DINOSAUR HILL

TRAILMAP

Our Story Begins...

One hundred forty million years ago, dinosaurs thrived and the Grand Valley was a warm and humid floodplain. Since then, many streams, lakes, and seas deposited thousands of feet of sediment and entire mountain ranges have been eroded. Remnants of these ancient dinosaurs were trapped and buried. Over time these sediments turned to rock and the bones were fossilized.

In 1899, Elmer S. Riggs, Assistant Curator of Paleontology at the Field Museum in Chicago, sent inquiries about fossil findings to rural towns in the western United States. One of the replies Riggs received was from Dr. S.M. Bradbury, president of the Western Colorado Academy of Science in Grand Junction.

Bradbury wrote Riggs that ranchers had collected bones as curios since the area was opened to white settlement in the early 1880s. Based on their correspondence, Riggs decided to spend a field season in Grand Junction in 1900. In an area now known as Riggs Hill, the expedition excavated the remains of a *Brachiosaurus altithorax*, a previously unknown dinosaur larger than any found before.

Riggs returned the following year to dig in an area south of Fruita. First his crew had to build a boat to ferry their supplies across the Colorado. During one such trip, the ropes to the boat snapped, sending all their dry food stuffs plus one half ton of plaster into the river. Considering that Riggs had to finance the entire field season on only $800 from the Museum, this was quite a loss. However, Riggs was successful in excavating the rear two-thirds of an *Apatosaurus (Brontosaurus) excelsus*. Interestingly, one of the dinosaur's ribs had been broken and healed during its lifetime. The head, neck, and lower limbs of the dinosaur had probably been exposed to the elements and washed away. The quarry area is now called Dinosaur Hill.

For Your Comfort and Safety

Please be aware of the following: adjacent lands are privately owned — sheep and cattle may be grazing in the area. Respect these lands and the rights of private land owners. Hike on the trail only. There are no toilet facilities or water available. Smoking is discouraged due to potential fire danger. There are no trash receptacles, so please pack out your trash. Parts of the trail become slick when wet; snakes and scorpions, although seen infrequently, do inhabit the area. No pets are allowed on the trail.

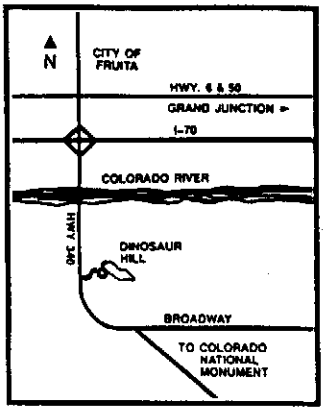
A Community Effort

Dinosaur Hill has been cooperatively constructed and managed by the Bureau of Land Management (BLM), the Museum of Western Colorado, and the City of Fruita.

The BLM, the Museum, and the City of Fruita appreciate and acknowledge the efforts of many local volunteers, the Eugene Fletcher family for their donation of the quarry site, and the BLM fire crew in making this trail possible.

Map to Dinosaur Hill:

Restrooms, gas, food and lodging are available in the City of Fruita.



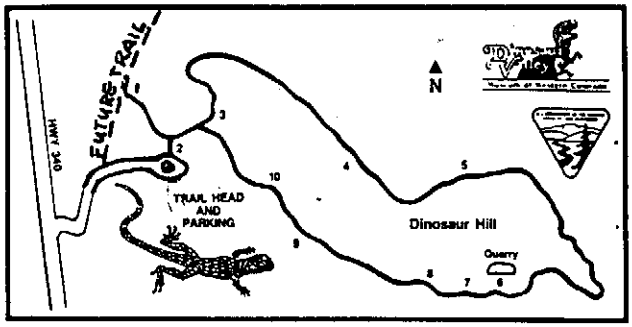
Remember:

It is illegal to remove, deface, or destroy improvements, artifacts, rocks, fossils, animals, and plants.

On the cover:

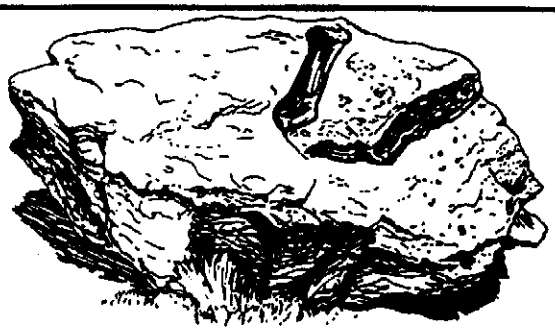
Amateur paleontologist Al Look, pictured here during the early 1930s, views the *Diplodocus*-like femur before its removal. This boulder is Stop #1 on the trail.

Courtesy Museum of Western Colorado (Al Look Collection, 81.115)



Trail Map of Dinosaur Hill:

Use this brochure to guide yourself along the 10 points of interest on the trail. Please allow 45 minutes to an hour to walk the mile long trail.



1. This boulder bears the mold of a femur (upper back leg bone) of a *Diplodocus*-like dinosaur. Fossils of various freshwater clams are also embedded in the boulder, which was submerged in the ancient river channel. The boulder broke away from its original position, several feet higher up the hill. TAKE LEFT TRAIL FORK. LOOK FOR SIGN POST #1

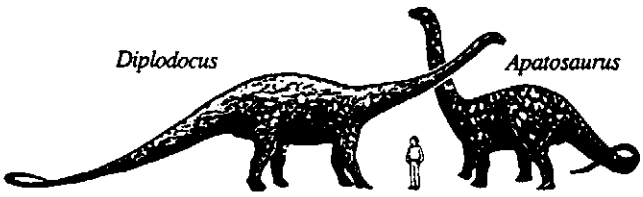
2. The scalloped pattern grooved into the top of this displaced boulder shows the direction that the stream flowed and how fast the river was traveling. If this boulder were in place, the stream flow would be toward the southeast.

3. On top of the hill is a sandstone outcrop. These rocks, called conglomerates, are composed of different sizes of sand grains and pebbles, indicating that they were deposited by a swiftly moving stream.

4. Following a line from north to west, you can see the city of Fruita, the Colorado River, a flat-topped terrace indicating an earlier Colorado River bottom, Opal Hill, and the reddish-capped Al Look Hill. To the south is the Colorado National Monument. At the eastern end of the valley at an elevation of 11,000 feet is the Grand Mesa, the largest flat topped mountain in the world. Left of the Grand Mesa, Mt. Garfield protrudes from the Bookcliffs, a landform which extends west into Utah.

5. This hard sandstone boulder is a remnant of the overlying Burro Canyon Formation. Much of the upper part of the Morrison Formation has eroded, leaving these displaced boulders.

Dinosaur Hill Discoveries



6. This is the quarry of the *Apatosaurus (Brontosaurus) excelsus*, a 70 ft. long plant eating dinosaur. Riggs and his crew blasted their way into the hillside in an effort to recover most of the bones. However, they abandoned the excavation due to the danger of a cave in. Some of the dinosaur's tail is probably still buried deep in the hillside.

Riggs, the Chamber of Commerce, and amateur paleontologist Al Look all contributed to the 1938 installation of the commemorative plaque.

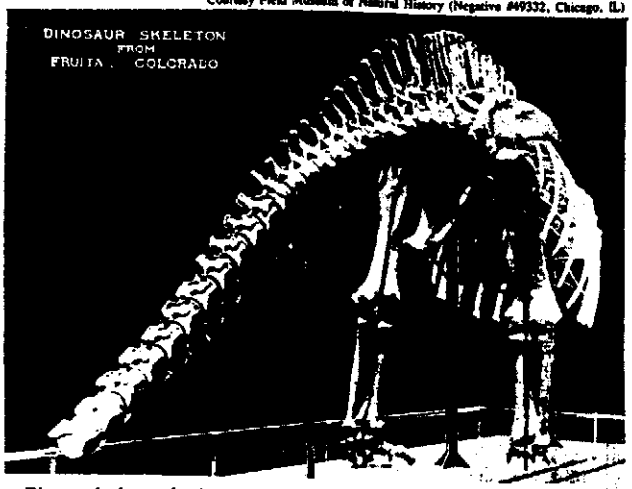
Courtesy Field Museum of Natural History (Negative #4005. Chicago, IL)

In the lower left corner several vertebrae are visible. Note how large they are compared to the quarry workers, who are preparing to drill and blast into the hillside.

Here are the exposed back vertebrae of the *Apatosaurus (Brontosaurus) excelsus*. Before removing the fragile fossils, a thick plaster "jacket" was applied (as pictured) to protect the bones during transport. This technique is still used today.

Courtesy Field Museum of Natural History (Negative #003977 — above and #3833 — below, Chicago, IL)

Courtesy Field Museum of Natural History (Negative #49332, Chicago, IL)

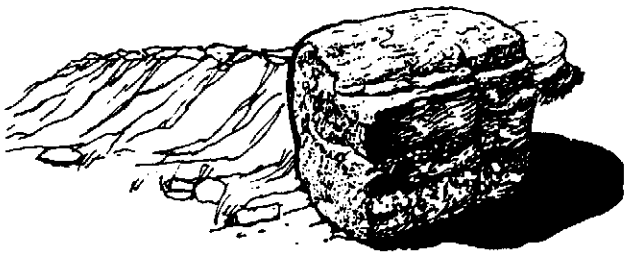


Pictured above is the *Apatosaurus* as it was first exhibited at the Chicago Field Museum. The skeleton was later completed with bones from other discoveries in Utah and Wyoming. The six tons of bones Riggs shipped east to Chicago, because of their scientific nature, were transported free by the railroads.

7. This sandy limestone layer which forms the floor of the adjacent dinosaur quarry is continuous through to the other side of the hill. These limestone beds are good horizon markers.

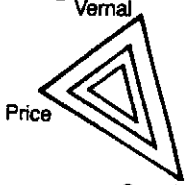
9. The gray, crusty material seen here in this active quarry is bentonite, a decomposed volcanic ash which has been deposited in layers. Because bentonite expands when wet, it serves as an excellent liner for ditches and ponds.

8. The colored bands exposed above the trail indicate fossil soils. The red layers were deposited during arid times. The green layers were deposited during times of abundant water.



10. Can you guess the original position of this conglomerate boulder? Surprisingly, it's a chip off the old block on top of the hill. Weathering caused the boulder to break away and roll down the hill. Note the marble sized pebbles which indicate a large, fast stream flow.

Explore earth's exciting past in the



Dinosaur Triangle

► *See in Grand Junction, Colorado*

Dinosaur Valley Museum
Featuring six animated life-like dinosaur replicas as they may have looked, moved, and sounded. See fossils and articulated skeletons; watch scientists restore fossils in the laboratory. Located at Main and 4th. From Memorial Day to September 30, open Sunday through Tuesday, 9am - 5pm, and Wednesday through Saturday, 9am - 7pm; in winter open Tuesday through Sunday 10am - 4:30pm; phone 303/243-DINO.

Trail Through Time (Rabbit Valley Research Natural Area)
Dinosaur bones, fossils and interesting geology exist along this 1½ mile trail. Take the Rabbit Valley exit on I-70, 30 miles west of Grand Junction. Open year 'round. Information — call Dinosaur Valley, 303/241-9210.

Riggs Hill
In 1900 a *Brachiosaurus*, then considered to be the world's largest dinosaur, was found here. Take Hwy. 340 west from Grand Junction to South Broadway, located at intersection of Meadows Way. Open year 'round. Call Dinosaur Valley for further information, 303/241-9210.

► *See in Price, Utah*

Cleveland-Lloyd Dinosaur Quarry
Since 1928, excavations have unearthed over 17,000 dinosaur bones here. Quarry tours originate at the Visitors Center. Restroom, picnic, and primitive camping facilities. Open Memorial to Labor Day, Thursdays through Mondays, 9am - 4pm. Located 30 miles south of Price on Utah Hwy. 10.

College of Eastern Utah Prehistoric Museum
View reconstructed dinosaur skeletons from Cleveland-Lloyd Quarry. Also on display are Indian rock art casts and artifacts, including the world-famous 800 year old Fillings clay figures. Open daily during summer, 9am - 7pm; closed Sundays in winter, corner of Main and Second East, phone 801/637-5060.

► *See in Vernal, Utah*

Dinosaur National Monument
Features a facility built around a magnificent wall containing hundreds of dinosaur bones, partially exposed and left in place. Since 1909, this site has produced 85 dinosaur skeletons, both juvenile and adult, of 11 different species. Open daily 8am - 7pm, phone 801/789-2115. Take US Hwy. 40 to Jensen, follow Utah Hwy. 149 north for 3 miles.

Utah Field House of Natural History
Inside the museum, examine fossil and mineral collections, Indian artifacts and natural history displays. Outside roam through the Dinosaur Garden, "inhabited" by 14 life-size prehistoric replicas. Open daily 8am - 9pm from Memorial to Labor Day; in winter from 9am to 5pm. Located on Main Street (US Hwy. 40), phone 801/789-3799.

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