

YOSEMITE
NATURE
NOTES



The Yosemite Museum

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The Lost Arrow Nature Trail

By Clifford C. Presnall

During the past few years the nature trail idea has gained considerable impetus, and is now being used at several state and national parks. In the Yosemite National Park such a trail had been made in the summer of 1927 and had proved quite satisfactory in spite of its very temporary nature. At the opening of the 1929 session of the Yosemite School of Field Natural History, Park Naturalist C. A. Harwell suggested that several such trails should be made in an effort to learn the best methods to employ in constructing a permanent trail.

It is with one of these experimental trails that this paper deals.

A signed nature trail is nothing more nor less than a pathway or roadway leading through some interesting bit of wilderness and posted with signs which explain various natural features in an interesting and instructive manner. The purpose of such a trail is to provide nature guidance for the public at all times of the day, and in as large or small doses as they may wish, without the necessity of assembling them in groups and furnishing a guide to lead them.

Editor's note

Each of the twenty students enrolled in the Yosemite school of field natural history, conducted by the education department of Yosemite National Park for a seven-week period each summer, is required to choose and complete some research problem in Yosemite natural history. Among the problems or projects selected during the past summer, the following eight are typical: "The Lost Arrow Nature Trail," "The Spray Nature Trail,"

"Some Minor Geological Features of Yosemite," "Bird Songs of Yosemite," "Luipnes of Yosemite," "Some Insects Found in Dead Wood," "Tree Associations," and the "Educational Work in Yosemite." Two students, Miss Lois Ballou and Sumner L. Evans, built a rock garden at the northwest corner of the museum, which at the present time is growing nicely and promises to be quite an attraction by next summer.

In casting about for a suitable location for such a trail it was found that less than half a mile from the Yosemite Museum there is a cool, delightful area of woods and streams through which part of the Lost Arrow Trail winds its way. The road leading from the museum to the beginning of this trail has several interesting features along it, and the trail itself is replete with nature lore material. The total distance covered by both road and trail is but little over a mile, therefore it was thought that the two could be combined to form a short nature trail leading direct from the back door of the museum. The trail, as thus planned, would terminate on a roadway leading to the foot of Yosemite Falls, and would be very close to the Yosemite Lodge with its many tourist guests.

In order to make the trail reasonably permanent and attractive, it was suggested that the signs should be made of white celluloid having a roughened surface that would take ink readily. The park service furnished a supply of such tags measuring three by five inches, which were thick enough to be used without backing of any kind. The tags were punched to permit attaching them to trees or stakes. India ink was used in lettering them. The wire stakes to which some of the tags were attached were made of ten gauge wire, bent to form a rack or holder. With the rack set at an angle, the cards were held so as to be easily read without stooping, and at the same time were visible from a distance along the trail. Somewhat similar wire racks were made for mounting cards on large trees, where a long encircling cord would be too conspicuous.

So many interesting features

were found along the trail that it was thought best to prepare only as many signs as would be necessary to preserve the continuity of the route to be followed. After a careful preliminary survey, sixty-five signs were written and posted along the trail. In addition to these explanatory signs, fifteen "question mark" signs were placed on trees and shrubs that had been named in some one of the explanatory signs; thus, whoever wished to test his knowledge might answer these questions from information already gleaned along his walk. At the lower, or Yosemite Lodge end of the trail a large sign was placed, stating the purpose of the trail. No such sign was placed at the museum end of the trail, it being thought that the museum attendant could direct people better than any printed notice.

The most noticeable features along this trail were the trees and shrubs, fourteen species being noted. There were also several wild flower gardens, and many miscellaneous objects of interest, but there was very little geological material. Most of the signs were, therefore, of a botanical nature, four had reference to passing insects and birds, and only two called attention to geological features of the valley walls. With but two exceptions, all the signs were explanatory (omitting the "question" signs). One requested in an indirect manner that the observer should not trample on the wild flowers, and the other was a quotation from John Muir regarding the Yosemite Falls, which were visible from the point at which it was posted. Most of the botanical signs carried both common and scientific names, but there were a good many that simply directed at-

tention to peculiar habits of growth, decay or living conditions of the vegetation. All the signs were made as short and concise as possible without sacrificing necessary detail. Often they carried leading questions to stimulate thought as to the why and wherefore of things. As an example, instead of saying "This is a red fir (*Abies magnifica*) and it is found in the higher hills in most cases," the sign reads, "Do the needles on this tree look like those on the white fir to the right? This is a red fir that has strayed down from its natural home on the higher mountains."

Since this trail was essentially an experiment, considerable time was spent in ascertaining the reaction of the public to it. Many persons who had traveled over it were interviewed, and several parties were personally conducted over it in an effort to learn its educational value. The latter method of research was unsatisfactory, however, as it did not allow the trail to speak for itself, and any deficiencies in the information on the signs were supplied by the guide. The most illuminating method of study was done after the manner of Sherlock Holmes. The observer would walk along the trail as an ordinary sightseer or tourist mingling and talking with any individuals whom he might encounter. Some very frank criticisms were obtained in this way. One elderly lady complained bitterly against the "question mark" signs, saying that she was not used to working crossword puzzles. She thought every new tree should be accurately labeled with its name only, omitting all the "confusing" questions as to its age, manner of growth, etc. This was a very uncommon criticism, al-

though many persons did express some doubt as to the value of the question mark signs. Among those of high school age, and even grammar school age, there was no doubt as to the satisfactory response. Most children seemed to take great delight in naming the trees, often making a little game of it among themselves and naming not only those tagged with signs but all the new ones they came to. In one family group the children showed great eagerness and excitement as they ran from sign to sign. The mother shared their enthusiasm to quite an extent, but the father walked along with a very bored air, hardly glancing at anything.

One valuable criticism of the trail as a permanent feature was that the flower labels required frequent changing, the wilting flowers occasionally leaving a stake standing out in space with nothing around it that fitted the wording of the label. If the trail were to be made permanent, the flower signs could still be of a temporary nature, providing they were policed every week and necessary changes made. On a nature trail there are always some features that are temporary, such as flowers, fungi and insect homes. Many of these features are so interesting that it would be quite inadvisable to omit them. It would seem that a combination of permanent and temporary signs could be worked out so as to include all the objects of interest along the trail.

The "double ended" nature of this trail increased the difficulty of placing signs properly, particularly the question mark signs. The policy followed in constructing the trail was to give the information first and ask the question later. If traffic had been in one direc-

tion only, one information sign would have sufficed for each question sign, but with people approaching the questions from both directions, it was necessary to place two information signs for each question, one on each side of it. The information signs were usually only a few rods from their respective question signs, thus making reference to them easy. In a few cases it was impossible to have two information signs for a question due to the scarcity of some particular species. The double ended character of the trail was the cause of some confusion among tourists, together with the fact that a bridle path crossed the foot path at one end in such a way as to lead some off the signed trail. An ideal nature trail should start at one point, circle back to nearly the same point, permit of one way traffic only, cross no other trails or roads, and should lead through grassy, rocky or shrubby country so as to confine the traffic quite closely to the trail. The Lost Arrow trail leads through bare forest floor most of the way and is not particularly well defined to city bred eyes.

Most people naturally started over this nature trail from the end nearest the Yosemite Lodge, and were properly directed by the con-

spicuous sign at that end. Some others started at the museum end, following directions given by the museum attendant. A great many more would have started at this end if a notice had been placed where it could have been read by the large number of people who daily visited the museum, many of whom never came in direct contact with the attendant. Many persons simply drifted onto the trail at some intermediate point, followed it a short ways, and drifted off again. It was from this class that most of the questions came as to the nature, purpose or value of the trail.

By far the majority of all persons interviewed concerning the trail expressed themselves as well pleased with it, although twenty-five per cent of this majority thought it might be well to dispense with the question tags. It was quite evident that most of these people were stimulated to new thought and interest in nature. Even to those who knew the names of most of the tagged objects, the signs often presented some sidelight or new angle of thought. This was the real purpose of the whole trail; not to simply name a series of natural history specimens, but to interest people in the workings of nature.

Moist Rock Garden at Yosemite Museum

By Sumner L. Evans

It was our intention to construct a practicable, life-like moist rock garden, making it principally for a museum piece. While the present garden is certainly not an architectural asset to the museum, and cannot be more than temporary, it has

a very important use in contributing to the knowledge of what the 'rock-garden that we'll have some day' should be. This latter use will be discussed later. Until that dream comes true, this garden fulfills its purpose—a fair reproduction of liv-

ing, moisture and shade-loving plants in their natural conditions.

Our initial task was the hauling in of about six carloads of rocks, all the way from fifty-pound boulders to small round pebbles. We used the Dodge $\frac{3}{4}$ -ton truck in doing this and our gratitude for its use must be borne in mind—we could not have done without it. The largest boulders were used for the bulwark of the lower tier.

In looking about for soil, we chose a reddish-black loam from some pits in Sentinel meadows, which have been extensively worked before for similar purposes. This loam holds the moisture excellently resists rain-wash to an extent beyond our hopes, and is ideal food-material.

The counter-action of heat was the problem we worried most about. Finally, it was decided to temporarily protect the garden by use of burlap—while the permanent shade will be made by the planting of trees, which has been promised by Mr. Wosky for this fall. The sun bakes this location (aided by radiation from the walls) about three to four hours daily in mid-summer, and, of course, this had to be nearly eliminated. The present surrounding tangle of grass should help in maintaining a fairly moist and cool condition. A pipe was laid about twelve inches deep, running from a sub-outlet at the southwest corner of the museum up to the apex of the garden. The topmost tier is meant to represent a meadow, but its utilitarian purpose is to act as a distributing plate for the outlet just mentioned. The theory is that with a small though constant outlet of water at the apex, the entire garden cannot really dry out, since moisture is easily carried and held by this soil and the plants in it. Fur-

thermore, the pipe is threaded, so that if in the future it becomes necessary, a spray-head may be put in.

The small pond in the middle tier is for swamp plants, and variation in design. The two principal tributary channels to the "lake" are concrete. There is an underlying distributing plate of concrete beneath the meadow; and all concrete work is reinforced with heavy screen to resist cracking. Furthermore, all pieces are separate from the rocks, so that what little settling may come to these, will not strain or affect the concrete work.

We intend the rock-garden to be an indication of what may be done in selecting the plants for the real rock-garden of the future. One may call our effort an experimental station for the future. There are several plants which have come from Eagle Peak meadows, Glen Aulin, and other locations away from the valley floor. If these plants will grow, still another key as to future possibilities will be furnished. These are the flowers and plants we have used: Common polypody, lady fern, arnica, enchanter's nightshade, sedge, grape fern, white violets, lichen, rice grass, horse trail, blue violets, epilobium, St. John's wort, wormwood, resurrection moss, birds-foot fern, white rein orchis, ginger, rattlesnake plantain, leopard lily, blue bell, columbine, wood fern, camas lily, alum root, sedum, five-finger fern, red and yellow mimulus, penstemon and fragile fern.

And finally, we hope all the ranger-naturalists will use the garden for keeping living specimens of this plant-type for use in the nature walks and experiments of their own.

Yosemite Flora and Fauna Report for October

By C. A. Harwell, Park Naturalist

On October 3 Fox Movietone outfit was in the valley to take pictures of our Yosemite bear and to record their voices if possible. The park naturalist, assistant park naturalist and Ranger Reymann assisted them at the bear pits. A generous quantity of food and sweets was taken along to attract the bear before the microphone. Nineteen bears were present before the party was over and the cubs proved especially good performers. Some good information regarding Yosemite and method of handling the bear situation was talked into the microphone by the park naturalist.

It was interesting to note that 17 of the 19 bears present were of the "cinnamon" color phase and only two, one massive male and one small cub, were "black." In a study of the Yosemite bear, as reported on page 64 of "Animal Life in the Yosemite," by Grinnell and Storer, they saw no cinnamon colored bears at all during the five or six years spent in the region. Certainly now black bear of the distinct black color phase are very scarce on the floor of the valley.

In order to control the bear population on the floor of the valley an ingenious trap on trailer wheels has been built at the shops. Offending bears are easily lured into this trap by bacon bait. Ranger Bill Reymann hooks it to the back of a government car, drives it on the scales for weighing, then onto the feeding platform at El Capitan, where the trap is opened. As the bear emerges, a daub of white paint is administered with a long-handled brush, a note is made of color phase and, if possible, of sex. This trap was put into operation October 12 at the incinerator, where eight were caught and transported the first day.

The trap is not continuously set. Up to October 26, 14 bears have been caught. One was "black," one dark brown and 12 were "cinnamon." Three were females, three were males, while the sex of eight

was not determined. Only one positive record of a bear returning to the place where trapped has been noted. A mother, whose eight-months-old cub was left behind, came back within a few hours.

A half-grown bear, lassoed by someone about the time of Indian Field Days, had a bell fastened to his neck, which he still carries. His wanderings throw some light on the movement of bear. Twice during the middle of the month he was noticed at Sinclair Point. Having a surplus of bears there already, men about the hotel promptly chased him down the Ledge trail, up which he had probably traveled. Soon after he was observed about his old haunts on the valley floor.

By a conservative estimate there are 35 bears now in Yosemite valley.

Bears are doing their full share to assist in the harvesting of the acorn crop. The close of October marks the height of the season. Local Indian women and children, California woodpeckers, blue-fronted jays, Sierra chickarees, mule deer, band-tailed pigeons, California ground squirrels and Mariposa chipmunks are all joining in the harvest.

Deer are still very common on the floor of the valley. Deer season has closed, with no reports of hunters poaching within the park boundaries. The herds have not yet broken up; bucks are still running more or less peacefully together. This month they have been observed feeding on acorns from the ground. This has gotten them into trouble along the highway. Several of them have been struck by passing automobiles. Pavements are so slick the surprised deer slips and falls quite easily. On October 15 the park naturalist observed 26 deer within 50 yards of the Yosemite schoolhouse at 8:30 a. m., just as children were gathering for school.

October 26, "Jiggs," a very friendly one-year old buck, entered the Museum while all was quiet and found a vase of white and blue

flowering ceanothus integerrimus and ceanothus parvifolius exhibited on one of the counters. The smell of deer brush had evidently attracted him. He was surprised to find this shrub in bloom during October, but the temptation was too strong. He tipped over the vase and browsed on the sweet leaves and stems. As the park naturalist came down the stairs, "Jiggs" was standing in the front door of the Museum finishing one of the specimens. He was entirely unabashed and unafraid and insisted on going back to finish up his find.

The tule elk herd of 21 animals in the paddock continues in good condition. The nine cows and three calves have been kept closely guarded from the other eight bulls of the herd by the "Sultan." He has been able to hold his strong position for the past three months.

Jay C. Bruce, official state lion hunter for California, was in the park October 25 and 26. An understanding was reached that he might follow the tracks of a Museum lion he was trailing with his dogs across our boundary into the park. Mr. Bruce estimates there are not more than 15 mountain lions in the Yosemite National Park.

Several California gray foxes have been reported about the valley this month. October 22 Ranger Mernan saw two near Mirror lake.

Gray squirrels have been seen at El Capitan, Cascade creek and along the Wawona road. Those

observed were in fine condition.

Steps have been taken to preserve two famous trees of Yosemite. The giant yellow pine near Sentinel Rock, on the floor of the valley, now in its old age, has been injured by the close packing of soil at its base by the thousands of automobiles that have driven over the road which circles it. This condition has been remedied this month. The soil has been loosened, new soil has been hauled in and spread, and the road relocated so that machines cannot drive about it.

The wind-blown Jeffrey pine atop Sentinel Dome will have its exposed roots covered with humus and granite and an effort will be made to keep people from climbing it or mutilating its bark by carving initials. A suitable sign will be placed at its base and a register, suitably enclosed, will be tried. It is hoped the desire to write a name will be satisfied by this outlet. If protected, this sturdy tree will make good progress in healing its many scars.

An azalea planted at the front of the Museum, feeling the warmth of these Indian summer days and watered by Bob Selby, has been in bloom all during the month. This is not a month for flowers. Dogwood, maples, young trees of the black oak, willows and azalea have been a blaze of color, their yellows and reds sharply contrasted against backgrounds of evergreen pines and firs and gray granite cliffs.

YOSEMITE BIRD REPORT FOR OCTOBER

By Enid Michael

The weather in Yosemite valley during the month of October was just about perfect. There was a slight shower on the seventh, then followed a few days of sunshine and shadow, but for the greater part of the month the days were balmy and the nights were not especially cold. It might be said that it was the normal weather that made October the most delightful month in all the year.

At the beginning of the month, the exotics—the elms, the locusts,

and the two imported maples—were showing in their foliage glorious splashes of autumn color. One elm and one locust were in full panoply of golden color. They were the leaders of the fall fashion parade while the more modest trees hesitated to join the march in a full parade of color. The two maples were the last of the exotics to join the fashion show, but when they did decide to come out in gay colors they were more daring than the leaders. Brilliant hues of red-gold

and crimson flared a contrast to the more modest yellows.

The first of the native trees to show color were the maples that hung high up on the south wall. Early in the month from their eerie they began to flash the autumn message to the backward trees on the valley floor. By the middle of the month, the oaks and cottonwoods waved back their first gesture of response.

When the morning sun of October 17 sent long slanting rays into the valley, the Kellogg oaks took on their first flush of autumn color. For days there had been spangles of golden leaves among the green, but this morning whole crowns glowed mellow in the sunlight. On the morning of October 18 an oak was noted at the far end of Sentinel Meadow that had almost completed its transformation from green to gold. Now, too, the dogwoods were aflame in the dark coniferous forests. Sweeps of foliage fire; how gaily do the dogwoods take their last fling before entering the drab and cold existence of the winter months. In spite, however, of the wonderful show of certain individual trees, when the month drew to a close the valley had not reached the full bloom of autumn color, for as a whole the oaks, the willows and the cottonwoods still seemed reluctant to join the parade.

After weeks of rainless weather and with the valley calmly settled into the brown October days, one would hardly expect to find wild flowers blooming. However, at the end of the month a remarkable habitat group of late blooming plants were still in full flower on the acres that sweep up from Rocky Point. The more prominent plants taking part in this October garden show were *Senecio doug-*

lassii, *corethrogyne filaginifolia*, Yosemite aster, *brickellia*, *gnaphalium* and *ericameria*—all members of the sunflower family. Also there were *zauschneria* and *erigonum*.

Ornithologically this October month was especially interesting on account of the presence of three different species of birds that had not previously been reported from Yosemite valley. These birds were American merganser, California linnnet and phainopepla. Regarding the species whose names for the first time appear on the Yosemite bird report, it might be said that it is not so remarkable that they should now appear as that they have never appeared before. The linnnet and the phainopepla are resident down the Merced canyon and the merganser is known to nest in the Sierra.

Besides the above mentioned species, there were 57 other species noted during the month, which brought the number up to 60, or 12 above the October average of the last 10 years. The least number of species noted for October was 33 in 1921—the greatest number 68, for October, 1928.

In spite of the fact that this October's number was well above the average, there were certain species of birds that we had looked upon as regular October visitors who failed to appear. Among these were mallard, bushtit and solitaire. Each ensuing year mallard ducks have been represented in the Yosemite by fewer numbers and therefore it is not surprising that they should become absolutely lacking. The solitaires, owing to the perfect weather, are probably still feasting on juniper berries and mistletoe berries in the "back country." We have no theory to account for the absence of the bushtits. In former years they were considered as resident birds



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