

JOHN MUIR

STEEP TRAILS

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*Steep Trails / California, Utah, Nevada, Washington, Oregon, the Grand
Canyon:*

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EDITOR'S NOTE

The papers brought together in this volume have, in a general way, been arranged in chronological sequence. They span a period of twenty-nine years of Muir's life, during which they appeared as letters and articles, for the most part in publications of limited and local circulation. The Utah and Nevada sketches, and the two San Gabriel papers, were contributed, in the form of letters, to the San Francisco Evening Bulletin toward the end of the seventies. Written in the field, they preserve the freshness of the author's first impressions of those regions. Much of the material in the chapters on Mount Shasta first took similar shape in 1874. Subsequently it was rewritten and much expanded for inclusion in Picturesque California, and the Region West of the Rocky Mountains, which Muir began to edit in 1888. In the same work appeared the description of Washington and Oregon. The charming little essay "Wild Wool" was written for the Overland

Monthly in 1875. "A Geologist's Winter Walk" is an extract from a letter to a friend, who, appreciating its fine literary quality, took the responsibility of sending it to the Overland Monthly without the author's knowledge. The concluding chapter on "The Grand Canyon of the Colorado" was published in the Century Magazine in 1902, and exhibits Muir's powers of description at their maturity.

Some of these papers were revised by the author during the later years of his life, and these revisions are a part of the form in which they now appear. The chapters on Mount Shasta, Oregon, and Washington will be found to contain occasional sentences and a few paragraphs that were included, more or less verbatim, in *The Mountains of California* and *Our National Parks*. Being an important part of their present context, these paragraphs could not be omitted without impairing the unity of the author's descriptions.

The editor feels confident that this volume will meet, in every way, the high expectations of Muir's readers. The recital of his experiences during a stormy night on the summit of Mount Shasta will take rank among the most thrilling of his records of adventure. His observations on the dead towns of Nevada, and on the Indians gathering their harvest of pine nuts, recall a phase of Western life that has left few traces in American literature. Many, too, will read with pensive interest the author's glowing description of what was one time called the New Northwest. Almost inconceivably great have been the changes wrought in

that region during the past generation. Henceforth the landscapes that Muir saw there will live in good part only in his writings, for fire, axe, plough, and gunpowder have made away with the supposedly boundless forest wildernesses and their teeming life.

William Frederic Bade

Berkeley, California

May, 1918

I. WILD WOOL

Moral improvers have calls to preach. I have a friend who has a call to plough, and woe to the daisy sod or azalea thicket that falls under the savage redemption of his keen steel shares. Not content with the so-called subjugation of every terrestrial bog, rock, and moorland, he would fain discover some method of reclamation applicable to the ocean and the sky, that in due calendar time they might be brought to bud and blossom as the rose. Our efforts are of no avail when we seek to turn his attention to wild roses, or to the fact that both ocean and sky are already about as rosy as possible—the one with stars, the other with dulse, and foam, and wild light. The practical developments of his culture are orchards and clover-fields wearing a smiling, benevolent aspect, truly excellent in their way, though a near view discloses something barbarous in them all. Wildness charms not my friend, charm it never so wisely: and whatsoever may be the character of his heaven, his earth seems only a chaos of agricultural possibilities calling for grubbing-hoes and manures.

Sometimes I venture to approach him with a plea for wildness, when he good-naturedly shakes a big mellow apple in my face, reiterating his favorite aphorism, "Culture is an orchard apple; Nature is a crab." Not all culture, however, is equally destructive and inappreciative. Azure skies and crystal waters find loving recognition, and few there be who would welcome the axe among

mountain pines, or would care to apply any correction to the tones and costumes of mountain waterfalls. Nevertheless, the barbarous notion is almost universally entertained by civilized man, that there is in all the manufactures of Nature something essentially coarse which can and must be eradicated by human culture. I was, therefore, delighted in finding that the wild wool growing upon mountain sheep in the neighborhood of Mount Shasta was much finer than the average grades of cultivated wool. This FINE discovery was made some three months ago¹, while hunting among the Shasta sheep between Shasta and Lower Klamath Lake. Three fleeces were obtained—one that belonged to a large ram about four years old, another to a ewe about the same age, and another to a yearling lamb. After parting their beautiful wool on the side and many places along the back, shoulders, and hips, and examining it closely with my lens, I shouted: "Well done for wildness! Wild wool is finer than tame!"

My companions stooped down and examined the fleeces for themselves, pulling out tufts and ringlets, spinning them between their fingers, and measuring the length of the staple, each in turn paying tribute to wildness. It WAS finer, and no mistake; finer than Spanish Merino. Wild wool IS finer than tame.

"Here," said I, "is an argument for fine wildness that needs no explanation. Not that such arguments are by any means rare, for all wildness is finer than tameness, but because fine wool is appreciable by everybody alike—from the most speculative

¹ This essay was written early in 1875.

president of national wool-growers' associations all the way down to the gude-wife spinning by her ingleside."

Nature is a good mother, and sees well to the clothing of her many bairns—birds with smoothly imbricated feathers, beetles with shining jackets, and bears with shaggy furs. In the tropical south, where the sun warms like a fire, they are allowed to go thinly clad; but in the snowy northland she takes care to clothe warmly. The squirrel has socks and mittens, and a tail broad enough for a blanket; the grouse is densely feathered down to the ends of his toes; and the wild sheep, besides his undergarment of fine wool, has a thick overcoat of hair that sheds off both the snow and the rain. Other provisions and adaptations in the dresses of animals, relating less to climate than to the more mechanical circumstances of life, are made with the same consummate skill that characterizes all the love work of Nature. Land, water, and air, jagged rocks, muddy ground, sand beds, forests, underbrush, grassy plains, etc., are considered in all their possible combinations while the clothing of her beautiful wildlings is preparing. No matter what the circumstances of their lives may be, she never allows them to go dirty or ragged. The mole, living always in the dark and in the dirt, is yet as clean as the otter or the wave-washed seal; and our wild sheep, wading in snow, roaming through bushes, and leaping among jagged storm-beaten cliffs, wears a dress so exquisitely adapted to its mountain life that it is always found as unruffled and stainless as a bird.

On leaving the Shasta hunting grounds I selected a few

specimen tufts, and brought them away with a view to making more leisurely examinations; but, owing to the imperfectness of the instruments at my command, the results thus far obtained must be regarded only as rough approximations.

As already stated, the clothing of our wild sheep is composed of fine wool and coarse hair. The hairs are from about two to four inches long, mostly of a dull bluish-gray color, though varying somewhat with the seasons. In general characteristics they are closely related to the hairs of the deer and antelope, being light, spongy, and elastic, with a highly polished surface, and though somewhat ridged and spiraled, like wool, they do not manifest the slightest tendency to felt or become taggy. A hair two and a half inches long, which is perhaps near the average length, will stretch about one fourth of an inch before breaking. The diameter decreases rapidly both at the top and bottom, but is maintained throughout the greater portion of the length with a fair degree of regularity. The slender tapering point in which the hairs terminate is nearly black: but, owing to its fineness as compared with the main trunk, the quantity of blackness is not sufficient to affect greatly the general color. The number of hairs growing upon a square inch is about ten thousand; the number of wool fibers is about twenty-five thousand, or two and a half times that of the hairs. The wool fibers are white and glossy, and beautifully spired into ringlets. The average length of the staple is about an inch and a half. A fiber of this length, when growing undisturbed down among the hairs, measures about an

inch; hence the degree of curliness may easily be inferred. I regret exceedingly that my instruments do not enable me to measure the diameter of the fibers, in order that their degrees of fineness might be definitely compared with each other and with the finest of the domestic breeds; but that the three wild fleeces under consideration are considerably finer than the average grades of Merino shipped from San Francisco is, I think, unquestionable.

When the fleece is parted and looked into with a good lens, the skin appears of a beautiful pale-yellow color, and the delicate wool fibers are seen growing up among the strong hairs, like grass among stalks of corn, every individual fiber being protected about as specially and effectively as if inclosed in a separate husk. Wild wool is too fine to stand by itself, the fibers being about as frail and invisible as the floating threads of spiders, while the hairs against which they lean stand erect like hazel wands; but, notwithstanding their great dissimilarity in size and appearance, the wool and hair are forms of the same thing, modified in just that way and to just that degree that renders them most perfectly subservient to the well-being of the sheep. Furthermore, it will be observed that these wild modifications are entirely distinct from those which are brought chancingly into existence through the accidents and caprices of culture; the former being inventions of God for the attainment of definite ends. Like the modifications of limbs—the fin for swimming, the wing for flying, the foot for walking—so the fine wool for warmth, the hair for additional warmth and to protect the wool, and both together for a fabric

to wear well in mountain roughness and wash well in mountain storms.

The effects of human culture upon wild wool are analogous to those produced upon wild roses. In the one case there is an abnormal development of petals at the expense of the stamens, in the other an abnormal development of wool at the expense of the hair. Garden roses frequently exhibit stamens in which the transmutation to petals may be observed in various stages of accomplishment, and analogously the fleeces of tame sheep occasionally contain a few wild hairs that are undergoing transmutation to wool. Even wild wool presents here and there a fiber that appears to be in a state of change. In the course of my examinations of the wild fleeces mentioned above, three fibers were found that were wool at one end and hair at the other. This, however, does not necessarily imply imperfection, or any process of change similar to that caused by human culture. Water lilies contain parts variously developed into stamens at one end, petals at the other, as the constant and normal condition. These half wool, half hair fibers may therefore subserve some fixed requirement essential to the perfection of the whole, or they may simply be the fine boundary-lines where and exact balance between the wool and the hair is attained.

I have been offering samples of mountain wool to my friends, demanding in return that the fineness of wildness be fairly recognized and confessed, but the returns are deplorably tame. The first question asked, is, "Now truly, wild sheep, wild sheep,

have you any wool?" while they peer curiously down among the hairs through lenses and spectacles. "Yes, wild sheep, you HAVE wool; but Mary's lamb had more. In the name of use, how many wild sheep, think you, would be required to furnish wool sufficient for a pair of socks?" I endeavor to point out the irrelevancy of the latter question, arguing that wild wool was not made for man but for sheep, and that, however deficient as clothing for other animals, it is just the thing for the brave mountain-dweller that wears it. Plain, however, as all this appears, the quantity question rises again and again in all its commonplace tameness. For in my experience it seems well-nigh impossible to obtain a hearing on behalf of Nature from any other standpoint than that of human use. Domestic flocks yield more flannel per sheep than the wild, therefore it is claimed that culture has improved upon wildness; and so it has as far as flannel is concerned, but all to the contrary as far as a sheep's dress is concerned. If every wild sheep inhabiting the Sierra were to put on tame wool, probably only a few would survive the dangers of a single season. With their fine limbs muffled and buried beneath a tangle of hairless wool, they would become short-winded, and fall an easy prey to the strong mountain wolves. In descending precipices they would be thrown out of balance and killed, by their taggy wool catching upon sharp points of rocks. Disease would also be brought on by the dirt which always finds a lodgment in tame wool, and by the draggled and water-soaked condition into which it falls during stormy weather.

No dogma taught by the present civilization seems to form so insuperable an obstacle in the way of a right understanding of the relations which culture sustains to wildness as that which regards the world as made especially for the uses of man. Every animal, plant, and crystal controverts it in the plainest terms. Yet it is taught from century to century as something ever new and precious, and in the resulting darkness the enormous conceit is allowed to go unchallenged.

I have never yet happened upon a trace of evidence that seemed to show that any one animal was ever made for another as much as it was made for itself. Not that Nature manifests any such thing as selfish isolation. In the making of every animal the presence of every other animal has been recognized. Indeed, every atom in creation may be said to be acquainted with and married to every other, but with universal union there is a division sufficient in degree for the purposes of the most intense individuality; no matter, therefore, what may be the note which any creature forms in the song of existence, it is made first for itself, then more and more remotely for all the world and worlds.

Were it not for the exercise of individualizing cares on the part of Nature, the universe would be felted together like a fleece of tame wool. But we are governed more than we know, and most when we are wildest. Plants, animals, and stars are all kept in place, bridled along appointed ways, WITH one another, and THROUGH THE MIDST of one another—killing and being killed, eating and being eaten, in harmonious proportions and

quantities. And it is right that we should thus reciprocally make use of one another, rob, cook, and consume, to the utmost of our healthy abilities and desires. Stars attract one another as they are able, and harmony results. Wild lambs eat as many wild flowers as they can find or desire, and men and wolves eat the lambs to just the same extent.

This consumption of one another in its various modifications is a kind of culture varying with the degree of directness with which it is carried out, but we should be careful not to ascribe to such culture any improving qualities upon those on whom it is brought to bear. The water-ousel plucks moss from the riverbank to build its nest, but it does not improve the moss by plucking it. We pluck feathers from birds, and less directly wool from wild sheep, for the manufacture of clothing and cradle-nests, without improving the wool for the sheep, or the feathers for the bird that wore them. When a hawk pounces upon a linnet and proceeds to pull out its feathers, preparatory to making a meal, the hawk may be said to be cultivating the linnet, and he certainly does effect an improvement as far as hawk-food is concerned; but what of the songster? He ceases to be a linnet as soon as he is snatched from the woodland choir; and when, hawklike, we snatch the wild sheep from its native rock, and, instead of eating and wearing it at once, carry it home, and breed the hair out of its wool and the bones out of its body, it ceases to be a sheep.

These breeding and plucking processes are similarly improving as regards the secondary uses aimed at; and, although

the one requires but a few minutes for its accomplishment, the other many years or centuries, they are essentially alike. We eat wild oysters alive with great directness, waiting for no cultivation, and leaving scarce a second of distance between the shell and the lip; but we take wild sheep home and subject them to the many extended processes of husbandry, and finish by boiling them in a pot—a process which completes all sheep improvements as far as man is concerned. It will be seen, therefore, that wild wool and tame wool—wild sheep and tame sheep—are terms not properly comparable, nor are they in any correct sense to be considered as bearing any antagonism toward each other; they are different things. Planned and accomplished for wholly different purposes.

Illustrative examples bearing upon this interesting subject may be multiplied indefinitely, for they abound everywhere in the plant and animal kingdoms wherever culture has reached. Recurring for a moment to apples. The beauty and completeness of a wild apple tree living its own life in the woods is heartily acknowledged by all those who have been so happy as to form its acquaintance. The fine wild piquancy of its fruit is unrivaled, but in the great question of quantity as human food wild apples are found wanting. Man, therefore, takes the tree from the woods, manures and prunes and grafts, plans and guesses, adds a little of this and that, selects and rejects, until apples of every conceivable size and softness are produced, like nut galls in response to the irritating punctures of insects. Orchard apples are to me the most eloquent words that culture has ever spoken, but they reflect no

imperfection upon Nature's spicy crab. Every cultivated apple is a crab, not improved, BUT COOKED, variously softened and swelled out in the process, mellowed, sweetened, spiced, and rendered pulpy and foodful, but as utterly unfit for the uses of nature as a meadowlark killed and plucked and roasted. Give to Nature every cultured apple—codling, pippin, russet—and every sheep so laboriously compounded—muffled Southdowns, hairy Cotswolds, wrinkled Merinos—and she would throw the one to her caterpillars, the other to her wolves.

It is now some thirty-six hundred years since Jacob kissed his mother and set out across the plains of Padan-aram to begin his experiments upon the flocks of his uncle, Laban; and, notwithstanding the high degree of excellence he attained as a wool-grower, and the innumerable painstaking efforts subsequently made by individuals and associations in all kinds of pastures and climates, we still seem to be as far from definite and satisfactory results as we ever were. In one breed the wool is apt to wither and crinkle like hay on a sun-beaten hillside. In another, it is lodged and matted together like the lush tangled grass of a manured meadow. In one the staple is deficient in length, in another in fineness; while in all there is a constant tendency toward disease, rendering various washings and dippings indispensable to prevent its falling out. The problem of the quality and quantity of the carcass seems to be as doubtful and as far removed from a satisfactory solution as that of the wool. Desirable breeds blundered upon by long series of groping

experiments are often found to be unstable and subject to disease—bots, foot rot, blind staggers, etc.—causing infinite trouble, both among breeders and manufacturers. Would it not be well, therefore, for some one to go back as far as possible and take a fresh start?

The source or sources whence the various breeds were derived is not positively known, but there can be hardly any doubt of their being descendants of the four or five wild species so generally distributed throughout the mountainous portions of the globe, the marked differences between the wild and domestic species being readily accounted for by the known variability of the animal, and by the long series of painstaking selection to which all its characteristics have been subjected. No other animal seems to yield so submissively to the manipulations of culture. Jacob controlled the color of his flocks merely by causing them to stare at objects of the desired hue; and possibly Merinos may have caught their wrinkles from the perplexed brows of their breeders. The California species (*Ovis montana*)² is a noble animal, weighing when full-grown some three hundred and fifty pounds, and is well worthy the attention of wool-growers as a point from which to make a new departure, for pure wildness is the one great want, both of men and of sheep.

² The wild sheep of California are now classified as *Ovis nelsoni*. Whether those of the Shasta region belonged to the latter species, or to the bighorn species of Oregon, Idaho, and Washington, is still an unsettled question.

II. A Geologist's Winter Walk³

After reaching Turlock, I sped afoot over the stubble fields and through miles of brown hemizonia and purple erigeron, to Hopeton, conscious of little more than that the town was behind and beneath me, and the mountains above and before me; on through the oaks and chaparral of the foothills to Coulterville; and then ascended the first great mountain step upon which grows the sugar pine. Here I slackened pace, for I drank the spicy, resinous wind, and beneath the arms of this noble tree I felt that I was safely home. Never did pine trees seem so dear. How sweet was their breath and their song, and how grandly they winnowed the sky! I tingled my fingers among their tassels, and rustled my feet among their brown needles and burrs, and was exhilarated and joyful beyond all I can write.

When I reached Yosemite, all the rocks seemed talkative, and more telling and lovable than ever. They are dear friends, and seemed to have warm blood gushing through their granite flesh; and I love them with a love intensified by long and close companionship. After I had bathed in the bright river, sauntered over the meadows, conversed with the domes, and played with the pines, I still felt blurred and weary, as if tainted in some way with the sky of your streets. I determined, therefore, to run out

³ An excerpt from a letter to a friend, written in 1872.

for a while to say my prayers in the higher mountain temples. "The days are sunful," I said, "and, though now winter, no great danger need be encountered, and no sudden storm will block my return, if I am watchful."

The morning after this decision, I started up the canyon of Tenaya, caring little about the quantity of bread I carried; for, I thought, a fast and a storm and a difficult canyon were just the medicine I needed. When I passed Mirror Lake, I scarcely noticed it, for I was absorbed in the great Tissiack—her crown a mile away in the hushed azure; her purple granite drapery flowing in soft and graceful folds down to my feet, embroidered gloriously around with deep, shadowy forest. I have gazed on Tissiack a thousand times—in days of solemn storms, and when her form shone divine with the jewelry of winter, or was veiled in living clouds; and I have heard her voice of winds, and snowy, tuneful waters when floods were falling; yet never did her soul reveal itself more impressively than now. I hung about her skirts, lingering timidly, until the higher mountains and glaciers compelled me to push up the canyon.

This canyon is accessible only to mountaineers, and I was anxious to carry my barometer and clinometer through it, to obtain sections and altitudes, so I chose it as the most attractive highway. After I had passed the tall groves that stretch a mile above Mirror Lake, and scrambled around the Tenaya Fall, which is just at the head of the lake groves, I crept through the dense and spiny chaparral that plushes the roots of the mountains here

for miles in warm green, and was ascending a precipitous rock front, smoothed by glacial action, when I suddenly fell—for the first time since I touched foot to Sierra rocks. After several somersaults, I became insensible from the shock, and when consciousness returned I found myself wedged among short, stiff bushes, trembling as if cold, not injured in the slightest.

Judging by the sun, I could not have been insensible very long; probably not a minute, possibly an hour; and I could not remember what made me fall, or where I had fallen from; but I saw that if I had rolled a little further, my mountain climbing would have been finished, for just beyond the bushes the canyon wall steepened and I might have fallen to the bottom. "There," said I, addressing my feet, to whose separate skill I had learned to trust night and day on any mountain, "that is what you get by intercourse with stupid town stairs, and dead pavements." I felt degraded and worthless. I had not yet reached the most difficult portion of the canyon, but I determined to guide my humbled body over the most nerve-trying places I could find; for I was now awake, and felt confident that the last of the town fog had been shaken from both head and feet.

I camped at the mouth of a narrow gorge which is cut into the bottom of the main canyon, determined to take earnest exercise next day. No plushy boughs did my ill-behaved bones enjoy that night, nor did my bumped head get a spicy cedar plume pillow mixed with flowers. I slept on a naked boulder, and when I awoke all my nervous trembling was gone.

The gorged portion of the canyon, in which I spent all the next day, is about a mile and a half in length; and I passed the time in tracing the action of the forces that determined this peculiar bottom gorge, which is an abrupt, ragged-walled, narrow-throated canyon, formed in the bottom of the wide-mouthed, smooth, and beveled main canyon. I will not stop now to tell you more; some day you may see it, like a shadowy line, from Cloud's Rest. In high water, the stream occupies all the bottom of the gorge, surging and chafing in glorious power from wall to wall. But the sound of the grinding was low as I entered the gorge, scarcely hoping to be able to pass through its entire length. By cool efforts, along glassy, ice-worn slopes, I reached the upper end in a little over a day, but was compelled to pass the second night in the gorge, and in the moonlight I wrote you this short pencil-letter in my notebook:—

The moon is looking down into the canyon, and how marvelously the great rocks kindle to her light! Every dome, and brow, and swelling boss touched by her white rays, glows as if lighted with snow. I am now only a mile from last night's camp; and have been climbing and sketching all day in this difficult but instructive gorge. It is formed in the bottom of the main canyon, among the roots of Cloud's Rest. It begins at the filled-up lake basin where I camped last night, and ends a few hundred yards above, in another basin of the same kind. The walls everywhere are craggy and vertical, and in some places they overlean. It is only from twenty to sixty feet wide, and not, though black and

broken enough, the

thin, crooked mouth of some mysterious abyss; but it was eroded, for in many places I saw its solid, seamless floor.

I am sitting on a big stone, against which the stream divides, and goes brawling by in rapids on both sides; half of my rock is white in the light, half in shadow. As I look from the opening jaws of this shadowy gorge, South Dome is immediately in front—high in the stars, her face turned from the moon, with the rest of her body gloriously muffled in waved folds of granite. On the left, sculptured from the main Cloud's Rest ridge, are three magnificent rocks, sisters of the great South Dome. On the right is the massive, moonlit front of Mount Watkins, and between, low down in the furthest distance, is Sentinel Dome, girdled and darkened with forest. In the near foreground Tenaya Creek is singing against boulders that are white with snow and moonbeams. Now look back twenty yards, and you will see a waterfall fair as a spirit; the moonlight just touches it, bringing it into relief against a dark background of shadow.

A little to the left, and a dozen steps this side of the fall, a flickering light marks my camp—and a precious camp it is. A huge, glacier-polished slab, falling from the smooth, glossy flank of Cloud's Rest, happened to settle on edge against the wall of the gorge. I did not know that this slab was glacier-polished until I lighted my fire. Judge of my delight. I think it was sent here by an earthquake. It is about twelve feet square. I wish I could take it home⁴ for a hearthstone. Beneath this slab is the only place in this

⁴ Muir at this time was making Yosemite Valley his home.

torrent-swept gorge where I could find sand sufficient for a bed.

I expected to sleep on the boulders, for I spent most of the afternoon on the slippery wall of the canyon, endeavoring to get around this difficult part of the gorge, and was compelled to hasten down here for water before dark. I shall sleep soundly on this sand; half of it is mica.

Here, wonderful to behold, are a few green stems of prickly rubus, and a tiny grass. They are here to meet us. Ay, even here in this darksome gorge, "frightened and tormented" with raging torrents and choking avalanches of snow. Can it be? As if rubus and the grass leaf were not enough of God's tender prattle words of love, which we so much need in these mighty temples of power, yonder in the "benmost bore" are two blessed adiantums. Listen to them! How wholly infused with God is this one big word of love that we call the world! Good-night. Do you see the fire-glow on my ice-smoothed slab, and on my two ferns and the rubus and grass panicles? And do you hear how sweet a sleep-song the fall and cascades are singing?

The water-ground chips and knots that I found fastened between the rocks kept my fire alive all through the night. Next morning I rose nerved and ready for another day of sketching and noting, and any form of climbing. I escaped from the gorge about noon, after accomplishing some of the most delicate feats of mountaineering I ever attempted; and here the canyon is all broadly open again—the floor luxuriantly forested with pine, and spruce, and silver fir, and brown-trunked libocedrus. The walls

rise in Yosemite forms, and Tenaya Creek comes down seven hundred feet in a white brush of foam. This is a little Yosemite valley. It is about two thousand feet above the level of the main Yosemite, and about twenty-four hundred below Lake Tenaya.

I found the lake frozen, and the ice was so clear and unruffled that the surrounding mountains and the groves that look down upon it were reflected almost as perfectly as I ever beheld them in the calm evening mirrors of summer. At a little distance, it was difficult to believe the lake frozen at all; and when I walked out on it, cautiously stamping at short intervals to test the strength of the ice, I seemed to walk mysteriously, without adequate faith, on the surface of the water. The ice was so transparent that I could see through it the beautifully wave-rippled, sandy bottom, and the scales of mica glinting back the down-pouring light. When I knelt down with my face close to the ice, through which the sunbeams were pouring, I was delighted to discover myriads of Tyndall's six-rayed water flowers, magnificently colored.

A grand old mountain mansion is this Tenaya region! In the glacier period it was a mer de glace, far grander than the mer de glace of Switzerland, which is only about half a mile broad. The Tenaya mer de glace was not less than two miles broad, late in the glacier epoch, when all the principal dividing crests were bare; and its depth was not less than fifteen hundred feet. Ice streams from Mounts Lyell and Dana, and all the mountains between, and from the nearer Cathedral Peak, flowed hither, welded into one, and worked together. After eroding this Tanaya Lake basin, and

all the splendidly sculptured rocks and mountains that surround and adorn it, and the great Tenaya Canyon, with its wealth of all that makes mountains sublime, they were welded with the vast South, Lyell, and Illilouette glaciers on one side, and with those of Hoffman on the other—thus forming a portion of a yet grander mer de glace in Yosemite Valley.

I reached the Tenaya Canyon, on my way home, by coming in from the northeast, rambling down over the shoulders of Mount Watkins, touching bottom a mile above Mirror Lake. From thence home was but a saunter in the moonlight.

After resting one day, and the weather continuing calm, I ran up over the left shoulder of South Dome and down in front of its grand split face to make some measurements, completed my work, climbed to the right shoulder, struck off along the ridge for Cloud's Rest, and reached the topmost heave of her sunny wave in ample time to see the sunset.

Cloud's Rest is a thousand feet higher than Tissiack. It is a wavelike crest upon a ridge, which begins at Yosemite with Tissiack, and runs continuously eastward to the thicket of peaks and crests around Lake Tenaya. This lofty granite wall is bent this way and that by the restless and weariless action of glaciers just as if it had been made of dough. But the grand circumference of mountains and forests are coming from far and near, densing into one close assemblage; for the sun, their god and father, with love ineffable, is glowing a sunset farewell. Not one of all the assembled rocks or trees seemed remote. How impressively their

faces shone with responsive love!

I ran home in the moonlight with firm strides; for the sun-love made me strong. Down through the junipers; down through the firs; now in jet shadows, now in white light; over sandy moraines and bare, clanking rocks; past the huge ghost of South Dome rising weird through the firs; past the glorious fall of Nevada, the groves of Illilouette; through the pines of the valley; beneath the bright crystal sky blazing with stars. All of this mountain wealth in one day!—one of the rich ripe days that enlarge one's life; so much of the sun upon one side of it, so much of the moon and stars on the other.

III. Summer Days at Mount Shasta

Mount Shasta rises in solitary grandeur from the edge of a comparatively low and lightly sculptured lava plain near the northern extremity of the Sierra, and maintains a far more impressive and commanding individuality than any other mountain within the limits of California. Go where you may, within a radius of from fifty to a hundred miles or more, there stands before you the colossal cone of Shasta, clad in ice and snow, the one grand unmistakable landmark—the pole star of the landscape. Far to the southward Mount Whitney lifts its granite summit four or five hundred feet higher than Shasta, but it is nearly snowless during the late summer, and is so feebly individualized that the traveler may search for it in vain among the many rival peaks crowded along the axis of the range to north and south of it, which all alike are crumbling residual masses brought into relief in the degradation of the general mass of the range. The highest point on Mount Shasta, as determined by the State Geological Survey, is 14,440 feet above mean tide. That of Whitney, computed from fewer observations, is about 14,900 feet. But inasmuch as the average elevation of the plain out of which Shasta rises is only about four thousand feet above the sea, while the actual base of the peak of Mount Whitney lies at an elevation of eleven thousand feet, the individual height of the former is about two and a half times as great as that of the latter.

Approaching Shasta from the south, one obtains glimpses of its snowy cone here and there through the trees from the tops of hills and ridges; but it is not until Strawberry Valley is reached, where there is a grand out-opening of the forests, that Shasta is seen in all its glory. From base to crown clearly revealed with its wealth of woods and waters and fountain snow, rejoicing in the bright mountain sky, and radiating beauty on all the subject landscape like a sun. Standing in a fringing thicket of purple spiraea in the immediate foreground is a smooth expanse of green meadow with its meandering stream, one of the smaller affluents of the Sacramento; then a zone of dark, close forest, its countless spires of pine and fir rising above one another on the swelling base of the mountain in glorious array; and, over all, the great white cone sweeping far into the thin, keen sky—meadow, forest, and grand icy summit harmoniously blending and making one sublime picture evenly balanced.

The main lines of the landscape are immensely bold and simple, and so regular that it needs all its shaggy wealth of woods and chaparral and its finely tinted ice and snow and brown jutting crags to keep it from looking conventional. In general views of the mountain three distinct zones may be readily defined. The first, which may be called the Chaparral Zone, extends around the base in a magnificent sweep nearly a hundred miles in length on its lower edge, and with a breadth of about seven miles. It is a dense growth of chaparral from three to six or eight feet high, composed chiefly of manzanita, cherry,

chincapin, and several species of ceanothus, called deerbrush by the hunters, forming, when in full bloom, one of the most glorious flowerbeds conceivable. The continuity of this flowery zone is interrupted here and there, especially on the south side of the mountain, by wide swaths of coniferous trees, chiefly the sugar and yellow pines, Douglas spruce, silver fir, and incense cedar, many specimens of which are two hundred feet high and five to seven feet in diameter. Goldenrods, asters, gillias, lilies, and lupines, with many other less conspicuous plants, occur in warm sheltered openings in these lower woods, making charming gardens of wildness where bees and butterflies are at home and many a shy bird and squirrel.

The next higher is the Fir Zone, made up almost exclusively of two species of silver fir. It is from two to three miles wide, has an average elevation above the sea of some six thousand feet on its lower edge and eight thousand on its upper, and is the most regular and best defined of the three.

The Alpine Zone has a rugged, straggling growth of storm-beaten dwarf pines (*Pinus albicaulis*), which forms the upper edge of the timberline. This species reaches an elevation of about nine thousand feet, but at this height the tops of the trees rise only a few feet into the thin frosty air, and are closely pressed and shorn by wind and snow; yet they hold on bravely and put forth an abundance of beautiful purple flowers and produce cones and seeds. Down towards the edge of the fir belt they stand erect, forming small, well-formed trunks, and are associated

with the taller two-leafed and mountain pines and the beautiful Williamson spruce. *Bryanthus*, a beautiful flowering heathwort, flourishes a few hundred feet above the timberline, accompanied with *kalmia* and *spiraea*. Lichens enliven the faces of the cliffs with their bright colors, and in some of the warmer nooks of the rocks, up to a height of eleven thousand feet, there are a few tufts of dwarf daisies, wallflowers, and penstemons; but, notwithstanding these bloom freely, they make no appreciable show at a distance, and the stretches of rough brown lava beyond the storm-beaten trees seem as bare of vegetation as the great snow fields and glaciers of the summit.

Shasta is a fire-mountain, an old volcano gradually accumulated and built up into the blue deep of the sky by successive eruptions of ashes and molten lava which, shot high in the air and falling in darkening showers, and flowing from chasms and craters, grew outward and upward like the trunk of a knotty, bulging tree. Not in one grand convulsion was Shasta given birth, nor in any one special period of volcanic storm and stress, though mountains more than a thousand feet in height have been cast up like molehills in a night—quick contributions to the wealth of the landscapes, and most emphatic statements, on the part of Nature, of the gigantic character of the power that dwells beneath the dull, dead-looking surface of the earth. But sections cut by the glaciers, displaying some of the internal framework of Shasta, show that comparatively long periods of quiescence intervened between many distinct eruptions, during

which the cooling lavas ceased to flow, and took their places as permanent additions to the bulk of the growing mountain. Thus with alternate haste and deliberation eruption succeeded eruption, until Mount Shasta surpassed even its present sublime height.

Then followed a strange contrast. The glacial winter came on. The sky that so often had been darkened with storms of cinders and ashes and lighted by the glare of volcanic fires was filled with crystal snow-flowers, which, loading the cooling mountain, gave birth to glaciers that, uniting edge to edge, at length formed one grand conical glacier—a down-crawling mantle of ice upon a fountain of smouldering fire, crushing and grinding its brown, flinty lavas, and thus degrading and remodeling the entire mountain from summit to base. How much denudation and degradation has been effected we have no means of determining, the porous, crumbling rocks being ill adapted for the reception and preservation of glacial inscriptions.

The summit is now a mass of ruins, and all the finer striations have been effaced from the flanks by post-glacial weathering, while the irregularity of its lavas as regards susceptibility to erosion, and the disturbance caused by inter- and post-glacial eruptions, have obscured or obliterated those heavier characters of the glacial record found so clearly inscribed upon the granite pages of the high Sierra between latitude 36 degrees 30 minutes and 39 degrees. This much, however, is plain: that the summit of the mountain was considerably lowered, and the sides were

deeply grooved and fluted while it was a center of dispersal for the glaciers of the circumjacent region. And when at length the glacial period began to draw near its close, the ice mantle was gradually melted off around the base of the mountain, and in receding and breaking up into its present fragmentary condition the irregular heaps and rings of moraine matter were stored upon its flanks on which the forests are growing. The glacial erosion of most of the Shasta lavas gives rise to detritus composed of rough subangular boulders of moderate size and porous gravel and sand, which yields freely to the transporting power of running water. Several centuries ago immense quantities of this lighter material were washed down from the higher slopes by a flood of extraordinary magnitude, caused probably by the sudden melting of the ice and snow during an eruption, giving rise to the deposition of conspicuous delta-like beds around the base. And it is upon these flood-beds of moraine soil, thus suddenly and simultaneously laid down and joined edge to edge, that the flowery chaparral is growing.

Thus, by forces seemingly antagonistic and destructive, Nature accomplishes her beneficent designs—now a flood of fire, now a flood of ice, now a flood of water; and again in the fullness of time an outburst of organic life—forest and garden, with all their wealth of fruit and flowers, the air stirred into one universal hum with rejoicing insects, a milky way of wings and petals, girdling the newborn mountain like a cloud, as if the vivifying sunbeams beating against its sides had broken into a

foam of plant-bloom and bees.

But with such grand displays as Nature is making here, how grand are her reservations, bestowed only upon those who devotedly seek them! Beneath the smooth and snowy surface the fountain fires are still aglow, to blaze forth afresh at their appointed times. The glaciers, looking so still and small at a distance, represented by the artist with a patch of white paint laid on by a single stroke of his brush, are still flowing onward, unhalting, with deep crystal currents, sculpturing the mountain with stern, resistless energy. How many caves and fountains that no eye has yet seen lie with all their fine furniture deep down in the darkness, and how many shy wild creatures are at home beneath the grateful lights and shadows of the woods, rejoicing in their fullness of perfect life!

Standing on the edge of the Strawberry Meadows in the sundays of summer, not a foot or feather or leaf seems to stir; and the grand, towering mountain with all its inhabitants appears in rest, calm as a star. Yet how profound is the energy ever in action, and how great is the multitude of claws and teeth, wings and eyes, wide awake and at work and shining! Going into the blessed wilderness, the blood of the plants throbbing beneath the life-giving sunshine seems to be heard and felt; plant growth goes on before our eyes, and every tree and bush and flower is seen as a hive of restless industry. The deeps of the sky are mottled with singing wings of every color and tone—clouds of brilliant chrysididae dancing and swirling in joyous rhythm,

golden-barred vespidae, butterflies, grating cicadas and jolly rattling grasshoppers—fairly enameling the light, and shaking all the air into music. Happy fellows they are, every one of them, blowing tiny pipe and trumpet, plodding and prancing, at work or at play.

Though winter holds the summit, Shasta in summer is mostly a massy, bossy mound of flowers colored like the alpenglow that flushes the snow. There are miles of wild roses, pink bells of huckleberry and sweet manzanita, every bell a honey-cup, plants that tell of the north and of the south; tall nodding lilies, the crimson sarcodes, rhododendron, cassiope, and blessed linnaea; phlox, calycanthus, plum, cherry, crataegus, spiraea, mints, and clovers in endless variety; ivesia, larkspur, and columbine; golden aplopappus, linosyris⁵, bahia, wyethia, arnica, brodiaea, etc.,—making sheets and beds of light edgings of bloom in lavish abundance for the myriads of the air dependent on their bounty.

The common honeybees, gone wild in this sweet wilderness, gather tons of honey into the hollows of the trees and rocks, clambering eagerly through bramble and hucklebloom, shaking the clustered bells of the generous manzanita, now humming aloft among polleny willows and firs, now down on the ashy ground among small gilies and buttercups, and anon plunging into banks of snowy cherry and buckthorn. They consider the lilies and roll into them, pushing their blunt polleny faces against

⁵ An obsolete genus of plants now replaced in the main by *Chrysothamnus* and *Ericameria*.

them like babies on their mother's bosom; and fondly, too, with eternal love does Mother Nature clasp her small bee-babies and suckle them, multitudes at once, on her warm Shasta breast. Besides the common honeybee there are many others here, fine, burly, mossy fellows, such as were nourished on the mountains many a flowery century before the advent of the domestic species—bumblebees, mason-bees, carpenter-bees, and leaf-cutters. Butterflies, too, and moths of every size and pattern; some wide-winged like bats, flapping slowly and sailing in easy curves; others like small flying violets shaking about loosely in short zigzag flights close to the flowers, feasting in plenty night and day.

Deer in great abundance come to Shasta from the warmer foothills every spring to feed in the rich, cool pastures, and bring forth their young in the ceanothus tangles of the chaparral zone, retiring again before the snowstorms of winter, mostly to the southward and westward of the mountain. In like manner the wild sheep of the adjacent region seek the lofty inaccessible crags of the summit as the snow melts, and are driven down to the lower spurs and ridges where there is but little snow, to the north and east of Shasta.

Bears, too, roam this foodful wilderness, feeding on grass, clover, berries, nuts, ant eggs, fish, flesh, or fowl,—whatever comes in their way,—with but little troublesome discrimination. Sugar and honey they seem to like best of all, and they seek far to find the sweets; but when hard pushed by hunger they make

out to gnaw a living from the bark of trees and rotten logs, and might almost live on clean lava alone.

Notwithstanding the California bears have had as yet but little experience with honeybees, they sometimes succeed in reaching the bountiful stores of these industrious gatherers and enjoy the feast with majestic relish. But most honeybees in search of a home are wise enough to make choice of a hollow in a living tree far from the ground, whenever such can be found. There they are pretty secure, for though the smaller brown and black bears climb well, they are unable to gnaw their way into strong hives, while compelled to exert themselves to keep from falling and at the same time endure the stings of the bees about the nose and eyes, without having their paws free to brush them off. But woe to the unfortunates who dwell in some prostrate trunk, and to the black bumblebees discovered in their mossy, mouselike nests in the ground. With powerful teeth and claws these are speedily laid bare, and almost before time is given for a general buzz the bees, old and young, larvae, honey, stings, nest, and all, are devoured in one ravishing revel.

The antelope may still be found in considerable numbers to the northeastward of Shasta, but the elk, once abundant, have almost entirely gone from the region. The smaller animals, such as the wolf, the various foxes, wildcats, coon, squirrels, and the curious wood rat that builds large brush huts, abound in all the wilder places; and the beaver, otter, mink, etc., may still be found along the sources of the rivers. The blue grouse and mountain quail are

plentiful in the woods and the sage-hen on the plains about the northern base of the mountain, while innumerable smaller birds enliven and sweeten every thicket and grove.

There are at least five classes of human inhabitants about the Shasta region: the Indians, now scattered, few in numbers and miserably demoralized, though still offering some rare specimens of savage manhood; miners and prospectors, found mostly to the north and west of the mountain, since the region about its base is overflowed with lava; cattle-raisers, mostly on the open plains to the northeastward and around the Klamath Lakes; hunters and trappers, where the woods and waters are wildest; and farmers, in Shasta Valley on the north side of the mountain, wheat, apples, melons, berries, all the best production of farm and garden growing and ripening there at the foot of the great white cone, which seems at times during changing storms ready to fall upon them—the most sublime farm scenery imaginable.

The Indians of the McCloud River that have come under my observation differ considerably in habits and features from the Diggers and other tribes of the foothills and plains, and also from the Pah Utes and Modocs. They live chiefly on salmon. They seem to be closely related to the Tlingits of Alaska, Washington, and Oregon, and may readily have found their way here by passing from stream to stream in which salmon abound. They have much better features than the Indians of the plains, and are rather wide awake, speculative and ambitious in their way, and

garrulous, like the natives of the northern coast.

Before the Modoc War they lived in dread of the Modocs, a tribe living about the Klamath Lake and the Lava Beds, who were in the habit of crossing the low Sierra divide past the base of Shasta on freebooting excursions, stealing wives, fish, and weapons from the Pitts and McClouds. Mothers would hush their children by telling them that the Modocs would catch them.

During my stay at the Government fish-hatching station on the McCloud I was accompanied in my walks along the riverbank by a McCloud boy about ten years of age, a bright, inquisitive fellow, who gave me the Indian names of the birds and plants that we met. The water-ousel he knew well and he seemed to like the sweet singer, which he called "Sussinny." He showed me how strips of the stems of the beautiful maidenhair fern were used to adorn baskets with handsome brown bands, and pointed out several plants good to eat, particularly the large saxifrage growing abundantly along the river margin. Once I rushed suddenly upon him to see if he would be frightened; but he unflinchingly held his ground, struck a grand heroic attitude, and shouted, "Me no fraid; me Modoc!"

Mount Shasta, so far as I have seen, has never been the home of Indians, not even their hunting ground to any great extent, above the lower slopes of the base. They are said to be afraid of fire-mountains and geyser basins as being the dwelling places of dangerously powerful and unmanageable gods. However, it is food and their relations to other tribes that mainly control the

movements of Indians; and here their food was mostly on the lower slopes, with nothing except the wild sheep to tempt them higher. Even these were brought within reach without excessive climbing during the storms of winter.

On the north side of Shasta, near Sheep Rock, there is a long cavern, sloping to the northward, nearly a mile in length, thirty or forty feet wide, and fifty feet or more in height, regular in form and direction like a railroad tunnel, and probably formed by the flowing away of a current of lava after the hardening of the surface. At the mouth of this cave, where the light and shelter is good, I found many of the heads and horns of the wild sheep, and the remains of campfires, no doubt those of Indian hunters who in stormy weather had camped there and feasted after the fatigues of the chase. A wild picture that must have formed on a dark night—the glow of the fire, the circle of crouching savages around it seen through the smoke, the dead game, and the weird darkness and half-darkness of the walls of the cavern, a picture of cave-dwellers at home in the stone age!

Interest in hunting is almost universal, so deeply is it rooted as an inherited instinct ever ready to rise and make itself known. Fine scenery may not stir a fiber of mind or body, but how quick and how true is the excitement of the pursuit of game! Then up flames the slumbering volcano of ancient wildness, all that has been done by church and school through centuries of cultivation is for the moment destroyed, and the decent gentleman or devout saint becomes a howling, bloodthirsty, demented savage. It is

not long since we all were cavemen and followed game for food as truly as wildcat or wolf, and the long repression of civilization seems to make the rebound to savage love of blood all the more violent. This frenzy, fortunately, does not last long in its most exaggerated form, and after a season of wildness refined gentlemen from cities are not more cruel than hunters and trappers who kill for a living.

Dwelling apart in the depths of the woods are the various kinds of mountaineers,—hunters, prospectors, and the like,—rare men, "queer characters," and well worth knowing. Their cabins are located with reference to game and the ledges to be examined, and are constructed almost as simply as those of the wood rats made of sticks laid across each other without compass or square. But they afford good shelter from storms, and so are "square" with the need of their builders. These men as a class are singularly fine in manners, though their faces may be scarred and rough like the bark of trees. On entering their cabins you will promptly be placed on your good behavior, and, your wants being perceived with quick insight, complete hospitality will be offered for body and mind to the extent of the larder.

These men know the mountains far and near, and their thousand voices, like the leaves of a book. They can tell where the deer may be found at any time of year or day, and what they are doing; and so of all the other furred and feathered people they meet in their walks; and they can send a thought to its mark as well as a bullet. The aims of such people are not

always the highest, yet how brave and manly and clean are their lives compared with too many in crowded towns mildewed and dwarfed in disease and crime! How fine a chance is here to begin life anew in the free fountains and skylands of Shasta, where it is so easy to live and to die! The future of the hunter is likely to be a good one; no abrupt change about it, only a passing from wilderness to wilderness, from one high place to another.

Now that the railroad has been built up the Sacramento, everybody with money may go to Mount Shasta, the weak as well as the strong, fine-grained, succulent people, whose legs have never ripened, as well as sinewy mountaineers seasoned long in the weather. This, surely, is not the best way of going to the mountains, yet it is better than staying below. Many still small voices will not be heard in the noisy rush and din, suggestive of going to the sky in a chariot of fire or a whirlwind, as one is shot to the Shasta mark in a booming palace-car cartridge; up the rocky canyon, skimming the foaming river, above the level reaches, above the dashing spray—fine exhilarating translation, yet a pity to go so fast in a blur, where so much might be seen and enjoyed.

The mountains are fountains not only of rivers and fertile soil, but of men. Therefore we are all, in some sense, mountaineers, and going to the mountains is going home. Yet how many are doomed to toil in town shadows while the white mountains beckon all along the horizon! Up the canyon to Shasta would be a cure for all care. But many on arrival seem at a loss to know what

to do with themselves, and seek shelter in the hotel, as if that were the Shasta they had come for. Others never leave the rail, content with the window views, and cling to the comforts of the sleeping car like blind mice to their mothers. Many are sick and have been dragged to the healing wilderness unwillingly for body-good alone. Were the parts of the human machine detachable like Yankee inventions, how strange would be the gatherings on the mountains of pieces of people out of repair!

How sadly unlike the whole-hearted ongoing of the seeker after gold is this partial, compulsory mountaineering!—as if the mountain treasures contained nothing better than gold! Up the mountains they go, high-heeled and high-hatted, laden like Christian with mortifications and mortgages of divers sorts and degrees, some suffering from the sting of bad bargains, others exulting in good ones; hunters and fishermen with gun and rod and leggins; blythe and jolly troubadours to whom all Shasta is romance; poets singing their prayers; the weak and the strong, unable or unwilling to bear mental taxation. But, whatever the motive, all will be in some measure benefited. None may wholly escape the good of Nature, however imperfectly exposed to her blessings. The minister will not preach a perfectly flat and sedimentary sermon after climbing a snowy peak; and the fair play and tremendous impartiality of Nature, so tellingly displayed, will surely affect the after pleadings of the lawyer. Fresh air at least will get into everybody, and the cares of mere business will be quenched like the fires of a sinking ship.

Possibly a branch railroad may some time be built to the summit of Mount Shasta like the road on Mount Washington. In the mean time tourists are dropped at Sisson's, about twelve miles from the summit, whence as headquarters they radiate in every direction to the so-called "points of interest"; sauntering about the flowery fringes of the Strawberry Meadows, bathing in the balm of the woods, scrambling, fishing, hunting; riding about Castle Lake, the McCloud River, Soda Springs, Big Spring, deer pastures, and elsewhere. Some demand bears, and make excited inquiries concerning their haunts, how many there might be altogether on the mountain, and whether they are grizzly, brown, or black. Others shout, "Excelsior," and make off at once for the upper snow fields. Most, however, are content with comparatively level ground and moderate distances, gathering at the hotel every evening laden with trophies—great sheaves of flowers, cones of various trees, cedar and fir branches covered with yellow lichens, and possibly a fish or two, or quail, or grouse.

But the heads of deer, antelope, wild sheep, and bears are conspicuously rare or altogether wanting in tourist collections in the "paradise of hunters." There is a grand comparing of notes and adventures. Most are exhilarated and happy, though complaints may occasionally be heard—"The mountain does not look so very high after all, nor so very white; the snow is in patches like rags spread out to dry," reminding one of Sydney Smith's joke against Jeffrey, "D—n the Solar System; bad light, planets too indistinct." But far the greater number

are in good spirits, showing the influence of holiday enjoyment and mountain air. Fresh roses come to cheeks that long have been pale, and sentiment often begins to blossom under the new inspiration.

The Shasta region may be reserved as a national park, with special reference to the preservation of its fine forests and game. This should by all means be done; but, as far as game is concerned, it is in little danger from tourists, notwithstanding many of them carry guns, and are in some sense hunters. Going in noisy groups, and with guns so shining, they are oftentimes confronted by inquisitive Douglas squirrels, and are thus given opportunities for shooting; but the larger animals retire at their approach and seldom are seen. Other gun people, too wise or too lifeless to make much noise, move slowly along the trails and about the open spots of the woods, like benumbed beetles in a snowdrift. Such hunters are themselves hunted by the animals, which in perfect safety follow them out of curiosity.

During the bright days of midsummer the ascent of Shasta is only a long, safe saunter, without fright or nerve strain, or even serious fatigue, to those in sound health. Setting out from Sisson's on horseback, accompanied by a guide leading a pack animal with provision, blankets, and other necessaries, you follow a trail that leads up to the edge of the timberline, where you camp for the night, eight or ten miles from the hotel, at an elevation of about ten thousand feet. The next day, rising early, you may push on to the summit and return to Sisson's. But it is better

to spend more time in the enjoyment of the grand scenery on the summit and about the head of the Whitney Glacier, pass the second night in camp, and return to Sisson's on the third day. Passing around the margin of the meadows and on through the zones of the forest, you will have good opportunities to get ever-changing views of the mountain and its wealth of creatures that bloom and breathe.

The woods differ but little from those that clothe the mountains to the southward, the trees being slightly closer together and generally not quite so large, marking the incipient change from the open sunny forests of the Sierra to the dense damp forests of the northern coast, where a squirrel may travel in the branches of the thick-set trees hundreds of miles without touching the ground. Around the upper belt of the forest you may see gaps where the ground has been cleared by avalanches of snow, thousands of tons in weight, which, descending with grand rush and roar, brush the trees from their paths like so many fragile shrubs or grasses.

At first the ascent is very gradual. The mountain begins to leave the plain in slopes scarcely perceptible, measuring from two to three degrees. These are continued by easy gradations mile after mile all the way to the truncated, crumbling summit, where they attain a steepness of twenty to twenty-five degrees. The grand simplicity of these lines is partially interrupted on the north subordinate cone that rises from the side of the main cone about three thousand feet from the summit. This side cone,

past which your way to the summit lies, was active after the breaking-up of the main ice-cap of the glacial period, as shown by the comparatively unwasted crater in which it terminates and by streams of fresh-looking, unglaciated lava that radiate from it as a center.

The main summit is about a mile and a half in diameter from southwest to northeast, and is nearly covered with snow and neve, bounded by crumbling peaks and ridges, among which we look in vain for any sure plan of an ancient crater. The extreme summit is situated on the southern end of a narrow ridge that bounds the general summit on the east. Viewed from the north, it appears as an irregular blunt point about ten feet high, and is fast disappearing before the stormy atmospheric action to which it is subjected.

At the base of the eastern ridge, just below the extreme summit, hot sulphurous gases and vapor escape with a hissing, bubbling noise from a fissure in the lava. Some of the many small vents cast up a spray of clear hot water, which falls back repeatedly until wasted in vapor. The steam and spray seem to be produced simply by melting snow coming in the way of the escaping gases, while the gases are evidently derived from the heated interior of the mountain, and may be regarded as the last feeble expression of the mighty power that lifted the entire mass of the mountain from the volcanic depths far below the surface of the plain.

The view from the summit in clear weather extends to an

immense distance in every direction. Southeastward, the low volcanic portion of the Sierra is seen like a map, both flanks as well as the crater-dotted axis, as far as Lassen's Butte⁶, a prominent landmark and an old volcano like Shasta, between ten and eleven thousand feet high, and distant about sixty miles. Some of the higher summit peaks near Independence Lake, one hundred and eighty miles away, are at times distinctly visible. Far to the north, in Oregon, the snowy volcanic cones of Mounts Pitt, Jefferson, and the Three Sisters rise in clear relief, like majestic monuments, above the dim dark sea of the northern woods. To the northeast lie the Rhett and Klamath Lakes, the Lava Beds, and a grand display of hill and mountain and gray rocky plains. The Scott, Siskiyou, and Trinity Mountains rise in long, compact waves to the west and southwest, and the valley of the Sacramento and the coast mountains, with their marvelous wealth of woods and waters, are seen; while close around the base of the mountain lie the beautiful Shasta Valley, Strawberry Valley, Huckleberry Valley, and many others, with the headwaters of the Shasta, Sacramento, and McCloud Rivers. Some observers claim to have seen the ocean from the summit of Shasta, but I have not yet been so fortunate.

The Cinder Cone near Lassen's Butte is remarkable as being the scene of the most recent volcanic eruption in the range. It is a symmetrical truncated cone covered with gray cinders and

⁶ An early local name for what is now known as Lassen Peak, or Mt. Lassen. In 1914 its volcanic activity was resumed with spectacular eruptions of ashes, steam, and gas.

ashes, with a regular crater in which a few pines an inch or two in diameter are growing. It stands between two small lakes which previous to the last eruption, when the cone was built, formed one lake. From near the base of the cone a flood of extremely rough black vesicular lava extends across what was once a portion of the bottom of the lake into the forest of yellow pine.

This lava flow seems to have been poured out during the same eruption that gave birth to the cone, cutting the lake in two, flowing a little way into the woods and overwhelming the trees in its way, the ends of some of the charred trunks still being visible, projecting from beneath the advanced snout of the flow where it came to rest; while the floor of the forest for miles around is so thickly strewn with loose cinders that walking is very fatiguing. The Pitt River Indians tell of a fearful time of darkness, probably due to this eruption, when the sky was filled with falling cinders which, as they thought, threatened every living creature with destruction, and say that when at length the sun appeared through the gloom it was red like blood.

Less recent craters in great numbers dot the adjacent region, some with lakes in their throats, some overgrown with trees, others nearly bare—telling monuments of Nature's mountain fires so often lighted throughout the northern Sierra. And, standing on the top of icy Shasta, the mightiest fire-monument of them all, we can hardly fail to look forward to the glare and glare of its next eruption and wonder whether it is nigh. Elsewhere men have planted gardens and vineyards

in the craters of volcanoes quiescent for ages, and almost without warning have been hurled into the sky. More than a thousand years of profound calm have been known to intervene between two violent eruptions. Seventeen centuries intervened between two consecutive eruptions on the island of Ischia. Few volcanoes continue permanently in eruption. Like gigantic geysers, spouting hot stone instead of hot water, they work and sleep, and we have no sure means of knowing whether they are only sleeping or dead.

IV. A Perilous Night on Shasta's Summit

Toward the end of summer, after a light, open winter, one may reach the summit of Mount Shasta without passing over much snow, by keeping on the crest of a long narrow ridge, mostly bare, that extends from near the camp-ground at the timberline. But on my first excursion to the summit the whole mountain, down to its low swelling base, was smoothly laden with loose fresh snow, presenting a most glorious mass of winter mountain scenery, in the midst of which I scrambled and reveled or lay snugly snowbound, enjoying the fertile clouds and the snow-bloom in all their growing, drifting grandeur.

I had walked from Redding, sauntering leisurely from station to station along the old Oregon stage road, the better to see the rocks and plants, birds and people, by the way, tracing the rushing Sacramento to its fountains around icy Shasta. The first rains had fallen on the lowlands, and the first snows on the mountains, and everything was fresh and bracing, while an abundance of balmy sunshine filled all the noonday hours. It was the calm afterglow that usually succeeds the first storm of the winter. I met many of the birds that had reared their young and spent their summer in the Shasta woods and chaparral. They were then on their way south to their winter homes, leading their

young full-fledged and about as large and strong as the parents. Squirrels, dry and elastic after the storms, were busy about their stores of pine nuts, and the latest goldenrods were still in bloom, though it was now past the middle of October. The grand color glow—the autumnal jubilee of ripe leaves—was past prime, but, freshened by the rain, was still making a fine show along the banks of the river and in the ravines and the dells of the smaller streams.

At the salmon-hatching establishment on the McCloud River I halted a week to examine the limestone belt, grandly developed there, to learn what I could of the inhabitants of the river and its banks, and to give time for the fresh snow that I knew had fallen on the mountain to settle somewhat, with a view to making the ascent. A pedestrian on these mountain roads, especially so late in the year, is sure to excite curiosity, and many were the interrogations concerning my ramble. When I said that I was simply taking a walk, and that icy Shasta was my mark, I was invariably admonished that I had come on a dangerous quest. The time was far too late, the snow was too loose and deep to climb, and I should be lost in drifts and slides. When I hinted that new snow was beautiful and storms not so bad as they were called, my advisers shook their heads in token of superior knowledge and declared the ascent of "Shasta Butte" through loose snow impossible. Nevertheless, before noon of the second of November I was in the frosty azure of the utmost summit.

When I arrived at Sisson's everything was quiet. The last of the

summer visitors had flitted long before, and the deer and bears also were beginning to seek their winter homes. My barometer and the sighing winds and filmy half-transparent clouds that dimmed the sunshine gave notice of the approach of another storm, and I was in haste to be off and get myself established somewhere in the midst of it, whether the summit was to be attained or not. Sisson, who is a mountaineer, speedily fitted me out for storm or calm as only a mountaineer could, with warm blankets and a week's provisions so generous in quantity and kind that they easily might have been made to last a month in case of my being closely snowbound. Well I knew the weariness of snow-climbing, and the frosts, and the dangers of mountaineering so late in the year; therefore I could not ask a guide to go with me, even had one been willing. All I wanted was to have blankets and provisions deposited as far up in the timber as the snow would permit a pack animal to go. There I could build a storm nest and lie warm, and make raids up and around the mountain in accordance with the weather.

Setting out on the afternoon of November first, with Jerome Fay, mountaineer and guide, in charge of the animals, I was soon plodding wearily upward through the muffled winter woods, the snow of course growing steadily deeper and looser, so that we had to break a trail. The animals began to get discouraged, and after night and darkness came on they became entangled in a bed of rough lava, where, breaking through four or five feet of mealy snow, their feet were caught between angular boulders. Here they

were in danger of being lost, but after we had removed packs and saddles and assisted their efforts with ropes, they all escaped to the side of a ridge about a thousand feet below the timberline.

To go farther was out of the question, so we were compelled to camp as best we could. A pitch pine fire speedily changed the temperature and shed a blaze of light on the wild lava-slope and the straggling storm-bent pines around us. Melted snow answered for coffee, and we had plenty of venison to roast. Toward midnight I rolled myself in my blankets, slept an hour and a half, arose and ate more venison, tied two days' provisions to my belt, and set out for the summit, hoping to reach it ere the coming storm should fall. Jerome accompanied me a little distance above camp and indicated the way as well as he could in the darkness. He seemed loath to leave me, but, being reassured that I was at home and required no care, he bade me good-bye and returned to camp, ready to lead his animals down the mountain at daybreak.

After I was above the dwarf pines, it was fine practice pushing up the broad unbroken slopes of snow, alone in the solemn silence of the night. Half the sky was clouded; in the other half the stars sparkled icily in the keen, frosty air; while everywhere the glorious wealth of snow fell away from the summit of the cone in flowing folds, more extensive and continuous than any I had ever seen before. When day dawned the clouds were crawling slowly and becoming more massive, but gave no intimation of immediate danger, and I pushed on faithfully, though holding

myself well in hand, ready to return to the timber; for it was easy to see that the storm was not far off. The mountain rises ten thousand feet above the general level of the country, in blank exposure to the deep upper currents of the sky, and no labyrinth of peaks and canyons I had ever been in seemed to me so dangerous as these immense slopes, bare against the sky.

The frost was intense, and drifting snow dust made breathing at times rather difficult. The snow was as dry as meal, and the finer particles drifted freely, rising high in the air, while the larger portions of the crystals rolled like sand. I frequently sank to my armpits between buried blocks of loose lava, but generally only to my knees. When tired with walking I still wallowed slowly upward on all fours. The steepness of the slope—thirty-five degrees in some places—made any kind of progress fatiguing, while small avalanches were being constantly set in motion in the steepest places. But the bracing air and the sublime beauty of the snowy expanse thrilled every nerve and made absolute exhaustion impossible. I seemed to be walking and wallowing in a cloud; but, holding steadily onward, by half-past ten o'clock I had gained the highest summit.

I held my commanding foothold in the sky for two hours, gazing on the glorious landscapes spread maplike around the immense horizon, and tracing the outlines of the ancient lava-streams extending far into the surrounding plains, and the pathways of vanished glaciers of which Shasta had been the center. But, as I had left my coat in camp for the sake of having

my limbs free in climbing, I soon was cold. The wind increased in violence, raising the snow in magnificent drifts that were drawn out in the form of wavering banners blowing in the sun. Toward the end of my stay a succession of small clouds struck against the summit rocks like drifting icebergs, darkening the air as they passed, and producing a chill as definite and sudden as if ice-water had been dashed in my face. This is the kind of cloud in which snow-flowers grow, and I turned and fled.

Finding that I was not closely pursued, I ventured to take time on the way down for a visit to the head of the Whitney Glacier and the "Crater Butte." After I had reached the end of the main summit ridge the descent was but little more than one continuous soft, mealy, muffled slide, most luxurious and rapid, though the hissing, swishing speed attained was obscured in great part by flying snow dust—a marked contrast to the boring seal-wallowing upward struggle. I reached camp about an hour before dusk, hollowed a strip of loose ground in the lee of a large block of red lava, where firewood was abundant, rolled myself in my blankets, and went to sleep.

Next morning, having slept little the night before the ascent and being weary with climbing after the excitement was over, I slept late. Then, awaking suddenly, my eyes opened on one of the most beautiful and sublime scenes I ever enjoyed. A boundless wilderness of storm clouds of different degrees of ripeness were congregated over all the lower landscape for thousands of square miles, colored gray, and purple, and pearl, and deep-glowing

white, amid which I seemed to be floating; while the great white cone of the mountain above was all aglow in the free, blazing sunshine. It seemed not so much an ocean as a land of clouds—undulating hill and dale, smooth purple plains, and silvery mountains of cumuli, range over range, diversified with peak and dome and hollow fully brought out in light and shade.

I gazed enchanted, but cold gray masses, drifting like dust on a wind-swept plain, began to shut out the light, forerunners of the coming storm I had been so anxiously watching. I made haste to gather as much wood as possible, snugging it as a shelter around my bed. The storm side of my blankets was fastened down with stakes to reduce as much as possible the sifting-in of drift and the danger of being blown away. The precious bread sack was placed safely as a pillow, and when at length the first flakes fell I was exultingly ready to welcome them. Most of my firewood was more than half rosin and would blaze in the face of the fiercest drifting; the winds could not demolish my bed, and my bread could be made to last indefinitely; while in case of need I had the means of making snowshoes and could retreat or hold my ground as I pleased.

Presently the storm broke forth into full snowy bloom, and the thronging crystals darkened the air. The wind swept past in hissing floods, grinding the snow into meal and sweeping down into the hollows in enormous drifts all the heavier particles, while the finer dust was sifted through the sky, increasing the icy gloom. But my fire glowed bravely as if in glad defiance of the

drift to quench it, and, notwithstanding but little trace of my nest could be seen after the snow had leveled and buried it, I was snug and warm, and the passionate uproar produced a glad excitement.

Day after day the storm continued, piling snow on snow in weariless abundance. There were short periods of quiet, when the sun would seem to look eagerly down through rents in the clouds, as if to know how the work was advancing. During these calm intervals I replenished my fire—sometimes without leaving the nest, for fire and woodpile were so near this could easily be done—or busied myself with my notebook, watching the gestures of the trees in taking the snow, examining separate crystals under a lens, and learning the methods of their deposition as an enduring fountain for the streams. Several times, when the storm ceased for a few minutes, a Douglas squirrel came frisking from the foot of a clump of dwarf pines, moving in sudden interrupted spurts over the bossy snow; then, without any apparent guidance, he would dig rapidly into the drift where were buried some grains of barley that the horses had left. The Douglas squirrel does not strictly belong to these upper woods, and I was surprised to see him out in such weather. The mountain sheep also, quite a large flock of them, came to my camp and took shelter beside a clump of matted dwarf pines a little above my nest.

The storm lasted about a week, but before it was ended Sisson became alarmed and sent up the guide with animals to see what had become of me and recover the camp outfit. The news spread that "there was a man on the mountain," and he must surely have

perished, and Sisson was blamed for allowing any one to attempt climbing in such weather; while I was as safe as anybody in the lowlands, lying like a squirrel in a warm, fluffy nest, busied about my own affairs and wishing only to be let alone. Later, however, a trail could not have been broken for a horse, and some of the camp furniture would have had to be abandoned. On the fifth day I returned to Sisson's, and from that comfortable base made excursions, as the weather permitted, to the Black Butte, to the foot of the Whitney Glacier, around the base of the mountain, to Rhett and Klamath Lakes, to the Modoc region and elsewhere, developing many interesting scenes and experiences.

But the next spring, on the other side of this eventful winter, I saw and felt still more of the Shasta snow. For then it was my fortune to get into the very heart of a storm, and to be held in it for a long time.

On the 28th of April 1875 I led a party up the mountain for the purpose of making a survey of the summit with reference to the location of the Geodetic monument. On the 30th, accompanied by Jerome Fay, I made another ascent to make some barometrical observations, the day intervening between the two ascents being devoted to establishing a camp on the extreme edge of the timberline. Here, on our red trachyte bed, we obtained two hours of shallow sleep broken for occasional glimpses of the keen, starry night. At two o'clock we rose, breakfasted on a warmed tin-cupful of coffee and a piece of frozen venison broiled on the coals, and started for the summit. Up to this time there was

nothing in sight that betokened the approach of a storm; but on gaining the summit, we saw toward Lassen's Butte hundreds of square miles of white cumuli boiling dreamily in the sunshine far beneath us, and causing no alarm.

The slight weariness of the ascent was soon rested away, and our glorious morning in the sky promised nothing but enjoyment. At 9 a.m. the dry thermometer stood at 34 degrees in the shade and rose steadily until at 1 p.m. it stood at 50 degrees, probably influenced somewhat by radiation from the sun-warmed cliffs. A common bumblebee, not at all benumbed, zigzagged vigorously about our heads for a few moments, as if unconscious of the fact that the nearest honey flower was a mile beneath him.

In the mean time clouds were growing down in Shasta Valley—massive swelling cumuli, displaying delicious tones of purple and gray in the hollows of their sun-beaten bosses. Extending gradually southward around on both sides of Shasta, these at length united with the older field towards Lassen's Butte, thus encircling Mount Shasta in one continuous cloud zone. Rhett and Klamath Lakes were eclipsed beneath clouds scarcely less brilliant than their own silvery disks. The Modoc Lava Beds, many a snow-laden peak far north in Oregon, the Scott and Trinity and Siskiyou Mountains, the peaks of the Sierra, the blue Coast Range, Shasta Valley, the dark forests filling the valley of the Sacramento, all in turn were obscured or buried, leaving the lofty cone on which we stood solitary in the sunshine between two skies—a sky of spotless blue above, a sky of

glittering cloud beneath. The creative sun shone glorious on the vast expanse of cloudland; hill and dale, mountain and valley springing into existence responsive to his rays and steadily developing in beauty and individuality. One huge mountain-cone of cloud, corresponding to Mount Shasta in these newborn cloud ranges, rose close alongside with a visible motion, its firm, polished bosses seeming so near and substantial that we almost fancied that we might leap down upon them from where we stood and make our way to the lowlands. No hint was given, by anything in their appearance, of the fleeting character of these most sublime and beautiful cloud mountains. On the contrary they impressed one as being lasting additions to the landscape.

The weather of the springtime and summer, throughout the Sierra in general, is usually varied by slight local rains and dustings of snow, most of which are obviously far too joyous and life-giving to be regarded as storms—single clouds growing in the sunny sky, ripening in an hour, showering the heated landscape, and passing away like a thought, leaving no visible bodily remains to stain the sky. Snowstorms of the same gentle kind abound among the high peaks, but in spring they not unfrequently attain larger proportions, assuming a violence and energy of expression scarcely surpassed by those bred in the depths of winter. Such was the storm now gathering about us.

It began to declare itself shortly after noon, suggesting to us the idea of at once seeking our safe camp in the timber and abandoning the purpose of making an observation of the

barometer at 3 p.m.,—two having already been made, at 9 a.m., and 12 m., while simultaneous observations were made at Strawberry Valley. Jerome peered at short intervals over the ridge, contemplating the rising clouds with anxious gestures in the rough wind, and at length declared that if we did not make a speedy escape we should be compelled to pass the rest of the day and night on the summit. But anxiety to complete my observations stifled my own instinctive promptings to retreat, and held me to my work. No inexperienced person was depending on me, and I told Jerome that we two mountaineers should be able to make our way down through any storm likely to fall.

Presently thin, fibrous films of cloud began to blow directly over the summit from north to south, drawn out in long fairy webs like carded wool, forming and dissolving as if by magic. The wind twisted them into ringlets and whirled them in a succession of graceful convolutions like the outside sprays of Yosemite Falls in flood time; then, sailing out into the thin azure over the precipitous brink of the ridge they were drifted together like wreaths of foam on a river. These higher and finer cloud fabrics were evidently produced by the chilling of the air from its own expansion caused by the upward deflection of the wind against the slopes of the mountain. They steadily increased on the north rim of the cone, forming at length a thick, opaque, ill-defined embankment from the icy meshes of which snow-flowers began to fall, alternating with hail. The sky speedily darkened, and just as I had completed my last observation and boxed my

instruments ready for the descent, the storm began in serious earnest. At first the cliffs were beaten with hail, every stone of which, as far as I could see, was regular in form, six-sided pyramids with rounded base, rich and sumptuous-looking, and fashioned with loving care, yet seemingly thrown away on those desolate crags down which they went rolling, falling, sliding in a network of curious streams.

After we had forced our way down the ridge and past the group of hissing fumaroles, the storm became inconceivably violent. The thermometer fell 22 degrees in a few minutes, and soon dropped below zero. The hail gave place to snow, and darkness came on like night. The wind, rising to the highest pitch of violence, boomed and surged amid the desolate crags; lightning flashes in quick succession cut the gloomy darkness; and the thunders, the most tremendously loud and appalling I ever heard, made an almost continuous roar, stroke following stroke in quick, passionate succession, as though the mountain were being rent to its foundations and the fires of the old volcano were breaking forth again.

Could we at once have begun to descend the snow slopes leading to the timber, we might have made good our escape, however dark and wild the storm. As it was, we had first to make our way along a dangerous ridge nearly a mile and a half long, flanked in many places by steep ice-slopes at the head of the Whitney Glacier on one side and by shattered precipices on the other. Apprehensive of this coming darkness, I had taken the precaution, when

the storm began, to make the most dangerous points clear to my mind, and to mark their relations with reference to the direction of the wind. When, therefore, the darkness came on, and the bewildering drift, I felt confident that we could force our way through it with no other guidance. After passing the "Hot Springs" I halted in the lee of a lava-block to let Jerome, who had fallen a little behind, come up. Here he opened a council in which, under circumstances sufficiently exciting but without evincing any bewilderment, he maintained, in opposition to my views, that it was impossible to proceed. He firmly refused to make the venture to find the camp, while I, aware of the dangers that would necessarily attend our efforts, and conscious of being the cause of his present peril, decided not to leave him.

Our discussions ended, Jerome made a dash from the shelter of the lava-block and began forcing his way back against the wind to the "Hot Springs," wavering and struggling to resist being carried away, as if he were fording a rapid stream. After waiting and watching in vain for some flaw in the storm that might be urged as a new argument in favor of attempting the descent, I was compelled to follow. "Here," said Jerome, as we shivered in the midst of the hissing, sputtering fumaroles, "we shall be safe from frost." "Yes," said I, "we can lie in this mud and steam and sludge, warm at least on one side; but how can we protect our lungs from the acid gases, and how, after our clothing is saturated, shall we be able to reach camp without freezing, even after the storm is over? We shall have to wait for sunshine, and when will it come?"

The tempered area to which we had committed ourselves extended over about one fourth of an acre; but it was only about an eighth of an inch in thickness, for the scalding gas jets were shorn off close to the ground by the oversweeping flood of frosty wind. And how lavishly the snow fell only mountaineers may know. The crisp crystal flowers seemed to touch one another and fairly to thicken the tremendous blast that carried them. This was the bloom-time, the summer of the cloud, and never before have I seen even a mountain cloud flowering so profusely.

When the bloom of the Shasta chaparral is falling, the ground is sometimes covered for hundreds of square miles to a depth of half an inch. But the bloom of this fertile snow cloud grew and matured and fell to a depth of two feet in a few hours. Some crystals landed with their rays almost perfect, but most of them were worn and broken by striking against one another, or by rolling on the ground. The touch of these snow-flowers in calm weather is infinitely gentle—glinting, swaying, settling silently in the dry mountain air, or massed in flakes soft and downy. To lie out alone in the mountains of a still night and be touched by the first of these small silent messengers from the sky is a memorable experience, and the fineness of that touch none will forget. But the storm-blast laden with crisp, sharp snow seems to crush and bruise and stupefy with its multitude of stings, and compels the bravest to turn and flee.

The snow fell without abatement until an hour or two after what seemed to be the natural darkness of the night. Up to the

time the storm first broke on the summit its development was remarkably gentle. There was a deliberate growth of clouds, a weaving of translucent tissue above, then the roar of the wind and the thunder, and the darkening flight of snow. Its subsidence was not less sudden. The clouds broke and vanished, not a crystal was left in the sky, and the stars shone out with pure and tranquil radiance.

During the storm we lay on our backs so as to present as little surface as possible to the wind, and to let the drift pass over us. The mealy snow sifted into the folds of our clothing and in many places reached the skin. We were glad at first to see the snow packing about us, hoping it would deaden the force of the wind, but it soon froze into a stiff, crusty heap as the temperature fell, rather augmenting our novel misery.

When the heat became unendurable, on some spot where steam was escaping through the sludge, we tried to stop it with snow and mud, or shifted a little at a time by shoving with our heels; for to stand in blank exposure to the fearful wind in our frozen-and-broiled condition seemed certain death. The acrid incrustations sublimed from the escaping gases frequently gave way, opening new vents to scald us; and, fearing that if at any time the wind should fall, carbonic acid, which often formed a considerable portion of the gaseous exhalations of volcanoes, might collect in sufficient quantities to cause sleep and death, I warned Jerome against forgetting himself for a single moment, even should his sufferings admit of such a thing.

Accordingly, when during the long, dreary watches of the night we roused from a state of half-consciousness, we called each other by name in a frightened, startled way, each fearing the other might be benumbed or dead. The ordinary sensations of cold give but a faint conception of that which comes on after hard climbing with want of food and sleep in such exposure as this. Life is then seen to be a fire, that now smoulders, now brightens, and may be easily quenched. The weary hours wore away like dim half-forgotten years, so long and eventful they seemed, though we did nothing but suffer. Still the pain was not always of that bitter, intense kind that precludes thought and takes away all capacity for enjoyment. A sort of dreamy stupor came on at times in which we fancied we saw dry, resinous logs suitable for campfires, just as after going days without food men fancy they see bread.

Frozen, blistered, famished, benumbed, our bodies seemed lost to us at times—all dead but the eyes. For the duller and fainter we became the clearer was our vision, though only in momentary glimpses. Then, after the sky cleared, we gazed at the stars, blessed immortals of light, shining with marvelous brightness with long lance rays, near-looking and new-looking, as if never seen before. Again they would look familiar and remind us of stargazing at home. Oftentimes imagination coming into play would present charming pictures of the warm zone below, mingled with others near and far. Then the bitter wind and the drift would break the blissful vision and dreary pains cover us like

clouds. "Are you suffering much?" Jerome would inquire with pitiful faintness. "Yes," I would say, striving to keep my voice brave, "frozen and burned; but never mind, Jerome, the night will wear away at last, and tomorrow we go a-Maying, and what campfires we will make, and what sunbaths we will take!"

The frost grew more and more intense, and we became icy and covered over with a crust of frozen snow, as if we had lain cast away in the drift all winter. In about thirteen hours—every hour like a year—day began to dawn, but it was long ere the summit's rocks were touched by the sun. No clouds were visible from where we lay, yet the morning was dull and blue, and bitterly frosty; and hour after hour passed by while we eagerly watched the pale light stealing down the ridge to the hollow where we lay. But there was not a trace of that warm, flushing sunrise splendor we so long had hoped for.

As the time drew near to make an effort to reach camp, we became concerned to know what strength was left us, and whether or no we could walk; for we had lain flat all this time without once rising to our feet. Mountaineers, however, always find in themselves a reserve of power after great exhaustion. It is a kind of second life, available only in emergencies like this; and, having proved its existence, I had no great fear that either of us would fail, though one of my arms was already benumbed and hung powerless.

At length, after the temperature was somewhat mitigated on this memorable first of May, we arose and began to struggle

homeward. Our frozen trousers could scarcely be made to bend at the knee, and we waded the snow with difficulty. The summit ridge was fortunately wind-swept and nearly bare, so we were not compelled to lift our feet high, and on reaching the long home slopes laden with loose snow we made rapid progress, sliding and shuffling and pitching headlong, our feebleness accelerating rather than diminishing our speed. When we had descended some three thousand feet the sunshine warmed our backs and we began to revive. At 10 a.m. we reached the timber and were safe.

Half an hour later we heard Sisson shouting down among the firs, coming with horses to take us to the hotel. After breaking a trail through the snow as far as possible he had tied his animals and walked up. We had been so long without food that we cared but little about eating, but we eagerly drank the coffee he prepared for us. Our feet were frozen, and thawing them was painful, and had to be done very slowly by keeping them buried in soft snow for several hours, which avoided permanent damage. Five thousand feet below the summit we found only three inches of new snow, and at the base of the mountain only a slight shower of rain had fallen, showing how local our storm had been, notwithstanding its terrific fury. Our feet were wrapped in sacking, and we were soon mounted and on our way down into the thick sunshine—"God's Country," as Sisson calls the Chaparral Zone. In two hours' ride the last snowbank was left behind. Violets appeared along the edges of the trail, and the chaparral was coming into bloom, with young lilies and larkspurs

about the open places in rich profusion. How beautiful seemed the golden sunbeams streaming through the woods between the warm brown boles of the cedars and pines! All my friends among the birds and plants seemed like OLD friends, and we felt like speaking to every one of them as we passed, as if we had been a long time away in some far, strange country.

In the afternoon we reached Strawberry Valley and fell asleep. Next morning we seemed to have risen from the dead. My bedroom was flooded with sunshine, and from the window I saw the great white Shasta cone clad in forests and clouds and bearing them loftily in the sky. Everything seemed full and radiant with the freshness and beauty and enthusiasm of youth. Sisson's children came in with flowers and covered my bed, and the storm on the mountaintop banished like a dream.

V. Shasta Rambles and Modoc Memories

Arctic beauty and desolation, with their blessings and dangers, all may be found here, to test the endurance and skill of adventurous climbers; but far better than climbing the mountain is going around its warm, fertile base, enjoying its bounties like a bee circling around a bank of flowers. The distance is about a hundred miles, and will take some of the time we hear so much about—a week or two—but the benefits will compensate for any number of weeks. Perhaps the profession of doing good may be full, but every body should be kind at least to himself. Take a course of good water and air, and in the eternal youth of Nature you may renew your own. Go quietly, alone; no harm will befall you. Some have strange, morbid fears as soon as they find themselves with Nature, even in the kindest and wildest of her solitudes, like very sick children afraid of their mother—as if God were dead and the devil were king.

One may make the trip on horseback, or in a carriage, even; for a good level road may be found all the way round, by Shasta Valley, Sheep Rock, Elk Flat, Huckleberry Valley, Squaw Valley, following for a considerable portion of the way the old Emigrant Road, which lies along the east disk of the mountain, and is deeply worn by the wagons of the early gold-seekers, many of

whom chose this northern route as perhaps being safer and easier, the pass here being only about six thousand feet above sea level. But it is far better to go afoot. Then you are free to make wide waverings and zigzags away from the roads to visit the great fountain streams of the rivers, the glaciers also, and the wildest retreats in the primeval forests, where the best plants and animals dwell, and where many a flower-bell will ring against your knees, and friendly trees will reach out their fronded branches and touch you as you pass. One blanket will be enough to carry, or you may forego the pleasure and burden altogether, as wood for fires is everywhere abundant. Only a little food will be required. Berries and plums abound in season, and quail and grouse and deer—the magnificent shaggy mule deer as well as the common species.

As you sweep around so grand a center, the mountain itself seems to turn, displaying its riches like the revolving pyramids in jewelers' windows. One glacier after another comes into view, and the outlines of the mountain are ever changing, though all the way around, from whatever point of view, the form is maintained of a grand, simple cone with a gently sloping base and rugged, crumbling ridges separating the glaciers and the snowfields more or less completely. The play of colors, from the first touches of the morning sun on the summit, down the snowfields and the ice and lava until the forests are aglow, is a never-ending delight, the rosy lava and the fine flushings of the snow being ineffably lovely. Thus one saunters on and on in the glorious radiance in utter peace and forgetfulness of time.

Yet, strange to say, there are days even here somewhat dull-looking, when the mountain seems uncommunicative, sending out no appreciable invitation, as if not at home. At such time its height seems much less, as if, crouching and weary, it were taking rest. But Shasta is always at home to those who love her, and is ever in a thrill of enthusiastic activity—burning fires within, grinding glaciers without, and fountains ever flowing. Every crystal dances responsive to the touches of the sun, and currents of sap in the growing cells of all the vegetation are ever in a vital whirl and rush, and though many feet and wings are folded, how many are astir! And the wandering winds, how busy they are, and what a breadth of sound and motion they make, glinting and bubbling about the crags of the summit, sifting through the woods, feeling their way from grove to grove, ruffling the loose hair on the shoulders of the bears, fanning and rocking young birds in their cradles, making a trumpet of every corolla, and carrying their fragrance around the world.

In unsettled weather, when storms are growing, the mountain looms immensely higher, and its miles of height become apparent to all, especially in the gloom of the gathering clouds, or when the storm is done and they are rolling away, torn on the edges and melting while in the sunshine. Slight rainstorms are likely to be encountered in a trip round the mountain, but one may easily find shelter beneath well-thatched trees that shed the rain like a roof. Then the shining of the wet leaves is delightful, and the steamy fragrance, and the burst of bird song from a multitude of thrushes

and finches and warblers that have nests in the chaparral.

The nights, too, are delightful, watching with Shasta beneath the great starry dome. A thousand thousand voices are heard, but so finely blended they seem a part of the night itself, and make a deeper silence. And how grandly do the great logs and branches of your campfire give forth the heat and light that during their long century-lives they have so slowly gathered from the sun, storing it away in beautiful dotted cells and beads of amber gum! The neighboring trees look into the charmed circle as if the noon of another day had come, familiar flowers and grasses that chance to be near seem far more beautiful and impressive than by day, and as the dead trees give forth their light all the other riches of their lives seem to be set free and with the rejoicing flames rise again to the sky. In setting out from Strawberry Valley, by bearing off to the northwestward a few miles you may see

"...beneath dim aisles, in odorous beds,
The slight *Linnaea* hang its twin-born heads,
And [bless] the monument of the man of flowers,
Which breathes his sweet fame through the northern bowers."

This is one of the few places in California where the charming *linnaea* is found, though it is common to the northward through Oregon and Washington. Here, too, you may find the curious but unlovable *darlingtonia*, a carnivorous plant that devours bumblebees, grasshoppers, ants, moths, and other insects, with insatiable appetite. In approaching it, its suspicious-looking

yellow-spotted hood and watchful attitude will be likely to make you go cautiously through the bog where it stands, as if you were approaching a dangerous snake. It also occurs in a bog near Sothern's Station on the stage road, where I first saw it, and in other similar bogs throughout the mountains hereabouts.

The "Big Spring" of the Sacramento is about a mile and a half above Sisson's, issuing from the base of a drift-covered hill. It is lined with emerald algae and mosses, and shaded with alder, willow, and thorn bushes, which give it a fine setting. Its waters, apparently unaffected by flood or drouth, heat or cold, fall at once into white rapids with a rush and dash, as if glad to escape from the darkness to begin their wild course down the canyon to the plain.

Muir's Peak, a few miles to the north of the spring, rises about three thousand feet above the plain on which it stands, and is easily climbed. The view is very fine and well repays the slight walk to its summit, from which much of your way about the mountain may be studied and chosen. The view obtained of the Whitney Glacier should tempt you to visit it, since it is the largest of the Shasta glaciers and its lower portion abounds in beautiful and interesting cascades and crevasses. It is three or four miles long and terminates at an elevation of about nine thousand five hundred feet above sea level, in moraine-sprinkled ice cliffs sixty feet high. The long gray slopes leading up to the glacier seem remarkably smooth and unbroken. They are much interrupted, nevertheless, with abrupt, jagged precipitous

gorges, which though offering instructive sections of the lavas for examination, would better be shunned by most people. This may be done by keeping well down on the base until fronting the glacier before beginning the ascent.

The gorge through which the glacier is drained is raw-looking, deep and narrow, and indescribably jagged. The walls in many places overhang; in others they are beveled, loose, and shifting where the channel has been eroded by cinders, ashes, strata of firm lavas, and glacial drift, telling of many a change from frost to fire and their attendant floods of mud and water. Most of the drainage of the glacier vanishes at once in the porous rocks to reappear in springs in the distant valley, and it is only in time of flood that the channel carries much water; then there are several fine falls in the gorge, six hundred feet or more in height. Snow lies in it the year round at an elevation of eight thousand five hundred feet, and in sheltered spots a thousand feet lower. Tracing this wild changing channel-gorge, gully, or canyon, the sections will show Mount Shasta as a huge palimpsest, containing the records, layer upon layer, of strangely contrasted events in its fiery-icy history. But look well to your footing, for the way will test the skill of the most cautious mountaineers.

Regaining the low ground at the base of the mountain and holding on in your grand orbit, you pass through a belt of juniper woods, called "The Cedars," to Sheep Rock at the foot of the Shasta Pass. Here you strike the old emigrant road, which leads over the low divide to the eastern slopes of the mountain. In a

north-northwesterly direction from the foot of the pass you may chance to find Pluto's Cave, already mentioned; but it is not easily found, since its several mouths are on a level with the general surface of the ground, and have been made simply by the falling-in of portions of the roof. Far the most beautiful and richly furnished of the mountain caves of California occur in a thick belt of metamorphic limestone that is pretty generally developed along the western flank of the Sierra from the McCloud River to the Kaweah, a distance of nearly four hundred miles. These volcanic caves are not wanting in interest, and it is well to light a pitch pine torch and take a walk in these dark ways of the underworld whenever opportunity offers, if for no other reason to see with new appreciation on returning to the sunshine the beauties that lie so thick about us.

Sheep Rock is about twenty miles from Sisson's, and is one of the principal winter pasture grounds of the wild sheep, from which it takes its name. It is a mass of lava presenting to the gray sage plain of Shasta Valley a bold craggy front two thousand feet high. Its summit lies at an elevation of five thousand five hundred feet above the sea, and has several square miles of comparatively level surface, where bunchgrass grows and the snow does not lie deep, thus allowing the hardy sheep to pick up a living through the winter months when deep snows have driven them down from the lofty ridges of Shasta.

From here it might be well to leave the immediate base of the mountain for a few days and visit the Lava Beds made famous by

the Modoc War. They lie about forty miles to the northeastward, on the south shore of Rhett or Tule⁷ Lake, at an elevation above sea level of about forty-five hundred feet. They are a portion of a flow of dense black vesicular lava, dipping northeastward at a low angle, but little changed as yet by the weather, and about as destitute of soil as a glacial pavement. The surface, though smooth in a general way as seen from a distance, is dotted with hillocks and rough crater-like pits, and traversed by a network of yawning fissures, forming a combination of topographical conditions of very striking character. The way lies by Mount Bremer, over stretches of gray sage plains, interrupted by rough lava slopes timbered with juniper and yellow pine, and with here and there a green meadow and a stream.

This is a famous game region, and you will be likely to meet small bands of antelope, mule deer, and wild sheep. Mount Bremer is the most noted stronghold of the sheep in the whole Shasta region. Large flocks dwell here from year to year, winter and summer, descending occasionally into the adjacent sage plains and lava beds to feed, but ever ready to take refuge in the jagged crags of their mountain at every alarm. While traveling with a company of hunters I saw about fifty in one flock.

⁷ Pronounced Too'-lay.

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