

YOSEMITE NATURE NOTES

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*Glacier polish, Upper Merced Canyon, Yosemite National Park
—Ansel Adams*



Anderson

A Yosemite Field School class at Stanford Point on the Pohono Trail, 3,000 feet above the floor of Yosemite Valley.

Cover: Glacier polish. Upper Merced Canyon, Yosemite National Park, by Ansel Adams from "Yosemite and the Sierra Nevada." Reproduction by permission of Houghton Mifflin Company. The smooth rounded contours of the granite attest to the powerful grinding action of now-vanished glaciers.

Yosemite Nature Notes

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YOSEMITE NATURE TRAILS

By Richard R. Wason, Ranger Naturalist

What is a nature trail?

In a very real sense, every trail in Yosemite National Park is one. Many hikers who have taken the Pohono Trail, for instance, know what a wealth of natural beauty and interest is there to be enjoyed by the alert observer — the magnificent vistas of Yosemite Valley, the azalea displays in early summer, the snow-plants. It is regrettable, however, that for the visitor not acquainted with natural history many of the more subtle wonders of the trailside go unseen or misunderstood. The ideal remedy for that situation, it may be suggested, would be for all interested but uninformed visitors to participate in the guided nature walks offered by Yosemite's naturalist staff. But it cannot be expected that all such visitors will have their needs met in that way; they may not be able to be present at the appointed time; the subject of the walk they attend may be specialized (and too well attended for them to ask many off-the-subject questions); or, justifiably or not, they would prefer to study the trail on their own. For such folks an answer is available—the self-guided nature trail, which is usually what is meant by the term

"nature trail," and is the actual subject of the present discussion. We must re-pose our original question then:

What is a self-guided nature trail?

I interpret this term to mean, simply, a trail through a natural area where some of the relationships among natural entities are explained by means of legends or labels. There is little doubt in my mind that such trails can serve a most useful function in any interpretive program, and that they form a worthy subject for consideration by those interested in Yosemite's natural history. What, then, has been the background, what is the present situation, and what, possibly, is the future of nature trailing in Yosemite National Park?

It is interesting to note that Yosemite's first nature trail, as defined above, was developed very soon after the nature-trail movement started in earnest as a result of the pioneer work of Benjamin Hyde, Frank E. Lutz, and William H. Carr at Palisades Interstate Park in New York. Lutz's trail, developed in 1925, served as a spark to ignite a nature-trail fire that subsequently spread

rapidly to parks and similar areas from coast to coast. Just two years later, in 1927, a temporary trail was laid out in Yosemite Valley, and that was succeeded by a more permanent one—the Lost Arrow nature trail—in 1929. This latter trail, apparently, was the most successful venture in nature trailing ever made in the park. It was for the most part the achievement of Clifford Presnall—then a Field School student and later a park naturalist—and it was maintained at least until the summer of 1933. Presnall made another nature trail on the Ledge Trail to Glacier Point, in 1930. This had to be abandoned after two summers, however, because of excessive vandalism. A member of the Yosemite Field School class of 1933, Helen Dunlap Packard, undertook the establishment of a nature trail on the Sierra Point Trail. This project must have been equally ephemeral—no vestiges of labels or other evidence remain today. Park naturalists' reports of subsequent years mention various proposed trails, but, so far as I can determine, no others besides those mentioned above ever materialized in the park, and no permanent ones exist today.

The main reason for the failure of self-guided nature trails in Yosemite National Park has always been the inability to keep up with one kind of park visitor—that small percentage who feel that somehow they're not getting their full vacation's worth if they fail to return with some piece of stolen public property. A nature-trail label, by its very location and temporary character, is a ready victim to such persons, and consequently has a life expectancy of days rather than years. The expense in time, labor, and materials involved in maintaining a nature trail under such conditions makes for an apparently insurmountable problem.

It can be pointed out, however, that there is another kind of self-guided nature trail, more or less vandal-proof, that has never been tried at Yosemite. I refer to that type of trail where the explanatory material is contained in a little folder or handbook keyed to small, semipermanent numbered markers. Such a marker offers less of an enticement to collectors, especially if it is firmly anchored, and can be replaced, if necessary, much less expensively. The guidebook can be made up simply, and is considered expendable, though many would be returned for re-use by other visitors. Such trails have been successfully developed and maintained at several national parks and monuments and many other natural areas throughout the country.

In order to determine the possibilities of this type of trail in Yosemite this past summer, I have converted the short footpath joining the Mariposa Grove Museum with the Big Trees Lodge into a temporary nature trail. Eleven stations at which natural features can be observed were designated along the 400-yard route. These stations were marked by small numbered stakes correlated with numbered pages in a mimeographed guidebook, copies of which were placed in boxes at either end of the trail. In the guidebooks attention is called to the more conspicuous forms of plant and animal life present in the grove, with emphasis on the giant sequoias.

As the trail has been in operation for so short a period (only 3 weeks at the season's end), there hasn't been sufficient testing time or accumulation of data to predict what future this type of trail may have in the Mariposa Grove or elsewhere in the park. My colleague ranger naturalist and I are glad to report, however,

that most of those who have used the trail thus far have commented very favorably on the general idea, and some have offered concrete suggestions for its improvement. We are looking forward to another season in

which this modest pilot trail may be adequately tested, in hopes of proving that nature trails can work in Yosemite, and that they can serve a highly useful purpose in our interpretive program.



Anderson

SPITTLEBUGS

By Henry G. Weston, Jr., Ranger Naturalist

On hiking the trails around Yosemite Valley in late spring and early summer the observant person cannot miss seeing small masses of foam scattered about on many of the trailside plants. At first it might be mistaken for frothy spittle made by some hiker or perhaps foam from the mouth of some hard-working pack animal or saddlehorse. It might also give the impression that someone had been using soap nearby and splashed lather on the plants.

All of these ideas will be quickly forgotten, however, because there usually appears to be too much of the substance present. Upon closer inspection one notes that the frothy mass has no definite shape. It is moist and feels slightly sticky when touched. Magnification discloses that it is made up of hundreds of tiny bubbles, not unlike soap suds in appearance. At the center of the mass will be found one or more small wormlike animals.

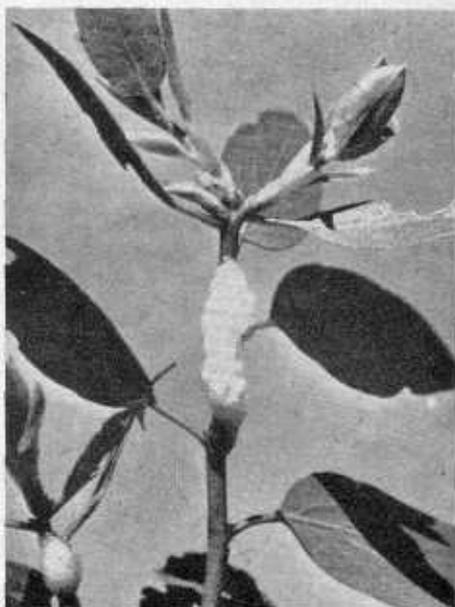
What are these tiny masses of white foam on the plants? They are nothing more than the homes of small soft-bodied immature animals called spittlebugs by some people, frog-hoppers by others. They are the foam castles of a type of insect belonging to the order Homoptera, family Cercopidae.

We can readily see why they might be called spittlebugs because of the appearance of the froth or spittle, but why froghoppers? It was formerly supposed that the material was voided from the mouths of tree-frogs and it was called "frog spittle." When the insects were found in it they were called spittle insects or spittlebugs. The term froghopper may also come from the squat, froglike appearance of the small adult insects, which are like cicadas. These adults also characteristically hop.

If we ask ourselves what advantage the tiny creature derives from the spittle, several possibilities immediately come to mind. By being surrounded by bubbles, the immature insect produces its own climate, keeping cool and moist, shielded from the direct rays of the sun. It employs its own primitive form of air conditioning. Perhaps the spittle is a kind of camouflage hiding the insect from the preying eyes of its enemies.

Inside the protection of the frothy covering the immature wingless insects or nymphs grow and molt, feeding on plant juices from within their home. They do not leave their cool retreat until they emerge as winged adults.

The mature spittlebugs are found on many different species of plants from which they extract juices for food by means of sharp beaks. During the breeding season, eggs are



Miller

Home of a spittlebug on manzanita

deposited on the stems of certain plants and surrounded by the spittle. Within this protective mass the eggs hatch, producing the immature insects—the nymphs.

For many years scientists debated how the foam was produced. We now know that it does not come from the mouths of tree-frogs nor from the mouths of the insects themselves. A kind of pumplike apparatus is found beneath the abdomen—a series of overlapping plates acts as a pump in blowing bubbles. These bubbles are formed by forcing air through excess plant sap. Secretions from glands in the abdomen seem to account for the spittle's slightly sticky consistency which is conducive to longevity.

Pause the next time you see the foamy spittle of the spittlebugs and contemplate how Nature has successfully solved another problem in the age-old fight for survival.

SNAKES — FACTS AND FANCIES

By William S. Tomko, Yosemite Field School, 1953

Ever since the serpent sold Adam that forbidden apple, the snake has been the victim of peculiar superstitions. Some of the most astounding fables about snakes passed down through generations are taken for granted to be fact.

Many stories of snakes are a result of their common names. The milk snake is an example. The name suggests that this brown and tan little creature deprives the farmer of milk by milking his cows. All snakes have jaws loaded with small needle-point teeth. You may imagine Bossy's reaction in the cowshed to a thirsty snake clamped on to one of her faucets. Besides, a snake's throat just doesn't make a satisfactory milking machine. Any farmer boy will tell you it takes a different kind of muscle.

The barnyard snake is attracted to the thriving rat and mouse population found therein. Statistics show that the snake in these circumstances is more valuable than half a dozen cats or mousetrap supplements.

Another valuable snake to the farmer is the gopher snake. It is found in open fields of grass or grain. The gopher snake finds shelter as well as his dinner in burrows in the meadows made by ground squirrels, gophers, and mice. These are the crop-destroying rodents so difficult for the farmer to control.

The gopher snake, like many other harmless species, is thought to be able to spray venom when he cannot reach his victim with a strike. Only the Asiatic cobra is able to accomplish this feat among snakes, and then for only a few feet.

Because the gopher snake is a great showman and bluffer defensively, imitating the poisonous rattlesnake, he suffers continued human persecution. He is absolutely harmless although he puts terror into the heart of those to whom he is a stranger by his repeated coiling and vicious striking and loud hissing. Surprised in a carpet of brittle dried leaves, his vibrating tail may give the sound effects of a dangerous rattlesnake. The gentle gopher snake will turn over and play dead with persistent enemy attention and will recover and go peacefully on his way only after all is quiet once again.

If the story of another snake swallowing her young for protection from an approaching potential enemy were true, it would be a strange kind of protection indeed, for all snakes depend upon powerful stomach juices with a hydrochloric acid base to digest their meal-time victims. These digestive juices are concentrated enough to dissolve the bones of animals and would make short work of baby snakes. Since it is not unusual to see many cannibal species of snakes making a meal of a cousin, it is easy to understand the origin of this common myth.

Among the longest snakes in North America is the whipsnake or coachwhip. It is dreaded superstitiously, especially in the deep South. This snake is supposed to be able to whip soundly an annoyer when perturbed. According to the story his victims have sometimes been found whipped to death. Since this tale circulates among the southern negroes

and dates back to the days of slavery, it is easy to visualize the value of such a tale in keeping the slaves in their quarters at night instead of on the prowl or thinking of escape.

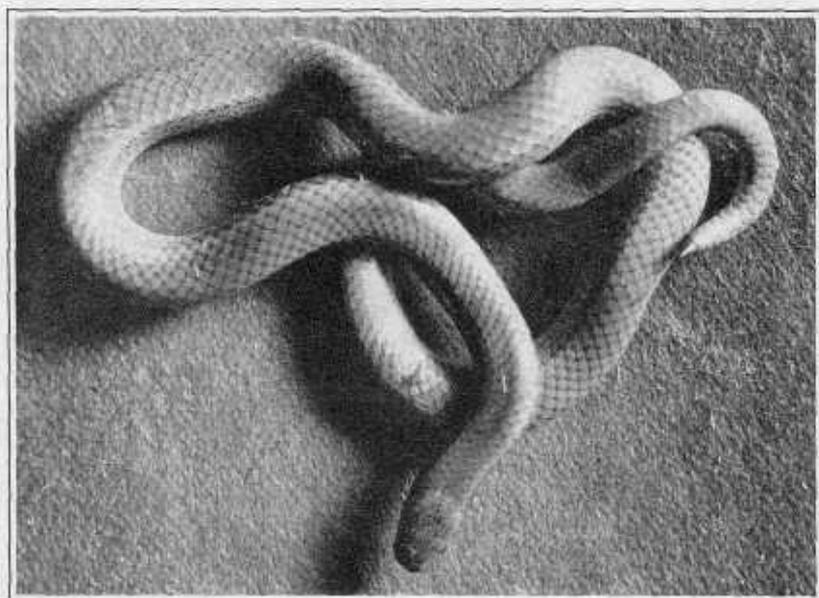
The blue, black, and red racers, while fast travelers, are capable of crawling not more than 4 miles an hour at full speed—yet are said to chase horses and people. Some snakes, harmless or poisonous, will stand their ground when cornered or in desperation. The only time any snake will head in the direction of the origin of heavy earth vibrations, such as those made by man or beast, is when the snake's den or other safe cover happens to be in the same direction.

Hoop-snake stories have always been favorites around the campfire. The hoop snake or horn snake, as it is sometimes called, is said to grab its own tail with its mouth and roll after its victims in the shape of a hoop at tremendous speed. When it

reaches its prey, it is said to straighten out and inject its poisonous tail stinger, fatal within seconds. The story relates that on one occasion the snake missed its prey, but succeeded in striking a sturdy young sapling and accordingly this tree wilted and appeared to die in short order.

The racers are the species supposed to possess this magical, though mythical, power. They do have an unusual carrying position of the head some distance above the ground when in motion. It is possible that some fearful observer, while rapidly retreating from the sight of one of these snakes, glimpsed its head position which curves forward and upward, and so conjured up a mental picture of a snake rolling in hot pursuit with his tail in his mouth and in the form of a hoop.

One of the few snakes that approach the barest suggestion of a tail stinger is the sharp-tailed snake,



Sharp-tailed snake

Anderson

which occurs in Yosemite National Park. This snake has a blunt tail that terminates in a spiny-scaled sharp point. No species of snake bears a "tail stinger."

There is a widespread belief that snakes hypnotize their prey. Because snakes have no eyelids they seem constantly to stare, perhaps giving rise to the hypnosis idea which really has no basis in fact.

Old-time campers will often describe the repelling powers of a horsehair rope where rattlesnakes are likely to become your bed partners during the night. Save your money, however, because experiments show that horsehair ropes or any other kind of rope are useless in repelling snakes.

It is a common misconception that snakes are slimy. Actually their outer covering of scales is very dry. They have no skin glands like those of the frogs and fishes that are often oily or slimy to the touch. The glistening smooth scales of the blue racer, king snake, and many other species only appear to be slimy. As a matter of fact, snakes are among our most dry-bodied animals. Their outer layer of scales is shed from two to several times a year to allow for growth. During this process of shedding, the animal will usually seek a moist place where it can rub against sticks or rocks to crawl literally out of its old skin, leaving this "shed-skin," as it is called, wrong side out. Immediately after shedding, the snake is in its coat, but soon this outer veneer will become dull and another shedding will occur later.

It is impossible to be sure of the age of a rattlesnake by counting the number of its rattles. This is because the snake exposes a new rattle every time it sheds. Since the number of sheddings per year varies, two snakes the same age may have a

largely different number of rattles. Don't count on this snake always to rattle before he strikes: often he will do so with no warning at all.

The constantly flicking Y-shaped tongue of any snake is often misinterpreted as being the fangs. This structure is completely harmless and is in no way connected with the venom-injecting teeth known as fangs in poisonous snakes. Darting out from the snake's mouth, it serves as a perceptive taste and "hearing" device. It is very hard indeed to surprise a snake, since the ground vibrations made by a walking person or animal are felt by the snake through its sensitive belly scales and possibly by the action of its tongue.

Two hollow hypodermic-like needle-sharp teeth are present in poisonous snakes. In the rattlesnake, copperhead, and water moccasin, these are retractile and lie in folds in the roof of the mouth. The deadly coral snake (not to be confused with our harmless coral king snake) has immovable or fixed fangs. It is said that if the fangs are pulled, the snake can be rendered harmless, but the fact is that the fangs rapidly grow back, making the snake deadly once more. Their poison is meant for killing prey such as rodents and birds, but it can be used for protection too, so stay away from poisonous reptiles. They aren't looking for trouble.

A tiny garter snake in a garden or at a picnic can cause a lot of panic. Although the snake is completely harmless it is persecuted just because it is a snake and because of the superstitions and myths surrounding all snakes. As appreciators of the out-of-doors, we should be able to distinguish between all the harmful and beneficial species of our area, for both our own protection and that of others, as well as for that of the snakes.

LATE AUGUST

By William L. Neely, Ranger Naturalist

At Tuolumne Meadows I sit on my doorstep smoking a pipe and notice that the wind has changed. The Mono wind is blowing, quietly now since it is still August, but enough to give a taste of autumn, a dry wind from the desert that is a sign that summer is nearly over. Tuolumne's 80 days of growth and exuberant living have ended. Already the meadows are browning, the grasses in flower. The heads of the shorthair reedgrass (*Calamagrostis breweri*) hang as a red mist above the meadows, and in the boggy hollows the frost has turned the swamp onion leaves to gold.

Tuolumne burns its candles at both ends. In the short space of summer between the melting of spring snows in June and the frosting of September nights, Nature makes the most of warm days and reeks with fertility. In time there are fawns in the meadows and nests in the trees and a thousand voices from the forest. Mosquitoes thrive in a frenzy for blood like pagan Aztec priests with their sacrifices. Mount Dana's alpine slopes suddenly break out into flower. Among the somber frost-split rocks little pincushion plants with deep taproots send out their perennial blooms as they have done for decades, *Draba* and *Phlox* and on top the sky pilot, all thriving in fierce winds and intense sunlight. Even the old marmot, who sleeps nine months of the year and is drowsy the other three, comes out to sun on the rocks, his fat flesh rolling as he moves. The cony cures his hay, working feverishly between flights of the hawk to gather those succulent leaves up on

the cliff, as though those around him were not good enough, but he must have some exotic food to spice up the long winter beneath the snow.

Now in late August comes the Mono wind, a gentle voice that says to make haste, winter is coming. With it comes the gentians in the meadows, having harvested all of summer's blue sky and distilled it into the petals. Nature brings out gentians when you think everything is finished, as though to lead you to expect more. Gentians are the bouquets presented for a good performance at the curtain call when the play is over.

Lower elevations, where summer eases along in an unhurried Mexican manner, have no comparison to the wildness and intensity of the drama at high altitudes—a wildness that can only be sensed, for there is no loudness; the mechanics of the sod and the grass function quietly, the needles of the lodgepole pine shimmer in the sunlight, and the marmot sprawls on, blinking on his flat rock, getting fat with apparently no effort.

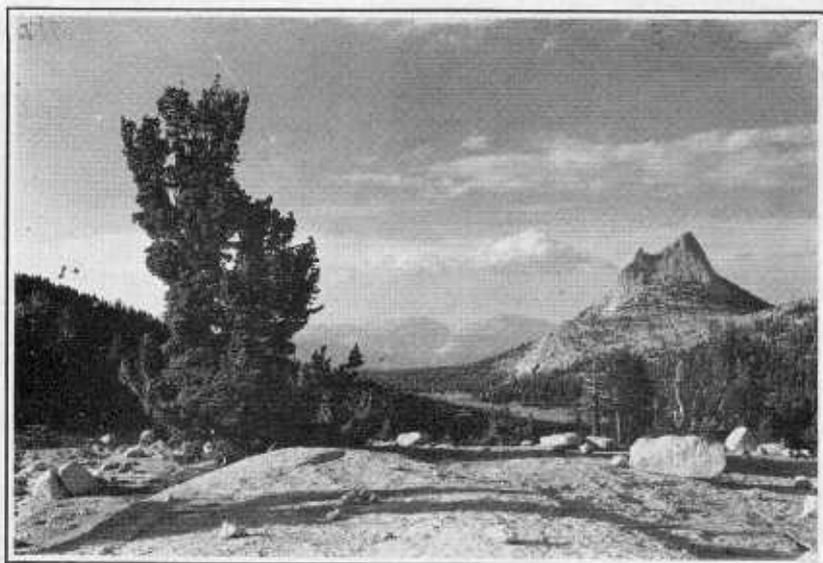
On summer days the meadows are often filled with serenity, as though such weather were an eternity. One feels in an Omar Khayyam-ic mood and sits beneath the bough, half awake, half in a mythological world where other measurements of time exist. One sees the fish swim in the pool and casts no line. One sees mountains above and, instead of climbing their summits, looks at their reflected tops within reach of the hand in the water below.

But at times the Nordic gods rule: the mountains are blasted with thunder and lightning; crash after crash and flame after flame against a black sky. If we are not made of sugar and afraid of dissolving, we run out into the storm to see it firsthand, to climb one of the domes and watch the fury of the scene. Thor is supreme; he rends a tree at a blow, strips it to kindling and sets it afire. On top of some of the high peaks we find evidence of lightning strikes among the rocks where the quartz has been fused into glass by white heat. Then at last comes the rain, the granite slopes and hollows run with scuppers full, the river swells, the dust dissolves, and the lake surfaces become gray with the beating rain. The forest drinks, thankfully.

But this has been going on for thousands of years. Tuolumne's news seldom makes the morning papers. Yet, as endlessly, man shall ever comment on the weather and the seasons. What naturalist has not at one time or another written of mountain weather? There is actually

no such thing as bad weather in the mountains—bad for us perhaps, but Nature has become immune, weather-proofed and weather-cured by surrendering entirely to the elements, and only man is miserable. It is said that Lao-Tse frightened his disciples by plunging into a wild cascade, only to emerge further on and come out, singing, on the opposite bank and go his way. He said, "In not trying to resist the water, I became as water, in harmony with it and unharmed by it."

The Mono wind blows away all of the World News that has reached here—that is to say, all of man's news—and broadcasts its own headlines, frost warnings, and battlefront reports: Lyell Glacier Advances an Inch, Gentians Conquer Meadows, Ground Squirrel Family Annihilated by Badger, Junco Nest Drowned in Deluge, Sierra Nevada Still Rising, Glacial Age Due in Twenty Thousand Years . . . and I smoke my pipe and look at the granite peaks and wonder whether I am on Pacific Standard or Mountain Eternal Time.



Cathedral Peak from Cathedral Pass

Anderson



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Dan Anderson