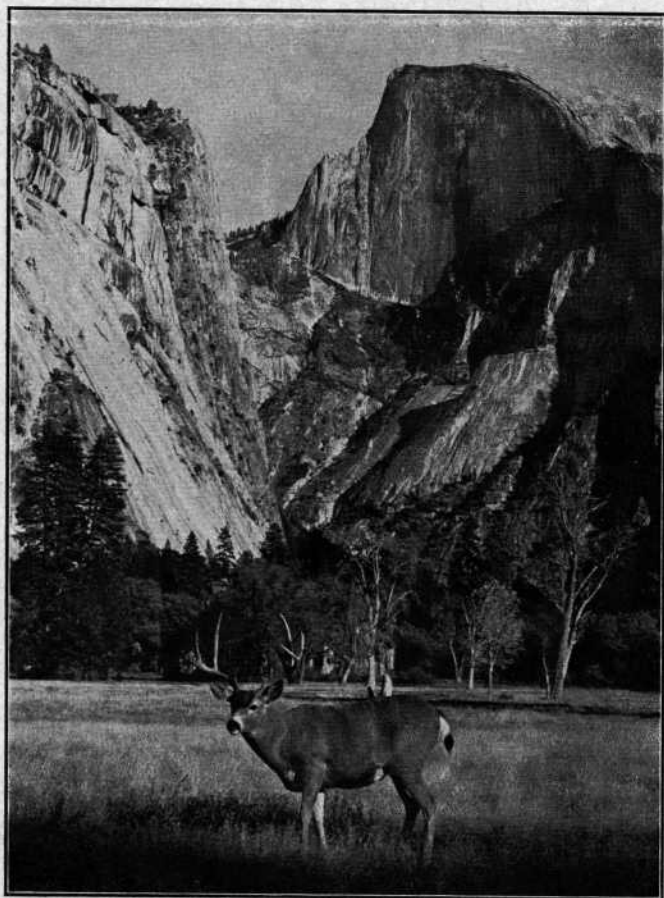


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Yosemite Nature Notes

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FROM GLACIERS TO LAKES TO MEADOWS TO VALLEYS

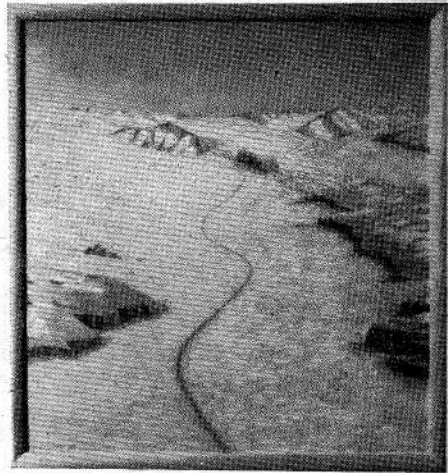
By M. V. Walker, Associate Park Naturalist

Few people ever stop to analyze, step by step, the origin and development of many of our beautiful mountain meadows. Although not true in every instance, the majority of our mountain meadows have "descended" from mountain lakes. And to carry this evolutionary process one step farther, we might say that our mountain lakes have descended from mountain glaciers.

Back in the Pleistocene or "ice age" large mountain glaciers mantled the higher slopes of the Sierra Nevada. These glaciers flowed down either slope of the mountains, following in their descent the stream valleys and canyons that already were in existence. We must never forget that the drainage system (stream and erosion pattern) of the Sierra Nevada was clearly outlined long before the development of mountain glaciers in the Pleistocene.

As these mountain glaciers flowed down the valleys and canyons they encountered bed rock of different texture and character. In areas where the granite bed rock was solid and free from fractures and

joints, the glaciers did very little quarrying or excavating, but simply flowed over the bed rock. But in areas where the granite bed rock was broken by joints and fractures,



Yosemite Valley during the height of the "Ice Age"

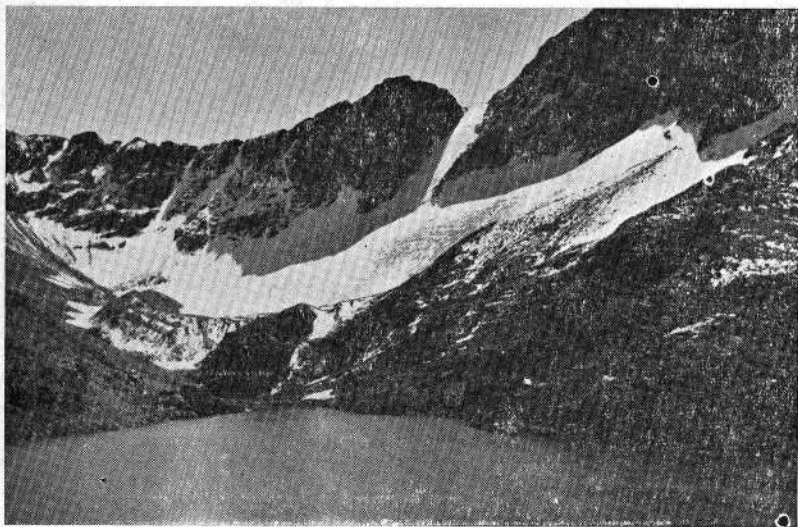
the glaciers were able to pluck up the jointed blocks, very much like the action of a magnet picking up a piece of iron, and then to carry these blocks along, thereby excavating a basin out of the bed rock.

When the glaciers retreated and melted away these basins were soon filled to the brim with water, thereby producing a lake. These lakes were spaced here and there along the stream course, very much like elongated beads on a string. As these lakes filled to the brim they would over-flow and then the water would continue on down stream to the next lake, and so on and so on. But mountain lakes of this nature are very short lived, geologically speaking, and soon they begin to "shrink-up" and disappear.

The descent of the stream from one lake to another was usually quite rapid, so that the stream had sufficient power to transport much

gravel, sand and mud. As the stream flowed into the upper end of the next lower lake, the current was of course dissipated and the sediment was in turn deposited at the inlet, forming a small delta that gradually built up and out into the lake. In this manner the lake was slowly filled at the upper end. The lake began to shrink as the delta (deposit of sediment) advanced slowly down the lake. Eventually the delta reached even to the lower end of the basin, at which time the lake ceased to exist.

In place of the lake there was now a relatively flat sediment filled basin, with a slowly flowing stream meandering in its course from upper to



Dana Lake - a glacial basin

N.P.S. Photo by Ralph Anderson



Tilden Lake • an alpine basin

N.P.S. Photo by Ralph Anderson

lower end of the former lake. For a time the ground water table was held so high that the entire basin was mostly a marshy bog. Only those plants which were tolerant of such marshy conditions were able to grow on this newly formed land surface. Slowly these plants added each year a thin layer of material on top of the original land surface. A small amount of sediment also trickled in along the sides of the basin. The stream continued to carry in its load of sediment, and at each flood stage, to spread this deposit widely over the flat floor. And in addition, the stream, which had never ceased its work, cut deeper and deeper the outlet channel at the lower end of the lake. All these changes proceed-

ed to add more soil to the surface and to lower the ground water table, thereby making it possible for more and more plants less tolerant of excessive ground water to grow upon this new land surface. Slowly there came into being the open, grassy, flower filled meadows which add so much to the enjoyment of the Sierra landscape.

But alas, even these meadows are doomed to extinction. Many have disappeared completely, others are loosing ground rapidly, a few are now at their best, while still others are slowly coming into existence. But eventually, even these that are being born today will pass through those stages of youth, maturity and old age, and will some day pass on

to make way for a new form of landscape that in itself represents the youthful stage in a new cycle of earth movement and erosion.



Ancient Lake Yosemite

If we but follow the Merced River in its course from the Park boundary up through Yosemite Valley, Little Yosemite Valley, Merced Lake, Washburn Lake and to its headwaters near Mount Lyell and Mount McClure, we pass through or recapitulate each and every step in this evolutionary process of glacier to lake to meadow to valley. Both Yosemite Valley and Little Yosemite Valley were once rock basin lakes. These lakes were in turn completely

filled with sediment and slowly changed from marshy bogs to meadows. The lowering of the ground water table allowed trees and shrubs to encroach upon the meadows. Little Yosemite Valley has lost all of its former meadows, while the meadows in Yosemite Valley itself are rapidly losing ground.

Merced Lake is being filled with sediment at the upper end and meadows are beginning to develop. Trees are already growing along the margin of the meadow. This cycle of change will continue as the delta, marsh and meadow slowly creep down the entire length of the lake. Washburn Lake is in a younger stage of development and has not been filled with nearly so much sediment. Farther up the stream course, where the Merced River approaches its source, especially along the drainage known as the Lyell Fork of the Merced, there is an interesting series of meadows and rock basin lakes. Finally we come to the very head of the drainage system near the crest of the Sierra. Here at the southwestern base of Mount Lyell is a small rock basin lake in its very infancy, for, geologically speaking, the glacier that once filled it melted away just "day before yesterday."

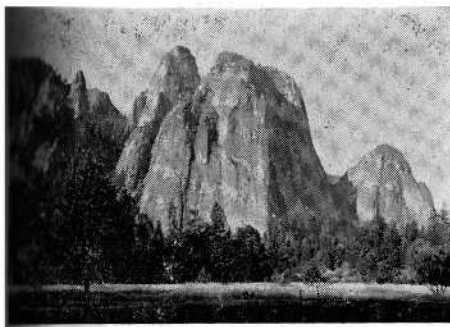


"ALONG THE POHONO TRAIL"

By Park Ranger Robert W. Prudhomme

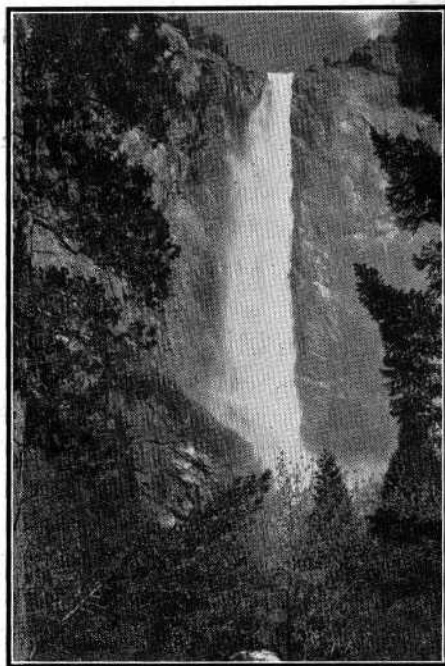
Where the sun has reached beyond the receding shadows of the cliffs there is morning dew sparkling on the meadow grass. A red-winged blackbird is perched among the branches of a black oak, and there, suddenly, it flies across the marsh beside the stream, flashing the red-

carious passage that has been torn apart by an avalanche, the remnants of this historic road serve us well to lead us to the rim-trail above.

*Cathedral Rocks*

orange that is on its ebony wings. Beyond the tall spires of ponderosa pines and incense cedar there are the immense and sheer Cathedral Rocks where now the morning sun has cast its golden light. At Bridalveil Fall we pause for a spell to catch the fragrance of its green glens and to watch the fragile, gauzy mists that descend the cliff.

The trail which we have chosen to take begins at Inspiration Point, which we have succeeded now in reaching by way of the old Wawona Road. The road has long been in disuse and is overgrown and blocked with brush and fallen trees. But with the exception of one pre-

*Bridalveil Fall*

At Inspiration Point the time is ours to linger on its brim where we may study the sculptured beauty and massiveness of Yosemite Valley. A golden-mantled ground squirrel scurries across the leaves and needles to the surface of a granite rock where we have tossed our crusts of bread. And there, sitting on a fallen log, a tiny chipmunk quivers with expectation as we prepare to throw

it a morsel of cake. A company of mountain chickadees is busy among the branches of a sugar pine that swing gracefully out over the valley, framing the beauty of our panorama.

Red-breasted
Nuthatch



As the sun has gathered the last of the shadows from the valley, we turn again to our trail. Ascending a high ridge we reach the beginning of the Pohono Trail which leads us along the south rim of Yosemite Valley. We enter a dense forest of red and white fir, the rich timber of the Canadian Zone, where there is the pungent odor of bear clover and the fragrance of fir needles; and of damp loam where the ferns grow. High among the crowns of the forest we can hear the faint, whistling notes of golden-crowned kinglets and the far off nasal call of a red-breasted nuthatch. There is a Sierra creeper hitching himself up the vertical trunk of a white fir.

Leaving the darkness of the forest, we follow the edge of the rim to Taft Point, where we may gaze into the valley, 3,500 feet below. The Merced River is but a tiny, blue ribbon, and the forests and meadows that fringe its shores are in miniature. Here we

may listen to the echoes of our voices that resound again and again from among the cliffs. High over the rim a golden eagle drifts upon its heavy wings and drops suddenly into the depths, where perhaps upon some high ledge it has its nest.

Along the Pohono Trail, where it follows the open, sunny spaces close to the rim, there are rock gardens of Indian paint brush and blue lupine, and where the green meadows lie there are shooting stars and Sierra daisies that grow in profusion. As we pass the edge of one of these hidden glens we see an old cinnamon-colored bear digging among the roots of a fallen pine. Catching sight of us he lumbers off into the woods, startled and disgruntled by our intrusion.

It is late afternoon and we are close now to Sentinel Dome. The shadows of the dying sun are lengthening, and below the rim there is a deep, violet haze. The valley walls have changed from grey to lavender, and to gold, where they reach to the last reflections of the sun. There is a deer, standing erect and poised, at the bend of the trail until hearing our steps he vanishes silently into the shadowed woods.

As the sun sinks rapidly in the west, we hurry to reach an open spot from which we may watch the final splendor of its setting. And it is indeed a beautiful sight; the brilliant, crimson fire flaring across the western sky, and the changing pastel shades deep within the valley.

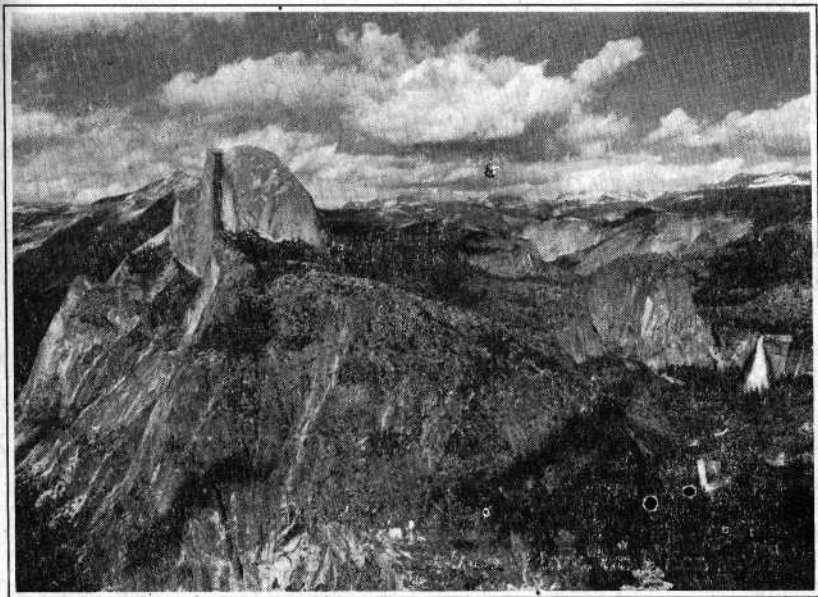
On Sentinel Dome we arrive with-
in time to see the alpine glow that
has turned the summit peaks into
strags of coral pink. There is a faint
breeze blowing down from the crests
and the air has gathered the tang of
twilight in its breath. Our view from
every side is one of contrast and ex-
panse. There is Half Dome to our
east, and Cloud's Rest, towering
above the purple depths of Tenaya
Canyon. Across the north rim, and
beyond us to the south are dense fir
forests, broken here and there by
granite spurs and domes.

Within sight of the old Jeffrey pine
on top of the dome, we build our
campfire as a full moon rises over
the High Sierra. In the west there is

still a lingering streak of light, while
the skies before it are filling with a
multitude of stars. There is some-
thing of the spirit of the wild within
the warmth of our fire and its sense
of comradeship. From beyond its
glow the moon has flooded the high
mountains with a silver haze and
has descended the cliffs of the valley
so that they are like immense white
walls, rising out of the shadows.

There is a breathless silence in
the air, save for the crackle of wood
as our fire fades into embers.

Descending the trail into the valley
we stop to hear the call of a coyote
that echoes among the hills. A
brown bat brushes across the path
on noiseless wings, and turns to soar
into the depths.



Storm clouds over the Sierra crest



MUSEUM NOTES

HARRY C. PARKER RETURNS

Asst. Park Naturalist Harry C. Parker, until recently a lieutenant in the U. S. Army, is again "among those present" at the Yosemite Museum, having returned to the park late in June. Harry entered military service in the fall of 1942 and saw action in the Aleutians before being returned to the United States. More recently he was stationed at Camp Lee, Virginia.

His wife Katharine, who was a student in the 1941 class of the Yosemite School of Field Natural history, and their young son accompanied him. In Harry's typical energetic fashion he soon plunged into his work, thus aiding the museum staff in meeting the greatly increased demand for naturalist services. (C.F.B.)

A PIONEER VISITOR

One of the more interesting recent visitors to the Yosemite Museum was Mrs. Esther Harris Nathan of San Francisco, who, in addition to giving us many interesting sidelights on the

early days in Yosemite, presented the Museum with two old photos of the Harris family taken in the Valley by Geo. Fiske, pioneer Yosemite photographer.

For many years Mrs. Nathan lived in the Valley and attended the first school in this area. Her father, Mr. Aaron Harris, set up and managed the first camp ground in Yosemite Valley—undertaking that enterprise in 1878 by authorization of the Commissioners of the Yosemite Grant. The Harris Campground occupied a site in the vicinity of the present Ahwahnee Hotel and its register of guests, now in the historical files of the Museum contains many interesting comments relative to the interest, helpfulness and kindness of this man whose enterprise was the forerunner of present day accommodations of a similar character.

At the time of her visit to the Museum (June 23) she was anticipating the celebration of her 80th birthday a few days later at her San Francisco home. In that connection, it is interesting to note that while in Yosemite she hiked to Vernal Falls mingling on the trail with hundreds of modern visitors along that scenic route. (CFB).



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Dan Anderson