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DANA GLACIER

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LITTLE CHANGE IN YOSEMITE'S GLACIERS

By C. Frank Brockman, Park Naturalist

Results of the annual glacier survey, conducted this year from September 27 to October 4, indicate that there was little change in the size and extent of the glaciers of Yosemite National Park during the past twelve months. Photographs of the Lyell, Maclure, Dana, and Conness Glaciers, taken annually from similar locations, together with statistical data taken on both the east and west lobes of the Lyell Glacier, revealed that fact—an indication of the effect of the heavy snow pack which characterized the High Sierra of this region during the past two winters. Although in the case of the Lyell Glacier there had been a general decrease in thickness of both the east and west lobes from 1933 (when such computations were first instigated) to 1940, heavy snowfall during the winter of 1940-41 arrested this shrinkage. Computations in October, 1941, indicated that the thickness of the ice of the east lobe had remained constant, while the thickness of the west lobe had increased slightly. As already stated, results of this year's survey revealed little change from that of 1941. The east lobe showed no change in thickness, and while data taken at one station on the west lobe showed a slight decrease, no change was recorded for the second station.

Although no statistical data is now taken on the Maclure, Dana, and Conness Glaciers, comparison of photos taken in 1941 and 1942, bears out the results noted for the Lyell. Their size and scope, too, suffered little if any reduction.

In common with yearly studies of the recession of important glaciers elsewhere, the compilation of similar data on the principal Yosemite National Park glaciers was undertaken by the naturalist department of the park in 1931, at the suggestion of F. E. Matthes of the U. S. Geological Survey, who also serves as the chairman of the Committee on Glaciers of the American Geographical Union.

For a ten-year period the methods generally used in other areas were followed. The recession of each of the local glaciers was tabulated from short base lines established on the frontal moraines of each lobe paralleling the ice front from which annual measurements could be made. However, after a few years it was evident that such a procedure would not provide the definite conclusive results anticipated. This was due to the fact that these Sierran glaciers were relatively small, and were characterized by thin edged ice fronts whose termini merged irregularly with the frontal moraines, thus making definite determination of the ice a difficult matter.

Results were further complicated by the fact that snow from the previous winter often remained upon the surface, and although the survey was planned to take advantage of the time when the ice would be free of this covering and in advance of the snowfall of the current year, this was not always the case. Unless the ice was entirely free of snow and fully exposed, accurate measurements were impossible. Shifting of morainal rocks which affected the accuracy of certain base lines was also a factor, and it was soon suspected, and later proven, that many of the moraines were underlain by shade ice. Consequently it was found necessary to abandon many of the original stations, and the method now in use—the taking of annual photos from similar points together with measurement of the thickness of the ice of the Lyell Glacier (the largest and most significant of the four studied) was put into practice.

However, where base lines could be established on bed rock or at a distance sufficiently removed from

Lyell Glacier

the ice to insure permanency, certain of these annual recession tabulations give an indication of the general trend of the Yosemite glaciers. The east lobe of the Lyell, for instance, shows an apparent retreat of 87 feet from 1931 to 1939. A 98-foot recession has been recorded for the Maclure Glacier from 1932 to 1939, and the east lobe of the Conness Glacier retreated 331 feet during the same seven-year period. Nevertheless, this general recession has been temporarily, at least, arrested during the past two years, as indicated by results obtained in the fall of 1941 and 1942.

FLYING SQUIRREL

By Ranger-Naturalist H. F. Cofer

On July 4, at about 10 p. m., a Sierra Nevada Flying Squirrel was observed at Camp 19. Our "bear box" consisted of a sack suspended by rope from a crossbar between two trees. The squirrel was first noted as it "flew" to the base of the trunk of one of these trees, but it soon made its way up the trunk, crossed the bar, and dropped about 2 feet to the sack containing our food. By this time we had our flashlight on it. The very large eyes and glossy coat were quite evident as it hung head down gnawing away at the sack, and although we wanted to watch, we didn't especially like the idea of its gnawing a hole in the sack to our food. Apparently, it was paying no attention to the light, but suddenly "flew" to the next tree, and scurried down to the base of the trunk. Shortly after it scampered up very high into the tree top and was lost from sight. We expected it to come again, but were disappointed.

The large number of small mammals that usually frequent our camp failed to show themselves for some reason last summer. This was the only flying squirrel we saw.

BATS

By Ranger-Naturalist H. F. Cofer

On May 31, 1942, at 10 p. m., four little California Bats (Myotis californicus californicus) were observed feeding on insects under an electric light at Camp 19. The light was on a pole out in the open, and the bats criss-crossed the area below the light at about 15 feet above the ground. They were seemingly oblivious to my presence, and their actions were watched at close range. Snapping of the bats' jaws could be distinctly heard as they caught insects in mid-air.

Again, on June 15 at 10 a. m., while on a nature walk to Snow Creek, a bat, which was not identified, was seen coursing up and down a few feet above the trail. At this point on the trail, the trees have grown in such a manner as to form a natural archway covering the trail for several yards and resulting in a semi-twilight condition. At that time of year the mosquitoes were quite prevalent in this area, and combined with the darkened condition may have accounted for the diurnal activities of this bat.

UNUSUAL BARK THICKNESS ON GIANT SEQUOIAS

By Ranger-Naturalist Russel Lewis

"Is the bark really that thick all the way up on a Giant Sequoia?"

That is one of the most common questions asked by visitors to the Mariposa Grove after observing one of the exhibits in the museum which displays a bark thickness of 23 inches. So, whenever time was available a few measurements were made in order that such questions could be answered more satisfactorily.

The fallen Stable Tree was a good one to start on, as on the north side it has large slabs of bark that are partly broken from the trunk. A certain amount of weathering, as well as disintegration through handling by visitors, has taken place in this instance, but those factors are probably negligible since the tree fell as recently as August 1934. The thickness of the bark was measured at 10-foot intervals from the base to a point 150 feet along the trunk.

The figures listed represent the average larger slabs:

Thickness of Bark on Stable Tree

Height on Tree	Approximate Thickness	Height on Tree	Approximate Thickness
10 ft.	15"	80 ft.	3"
20 ft.	14"	90 ft.	2¾"
30 ft.	11"	100 ft.	2½"
40 ft.	7"	110 ft.	2½"
50 ft	5"	120 ft.	2"
60 ft	4"	130 ft.	1½"
70 ft.	3½"	140 ft.	1"
		150 ft.	1"

Above 150 feet the bark seemed to be about one inch thick, except in some grooved areas between limbs where it was more dense. The thickness 5 feet above the base was difficult to determine, although of the parts that were possible to measure it varied from 4 inches near the fire scar on the south side of the trunk to as great as 16-inch slabs on the north side.

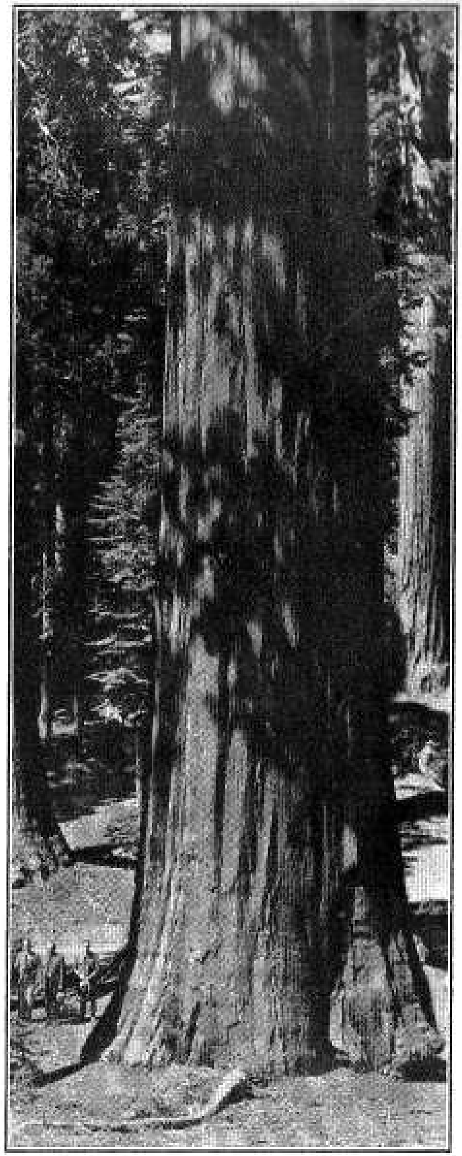
Within the Mariposa Grove Museum is the 1,830-year-old, pie-cut section, which is used to tell the life story of a giant sequoia. It is a section taken 11 feet above the base of the tree, yet the bark is but 6½ inches thick in comparison with the 15-inch thickness of the Stable Tree's bark measured at the same height.

The 997-year-old cross section of a giant sequoia, exhibited on the exterior north end of the Mariposa Grove Museum, has a bark thickness of about 6 inches. The distance above the base from which this was taken is unknown.

A study comparison of giant sequoias for thickness of bark indicated that the deeper the grooves, the thicker the bark. The Stable Tree, with its comparatively shallow grooves would prove this point, since the thickness of its bark measured less than that of the more deeply grooved giant sequoias.

On the side of a standing tree just east of the General Sherman the thickness of one external slab of bark measures more than 21 inches. How much thicker its bark might be is unknown, as it is a living tree, and precaution was taken to avoid any possible damage to both living and fallen trees. A similar slab on a standing tree above the road and east of the museum measured 19 inches. These two examples of bark thickness would compare favorably with the section of bark exhibited in the Mariposa Grove Museum measuring 23 inches.

Obviously, as indicated by the Stable Tree, and as observed on all giant sequoias, the greatest bark thickness is near the base. Here, the fire-resisting properties of this protective covering are more necessary, for while many of the trees show fire scars in their thick bark a few



feet above the ground, the additional thickness at such points has undoubtedly served as an important factor in the survival of these forest monarchs during past centuries. Apparently, repeated fires have burned themselves out in those thick slabs of asbestos-like bark. Thus the study of the bark is particularly interesting, since the long life of our famous giant sequoias is at least partially due to this thick, protective, fire-resistant covering.

SNAILS OF YOSEMITE VALLEY

By Ranger Naturalist Lloyd P. Parratt

Arthur B. Fuller of the Cleveland Museum of Natural History had asked for an investigation of the snails of Yosemite. A search was first made of the correspondence file on snails, which contained letters written in 1925 and 1926, soon after the Yosemite Museum was completed.

In a letter of September 11, 1925, from Stillman S. Berry of the California Fish and Game Commission to Dr. Harold C. Bryant, there is the statement, "You will be pleased to know they (snails) gambol under the euphonius patronymic of Helminthoglypta traskii proles (Hemphill)." In this same letter we learned that the sharp-lipped ones were juvenals.

Yosemitiensis we found was a larger and altogether different species. The latter, the Yosemite Land Snail, is about one inch across, and is usually found in rock slides. Juvenals of this species are microscopically Hirsute (hairy).

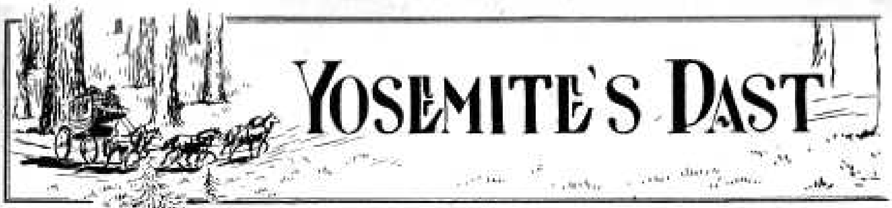
From a letter to Carl Russell (then Yosemite Park Naturalist) from Dr. Emmet Rixford, we learned that Yosemite snails are nocturnal, hiding in damp, moist conditions during the daytime.

Our field collecting of snails ran over a period from June 30 to August 3, 1940. In the Fern Spring area we looked over the rocks without success, and finally began to find the small traskii in moist soil under clumps of grass near the edge of the outlet into the Merced River. A few large shells of the Yosemite Land Snail were found, but no living ones. No specimens were found at the base of Lower Yosemite Fall. The base of Upper Yosemite Fall was investigated both from the trail side and from the "Sunnyside Bench" approach without results.

The Vernal Fall area near the Mist Trail yielded a few small traskii after several hours of looking while soaked to the skin by the mist.

The area along the stream back of the Old Village did not yield any results. All of the places investigated were recommended as likely places in the snail file.

The snails of Yosemite are conspicuous by their absence partially due to nocturnal habits and probably mostly due to a paucity of numbers which apparently has not changed a great deal in the years since they were first investigated.



INDIAN MORTAR ROCKS

By William Bennett, Field School 1941

Indian mortar rocks are not uncommon in certain areas of Yosemite National Park; in fact, visitors may readily find them at numerous places about the valley floor, but the discovery of a number of these at Miguel Meadow in the vicinity of the camp established by the Yosemite School of Field Natural History during the summer of 1941, added a bit of "extra curricular" study to our principal activities in that area.

Our interest in these indications of early Indian activities in this section of the park was touched off one evening when some debris was casually brushed off from a large boulder, which projected about 5 ft. above the trail near our camp, and which we had been nonchalantly passing several times each day. An observation of the rock with the debris so removed revealed a number of mortar holes, and when completely cleaned off, twenty-one such depressions were discovered. In addition, several rocks which had served as pestles were found buried in the litter about the base of the rock.

This discovery encouraged additional explorations with the result that, in all, eighteen mortar rocks were located within a short distance of the Miguel Meadow area.

These rocks were used by the Indians to pound acorns into meal, which served as a major part of the diet of these people. Such work was done by the Indian women, who, after shelling the acorns and placing the meats in the desired "cup" would grasp the pestle in both hands and crush the acorns by bending forward and pounding the pestle into the depression.

Many of the pestles found were in place, or at the base of the rock where they had been used. They were of varied shape and size, and the rock for this purpose had evidently been procured from neighboring steam beds or from the immediate terrain. While the majority of "cups" were found in bedrock, or rocks whose surfaces were only a foot or two above the ground level, holes and pestles were also located on several boulders which were about 6 feet from the surrounding ground. The number of holes found in individual rocks varied from one to as many as twenty-one. From the number and depth of the depressions observed in the granite, some of the rocks must have been in use for many years.

One of the smaller mortar rocks had several deep holes, the deepest of which was 7 inches. Usually when a "cup" became 5 inches deep a new one was formed a short distance away. Barrett and Gifford in their book, "Miowok Material Culture," p. 208, state that "deep mortar holes were used for the preparation of manzanita berries, oats and other seeds, especially when it was desired merely to crack the shells and not to crush the meats, previous to winnowing. In such a case the pestle was used lightly and also worked sidewise in the hole."

Most of these mortar rocks were found in places which received the morning sun, which were near water, and had oak trees in the immediate vicinity.

We were greatly surprised to find a fine mortar rock near Crescent Lake which is an altitude of 8,500 feet. There were no oaks in this vicinity, which was probably used by the Indians as a hunting camp.

The women gathered at the mortar rocks and, as might be expected, the men found resting places close by. This conclusion was drawn from the fact that near the mortars were found large numbers of obsidian chips and occasional arrowheads, obviously the result of the work of men whose duty it was to prepare weapons.

Ta-bu-ce shelling acorns preparatory to pounding