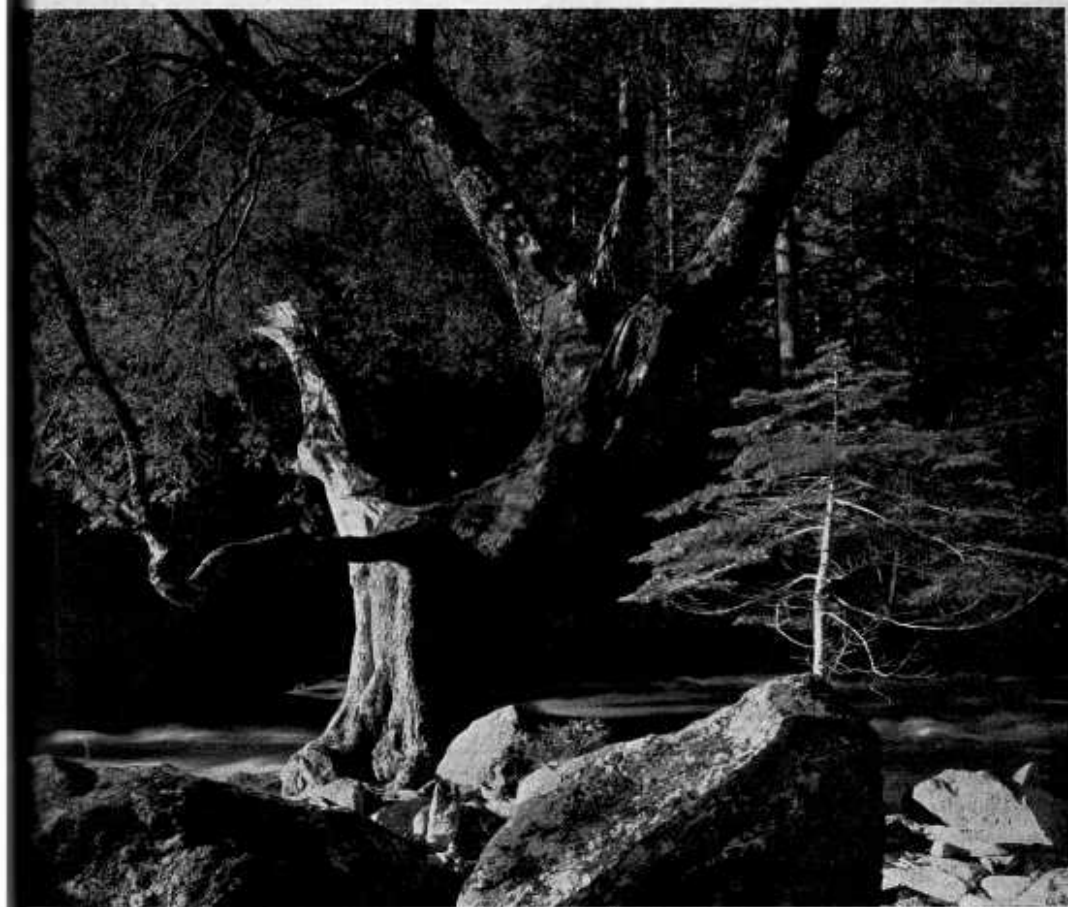


# YOSEMITE NATURE NOTES

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In the Merced Canyon below Yosemite Valley  
—Ansel Adams



The obsidian was broken—



then carefully flaked into points.

THE MONTHLY PUBLICATION OF  
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THE YOSEMITE NATURAL HISTORY ASSOCIATION, INC.John C. Preston, Superintendent  
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## OBSIDIAN—A FRAGMENT OF THE PAST

By M. L. Gilbert

We stopped to rest on a sandy mountain bench, covered with prostrate lupine whose colors reflect the sky and snow. The bench was formed by the different rates of weathering of the Johnson Peak and Cathedral Peaks granites. Here, and in the meadow just a step below us, are found all the things man could want; shelter on the soft needles under the gnarled whitebark pines; water from the sparkling stream which flows from the lingering snowbanks through the flowering meadow; food from the fat marmots and pikas whose whistles of alarm warn of your approach; beauty in the views of mountains and valleys, forests and meadows.

As we rested, one of the party noticed a piece of black rock among the white sand. It was so different from the other rocks around us, that he brought it to our attention, and it was recognized as a fragment of obsidian. Obsidian, a geologist's term, conjures up pictures of life here before the white man's history began.

Obsidian is formed when a mixture of molten glass and iron compounds is cast out of a volcano in such a way that it cools very quickly. The rock is uniform in composition and structureless, and thus breaks along any line upon which force is applied. Obsidian was one of the most important materials used by the stone age Indians; they worked it with tools made from hardened deer antlers into spear points and arrowheads.

This sandy spot may have been a favorite camping and working place for the Yosemite Indians on their way back from trading with the Monos or from trips to where they obtained their obsidian. We found many chips, several perfect arrowheads, and an unusual chert point which must have been brought from another region. In imagination we could picture the Indians camping and working here, enjoying the spot as we did while we rested there, many years after they had left the mountains forever.

## THERE'S A SUCKER BORN EVERY MINUTE!

By Emil F. Ernst, Park Forester

The Yosemite Valley has been visited and enjoyed by people from all walks of life. One of these was that seeker of the unusual, Phineas T. Barnum of circus fame. Barnum was an early traveller to Yosemite and as the wagon roads had, at the time of his visit in the spring of 1870, not reached the floor of the valley, part of his journey was on horse-back.

Barnum took a circle tour that began at Mariposa and ended at Coulterville which was a common way of travellers in those days. This circle tour took in Wawona, the Mariposa Grove of Big Trees, Yosemite Valley, and the Merced Grove of Big Trees. With Barnum on this visit, of over a week's duration, were a Miss Fish of England, L. L. Pierce and wife of Syracuse, New York; and F. W. Smith, Jr. and Miss Wheeler, both of Bridgeport, Connecticut.

Barnum was impressed by the size of the Big Trees and in a letter to the Editor of the *Mariposa Gazette* on his return to San Francisco said, "They were so large I told our guides I could not stand to look at a bigger one without taking chloroform." Showman that he was he was building up for the display at Wood's Museum in New York a piece of Big Tree bark he had purchased in Mariposa. This piece of bark, measuring in thickness  $29\frac{1}{2}$  inches, had been obtained by a Mr. Stegman of Mariposa from a tree in the Fresno Grove of Big Trees.

The bark had been on display at Miller's Saloon and had attracted considerable attention. Barnum was not one to pass up anything such as this for his renowned museum and purchased it on the spot. He had it boxed and shipped to San Francisco. The Editor of the *Mariposa Gazette*, in the issue of his paper of June 17, 1870 observed, "... that the piece of bark, which was already thick enough to satisfy any reasonable ambition, increasing in thickness about six inches in travelling from here to San Francisco, being now three feet according to Barnum. If the bark and seal (Barnum had also obtained a young female sealion in San Francisco) go on growing in that ratio they will become unmanageable before reaching New York."

Barnum added another Yosemite specimen to his museum a year later. This was in the nature of an Indian boy from the wilds of the Sierra Nevada and Yosemite Valley. A sure enough attraction for staid Easterners. The story is told quite well by the Editor of the *Mariposa Gazette* in the March 3, 1871 edition of his informative newspaper, "*Distinguished Departure: Charley, Indian boy, aged 13 years, son of Balty, Captain of the Yo Semite tribe, left Mariposa last Monday under the escort of Mr. John Bruce for San Francisco, whence he will be consigned to New York and Barnum. Barnum wanted two Indian boys and two*

occasions for his show, but has to start with one boy, as suitable Indian boys of good family are scarce just now. Mr. Bruce had a good deal of trouble catching this one. Charley is to figure in the circus department of Barnum's menagerie. He is a good rider, can pick up scalps or half dollars from the ground riding at full gallop, and will hold his own in the sawdust arena. He is one of the Piutes that spread such terror through the mountains last summer. We are afraid that Barnum may not get up this young chieftain in sufficiently striking Indian style to do justice to his race, lineage and native

habits, and may not make enough of the romantic character and high birth of the scion of the noble house of Yo Semite. But perhaps he will."

Undoubtedly Charley's advent at Wood's Museum in New York received the usual embellishments that Barnum is known to have lavished on his exhibits. Barnum was the greatest showman of them all and at the time of his visit to the Yosemite Valley was at the peak of his career with Wood's Museum. An Indian boy from the famed Yosemite Valley, and a Piute that had spread terror a short time before must have been more than a ten day sensation.

## PROBLEMS OF A PINE CONE\*

By Richard G. Beidleman

On the flanks of California's Sierra Nevada mountains grows the stately sugar pine, king of the conifers as far as cones are concerned. While the Giant Sequoia, largest of living trees, is content with cones that are only about two inches in length, the five-needled sugar pine produces over a two year period cones that in some instances will exceed twenty-four inches in length and half-a-foot in width. These enormous cones are not only of interest to the trees and tourists but also to myriads of forest animals who subsist upon the hard-shelled nuts found under the woody cone scales.



Among these nut-eaters is the chipmunk-like golden-mantled ground squirrel. Although unable to climb

the towering pines and cut his selected crop of cones, this lively little rodent enjoys scavenging fallen cones and needle-covered ground for nuts, stuffing them into his cheek pouches until his jowls take on a mumpy appearance. Then hastening to a secluded spot in the forest, he scratches out hole after hole in which the nuts are cached away, oft-times never to be rediscovered.

In the course of their food gathering golden-mantled ground squirrels, like people, often develop ideas that surpass their capacities. One such individual living in California's Yosemite National Park concluded, after what must have been a tremendous bit of squirrelian cogitation, that summer time was too precious to waste by gathering and burying nuts piecemeal. Selecting a nutty, fifteen-inch sugar pine cone, he attempted to drag the entire treasure over to and down into his hole.

Such aspirations as may have belonged to the ingenious squirrel shrank when he started the six-inch-wide cone down his three-inch burrow. The cone in its present state just would not go down the hole in its present state! Undaunted, the animal widened the hole, chopped off a few scales, and was able to

move about a fourth of the cone underground. The other three-quarters, however, still remained unburied and unharvested.

There followed several days of inactivity during which time the cone reposed in and out of the ground squirrel's burrow. Then one morning the little animal, undoubtedly on the advice of several older and wiser neighbors, pushed the cone up out of this hole and rolled it to one side. Front paws went to work; and in a short time a shallow trough about the length of the cone had been dug, a ditch which crossed the entrance to the squirrel's burrow. Into the trough the cone was rolled; and what had started out to be a winter ladder became a front porch.

It would be amusing to imagine that from that time forward golden-mantled ground squirrels came from all around to see this bizarre installation; but truth to tell, within a week a tourist wandered by and, unaware of the story behind the cone, picked it up and took it home for his mantelpiece.

\*This article first appeared in *Nature* magazine (437): p. 342, 1950) and is reprinted through the courtesy of that excellent publication.

## MT. MACLURE — ITS NAME

By Lloyd M. Smith

Mt. Maclure, situated half a mile west of Mt. Lyell, is the second highest peak in the Yosemite, Mt. Lyell topping it by less than fifty feet. Like its neighbor, it also has a glacier on its south flanks, one of the few re-

maining within the park's boundary. And like Mt. Lyell, it was named to perpetuate the memory of a great geologist.

William Maclure was born in Scotland (also the native land of Lye-

in 1763. He was privately tutored, in contrast to the Oxford-educated Lyell. With adventuresome enthusiasm he sailed for New York when only 19. He soon became partner in an export and import mercantile firm with offices in London. Through this successful venture, Maclure was able to accumulate a considerable fortune.

At this time Maclure developed an interest in geology. He toured Europe, collecting specimens and books on the subject. He returned to America overflowing with geological zeal and, not finding sufficient data on the subject available in this country, set about gathering it himself. In 1809 he published a booklet *Observations on the Geology of the United States*. Illustrating this brochure was a colored map, the very first truly geological map of any part of North America, and one of the earliest in the world.

After extensive travel in the West Indies, he republished his *Observa-*

*tions* in 1817. Then, obsessed with the idea of founding an agricultural school, he purchased some 10,000 acres in Spain. However, priests laid claim to his land and Maclure found himself in danger of being captured by brigands, so he fled Spain and returned to America. Still enthralled by his plan for such a school, he joined Robert Owen in trying to establish a communistic colony in Indiana. This finally crumbled too, so Maclure, aging and in ill health, journeyed southward to Mexico to try to help the native Indians. In 1840 he died at San Angel, near Mexico City.

Among his accomplishments were the founding of the Philadelphia Academy of Sciences and of the American Geological Society. He can rightly be considered one of the pioneer American geologists, and it is appropriate that one of Yosemite's highest mountains should bear his name.



Mount Maclure rises above a beautiful turquoise lake.

—Anderson

## PLANTS THAT MOVE MOUNTAINS

By Ann Larson

Everywhere, from the surface of the bark on roadside trees to the rocks on the highest peaks, there are vast flower gardens just waiting to be enjoyed. The little plants that are there come in amazing varieties of color, shape and size. As they are perennials, they can be seen in the same place year after year and as they grow very slowly, some plants survive for centuries. You all have seen those gray-green or gray incrustations on the rocks around the valley and the chartreuse tufts growing on some of the trees. There are many more different kinds than these. It is very easy to look right at some of them and yet not even see them, as quite a few are small and blend into their environment. Others are so conspicuous with their bright color or large size they can hardly be missed. These plants are called lichens (lye-kens).

The term lichen was first used by Theophrastus (about 375-285 BC) in his book "History of Plants," and was used to describe the superficial growth on the bark of olive trees. This also included several other plant types.

Lichens were originally studied for their medicinal value, which reached its peak in the fifteenth century with the doctrine of signatures. This theory held that nature had designed certain plants to resemble parts of the human body and that they were therefore useful in curing ailments of that part. For example, *Usnea barbata*, a lichen resembling long hair, was used to strengthen hair and *Lobaria pulmonaria*, as it re-

sembled lung tissue, for disorders of the lungs. Needless to say few people were cured by these remedies.

At a very early date their use as dyes was known, reference being made to the dyes in the Old Testament (Ex. XXV:4). The most important of these (*Rocella tinctoria*) gave a purple color. Lichens also found use in perfumery, tanning, brewing and distilling and even as food. It is fairly certain that the manna described in the Bible is a lichen (*Lecanora esculenta*). It grows and spreads rapidly and is easily broken off and driven into heaps by the wind and carried down into the valleys. After extra heavy rains it can pile up to a depth of several inches. This form is very plentiful in North Africa and in the Steppe region of Asia is used as a substitute for corn. Iceland moss (*Cetraria islandica*) is still used in northern nations and is available commercially. Also in northern areas reindeer, cattle and other animals use reindeer moss (*Cladonia rangiferina*) as winter feed. Most lichens have very little nutritive value, a very bitter taste and are mainly useful in time of famine.

Lichens are unique in that they are actually composed of two different plants, each functioning for the benefit of both. One, the fungus, serves as the structural and water absorbing portion while the other, the alga, manufactures food. The algae alone could not survive the extreme weather conditions that lichens are able to withstand, many being frozen in ice during the winter





Streaks on many Yosemite cliffs are made by lichens. Illustration: Half Dome, moonrise. By Ansel Adams from Yosemite and the Sierra Nevada, Courtesy of Houghton Mifflin Company.

and baked in summer.

They do not have true roots, but holdfasts (or rhizoids) that serve mainly to hold the plant to the structure on which it is growing. Most of the water needed for growth is absorbed from the atmosphere. Minerals are obtained either from the substance on which they are growing or from dust and dirt particles carried to them by air currents. The minerals in rocks are made available to the plants by their secreting acids which dissolve the rock and are then absorbed through the holdfasts.

The forms that these plants can take are varied. The usual divisions

are: (1) The stalked lichens — those with a stalk or those that are lifted well clear of the foothold. (2) The papery lichens — those flattened like paper, with an upper and lower surface. (3) The flake lichens — those with no under surface showing. (4) The crust lichens — those growing fast to the surface. This takes care of most of the lichens.

The color varies from bright greens, yellows and oranges all the way to dull browns, grays and blacks. It is truly amazing to observe the different colors of the groups on just one small surface of rock. In the high mountains one can see rocks with great splashes of

bright color on their surfaces. Many of the dark streaks on Yosemite Valley cliffs are formed by living lichens.

As lichens cannot live on air that is polluted with smoke and chemical fumes, they are not found growing in cities and other industrial areas, nor are they found in fertile areas as are many plants. In fact, they seem to grow in the waste areas of the world — the rocks from the desert to the highest peaks, neglected farm land and even sand dunes near the ocean. They are able to grow in these places because they can withstand great changes in moisture content and extremes of temperature. Their only requirements seem to be sunlight and exposure.

One of the easiest of these plants to find is the Staghorn lichen, often mistaken for moss. The chartreuse tufts can be seen on dead branches and bark of conifers, not only in the valley, but also at the Mariposa Grove and at Glacier Point and other areas, especially where the red fir grows. Other forms live with the Staghorn lichen, but they are usually smaller and of not such a conspicuous color. Many of the white patches on the oak trees are due to the presence of lichen. To see them one has to get close to the tree and a magnifying glass can sometimes be used to advantage. Usually the fruiting bodies can be seen without much trouble, although there are some powdery looking ones on which the fruiting bodies are usually not seen. These are found practically everywhere.

The granite rocks in the talus slopes in the valley and elsewhere are excellent places to see colonies of the crust forms. On old rocks the surface can be completely covered with many different forms — one edging right up to its neighbor and

in some cases growing right over it. In sheltered places one can find the large leafy forms which can cover a foot or more in area. This form is usually found growing on rocks along with moss. Another type that is found in rock crevices with moss is the group of stalked lichens. Many of these latter forms, when found are all dried out with a drab, dusty appearance and do not look very interesting, but if they are dampened, within a few hours will become a beautiful shade of green and look like healthy, growing plants.

These plants play an important part in making soil. On the bare rocks of the mountains, the crust lichens are the first plants that are able to get a foothold. They begin to grow and in time cover large areas of rock without the presence of soil. As they spread their acids etch into the rock and permit water and the holdfasts to get in and loosen the rock particles. Over a period of time parts of the lichen die, dust and dirt accumulate on the surface, and if they are in a very exposed place, they eventually drop off as the rock crumbles away from underneath them. If there is enough protection and water, mosses can begin to grow in these little patches of soil. Areas into which moss has come make very good traps for dirt and debris and then the papery or leafy lichens and the stalked lichens can grow well. After much of this material has accumulated, if again the conditions are right, flowers or even trees can grow. There are many trees that are growing out of narrow cracks in the rocks. Their soil was formed originally in this manner. This process is indeed slow, but over a period of centuries the amount of soil that is built up and rocks broken down is vast. What a mighty task for such small plants.

**MOUNTAIN BREEZE**

I wish I were a mountain breeze  
That wanders o'er hill and dale,  
Sighing softly through stalwart trees  
And caressing flowers in mountain vale.  
I'd wander up the canyon walls  
Where cliff swallows dart and sway,  
Then pause to listen in wooded halls  
Where chipmunks and chickarees play.

I'd float along the river's breast,  
Breathing perfume of azalia bowers,  
Then drifting o'er the waterfall's crest  
I'd gather mists for summer showers.  
Once again I'd sweep the crest  
'bove the skylines glacial cirques  
And there in quiet contentment rest  
In wonderment at our Creator's works.

Lewis W. Clark



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Dan Anderson