

Yosemite Nature Notes



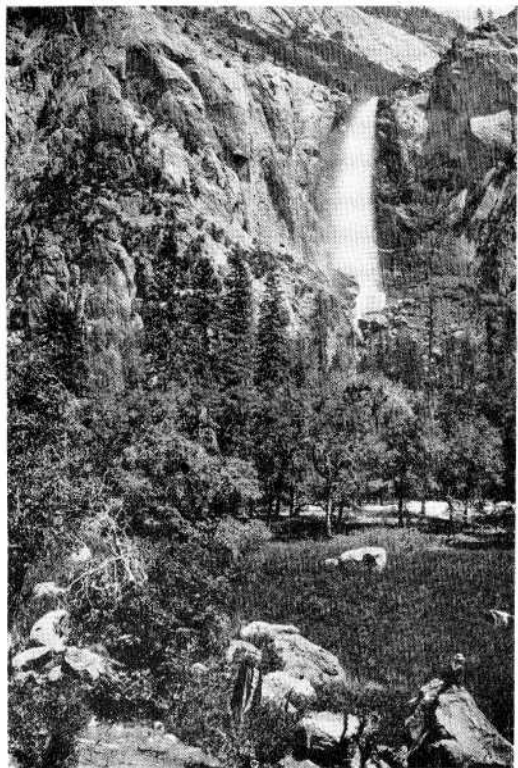


FIGURE 1 Photo of Bridalveil Fall, by Watkins
1866 from a point not far east of Valley View at
Black's Spring.

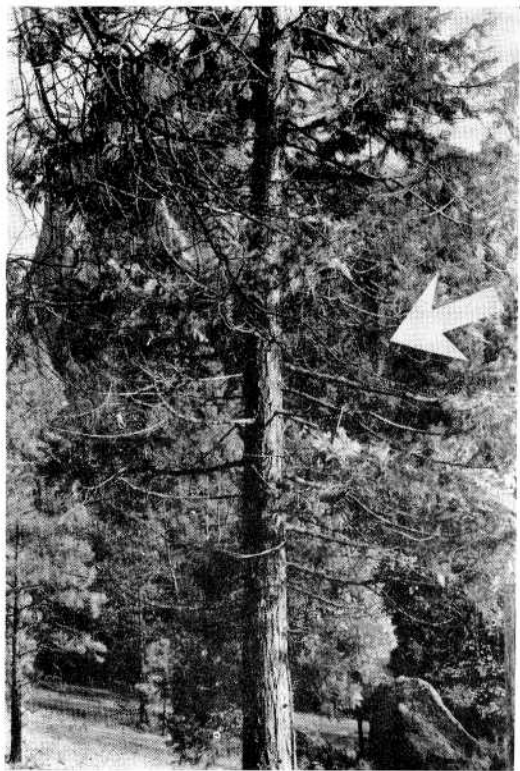


FIGURE 2 Photo by Anderson 1943, from same spot as in Figure 1. Arrow points to Bridalveil Fall.

Yosemite Nature Notes

THE MONTHLY PUBLICATION OF
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THE YOSEMITE NATURAL HISTORY ASSOCIATION, INC.

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TWENTY-FIVE YEARS AGO

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By Carl P. Russell, Park Superintendent

On May 7, 1924, there arrived in the office of Superintendent W. B. Lewis a book of such portent and significance in the history of interpretive work in Yosemite National Park as to place it for all time among the important instruments of the Naturalist Department. I refer to **Animal Life in the Yosemite**, by Joseph Grinnell and Tracy I. Storer, University of California Press, Berkeley, Calif. 1924. Pp. XVIII—752. To refer to this publication as a book is hardly adequate, for it became an institution.

In 1914, Joseph Grinnell, who conceived the idea of the enterprise, made the reconnaissance preliminary to actual field work which started in November, of that year and continued into 1920. Eight different persons participated in the field investigations at one time or another, and 40 collecting stations were occupied. The area surveyed, some 1,500 square miles, extended from the eastern margin of the Great Basin, around Mono Lake,—a rectangular belt of country $89\frac{1}{4}$ miles long and $17\frac{1}{3}$ miles wide lying across Yosemite National Park in a location to include Mt. Lyell near the southern edge of the strip and Mt. Conness on the north. Yosemite Valley in its entirety was embraced by the work. The altitudes of the study ranged from 250 feet at Snelling to slightly over 13,000 feet on Mt. Lyell.

The work was not noteworthy for its magnitude alone; it proved to be accurate as to facts and reliable in its interpretation. It was presented in a manner as understandable to the layman as to the scientist. David Starr Jordan described the printed report as the best original work on life histories published in the West. Because of its influence upon park naturalists, ranger-naturalists, and students of the Yosemite School of Field Natural History, the book is highly deserving of a place in the present series of articles. Actually, it also extended far into the realm of popular education in nature study and it has long been out of print because of the interest shown by the general public. From a National Park Service standpoint, however, I think it may be regarded as primarily important because of its effect in crystallizing the wildlife policy for the entire Service.

George M. Wright, one of Grinnell's students at the Museum of Vertebrate Zoology, University of California, fell under the spell of the Yosemite book. Later he sought and obtained a permanent position in the Yosemite Park Naturalist organization. He soon sensed the dangers of the then ill-defined wildlife policy and determined that there should be better administrative understanding of the normal biotic complex of Yosemite and all other national parks.

Out of this determination grew a program of preliminary studies carried on in several national parks at the personal expense of Mr. Wright. In the small staff which he organized was a principal assistant, Joseph S. Dixon, a one-time staff member at the Museum of Vertebrate Zoology and participant in the Grinnell Survey of the Yosemite animal life. Their work demonstrated that a Wildlife Division was an important administrative adjunct in the Director's organization, and that a coordinated wildlife program and policy should guide each Park Superintendent in handling biological problems. Mr. Wright went further and defined

that wildlife policy. That his reasoning was good as he wrote the prescription for wildlife work in national parks is evident, for there has been no important change in his wording in the years during which the policy has been put into practice.

National Park Service policy statements will not be found in the Grinnell book, but the reasons why there should be a wildlife policy for Yosemite National Park are there, and the existing well-established wildlife program may be regarded as something of a monument to Joseph Grinnell as well as a memorial to George Wright.

VANISHING MEADOWS IN YOSEMITE VALLEY

By Emil F. Ernst, Park Forester

Editor's Note: This interesting article in no wise constitutes an official recommendation on the part of the staff of Yosemite National Park.

Today's visitor to Yosemite National Park, and to Yosemite Valley in particular, unconsciously accepts conditions as he sees them, little realizing that profound vegetal changes have occurred since the white man came to Yosemite. Whether these changes have been for the better or for worse the reader can decide for himself. However, that these changes have occurred, and how and why they have occurred, make an interesting story.

Discovery by the White Man

The Yosemite Valley first became effectively known to white men in March 1851 when members of the Mariposa Battalion, led by Major James Savage, beheld it from Old Inspiration Point. The name then decided upon and still in use is a corruption of the local Indian word "usumati" meaning "terrible" or "grizzly bear." The Indian inhabitants, themselves, called the valley "Ahwahnee," meaning "deep, grassy place."

The Indian Mode of Life

Until March 1851, the Indians of Yosemite had managed the Valley in a primitive but, to them, effective way. They utilized the game and fish therein and over a hundred kinds of native plants. Their dwellings and sweat houses were fashioned from products of the trees. Their utensils were made from reeds and willow wands. Their bows and arrow-shafts were made of selected woods. Their arrow tips were of obsidian from east of the range. It is of record that this primitive people practiced various forms of agriculture, including a form of silvicultural treatment of the oaks which supplied their principal vegetative food staple—acorns.

The management of the lands of the Valley, in addition to the agricultural practices already mentioned, involved processes of plant control for several objectives including: (1) Clearings for the hunting of

game; (2) Clearings to aid the procurement of roots, rhizomes and tubers at the end of the growing season; and (3) Clearings to eliminate lurking places for their enemies. These clearings were accomplished mainly through the use of fire and through the imposed clearing activities of children in the vicinities of their camping places which are now called "rancherias."

The Old Order Changeth

With the coming of the white man, also came a drastic change in the management of the lands of Yosemite Valley. The Indian wished to retain the open, meadow-like character of the Valley while the white man wished to protect his investments and to utilize the natural resources in a far different manner from the original inhabitant. As a result of the white man's protective endeavors, he has brought about profound changes in the vegetative ground cover of the Valley.

Except for old time observers and students interested in the problems wrought through the activities of the well intentioned but ill-advised conservationists, no recognition has been taken of the fact that the meadows and meadow-like areas of Yosemite Valley are far less in size than they were many years ago. As one keen observer and student remarked in 1882 in a report to the Governor of California, "protection has worked destruction."

By 1937, when the last estimate was made, the aggregate area of the meadows of Yosemite Valley had declined to a total of 327 acres. In 1866, or 15 years after the coming of the white man, the total area of meadow land in the Valley was computed by State Geologist J. D. Whitney to be 750 acres. In the intervening years—1866 to 1937—the

forests had encroached upon and taken over more than 56% of the meadow area in existence at the time of Whitney's survey. And, in the same years, the open, park-like, land commented upon many times in old writings and reports has become more densely tenanted with trees, brush and debris due to this white man's protection.

The loss in area of meadow land is, in itself, not serious when considered in the light of the basic principles and objectives of the National Park Service for no agricultural usages can be permitted. However, along with this loss has come the loss of numerous sublime views of the falls, the cliffs, and broad, open, park-like vistas stretching on through the Valley. Only through comparative photographs can one realize the extensive vegetative changes that have occurred in the Valley since the coming of white man.

The Photographic Record

An example of the loss of a pleasing view is demonstrated in Figures 1 and 2. Who would deny that the 1866 view is far more pleasing than the scene that now greets one today from the same place? The modern traveler crosses a spot shown in the foreground of the 1943 picture, yet has not the slightest idea of the view that has been obliterated by the protected tree growth of the years. In the 1866 photograph, even a portion of the Merced River is clearly discernible while the 1943 view shows practically nothing but a wall of interlaced tree branches. After comparing these two pictures one can readily agree with the statement that, at least in this instance, "protection has worked destruction."

Figure 3 is also taken from the series made by Watkins in 1866. It clearly shows the open park-like

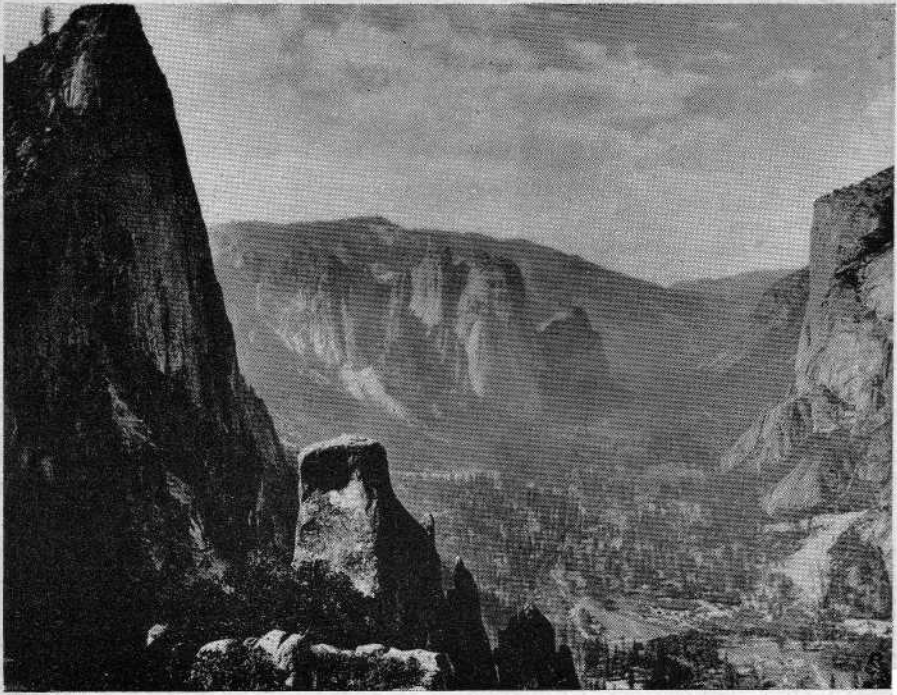


FIGURE 3. Photo by Watkins 1866, from spot near Union Point on the present Four Mile Trail.

forests and the more extensive meadows of the time. The 1943 photo from the same vicinity shows what seventy-seven years and the protection of the white man have accomplished in changing the vegetative character of the floor of the Valley. The former open park-like areas have been covered with dense stands of trees; the meadows have been reduced in size; and extensive vistas have been obliterated. That the Black's Spring situation was not a localized one is well demonstrated in these two photographs from near Union Point.

Figures 5 and 6 are from near Columbia Point on the north rim of Yosemite Valley. The 1890 photograph shows the open character of the Valley so often spoken about by the early visitors. Spots of low reproduction, which in the 1943 picture are tall trees, are barely discernible. A little more than forty years, 1854-1890's, of white man's management

were beginning to have their apparent effects even at this time.

The Written and the Spoken Record

In 1866 a geological survey of the Yosemite region was made by a party headed by John D. Whitney. As part of the work a map was made of the floor of Yosemite Valley which showed a total of 750 acres of meadow land. In 1937, only 327 acres could be so classified. Not so methodical and analytical are the numerous references, written and quoted, by other observers. However, the story remains the same, i.e., the Valley is not the same to successive returning visitors.

Dr. L. H. Bunnell, a member of the 1851 discovery party, many years later in an article apparently prepared for but not published by the *Century Magazine*, states:

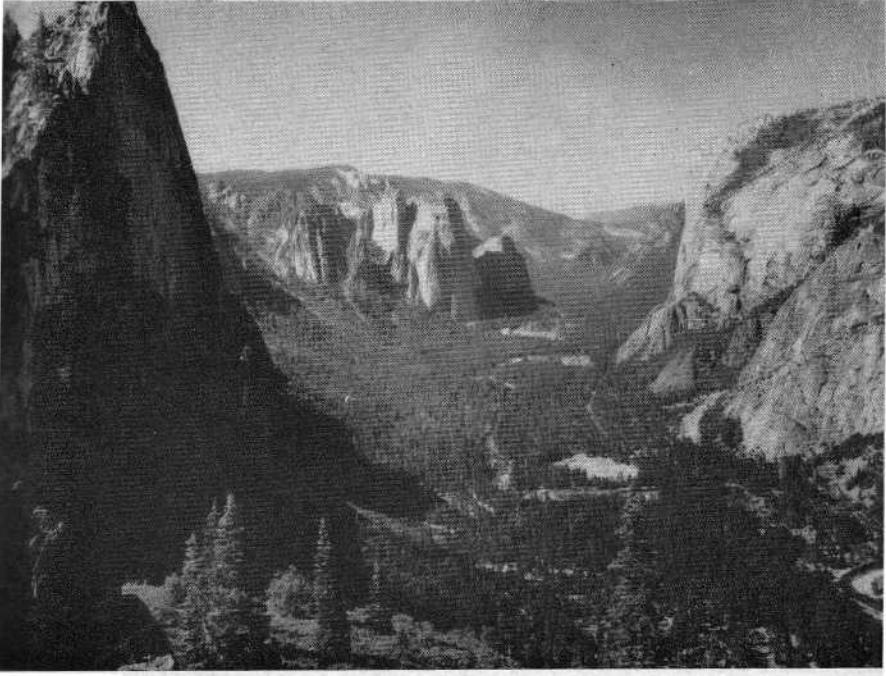


FIGURE 4. Photo by Anderson 1943, from same vicinity as Figure 3.

The Valley at the time of discovery presented the appearance of a well kept park . . . there was little undergrowth in the park-like valley, and a half day's work in lopping off branches along the course enabled us to speed our horses uninterrupted through the groves.

Galen Clark was for many years the Guardian of the Valley during the period of trusteeship by the State of California. In 1894 he wrote to the Board of Commissioners of Yosemite Valley and the Mariposa Big Tree Grove:

My first visit to Yosemite was in the summer of 1855. At that time there was no undergrowth of young trees to obstruct clear, open views in any part of the Valley from one side of the Merced River across to the base of the opposite wall. The area of clear open ground, with abundance of luxuriant native grasses and flowering plants, was at least four times as large as at the present time.

William H. Stoy, Rector of St. Paul's Episcopal Church at San Rafael, has stated in a letter to the Secretary of the Interior dated December 10, 1890:

I visited the valley again . . . a lapse of twenty-four years since I had first seen it. The contrast between things then and now is something remarkable . . . another thing that struck me forcibly in the contrast with 1866 was the immense increase of trees and small undergrowth everywhere visible in the valley . . . while the majestic Giant Trees of primeval growth seemed to be as numerous as in former days. The valley, as I saw it in 1866, was more in the condition that the aborigines had left it . . . In consequence, also, of the openness then existing, much better views existed of the waterfalls and cliffs, from the floor of the valley, in any direction.

H. J. Ostrander was a cattleman who, in his day, ran herds of cattle on lands now in the park. In one of the October, 1897 issues of the "San Francisco Call" he is quoted as saying of the Yosemite which he had first seen a third of a century before:

And the windings of the beautiful clear Merced River could be traced for miles up the valley until lost sight of at the base of "Cathedral Rocks." At that time in the graceful bends nestled beautiful meadows. Outside of the meadows noble pines, Douglas firs, and cedar dotted the valley. No underbrush, cottonwood nor second growth pines and fir to

obstruct the view of the marvelous walls of the valley.

Another of the well known State Guardians, James M. Hutchings, as early as 1881 in a report to the State Commission complains:

A dense growth of underbrush, almost from one end of the valley to the other, not only offends the eye and shuts out its magnificent views, but monopolizes and appropriates its best land, to the exclusion of valuable forage plants and wild flowers.

Hutchings was a confirmed nature lover and the unwarranted destruction of a tree or a flower was a disgraceful thing in his eyes. The situation must have been serious and its potentialities apparent to Hutchings who had settled in the Valley as early as 1861.

Many of the Army officer Acting Superintendents of the park lands surrounding Yosemite Valley repeatedly referred to the great areas of dense brush and the potential fire hazards existing in the forests. In their annual reports the majority blamed the thickets on the suppression of fires. What had happened on the floor of the Valley was also occurring on adjoining protected areas. Dense thickets of brush and forest reproduction were coming in on areas where they had formerly been absent.

Indian Methods of Brush Control?

At this point, the reader naturally will wonder what caused the pronounced decrease in the acreage of meadow in Yosemite Valley and also why it was possible for the trees to become so numerous and so tall that they have obliterated many of the views and open vistas existing in the earlier days. The explanation may be found in the observations

and the views of numerous responsible individuals who have visited and recorded their reactions and findings.

Recent students advance the theory that encroachment of the forests upon the meadows is tied in with a probable lowering of the water table throughout the floor of the Valley. The only activities of white man on record tending to effect such a lowering occurred in 1879 when several large boulders were blasted out of the river near the old El Capitan Meadows. It was reported that as a result the rate of speed of the river current was increased and also there was an increase in the amount of bank erosion. The only other obvious and apparent activity was one of nature itself, i.e., the breaching of the terminal moraine at the same point where the boulders were removed and the gradually deepening of the stream bed over the ages. The forest encroachment problem was considered in all its seriousness but two years after the boulder removing project when, in 1881, Hutchings was complaining to the Board of Commissioners.

Reference has previously been made that the Indians of Yosemite Valley practiced clearing of the meadows and the adjacent forests. The Indians did not have any labor saving mechanical devices. It was natural for them to use fire. Carl O. Sauer, speaking of all or most tribes in America, states, "Fire and smoke became labor saving devices for overpowering, trapping, and driving game . . . Fire aided the collection of fallen fruits . . . The earlier economies collectively may be called fire economies."¹ Later he says, "Recurrent fires sweeping across surfaces of low relief, are

1. *Vegetation Climax, Fire and Man*. Paper presented at Annual Meeting, Northern California Section, Society of American Foresters, December 4, 1948.

competent to suppress woody vegetation. Suppression of fire results in gradual recolonization by woody species in every grassland known to me."

At least in one instance the Indian inhabitants of Yosemite Valley were observed to be using fire to clear the ground. H. Willis Baxley,² recorded this observation in the fall of 1861:

A fire-glow in the distance, and then the wavy line of burning grass, gave notice that the Indians were in the Valley clearing ground, the more readily to obtain their winter supply of acorns and wild sweet potato root (huckhau).

Speaking of the Miwoks, of which the Indians of Yosemite were a branch, Barrett and Gifford³ state, "The only other control of vegetation which they attempted was burning off of dry brush about August. This was said to have been done to get a better growth the following year. Underbrush was less abundant anciently than now, so informants said, and perhaps was due to this periodic burning."

When in 1928 Carl P. Russell talked to Maria Lebrado, a member of the Yosemite band taken into custody by Captain Boling's party of 1851, she expressed a good deal of concern because the Valley is now "too brushy."

The Miwoks also used fire for hunting. Fires were set around meadows which deer frequented. New fires were built from time to time and the deer approached out of curiosity and were noiselessly shot with arrows by the Indians from their places of ambush.

Dr. Bunnell, in the unpublished *Century Magazine* article, further says of the discovery expedition:

There was a great variety of evergreen and deciduous trees, planted by Nature's landscape gardeners and, as the undergrowth was kept down by annual fires while the ground was yet moist, to facilitate the search for game, the Valley at the time of discovery presented the appearance of a well kept park.

Galen Clark in 1894 also wrote:

The Valley had then been exclusively under the care and the management of the Indians, probably for many centuries. Their policy of management for their own protection and self-interests, as told by some of the survivors who were boys when the Valley was first visited by Whites in 1851, was to annually start fires in the dry season of the year and let them spread over the whole Valley to kill young trees just sprouted and keep the forest groves open and clear of all underbrush, so as to have no obscure thickets for a hiding place, or an ambush for any invading hostile foes, and to have clear grounds for hunting and gathering acorns. When the forest did not thoroughly burn over the moist meadows, all the young willows and cottonwoods were pulled up by hand.

M. C. Briggs, December 18, 1882, complains rather bitterly of the underbrush:⁴

While the Indians held possession, the annual fires kept the whole floor of the valley free from underbrush, leaving only the majestic oaks and pines to adorn the most beautiful of parks. In this one respect, protection has worked destruction.

A year previously, State Engineer William H. Hall made an extended professional visit to the valley after which he submitted a report to the Commissioners, dated May 20, 1882. In part, the report says:

The area is decreasing, while young thickets of forest or shrub growth are springing up instead. Members of your Board have observed this change: it is very marked, and may be regarded as in a degree alarming, sufficiently so, at least, to prompt measures calculated to check it.

¹ *What I Saw on the West Coast of South and North America and in the Hawaiian Islands*. D. Appleton, New York, 1865.

² *Miwok Material Culture*. Bulletin of the Public Museum of Milwaukee, Wisconsin, 1933.

³ In his report to the State Commission for Yosemite Valley and Mariposa Big Trees Grove.

The cause is alleged to be the abolition of the old practice of burning off the thickets, which practice formerly made new clearings almost every year for grass growth.

The Record on the Ground

If the statements recorded here have any truth in them, then evidence supporting them should be available in the forests of the Valley and elsewhere. Study of those trees on the floor of the Yosemite Valley which are obviously over one hundred years old, reveals that large numbers of them have signs of severe or repeated fires. Those trees less than 100 years old are remarkably free of signs of fire. The evidence on the ground indicates that fires were, whether deliberately set or not, common enough to leave clear indications on trees existing before the coming of the white man. Although many more trees invaded the Valley since the coming of the white man, there is little or no evidence of fire on them.

On lands in the adjoining Stanislaus National Forest, E. I. Kotok, formerly of the California Region Forest and Range Experiment Station, made a study of fire scars on trees which showed that fires had swept the 74 acres investigated 221 times between 1454 and 1912. This averaged one fire every two years. It is doubted that Nature could be so regular with fire for such a long period of time.

The Immediate Future of the Valley

The past is the mirror of the future. As long as the Indians had control of the Valley, the evidence indicates that they kept it clear of brush and reproduction. This evidence also strongly points to the use of fire as being the main instrument used in clearing. Whatever they did ceased soon after the coming of the white man in 1851. In 1881, thirty years after the first white man, and twenty years after the first white settler, appear the complaints against the brush and the reproduction.

Until the National Park Service assumed administration of the area in 1916, these complaints were numerous and came from the responsible officials in charge at the time. Clearing by fire was prohibited and the suppression of fire has been the rule since the white man became dominant in Yosemite Valley. The forests of the Valley continue to encroach on the meadows. Is Galen Clark's plaint of August 13, 1896, still valid today when, as he said, "All the open meadow ground in Yosemite is being covered with young cottonwoods and willows, and drier portions of the Valley overrun with dense thickets of young pines and cedars. The great work of reclamation should be commenced as soon as possible and prosecuted from year to year until the whole Valley is again restored to its original, superior beauty."?



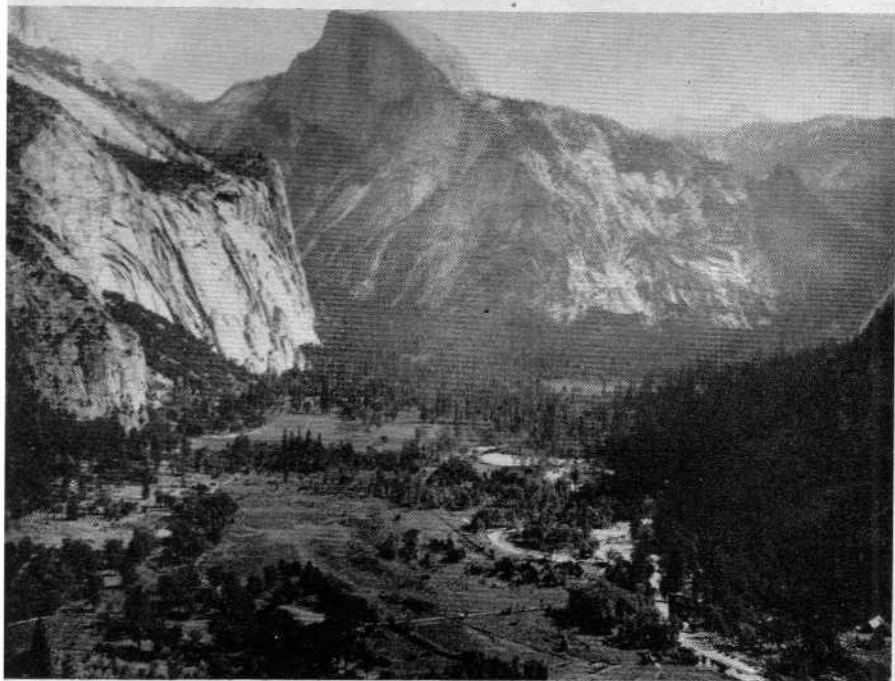


FIGURE 5. Photo by Fiske in the 1890's, taken near Columbia Point.

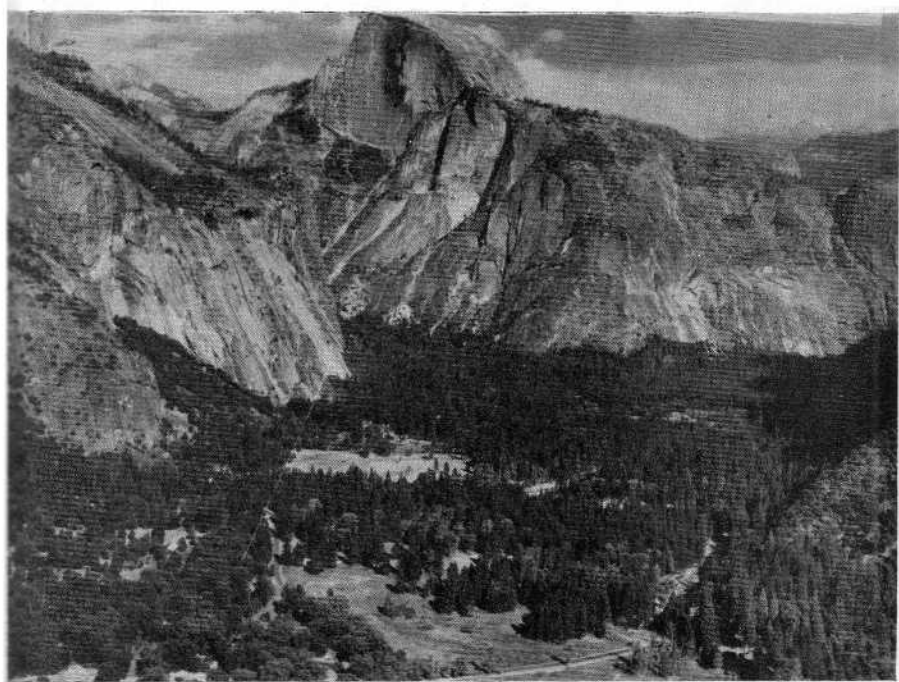


FIGURE 6. Photo by Anderson 1943, from same spot as Figure 5.

DIGEST OF THE PURPOSES OF THE
YOSEMITE
NATURAL HISTORY
ASSOCIATION

Yosemite National Park, California

INCORPORATED for the purpose of cooperating with the National Park Service by assisting the Naturalist Department of Yosemite National Park in the development of a broad public understanding of the geology, plant and animal life, history, Indians and related interests in Yosemite National Park and nearby regions. It aids in the development of the Yosemite Museum and library, fosters scientific investigations along lines of greatest popular interest, offers books on natural history applicable to this area for sale to the public, and cooperates in the publication of

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