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Overhanging Rock at Glacier Point

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THE FATE OF OVERHANGING ROCK

by Ranger-Naturalist E. L. Lucas

Thousands of visitors view overhanging rock at Glacier Point each season and invariably the following question is asked: "How long do you think it will be before it will topple into the valley?" It isn't likely that it will ever topple over the edge as a boulder. There are only two bare possibilities of that. An earthquake might cause it to be unbalanced or weathering might cause the underlying rock support to weaken and crumble, releasing the boulder. Other than these two conditions it is quite probable that it will remain in place for centuries. This rock was not left here by the glaciers. It is just a residual boulder of a once much larger rock mass. It is a boulder of very common occurrence but left in an unusual position, as the result of the agencies of weathering.

All rocks are divided by joints into masses of blocks of varying sizes, and the blocks, in turn, have rifts and flaws which may be only microscopic. These clefts and crevices are filled with water during the rainy season, the water freezes, expanding with tremendous

power, forcing joint blocks off the exposed faces of rocks. This shattering process goes on, breaking up the blocks into smaller and smaller pieces. The sizes of these fragments are determined by the character of the rock.

Since the overhanging rock is granite, it is made up of four essential minerals, in separate and distinct crystals, viz; quartz, feldspar, hornblende, and mica. Each of these minerals has a different coefficient of expansion and so the small crystals tend to pull apart when expanded by heat or contracted by cold. Due largely to the mechanical processes, overhanging rock is slowly disintegrating and each year a few crystal grains drop to the ledge below.

The rate of weathering depends upon such factors as the texture of the rock, composition, climate, position of rock, etc. When all these factors are considered in the light of its past history, the fate of overhanging rock is likely to be slow disintegration until the entire boulder has crumbled away. The weathering of the overhanging

portion of the boulder will be most rapid, because it has more proportionate area exposed to the elements. Continued disintegration and decomposition of the boulder under these conditions will tend to increase its stability as a balanced rock. So, nothing short of a catastrophe could cause the fatal leap of this balanced boulder which is today one of the spectacular features of the Yosemite incomparable. Its fate then, in point of time is likely to involve at least a few thousand years.

When overhanging rock has crumbled to dust, it is entirely possible that a new overhanging rock will have been fashioned by the hands of nature from the more solid underlying mass. We are fortunate to happen along at this stage. We must realize that the time element is the most important factor in all geologic processes and though generations may come and go, geologic time marches but slowly.

THE MT. LYELL SALAMANDER

By Ranger-Naturalist Lowell Adams

Mt. Lyell Salamanders were discovered July 18, 1915 by Dr. Charles L. Camp. The significance of such a discovery is pointed out by Grinnell and Storer (1924) when they described it as the "greatest event of the entire Yosemite survey," and by Dunn (1923)—"The most startling discovery made in the United States since Stejneger announced the finding of a *Discoglossal Toad* in the

Olympic Mountains." Since that noteworthy discovery of the Mt. Lyell Salamander twenty-three years ago surprisingly little has been learned about it. Camp (1916) placed it in the genus *Spelerpes*. Stejneger and Barbour (1917) changed it to the genus *Eurycea*. In 1923 Dunn reclassified it again in the genus *Hydromantes* where it has remained. The external anatomy has been described in detail but I have found no report of studies on the internal anatomy nor of the life history and ecologic relationships. The range limits are still unknown. Stejneger and Barbour (1933, Check List of North American Amphibians and Reptiles) report only the type locality as the range. That it ranges rather extensively throughout the Sierra Nevada is evidenced by a number of collection records heretofore unpublished. In the collection of the Yosemite Museum are 33 specimens from the top of Half Dome, (8850 ft.) and two from Peeler Lake (9532 ft.). In the Museum of Vertebrate Zoology at Berkeley are the two individuals described by Camp (1916) and one collected at Twin Peaks on the Sequoia National Park boundary (10,000 ft.). They also have been reported from the Sonora Pass region (altitude unknown) by Dr. G. S. Myers.

These locality records probably afford sufficient evidence to assume that the range is at least from Sequoia to Sonora Pass. And there is little reason to doubt that they occur even beyond these limits as far north and south as similar en-

vironmental conditions extend. The known altitudinal has now been extended by two new low-elevation records.

On June 18, 1938, a Mt. Lyell Salamander was found in Tenaya Canyon by Bob Wiegel at an elevation of 5800 feet. As far as is known this is the low altitude record for this species. At the base of Clouds Rest, in Tenaya Canyon, there is a large snow bank. At the top it has melted exposing a granite ledge which is covered in some spots with gravel kept wet by the melting snow. It was there, as he pushed a rock away with his foot, that he saw the salamander. It must have been a young one as it was only one and seven-eighths inches long. The associated plant life consisted of some moss, lichen and a dwarfed azalea. The salamander was taken and is now in the collection of the Yosemite Museum.

On July 29, 1938, a Mt. Lyell Salamander was taken by the author at the foot of upper Yosemite Fall (5140 ft.). This individual was crawling on a large, spray-drenched boulder in the dark shadows of the cave under the fall. In order to determine whether or not an "accidental" or stray had been found a search was instituted. Under the first rock turned over a second salamander was found, but no others appeared and the search was soon discontinued. I feel certain, however, that the salamanders must have resident status at the base of the fall. Perhaps the ice cone that forms there each winter may account for the presence of

the salamanders. It will be interesting to see if the lower boundary of the salamander range cannot be pushed down to Yosemite Valley—perhaps to the snow bank at the base of middle Cathedral Rock. Thus the altitudinal range can be given at least from 5140 ft. to 10,800 ft.



Upper Yosemite Fall and Ice cone.

THE LUNAR BOW IN YOSEMITE FALL

By Ranger-Naturalist H. E. Perry

An unusual experience presents itself to Yosemite visitors who are in the valley while mist still forms at the base of lower Yosemite Fall and while the moon is at or near its full phase. The spring months of the year and on through the early part of July is the period during which the display about to be described is most effective.

The ordinary rainbow, a spectrum

which results from sunlight shining through raindrops, is so common that it excites little wonder, usually just admiration, but to many people the idea of a spectrum resulting from moonlight and water spray is something extremely new.

Those who are skeptical that such a phenomenon is possible and all others who really delight in the unusual and the uncommon in nature should plan sometime to visit the bridge at the base of the lower Yosemite Fall when the full moon has risen to the height of Glacier Point and is shining brightly on the clouds of spray. A glorious reward results if all the requirements of a proper setting have been met, for one's attention is caught immediately by a circular band of light fixedly arching a background of dripping granite walls. It is a lunar bow, and while one's first impression is that of a single band of light, as one continues to study it, he becomes conscious of the presence of spectrum colors very delicately shading from one to another.

Occasionally the mist is so thinly dissipated as to cause the bow to fade almost completely from the moonlit scene, only to come to full expression again when the billowy spray returns.

Altogether it is an enriching experience for a person who is sensitive to the many and varied moods of nature. Not only has he witnessed a somewhat eerie spectacle, but he has come into a more intimate relation with Yosemite's nocturnal charm, and as the cool mists from

the Fall blow across his face refreshingly, he is more than likely to breathe an inaudible expression of gratitude for the evening's adventure.

PATROL NOTES

By Ranger H. S. Hildreth

About two o'clock Monday morning, May 9, I observed a porcupine along the road on the south side of the valley approximately one-half mile east of the junction of the road that crosses El Capitan bridge. Previously on two different occasions I saw one of these animals on the Wawona road just east of the tunnel. Ranger Garrison reports having seen a porcupine in the tunnel. It is possible that we have seen the same animal in various stages of his migration to the valley. Is it possible that this (or these) animals have found the tunnel an easy means of entering the valley or is their presence due to the late spring and the deep snow at their natural range?

I have noticed a Ring-tailed Cat near the arch at Arch Rock station when patrolling that district in the early morning. He seems to be quite tame and on one occasion I approached to within a few feet of him. The operators also report one of these animals in the vicinity of the power plant and state that they have been startled by the cat climbing up the wall of the power plant and peering in at them through an open window.



YOSEMITE'S PAST

AN EARLY TRIP TO YOSEMITE

By Ranger-Naturalist Harold Perry

Recently there fell into the hands of the writer a diary written by a New England woman as an account of her experiences on a trip from Massachusetts to California in 1897 when she was a member of an excursion party bound for a Christian Endeavor Reunion in San Francisco.

During her stay in California, she with other members of her group visited Yosemite Valley. Because the record of her trip is descriptive of traveling conditions to Yosemite in 1897, it is quoted here (the parenthetical insertions being my own) in hopes that it may awaken memories in the minds of some readers and stimulate the imaginations of others.

July 15, 1897

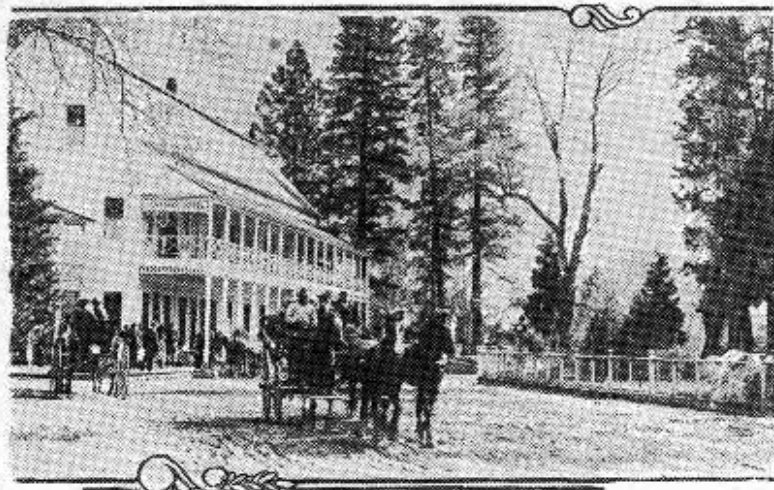
We arrived at Raymond (the end of a branch railroad near Madera) and had breakfast there in a little railroad station instead of the fine hotel I expected to find, which is situated in lower California (doubtless meaning the Raymond Hotel in Pasadena.) The breakfast was all cooked by one woman and was ready at four o'clock. We took coaches for the Yosemite and as hot, dusty and frightful a journey as one would care to take, winding around

mountains with deep gorges within a few inches of the wheel. At Ahwahnee Hotel (between Raymond and Wawona) we had lunch and a good one. One lady of the party who was upset at the Garden of the Gods was in our coach, in fact several of them, but this one was terribly frightened, so she cried out once when turning these sharp corners and wept. The Superintendent of the road came along and took her in with him, in a buggy. He waited till all coaches started, then passed them all to see that all is right and going well. Twelve horses have already died on the road this year—a horse only lasts one year on this dreadful road. We have four horses for a coach and changed them three times before reaching Wawona Hotel, before six, as dirty, dusty and tired a party as one would wish to see, after traveling 45 miles. When we were on one of the higher mountains, the driver said it must be at least 105 and there was little shade. The horses walked much of the way and stopped often on these steep grades. The coaches hold twelve with the driver. We were ready for dinner, then to rest.

July 16

We were up and off about six and the roads are more narrow and steep if possible than on the previous day. But it is grand. Lookout Point was pointed out to us. While driving through these primeval forests, we saw two deer, a doe and fawn. They have such gentle faces. They stood and looked at us, then trotted calmly off. We also saw a lizard and quails and squirrels, many of them. Just after leaving Wawona, we passed the U. S. Camp and a sentinel stationed there. The driver said if this sentinel thought we had fire-arms or anything of the sort, he would take them away from us. One of the California stories told on the way was when something was passed that looked like a basket on a tree. The story goes that some sportsmen hung the basket on a tree for safety and went fishing. When they returned the tree had grown so the basket was out of reach and still hung there. The highest point crossed was a

little over 6500 feet—higher than Mt. Washington—and is densely covered with trees, fully 200 feet high—magnificent great trees. The last four miles of the journey is something not soon to be forgotten. The grade was so steep it was fearful, especially a zig-zag where we could look down hundreds of feet, or thousands. The Valley and Sentinel Hotel were reached about one o'clock and glad enough we were to be there. Words cannot express the grandeur of the place. It is oppressive. After dinner or lunch rather, many of our party took a horse or mule and took the trail up to Glacier Point—started at three and did not return until nine, dark as night. I did not feel like climbing the mountain in that way. The view all along was grand so they report, but they were right on the ragged edge of the precipice all the way, the horse stepping within six inches of the edge. One lady said she would not give up the experience for \$1000,



but that she would not go again or have a friend go for \$10,000. I rode down to see them mount, then went back to the hotel and just before night walked up to the Yosemite Falls—the highest in the world—and sat on the rocks under the spray. In the evening a cannon was discharged to hear the reverberation, the echo from mountain to mountain and back. It was wonderful. Retired early.

July 17

Got up early and all rode up to Mirror Lake, four miles away, to see the sun rise, then went to see the others take the trail. Then three of us walked up to the Vernal Falls a mile and a half, up the mountain side. It was grand and the rapids below the Falls were even more grand than the fall itself. Rode back to the hotel, had lunch, then took coaches for Wawona, part of us. We were more used to the heights so did not mind that part, but enjoyed the ride. Reached Wawona at seven, tired and dusty. . . When we came up we met a party in a narrow place and all had to get down. The rigs were run up the mountain side and down the bank as much as possible and finally passed. It was a party who was camping out and did not understand the signals. Our driver got out once and picked some beautiful lilies for us.

July 19

We were early astir and started at six for the Mariposa Big Tree region. It is a noble forest with now and then one of these monstrous

trees, sometimes twins or three in a group. Twenty-one of our party took hold of hands around the old Grizzly Giant. . . We drove through one and looked up through one, the



Telescope, whose heart had all been burned out. It seems strange that all these trees have been burned more or less at one time by forest fires and still live. California azalea grows quite profusely all through this region and is very beautiful. At two o'clock we reached Ahwahnee where we had lunch, then proceeded on our journey, reaching Raymond at seven, tired and dirty again. We had a good time with singing and stories, conundrums, etc. We were trying to guess an object with twenty questions. Mr. Coleman chose for one the piece of pie he ate the night before, and again the last bump just passed, etc.

We changed horses three times. Among the last set was a young horse who had only been over the road five times. She acted badly, would not pull, and I was afraid she

would land us all over the precipice before we reached the end, but this last part was not as bad as it had been. We had supper at Raymond, then took a sleeper at nine for San Francisco.

A CALIFORNIA BLACK OAK OF UNUSUAL SIZE

By Ranger-Naturalist E. A. Payne

Extremes in size in any species of flora or fauna usually has no particular significance other than the interest it created in the observer as he is attracted by the tallest or the shortest, the smallest or the largest, the whitest or the blackest. The normal or the typical members of any species are the individuals which compose the bulwark of the groups and upon which the maintenance and perpetuation of the species depends. The unusual individual attracts out attention because it is unusual and not because of its particular importance to its kind.

As members of my Roughing Hike party were returning through Tenaya Canyon on August 9 we came upon an extraordinarily large California Black Oak (*Quercus kelloggii*.) We had no tape measure but one of the boys was carrying a ball of twine. We placed the string around the tree at breast height and broke the string at the point of contact so the string would represent the exact circumference of the tree.

The string was subsequently measured and was found to be twenty-five feet, ten inches in length.

With this as the circumference the average diameter would be about eight feet three inches. The tree, however, was not regular in its diameter as its trunk formed an irregular oval varying from about six feet across the smallest diameter to nearly ten feet through the greatest diameter. Arising from the massive trunk about ten feet above the ground were three large limbs all of which were estimated to be close to thirty inches in diameter.

In referring to the size of the California Black Oak Sudworth in *Forest Trees of the Pacific Slope* says: "Commonly from fifty to seventy-five feet high and from fifteen to thirty inches in diameter . . . Old trees are sometimes eighty to eighty-five feet high and from thirty-six to forty inches through; such trees, as shown by their decayed, hollow trunks, often broken at the top, have long since passed maturity."

The trunk of this tree appeared to be sound and free of any visible evidence of deterioration and with the exception of one of the limbs which showed some signs of decadence, the tree appeared to be healthy and vigorous.



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Dan Anderson