

YOSEMITE NATURE NOTES



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YOSEMITE NATURE NOTES

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MULTIPLE GLACIATION IN THE SIERRA NEVADA

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Definite and conclusive proof of two stages of glaciation was found in the Sierra Nevada of California in 1913, independently by Knopf, on the east flank of the range, and by the writer, in the Yosemite region. The evidence consists primarily of two series, or bodies, of moraines—an older, characterized by subdued, partly eroded forms, and containing weathered, disintegrating boulders, and a younger characterized by well-preserved, sharp crests and containing mostly fresh, unweathered boulders. In addition, both observers found erosional evidences of a roughly quantitative sort demonstrating that the interval between the deposition of the older and younger moraines was of the order of an interglacial stage.

The detailed mapping of the moraines of the Yosemite glacier and

its tributaries, however, soon enabled the writer to distinguish further subdivisions of the glacial record. Each of the two great bodies of moraines he found to be composite in its nature, so that together they embody a four-fold record—of two earlier and two later glacial advances. But whether each of these glacial advances represents a separate glaciation, or merely a major fluctuation of the glaciers, seemed at first uncertain. Comparative studies made in subsequent years on the morainal systems of the Tuolumne, San Joaquin, Kings and Kaweah glaciers and revisits to the Yosemite region, however, have since tended to confirm the writer's opinion that the two later glacial advances occurred in relatively rapid succession and mark sub-stages of a single—the last—stage

Editor's note

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of glaciation; whereas the two earlier advances were separated from each other by a long interval of time and mark two distinct stages of glaciation. Accordingly, there is on the west slope of the Sierra Nevada a definite record of three successive glaciations, of which the third and last had two climaxes. The general correctness of Willard D. Johnson's tentative recognition in 1905 of a triple glacial record in Bridgeport valley, on the east side of the Sierra Nevada, is thereby borne out.

These proofs of multiple glaciation in the Sierra Nevada of course render desirable the finding of suitable names for the different stages. The last stage, to judge by the fresh appearance of its moraines and the excellent preservation of its glacier polish on rock surfaces, doubtless corresponds to the last glacial stage in the Rocky mountains, and therefore is properly correlated with the Wisconsin stage of the continental ice. It scarcely needs a new name in the Sierra Nevada, and, therefore, in his reports on the Yosemite Valley and the San Joaquin basin the writer is referring to it as the Wisconsin stage. Its division into two substages would seem in harmony with the well-known division into distinct substages of the Wisconsin in the north-central parts of the continent. Still, the writer would not for the present dismiss altogether the possibility that what is here called the first substage of the Wisconsin in the Sierra Nevada may be the correlative of the Iowan.

The ice of the preceding, or second, glacial stage was much more extensive in the Sierra Nevada than the ice of the Wisconsin stage. Whereas, the Yosemite glacier of the Wisconsin stage terminated

within the Yosemite Valley, as is attested by the frontal moraines above the Bridal Veil meadow, the Yosemite glacier of the second glacial stage reached ten miles farther down the Merced canyon and terminated a short distance below El Portal, the entrance to the Yosemite National Park. Frontal moraines are lacking there, but the lateral moraines can readily be traced to the vicinity of El Portal, and beyond that place begin the remnants of a long valley train of outwash material that must have extended from the front of the glacier. The name El Portal stage therefore seems appropriate for this stage of glaciation (no more suitable name derived from a locality in any of the major glaciated canyons on the west flank of the range suggests itself).

The earliest of the three glaciations appears to be recorded in the Yosemite region only by erratic boulders occurring singly or in rows or groups, but without accompanying fine material, at levels 100 to 200 feet above the highest lateral moraines of the El Portal stage. They lie in places where there is every reason to believe that heavy, continuous moraines once were laid down. As the conditions there are on the whole favorable for the preservation of such moraines and as the boulders consist invariably of exceedingly resistant rocks, such as quartzite or highly siliceous granite, the conclusion seems inescapable that the boulders are the sole surviving remnants of moraines of a very early stage of glaciation that have wasted away almost completely. Such erratic boulders occur at a level about 700 feet above Glacier Point, extending in a row from the east base of Sentinel Dome to the north end of Illilouette ridge.

Others are scattered on the broad divide east of Mount Starr King. The extreme antiquity of the boulders above Glacier Point is attested also by the fact that, although they were carried by the ice only half a mile from their parent ledges, they have lost the angular forms of plucked blocks and have become rounded by long-continued exfoliation in situ. For this nearly state of glaciation, accordingly, the name Glacier Point stage is proposed.

Correlation of the El Portal and Glacier Point stages with the generally accepted stages of the Pleistocene determined in the area of continental glaciation can scarcely be attempted at the present time. However, from the depth to which the granite on Moraine Dome, on the north side of the Little Yosemite, has disintegrated and wasted away since the El Portal glaci-

ation—a minimum of seven feet, as is indicated by residual crags of resistant aplite—it may be judged that the time distance back to the El Portal stage is at least 20 times, and perhaps 40 times, as long as the post-glacial interval and is to be reckoned in hundreds of thousands of years. The El Portal stage therefore, probably corresponds to the Illinoian, and the Glacier Point stage, by inference, may correspond to the Kansan or even the Nebraskan.

Of particular interest in this connection is the recent discovery by Blackwelder at several points on the east front of the Sierra Nevada of what he regards as evidence of three, and possibly four, distinct glaciations. It is to be hoped that these may soon be definitely correlated with those recognized in the Yosemite region.

MUSEUM GUESTS RECALL HISTORY OF YOSEMITE VALLEY

By H. E. Perry

As in previous years, the Yosemite Museum has been very popular among the thousands of visitors to the park this summer. Those guests who were in the museum during the early part of their sojourn in the valley usually came back many times for further and even more intensive study of the exhibits. Those who delayed their visits until just before leaving the valley usually made a hurried tour of the various rooms and often lamented the fact that they failed to come sooner. That all were appreciative of the attempt that is being made to acquaint them with the fauna, flora, geological and histori-

cal facts of the park is apparent, not only by remarks that were made in passing, but by the look of genuine interest which clothed their expressions.

The ranger-naturalist on duty in the museum has many valuable experiences in meeting the guests. The various types of exhibits frequently call to their minds incidents which they like to pass on and the ranger-naturalist often falls heir to interesting stories. From time to time he is the recipient of stories relating to early Yosemite history and it is then that his attention is keenest.

During the early part of August,

the writer had the pleasure of meeting George Conway, who had come up from Merced for the day. Mr. Conway had come to the museum to rekindle memories of his youth, for in 1870 George was in the valley as a boy with his father, John Conway, the builder of several of the first trails in and around Yosemite, such as the trail to Little Yosemite, the four-mile trail to Glacier Point, etc. By 1870, James C. Lamon, Yosemite's pioneer settler, had become very well established in the valley, having built his home, planted his orchards and gardens soon after his arrival in 1859.

George Conway was evidently an admirer of Mr. Lamon's apple orchard, for he said that he and some other boys in the valley would frequently visit this orchard. Mr. Lamon had given them permission to eat as many apples as they desired as long as they would eat the skins too, for he said that these were good for them, but he told them he would never give them any more apples if he ever found them throwing the peelings away.

At about the same time in August two elderly gentlemen paid the museum a visit and it was of special significance inasmuch as they were nephews of Galen Clark. To one who is familiar with the history of Yosemite, the name of Galen Clark looms large. Settling in 1857 on the south fork of the Merced at what is now Wawona, Galen Clark explored the Mariposa grove in that year, bringing out the first detailed information relative to the now famous grove. In 1864 Clark was made guardian of Yosemite valley and the Mariposa grove, a position which he held for twenty-four of the forty-two years that this territory remained a state park. In greeting

the two nephews of Galen Clark, Leo McCoy and A. M. McCoy, one felt as though he were linking hands with the makers of history. Leo McCoy's first visit to Yosemite was made in 1872, at which time he visited his uncle, Galen Clark. In referring to this incident during his recent visit to the museum, Mr. McCoy remarked that he and another brother, Galen Clark McCoy, and Galen Clark made a trip up towards Little Yosemite during the latter part of September or the first part of October, 1872, and that they stopped over night at Snow's La Casa Nevada hotel, which had been built on the flat between Vernal and Nevada falls in 1870. Inasmuch as the old register of the La Casa Nevada is on exhibition at the museum, a search was made through its pages to see if the registration of the party could be found, and under the date of October 1, 1872, were the signatures of Galen Clark, G. C. McCoy and Leo McCoy.

About the first of September, Charles Leidig paid a short visit to the museum. The name of Leidig is a familiar one to Yosemite visitors, for one of the meadows still bears that name. The name has earlier significance, however, inasmuch as one of the former hotels was known as Leidig's Hotel, having been built by George F. Leidig in 1869 at a point a mile below the present old village. That same year there was born to the Leidig family a boy who was christened Charles, the same boy who as a man visited us so recently, and he has the honor of being the first white boy born in Yosemite valley.

In one of the cases in the history room may be found a copy of "The Yosemite Tourist," dated July 10, 1906, which tells of a thrill given passengers of five stages bound

from Raymond to Wawona. As the first of those stages approached a certain locality on the side of Chowchilla mountain, an honest-to-goodness masked highwayman, armed with a .44 Winchester, stepped out into the road and commanded the passengers to alight. He ordered a young lady in the party, Miss Bowen, to pass the hat among his victims of the first stage and to collect all articles of value. She unwillingly complied with his request, although additional "collectors" were pressed into service as the other stages drove up. All passengers were kept with hands held high until the bandit was ready to leave, at which time he ordered everyone to remain motionless until

his gun went off in the distance. Such a story is interesting to read but mere interest changes to excitement when the facts come from the lips of one who participated in the events, for the "Miss Bowen," who so unwillingly passed the hat at the command of the highwayman, visited the museum on September 8 and related her experiences to a small circle of interested listeners.

As can be readily seen, the history of Yosemite valley since the coming of the white man is still young enough to make it possible for many of the persons connected with it to relate stories of their participation in the flow of events, and it is thus that there is a continual enriching of the lore of this famous valley.

Yosemite Indian Caves

By J. S. Smith

Multitudes of tourists come and go in a season at Yosemite without knowing of the existence of the Indian caves. However, rangers are asked many times during the summer to direct visitors to them and ranger-naturalists often visit them on the walks from Camp Curry.

The caves are located at the foot of the talus slope just below Washington Column, which towers 1952 feet above. They are formed by immense overlapping segments of granite, which during the process of exfoliation have flaked off of the cliff above. The lower of the caves is approximately a hundred feet long and seventy feet wide. Its entrance is broad and is high enough to admit a man standing. Many recesses are included among the boulders beneath the roof, which is low and smoke-smudged. A small opening in the roof reached by a

15-foot climb over the boulders leads to the open through a smaller cave above formed by the overlapping boulder.

A short climb is required to reach the upper Indian cave where the overlapping slab of granite makes a natural shelter about fifteen feet wide and twenty feet long. Here, too, there are several smaller and more secret "chambers."

Grown-ups exhibit as much enthusiasm as children in the exploration of these caves. A ranger-naturalist conducting a party of thirty invited the juvenile members to make the climb up through the "skylight" of the lower cave and evidently all considered themselves children, for the entire group climbed through and from there on to the top of the rock covering the entrance.

The smoke-blackened ceilings,

extensive acorn supplies and a expedition to Yosemite in 1851. storage basket found in some of Yosemite is rich in Indian lore the more remote recesses indicate and legend. Indian names add the use of the caves as habitations charm and interest to its natural by the Indians. An Indian squaw beauties. To these caves they gave was found in these caves by the the name of "Lah-koo-hah," mean- Mariposa battalion on their first ing "Come Out."



Entrance to lower Indian Cave.

Winged Death

By C. H. Oneal

All was silent about 10 o'clock one warm morning. Several yards below us was a little flat in a clearing on the easterly side of Glacier Point. A Tahoe chipmunk was eating a crust of toast at the upper edge of the clearing. Behind it was a large rock. Off about 150 yards at the very top of a tall dead pine sat motionless a Western red-tailed hawk. Suddenly the keen eye of the bird of prey spied the chipmunk. A few rapid beats of the wings and a dark brown streak flashed across the clearing. There was a dull thud, a little dust, but no outcry, no struggle. A few seconds later the enemy flew away the victim motionless in his grasp. As the hawk again made for the tree the bright red tail proclaimed his species.

YOSEMITE BIRD REPORT FOR NOVEMBER

By Enid Michael

The monthly weather report for November in the Yosemite Valley is indeed simple, as there is scarcely anything to report except perfect weather. Not once during the month was there any sort of storm. The nights were cold of course, but the lowest thermometer reading was 18 degrees. However the quiet water of the "river pool" froze over early in the month, and during the last week many of the "locals" enjoyed good skating.

Autumn colors came exceptionally late this year and the height of the show came during the week beginning November 4. It is true that the exotics and the native maples were in fine color a month earlier, but the oaks and cottonwoods, trees that are dominant on the floor of the valley among the deciduous type, did not really reach perfection until November 6. At this time some of the tardy maples on the north wall were also in fine color, but many of the exotics were quite leafless.

Fifty-three is the average number of birds noted during the November month in the Yosemite valley over a period of ten years. This year the number of species fell far below normal, with only forty different species noted during the month. Among the forty species the waxwing was the only surprise of the month.

The subnormal total of species for this month is most likely due to the long stretch of perfect weather. Such birds as slate-colored junco, purple finch, hermit thrush and solitaire would probably appear in the valley if there were storms of any consequence. Another thing

that brought down the number of species was the utter absence of water birds. Usually during November ducks of one or more species are seen in the Yosemite.

The acorn crop was small this fall. The California woodpecker, however, have made the best of the meager crop and have managed to tuck away a goodly store for the winter use. From present indications these birds plan to stay through the winter. Blue-fronted jays are still common in the valley. In years of plenty the jays claim, and manage to get, a certain share of the acorns stored by the woodpeckers. I am afraid though that the jays will be out of luck this winter for when the snow comes the woodpeckers will do their best to run the jays out of the valley.

Both cedar and oak mistletoes bear a crop of berries this year and so there will be food for bluebirds and solitaire that choose to winter in the valley.

Yosemite Birds Noted in November, 1929

Great Blue Heron--A lone bird noted a number of times during the month, and on November 6, three were seen.

Mountain Quail--On two occasions three birds were seen.

Band-Tailed Pigeon--On the first day of the month a flock of 60 were seen, and also several small flocks. After this date only stray birds were noted.

Sharp-Shinned Hawk--A lone bird noted November 11.

Red-Tailed Hawk--Twice a lone bird was seen.

Swainson Hawk--A hawk that we

took to belong to this species was noted on the first day of the month.

Golden Eagle—A lone bird twice seen about the bear pits. No doubt, feeding on carion.

Sparrow Hawk—A lone male bird noted on several occasions.

Horned Owl—Two birds heard calling to one another on several occasions during the month.

Pigmy Owl—A lone bird noted daily during the first two weeks of the month. Thereafter but rarely noted.

Belted Kingfisher—A few birds probably present throughout the month, but there were days when they were not found in their usual haunts.

Hairy Woodpecker—No doubt present in small numbers throughout the month, but there were days when we failed to find a single bird.

Willow Woodpecker—Unusually rare this month, never more than one bird noted on a morning's walk, and there were many days when the lone bird was missing.

Nuttall Woodpecker—A single bird noted November 8 and 18.

White-Headed Woodpecker—A lone male bird frequently noted about the mouth of Indian canyon. Otherwise, rarely noted.

Pileated Woodpecker—a lone bird noted September 17.

California Woodpecker—Still common in all the Kellogg oak groves.

Red-Shafted Flicker—Present daily and six or eight to be noted in an hour's walk.

Blue-Fronted Jay—The most common bird of the month.

California Purple Finch—A pair noted on the third and fourth.

Pine Siskin—A flock of 100 feeding in the alders November 4. On three occasions thereafter smaller flocks were noted in the same alders.

White-Crowned Sparrow—Three birds noted on two occasions.

Golden-Crowned Sparrow—Groups of three or four frequently seen.

Chipping Sparrow—A lone bird on the first day of the month.

Sierra Junco—Flocks present on the north side of the valley throughout the month.

Sacramento Spotted Towhee—Seven or eight birds present daily about the mouth of Indian canyon. Not noted elsewhere.

Waxwing—A lone bird that we took to be a Bohemian was seen with a flock of Western Bluebirds.

Hutton Vireo—A pair noted on three occasions.

Audubon Warbler—Noted almost daily. A lone bird usually accompanies each flock of Western Bluebirds.

Water Ouzel—Possibly present throughout the month, but if so, not on their usual beats.

Canyon Wren—No doubt present daily, as they were always to be found in certain rock slides on the north side.

Winter Wren—A lone bird noted on November 14.

Sierra Creeper—Found in all sections of the valley.

Red-Breasted Nuthatch—Single birds or pairs frequently noted.

Mountain Chickadee—Next to the jay, the most common bird.

Ruby-Crowned Kinglet—Lone birds noted almost daily.

Golden-Crowned Kinglet—Small flocks to be found in many sections of the valley.

Western Robin—Rare. Not so common as the chart would indicate. Never more than three noted on our morning walk, and most often it was just a lone bird.

Varied Thrush—Not numerous. Twelve was the greatest number noted on any one day.

Western Bluebird—Among the common birds of the month. Flocks likely to be found in any of the Kellogg oak groves, where they come to feed on mistletoe berries.

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