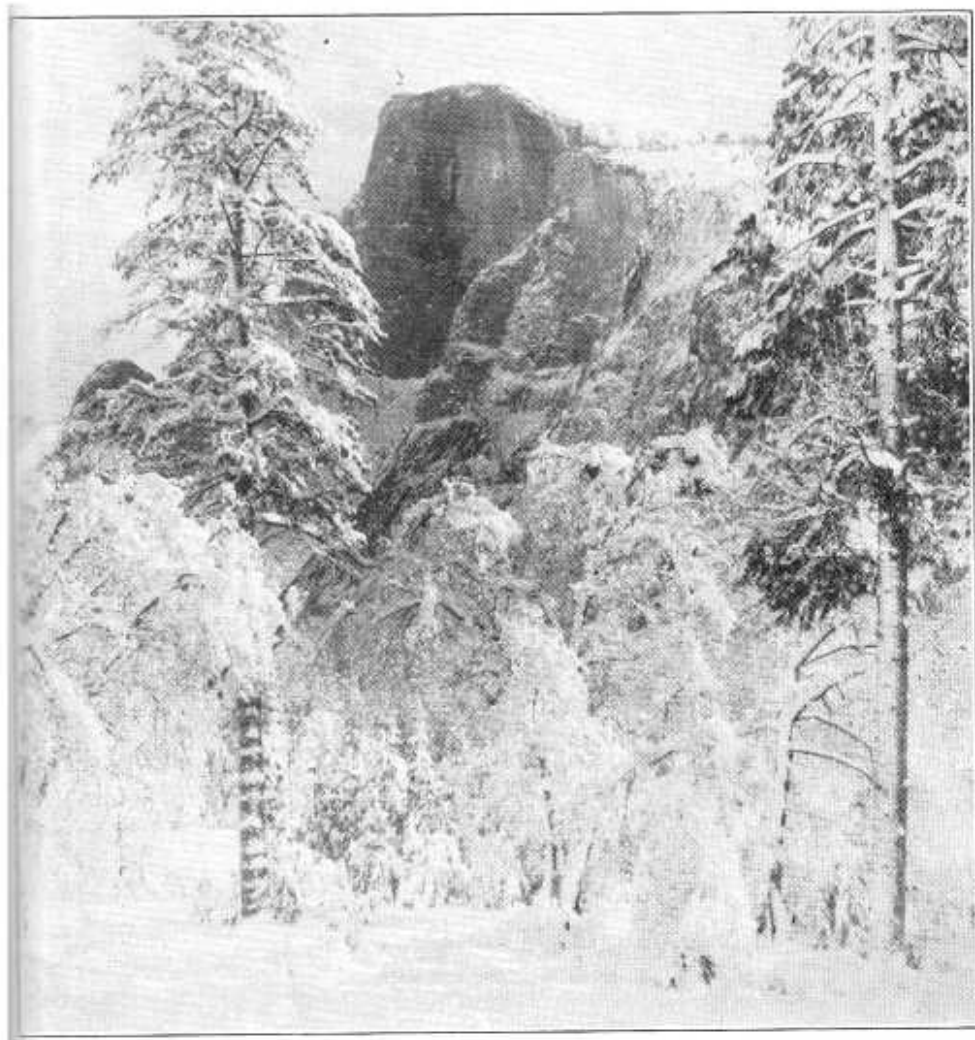


YOSEMITE NATURE NOTES



December 1935

Volume XIV

Number 12

Yosemite Nature Notes

THE PUBLICATION OF
THE YOSEMITE NATURALIST DEPARTMENT
AND THE YOSEMITE NATURAL HISTORY ASSOCIATION
Published Monthly

Volume XIV

December 1935

Number 12

Measuring Yosemite Glaciers

(M. E. Beatty, Asst. Park Naturalist)

On October 5, the Naturalist Department completed the fifth annual measurement of several Yosemite glaciers. This work, starting in 1931, is in conjunction with similar studies carried on by the United States Geological Survey throughout the continental United States. Mr. F. E. Matthes, well known for his geological work in the Sierra, is chairman of the committee on glaciers for the survey. Other regular collaborators in this work besides Yosemite are the park naturalists of Mount Rainier, Glacier and Rocky Mountain National Parks; the Superintendent of Mount McKinley National Park, Alaska; the Research Committee of the Mazamas, Portland, Oregon, and the Committee on Glaciers of the Sierra Club.

The value of this work is manifold. To the U.S.G.S. it gives accurate data as to what is happening to the glaciers of North Ameri-

ca; statistics regarding the relation of climate to glaciers; the frequency and rate at which icebergs are formed, and detailed knowledge of how a glacier works. Yosemite naturalists in addition take this means to make an intimate study of the fauna and flora at and above timberline especially related to our glaciers. To the cities of San Francisco and Los Angeles this work furnishes information regarding their water supply as the headwaters of this supply is the glaciers of the Sierra Nevada. The same holds true for irrigation and power companies dependent on the waters of the Sierra.

This year's official expedition consisted of C. A. Harwell, park naturalist; J. E. Cole, junior park naturalist; E. M. Hilton, park engineer, and the writer. The party left Tuolumne Meadows on September 28 for the base camp at timberline two miles north of Lyell

Glacier. Work was delayed by stormy weather and measurement of Lyell, Maclure, Dana and Conness glaciers was not finished until October 5. On the whole, the glaciers showed a slight advance over last year due mainly to the heavy winter preceding. The following table gives the average changes in the glacier fronts for the five years measurements have been taken:

(All measurements given in feet.)

	31	32	33	34	35	Av. Change
East lobe Lyell Glacier:	0	-2	-18	-21	1	40 ft. loss
West lobe Lyell:	0	6	-7	-14	7	8 ft. loss
Maclure:	—	0	-22	-15	0	37 ft. loss
Dana:	0	36	-48	-31	13	30 ft. loss
Conness:	—	0	-177	-25	12	150 ft. loss

From the above chart, it is seen that the glaciers of the Yosemite region are gradually losing ground although it is possible that in future years they may show an increase. Swiss glaciers measured for over a century have shown definite cycles of advance and recession and are at the present time in a period of recession. At least, there is no immediate danger of our Sierra glaciers disappearing entirely, for the combined Maclure and Lyell glaciers are still nearly two miles wide and three-quarters of a mile long. This is especially significant to the city of San Francisco, as these glaciers head the Tuolumne river, which empties into the Hetchy

Hetchy reservoir, the city's major water supply.

Although the water represented by the ice in the glaciers is not appreciable compared to the yearly run-off due to winter snow and rain, they nevertheless form an important reserve in case of a prolonged period of draught. Taking the average water consumption of San Francisco and suburban as around 50,000,000 gallons daily, the Lyell and Maclure glaciers alone could furnish a three years supply.

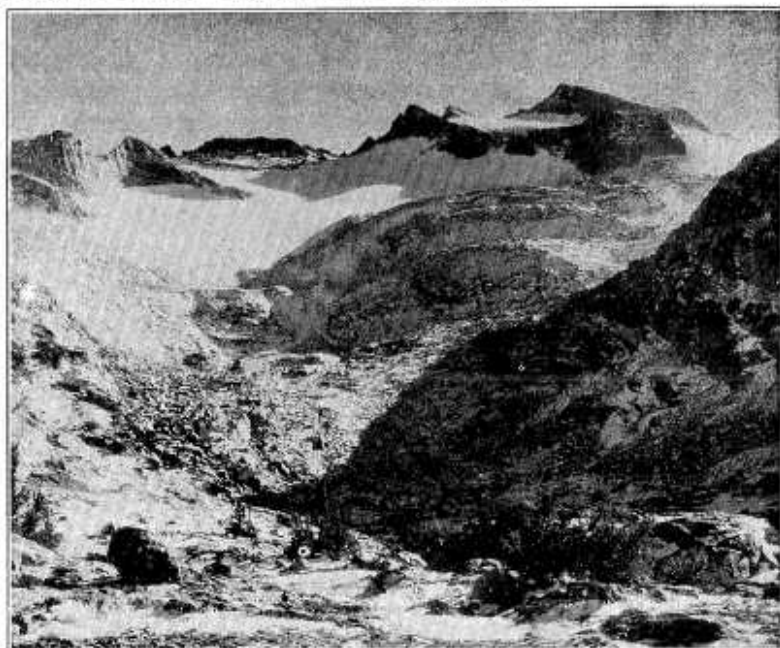
In addition to measuring the fronts of our glaciers, we have attempted to determine the rate at which the glaciers move.



Following the discovery of a mummified Mountain Sheep (*Ovis canadensis sierrae*) in the east lobe of Lyell Glacier in 1933 (Yosemite Nature Notes, December 1933), a

number of iron stakes were set in the ice along an established line to measure the rate of flow. Due to a heavy snowfall during the glacier measuring in 1934, we failed to relocate the stakes until this year. They had melted out in the interim but from their position in reference to the base line, we believe they had not slid appreciably. The stakes were replaced and new experiments started by using a strong coal tar dye to mark the stake location. This gives a check to the stake location should the stake melt out of the glacier. The chief difficulty with the use of stakes set in the ice is the fact that the ice surface melts down about $4\frac{1}{2}$ feet per year, from the last two years' records, and it is difficult to bore holes in the ice to a very great depth.

From data so far accumulated we believe that the maximum movement of the Lyell glacier is not over seven feet per year, or one-fourth inch per day average. It must be remembered that the majority of the yearly movement takes place during the late summer and these figures are not reliable for individual days.



LYELL GLACIER

In comparison with other glaciers of the world, the Sierra glaciers are small and slow in movement. The glaciers of the Alps move on the average of one to two feet per day, while Alaska glaciers move from two to four feet daily. The greatest daily advance ever recorded

was that of a glacier in Greenland that moved 100 feet in 24 hours.

The largest glacier in the Sierra Nevada is found in the basin north of the North Palisade, third largest peak in the Sierra. This glacier is a mile long and several miles wide but unfortunately no definite knowledge is available as to its rate of flow.

Lyell ranks as the second largest

glacier in the Sierra Nevada. In addition, there are around 50 smaller glaciers extending from Matterhorn Peak and Sawtooth Ridge on the north of Yosemite National Park, to Mt. Whitney in the southern Sierra.

These glaciers, though small, play an important role in the water resources of California.



A Good Flower Year

(Ranger-Naturalist Enid Michael)

Botanically the year 1935 was exceptional in Yosemite Valley. Flowers that had not been seen, except sparingly, for years appeared again in profusion on the floor of the valley. This was especially true of the Lily tribe. The first of the lilies to appear in flower was *Fritillaria parviflora*. During our first years in the Valley, from 1920 to 1923, these plants flowered in early spring and individuals were likely to be seen in almost any section of the Valley. Then came a period of ten years when not a single flowering plant of the species was to be found on the floor of the Valley. This

year, 1935, as if by magic flowering stalks appeared in many sections—really a more abundant bloom than even in the old days. Then *Lilium parvum*, another plant that had almost disappeared from the Valley, came gloriously back. Hundreds of plants came into bloom in cool, wooded sections where they had not bloomed for years. And in the meadows *Brodiaea grandiflora* had a much better showing than had been made for years.

All three species of *Calochortus* came back in numbers to their haunts of the more prosperous years. *Calochortus Leichtlinii* was

to be found flowering in scattered colonies in many sections of the Valley, it appeared to have gained back all of its old territory. *Calochortus nudus*, another Mariposa Lily that had made no great show in many years, came back in full flower to all its old haunts. But, the most surprising show in all the floral parade was furnished by the third Mariposa, *Calochortus venustus*. The greatest flood of bloom came to the Leidig meadow and strangely enough we have never known *Calochortus venustus* to appear here before. The plants flourished only in the higher sections of the meadow and where rounded ridges lifted above the general level of the meadow there appeared thickets of bloom. A careful survey made when the plants were at the height of bloom led us to conclude that there were at least 3,000 plants in flower.

The *Calochortus* that bloomed so abundantly in the meadows of Yosemite Valley we believe to be a variety of *venustus* that has never been properly described. The other *Calochortus* found in the Yosemite district is not a meadow plant. It grows at higher elevations on more or less open slopes and is always associated with *Chamaebatia*. And too, the *venustus* of the Yosemite meadows is practically constant in pattern and in color, while the *venustus* of the slopes ranges through many patterns and through many shades of color, from white to a

very dark plush purple. Dogwood and Azalea, two of the Valley's most showy plants, were lovely this spring, but the bloom was not exceptional. However, both of these plants set their buds in fall and so following a heavy winter would not influence the bloom of the following spring. In these plants the influence of the heavy winter of 1935 should be proclaimed in the spring of 1936.

A NEW SPECIES OF ALLIUM DISCOVERED IN YOSEMITE

(By CHAS. W. MICHAEL)

Early in June, 1922, Mrs. Michael and I were out for one of our weekly rambles. The day was spent fishing and botanizing along Bridalveil Creek above the Fall. In the course of the morning we came upon an onion growing in the wet cracks of the west facing canyon wall. It was a stranger to us, neither of us having seen it before. Specimens were collected. The bulbs were large for the size of the plant and the onion odor was so strong from the specimens stowed away in the knapsack that we were trailed home by a horde of excited blue-bottle flies. At home we tried to identify our onion, but no description in any of our books seemed to fit our find precisely.

One of the specimens was submitted for identification to Miss Alice Eastwood of the California

Academy of Sciences. Miss Eastwood tentatively identified it as a variety of *Allium anceps*.

Another specimen was put to press and when apparently dry it was put in a riker mount for display in the Yosemite Museum. Further evidence of the miraculous strength of the onion came to our attention in the following spring when it was noted that the specimen that had been in the riker mount for six months was beginning to send up fresh green shoots.

Years passed and then once more our *Allium* came into prominence when the following paragraph appeared in Vol. 1, No. 12 of Leaflets of Western Botany; Type: Herb. Calif. Acad. Sci. No. 205887, collected by Mrs. Enid Michael at head of Bridal Veil Fall, Yosemite Valley, California, June, 1922. It is

related to *A. anceps* Kellogg, differing in the much narrower longer leaves, an almost terete scape, larger flowers with broader sepals, and much longer style. It might be considered a subspecies of *A. anceps*, but the differences are so pronounced that specific rank seems advisable. The flowers seem to grow larger as they become older. The bulb is large, covered with a thin black coat that has no perceptible reticulations.

The new onion from the Bridalveil Canyon was named in honor of Yosemite and is now known as *Allium yosemite*. In our years of wandering about Yosemite National Park neither Mrs. Michael nor I have ever come upon *Allium yosemite* anywhere but in the Bridalveil Canyon.



Weather Influences Bird Life

(Range-Naturalist Enid Michael)

The heaviest snowfall in 12 years came to the Yosemite National Park, the precipitation on the floor of the valley was well above normal. From

the point of view of the Park visitor, or the most pleasing affect of the heavy precipitation was the grand display of leaping waters. During

the spring months the waterfalls were not so badly off as were the swallows, for two pairs of these birds had nesting sites beyond the reach of high water. To my knowledge these two nest sites have been occupied by the kingfishers for the last 15 years. They were drilled out in the days when spring floods were the usual thing. Other pairs of kingfishers that were not so fortunately situated were forced to abandon nesting sites that had been occupied during our seasons of low water. The Water Ouzel, our only other bird that nests along the river, probably enjoyed the flood conditions, for he likes to have his moss-covered nest in the splash of flying spray.

Both the fauna and flora were affected by the conditions that followed the heavy winter. The Spotted Sandpipers, who by preference nest out on the gravel bars, were forced to seek nesting sites on higher ground. Fortunately nesting sites were available and so the sandpipers were not seriously affected by the flood waters. On the other hand, the Rough-winged Swallows were not so fortunate and as a matter of fact not a single pair nested in the valley. All their former nesting sites in the banks of the river were under water at nesting time.



The Belted Kingfishers who also nest in burrows along the riverbank

The Red-winged Blackbirds had a prosperous year, as the low-lying meadows, marshy this year, gave them a wide choice in nesting sites. Conditions favorable to Red-winged Blackbirds, however, are also favorable to mosquitoes, and in order to control the mosquitoes the ponds and marshes are sprayed with oil. As a result of spraying with heavy oil, many birds are trapped and die a lingering death. Pigeons, robins, grosbeaks, tanagers, and small birds of many species fall victim to the heavy oil, but strange as it may seem the Redwings through the years have learned to avoid the trap that is set at the very doorway. It is possible that the oily agent of destruction may keep marauding enemies away from the nests of the Redwinged Blackbirds.

One might expect that conditions

favorable to Red-wings would at species was seen in the valley from May 1 until the end of August.

Many things come to notice during the spring and summer months that would seem to indicate the influence of the heavy winter on the movements of birds. For instance, Olive-sided Flycatchers, common nesting birds above the rim of the valley, were found this year nesting in numbers on the floor of the valley. Mountain Chickadees, also birds that belong above the rim of the valley during the summer months, were common nesting birds on the floor of the valley this year. Red-breasted Sapsuckers, at least three pairs reared young on the floor of the valley, which is another case of birds nesting below their normal range. And there were three pairs of Mountain Bluebirds that nested and reared young on the floor of the valley—a new record, and these birds were 5,000 feet below their normal nesting range. Another new record was the nesting of Slender-billed Nuthatches on the floor of the valley. In Yosemite Valley this was a wonderful year for insects of many kinds, and so it might be offered that it was food instead of weather that influenced their movements.

For the first time in 15 years the Sacramento Towhees failed to put in an appearance in the valley. Always in our previous experience nesting pairs of these birds were to be found in the cool thickets about the valley and often eight or

ten birds spent the winter in the warm section about the mouth of Indian Canyon, and yet not a single bird was seen this year.

The Evening Grosbeaks also offer a problem. For the last five or six years these birds have nested commonly in certain sections of the valley. This year the birds were present in numbers before and after the nesting season, but not during the nesting season. Not a single nesting pair was to be located in the usual haunts.

For the last three years, that is, since wild flowers have been blooming behind deer-proof fences, Rufous Hummingbirds have appeared in the Museum and Ahwahnee gardens during August. This year the Rufous Hummers passed the gardens up. The fact that there was a bountiful bloom of wild flowers in the higher sections of the park this August may account for their absence. As a matter of fact, the natural migration route of the Rufous Hummingbirds lies along the mountain tops among the late blooming flowers.

A NATURE NOTELET

The bear pits have become a great congregating place for birds during the day time. Robins, Tanagers, Grosbeak, Juncos and Jays may be seen there in great numbers, picking up the crumbs that have been left behind by the bears. Over 30 of these birds were seen feeding at the same time at the pits on July 3.



Digitized by
Yosemite Online Library

<http://www.yosemite.ca.us/library>

Dan Anderson