of the week than not due to our unseasonably warm weather and the fact that I am waiting for some paperwork to go through before I can apply for more therapist positions. What most struck me across these environments was how the geological and ecological past, present, and future of each place seemed to be written in its flora. I would like to visit each of these places in time Christmas Carol-style by looking at evidence for what was, what is, and what yet may be. It is my hope to convey some of that sense in this post. Ghosts of Life Past Honestly I considered not adding anything about this, as it is a thematic departure from past posts. Please hang with me for a moment to delve into the likely non-existent world of amateur paleobotany. West Denver affords some interesting opportunities to a person who is interested in rocks and also in plants. The uplift which created the Rocky Mountains also revealed in a step-wise fashion ancient layers of sediment. A few layers above the Fountain Formation lies a belt of red to white sand and clay which constitutes the famous All three major layers are present in the photo below. The Morrison formation is difficult to see, but is present in the lowest rock strata of the hogback ridge at right Dinosaur Ridge. The Dakota Formation is visible at far right in the crest of white sandstone along the top of the hogback, as well as in the heavily lichenized sandstone in the foreground of the photo. The town is Morrison, Colorado. The cool thing about having these layers readily exposed and nearby is that evidence of ancient life and landscapes can be found with only a little determined rock scrambling. The photos below illustrate some of the more interesting things I found poking around the Dakota Formation near the summit of Mount Glennon, a hogback designated as park land just south of Morrison. The Dakota Formation sat partially submerged in or along the edge of a vast inland sea which is one of my favorite tropes in museum educational films 3. This also meant that much of what is now the Dakota formation was honeycombed with river drainages leading to said inland sea. Charcoal on the West of side of South Table Mountain, across a small valley from Mount Glennon at about the same altitude. Gigantic lava flows formed the caps of each table mountain, sealing the Late Cretaceous Dakota Sandstone under a blanket of igneous rock 4. I have no idea how to go about identifying the species, or whether it is even possible at this point. Presumably the shallow depth and low pressures found below the lava flow disallowed conversion into coal or oil. Two fossils from the Dakota formation exposed near the summit of Mount Glennon. Most of the fossils I saw in this area were plant fossils preserved as red-brown iron oxide in white sandstone. Another bark fossil, this one still embedded in the cliff and covered with a generous coating of lichen. The parallel grooves of the "bark" again seem to suggest Salicaceae. Or I could be way off. A closer look at the fossil with the leaves click to enlarge. Compare these lanceolate leaves with a prominent central vein and pinnate venation to that of a modern willow *Salix amygdaloides*. It would appear that at least part of the Cretaceous landscape bore the familiar, willow-like plants that still grow along streams here today. Ghosts of Life Present Fast-forward about 66 million years the late s, when a fire leveled some of the forest on an expanse of the foothills which is now Mount Falcon Park 6. I thought it would be an interesting place to take stock of "life present" since I feel like the dynamism of the ecosystem is more apparent while recovering from a natural trauma like fire. Winter is actually an interesting season to investigate new growth in a burn scar, as the more year-round organisms such as lichens and bryophytes are not obscured by larger vascular plants. The burn scar as it appears now. The extreme slow return of forest growth underscores the harsh, dry environment of the foothills near Denver. It also demonstrates the need for other organisms to assist in maintaining soil coverage and moisture retention until the trees can provide a consistent canopy. Several species of mosses covered the soil of the sunny, exposed burn scar. One study demonstrated an orderly succession of cryptogamic flora development following a fire in a subarctic forest, and it is reasonable to surmise that something similar

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### 3: What's Growing in Colorado : Ghosts on the Mountain

*Additional Physical Format: Drewes, Harald, Table Mountain shoshonite porphyry lava flows and their vents, Golden, Colorado iv, 28 p. (OCoLC)*

I was born and raised in Vermont. Applications have largely focused on questions in paleoanthropology and the geologic timescale. Journal of Analytical Atomic Spectrometry. Elemental, isotopic, and geochronological variability in Mogollon-Datil volcanic province archaeological obsidian, southwestern USA: Solving issues of inter-source discrimination. Preservation of ancient impact ages on the R chondrite parent body: Pressure disequilibria induced by rapid valve closure in noble gas extraction lines. Noble Gas Mass Spectrometry, in: Geological Society, London, Special Publications, Timescales of critical events around the Cretaceous-Paleogene boundary. Precision and accuracy in geochronology. Retention of inherited Ar by alkali feldspar xenocrysts in a magma: Kinetic constraints from Ba zoning profiles. A chronological framework for a long and persistent archeological record: Refined age estimates and paleoanthropological investigation of the Manyara Beds, Tanzania. Journal of Anthropological Sciences, v. Geochronology of the Manyara Beds, northern Tanzania: Late Miocene evidence from the Middle Awash, Ethiopia. Archaeological age constraints from eruption ages of obsidian: Examples from the Middle Awash, Ethiopia.

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## 4: What's Growing in Colorado : March

*Download Citation on ResearchGate | Table Mountain Shoshonite Porphyry Lava Flows and Their Vents, Golden, Colorado | The objective of the Society is to promote The knowledge and understanding of.*

Mesa[ edit ] The most distinctive feature of the mesa is its nearly flat cap that is formed by ancient Paleocene lava flows. It is separated from companion North Table Mountain , which consists of the same geologic formation, by Clear Creek. South Table Mountain is a popular scenic and recreational destination in the Denver metro area, and most of it is preserved as Jefferson County Open Space. Geology[ edit ] South Table Mountain is underlain by sedimentary rocks of the Denver Formation , which spans the interval from latest Cretaceous to early Paleocene time. An exposure of the Cretaceous-Paleogene boundary layer has been identified and documented on its slopes. The Ralston Dike, a body of intrusive monzonite located about 4 miles to the northwest, probably represents the volcanic vent from which the flows erupted. Generally referred to as basaltic , they are classified either as latite , [5] or as shoshonite. These include analcime , thomsonite , mesolite , chabazite , and others. A piece of grape shot thought to be from either Spanish explorers or fur traders was found by Arthur Lakes on the mesa top in April The earliest recorded ascents of the mesa occurred during the Colorado Gold Rush in In , father and son William H. Ashworth built the original Castle Rock Resort, a cafe atop Castle Rock, where visitors were taken by burro up a trail on the north flank of Castle Rock. After vandalism destroyed it in , the venture was abandoned until Charles F. Quaintance revived it in with a new cafe and burro train and a road from the south slope built by Harry Hartzell. This was supplemented in with a lighthouse , dance hall and funicular incline railway to the top. Business faded with the advent of the Denver Mountain Parks , and the funicular rails were salvaged for the allied effort in World War I in The idle resort was taken over by the Ku Klux Klan during the s as a major meeting and ceremonial place, during its rise to power in Colorado. The resort burned to the ground in an arson fire in Developers in originally wanted to build the Magic Mountain theme park at its northeastern alcove, until residents of Applewood protested and convinced them to build elsewhere. Subsequent attempts to develop or quarry the mountain including condominiums and a corporate headquarters continued through the remainder of the 20th century, and the mesa was gradually purchased or placed under easement by Jefferson County for open space. Castle Rock is the prominence to the left of center. Although not necessarily recorded on United States Geological Survey maps, several historically named features are part of South Table Mountain: Castle Rock, originally known as Table Rock, a prominent butte at northwest end Slaughterhouse Gulch, a gulch upon its northern slope, likely named for farms once in the Coors Brewery valley Long Gulch, a lengthy gulch along Quaker Street on the south slope Crystal Springs, natural water springs in the vicinity of the head of Long Gulch Wildlife[ edit ] Animals known to frequent the mesa through time include rattlesnakes, coyotes, mountain sheep, cougars, deer, elk and more. Of these, most except for the mountain sheep continue to live on the mountain today. The area, along with the adjacent north table mountain, is notorious among locals for its dense population of rattlesnakes, considered to be the most dangerous wildlife in the area. Coyotes are frequently sighted in the area but tend to avoid humans. Cougars have been spotted by some hikers, but sightings are exceedingly rare. The most commonly spotted wildlife tend to be elk, deer, coyotes, and a variety of birds. Ascent Trivia[ edit ] First Ascent “ earliest by a person of confirmed identity was on February 14, , by gold discoverer George A. Jackson , partner Thomas L. Golden and members of the Chicago Company, a gold seeking party, all of whom were hunting mountain sheep atop the mesa. Fastest Ascent “ according to the Colorado Transcript issue of September 8, , the fastest ascent was disputed between David G. Dargin, climbing to top of Castle Rock in However, according to the website www. Quaintance and camera equipment in Fastest Automobile Ascent “ same as first automobile ascent, timed from starting point at 13th Street and Washington Avenue in 12 minutes 45 seconds, via South Golden Road and Quaker Street, proof of ascent published on front page of the Transcript showing automobile with passengers atop Castle

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Rock. Helicopter Ascent " made Transcript front page during the s when helicopter made a forced landing atop Castle Rock.

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### 5: North Table Mountain, Golden, Golden District, Jefferson Co., Colorado, USA

Add tags for "Table Mountain shoshonite porphyry lava flows and their vents, Golden, Colorado". Be the first.

The zeolites are a group of aluminosilicate minerals that are industrially important and used in a variety of products from cat litter to elements used in the reprocessing of nuclear material. Thomsonite is one of the few zeolites available for use as semi-gemstones; tumbled or polished small nuggets are utilized in pendants and bracelets. However, most rockhounds are interested in zeolites due to their well-developed crystals and often very reasonable prices. Gem-type thomsonite is best known from the MRS while one of the prime places to collect crystalline thomsonite is from North Table Mountain near Golden, Colorado. The brewery, established in , is located between the Mountains and has used a stylized projecting point on South Table Mountain as part of its logo. Castle Rock, as the point is known, is a large hunk of volcanic rock. Distant view of Golden City. View from the foothills west of the city, looking east over the broad basaltic tables, flanking Clear Creek upon either side. Colorado Territory, July 28, Persons of my age, mostly male Baby Boomers, fondly remember Coors beer for a number of reasons, not the least of which is that only beer drinkers in the western U. While attending graduate school in South Dakota I hauled back cases of Coors and made a small profit selling them to fellow students later found out this was considered bootleggingâ€”is that a felony? Photo courtesy of The Pour Pub. Botryoidal thomsonite T with plates of analcime A situated on a bed of chabazite C crystals within a vug in the shoshonite matrix. OK, back to zeolites and thomsonite. North and South Table Mountains are formed from the Denver Formation with capping and intercalated shoshonite lava flows non-explosive, potash-rich basaltic rocks. The sedimentary rocks of the Denver Formation span the Cretaceous-Tertiary boundary as dinosaurs have been described in the lower part while Tertiary mammals have been found in upper beds. During the early Paleocene the lava was extruded from several nearby volcanic plugs Ralston where the only evidence that remains is the roots of this volcano. There were at least four different flows over a 1 my. The zeolites that formed in vugs of the shoshonite are secondary minerals. Photomicrograph of crystalline chabazite with plates of analcime A. Com lists 16 different zeolite minerals known from North Table Mountain, including thomsonite-Ca. In the last post I noted the calcium of thomsonite-Ca is at times replaced by strontium so the mineral becomes thomsonite-Sr. The specimen I have from North Table Mountain has light tan stained? At least that is my novice interpretation of the specimen! Photomicrograph of botryoidal thomsonite. So, thomsonite can be collected as semi-gemstones from the MRS or as crystals from many localities including North Table Mountain. I threw in the Coors beer bit as a bit of nostalgia with apologies to some overseas blog followers, or also to readers who have not seen Smoky and the Bandit: Geological Survey Scientific Investigations Report â€”

### 6: [www.enganchecubano.com](http://www.enganchecubano.com) | Table Mountain Shoshonite Porphyry Lava Flows and Their Vents, Golden

Encuentra Table Mountain Shoshonite Porphyry Lava Flows and Their Vents, Golden, Colorado: USGS Scientific Investigations Report de Harald Drewes (ISBN: ) en Amazon. EnvÃ-os gratis a partir de 19â,-.

### 7: Leah E Morgan, Ph.D.

Compre o livro Table Mountain Shoshonite Porphyry Lava Flows and Their Vents, Golden, Colorado: USGS Scientific Investigations Report na [www.enganchecubano.com](http://www.enganchecubano.com): confira as ofertas para livros em inglÃs e importados.

### 8: CSMS GEOLOGY POST: TABLE MOUNTAIN, ZEOLITE, and COORS BEER

Drewes, H., , Table Mountain shoshonite porphyry lava flows and their vents, Golden, Colorado: U.S. Geological Survey

**TABLE MOUNTAIN SHOSHONITE PORPHYRY LAVA FLOWS AND THEIR VENTS, GOLDEN, COLORADO pdf**

*Scientific Investigations Report , 28 p. Kile, E.D. () Zeolites and Associated Minerals from the Table Mountains near Golden, Jefferson County, Colorado.*

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*Practical guide to remedial reading Fast Track ASP.NET Reel 214. Robertson 16 biology darwins theory of evolution assessment Genetic engineering of plants Medical and health administration in rural India Ontogenetic development of occlusion, by B.H. Broadbent. Love and money? The question of individual motivation Sodexo annual report 2015 Design in business printing.  $\text{D}\phi\tilde{\text{N}}\in\text{D}^{\frac{3}{4}}\text{D}\mu$   $\text{D}^2$   $\text{D}\gg\text{D}^{\frac{3}{4}}\text{D}'\text{D}^{\circ}\text{D}\mu$   $\text{D}^{\frac{1}{2}}\text{D}\mu$   $\tilde{\text{N}}\bullet\tilde{\text{N}}\ddagger\text{D}_2$   $\tilde{\text{N}},\text{D}^{\circ}\tilde{\text{N}}\bullet$   $\tilde{\text{N}}\bullet\text{D}^{\frac{3}{4}}\text{D}\pm\text{D}^{\circ}\text{D}$ , Lasers in Dermatology Van Vogt, A. E. Enchanted village. Dance Writing for Classical Ballet Bentham's utilitarianism Gerald J. Postema Gathering treasure Lesson 14 (John 13:31-14:31 : The Christ of comfort List of all nuclear power plant in india Online icebreakers 6. An Introduction to the Order Under Milk Wood: account of an action to recover the original manuscript Accommodation without assimilation 2d tutorials autocad 2007 Tennessee Coal Mining, Railroad Logging In Cumberland, Fentress, Overton Putnam Counties The gentleman from Paris. Jazz paul tanner 12th edition Trolleys of Jamestown and Chautauqua Lake Scripture Study Book Teaching strategies for ing Emil Rathenau und das elektrische Zeitalter Brice Marden drawings Reel 439. Skelley-Slazy Theories of chemistry Operation Red Jericho Jackie Jones Royster: radical pathways of nerve and sass Honda rune service manual The spirit of bondage Drugs in anaesthesia and intensive care Developing language skills in the elementary schools The art of jose gonzalez*