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TOM COMMITTA

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by  
Tom Comitta

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**On the Road Not Taken**

1 The to the Valley When on the long that to and alone, from to the Gulf of , with a - on , a , like the birds when they are from to . From the coast of crossed the gulf to , the there for a , intending to thence to the of , through the woods to the waters of the , and float down that river to the ocean. was to a for -- , for had little for so long a and had not yet fully from a in the swamps. to for a or to its and the Valley. the was before and was a , so it did not to which of the ' . by the , stopped in and then for the nearest out of . " where do to ?" the to had for this . "To that is ," . This . to be and the was out of the , so to the . So on the of , , for . It was the bloom- of the over the lowlands and coast ranges the of the Valley were drenched with sunshine, the air was with the of the meadow-larks, and the hills were so with flowers that they to be . was through these , the of the had . and were as yet, and in long wavering curves, knowing by that Valley lay to the and that it. The From The from the of the shining , a was that after as the have beheld. At lay the Valley of , and flowery, like a lake of sunshine, or , long, furred of yellow Compositoe. And from the of this golden flower- rose the , in , and so and so radiant, it not with light, wholly of it, like the of some celestial . Along the top and extending a down, was a pearl-gray of snow; below it a of blue and dark purple, marking the extension of the forests; and stretching along the base of the range a of rose-purple; these , from the blue sky to the yellow valley smoothly blending as they do in a rainbow, a of light . Then it to that the be , not the or Snowy Range, the Range

of Light. And after of and in the of it, in its of light, the white beams of the streaming through the , the radiance on the crystal rocks, the flush of the alpenglow, and the spray of waterfalls, it above the Range of Light. In of is upon it, nor to suggest the depth and of its . None of its forest- ridges to rise much above the to its . valley or river is , or of - of out as . the peaks, in array so high in the sky, in . the whole range long is furrowed with canyons 2000 to 5000 deep, in which once flowed glaciers, and in which flow and the bright rivers. Of The Canyons Though of such depth, these canyons are not gloom gorges, and . With rough passages here and there they are flowery to the snowy, icy ; mountain streets full of and light, graded and by the glaciers, and throughout their a of novel and --the that has yet been in the mountain ranges of the . In , in the of the flank, the canyons widen into valleys or like with meadows and groves and thickets of blooming bushes, while the lofty , varied in are fringed with ferns, flowering , shrubs of and tall evergreens and oaks that on small and tables, and with stream that chanting in chorus over the cliffs and through side canyons in falls of , to join the river that flow in , shining down the of each of . The Incomparable The and of these canyon valleys, and also the that their and on the , is the , in the basin of the River at an of 4000 above the of the sea. It is about long, half a to a , and a deep in the solid flank of the range. The are up of rocks, mountains in , from each by side canyons, and they are so sheer in front, and so and harmoniously on a , that the Valley, , like an hall or lighted from above. with can with

. rock in its to glow with . Some lean in ; , sheer or so for of , beyond their in , to and alike, , yet heedless, of on about . in stern, immovable , softly these rocks are , and and the they keep: their among groves and meadows, their in the sky, a flowers against their , in of water, of light, while the snow and waterfalls, the winds and avalanches and clouds shine and and about as the by, and myriads of small winged birds, bees, butterflies-- animation and to the air into . Down through the of the Valley flows the crystal , River of Mercy, quiet, reflecting lilies and trees and the onlooking rocks; and and of here and blending in , as if into this mountain mansion had choicest treasures, to into close and with . The To The Valley up the foothills to by of the or in before the railway was from the of up the river to the of , and become the forests and streams. At an of 6000 above the of the sea the silver firs are high, with branches whorled around the shafts in , and branch pinnate like a fern frond. The spruce, the yellow and sugar pines and brown-barked Libocedrus here their of and . The Sequoia is here, too, the of conifers, the of the . These trees are as in of and proportion as in stature--an of conifers that have yet been in the forests of the . Here is the tree-' paradise; the woods, dry and wholesome, letting in the light in shimmering of half sunshine, half shade; the air as as the air spicy and exhilarating; plushy fir-boughs for ' and to to sleep. On the highest ridges, over which these ways , the silver fir (*Abies magnifica*) the of the woods, ing forward in array to the very brink of the Valley on both sides, and beyond the Valley to a of from 8000 to 9000

above the of the sea. Thus it that , such faces of bare , is imded in forests, and the of pine, fir, spruce and libocedrus are also in the Valley , there are "big trees" (Sequoia gigantea) in the Valley or about the rim of it. The nearest are about and beyond the lower of the valley on small tributaries of the and Rivers. The : The From the of these forests the of the Valley used to be --a revelation in affairs that enriches ' forever. the Valley, overwhelmed with the of objects about , the to fix will be the , a waterfall on right. Its , where it leaps from the cliff, is about 900 above ; and as it sways and sings in the wind, clad in gauzy, sun-sifted spray, half falling, half floating, it and ; the hymns it sings the fateful beneath its soft . The from the upper edge of the cliff by the velocity the stream has acquired in descending a long slope above the of the fall. from the top of the rock-avalanche talus on the side, about above the of the fall, the under surface of the water is to be grooved and striated; and the sky is through the between rock and water, a novel and . Under the fall strikes on -topped slabs, a of about -thirds of the down from the top, and as the fall sways and forth with of motions among these -topped pillars, kissing and plashing notes as as -like detonations are , like those of the Fall, though on a smaller . The rainbows of the , or the spray- and foam-bows, are , the waters are dashed among of at the , producing of spray of the quality for , and also for a luxuriant of grass and - on the side of the talus, which lower down is planted with oak, laurel and willows. Of The Valley On the side of the Valley, opposite the , there is another fall, wider than the when the

snow is melting and than 1000 in , from the of the cliff where it out into the air to the of the rocky talus on which it strikes and is up into ragged . It is the Ribbon Fall or Virgin' Tears. During the spring it is a object, the suffocating blasts of spray that fill the recess in the which it a near . In , however when its feeble falls in a , it then for tears with the from a to the . Just beyond this flood the Rock, by as the of the Valley, is through the pine groves, forward beyond the of the in , a of . It is 3300 high, a , , glacier- of, the of of the and of the mountain ridges, unrivaled in and breadth and . Across the Valley from here, next to the , are the Rocks, 2700 high, a of yet . They are closely to , having been from the same mountain ridge by the Glacier when the Valley was in of formation. Next to the Rocks on the side towers the Rock to a of than 3000 , a of the glacial . opposite the are the , an mountain with fronting the Valley, above another, the topmost gable 4000 high. They were named for , of , the chief, captured here during the , at the of the of the Valley in 1852. up the Valley through meadow and grove, in the of these rocks, which to as , , , for a where about is so , the of the Fall is heard, and when arrive in front of the Rock it is revealed in its from base to , half a in , and to spring out into the Valley sunshine from the sky. this fall, the of its in the , cannot at , for the upper of the Valley is to , with the , the and on left; Glacier , with its , on the right; and in the , directly in front, looms or Half , the and of the rocks, rising in from flowery groves and meadows to a of 4750 . The Upper Canyons Here the Valley divides into

branches, the , , and Canyons, extending into the of the High , with worthy the relation they bear to . In the branch, a or from the Valley, is the Fall, high, of the of the choir, to as yet on of its rough, steep, boulder-choked canyon. Its of ice and snow lie in the and mountains of the , while its basin between its mountains and canyon is noted for the of its lakes and forests and moraines. to the Valley, and up the branch of Canyon, between the and Half , and in than an hour to Lake, the Cascade and Fall. Beyond the Fall, on the side of the canyon is the Ed-like rock Mount ; on the the wave of Clouds' , a in ; and between the Cascade with silvery plumes outspread on smooth glacier- of , a descent in of about 700 . Just beyond the , on the of Mount , there is an once used by on their across the range to , in the canyon above this there is of sort. Between Mount and Clouds' the canyon is only to , and it is so that hesitate to advise ers, to test their nerve and , to to through it. Beyond the will be encountered. A of lily and meadows occurs in filled-up lake basins among the rock-waves in the bottom of the canyon, and the surface of the has a smooth-wiped , and in reflects the sunbeams like , a to glacial , the canyon having been the of of the tributaries of the Glacier. About above the Valley to the Lake, and here the canyon terminates. A or above the lake the , a of stone, sewn from the rock, with sides, roof, gable, and pinnacles, fashioned and symmetrically like a of , and set on a -graded about 9000 high, as if in so a had also been that it be . From its and , of exion fail to charm. Its from its base to the ridge of the roof is about

2500 , and among the pinnacles that the front be of the upper basins of the and Rivers. Passing the descend into the , Valley, from which be to Mounts , , , and Lake, and to the peaks that rise above the meadows on the , and to the Big Canyon, with its of rock and falling, gliding, water. For these the meadows near the a . Near The Valley to and ascending the or branch of the Valley, by the River, within a to the and Falls, and high, pouring their white, waters in the midst of the novel and rock to be in the . the river beyond the of the Fall are into the Little , a valley like the in , and vegetation. It is about long, with to 2000 high, over , and the flowing through the meadows and groves of the bottom in , -embowered . Beyond this Little in the canyon, there are little , the highest a below the base of Mount , at an of about 7800 above the sea. To describe these, with their of furniture, and the of lofty peaks above , the of the avalanche and treasury of the snow, far beyond the bounds of a book. Nor can here consider the formation of these mountain -- the crystal rock were brought to light by glaciers up of crystal snow, is so on sees it. Of the small glacier lakes so of these upper , there are fewer than - in the basin of the branch, besides smaller pools. In the basin of the there are , in the basin and its branches , in the Creek basin , and in the or , a total of and lakes waters to at . So is the background of the Valley, so its relations to its widespreading . The same prevails in the of the adjacent . out of the Valley by the canyons, the rising from the brink of the : on the side to the of the Creek, the basin of which is noted for the of its



meadows and its forests of silver fir; on the side through the basin of the Creek to the ridge along the Canyon and the of the Range. Down The Creek In the Creek basin to be paved with and smooth, whaleback of in of --some only their crowns; rising high and above the girdling forests, singly or in . are only on side, bold outstanding fringed with shrubs and trees, and the surfaces given by the glacier that brought into . On the upper of the basin moraine have been deposited and on these , thrifty forests are . Lakes and meadows and small spongy bogs be here and there in the woods or in the recesses of Mount , while a are planted along the of the streams. the , fan- upper of the basin is with a of small rills that on their to their fall in the Valley, flowing on smooth in sheets thin as , diving under willows and laving their red roots, oozing through green, plushy bogs, plashing over small falls and down slanting , calming again, gliding through of smooth glacier meadows with sod of alpine agrostis mixed with blue and white and daisies, breaking, among rough boulders and fallen trees, resting in pools, flowing together until, , they to their fate with , like a full- river. At the crossing of the , about above the of the Fall, the stream is , and when the snow is melting rapidly in the spring it is about deep, with a of and a half an hour. This is about the of water that the Fall in and when there had been much snow the preceding ; it varies from to . The snow rapidly vanishes from the of the basin, which faces , and only a of the tributaries to perennial snow and ice in the shadowy on the slopes of Mount . The total descent by the stream from its highest

sources to its with the in the Valley is about 6000 , while the is only about , an fall of per . The of its lies between the sides of sunken and sing of the that are clustered and ed together like a of bossy cumulus clouds. Through this shining Creek goes to its fate, swaying and swirling with , and the of its mountain before it the dizzy edge of to fall 2600 into another , where , vegetation, inhabitants, are . Emerging from this canyon the stream glides, in lace-like , down a smooth incline into a small where it to and compose before the plunge. Then calmly, as if leaving a lake, it slips over the of the down another incline and out over the of the in a curve thick- with rainbow spray. The Fall Long ago before had this stream to its of Mount , was eager to the extreme to it behaved in flying so far through the air; after this and getting safely away have advised to steps. The incline down which the stream journeys so is so steep and smooth slip cautiously forward on and alongside the rushing water, which so near ' is very . to a yet farther, over a curving to a slight shelf on the extreme brink. This shelf, by the flaking off of a fold of , is about , just for a for ' heels. To it nerve- to slip to this narrow and poise on the edge of such so close to the confusing whirl of the waters; and after casting longing glances over the shining of the fall and to its psalm, not to to nearer, , , against reasonable judgment, did. Noticing some tufts of artemisia in a cleft of rock, filled mouth with the leaves, hoping their bitter taste to keep caution keen and giddiness. In spite of the little , got heels set, and worked sidewise or to a close to the out-plunging . Here the is down into the of the

bright throng of comet-like streamers into which the whole of the fall separates, or below the . So a of wildness, acting at close range while cut off from the beside, is terribly . A nerve- be obtained from a fissured of the edge of the cliff about yards to the of the fall. from this towards noon, in the spring, the rainbow on its to be up and mingled with the rushing comets until the fall is stained with , leaving white water . This is the of the from above, the huge steadfast rocks, the flying waters, and the rainbow light of the . The Fall is into an upper and a lower fall with a of falls and between , when viewed in front from the bottom of the Valley they as . So does this fall from the of the Valley, the to the to nearer , to realize it is near by than at a of or . A Ascent The in a up the of the leading to the of the Upper Fall are about as varied and as those along the Glacier . rises as if on wings. The groves, meadows, fern- and of the river , as if before; the in a as higher from to . The also changes rods in the surprising , although the earthquake talus and the bench on the of the over which the monotonous and commonplace as from the bottom of the Valley. Up with exhilaration, through shaggy fringes of laurel, ceanothus, glossy-leaved manzanita and -oak, from shadow to shadow across bars and of sunshine, the leafy openings frames for the Valley beheld through gem, and for the glimpses of the high peaks that in the . The higher the farther to be from the of the . Here a projecting hose grooved and rounded surface tells a of the when the Valley, filled with sunshine, was filled with ice, when the Glacier, flowing river-like from its distant ,

through it, crushing, , its deeper, and these rocks. Again cross a white, gully, the of rock avalanches or snow avalanches. Farther on to a stream slipping down the of the Cliff in lace-like strips, and dropping from to --too small to be a fall--trickling, dripping, oozing, a from of the upland meadow lying a little of the Valley rim, a after to the depths of the Valley . after a cool , evaporation , it gathers and sings like a bird, as the and the sun strikes its thin outspread on the , of its waters vanish ere the bottom of the Valley is . a , hanging- aloft on breezy heights to it its freshness and fullness of ; ferneries in shady , filled with Adiantum, Woodwardia, Woodsia, Aspidium, Pellaea, and Cheilanthes, rosetted and tufted and ranged in lines, daintily overlapping, thatching the cliffs with softest , some of the fronds to float on the warm moist air, connection with rock or stream. Nor is there lack of wherever they can a to cling to; lilies and mints, the cardinal mimulus, and glowing cushions of the golden bahia, with butterflies and bees and the small, humming that belong to . After the highest on the lower of the is it leads up into the deep recess by the fall, the of falling water to be in the Valley, or in the . When it comes in it within of ' , so in the spring is its and velocity, yet it is a of a away and to recede as . The of the about it is on a of , nobly with the fall and , though , like the cliffs about the Valley. In the an shadow is cast athwart the in front of the fall, and over the chaparral bushes that the slopes and of the to the , upward until the fall is wholly overcast, the between the shaded and illumined sections very in these near . Under this shadow, during the cool

following the breaking-up of the Glacial , dwelt a small glacier, of the that on this sun- side of the Valley after the trunk glacier had . It down a long winding through the narrow canyon on the side of the fall, and have a of the of the Valley; the lofty fall of ice and fall of water side by side, yet and . The coolness of the shadow and the dewy spray a for the ferns and grasses, and for the azalea bushes that grow here in profusion and bloom in , long after the warmer thickets down on the of the Valley have withered and gone to seed. close to the fall, and behind it at the base of the cliff, a venturesome be by the rock-shaking . The basin at the of the fall into which the directly pours, when it is not swayed by the wind, is about deep and to in . That it is not much deeper is surprising, when the and force of the fall is considered. the rock where the water strikes suffers than it were the descent than half as , since the is outspread, and much of its force is ere it the bottom-- received on the air as upon an elastic cushion, and borne outward and dissipated over a surface than yards . This surface, when the water is low, is intensely clean and . It is the raw, flesh of the mountain wholly untouched by the . In droughts when the snowfall of the preceding has been light, the fall is reduced to a mere of drops obscuring spray. Then safely of it and the crystal from beneath, each drop wavering and pulsing as it its through the air, and flashing off jets of light of ravishing . this is from the bottom of the Valley, like a . labor for as for , here as elsewhere. The Of The Fall During the of the spring the near of the fall is obtained from Fern on the side above the blinding spray at a of about above

the base of the fall. A of about 1400 from the Valley has to be , and there is , to fond of this will the ascent the . A narrow part of the extends to the side of the fall and of it, enabling to it as closely as . When the sunshine is streaming through the throng of comets, wasting, , , firmness and of their are revealed. At the top of the fall they to burst forth in spurts from some , throbbing mountain . and then throb forth a of solid water into the air far beyond the which rushes alone to the bottom of the fall with long streaming tail, like , while the , descending in clusters, mingle and their identity. they with amazing velocity and of though drowsy and in their movements when from a of a or . The of these comet-like are of solid water, and are dense white in like ed snow, from the they suffer in rushing through the air, the off the tail between the white lustrous threads and films of which faint, grayish pencilings , while the outer, sprays of water-dust, whirling in sunny eddies, are pearly gray throughout. At the bottom of the fall there is little distinction of . It is a hissing, clashing, seething, upwhirling of scud and spray, through which the light sifts in gray and purple while at when the sun strikes at the required angle, the whole and lawless, , striving is changed to brilliant rainbow hues, . The of the fall is the openly ; lower, the into which the waters are wrought are closely and voluminously veiled, while higher, towards the , the is and . at the bottom, in the boiling clouds of spray, there is , while the rainbow light , adding and to . This fall has far the richest, as as the powerful, of the falls of the Valley, its varying from the sharp hiss and

rustle of the wind in the glossy leaves of the -oak and the soft, sifting, hushing of the pines, to the loudest and roar of winds and among the crags of the peaks. The low bass, booming, reverberating , heard under circumstances or away are by the dashing and of heavy mixed with air upon projecting on the of the cliff, the on which are and another about above it. The of comets is at of high water, while the explosive, booming notes are , , by the wind, of the out from the of the , and the upon which at they are . the whole fall is swayed away from the front of the cliff, then suddenly dashed against it, or vibrated from side to side like a , rise to of and . The Fall The Fall is high and is ranked next to the in among the falls of the Valley. through the Little in , the river is into rapids on a moraine boulder- that crosses the lower of the Valley. Thence it pursues its to the of the fall in a rough, solid rock , dashing on side , heaving in heavy surging against , and swirling and swashing in a moment' . Thus, chafed and dashed to foam, overfolded and twisted, it plunges over the brink of the as if to escape into the air. before it the bottom it is pulverized yet by impinging upon a sloping of the cliff about half- down, thus it the whitest of the falls of the Valley, and altogether of the in the . On the side, close to its , a slab of projects over the brink, a for a , over its throng of streamers and plunging, into its intensely white bosom, and through the drifts of spray, to the river far below, its waters and rushing on again down the canyon in exultation into Emerald , where at it and gets for what lies before it. the of the correspond with the waters in and wildness. The glacier

of the canyon on , with the of the Glacier Ridge in front, a huge triangular basin, which, filled with the roaring of the falling river as if it be the hopper of of the of the gods in which the mountains were . The Fall The , about a below the , is high, a , , fall, and in and , with a hint of the of the or of the impetuous , chafed and twisted waters over the cliff to escape into the air, while its deep, booming, - reverberate over the . it is a with , it is than , closely and and heard. A ascends the cliff beside it and the at the to safely along the edge of the river as it comes from Emerald and to watch its waters, calmly bending over the of the , in a , in from green to purplish gray and white until dashed on a boulder talus. Thence from beneath its spray-clouds the tremendously river , its down the and deepest of its canyons in gray roaring rapids, to the ouzel, and below the of the , around the of the Half on its to the of the of the Valley. The Fall The in resembles the . The of water is than half as , it is about the same ( ) and its waters receive the same of in a rocky, . it is a very white and - fall. When it is in full springtime bloom it is by rocks that roughen the of the , this only to a of fluting and grooving of the , which has a . It is not so a fall as the upper , or so as the , or so airily and as the , nor does it so an outgush of snowy as the ; in the and of of its flowing it surpasses . of the of sunlight on falling water saw in or elsewhere on the of this fall. It was in the , when the leaf were ripe and the cliffs and were transfigured in the hazy golden air. had scrambled up its talus- canyon, oftentimes to breath and to admire the to be had there of the Half , and to enjoy

the extreme purity of the water, which in the motionless pools on this stream is ; the of the maples, dogwoods, Rubus tangles, , and the goldenrods and asters. The of the fall was low, and the spring and had waned to sifting, drifting gauze and thin-broidered of linked and arrowy lace-. When the of the fall sunbeams were glinting across its , leaving the of it in shadow; and on its illumined a of yellow of and were playing, flashing up and in large flame- , wavering at , then , rising and falling in with the shifting of the water. the of the changed not at . in clouds or flowers, on bird-wings or the lips of shells, it in . It was the divinely of yellow light beheld-- of ' gifts that perchance to once in a lifetime. The Minor Falls There are small falls and in the Valley. The notable are the Gorge Fall and , Fall and , Falls, the and the falls of Cascade and Tamarack Creeks, a or below the lower of the Valley. These are often . The are or ; although in they be and as . The intermediate falls in the gorge between the of the Lower and the base of the Upper Falls, by a deep pools and strips of rapids, and , tributary on the side a varied and than in the Valley, yet very of the Valley or of . available commands a of . The is obtained from the mouth of the gorge near the of the Lower Fall. The of the , together with of the tributary , are from this , in it the or of the descent is in of high water, the shelving rocks then slippery on of spray, if chance to slip when the water is low, only a bump or and a harmless splash be the penalty. part of the gorge, however, is to cautious ers. Though the dark gorge hall of these waters is flushed by the purple light of or

, it is warmed and cheered by the white light of , which, falling into so much foam and and spray of varying of , of rainbow . So filled, , is it with this light, at it to the of air. Laurel bushes shed into it from above and - oaks, those fearless , to seams and lean out over it with their fringing sprays and bright leaves. bird, the ouzel, loves this gorge and flies through it , or , , to on foam-where birds for their . have a gray squirrel down in the of it beside the water. of was along the rim of this gorge in of high water when the moon was full, to the lunar bows in the spray. For about a above Lake the Canyon is , and planted with fir, spruce and libocedrus, a grove, at the of which is the Fall. Though or , this is, think, the of the small falls. A above it, Creek comes down, white and foamy, over a pavement at an angle of about . In of high water this of rapids is , and is varied in a very by furrows that extend in the of its flow. These furrows, by the of the stream upon cleavage joints, vary in , are slightly sinuous, and have large boulders firmly wedged in here and there in narrow , rise, of , to a complicated of dashes, doublings, and upleaping in the swift . Just before it the of the fall the is , the left a drop of about in a , leafy, flowery, mossy nook, while the a cascade. The Fall in of high water is a object, a in front of the . The , 3000 high, are also spectacles when the snow is melting in the spring, by the of they have to mere streaks amid their surroundings. The Of The Rainbows The and Falls are for their rainbows; and visits to are often when the sun shines into the spray at the angle. amid the spray and foam and - mist rising from the falls and cataracts there is an

affluence and of bows to stay only a or . Both and , and , this light be wherever water is falling , ; the - of amid the of . In the bright spring the black- recess at the of the Lower Fall is with spray; and not does this span the dashing foam, the foam , the whole of it, beheld at a certain , to be , and drips and wavers from to , mingling with the of the adjacent trees, suggesting relationship to the rainbow. This is the and -like of to be in the Valley. Lunar rainbows or spray-bows also in the affluence of dashing, , hurraing, spring , their as as those of the sun and and obviously banded, though vivid. be at the of the Upper Fall, glowing amid the gloomy shadows and waters, whenever there is plenty of moonlight and spray. the secondary bow is at distinctly . The from which to is on Fern . For some after moonrise, at of high water, the arc has a span of about , and is set upright; planted in the boiling spray at the bottom, the in the edge of the fall, lower, of , and becoming upright as the moon rises higher. This arc of , glowing in mild, shapely in so weird and huge a chamber of shadows, and amid the and roar and tumultuous dashing of this -voiced fall, is of the and of the mountain evangels. Smaller bows be in the gorge on the between the Upper and Lower Falls. Once toward midnight, after a with the of the Upper Fall, along the edge of the gorge, in here and there, wherever the footing , to what learn of the aspects of the smaller falls that there. And down in an black, of the gorge, at the of the highest of the intermediate falls, into which the moonbeams were pouring through a narrow opening, saw a - spray-bow, in , spanning the from side to side, while white foam-

waves beneath the bow were springing up out of the dark into the moonlight like ghosts. An Unexpected A scene, not a , is by the moon as it through the edge of the Fall when is behind it. Once, after the - of the waters and the formation of the bow as the moon came round the and beams into the uproar, ventured out on the narrow bench that extends of the fall from Fern and to admire the dim-veiled of the . the gauzy threads of the fall' filmy border by having the light in front; and wishing to at the moon through the meshes of some of the denser of the fall, ventured to creep farther behind it while it was gently wind-swayed, thought about the consequences of its swaying to its after the wind- be removed. The was enchanting: , sounding above, beneath, around ; while the moon, in the very midst of the rushing waters, to be struggling to keep , on of the -varying and density of the water through which was , darkly veiled or eclipsed by a of thick-ed comets, flashing out through openings between their tails. was in fairyland between the dark and the throng of illumined waters, suffered sudden disenchantment; for, like the witch-scene in Alloway Kirk, "in an instant was dark." Down came a dash of comets, thin and harmless- in the , they solid and stony when they struck , like a mixture of choking spray and gravel and big hailstones. Instinctively dropping on knees, gripped an angle of the rock, curled up like a fern frond with ed against breast, and in this submitted as to bath. The to strike like cobblestones, and there was a confused noise of waters about ears--hissing, gurgling, clashing that were not heard as . The situation was quickly realized. '

thoughts in such of stress! was weighing chances of escape. the be swayed a away from the , or it yet closer? The fall was in flood and not so lightly its be swayed. fate to depend on a breath of the "idle wind." It was moved gently forward, the ceased, and was once by glimpses of the moon. fearing be at a disadvantage in too hasty a , moved only a along the bench to where a block of ice lay. wedged between the ice and the and lay downwards, until the steadiness of the light gave encouragement to rise and get away. Somewhat nerve-shaken, drenched, and benumbed, out to a , warmed , ran , before daylight, got an hour or of sleep, and awoke and , , not for hard midnight bath. And Owing to the trend of the Valley and its depth there is a difference between the climates of the and sides-- than between far apart; for the is in shadow during the , while the is in sunshine clear . Thus there is mild spring on side of the Valley while rules the . Far up the -side cliffs a nook be closely embraced by sun- rock- in which flowers bloom of the . butterflies be in these high when snow- are falling and a after they have ceased. Near the of the lower Fall in the ant lions lying in wait in their warm sand-cups, rock ferns unrolled, club mosses with - , the flowers of the laurel , and the honeysuckle rosetted with bright leaves; to be thinking about . on the shadow-side of the Valley the frost is very sharp. The during was 7 Fahrenheit. The - of had an at 9 A.M. of 32 , minimum 22 ; at 3 P.M. the was 40 30', the minimum 32 . Along the top of the , 7000 and 8000 high, the was, of , much lower. the difference in between the and sides is not so much to the sunshine

as to the heat of the preceding , stored up in the rocks, which rapidly melts the snow in contact with . For though sun-heat is stored in the rocks of the side also, the amount is much the rays fall obliquely on the in and on the . The upper branches of the streams are beneath a heavy of snow, and set in the spring in . Then, the , full and overflowing, breaks forth into , and the streams shining and falling in the warm sunny , shake into the mountain- a . The spring thaw in in the forest , and in and on the high , varying somewhat both in and fullness with the and the depth of the snow. Toward the of the streams are at their ebb, of the much above a whisper they slip and ripple through gravel and boulder- from to in the hollows of their , and drop in pattering like , and slip down and fall in sheets of , fold over fold. , however low their , it is in tone, in with the restful of the . The snow of the season that comes to the of the streams falls in or , is the latter part of , in the midst of yellow when the goldenrods and gentians of the glacier meadows are in their . This - snow, however, soon melts, the chilled flowers spread their petals to the sun, and the as as the streams are as if only a warm had fallen. The snow- that load the mountains to the for the set in before the or of . Of The Valley When the heavy stopped on the high mountains, down to den, not to "hole up" and sleep the white away; was out , and often , sleeping little, studying the so- and on , wading, , among the and , in alike that or : the brightness of frosty ; the sunbeams pouring over the white and crags into the groves waterfalls, kindling in the hoarfrost and spray; the forests and mountains in

their deep noon sleep; the - alpenglow; the stars; the moon, drawing the huge and lands by glowing white out of the shadows and breathless like an audience in , while the meadows at their sparkle with frost-stars like the sky; the darkness of -, when the lights are out; the clouds in depths the snow-flowers grow; the and of the kinds of , trees, birds, waterfalls, and snow-avalanches in the - . clear, frosty are heard booming and reverberating from side to side of the Valley at of a , soon after sunrise and continuing an hour or like a -. In in the Valley not out the source of this noise. thought of falling boulders, rock-blasting, Not till saw what like hoarfrost dropping from the side of the Fall was the problem explained. The is by the fall of sections of ice of spray that is on the of the cliff along the sides of the Upper Fan--a sort of crystal plaster, a or thick, racked off by the sunbeams, the Valley like cock-crowing, announcing the , shouting 'infinite and of hard in creating . Exploring An Ice Cone This spray gives rise to of the of the Valley--a cone of ice at the of the fall, or high. From the Fern its crater-like throat is , down which the fall plunges with deep, gasping explosions of comed air, and, after churned in the wormy , the water bursts forth through openings at its base, scourged and and to escape, while belching spray, spouted up out of the throat the descending , is wafted away in drifts to the adjacent rocks and groves. It is during the and of the ; only in spells of cold and cloudy is the continued through the . The part of the spray material falls in crystalline to its , like a small local snow-; a is on the of the cliff along the sides of the fall and stays there until expanded and cracked off in

, some of tons in , to be into the of the cone; while in windy, frosty , when the fall is swayed from side to side, the cone is drenched and the loose ice and spray-dust are firmly and together. Thus the of the wafts and curls of spray-dust, which in mild fall about as silently as dew, are held until sunrise to a store of heavy ice to reinforce the waterfall' -. While the cone is in of formation, higher and wider in the frosty , it like a smooth, -white hill; when it is wasting and breaking up in the spring its surface is with leaves, pine branches, stones, sand, , that have been brought over the fall, it like a heap of avalanche detritus. to learn what about the of this hill often it in and to it, an to cut steps. Once in the . At the base was met by a of spray and wind that and breathing . pushed on backward however, and soon the slope of the hill, where by close to the surface of the choking blast over and managed to crawl up with little . Thus to the , halting at to peer up through the whirls of spray at the veiled of the fall, or to listen to the beneath ; the whole hill was sounding as if it were a huge, bellowing drum. that by waiting until the fall was blown aslant be able to to the of the crater and get a of the ; a suffocating blast, half air, half water, followed by the fall of an of spray from a spot high up on the , quickly discouraged . The whole cone was jarred by the blow and some of the sped dangerously near; so a hasty , chilled and drenched, and lay down on a sunny rock to dry. Once during a wind- when saw that the fall was blown , leaving the cone dry, ran up to Fern hoping to a clear of the . at noon. the up the notes were so about that the of the fall was drowned by . Notwithstanding the



rocks and bushes were drenched by the wind-spray, the brink of the the mouth of the ice cone, was suffocated by the drenching, gusty spray, and was to seek. searched for some - in the from whence out at some opportune moment when the fall with its whirling spray and torn shreds of comet tails and , tattered was borne , as had it before, leaving the cliffs on the side and the ice hill bare in the sunlight. had not long to wait, for, as if ordered so for accommodation, the downrush of comets with their whirling swung and remained aslant for half an hour. The cone was admirably lighted and deserted by the water, which fell of the on the rocky slopes outside of the cone. The mouth into which the fall pours was, as near as , about in and and about and , which is about the shape and of the fall at its in its normal at this season. The crater-like opening was not a oval, like a huge coarse mouth. down the throat about or farther. The fall overhangs from a of above the base; the water strikes some from the base off the cliff, allowing for the accumulation of a of ice between the fall and the .

2 and Spring The and the Upper Falls, on of their and , are by winds. The winds that up the river canyon from the plains are very ; the winds do some very , worrying the falls and the forests, and hanging snow-banners on the comet-peaks. was awakened by -wind that was playing with the falls as if they were mere wisps of mist and the pines bow and with . The Valley had been a short before by a of snow-, and the and the cliffs and the round about were with its jewelry, the air was full of snow-dust, and pine branches, tassels and empty cones were flying in an flock. Soon after sunrise, when was a from flying branches, saw the Lower Fall thrashed and pulverized from top to bottom into of rainbow dust; while a above it the Upper Fall was suspended on the of the cliff in the of an inverted bow, silvery white and fringed with short wavering strips. Then, suddenly assailed by a blast, the whole of the fall was blown into thread and ribbons, and over the of the cliff whence it came, as if denied to the Valley. This of - was continued about or ; then another in the of the huge swirls and ows and upheaving of the gale allowed the baffled fall to and its tattered waters, and sink down again in its . As the , the gale gave of dying, excepting brief lulls, the Valley was filled with its roar, and the cloudless sky grew garish-white from myriads of minute, sparkling snow-spicules. In the , while watched the Upper Fall from the of a big pine tree, it was suddenly arrested in its descent at a about half- down, and was neither blown upward nor aside, held stationary in mid-air, as if gravitation below that in the path of its descent had ceased to act. The flood,

weighing of tons, was sustained, hovering, hesitating, like a bunch of thistledown, while and . this the amount of water was over the cliff and accumulating in the air, and widening and an cone about high, tapering to the top of the , the whole , jesting on the of the Wind. At , as if to on again, scores of arrowy comets shot forth from the bottom of the suspended as if escaping from outlets. The of was decked with long snow-streamers like , Clouds' was enveloped in drifting gossamer elms, and the Half loomed up in the garish light like a , clad in the same gauzy, wind- , while upward at over it smoke like a volcano. An And Flood as are these rocks and waters arrayed in robes, or chanting in - dress, they are when to with . Only once during the have lived in the Valley have it in full flood bloom. In the was ; the sunshine, the starry and , calling forth crops of frost-crystals on the pines and withered ferns and grasses for the sunbeams to sift through. In the of 16, when was on the meadows, a crimson cloud in solitary above the Rocks, its than its . It had a , bulging base like an sequoia, a smooth, tapering stem, and a bossy, down-curling like a mushroom; its parts were alike, of translucent crimson. what the of that , red cloud be, was up betimes next at the , as yet. Towards noon gray clouds with a , curly grain like bird'- maple to grow, and at fell, which soon changed to snow. Next the snow on the meadows was about deep, and it was falling in a , cordial . During the of the 18th heavy fell on the snow, as the was 34 , the snow- was only a above the bottom of the Valley, and had only to a little higher than the tops of the pines to get out of the - into

the snow-. The streams, instead of increased in by the , were , the snow sponged up part of their waters and choked the smaller tributaries. about midnight the suddenly rose to 42 , the snow- far beyond the Valley , and next was in a flood. The warm falling on the snow was at absor and held , and so also was that of the snow that the melted, and that was melted by the warm wind, until the whole of snow was saturated and became sludgy, and at slipped and from a slopes in extravagance, heaping and sing flood over flood, and plunging into the Valley in avalanches. Awakened by the roar, out and at once the character of the . The was pouring in and the wind at gale was doing it with the flood- . The of the from was streaked with falls-- roaring singers that out of . Eager to get into the midst of the , snatched a of for breakfast and ran out. The mountain waters, suddenly liberated, to be a jubilee. The rivaled the falls at stages, and across the Valley by the glimpses of falls than count; while the whole Valley throb and trembled, and was filled with an , , , sea-like roar. After a while with the of falls that were adorning and transfiguring rock in , to the upper meadows, where the Valley is widest, that be able to the on both sides, and thus . the river was over its and the meadows were flooded, an lake dotted with blue sludgy islands, while streams roared like lions across path and were forward rocks and logs with over where tiny giliias had been a short before. into the talus slopes, where these torrents were among earthquake boulders, managed to cross , and force up the Valley to Hutchings' , where crossed the river and waded to the of the upper meadow. Here of the falls

were in , the of waterfalls from . On that of the between Hutchings' and the there were falls plunging and booming from a of , the smallest of which have been heard away. In the neighborhood of Glacier there were ; between the and Fall, ; between and Falls, ; from to Mount , ; on the slopes of Half and Clouds' , Lake and Canyon, ; on the of Half , the Valley, ; - falls occupying the upper of the Valley, besides a host of silvery threads gleaming . In the Valley there have been upwards of a . As if celebrating some event, falls and in costume were down from basins, far and near; and, though newcomers, they behaved and sang as if they had lived here . - will the comet of the Fall and the laces of the and . In the falls of this jubilee the lace predominated, there was lack of -toned comets. The lower of of the was of white torrents with the between filled in with chained and beaded gauze of intricate , through the threads of which the purplish-gray rock be dimly . The above Glacier was complicated in , displaying that water be dashed and and into. Those on the between and the Fall were so they an , and these again were slightly from those about Canyon. The about the and , owing to the and cleavage of the cliffs of , was and . The were small, yet to that of mountain rocks a . In the midst of this the Fall was heard until about o'clock in the . Then was by a sudden crash as if a rock avalanche had to the of the roaring waters. This was the flood-wave of Creek, which had just delayed by the it had to , and by the choking snows of its widespread . , with tenfold increased beyond its springtime fullness, it took its as leader of the choir. And the winds, too, were in

, playing on tree and rock, surging against the huge and and outstanding battlements, deflected hither and thither and into a cascading, roaring in the canyons, and low bass, drumming swirls in the hollows. And these again, reacting on the clouds, cavernous spaces in their gray depths and forward the resulting detritus in ragged trains like the moraines of glaciers. These cloud movements in turn ed the of the winds, a body, and enabling to . As if endowed with , a detached cloud rise hastily to the very top of the as if on some errand, the faces of the cliffs, and then as suddenly descend to sweep imposingly along the meadows, its draggled fringes through the pines, the waving with infinite , or, gliding behind a grove or a tree, bringing it into , as it bowed and waved in rhythm. , as the clouds drooped and condensed or dissolved to misty gauze, half of the Valley be suddenly veiled, leaving here and there some lofty land cut off from connection with the , looming alone, dim, spectral, as if belonging to the sky--, like the falls, to part in the festival. Thus for and in measureless extravagance the went on, and spectators, at of a terrestrial . saw nobody out--bird, bear, squirrel, or . had before, and the and laborers were out of , about getting cold, and with from windows. The bears, , were in their canyon-boulder dens, the squirrels in their -hole nests, the grouse in close fir groves, and the small singers in the Canyon chaparral, to keep warm and dry. to , did not the water-ouuzels, though they have the . This was the waterfall flood saw--clouds, winds, rocks, waters, throbbing together as . And then to contemplate what was on with this in mountain ; the Big Canyon-- the white waters and the winds were

there! And in Valley and the ' River , and in the canyons and valleys from to the of the Kern, of flood waterfalls chanting together in jubilee dress.

3 Snow- As has been stated, the of the snow- that replenish the sets in before the of . Then, warned by the sky, -awake , together with the deer and of the birds, to the lowlands or foothills; and burrowing marmots, mountain beavers, wood-rats, and small mountain , into quarters, some of not again to the light of until the and resurrection of the spring in or . The fertile clouds, drooping and condensing in , to be thoughtfully the forests and streams with reference to the that lies before . At , their plans perfected, tufted flakes and starry crystals in , solemnly swirling and glinting to their ; and soon the throng fills the sky and darkness like . The heavy fall is from about to in depth then with of or of bright succeeds , heaping snow on snow, until to has fallen. on of its settling and , and waste from melting and evaporation, the depth actually at in the forest , or along the slopes of the peaks. After snow- avalanches, varying in , , and in the they ; some on the smooth slopes of the mountains are short and ; long and river-like in the side canyons of and in the canyons, flowing in and booming like waterfalls, while smaller fall from laden trees and rocks and lofty canyon . it is to stand in the of on clear after snow- and watch the throng of avalanches as they down, , to their , whispering, thrilling like birds, or booming and roaring like . The yellow pines stand and motionless as if under a spell until the sunshine to sift through their laden ; then the dense on the ends of the leafy branches to shift and fall, those from the upper branches the lower in , enveloping each tree in a hollow conical avalanche of ; while the relieved branches spring up and wave with

startling in the stillness, as if each tree was moving of its volition. of cloud- also be , over the of the cliffs from heights, descending at with avalanche until, into dust by , they float in front of the like clouds. Those which descend from the of are ; of the avalanches flow in like and waterfalls. When the snow gives on the upper slopes of their basins, a dull rushing, rumbling is heard which rapidly and to nearer with appalling intensity of tone. Presently the white flood comes bounding into over and sheer , from bench to bench, spreading and narrowing and off clouds of whirling dust like the spray of foaming cataracts. with waterfalls and , avalanches are short-lived, of lasting than a minute or , and the sharp, clashing so in falling water are wanting; in their low massy thundertones and purple-tinged whiteness, and in their dress, gait, and , they are much alike. Avalanches Besides these after- avalanches that are to be not only in the in the deep, sheer- canyon of the Range there are kinds, which be and avalanches, which further enrich the . The only about the Valley where be sure to the is on the slope of Clouds' . They are of heavy, compacted snow, which has been subjected to frequent alternations of freezing and thawing. They are on canyon and mountain-sides at an of from to , where the slopes are at an angle too low to shed off the dry snow, and which accumulates until the spring thaws sap their foundations and slippery; then away in the icy snow-dust. Those of Clouds' descend like thunderbolts for than a . The avalanches and the that mow swaths through the upper forests on mountain-sides about or high, where under the snow from to lies at for , allowing

trees, to a high, to grow on the slopes beneath . On their down through the woods they fail to a clean sweep, stripping off the soil as as the trees, clearing paths or yards from the timber to the glacier meadows or lakes, and piling their uprooted trees, downward, in rows along the sides of the gaps like moraines. and branches of the trees on the sides of the gaps record the depth of the overwhelming flood; and when to count the wood- on the uprooted trees learn that some of these avalanches only once in a or at wider . A Ride On An Avalanche snow avalanches and fewer know the exhilaration of riding on . In mountaineering have only avalanche ride, and the was so sudden and the came so soon had little to think of the that attends this sort of , though at such thinks . after a heavy snowfall, eager to as avalanches as and of the forest and peaks in their white robes before the sunshine had to , to by a side canyon to the top of a commanding ridge a little over above the Valley. On of the looseness of the snow that the canyon knew the require a long , some or as estimated; it proved far than had anticipated. of the sank deep, out of in some . After the whole to within half an hour or so of sundown, was below the . Then hopes were reduced to getting up in to the sunset. was not to get of sort that , for deep near the canyon , where the snow was strained, started an avalanche, and was swished down to the of the canyon as if by enchantment. The wallowing ascent had , the descent only about a minute. When the avalanche started threw on and spread to to keep from sinking. , though the grade of the canyon is very steep, it is not interrupted by large

to or plunging. On part of the was . was only moderately imded on the surface or at a little below it, and with a of -streaming dust particles; and as the whole beneath and about joined in the flight there was , though was tossed here and there and lurched from side to side. When the avalanche swedged and came to on top of the crumpled pile bruise or scar. This was a experience. Hawthorne says somewhere that has spiritualized ; though unspiritual smells, smoke, , attend . This flight in what be a milky of snow-stars was the spiritual and exhilarating of the of have experienced. Elijah' flight in a chariot of have been .

The Streams In In the spring, after the avalanches are down and the snow is melting , then the streams, from their to their falls, their . rills to the rivers, and soon after sunrise, and with until sundown; then they fail through the frosty of the . In this the of the upper branches of the river is doubled during the , rising and falling as as the tides of the sea. Then the overflows its , flooding the meadows, from to in some , to rise towards sundown just when the streams on the are to , the difference in of the rise and fall by the the upper flood streams have to before the Valley. In the warmest they to shout for and clash their upleaping waters together like clapping of ; racing down the canyons with white manes flying in exuberance of , compelling huge, sleeping boulders to wake up and join in their and , to their chorus. In , after the flood season, the streams are in their , crystal clear, deep and full not overflowing their --about as deep through the as the , the difference in so in spring too slight to be . the is cloudless and is at its brightest--lake, river, and

forest with their . of the are in full flower. The ouzels have their mossy huts and are their with the streams. In , , when the ' is about done and the fruits are ripe, birds and seeds out of their nests, and the is glowing like a benevolent , then the streams are at their ebb, with a memory left of their spring . The small tributaries that do not to the lasting snow of the peaks shrink to whispering, tinkling . After the snow is gone from the basins, excepting occasional thunders, they are fed only by small waters are evaporated in passing over of warm , and in their from to through the midst of boulders and sand. the rivers are so low they be forded, and their falls and , and , have waned to sheets of .

4 Snow Banners it is on the mountain tops, when they are laden with loose, dry snow and by a gale from the , that the is . The peaks along the of the Range are then decorated with resplendent banners, some of than a long, shining, streaming, waving with as if celebrating some surpassingly event. The snow of which these banners are falls on the high in , to a depth of or , from the fertile clouds not in large angled flakes such as oftentimes sees in , in crystals, for of the starry blossoms fall before they are ripe, while of those that as -petaled flowers are or by glinting and chafing against another on the down to their . This dry frosty snow is for the banner-waving celebrations by the of the wind. Instead of at once like that which falls into the depths of the forest, it is shoved and rolled and against boulders and out-jutting rocks, swirled in pits and hollows like sand in river , and into sparkling dust. And when winds this snow-dust in a loose on the slopes above the timber- they toss it into the sky and sweep it onward from peak to peak in the of smooth banners, or in cloudy drifts, to the velocity and of the wind, and the conformation of the slopes over which it is . While thus flying through the air a small escapes from the mountains to the sky as vapor; far the part is at locked in bossy overcurling cornices along the ridges, or in stratified sheets in the glacier cirques, some of it to replenish the small glaciers and remain and for before it is melted and down to the sea. , though snow-dust and -winds on the mountains, shapely banners are, for causes presently , . During the that in to high above the in kinds of to what was on outside; from lofty outlooks saw only banner- that

in . This was in the of 1873, when the snow-laden peaks were by a powerful norther. was awakened in the by a -wind and of had to to the of the Valley to enjoy it. torrents and avalanches from the wind-flood over were roaring down the side canyons and over the cliffs, arousing the rocks and the trees and the streams alike into hurraing , shaking the whole Valley into huge . Yet inconceivable as it to those ' wildness, the was its on the mountains in . A Scene had long been to some in the of the ice-hill at the of the Upper Fall, , as have explained, blinding spray had hitherto from getting sufficiently near it. This the body of the Fall was oftentimes torn into gauzy strips and blown along the of the cliff, leaving the ice-hill dry; and while to the top of Fern to seize so an to down its throat, the peaks of the came in over the of the , each waving a white glowing banner against the dark blue sky, as in and firm and in as if it were of . So and splendid a , of , smothered else and at once to scramble and wallow up the snow-choked Canyon to a ridge about 8000 high, commanding a of the along the of the Range, assured bannered ; nor was in the disappointed. the top of the ridge in or , and through an opening in the woods the wind- beheld came full in ; unnumbered mountains rising sharply into the cloudless sky, their bases solid white their sides plashed with snow, like ocean rocks with foam, and on a silvery banner, from to in , at the of attachment, and widening until about a or in breadth, and as shapely and as in as the banners of the , streaming and waving and clear in the sun-glow with to blur the they . Fancy beside on this Ridge. There is a garish

glitter in the air and the gale drives over, of its violence, for are out through a opening in the woods, as through a window. In the there is a forest of silver fir their warm yellow-green, and the snow beneath with their plumes, plucked off by the ; and beyond , ridgy, canyon-furrowed, -dotted , darkened here and there with of pines, behold the lofty snow laden mountains in array, waving their banners with jubilant as if shouting for . They are away, not nearer, for is and the whole is in its right proportions, like a ting on the sky. And after this , sharply the ribs and and of the mountains are , excepting the veiled by the banners; and nobly the banners are waving in with the throbbing of the wind flood; trimly each is attached to the very of its peak like a streamer at a mast-; bright and glowing white they are, and their fading fringes are penciled on the sky! solid white and opaque they are at the of attachment and filmy and translucent toward the , so that the parts of the peaks which they are streaming dim as if through a of . And some of the longest of the banners on the highest peaks are streaming from peak to peak across intervening notches or , while overlap and hide another. As to their formation, that the causes of the and perfection of those are at are the and force of the wind, the of snow-dust, and the of the sides of the peaks. In , the sides are concave in both their horizontal and sections, having been into this shape by the glaciers that in the shadows, while the sun- sides, having been subjected to this of glaciation, are convex or . It is , , not only that the wind move with velocity and steadiness to a sufficiently copious and stream of snow-dust, that it

from the . banner is hung on the peaks by the wind. Had the gale today blown from the , leaving the , only swirling, interfering, cloudy drifts have been ; for the snow, instead of spouted up and over the tops of the peaks in condensed to be out as streamers, have been over the convex slopes from peak to peak like white pearly fog. It , , that shadows in part not only the of lofty ice mountains, also those of the snow banners that the winds hang upon . Earthquake The avalanche taluses, against the at of a or , are among the and of the secondary of the Valley. They are from about to high, up of huge, , -, unshifting boulders, and instead of from the cliffs like taluses, they were suddenly and by a earthquake that at ago. And though thus hurled into in a seconds or , they are the changeable of the soil-. Excepting those which were launched directly into the of swift rivers, of their wedged and boulders has moved since the of their ; and though up of huge of , of from to cube, weighing of tons with only a small chips, trees and shrubs out to and thrive on and herbaceous --draperia, collomia, zauschneria, , soothing and coloring their slopes with and groves. was long in doubt on some concerning the origin of those taluses. Plainly they were from the cliffs above , they are of the of on the , the rough surface of which contrasts with the rounded, glaciated, unfractured parts. It was , too, that instead of up of material and from the cliffs like taluses, of had been suddenly in a avalanche, and had not been increased in during the or , for trees or are on , some at the top close to the a bruise or branch, that a boulder had fallen among . Furthermore, these taluses throughout the Range by



the trees and lichens on to be of the same . the thus pointed to a earthquake. for left the , and went on from canyon to canyon, observing again and again; measuring the heights of taluses throughout the Range on both flanks, and the in the of their surface slopes; studying the their boulders had been assorted and and brought to , and their in with the cleavage joints of the cliffs from whence they were , cautious about up . at doubt as to their formation . At half- o'clock of a moonlit in , was awakened by a earthquake, and though had before a of this sort, the thrilling not be , and ran out of , both and frightened, shouting, "A earthquake! A earthquake!" sure was to learn . The were so violent and varied, and another so closely, that had to balance fully in as if on the deck of a among waves, and it impossible that the high cliffs of the Valley escape shattered. In , feared that the sheer-fronted Rock, towering above , be shaken down, and took of a large yellow pine, hoping that it protect from at the smaller boulders. For a minute or the became and violent--flashing horizontal thrusts mixed with a twists and battering, explosive, upheaving jolts,-as if were wrecking , and getting ready to a . was convinced before a boulder had fallen that earthquakes were the talus-makers and positive proof soon came. It was a moonlight , and was heard for the minute or so, save low, , underground, bubbling rumblings, and the whispering and rustling of the agitated trees, as if were breath. Then, suddenly, out of the and there came a roar. The Eagle Rock on the , about a half a up the Valley, gave and saw it falling in of the boulders had so long been studying, pouring to the Valley in a curve

luminous from , a terribly spectacle--an arc of glowing, , span, as in and as in as a rainbow in the midst of the , roaring rock-. The was so tremendously deep and and , the whole like a to have at a and to be calling to planets. In to of the of this it to that if the of the had heard were condensed into roar it not this rock-roar at the of a mountain talus. Think, then, of the roar that arose to at the of the of canyon-taluses throughout the and breadth of the Range! The were soon over, and eager to the -born talus ran up the Valley in the moonlight and clim upon it before the huge , after their fiery flight, had to . They were settling into their , chafing, grating against another, groaning, and whispering; was in a stream of small pattering down the of the cliff. A cloud of dust particles, lighted by the moon, floated out across the whole breadth of the Valley, a that lasted until after sunrise, and the air was filled with the of crushed spruces from a grove that had been down and like weeds. After the to ran across the meadow to the river to in what it was flowing and was to that \_down\_ the Valley was down. Its waters were muddy from of its having given , it was flowing around its curves and over its ripples and shallows with and . The mud soon be cleared away and the raw slips on the be the only record of the shaking it suffered. The Upper Fall, glowing white in the moonlight, to know of the earthquake, in or , as far as or . After a startling shock, about half- o'clock, the continued to tremble gently, and smooth, hollow rumbling , not distinguishable from the rounded, bumping, explosive of the falls, came from deep in the mountains in a .

The fled from their huts to the of the Valley, fearing that angry were to ; and, as afterward learned, of the , were the at their village on Bull Creek away, were so terrified that they ran into the river and ,--getting clean to their prayers, , or to . , of the with was , "What the shake and so much?" only shook and , " , " and to to hope that was to be spared. In the the white settlers in front of the Hutchings comparing notes and meditating flight to the lowlands, as sorely frightened as the . Shortly after sunrise a low, blunt, rumbling, like distant , was followed by another of , which, though not so as the , the cliffs and tremble like jelly, and the big pines and oaks thrill and swish and wave their branches with startling . Then the talkers were suddenly , and the solemnity on their faces was . in of these , a somewhat speculative thinker with had often conversed, was a firm r in the cataclysmic origin of the Valley; and jokingly remarked that tumble-down-and-engulfment hypothesis soon be proved, since these underground rumblings and shakings be the fore of another - cataclysm, which double the depth of the Valley by swallowing the , leaving the ends of the and dangling or in the air. Just then came the of , and it was to and became. belief in the of a abyss, into which the suspended of the Valley and the and battlements of the at moment roaring down, mightily troubled . To fears and laugh into like reasonable faith, , " , up; smile a little and clap , that is trotting on knee to amuse and ." the - meant joke irreverent and utterly failed, as if only prayerful terror rightly belong to the - business. after the were over do to reassure , on the , handed the

keys of little store to keep, saying that with a companion of like was to the lowlands to stay until the fate of , trembling was settled. In vain rallied on their fears, calling to the of the of Valley , the very and solidest in the , and likely to collapse and sink than the sedimentary lowlands to which they were for safety; and saying that in case they sometime have to , and so a burial was not to be slighted. they were too seriously panic-stricken to get from . During the shock the trees were so violently shaken that the birds flew out with frightened cries. In , robins flying in terror from a leafless oak, the branches of which swished and quivered as if struck by a heavy battering-ram. were the flashing and of the elastic needles of the pines in the sunlight and the waving up and down of the branches while the trunks . There was swaying, waving or swirling as in wind-, , jerks, and at the heavy tasseled branches moved as if they had been ed down against the trunk and suddenly let , to spring up and vibrate until they came to again. Only the owls to be . Before the rumbling echoes had away a hollow-voiced owl to hoot in philosophical tranquillity from near the edge of the talus as if had , although , was to know what the noise was about. "hoot-too-hoot-too-" have meant, "what' a' the steer, kimmer?" It was long before the Valley . The rocks trembled or for over , and kept a bucket of water on table to learn what of the movements. The blunt in the depths of the mountains was followed by sudden jarring, horizontal thrusts from the , often by twisting, upjolting movements. than a after the shock, when was on a fallen tree up the Valley near Lamon' , heard

a bubbling from the of Canyon Carlo, a large intelligent St. Bernard dog beside astonished, and intently in that with mouth and uttered a low \_Wouf!\_ as if saying, "What' that?" have that it was not , though like it. The air was , not the faintest breath of wind , and a , , sunny pervaded , in the midst of which came that subterranean . Then, while gazed and listened, came the , as if some had shaken the . After the sharp horizontal jars away, they were followed by a rocking and undulating of the so that Carlo at the log on which was to was shaking it. It was the season of flooded meadows and the pools about , as sheets of , were suddenly thrown into low ruffling waves. Judging by its , this , or Inyo earthquake, as it is , was as with the that gave rise to the talus of the Range and did so much for the canyon . , so in , then created, as have , a set of , by the mountains a shake-- not only the high peaks and cliffs, the streams. As soon as these rock avalanches fell the streams to ; for in of boulders were hurled into their , roughening and half-damming , compelling the waters to surge and roar in rapids where before they glided smoothly. Some of the streams were ; driftwood, leaves, , filling the interstices between the boulders, thus rise to lakes and ; and these again, after filled in, were changed to meadows, through which the streams are silently meandering; while at the same some of the taluses took the of meadows and groves. Thus rough were smooth, and smooth rough. , on the whole, by what at confounded and , the were ; for talus was with groves and , and a proportioned and base for the cliffs. In this of , boulder is and and put in its thoughtfully than are the stones of . If for a

moment are to these taluses as mere draggled, chaotic dumps, to the top of of , and down haggling, puttering hesitation, jumping from boulder to boulder with . will then playing a tune, and quickly the and poetry of these rock piles--a lesson; and ' wildness tells the same --the and outbursts of earthquakes, volcanoes, geysers, roaring, waves and , the of sap in , of sort--each and are the - - of' .

5 The Trees of the Valley The of the Valley trees is the yellow pine (*Pinus ponderosa*). It attains its dimensions on of water-, coarsely-stratified moraine material, between the talus slopes and meadows, dry on the surface, -watered below and where not too closely in groves the branches to the , to 220 in . The that have is alone opposite the Rock, or a little to the of it. It is a little over in and about 220 high. these trees, when they are waving and in worship in wind-, is a experience. Ascending from the branch to the topmost is like up stairs through a blaze of white light, needle thrilling and shining as if with religious ecstasy. Unfortunately there are sugar pines in the Valley, though in the ' they are in . The incense cedar (*Libocedrus decurrens*) with cinnamon- bark and yellow-green is of the of the trees. Some of are 150 high, from to in , and they are out of as among the yellow pines. Their bright brown shafts and towers of , frondlike branches a of the throughout the . In midwinter, when of the trees are asleep, this cedar puts forth its flowers in ,--the pistillate pale green and inconspicuous, the staminate bright yellow, tingeing the branches and the trees as they stand in the snow like goldenrods. The branches, outspread in plumes and, fronded, sweep downward and outward, those near the top, which ; the , in youth and , droop to the , overlapping another, shedding off and snow like shingles, and tents for birds and . This tree lives than a and is worthy its beside the pines and the spruce. The know of the spruce, about in , are at the of the Liberty Cap near the Fall, and on the moraine of the small glacier that in the shady Canyon. After the

conifers, the of the trees are the oaks, ; the -oak (*Quercus agrifolia*), with black trunks, a thickness of from to , spreading branches and bright deeply-scalloped leaves. It the part of the sandy of the upper of the Valley, and is the that the acorns so highly by the and woodpeckers. The is the mountain -oak, or goldcup oak (*Quercus chrysolepis*), a of a tree, on the earthquake taluses and of the sunny of the Valley. In , , it is the oak of oaks, a tree. The and in the Valley is near the of the Fall, a spot on of the rough of getting to it. It is planted on huge boulders and yet to moisture and from this craggy soil to in . It is in , above a large branch between and in that has been off. The trunk to be up of craggy boulders like those on which it , about the same as the mossy, lichened boulders and about as rough. moss- caves near the into the trunk, on the side, the on the , , seats. The of the branches is and in , and some of the long pendulous branchlets droop over the stream at the of the fall where it is gray with spray. The leaves are glossy yellow-green, in from the wind from the fall. It is a to dream in, with falls, , cool rocks with hypnum thick; shaded with maple, dogwood, alder, willow; clumps of lady-ferns where ; light filtering through translucent leaves; oaks high; lilies high in a filled lake basin near by, and the libocedrus groves and tallest ferns and goldenrods. In the river canyon below the Fall and on the shady side of the Valley there are a groves of the silver fir (*Abies concolor*), and forests of the round the rim of the Valley. On the tops of the is the , - red cedar (*Juniperus occidentalis*). It like a forest here, out and in the wind, by slight joints to the rock, with

a handful of soil in of it, to depend on snow and air for nourishment, and yet it has maintained on this diet for or . The hereabouts are from to in and in . The river-side trees are poplar, alder, willow, -leaved maple, and Nuttall' flowering dogwood. The poplar (*Populus trichocarpa*), often balm-of-Gilead from the on its buds, is a tall tree, towering above its and embowering the of the river. Its turns bright yellow in the fall, and the - sunshine sifts through it in over the -gliding waters when they are at their ebb. Some of the involucre of the flowering dogwood to in , and the whole tree when in flower as if with snow. In the spring when the streams are in flood it is the whitest of trees. In the leaves become bright crimson, a than the flowers. The -leaved maple and mountain maple are in the cool canyons at the of the Valley, spreading their branches in over the foaming streams. Scattered here and there are a trees, small--the mountain mahogany, cherry, chestnut-oak, and laurel. The nutmeg (*Torreya californica*), a evergreen belonging to the yew , small groves near the a or below the of the Valley.

6 The Forest Trees in For the of the - of into the mountains beyond the Valley, a sketch of the forest trees in will be useful. The are in zones and sections, which brings the forest as a whole within the comprehension of . These are as controlled by the climates of elevations, by soil and by the of each in and possession of the ; and so are these relations the er be at a loss in determining within a above sea by the trees alone; for, notwithstanding some of the range upward for and another or , yet those possessing the range are available in measuring the ; inasmuch as they on with in altitude. the lower fringe of the forest of oaks and Sabine pines, the trees grow so far apart that not -twentieth of the surface of the is in shade at noon. After or towards and an ascent of from to the lower of the pine , of sugar pine, yellow pine, incense cedar and sequoia. Next to the silver-fir and lastly to the upper pine , which sweep up to the of the peaks in a fringe, to a of from to . That this of depends on as affected by above the sea, is at once, there are harmonies that become only after observation and . of the of these is the of the forest in long curving bands, braided together into lace-like in some and out-spread in . The key to these arrangements is the of glaciers; where they flowed the trees followed, their along the sides of canyons, over ridges, and high plateaus. The cedar of Lebanon, Sir Hooker, occurs upon of the moraines of an glacier. the forests of the are upon moraines, moraines vanish like the glaciers that . that falls upon wastes , away their decaying, disintegrating material into formations, until they are longer recognizable their transitional

down the Range from those in of formation in some through those that are and and by vegetation and kinds of -glacial weathering. It , , that the forests indicate the extent and of moraines as as they do of . will have in knowing the Nut Pine (*Pinus Sabiniana*), for it is the conifer met in ascending the Range from the , springing up here and there among oaks and thickets of ceanothus and manzanita; its extreme upper about 4000 above the sea, its lower about from to 800 . It is for its loose, airy, -branching habit and thin gray . Full- are from to in and from to in . The trunk divides into or branches about or from the that, after bearing away from another, up and . Their , grayish needles are from to long, and to droop, with the , dark- trunk and branches. tree of so in its body has so thin and pervious to the light. The cones are from to long and about as large in thickness; chocolate-brown in and by , down-curving which terminate the . the little Squirrel can . the trees like bears and off the cones or recklessly cut off the fruitful branches with hatchets, while the squaws and roast until the sufficiently to allow the hard-shell seeds to be out. The little *Pinus attenuata* is at an of from to 3000 , in close groves and . It is and , although trees that chance to stand alone out very long, curved branches, a to the grove . The is of the same gray-green as that of the nut pine, and is about as loosely, so that the body of the tree is by it. At the of or it to bear cones in whorls on the , and as they fall off, the trunk is soon picturesquely dotted with . Branches also soon become fruitful. The of the tree is about or in and to in . The cones are about long and with a sort

of varnish and , rendering impervious to moisture. can fail to the adaptation of this pine to the - where alone it is . After a has scorched and it the cones and the beneath it is then with the seeds during its whole . Then up spring a of bright, seedlings, for ashes in . The Sugar Pine, Of Pine Trees Of the ' or of pine trees, the Sugar Pine (*Pinus Lambertiana*) is , , not merely in in lordly and . In the it at an of from 3000 to 7000 above the sea and attains at a of about 5000 . The are about 220 high and from to in from the , though some patriarch be met here and there that has or of and attained a thickness of or , and in fiber. The trunk is a smooth, round, -tapered shaft, and as if turned in a lathe, , purplish brown in and with tufts of a yellow lichen. Toward the of this long branches sweep outward and downward, a palm-like , far than palm beheld. The needles are about long in fascicles of , and in close tassels at the ends of branchlets that the long outswEEPing . they in the wind, and an is by the long cylindrical cones, depending loosely from the ends of the long branches! The cones are about to long, and in ; green, shaded with dark purple on their sunward sides. They are ripe in and of the from the flower. Then the , thin and the seeds wing, the empty cones become and effective as decorations, for their is doubled by the spreading of the , and their changes to yellowish brown while they remain, swinging on the tree the following and , and continue effectively on the after they fall. The wood is , in grain and and creamy yellow, as if of condensed sunbeams. The sugar from which the name is is, think, the of . It exudes from the -wood where

wounds have been by forest or the , and , crisp, candy-like kernels of , like clusters of resin beads. When it is white, of the wounds on which it is have been by the sap is stained and the hardened sugar becomes brown. are fond of it, on of its laxative prties only small be eaten. tree will forget with the sugar pine. In pine trees there is the sameness of exion which to is to become monotonous, for the spiral of conifers, however , affords little scope for character. The sugar pine is as from conventionalities as the oaks. are alike, and though they toss out their in what they their exion of . They are the priests of pines and to be addressing the surrounding forest. The yellow pine is with on warm hillsides, and the silver fir on cool slopes , as these are, the sugar pine is , and spreads above in while they rock and wave in of . The branches are long, yet persistently , at , excepting near the ; like a bare cable is by the small, tasseled branchlets that extend around ; and when these sweep out symmetrically on sides, a or is , which, poised on the of the shaft, is a object. , however, there is a preponderance of toward the , away from the of the prevailing winds. Although so unconventional when full-, the sugar pine is a tree in youth--a strict follower of coniferous fashions--slim, , with leafy branches kept exactly in , each tapering in and terminating in a spiry . The successive between the cautious neatness of youth and the bold freedom of maturity a . At the of or , the shy, fashionable to be up. Specialized branches push out and bend with the cones, character, that becomes from to . Its constant companion is the yellow pine. The spruce, libocedrus, sequoia, and the

silver fir are also or with it; on deep-soiled mountain-sides, at an of about 5000 above the sea, it the of the forest, filling and hollow and down-plunging ravine. The crowns, each in bold curves, a canopy through which the tempered sunbeams pour, silvering the needles, and gilding the boles and the flowery, -like into a scene of enchantment. On the sunny slopes the white-flowered, chamaebatia is spread like a carpet, brightened during with the crimson sarcodes, the rose, and and gilies. Not in the shadiest will rank, untidy weeds or unwholesome darkness. In the sides of ridges the boles are , and the is by an underbrush of hazel, ceanothus, and flowering dogwood, not so as to the er from where will; while the crowning branches are impenetrable to the rays of the sun, and so interblended as to their . The Yellow Or Silver Pine The Silver Pine (*Pinus ponderosa*), or Yellow Pine, as it is , among the pines of the as a lumber tree, and the sugar pine in stature and nobleness of port. of its powers of of and soil, it has a range than conifer on the . On the slope it is met at an of about 2000 , and extends to the upper of the timber-. Thence, crossing the range by the , it descends to the base, and out for a into the hot, volcanic plains, upon -watered moraines, gravelly lake basins, volcanoes and dropping ripe cones among ashes and . The of full- trees on the slope where it is with the sugar pine, is a little than in and from to in , though larger be . Where there is plenty of sunshine and are , it a in to the sugar pine, a , of a round trunk, clad with branches that are over and over again. the about -half of the trunk is branchless, where it at

close -fourths or is naked, then a and elegant shaft than tree in the woods. The bark is in plates, some of measuring or in by in , with a thickness of or , a and . The needles are of a , warm, yellow-green , to long, firm and elastic, and in , radiant tassels on the upturning ends of the branches. The cones are about or long, and and a half , in close, sessile clusters among the leaves. The attains its in filled-up lake basins, in those of the , and as have , so prominent a part does it of their groves that it be the Pine. The Jeffrey attains its in the of the Range, in the basins of the McCloud and Pitt Rivers, where it forests invaded by tree. It differs from the in , only about half as tall, in its redder and closely-furrowed bark grayish-green , branches, and much larger cones; intermediate in which a clear separation impossible, although some botanists it as a . It is this of ponderosa that - ridges alone, and out among the volcanoes of the Basin. Whether to extremes of heat or cold, it is like trees, and becomes and , wholly the have been . , bearing cones about as big as pineapples, be to rifted rocks at an of 7000 or 8000 , highest branches above ' . have often feasted on the of these trees when they were towering in their , laden with snow-- of bloom; in , too, when the brown, staminate clusters hang thick among the shimmering needles, and the big purple burrs are ripening in the light; it is during cloudless wind- that these pines are imively . Then they bow like willows, their leaves streaming forward in , and, when the sun shines upon at the required angle, groves glow as if leaf were silver. The fall of tropic light on the of a palm is a spectacle, the fervid sun-flood breaking upon

the glossy leaves in long lance-rays, like mountain water among boulders at the of an cataract. to there is in the fall of light upon these , silver pine pillars: it is to the dust and shed off in myriads of minute sparkles that to radiate from the very of the tree as if like , falling upon fertile soil, it had been absor to reappear in flowers of light. This also gives forth the wind . After to it in kinds of winds, and , season after season, think approximate to on the mountain by this pine alone. If catch the tone of needles a tree in breezy . needle is fully tempered and gives forth uncertain each out with interference excepting during gales; then detect the click of needle upon another, distinguishable from the wind-like hum. When a sugar pine and of this in are together, the latter is to be in manners, lively and , and its is of a ; on the it is dignified and original in demeanor. The yellow pine eager to aloft, higher and higher. while it is drowsing in sun-gold detect a skyward aspiration, the sugar pine too unconsciously and too in to leave room for a . The Spruce The Spruce (*Pseudotsuga ii*) is of the and longest-lived of the giants that flourish throughout the pine , often a of , and a of or . Where the is not too close, the stout, spreading branches, than half of the trunk, are hung with , drooping sprays, handsomely feathered with the short leaves which radiate at right around . This tree is , welcoming the mountain winds and the snow as as the light; and it maintains its youthful freshness undiminished from to through a . It its during the of and , when the brown buds at the ends of the sprays and , revealing the leaves, which at are bright yellow, the tree as if with blossoms; while the



pendulous bracted cones, or long, with their shell-like, are a constant adornment. The trees are in , each sapling exquisitely . The primary branches are whorled around the , in , while each is draped with long, feathery sprays that descend in lines as and as as those of falling water. In and it forests, tall and mast-like to a of 300 , and is as a lumber tree. Here it is scattered among trees, or small groves, ascending higher than 5500 , and what be a forest. It is not in its choice of soil: wet or dry, smooth or rocky, it out to on . of the , as have , are in ; of these, than in , is on a moraine; the , as large, on of . tree in the so much at on earthquake taluses and of these huge boulder-slopes are exclusively by it. The Incense Cedar Incense Cedar (*Libocedrus decurrens*), among the trees, is throughout the pine exclusively occupying , or groves. On the warmer mountain slopes it ascends to about 5000 , and the congenial to it at a of about 4000 , vigorously at this in kinds of soil and, in , it is of moisture about its roots than of its excepting only the sequoia. Casting over the forest from some ridge-top can identify it by the alone of its spiry , a warm yellow-green. In its youth up to the of or , none of its so tapered a cone from top to bottom. As it becomes it oftentimes and . Large branches push out at right to the trunk, stubborn elbows and up with the . Very trees are at the top. The plumes are : waving fern-frond is in and . In its the whole tree is thatched with , if the libocedrus in its to the woods in midwinter when it is laden with myriads of yellow flowers about the of wheat grains, a illustration of ' virility and vigor. The mature cones,

about -fourths of an long, born on the ends of the plummy branchlets, serve to enrich the of this - blooming tree-goldenrod. The Silver Firs to the planted and of the forest , exclusively of Silver Fir--*Abies concolor* and *Abies magnifica*--extending with little interruption 450 at an of from 5000 to 9000 above the sea. In its youth *A. concolor* is a charmingly tree with its plummy branches in whorls around the whitish-gray which terminates in a stout, , pointing to the zenith, like an admonishing finger. The leaves are in horizontal rows along branchlets that are than , plumes, pinnated like the fronds of ferns. The cones are grayish-green when ripe, cylindrical, from to long, and and a half to , and stand upright on the upper horizontal branches. Full- trees in situations are about high and or in . As creeps on, the rough bark becomes rougher and grayer, the branches their of , that are snow-bent are off and the often becomes double or otherwise from to the bud or . , throughout the vicissitudes of its or of , what , the of this , however , is lost. The Silver Fir, or Red Fir (*Abies magnifica*) is the of the giants, far its companion in this respect and distinguished from it by the purplish-red bark, which is also closely furrowed than that of the white, and by its larger cones, its whorled and fronded branches, and its shorter leaves, which grow around the branches and upward instead of in horizontal rows. The branches are whorled in , and stand out from the , red-purple bole in , or in trees in drooping collars, branch pinnated like fern-fronds, plumes, and sumptuous-. The flowers are in their about the of ; the red, on the underside of the branches in profusion, a

very to the trees; the greenish-yellow, tinged with pink, on the upper side of the topmost branches, while the tufts of leaves, about as brightly as those of the spruce, another . The cones mature in a season from the flowers. When mature they are about to long, or in , with a gray down and streaked and beaded with transparent balsam, very and -, and stand like casks on the topmost branches. The inside of the cone is, if , . The and bracts are tinged with red and the seed-wings are purple with bright iridescence. Both of the silver firs between and when the about are at . Some venerable patriarch be heavily -, towering in above the rising generation, with a grove of saplings ing close around , each dressed with such that not a leaf wanting. are up of trees near the of , nicely as if had culled with discrimination from the of the woods. It is from this tree, Red Fir by the lumbermen, that cut boughs to sleep on when they are so fortunate as to be within its . or rows of the sumptuous plushy-fronded branches, overlapping along the , and a crescent of smaller plumes mixed to ' taste with ferns and flowers for a pillow, the very imaginable. The essence of the ed leaves to fill pore of ' body. Falling water a soothing , while the spaces between the afford openings through which to gaze into the starry sky. The fir woods are - at of the , in when the trees are in the hazy light and drip with balsam; and the flying, whirling seeds, escaping from the ripe cones, mottle the air like flocks of butterflies. in the richest part of these unrivaled forests where so trees challenge fondly among the firs and extol their again and again, as if tree in the henceforth claim . It is in these woods the arise that are so and a of the .

Here, too, the of the -meadows full of lilies. A dry spot a little from the of a silver fir lily- a -, where the slope is toward the with a of the distant peaks along the of the Range. The tall lilies are brought forward imively like by the light of - and the nearest of the trees with their whorled branches above like larger lilies and the sky through the -opening meadow of white lily stars. The -Leaved Pine The -Leaved Pine (*Pinus contorta*, var. *Murrayana*), above the Silver Fir , the of the alpine forests up to a of from 8000 to 9500 above the sea, in on moraines changed as yet by -glacial weathering. with the giants of the lower this is a small tree, a of or . The was high and a little over in . The of mature trees throughout the is not far from or with a of . It is a -proportioned, tree with grayish-brown bark and , much- branches which cover the part of the trunk, not so as to it . The lower , like those of conifers that grow in snowy , curve downward, a horizontal about half- up the trunk, then and toward the . The short, needles in fascicles of are in long cylindrical tassels at the ends of the up-curving branches. The cones are about long, in clusters among the needles while very , when the flowers are of a vivid crimson and the whole tree to be dotted with brilliant flowers. The staminate flowers are on of their , often a reddish-yellow tinge to the whole of and filling the air with pollen. pine on the Range is so planted as this , moraines that extend along the sides of the high rocky valleys for interruption. The thin bark is streaked and sprinkled with resin as though it had been upon the forest like . this tree than is subject to by . During

winds forests are , the flames from tree to tree in that surging and racing onward above the bending wood like prairie-grass . During the season of the creeps quietly along the , on the needles and cones; at the of a tree, the resinous bark is ignited and the air ascends in a swift , in velocity and dragging the flames upward. Then the leaves catch an of , spired on the edges and tinted a rose-purple hue. It rushes aloft or above the top of the tree, a spectacle, at . It lasts, however, only a seconds, vanishing with magical rapidity, to be by along the - at , tree after tree, upflashing and , leaving the trunks and branches scarred. The heat, however, is to the tree and in a the bark shrivels and falls off. Forests in extent are thus and left , with the branches on, and , gray in the like misty clouds. Later the branches drop off, leaving a forest of bleached spars. At the roots and the forlorn gray trunks are blown down during some and upon another, encumbering the until, dry and , they are consumed by another and leave the ready for a crop. In lake-hollows, on of alluvium, this pine varies so far from the that it be for a , in damp sods like grasses from to high, bending together to the breeze and whirling in eddying gusts lively than tree in the woods. high than in . so and at the same clad with leafy boughs, it is often bent and weighed down to the when laden with soft snow; thus , of to until the melting of the snow in the spring. The Mountain Pine The Mountain Pine (*Pinus monticola*) is the tree of the alpine -- and long-lived towering above its and becoming stronger and just where to crouch and . At its it is about high and or in , though here and there larger than this. It is as and suggestive of as an

oak. About -thirds of the trunk is of , close, fringing tufts of spray the down to the . On trees that situations near its upper the bark is deep reddish-brown and deeply furrowed, the furrows to each and connected on the trees by conspicuous cross-furrows. The cones are from to long, smooth, , cylindrical and somewhat curved. They grow in clusters of from to or and become pendulous as they in . This is to the sugar pine and, though not half so tall, it suggests its in the that it extends its long branches in habit. It is met on the upper of the silver fir , singly, in what as chance situations much on the forest. Continuing up through the forests of the -leaved pine it to its in the at an of about 10,000 extending its , in the frosty air, welcoming the and on and to the of 1000 . The Juniper The Juniper or Red Cedar (*Juniperus occidentalis*) is preeminently a rock tree, occupying the baldest and in the upper silver fir and alpine zones, at a of from 7000 to 9500 . In such situations, rooted in narrow cracks or , where there is a handful of soil, it is over in and not much in . The tops of trees are , and large stubborn- push out , of and at the , , and imded here and there with tufts or mounds of gray-green scalelike . Some trees are mere - stumps about as as long, decorated with a leafy sprays, reminding of the crumbling towers of castles scantily draped with ivy. Its on bare, barren and ridge-top to have been chosen for safety against , for, on isolated mounds of sand and gravel from grass and bushes on which feed, it is often tall and unscathed to a of to , with a of the rocky angularity and so a throughout the part of its range. It like a forest; a grove. it out and , by slight joints

to the rocks, on snow and thin air and maintaining on this diet for 2000 or . or it exes steadfast, dogged . The bark is of a bright cinnamon and is handsomely braided and reticulated on thrifty trees, flaking off in thin, shining ribbons that are used by the for tent matting. Its and picturesqueness are by artists, to the juniper a and tree. have a and in its and have it and . It to be a survivor of some , wholly with its . Its stumpiness, of , wind-waving or shaking out of the , it is not this rocky that constitutes its . In , sun- the sugar pine preaches like an apostle moving a leaf. On rocks the juniper dies and wastes insensibly out of like , the wind about as little over it, alive or , as is does over a glacier boulder. have a deal of to the of these trees, as of the very are honey- with dry rot was able to get a count of the . Some are than 2000 , for though on deep moraine soil they grow about as as some of the pines, on bare and smoothly glaciated, overswept ridges in the they grow very . on the Ridge only in was 1140 ago. Another on the same ridge, only and a half in , had the of 834 . The from the bark of a medium- tree in , on the pavement, had 859 layers of wood. Beyond this the count was stopped by dry rot and . The was - in girth, or in and, although have failed to get like a count, learned from this and to convince that of the trees or thick, on , are than than . , for can they forever; then overthrown by avalanches, they refuse to lie at , lean stubbornly on their big branches as if to rise, and while a root to the rock, put forth leaves with a grim, -- exion. The Mountain Hemlock As the juniper is the stubborn and unshakeable of trees in the , the Mountain

Hemlock (*Tsuga Mertensiana*) is the and pliant and . Until it a of or it is down to the with drooping branches, which are again and again into waving sprays, grouped and in ways that are , and with small brown cones. The flowers also are and effective; the dark purple, the blue, of so and a tone. What the azure of the mountain sky to be condensed in . Though the and feminine of the mountain trees, it where the snow lies deepest, at a of from 9000 to 9500 , in hollows on the slopes of mountains and ridges. under circumstances, from heavy winds or in bleak to , fed or starved, at its highest , 10, above the sea, on ridge-tops where it has to crouch and huddle close in low thickets, it contrives to put forth its sprays and branches in of invincible , while on moist, -drained moraines it a of , flowers and fruit. The snow of the is soft, and lodges in dense leafy branches, weighing down against the trunk, and the , drooping , bending lower and lower as the load , at the , an . Then, as succeeds and snow is heaped on snow, the whole tree is at , not again to the light of or move leaf or limb until set by the spring thaws in or . Not only the saplings are thus fully and put to sleep in the whitest of white for or of the , trees high or . From to , when the snow by repeated thawing and freezing is firmly compacted, ride over the prostrate groves a branch or leaf of . of alpine conifers so veils its ; poised in thin, white sunshine, clad with branches from to , it towers in , drooping as if unaffected with the tendencies of its , the , conscious of and joyously receptive of its blessings, out its branches like tentacles, the light and reveling in it. The was in . It was on the edge of

Lake Hollow, of Mount , at an of 9250 above the of the sea, and was about a in . groves of mature trees, to a in , are near the base of Mount . It is widely from near the of the high along the Cascade Mountains of and the coast ranges of to , where it was in 1827. Its , so far as have , is in the icy fiords of Prince William in latitude 61 , where it forests at the of the sea, tall and on the of glaciers. There, as in the , it is , the very loveliest of the conifers. The White-Bark Pine The Pine, or White-Bark Pine (*Pinus albicaulis*), the extreme edge of the timberline throughout the whole extent of the Range on both flanks. It is met with the -leaved pine on the upper of the alpine , as an tree from to high and from to in hence it goes straggling up the flanks of the peaks, upon moraines or crumbling , wherever it can get a , to an of from 10,000 to 12,000 , where it to a of crumpled branches, with , each tipped with a short, close-, leaf tassel. The bark is smooth and purplish, in some white. The flowers are bright scarlet and rose-purple, a very flowery little for in such a tree. The cones are about long, an and a half in , grow in clusters, and are dark chocolate in while , and bear pearly-white seeds about the of peas, of which are eaten by chipmunks and the Clarke' crows. Pines are as sky- trees that or . This a , crouching and in compliance with the rigorous demands of ; yet to a than of its lofty relatives in the sun-lands far below it. from a it be for a tree of . , on Peak there is a scattered of this pine, like mosses over the roof, nowhere hint of an ascending . While, near, it matty and heathy, and in over the top of it, yet it is prostrate, a of or with a trunk, and with branches

outspread above it, as if in ascending they had been by a against which they had been to spread . The snow is a sort of , lasting half the ; while the ed surface is yet smoother by violent winds with sand-grains that bear down which offers to rise much above the , and that the trunks and branches in . During have often camped snugly beneath the of this little pine. The needles, which have for , , a fact to , such as deer and sheep, paw out oval hollows and lie beneath the larger trees in and . This lowly a far than be . A that , at an of 10,700 , yet as though it be plucked up by the roots, for it was only and a half in and its topmost tassel above the . it half through and the with the of a , its to be than 255 . Another about the same , with a trunk in , to be 426 , ago; and of its supple branchlets an of an in inside the bark, was - , and so filled with oily balsam and by that tied it in like a whip-cord. The Nut Pine In across the Range from the River to Lake the of the little Nut Pine (*Pinus monophylla*). It dots the flank of the to which it is in grayish bush-like , from the of the sage-plains to an of from 7000 to 8000 . A , fruitful and conifer not be . the have been or distant from the , none goes so far as this. it keeps near the , out , divergent branches like an apple-tree, and a higher than or above the . The thickness of the trunk is , about or . The leaves are , like round awls, instead of , like those of pines, into and and . The cones are green while , and are over the tree, a as against the bluish-gray . They are small, only about in , and to have little for seeds; when to , that about half the of the cone is up of , nutritious nuts, as large as hazel-nuts. This is

the -tree on the , and the , , and River with and nuts than the together. It is the ' tree, and a white have they for it down. so low, the cones are off with , and the nuts by until the . In a or .

7 The Big Trees Between the heavy pine and silver fir zones towers the Big Tree (*Sequoia gigantea*), the of the conifers in the , "the of the ." The groves nearest Valley are about to the and and are the , and Mariposa groves. It extends, a widely interrupted , from a very small grove on the of the River to the of Deer Creek, a of about 260 , its near the - , the a little below the -. The of the above the sea varies from about 5000 to 8000 . From the River to River the occurs only in small isolated so sparsely along the that of the gaps in it are from to . from River -ward the sequoia is not to mere groves extends across the basins of the and Rivers in forests, a of , the of this part of the only by the canyons. The , the of the groves, has an of or , a short to the of the Mariposa grove. Along the rim of the canyon of the of River there is a sequoia forest about long by . This is the that be a forest. Descending the between the and Rivers to the forests that the of the . the giants become and irreibly , heaving their crowns into the sky from ridge and slope, waving onward in compliance with the complicated of the . The of the of the is on the ridge between Marble Creek and the , and is the Forest. It extends from the lands, the hot plains, to within a of the cool glacial of the peaks. The extreme upper of the is between the and of the at a of 8400 , the block of big tree forests in the is on the of River, and is included in the Sequoia . In the groves there are trees or saplings. here for - there are in their and for each of these a of trees and saplings, vigorously on moraines, rocky edges, along water and meadows. though the by the big tree so from to , here is in

the of the trees. The of 275 or thereabouts and a of about , from the is, , about the of what be full-trees, where they are favorably . The in are not very and a are high. In the grove there are trees over 300 in , the tallest of which as by the is 325 . The very that have yet met in the of is a -scarred in the River forest. It is - and in inside the bark, above the . It is half through, and a in clearing away the charred surface with a sharp and the wood- with the of a . in laying bare a the from the outside to the and a little over , that this tree was in its about - in at the of the . tree in the , as far as know, has down on so as the sequoia or opens so and suggestive into . Under the these giants 5000 or though of the larger trees are half as . The of that was felled in grove, for the sake of having its stump for a -, was about 1300 , and its across the stump - inside the bark. Another that was felled in the River forest was about the same a (2200 ), though not a very - tree. So and balanced are the mightiest of these in their proportions that there is overgrown or about . for the are with their than their , their in part ; or later it becomes to the , on the senses like the of or of the . When and around to at their and to . They bulge at the base, not than is required for and safety and the only reason that this bulging in some is that only a small is in near . that in the River forest was in at the and in 220 above the the of the taper of the trunk as a whole. can like an adequate idea of their , much of their . the sugar pine, of their with pointed tops to higher, while the big tree, soaring above , . Its domed to be poised about as lightly as a cloud, of to rise higher. Only

when it is does it like conifers a , sharply with a long - top. , the whole tree for the or , or until it is a or and high, is in , and, with the of , as to the wind as a squirrel' tail. As it , the lower branches are dropped and the upper thinned out until are left. These, however, are to a , again and again and terminate in bossy, rounded of leafy branch-lets, while the becomes -, and is the to the of the rosy beams of the , the to bid the sun . , by or , are and in though not in the , for they in the and of their . The , shafts are of for and or so. The large out with a , side, and tree has so , so in and so to an . A , , - branch, from to or in and a , be out from the trunk as if to break across the bounds of the curve, like the it dissolves in of branchlets and sprays as soon as the is . in , after struck by or by of snow-, the of is of their . Another is the of the trunk and its thickness as with its and the of the branches, which like and architectural columns than the stems of trees, while the like rafters, supporting the -. though so consummately , the big tree , with physiognomy, and ; yet with its it as at than of its , the right to the as the oldest inhabitant. soon becomes with of pine and fir and spruce as with friendly , shaking their outstretched branches like shaking and their little , while the venerable sequoia, of , keeps at a , as in aspect and among its trees as the mastodon among the homely bears and deers. Only the juniper is at like it, and unconquerable on glacier for of , grim and , with an air of about as pronounced as that of the sequoia. The bark of the trees is from to thick, cinnamon brown, purplish on trees, of with the underbrush. Toward

the of the trees are in bloom, while the snow is or deep. The flowers are about -eighths of an long, pale green, and grow in on the ends of sprays. The are , pale yellow, a of an long and when the pollen is ripe they the whole tree and dust the air and the . The cones are bright grass-green in , about and a half long, and a half , up of or , closely-, rhomboidal , with to seeds at the base of each. The seeds are small light, only from an to a of an long and , including a filmy surrounding wing, which causes to glint and waver in falling and the wind to carry . harvested by the squirrels, the cones discharge their seed and remain on the tree for . In fruitful the trees are laden. On small branches and a half and in 480 cones. conifer produces so seeds, , , the sequoia, the Redwood of the Coast Mountains. are by a tree, and in a fruitful the product of of the groves be to the mountain ranges in the . As soon as accident happens to the , such as smashed off by , the branches beneath the wound, , to be , like a colony of bees that have lost their , and become to the . that have outward for at right to the trunk to turn upward to in a , each the of . in the case of mere stumps, half through, some mere tuft will to aloft and do its as a leader in a . of or are often close together, the seeds from which they sprang having on cleared for their by the fall of a large tree of a generation. They are " couples," " , " When these trees are they are to stand or apart, by the they are full-their trunks will and against each and in some as . It is that the sequoia was once far widely over the ; after long and have to the that it was, at since the close of the glacial , a along the margins of the groves,

and in the gaps between to a of its beyond its bounds. Notwithstanding, confident that if sequoia in the Range were to today, of their remain, of so imperishable a as to be available for the student than hence. In the , of coniferous tree in the Range keeps its members so together as the sequoia; a is, , the of straggler from the body, and of those stragglers that have under observation are , instead of al trees, of a extended . Again, the trunks of the sequoia for after they fall. have a block of sequoia wood, cut from a fallen tree, which is distinguishable from a cut from a tree, although the cut from the fallen trunk has lain on the damp forest than 380 , as long. The - in the case is this: When the trunk to which the belonged fell, it sunk into the , thus a long, ditch, and in the of this ditch a silver fir in and 380 was , as by it half through and the , thus that the of the trunk that the ditch has lain on the — than 380 . For it is evident that, to the whole , to the 380 the that the of the trunk lay in the ditch before out of the , plus the that before the seed from which the al fir sprang fell into the soil and took root. , sequoia trunks are wholly consumed in forest , and those recur only at , and sequoia ditches after cleared are often left for , it becomes evident that the trunk- in have lain a or . And this instance is by a . Again, that upon those areas to have been once with sequoia forests, tree have fallen, and trunk have been or , leaving not a , of the ditches by the fall of the trunks, and the bowls by their upturning roots, remain for of after the of the trunks that had . Much of this ditch-writing doubt be quickly effaced by the flood- of overflowing streams and



-; inconsiderable remain engraved on ridge-tops beyond such ; for, where the are , it is imperishable. these historic ditches and root-bowls in the sequoia groves and forests, , as far as have , not the faintest of outside of . that the by sequoia has not been during the or , and not at in -glacial . , the be : Is the verging toward ? What are its relations to , soil, and trees? the bearing on these also throw light, as to , upon the of the , and sustain the at as to the of extension. In the , as have , there are trees or saplings up around the to the , and inasmuch as those sequoias, so , are the only the , to , to , as than an , in the so- for by pines and firs that have it into its strongholds in moist glens where the is to be . the by the forests of the a very . tree in the forest is in with both and soil. It --on moraines, rocky , along watercourses, and in the deep, moist alluvium of meadows with, as have , a of seedlings and saplings up around the , able to the forest in vigor. So that if the trees of of the sequoia forest were ranged together to , a very curve be , the up from ' seedlings to giants, and with the and - of the curve longer than the . as far as the , 536 saplings and seedlings, upon a not in . This soil- was about , and had been seeded by pines, firs, libocedrus, and sequoia, a and instructive illustration of the for among the ; and it was to note that the thus far have the sequoias to a . Toward the where the sequoia becomes and , the trees become so; and where they mix with sequoias they grow up beneath like grasses among stalks of corn. Upon a of sandy - sequoias, from to high, on a of once by large sugar pines which lay crumbling beneath

--an instance of which have sequoias to out the pines. also noted - saplings upon a of for their by . Thus , the of the sequoia, also the bare required for its from the seed. is, however, in for the of the forests the of --by the fall of trees. The soil is thus and , and trees are planted for that falls. It is in a that the was wetter than , and that the drought will of the sequoia, leaving its to trees of flourishing in a drier . that the sequoia can and does grow on as dry as of its is in a . ", then," it will be , "are sequoias only in -watered ?" a of sequoias those streams. The knows that in sequoia grove will water, it is a to that the water is the of the grove there; on the , the grove is the of the water there. Drain off the water and the trees will remain, cut off the trees, and the streams will vanish. was for than in the case of these of sequoia woods and perennial streams. When is to the method of sequoia stream-, it will be apprehended at once. The roots of this tree fill the , a thick sponge that and the and melting snow, only allowing it to ooze and flow gently. , fallen leaf and rootlet, as as long root, and prostrate trunk, be as a hoarding the bounty of -clouds, and dispensing it as blessings through the , instead of allowing it to long in short-lived . Since, then, it is a fact that of sequoias are on what is termed dry , and like mountain pines to rifts in , and since it has also been shown that the moisture in connection with the denser growths is an of their presence, instead of a of their presence, then the notions as to the extension of the and its near to , based upon its dependence on moisture, are to be . The in and snowfall since the close of the glacial in the is much than is . The

highest -glacial water- are in the upper river , and they are not higher than the spring flood- of the ; conclusively that has in the of the upper tributaries of -glacial streams since they came into . , in the meantime, eliminating this complicated of climatic , the fact remains that the and snowfall is for the luxuriant of sequoia forests. , observations tend to that in a prolonged drought the sugar pines and firs perish before the sequoia, not alone of the longevity of trees, the can drought, and the of moisture falls. Again, if the restriction and of the be interpreted as a result of the of the Range, then instead of as it does in toward the where the rainfall is , it . If, then, the of sequoia has not been by of soil as to fertility or moisture, by what has it been ? In the of that the groves, the only was at with, were on just those of the forest soil- that were laid bare toward the close of the glacial when the ice- to break up into glaciers. And while the basin of the , and to for the absence of sequoia where for its , it to that this gap in the sequoia is exactly in the basin of the , mer de glace of the and River basins which poured its to the through this gap as its . then perceived that the next gap in the to the , , extending between the and groves, occurs in the basin of the mer de glace of the and basins; and that the smaller gap between the and Mariposa groves occurs in the basin of the smaller glacier of the . The wider the glacier, the wider the gap in the sequoia . , across the basins of the and , that the sequoia attained its just where, owing to the of the , the had been from the ice-rivers that continued to pour from the long after the smaller local glaciers

had been melted. a of the , at the that the glaciers were shed off right and left down the valleys of Kern and Rivers by the lofty spurs outspread embracingly above the warm sequoia-filled basins of the and . Then, next , occurs the sequoia- , or basin of the and sings River mer de glace; then the warm, spots of and Mariposa groves; then the sequoia- of the glacier; next the warm, of the and groves; then the sequoia- of the mer de glace of the and ; then the warm of the and groves. It , , that just where, at a certain in the of the , the glaciers were not, there the sequoia is, and just where the glaciers were, there the sequoia is not. although the bearing on the -glacial of this tree to the that it was widely on the since the close of the glacial epoch; that its forests are , if, , they have ; that the -glacial of the is not half done; yet, when from a wider outlook the of the is considered, and its in and , --comparing and Sequoia sempervirens of the Coast Range, the only of sequoia, with the fossil and by and , some of which flourished over areas in the and in and , during tertiary and --then, , it becomes that , to narrow within the limits of , are mere of the , both as to and , and that they be verging to . the of a in have a breadth of of of , not to the of to and - extend both and . There is to the of tree. is to , not, as that of , to the out of . Only the leaves of . Their fall is in their ; the leaves are , and so also are the wood, roots, bark, buds. of the trees of disease, insects, fungi, , the big tree. saw that was or the of . , it to be . It is a fact that the very sequoias had lost their by strokes. " to ." of , sequoia is the only able to wait long to sure of struck by . So far as am

able to at only and the the of these of trees. In ' they are , through the of is , while in the of only a has been . The grove, the , and Mariposa groves are under the of the in the . So are the and Sequoia ; the latter, - ago, has an of 240 and is by a of under the of the of the ; so also are the small , at the same with an of , and the Mariposa grove, about the same and the small and . than half of the big trees have been and are in the of speculators and mill . It , , that far the and of big trees is in the Sequoia , by rail to Lemon Cove and thence by a into the forest of the and thence by rail to parts of the ; large as it is it be much larger. Its is the High and the and are the and Kern Rivers. Thus be included the on the waters of these rivers and -tenths of the big trees in . within these bounds be extinguished by purchase by the . The big tree, leaving its higher out of the count, is a tree of to the ders of the dependent on irrigation, a - spring, sending waters to the lowland. For grove cut down a stream is dried up. is crying, "Save the trees of the ." Nor, judging by the signs of the , is it likely that the cry will cease until the salvation of that is left of Sequoia gigantea is sure.

8 The Flowers was flower before and and , biting horses came to its spaces like ' . , flowers bloom in profusion on the talus slopes, and tablets, and in the , cool side-canyons up to the rim of the Valley, and beyond, higher and higher, to the of the peaks. on the and in - side- flowering have survived and a in the spring and . Among these tall oenotheras, *Pentstemon lutea*, and *P. ii* with blue and red flowers; *Spraguea*, scarlet *zauschneria*, with its radiant rosettes of the sandy ; *mimulus*, *eunanus*, blue and white , *geranium*, *columbine*, *erythraea*, *larkspur*, *collomia*, *draperia*, *gilies*, *heleniums*, *bahia*, *goldenrods*, *daisies*, *honeysuckle*; *heuchera*, *bolandra*, *saxifrages*, *gentians*; in cool canyon and on Clouds' and the base of *Primula suffrutescens*, the only primrose in , and the only shrubby in the . And there are orchids, *habenaria*, and *cyripedium*, the latter very , once in the Valley near the of Glacier , and in a bog on the rim of the Valley near a ' , . It is a very , the large oval white, with purple; the petals and the sepals purple, strap-, and curled and twisted. Of the lily , *fritillaria*, *smilacina*, *chlorogalum* and of *brodiaea*, *Ithuriel* , and are , and the *calochortus*, or Mariposa lily, a unique of , like the tulips of far . of grow on the warm foothills below the Valley, , *C. coeruleus* and *C. nudus*, in springy on the a beyond the brink of the . The snow (*Sarcodes sanguinea*) is by than in . It is red, fleshy and watery and like a asparagus . Soon after the snow is off the round it rises through the needles and humus in the pine and fir woods like a bright glowing of . In a or so it to a of or with a of an and a half or ; then its long fringed bracts curl aside, allowing the - or --lo,

- flowers to and out from the . It is to grow up through the snow; on the , it until the is warm, though with flowers it is or half- for a or by spring . The --flowers, bracts, stem, , and roots--is fiery red. Its appeal to ' blood. , it is a cold and . Everybody it as a curiosity, nobody loves it as lilies, , roses, daisies are . , it beneath the pines and firs and , as if with in the ; moving in the ; as if , though with rosy flowers. Far the and of the Valley flowers is the lily, white, in , with from - to -flowered racemes. in the lower of the Valley at the of the grade that was high, the raceme long, with - flowers, of ; the had faded or were in the bud. This lily is over the sunny of the sugar-pine woods, in large meadow- like the large and the small tiger lilies (*pardalinum* and *parvum*), widely scattered, up to the in dense *ceanothus* and *manzanita* chaparral, waving its flowers above the blooming of brush, and their to the breeze. It is becoming in the parts of its range on of the high price paid for its bulbs by through it has been far and over the flower- . For, on of its and , , lily at once it as a . The shrubs are *manzanita* and *ceanothus*, of each, *azalea*, *Rubus nutkanus*, brier rose, choke-cherry *philadelphus*, *calycanthus*, *garrya*, *rhamnus*, The *manzanita* to . The in the Valley is about or high, round-ed with branches, red or chocolate- bark, pale green leaves set on edge, and a profusion of small, pink, narrow-throated, urn- flowers, like those of *arbutus*. The , , branches are about as as bones, and the red bark is so thin and smooth on both trunk and branches, they as if they had been and and . In the spring large areas on the mountain up to a of or are brightened with the rosy flowers, and in with their

red fruit. The pleasantly acid berries, about the of peas, like little apples, and a is to eat , though half their is up of hard seeds. , bears, coyotes, foxes, birds and mountain on for and . The of *ceanothus* with *manzanita* are flowery and altogether shrubs, in , not only in the Valley, high up in the forest on sunny or half-shaded . In the sugar-pine woods the is *C. integerrimus*, often lilac, or deer brush. It is or high with branches, glossy , and of blue flowers in close, panicles. , *C. prostrates* and *C. procumbens*, spread smooth, blue-flowered and rugs beneath the pines, and to . The , *C. cordulatus*, is in the silver-fir woods. It is white-flowered and thorny, and dense thickets of tangled chaparral, to wade through or to over. it is ed by or of snow. The *azalea* of bloom along the river and meadows. In the Valley it is from to high, has green leaves, beneath its profusion of large, white and yellow flowers, which are in their in , and , to the , ranging from 3000 to 6000 . Near the *azalea*- streams the small rose, resembling *R. blanda*, large thickets , on a dewy and after . Not far from these *azalea* and rose , *Rubus nutkanus* covers the with , soft, velvety leaves, and -white flowers as large as those of its and , the rose, and much in , followed at the of by soft red berries for everybody. This is the and the of the whole , flowery, fruity *Rubus* . There are a ferns in the Valley and about it. the are rock ferns--*pellaea*, *cheilanthes*, *polypodium*, *adiantum*, *woodsia*, *cryptogramma*, , with small tufted fronds, lining cool glens and fringing the seams of the cliffs. The of the larger are *woodwardia*, *aspidium*, *asplenium*, and, above , the *pteris*. *Woodwardia radicans* is a , -shouldered fern to high,

in vase- clumps where tile is and on some of the of the Valley where it is watered by a trickling stream. It thatches the sloping rocks, frond overlapping frond like roof shingles. The -fronded, *Pteris aquilina*, the of ferns, covers large areas on the of the Valley. fern does so much for the of , with its browns and reds and yellows, after lying beneath the snow . It spreads a brown over the desolate in the spring before the grass has sprouted, and at the of sun-heat its fronds rearing up full of faith and hope through the midst of the ' . Of the of *Pellaea*, *P.* is the hardiest as to high altitudes and and at the same it is the fragile of the . It in dense tufts in the clefts of - rocks, high up on the mountain-side on the very edge of the fern . It is a little fern about or high, has pale-green pinnate fronds, and shining bronze- stalks about as brittle as . Its on the lower part of its range are *Cryptogramma acrostichoides* and *Phegopteris alpestris*, the latter with soft, fronds, not in the like those of Rock fern, though it on the rocks where the snow lies longest. *Pellaea Bridgesii*, with blue-green, narrow, -pinnate fronds, is about the same as and next to it as a , in , wet or dry, and around the edges of boulders that are resting on glacier with . About a lower the smaller, *P. densa* on and boulder-, fissured , watered until in from oozing , from lingering snowbanks. It is, or was, between the of the and the of the Fall, with have dug out root, so that has to scramble in out-of-the- to it. The of *Cheilanthes* in the Valley--*C. californica*, *C. gracillima*, and *myriophylla*, with -to--pinnate fronds, an to long, the however dry and sheer. The *californica* is so that have it only once. The are and are accompanied

by the little gold fern, *Gymnogramme triangularis*, and rarely by the little *Botrychium simplex*, some of than an high. The of the rock ferns is *Adiantum pedatum*, of waterfalls and the spray-dust. The it loves are over- , cave-like hollows, beside the larger falls, where it can wet its fingers with their dewy spray. of these moss- chambers contain of these ferns, to mossy by the , out their finger-fronds on dark, shining stalks, and tremulous, throbbing in unison with and tone of the falling water, moving each of the frond separately at , as if fingering the . and are the bloom- of the . Both the flowers and falls are then at their . By the of the glories of the Valley are their . The birds are then out of their nests. of the have gone to seed; berries are ripe; tints to kindle and over meadow and grove, and a soft haze in the sunbeams heralds the of . The shallow river is at , its flood- done. It is little than a of pools by trickling, whispering that softly over brown pebbles and sand with an audible murmur. Each has a character of its and, though they are , the air and tree shadows keep cool. Their shores curve in and out in bay and promontory, the of miniature lakes, their in embossed with brier and azalea, sedge and grass and fern; and above these in their of a mingled of alder, willow, dogwood and balm-of-Gilead; sunshine over, cool shadows beneath; light filtered and strained in passing through the ripe leaves like that which through windows. The surface of the water is stirred, , by whirling water-beetles, or some trout, beneath fallen logs or roots. The falls, too, are quiet; wind stirs, and the whole Valley is a of greens and purples, yellows and reds. the rocks soft and , as if they, too, had .

9 The Birds The of the winds and waterfalls are with bird , in the nesting of spring and . The and of is the robin, be , hopping about briskly on the meadows and , enlivening . The black-ed grosbeak, too, is here, with the Bullock oriole, and tanager, brown -sparrow, hermit thrush, the purple finch,--a , with and throat of a rosy-red hue,-- of warblers and vireos, kinglets, flycatchers, the of the birds is the water-ouzel that dives into foaming rapids and feeds at the bottom, on in a , a charmed . of humming-birds are to be , and buzzing among the flowers. The little red-bellied nuthatches, the chickadees, and little brown creepers, threading the furrows of the bark of the pines, for in the crevices. The large Steller' jay in the pine-tops; flocks of green swallows skim over the streams, and the noisy Clarke' crow oftentimes be on the highest around the Valley; and in the deep woods beyond the and the dusky grouse and the pileated woodpecker, or woodcock as large as a pigeon. The junco or snow-bird builds its nest on the of the Valley among the ferns; of sparrow are and the lazuli bunting, a bird in the underbrush, flitting about among the azalea and ceanothus bushes and enlivening the groves with brilliant ; and on gravelly bars the spotted sandpiper is . woodpeckers in the Valley; the flicker, the Harris woodpecker and the which so busily up acorns in the thick bark of the yellow pines. The short, cold of are also ened with the and of a of birds. cheerier choir sang in snow. and of is the water-ouzel, a dainty, dusky little bird about the of a robin, that sings in fluty and , in and , sunshine and shadow, haunting the rapids and waterfalls with , nest

in the cleft of a rock in spray. is not web-footed, yet dives into foaming rapids, to the the boisterous the stream, as and as linnet in a grove. as about amid the uproar of the falls the utmost and --bird and stream and . What a ! yet they are . A bloom than the foam in an eddying is this little bird. miss the of the - , the -like of the bird--only is in it. A robins, on their down from the upper Meadows, in the Valley and out to the in , on the mistletoe berries that grow on the oaks. In the depths of the forests, on the high meadows, in the severest altitudes, they as much at as in the and orchards about the habitations of , ascending the as the snow melts, following the green of Spring, until in or the highest glacier meadows are on the of the Range. Then, after the short is over, and their in and these lofty wilds is done, they their down again in with the , below the snow-, lingering here and there to feed on huckleberries and frost-nipped cherries on the upper slopes. Thence down to the vineyards and orchards of the lowlands to the ; the of the as as and , where the are too often for -- a to put so a to; wood of to feed the . The kingfisher in the Valley, and the flicker and, of , the carpenter woodpecker, that lays up large of acorns in the bark of trees; wrens also, with a brown and gray linnets, and flocks of the bluebird, lively among the snow-laden mistletoe bushes. Flocks of pigeons are often , and about of ducks, as the river is wholly over. Among these are the mallard and the woodduck, on of so often shot at. Flocks of geese used to the Valley in and , and do so , down by or stress of while on their across the Range. When by the have to fly over the

of Valley until out and to -alight. magnitudes to be as deceptive to geese as to , for after to a and harrow- they suddenly in of dashed against the of the cliff, much nearer the bottom than the top. Then turning in with they again and again until and to descend. have large flocks on their crossing the of the Range at a of 12,000 to 13,000 above the of the sea, and in so an as this they to be sustaining effort. , however, as they are of wind and wing, they cannot fly over , starting from the bottom. A of golden eagles have lived in the Valley since it, hunting along the cliffs and down the river canyon. Their nest is on a of the cliff over which pours the Fall. Perched on the top of a spar, they were interested of the geese when they were shot at. once of the geese to leave the flock on of sorely , although it to fly . the eagles it and doubt struck it down, although did not the result of the hunt. , it flew up the Valley, closely . , after of snow had fallen on the of the Valley and the flying flakes by a wind thickened the air, darkness like the of , forth to what learn and enjoy. It was impossible to very far the of snow-shoes, in to a part of the river where of ouzels lived. at about breakfast, of in the . Presently flew out to a stone against which the icy was , and turning to the wind, sang as as a lark in springtime. After an hour or with , across the Valley, and wallowing through the loose snow, to learn as much as about the the birds were their . In can they are then to the side of the Valley, the Canyon groves, which from their are the warmest. of the robins on the side of the larger branches of the trees, where the snow not fall on , while or of the

venturesome were desperate to get at the mistletoe berries by to the underside of the snow- , downward, like woodpeckers. and then some of the loose snow was dislodged and sifted down on the birds, sending to their in the grove, and like cold, . Some of the sparrows were scratching and pecking at the of the larger trees where the snow had been shed off, gleaning seeds and benum insects, joined and then by a robin of to get at the snow- mistletoe berries. The woodpeckers were to the snowless sides of the larger boles and overarching branches of the trees, short from side to side of the grove, pecking and then at the acorns they had stored in the bark, and aimlessly as if to keep , putting in the in a very dull . The nuthatches were threading the furrows of the barks in their and their quaint notes, of . The Steller' jays were, of , noise and stir than the birds ; and with bluster, as if each had a lump of melting sludge in throat, and to improve by the darkness and of the to from the acorn of the woodpeckers. of the golden eagles an as bolt upright on the top of a tall pine-stump, the , with to the wind and a tuft of snow on , a of . Thus - bird or , if not in . The was reflected in , and not note, not to , came from a . Their , contrasts to the , of the ouzel, out than a rose . , though the fall.

10 The With the of a and pinnacles, the is the only rock about the Valley that is , and its is in . a , , hard to invent a to the top of its -- in vain, until in the 1875, , an , the . The side Canyon is an from the to a depth of about 1600 , and on the opposite side it is for about as a depth. The side a very steep and curve from the top down a or , while on the , where it is with the Clouds' Ridge, a the , about below the . From the the rises in a curve a too steep for , besides defended by overleaning ends of the concentric layers of the . A or before the , , the - of the Valley, and little , clim smooth rocks like lizards, a bold effort to the top by up the curve with a which they fastened at by of -bolts into joints of the rock. that the upper part require , they the , to escape from the they had , some 300 above the . with ' , which had been left in , and resolutely drilled to the top, inserting -bolts to apart, and to each in , resting on the bolt while drilled a hole for the next above. some ity in the curve, or slight , enable to a a , which and again, and thus the whole was in a . From this to a which to in for the next ' , while getting out timber for and of the to from , was and alone in little . On the of , after from a to Mount , a or after had the , to the , not only for the of , to what learn. The -clouds had blossomed and the mountains and the high about the Valley were mantled in snow. was, , a little of from the slipperiness of the and the rock. to from the , to that in the - in which it then was. Moreover, the sky was overcast and snow-clouds to curl around the , and on icy came to . reflecting that had in , and that a little be , that in case of a the

be on the , what the clouds bring forth. pushed on and the top. It was of those , that between and , when the leaf have dim and the clouds and among the cliffs like for : hovering aloft, rock- with , or, afar over the tops of the forests, touching the of fir and pine with their soft fringes as if to the of the of snow. The was . A cloud of pearl luster, as and as the meadows and groves in the shadow beneath it, was across the Valley from to , resting on the abutment of , the on Rock. A little later, as on the Lake, a flock of smaller clouds, white as snow, came from the , their over the dark forests, and the Valley with through Canyon and over the and , moving swiftly, yet with . On they came, nearer and nearer, and beneath and filling the Canyon. Then the sun shone , lighting the pearly gray surface of the cloud-like sea and it glow. , , was to for the the of the " of the ." shadow, , about half a long, lay upon this white surface with startling . and forth, waved and struck sorts of , to . Considering that have down so from mountain tops on seas of sorts of clouds, it that have the " " only this once. A surface and a stand-, however, have been in the . After this the cloud-sea rose higher, the , and for a short submerging it, darkness like , and to think of for a in a cluster of pines. soon the sun shone again, the clouds, sinking lower and lower, , leaving the Valley with its - , while to the the -peaks, clad in snow, towered along the in array. Though it is , there are clumps of pines on the , re , *Pinus albicaulis*, *P. contorta* and *P. ponderosa*, var. *Jeffreyi*-- , of , and -. The alpine spiraea here also and blossoms with potentilla, erigeron, erigonum, pentstemon, solidago,



and an of onion, and or of grasses and sedges. None of these differs in respect from those of of the same , excepting the little narrow-leaved, - onion, which had not elsewhere. Notwithstanding the of to the of the the of the Valley from this lofty are than from low, on of the by down from so a . The is beyond , the of the is , and the whole range of on both sides low, when the Valley is flooded with noon sunshine; while the , the of the , is out of beneath ' . The of Little Valley is very , though to obtained from the base of the Cone, the towards Mounts , , , and the , are very effective and . has attempted to carry out ' plan of the . For part prefer leaving it in wildness, though, after , be done by over it. The surface be with and bottles, the gales blow the away. Avalanches off sort of or that be . Blue jays and ' crows have trodden the for a , and so have beetles and chipmunks, and be "" or be to list of . and not stir a of . When the ice- of the glacial poured down the flank of the Range over what is Valley, they were to break through a of extending across from Mount to ; and as the to near a close the shallowing ice- were and the was, , the to emerge, and shining like a above the surface of the icy sea; and though it has sustained the and tear of the of of , it yet remains a of the of the glaciers that brought it to light. Its surface is with glacial is the of .

11 The Glaciers: the Valley Was has been glaciated, the low plains and valleys as as the mountains. of an ice-, of in thickness, beneath heavy the have been , be , though glaciers only among the peaks of the High . mountain on this or of the that have is so as the in bold, , - glacial . , is or glacial. Not a peak, ridge, , canyon, , lake-basin, stream or forest will that does not in some the and of of flowing, , , soil-, - ice. For, notwithstanding the -glacial --the air, , snow, frost, river, avalanche, --have been at upon the of the Range for of of , each engraving its and deeply over those of the ice, the latter are so and so heavily emphasized, they rise in , clear and legible, through after-inscription. The of Greenland, Antarctica, and some of those of , are fashioned beneath a -crawling of ice, from a quarter of a to than a in thickness, illustrations of the of , when its lay in of formation. On the , the mountains of and , the , and on of those of , their ice- has been melted down into glaciers that flow river-like through the valleys, illustrating a in the , when canyon and valley was the of an ice-stream, of which be to their , where some - or of their topmost branches beneath mountain shadows. The from to another of those glacial was as count . When the cycle of snow , the Glacial , was in , the ice-, wasting from season to season faster than it was , to withdraw from the lowlands and became shallower . Then the highest of the and ridges, glaciers between , to above the icy sea. These river-like glaciers remained in toward the of the Range for . as the snow-fall , and the became milder, this upper part of the ice- was also in turn into smaller glaciers,

and these again into smaller, while at the same were shorter and shallower, though of the and then that brought their receding ends to a, or to for a or of. Meanwhile, - and, after long waiting, flocked to their, on higher and higher, along sun-warmed slope, closely following the ice, which, like shreds of clouds, at from the -born mountains, leaving in their, as . the ways of glaciers, mountain-waves in - that so, is . The and of the glacial in the upper are the glacier, they are so, and their is of so a, so of the loose, deeply lowlands where and their. They are or gently undulating areas of hard, which the surface upon which with the glaciers flowed. They are in in the subalpine, at an of from to. Some are in extent, only slightly interrupted by spots that have given to the, while the reflect the sunbeams like water or, and shine as if afresh, notwithstanding they have been to, dew, frost, and snow measureless of. The of and, so mountain, is by glacial, moraines however and -, canyons however deep or, rocks however high; when they to these shining they and in, kneel again and again to the brightest spots, and hard to for their shining smoothness. They have the avalanches of snow descending in through the woods, the rocks and away like weeds the trees that in their, that this cannot be the of avalanches, the scratches and that the, it was, moved along the sides of high rocks and ridges and up over the tops of as as down their slopes. Neither can they water have been the, for they the same polish upon ridges and of above the of flood. Of the of they know, only the wind of moving across the of the in the by the scratches and grooves.

The name of Lake is ""--the lake of shining rocks. of the, , came to and if what had the rocks so smooth. dogs and horses, when up the mountains, geology to this extent that they gaze at the brightness of the and it, and their cautiously upon it as if afraid of falling or sinking. In the production of this hard finish, the glaciers in flowed with a of than a tons to the yard, planing down, slate, and quartz alike, and bringing out the veins and crystals of the rocks with. Over large areas below the sources of the and the is porphyritic; crystals in or in in the part of the rock, and these, when planed off with the surface, rise to a on which the sunbeams splash and glow in. Here lie the brightest of the. The Range both to the and of this was, , glaciated about as heavily, the rocks are, their surfaces have given to the, leaving only small imperfect. The lower of the glacial surface at an of from 3000 to 5000 above the sea, and to below the of the Range. The short, steeply canyons of the flank also contain, brilliantly striated and rocks, these are than those of the flank. of the of the brightest and of the that, is to be had from the top of Fairview, a lofty rock near Peak that long ago named the Glacier, of the and of the. Its is about above the Meadows and 10,000 above the sea. At it, though a er will it be scaled on the side. About half-up will it so steep that there is of slipping, crystals, or long, of which the rock is full, having resistance to atmospheric than the of the rock in which they are imded, have been brought into slight in some, roughening the surface here and there, and affording helping. The is and scored like the sides and base, the scratches and

indicating that the Glacier over it as if it were only a mere boulder in the bottom of its . The it withstood have been . Had it been solidly it have been away, into moraine , like the adjacent rock in which it lay imded; for, as it is, it is only a hard like the , brought into by the removal of rock about it; an illustration of the of the and favorably . is the resistance it has to the mountain since its rose above the icy sea. The whole quantity of -glacial and tear it has suffered has not degraded it a hundredth of an , as be shown by the of the surface. A erratic boulders, nicely poised on its , an . They came from the -peaks away, drifting like chips on the sea, and were here when the top of the merged from the ice, while their , to be above the slopes of the sides where they not , were farther on by falling on the shallowing ice . The from the consists of a of ice-born rocks and mountains, long wavering ridges, meadows, lakes, and forest- moraines, of of . The lofty -peaks rise along the sky to the , the gray slopes of the Range toward the , and a ovy sea of shining rocks like the , some of as high and which from their to be rolling in the , like breaking waves. beneath are the Big Meadows, smooth with large breadths of woods on side, and watered by the River, rushing cool and clear from its snow- and ice-. the upper part of the basin of the Glacier is in , of the and of the ice-rivers. flooded by a from the ice-laden flanks of Mounts , , , , it poured its outflowing full against the of the Range, which and deflected it to right and left, just as a river of water is against an island in the of its . glaciers were thus , of which flowed through the Canyon and Valley, while the upward

in a deep across the , high between the basins of the and , into the Basin, and thence down through the Canyon and . The -like and freshness of this glacial ceannot fail to the of , little of its scientific significance be . These , - rocks, with their rounded backs and toward the glacier of the -mountains, and their split, fronts in the opposite , the force with which the ice-flood over , and also the of its flow. And the mountain peaks around the sides of the upper Basin, with their sharp unglaciated and rounded sides, indicate the to which the glaciers rose; while the moraines, curving and swaying in lines, the of the trunk and its tributaries as they toward the close of the glacial . None of the of the land or sea, with and , , and guide-boards, is so as are these , shining of the Glacier and its far- tributaries. like to some nearer of a of these ice-streams, though it is not to a selection from so a . The branches of the Glacier are, , to , their basins, full of , are the and to the like to beyond the valley . They , and be glaciers, since they were the used in and the Valley. The have given are, with the -, Creek, , , , and Glaciers. These converged in poise around from to , together into the Glacier, which, deeper, down through the Valley, small tributaries on its from the , , and Canyons; and at flowed out of the Valley, and on down the Range in a . At the that the tributaries above were as to their , the upper of the valley , and the highest rocks about , such as the , the uppermost of the and the , rose above the surface of the ice. during the Valley' earlier , its rocks, however lofty, were beneath a , which on above and about like the wind, the upper of the flowing ,

while the lower went and down in the and - canyons toward the of the Valley. glacier of the fluctuated in and depth and , and in of , down to the latest glacial . It , , be borne in that the following of the glaciers applies only to their , and to that phase of their that they toward the close of the glacial after of their was , and the of the Valley and the adjacent were brought into . The , - Creek Glacier was about in by or in , and from to a deep. Its tributaries, drawing their sources from the spurs of the Range, at a ; then, with each , and a of short from the rim of the basin, the trunk thus around to the in a curve, and poured its ice over the of in about . This and shallow glacier a sort of crawling, wrinkled ice-cloud, that became in shape and river-like as it grew . Encircling peaks to overshadow its highest , rock islets rose here and there amid its ebbing , and its , with and round-backed ridges, extended in down to the brink of the . In the meantime the chief tributaries, receding to the of the shadows their , continued to and , spreading soil, deepening lake-basins and touches to the in . At these also , and the whole basin is full of light. Forests flourish luxuriantly upon its ample moraines, lakes and meadows shine and bloom amid its , and a the of its streams. It is to the and slope of the Creek Glacier that owe the unrivaled and of the Falls. For had the of the ice- and the of the rocks been such as to down-thrusting of the Glacier as it the Valley, then, instead of a high fall have had a long slanting cascade, which after have been as and , if only had a to it so. The short, swift-flowing Glacier, extend along the slopes of the Range, a to the just . The erosive of the latter

was over a field of sunken, boulder-like and ridges. The Glacier, on the moved right a on a surface, descent of in , and deepening its , and with the Glacier as of its tributaries in the and of the Half , and the rocks adjacent to about the of the Valley. The of its is not that of its companion , though the declivity of its , and its to sun-heat of its from becoming torpid, lingering only up on the Mountain slopes to finish their and encircle with a of moraine soil for forests and . Nowhere in this will trees and shrubs and flowers the of ice. The Glacier crevassed here and there above the ridges it had to cross, instead of drawing its sources from the of the Range, , as have , of the outlets of the Glacier, from this like a river from a lake, , about long, and from to 2000 deep. In leaving the it crossed over the , as above, between the and basins, an ascent of . Hence, after its and a from the about Peak, it poured its flood over the ern rim of its basin in splendid . Then, crushing heavily against the Clouds' Ridge, it bore down upon the with . Toward the of the ice , while its companion continued to rock- for , the trunk became torpid, and , areas of rolling rock-waves and glistening , on surface water ran and . And the trunk throughout its whole extent, moraines are in its canyon ; nor, since its are, in , too steeply to of the deposition of moraine , do much of the . The of its glaciers beneath the shadow of the Half ; along the base of Peak above Lake and along the extending from the lake to the Big Meadows. The latter, on of the uniformity and of their shadows, moraines of and that are liable to be for of the left of the tributary glacier. the can spare or on

the tracks of this glacier, charmed and by its canyon, lakes and and resplendent glacier . The Glacier was longer and than the , and the only of the sources extended directly to the on the of the Range. Its were ranged side by side in , at an of from 10,000 to 12,000 above the sea. The , on the right side of the basin, extended from the to Peak; that on the left through the , and these were by a that extended around the of the basin in a at right to the . The ranges of high peaks and ridges that the snow for these , together with the Clouds' Ridge, inclose a basin, that was filled with a sea of ice, leaving an toward the through which flowed the trunk glacier, -fourths of a to a and a half , long, and from 1000 to deep, and between the Half and Mount . have Valley at this of its , have its ice than their tiny water of the . of the of these was by that of the Glacier that poured over the of the Half . This glacier, as a whole, resembled an oak, with a gnarled sing base and -spreading branches. rocks of its , among which glided the tributaries, mottled with black and red and gray boulders, from the peaks, while and anon, as the away, after raised its above the ice-flood to enrich the opening . The moraines in short sections along the sides of the canyons, their to by of the sides of the canyon too steep for moraine to lie on, and to down-torrents and avalanches. The left of the trunk be about from the mouth of the tributary to the Canyon. The of the right , extending from tributary to the Half , is of the character of the side of the canyon. A short side-glacier came in against it from the slopes of Clouds' ; fully to the sun, it was melted long before

the trunk, allowing the latter to deposit this of its moraine . Some of the and of this moraine be by following the Clouds' from , which crosses it obliquely and conducts sections by streams. Slate boulders be that have from the , distant. the of the moraine is of porphyritic from and Valleys. On the sides of the moraines a of , indicating in the of the glacier, by of snow-fall, , , that the of the glacial was by cycles of milder or stormier to those of -glacial . After the depth of the trunk to about , the became torpid, as is shown by the moraines, and lay dying in its like a snake, maintaining for a a feeble squirming in of depth, or where the bottom of the canyon was steeply . The -, however, continued fruitful long after the trunk had , rise to an array of short glaciers, extending around the rim of the basin a of - . of these have recently succum to the , dying in turn as by , , and , leaving only a feeble survivors beneath the coolest shadows, which are completing the of of the of the basins. The shallow glacier that at this filled the Basin, though once far from shallow, resembled a lake than a river of ice, half as as it was long. Its was about , and its depth nowhere much 1000 . Its chief , ranged along the side of the , at an of about 10,000 , gave to tributaries that flowed in a , and in the of the basin. The trunk at poured ward, then curved to the , deflected by the lofty its , and with the trunk, opposite Glacier . the relating to glacial in this basin are and , on of the by its ice-, with reference to the of larger glaciers from the of the Range earlier in the . From the base of the cone obtain a of the moraines out into the of the basin from the of the peaks,

between which the ice- lay. The right of the tributary, which took its rise between Red and Mountains, and in at its upper , and - , to those of the Glacier. The smoothness of the upper- that it is than the , of the boulders of which it is having crumbled. A to the , this moraine has an slope of - , and an above the bottom of the of and . Near the of the basin, just where the medial and moraines flatten out and , there is a smooth field of gravel, planted with arctostaphylos, that at the of a like a meadow. Stream sections the gravel deposit to be of the same material as the moraines, , and water- from the of torrents from the tributary glaciers after the trunk was melted. The of the basin is a , gray on the top, and white down the sides and at the base with snow, in which a crystal brook takes rise. The is up of smooth undulating of gray , that lift here and there into of which the cluster is the , while on the of the -peaks with canyons and neve between , variegated rocks out against the sky. The ice- of this basin, ranged side by side in gangs, furrowed the rocks with uniformity, producing irrigating for a of streams, and of soil adapted to of and grove. of the uplands is in so a of glacial . Its and peaks, and sing rock-waves, however in , and yet submissively to the . The basins have been are of rocks, with and groves; the is and forest, with rocks, each of the in its , and as harmoniously as are the petals of a flower. After in the Valley, and the down-thrusting from their and the declivity of their , the trunk flowed on through and out of the Valley. In its ascent was , of which be on the rocks at the lower of the Valley, while the after leaving the Valley is by the

moraines extending from the ends of the at an of from to . The right moraine was by a large tributary glacier that the basin of Cascade Creek, in its . The left is in for of its , or to the where a tributary came in from the . both are by the forests and underbrush upon , and by the denuding of and melting snows, It is, , the to be at that these moraines, up of material from the distant -mountains, and from the Valley , were not . The glacier of the , , Kern, and River Basins were on a and are so replete with that the of each, with the works they have fill a . can do little than everybody is to and for . The of flowing ice, whether in the of river-like glaciers or , the part it in the , is as yet little understood. Water rivers openly where , and so does the , and the sea, on the shores of the ; and the ocean of air, though , in a , and its of and its . glaciers, in their white solitudes, apart from , their in and darkness. Outspread, , they above the , on through , until, in the fullness of , the mountains and valleys are brought forth, furrowed for rivers, basins for lakes and meadows, and of the sea, spread for forests and ; then they shrink and vanish like clouds.

12 to ' - . 1. If were so - as to have only to in at daybreak, at o'clock in , with a pocketful of sort of dry breakfast stuff, for Glacier , , the of Fall, Fall, the top of Liberty Cap, Fall and the boulder-choked River Canyon. The leaves the Valley at the base of the Rock, and as from to along its the Valley rocks and falls are in , - . At an of about a , - down the Valley is obtained, the sheer of the and between the Rocks and . At a of about the Half comes full in , overshadowing of the Valley to the . From Glacier down 3000 over the edge of its sheer to the meadows and groves and yellow pine , with the meandering river sparkling and spangling through the midst of . Across the Valley a is of the , , Canyon, and , with the - paved basin of Creek and Mount in the background. To the , the Half close beside higher and than ; ward the , girdled with silver firs, and the -like basin of the and its deeply -peaks, "The "; and beyond , along the , the icy on the of the Range and swaths of forests on moraines, while the , and Falls are not only full in are distinctly heard as if were beside in their spray. The from the of are and . the crowds of peaks at the of the , and Rivers are in array; , the forests, yellow foothills and the plains and the Coast Ranges, hazy and dim in the . From Glacier down the into the lower of the basin, cross Creek and it to the Fall where from an outjutting rock at its will get a of its waters and canyon and the Half . Thence to the , it to the of the Fall. here an hour or , for not only have of the fall, of its , , rapids and, than , the into the of which the white river goes , of its in the . After an hour or so of this , body aglow, nerve flashing through

before , to the top of the Liberty Cap, only a that as as and are awake and with . The Liberty Cap, a companion of the Half , is sheer and on of its sides on the a , ice-, juniper-dotted slope extends to the where are where are : the side and of Half and Clouds', the Little Valley and its , the cluster of , , Glacier , and, the tremendously of , the of the hopper- canyon of the river from the of the Fall to the of the Valley. to the descend between the Fall and the Liberty Cap with side of both the fall and the rock, on through clouds of spray and along the rapids to the of the Fall, about a below the . here if is distant, for of this fall and the rock about it. Then descend a by its side, a dim through its spray, and a along the border of the boulder-dashed rapids and so to the , Valley. - . 2. Another - is to the Upper Fall, the top of the highest of the , Eagle Peak on the ; the of ; the of the Ribbon Fall; across the Ribbon Creek Basin; and to the Valley by the Big Oak -. The leaves the Valley on the side of the of the earthquake taluses opposite the Rock and as it within a rods of the of the fall, are obtained as it and through its spray, though when the snow is melting will be drenched. From the of the Fall the up a narrow canyon between the fall and a mural cliff that is here and there by glacial . a while on a iron- rock a little below the of the fall beside the throng of starry comet-like waters to learn of their , their of , and above , their , and from the snow-, hail-, - and wind- that have fallen on their glacier-, , ridgy basin. and , - through silver fir and pine woods to Eagle Peak, where the of the to be had on the - heights are . After an hour or of , , studying the , , the

rim of the Valley to the ridge and down to its , where will of ' and with of . Dragging away, to the of the Ribbon Fall, thence across the Ribbon Creek Basin to the Big Oak -, and down its to the Valley, the to the of and . - . 1. For a - to Mount , the on the , next down by Lake to Lake and return to the Valley by Cloud' and the and Falls. As on the , leave the Valley by the Falls and it to the -, a short of Porcupine . From that push up to the . Mount is a of gray that rises in the of the , about or in a from the Valley. Its slopes are low and clim, and here and there with -like crumbling piles and long jagged that like ; on the side it is and with lasting snow. of the is and thick with crystals, quartz, mica, hornblende, , , zircon, tourmaline, , out and closely and loosely as if they had been . Their radiance is in sunlight, the of small flowers that grow among . At only these radiant crystals are likely to be , closely a of very small gilia, phloxes, mimulus, , of with petals than leaves. On the borders of little streams larger flourish--lupines, daisies, asters, goldenrods, hairbell, mountain columbine, potentilla, astragalus and a gentians; with heathworts--bryanthus, cassiope, kalmia, vaccinium in boulder-fringing or covers. among the crystals and flowers as if were among stars. From the the is like a : forests, lakes, meadows, and snowy peaks. lies ' basin with its and small lakes, shining like larger crystals; the rocky, meadowy , by its snowy peaks in array; and the forest. On mountain are likely to . will it a sky . Clumps of pine and mountain hemlock will resin roots and branches for and light, and the rills, sparkling water. of the little will gaze at - with the crystals and

stars, and as lie at in the of the . The of the is the basin of the with its meadows, forests and of smooth rock-waves that to be rolling on towards like high heaving waves ready to break, and beyond these the mountains. of are the and the sunrise. mountain top be placed for this of mountain --to watch and the deepening of the and the sunbeams streaming through the snowy High , the lakes and crystals, the chilled and winged , and shine and in . With aglow, spangling Lake and Lake will away for on their ice- shores. Leave at the , cross to the side of the , and up in an to the of the between Creek and the upper River or Creek and the to Clouds . After a from the crest of this lofty wave will a on its that will down and Falls to the Valley in , left sky . - . 2. Another - is the same as the of the - , as far as the of Fall. From there the stream up through the of its forests and to the canyons between the Red and Peaks, and the where camped - ago. next the small glacier on the side of Peak, the of the - that in the . Glacial in the Basin are on the , and in the of that the canyon and moraines between the and Red Mountains were the of . The path of the glacier shone in as if with silver, and up the canyon on this bright lake after lake in solid basins of and a meadow along the canyon stream that links together. The moraines that the below the canyon are from a to high and , like embankments with a of silver fir and pine. this and forest is left behind, and of bryanthus, cassiope and willows to . The small lakes which a down the Valley are so with flowery meadows have at an of 10,000 only small brown of x, leaving bare rocks around than



half their shores. Yet, to , amid this the mountain pine on and of Red Mountain to the to it. Some that were over a high and - in , a of , as and as the giants of the lower zones. came on just as got into the canyon. It is about a and a little than long. The crumbling spurs of Red Mountain it on the , the somber cliffs of Mountain on the and a deeply-serrated, splintered ridge curving around from mountain to mountain shuts it in on the . was on the brink of of the lakes in a thicket of mountain hemlock, from the wind. next to the glacier to its . Passing around the shore of lake followed the stream from lakelet to another. The pines and hemlocks and the stream was with icicles. The moraines that extend from the mouth of the canyon are continued in straggling along the . the streams to the highest of its little lakes, a deposit of gray mud, like the mud corn from a . This suggested its glacial origin, for the stream that was it from a raw-moraine that to be in of formation. It is from to over a high in front, with a slope of about - . to the top of it, a very small glacier swooping down from the shadowy cliffs of the mountain to its moraine. The ice on the lower of the glacier; farther up it was with snow. The uppermost crevasse or "bergeschrund" was from to . The melting snow and ice a of rills that ran down the surface of the glacier, in their shining . After this over the High and that what at like snowfields were in part glaciers which were completing the of the peaks. Rising ,--which will be , as will be cold and will not be able to sleep much ,--after the glacier, the Red Mountain and enjoy the from the . lakes from an this mountain, and the to the over the Basin, the

forested of the basins waters into , and those of the rocks, the Half and the upper part of the , are very . , of , far the is the array of snowy peaks along the of the Range. Then from the top of this peak, light and and with mountain air and mountain , lightly down the slope of the mountain, descend the canyon between Red and Gray Mountains, thence along the bases of Gray Mountain and Mount and down into the of Little , and thence down the and Falls to the Valley, a - ! A - The - , as far as can , is the same as the of the - until Lake . There instead of to the Valley, the around the side of the lake, over to the Meadows and up to the base of Mount . Leave the there and for the highest on the timber between Mounts and and there. On the of the to the top of Mount in for the of the and the sunrise over the gray Desert and the forest of High peaks. When leave the mountain far down the side for a of the Glacier, then to the , it along the Meadows to the crossing of Budd Creek where will the Sunrise branching off up the mountain-side through the forest in a erly the side of Peak, which will down to the Valley by the and Falls. If are a can leave the where it to descend a steep slope in the silver fir woods, and bear off to the right and for the top of Clouds' . The is and and from the of Clouds' the Clouds' which will to the Valley by the and Falls. To not - this have instead of ; the at the ; thence to Mount and return to the , the there; thence by the Sunrise to Peak, the lake which lies about a to the of Peak, , and thence to Clouds' and the Valley as above. This is of the of the short that can be in the whole . Not only do the of the

rocks and waterfalls and the High with their glaciers, glacier lakes and glacier meadows, sections of the silver fir, -leaved pine, and pine zones; with the alpine flowers and shrubs, sods of vaccinium with flowers and fruit though than an high, of willow an high with catkins that rise from the , and of blue gentians, - and for a lifetime. The Upper to the of the , that requires at or . The to it is from about the of . The visitor the in has the of the falls not, , in their very flood next to it; while the glacier-meadows will be in their and the snow on the mountains will be firm to . Long ago these , only a of with a little tea and sugar and was thus and , that or out of the Valley in it is to a pack , so that the of a and a of can be had. The to leave the Valley will be by the Fall , the on the opposite the of the Range. Next Mount ; thence push on Lake into the Meadows and a near the , from which can be at leisure. For here in this upper Valley is the widest, smoothest, , and in the - in the High . And since it is connected with by , and a that between and Mount , it is also the . It is in the of the High of , 8500 to 9000 above the of the sea. The gray, Range bounds it on the ; a range or spur, the highest peak of which is Mount , on the ; the Mounts , , Mammoth, , and on the of the Range on the ; a heaving, owing of glacier- rocks and Mount on the . Down through the sunny meadow- of the Valley flows the River, and cool from its glacial , the highest of which are the glaciers that lie on the sides of Mount and Mount . Along the river a of glacier-meadows extend with little interruption, from the lower of the Valley to its , a of about , - from which the

mountains be as they down in serenity over the dark forests that their bases. Narrow strips of pine woods cross the meadow-carpet from side to side, and it is somewhat roughened here and there by moraine boulders and trees brought down from the heights by snow avalanches; for and it is so smooth and that a horsemen ride abreast over it. The lower of the meadows is about long and from a quarter to half a , the of the Valley is, on an , about . the river, that it a above the , the turning to Mount , the to Mount and Mount . Along both strips of meadow extend to their . The of the meadows are spread over lake basins, which have been filled up by deposits from the river. A of these river-lakes , they are shallow and are rapidly . The sod in is and silky and from weeds and bushes; while flowers , gentians, daisies, potentillas, and the pink bells of vaccinium. On the of the river and its tributaries cassiope and bryanthus be , where the sod curls over stream and around boulders. The grass of these meadows is a calamagrostis with very filiform leaves, and when it is in flower the to be with a faint purple mist, the stems of the panicles so that they are , and resistance in through . Along the edges of the meadows beneath the pines and throughout the part of the Valley tall ribbon-leaved grasses grow in , bromus, triticum and agrostis. In the are frosty, and then the meadows at sunrise, when leaf is laden with crystals, are a . The are warm and , and bees and butterflies continue to waver and hum about the -blooming flowers until the of the snow, in . then follows in , burying the meadows to a depth of from to , while avalanches descend through the forests from the laden

heights, depositing huge piles of snow mixed with uprooted trees and boulders. In the sunshine the snow lasts until the of the season' vegetation is not in bloom until in . the round - after of snowfall is from the of to the or of . The snow is then melted from the woods and slopes of the mountains and the meadows and are in their , while the is -reviving, exhilarating sunshine. The clouds that rise and then and the they are only to keep and . The groves about the are - on of the cold, pleasant-tasting water charged with carbonic acid, and of the of the mountains across the meadow--the Glacier , Peak, , Unicorn Peak and a of nameless , rising in and nearness above a dense forest on the left moraine of the glacier, which, , deep, and far-, exerted on the of this of the . there are - along the meadows, and move from grove to grove , and to satisfy for . There are capital to be from here--to the of Mounts , and , and through the Canyon to Lake and the volcanoes, and down the Canyon, at as far as the of the of river cataracts. of these are sure to be memorable with - ; none of will be with than the in on the velvet by the river, sharing the sky with the mountains and trees, of their and . The to the top of Mount is a very ; for though the mountain is 13,000 high, the ascent from the side is so and smooth that ride a mule to the very . Across a stream, from meadow to meadow, lies flowery ; mountains about , of by . ascending, mountains in , peak rising above peak with their snow and ice in of grouping and . is turned to the moraines, in curves from the hollows and canyons, to the waves and rising here and there above the heathy sod, a ago and shining.

Towards the base of the mountain note the dwarfing of the trees, until at a of about 11,000 of the , white-barked pine, ed so by the or of snow upon for that over as if on a shaggy rug. And, if about such , of this tree- not than high and about as in at the , that are from to , to , the of their , shaking their tasseled needles in the breeze right , the thin sunshine and their purple cones as if they meant to forever. The from the is of the and to be in the Range. To the gaze far out over the desert plains and mountains of the " Basin," range beyond range extending with soft outlines, blue and purple in the . than below lies Lake , in from to , and from to , lying bare in the treeless desert like a disk of metal, though at it is by mountain winds and streaked with foam. To the there is a range of pale-gray extinct volcanoes, and though the highest of rises above the lake, can down from here into their circular, craters, from which a short ago ashes and were over the surrounding sage plains and glacier-laden mountains. To the the is up of , gray, glaciated and ridge waves, of low, the high to be mountains; by canyons and darkened with lines and of forest, Peak and Mount in the ; small lakes and meadows in the . and the snowy mountains, along the of the Range, are in their , together in some like trees in groves, of , , yet and as the sky. Some glaciers are in . of these is the Glacier on the side of the mountain, lying at the of a about a high, with a pale-green lake a little below it. This is of the , small, shrunk of the glacial of the that once filled the hollows and valleys of the mountains and the lower ridges below the -, flowing to right and left away from

the of the Range, fed by the snows of the glacial . In the to Mount the base of the mountain is on meadow along the river. Turning to the above the of the river, enter the narrow branch of the Valley, narrow and deep to be a canyon. It is about long and from 2000 to 3000 deep. The meadow bottom is from about to yards , with gently curved margins about yards from which rise the of gray at an angle of about - , timbered with a light of pine and streaked in with avalanche . Towards the upper of the canyon the comes in , a balanced framed by the canyon . In the , when the grass is in flower, have the purple meadow willow-thickets on the river ; in the huge sing of that the base of the of the mountain, with fringing lines of dark woods marking the lower curves, smoothly snow-clad in the . If to on the will a - on the side of the river, about a above a cascade that comes down over the canyon in and . From here to the top of the mountains is an ' . At near the is , it is not so or as to deter of , while the are . To the are Mammoth Mountain, Mounts , , , and , unnumbered and unnamed; to the the and jagged range of Mount and the ; ward stretches the ridge between the of the and the , with the or of peaks that the of the branch of the ; and to the - extends the spur. These spurs like ranges at ; at in the of their extension, and their peaks to be and against another, while , canyons and ridges with their of lakes, glaciers, and snow-, maze and cluster between . In the ascent in or the glacier is crossed, for then its snow is smooth or melted off. in the is tedious the snow is then into and blades, sharp and , and set on edge in a . They lean towards the

of the glacier and extend across from side to side in in a at right to the of declivity, the between the about or , and the depth of the troughs between about . A problem than a over a glacier thus and is to the . The Glacier is about a and than a long, , , the of large, river-like glaciers--moraines, -bands, blue veins, crevasses, , while the streams that issue from it are, of , turbid with rock-mud, its on its . And it is the since it is the highest and of the Glacier, are away, and on the was so . The Glacier, once a tributary of the , is smaller. - ago set a of stakes in it to its of . Towards the of in the of the glacier it was only a little over an in - . The to from the can be in a , be near the shores of the lake, out on its islands and about the volcanoes. In the down the Big Canyon, be as far as a small, grassy, forested lake-basin that lies below the crossing of the Creek . And from this accustomed to on earthquake boulders, carpeted with canyon chaparral, can down as far as the big and return to in . , however, are not able to do , and it is to , to anywhere, and enjoy the of the . The canyon near the lower of the meadows and extends to the Valley, a of about , though it will much longer to scrambles through it. It is from to about deep, and is narrow, there are roomy, -like openings in it, and throughout its whole extent natures are on a --, rocks, , Sentinels, , Glacier , , There is a Half among its of rock , though far than the Half . Its falls and are . The sheer falls, when the snow is melting in spring, are small in as with those of and ; though in of be as . it is the or sloping falls on the river that are the crowning of the canyon, and these in , extent and

surpass those of canyon in the . The and of are in the upper part of the canyon, above the of entrance of Creek and Creek. For the river is , , on-rushing of snowy purple bloom, spreading over glacial waves of definite , gliding in silver plumes, dashing and foaming through huge boulder-dams, high into the air in wheel-like whirls, displaying , from side to side, doubling, glinting, in exuberance of mountain . is of a on through the of the canyon, out by . There is not a dull step the . With , it is a Valley from to . Besides these , far-, much- from the , there are numberless, little and scrambles and a dozen or so not so very little. Among the of these are to Lambert and ; to the topmost of Peak, and to those of the , around the base of which on to Mount ; to of the very loveliest of the glacier-meadows imded in the pine woods about of the , where - ago . It and , and can it by the base of Lambert' to Dog Lake and thence up through the woods about a or so; to the shining rock-waves full of ice-, crystals at the of the meadows; to Lake ; and, not , a long and very scramble down by the of the meadow along the toward Lake to the crossing of Creek, where turn off and the creek down to its with the . This is a scramble much of the of the in its glacial rock- and . If and fish at lake and stream to, a whole , or , will not be too long for this High . was long. From The Valley Short are in the to Lake to its reflections of the Half and Mount ; and in the ride down the Valley to the rainbows or up the river canyon to those of the Fall; where, in the spray, not getting drenched, what are round rainbows, when the ends of the bow are lengthened and at , a

circle which is and again and again as by the varying wafts of spray. A to the top of the Rock, or ride down the Valley and up to the once- for a ; while a , only or , do or riding their on the meadows by the river, the falls, and the relay of light and shade among the rocks from to , than those up the in large noisy . Those have while the round on part of the deeply . At so have it after the Valley for . Here are a from short which walkers useful. , up the river canyon, across the between the and Falls, through chaparral and boulders to the of Half , along the top of the to the , down by a crumbling slot gully and close along the base of the split front (the , sheer, in canyon ), thence up the and along the ridge to Clouds' --a sunset--then a starry to ; down through the junipers, down through the firs, in black shadows, in white light, roaring and , flowering ghost-like beneath their huge frowning cliffs; down the dark, gloomy canyon, through the pines of the Valley, murmuring in their , breezy sleep--a little for and --so much sun-, moon- and star-shine in it, and , up-and-down rhythmical, glacial . Another, to the of Fall by Canyon; thence up the Creek, it the to its highest sources of Mount , then a sweep around the of its -paved basin, passing its little lakes and bogs, and groves, trilling, warbling rills, and by the Fall Canyon. This was of Sabbath , -and-slide long ago before had been on the side of the Valley. Another was up, bright and , by Avalanche Canyon to Glacier , along the , its far outs and ins to the of the Fall, thence , bright and , by a brushy, bouldery slope between rocks and and along the Valley . This was of long, bright-

and bright- or ago when, like river and ocean , flowed , uncounted--a , , scrambly, botanical, -filled ramble. The up the Valley was by the brightness of the star. So was light, tree cast a - shadow on the smooth sandy . Everybody visits wants to the Big Trees. Before the rail was ed, of the - that the Valley through a grove of these trees by the ; namely, the , and Mariposa groves. The grove was on the Big Oak , the grove by the and the Mariposa grove by the and . , to of these groves, a has to be . to the Mariposa grove, the of the . On this Sequoia not only the Big Trees forests of silver fir, sugar pine, yellow pine, libocedrus and spruce. The not require than , a in a at , a on the of the River, and to the Valley or to Portal, the terminus of the rail. This by costs dollars. the High that have sketched from a a to like. None of mine when was exploring the over a a , of .

13 Of The Valley In the gold of 1849 and '50, the tribes along thus foothills became alarmed at the sudden of their acorn and game by miners, and soon to upon , in their , . This continued until the in into , some , by their and of . The or Grizzly Bear , secure in their deep mountain , were the and of , and it was while the Mariposa , under of , was to this and to the that their deep mountain , the Valley, was . From a on the of the , to the bands were to be in the mountains, to the that if they in and with the they be with and and be , if they did not in upon and . None of the to this , when a was to the chief the next . came entirely alone and in dignified before of the guards until to enter the . was by of the friendly as , the chief of the Grizzlies, and, after had been with , , with the of interpreters, of the wishes of the . the chief was very of and feared that was this method of getting the into for the of revenging . if to the and with as the tribes had done there be . what was the object of the to the . " , " , "do not from the about. The is and has with . do not from white . are able to do . , then. Let remain in the mountains where were born, where the ashes of fathers have been given to the wind. have ." To this the answered in : "If and have , do horses and mules? do rob the miners' camps? do the white and plunder and their houses?" was for some . understood what the had , for replied, " have horses and mules from the whites. This was . It is not to the prty of enemies have wronged . that the gold diggers were enemies. know they are not and be to in with . will stay here and be friends. do not to to the plains.

Some of the tribes have gone there are very . cannot with . Here can defend ourselves." To the firmly , " to the . If they do not will again horses and and plunder the whites. It was rob , houses and murdered . It they do not a , whole will be . Not of will be left alive." To this the chief replied, "It is useless to to about prty and . am and can if will, it is useless to lie to know than the . will not lie to if will let return to will bring in." was allowed to . The next came and were on the to to with the by the , was so and . Another from the deep Valley . The chief that the snow was so deep and village was so far down that it took a long to out of it. After waiting another the expedition started for the Valley. When was questioned as to the route and that the snow was so deep that the horses not through it. was along as guide. When the party had gone about half- to the Valley they met the on their to the on the . There were only - of and when the chief was what had become of the of band, replied, "This is of that are willing to with to the plains. the have gone with their wives over the mountains to the and tribes." that was not the truth, for not cross the mountains in the deep snow, and that knew they be at village or somewhere near it. The had been estimated to over . then to , " return to with and will of with to village to will not . They will if . " " will not of there," ; " do not know where they are. is small. of the of have from tribes and if they to the plains and are they will be by the friends of those with they have quarreled. was that was and it was that , that and can plenty in the mountains: , they to the hot plains

to be penned up like horses and ? has been sore since that am willing to , for it is for ." a, turns in breaking a through the snow, they in of the Valley in the and, guided by of ' , descended by the same route as that followed by the Mariposa , and the party went into on the river opposite . After supper, seated around a big , the Valley became the topic of conversation and Dr. Bunell suggested it a name. were , after a vote had been the name , by Dr. Bunell, was unanimously to the name of the so long had their there. The name of the Valley, however, is Ahwahnee. The had for the rocks and streams of the Valley, very of are in by the whites, , the , the . The expedition remained only and in the Valley, out on the of a and the - quarters on the of the after starting out. Thus, in the round had been to the Valley, of it had been explored in a and some of its had been named. the had fled up the Canyon and none of were , an to the fugitives. A expedition was in the same under of Boling. When the Valley was were , the wigwams with smoldering that they had been hurriedly that very . Later, had been left to watch the movements of the expedition were captured at the of the after a lively chase. of the were of the chief and the rock was named for . of these captives their escape within a , the youngest son of , was shot by guard while to escape. That same the chief was captured on the cliff on the side of Canyon by some of Boling' scouts. As toward the fell upon the body of son. Captain Boling through an interpreter, regret at the occurrence, not a did utter in . Later, an to escape was as was about to swim across the river. expected to be shot for

this and when brought into the presence of Captain Boling in , " , Sir Captain, , as son, as if they were to to . if had the . , Sir , can warriors to the chief. have dark with sorrow. the of . not the ? wait a little and when am will to and they in their sleep and to avenge the of their chief and son. , Sir , will for and , as have to and . With the wizards will the white and . , Sir Captain, not in . will in . will not leave , be with the among the rocks, the waterfalls, in the rivers and in the winds; wherever will be with . will not will the of the chief and grow cold. The has spoken. am done." This expedition captured the of the tribes at the of Lake and took to the , together with their chief, . after a short stay they were allowed to return to the Valley under restrictions. promised faithfully to conform to required, joyfully left the hot and dry , and with returned to . The following a party of miners was attacked by the in the Valley and of were . This to another expedition. A detachment of soldiers from Fort Miller under Lieutenant Moore, U..A., was at once dispatched to or punish the murderers. Lieutenant Moore the Valley in the and surprised and captured a party of , an alarm was given and and fled from their huts and escaped to the Monos on the side of the Range. On examination of the prisoners in the it was that each of had some article of that belonged to the murdered . The bodies of the miners were and on the edge of the meadow. When the captives were accused of the of the white they admitted that they had to white from to their Valley, declaring that it was their and that white had right to there their consent. Lieutenant Moore

through interpreter that they had their lands to the , that it belonged to the white and that they had to on the for . To this they replied that had consented to the sale of their Valley and had received pay for it. The chief, they , had right to sell their . The lieutenant fully that had captured the real murderers, promptly pronounced judgment and had placed in and shot. Lieutenant Moore the fugitives to was not successful in of . After hospitably entertained and by the and Paute tribes, they stole a of stolen horses from their entertainers and their by a long, obscure route by the of the of the , their once , , after a feast of horse-flesh, a band of Monos surprised in their huts, killing and . Only a small escaped down the river canyon. The Canyon and Lake were named for the chief. Very visits were to the Valley before the or 1855, when J. M. Hutchings, having heard of its , collected a party and the ' to the and in magazine it in articles illustrated by a , was into the Valley by for that . This party was followed by another from Mariposa the same , consisting of or per. The next the and a on the Mariposa side of the Valley was opened by Mann . This was afterwards purchased by the citizens of the and to the public. The house in the Valley was erected in the of 1856 and was kept as a the next by G. A. Hite and later by J. H. Neal and . M. Cunningham. It was directly opposite the Fall. A little over half a farther up the Valley a canvas house was put up in 1858 by G. A. Hite. Next a frame house was and kept as a by Peck, afterward by Longhurst and since 1864 by Hutchings. these hotels have the frame house in 1859, which has been changed beyond . A large on the brink of the



river in front of the is the only in the Valley. A large by the and farther up the Valley was . To for the overflow of there are camps with board floors, wood frame, and with canvas, , some of with electric light. A large - is very much needed. of has been rapidly , after the establishment, by Act of Congress in 1890, of the and the recession in 1905 of the original to the by the . The , of , was by the ion of the Valley rail from to the border of the , below the Valley. It is long, and the , the - from the of , is through the River Canyon. The was virtually blasted out of the solid rock for the in the canyon. was begun in , 1905, and the train Portal, the terminus, 15, 1907. of the as much as \$100,000 per . Its business has increased from 4000 in the it was operated to 15,000 in 1910.

14 Lamon The pioneer, Lamon, was the of the settlers cordially and unreservedly the Valley as . was born in the Shenandoah Valley, , 10, 1817, emigrated to Illinois with , Lamon, at the of ; afterwards went to Texas and settled on the Brazos, where raised melons and hunted alligators for a . "Right interestin' business," ; " the alligator part of it." From the Brazos went to the Comanche between Gonzales and Austin, from nearest . During the , the only had was the breast meat of turkeys. When the formidable Comanche were on the -path left after dark and slept in the woods. From Texas crossed the plains to and worked In the and Mariposa gold-. heard spoken of as a very mountain valley and after in the of 1857 and 1858 to the , up to quit and a permanent in it. In , 1859, moved into it, a opposite the Half , a lot of apple, pear and peach trees, planted potatoes, , that had in on a " mule," and worked for board in a which was afterwards purchased by Hutchings. thought was very foolish in attempting to raise crops in so high and cold a valley, and warned that raise and sell , and starve. For the or lack of provisions to move out on the of , in 1862 after had in raising some fruit and vegetables to in the Valley. The had , not a dog or cat, and was surprised to up the Valley. They were very to , for they had from Mariposa in of , a report having been spread that had been by . assured that safer in , lying snug and squirrel-like in 10 x 12 , than in Mariposa. When the avalanches to slip, where the roaring and booming came from, the flying snow preventing from . , upon the whole, at the brightness, , and sunniness of the , and hopefully

employed the in tearing for an and vegetable . In the a under the , where sunshine. praised the not induce to with until 1864. liked to describe the flood of 1867, the before , when the were striped with waterfalls. was a , , whole-souled , between and high, with a , , bland and guileless as pet oxen. stranger to and weariness, knew to of a like in , and there be, among the , can testify to , unostentatious kindness that exion in a small deeds. After to enjoy a long of in affluence and ease, in the of 1876. sleeps in a spot near Galen and a hewn from a block of grave.

15 Galen Galen was the met, and of the kindest and amiable of mountain friends. met at ranch - ago on to . had the Valley with companion by of , and returned by what was then as the Mariposa . Both were in deep snow where the was from 5000 to 7000 above sea in the sugar pine and silver fir . had , however, in by the of the of the . Botanizing by the , , plodding , and were again about out of provisions when ' hospitable at . kindly with flour and a little sugar and tea, and companion, complained of the numbing poverty of a vegetarian diet, gladly accepted ' of a of a bear that had just been . After a short about bears and the forests and the to the Big Trees, pushed on up through the firs and sugar pines, and camped in the - Mariposa grove. Later, after in the Valley, became with , while was . was elected again and again to this by Boards of on of efficiency and real of the Valley. Although mountaineering has been done , had the of having Galen with on . About - ago to accompany on a through the Big Canyon from Valley. The canyon up to that had not been explored, and knowing that the difference in the of the river at the of the canyon and in was about 5000 , expected to some cataracts or falls; nor were disappointed. When were leaving an begged leave to join . strongly advised not to such a long, hard , for it prove very to an inexperienced er. assured , however, that was to , gladly as it came, and hindrance or of sort. So at , after repeating advice that up the , consented to joining . the canyon by of Valley, each provisions, and tea, porridge, , In the of the out from came to what is as "Muir Gorge," and

hesitation to force a through it, wading and jumping from submerged boulder to another through the , bracing and with a long pole. Though the river was then low, the , roaring, surging it was ringing was nerve-, to inexperienced companion. With assistance, however, managed to get through, this hard trial, , proved too much and , pale and trembling, that farther. some wood at the upper throat of the gorge, a for and advised to at and , enjoy the and the of the water-ouzels which haunted the gorge, and assured that return some in the , though it be , as wished to on through the canyon if . pushed through the dense chaparral and over the earthquake taluses with such that the of the upper cataract while had an hour or so of daylight for the return . It was long after dark when , nerve-shaken companion , of , was and , not accustomed to solitude, however kindly and flowery and full of bird- and stream-. lay down in restful on the river beside a , instead of to down the gorge in the dark or over its high to blankets and provisions, which had left in the in a tree at the of the gorge. remarking that if had choice that between provisions and blankets choose blankets. The next in about an hour had crossed over the ridge through which the gorge is cut, provisions, tea, and had a breakfast. As soon as had returned to obtained provisions, pushed off alone up to the of Creek basin, the canyon by a side canyon, and completed the exploration up to the Meadows. It was on this from to the upper cataracts that had convincing proofs of 'daring and as , in fording torrents, and in forcing through thick chaparral. it somewhat to keep up with in dense,

tangled brush, though in jumping on boulder taluses and slippery cobble- had in leaving behind. After had the glaciers on Mount and Mount , kindly a with to in establishing a of stakes across the glacier to its of flow. On this also clim Mount together, when the snow which the glacier was melted into upcleaning, icy blades which were to cross, not to support , nor apart to enable to stride across each blade as it was met. Here again , lighter, had in a of . While resting after wearisome staggering and falling stared at the of blades, and , "think have ed sorts of and canyons, through kinds of brush and snow, this gets ." at urgent request joined small party on a to the River by of the high mountains, of the a . joined at the Mariposa Big Tree grove and intended to the , that, on of the difficulties encountered, the required was much than expected, turned near the of the of the River. In cooking mess of oatmeal porridge and tea, pot was the to boil, and used to , with in through brush in the easiest , and preparing meals, was so utterly less about . lie down anywhere on , rough or smooth, to remove cobbles or sharp-angled rocks protruding through the grass or gravel, saying that bones were as hard as stones and do harm. kindness to and was marvelously constant and . was not a business , and in an and barns at , before the to had been , borrowed , mortgaged prty and lost it . Though not the to the Mariposa Big Tree grove, was the to explore it, after had heard from a , had through the grove and gave the indefinite , that there were some big trees up there on the top of the hill and that they be of the same that had become so and - in the

grove farther . On this , Galen , went up and thoroughly explored the grove, the trees and measuring the , and becoming with it. stated also that had explored the forest to the and had the much larger grove of about , or distant from the Mariposa grove. Unfortunately of the grove has been cut and flumed down to the rail near Madera. was and literally a -. heard utter a hasty, angry, fault- . was uniformly pitched at a low tone, , although lances of and slight intonations of often that funny or mildly sarcastic was , upon the whole was serious and , and, however deep and fun-provoking a be, indulged in boisterous laughter. was very fond of and once after became with that liked " in the than to the top of a high ridge or mountain and off." preferred the mountain ridges and in the on of the and of the forests. Often rifle, a pounds of bacon, a pound of flour, and a and off hunting, for reason than to explore and get with the of within a journey of a or from . On these was alone and indulge in enjoyment of to ' . that on those , when was a from in a neighborhood where wished to , shot a deer, a grouse, and a bear. After diminishing the of a deer or bear by part of it, as much as of the of the meat to , and from hospitable - went away or unrested. The value of the mountain air in prolonging is exemplified in ' case. While in the mines contracted a cold that settled on lungs and inflammation and bleeding, and none of friends thought recover. The physicians had a short to . It was then that repaired to the sugar pine woods at and took up a claim, including the meadows there, and , of and exploring in the mountains about , bare-ed. In

a short lungs were healed. was of the sincere tree-knew. About before choice of a in the cemetery on the side of the Valley, not far from the Fall, and selecting a dozen or so of seedling sequoias in the Mariposa grove brought to the Valley and planted around the spot had chosen for . The there is gravelly and dry; by watering nursed of the seedlings into , thrifty trees, and they will long shade the grave of their and friend.

16 Valley is so that are to it as an , the only valley of its in the ; is not so as to have only of . have been in the that the same on the Range and were by the same in the same of . of these, the Valley, is in the about from and is to sorts of ers by a and that leaves the Big Oak at Meadows a below Crane , and to by of Creek basin and the of the of the . It is to have been by , a , in , a before the of the . After to it in the of , have it the " , " for it is a of the , not only in its rocks and waterfalls in the , groves and meadows of its flowery -like . The of is about 4000 above the sea; the about 3700 . And as the River flows through , so does the through . The of both are of gray , rise from the , are in the same and in both rock is a glacier . out from the is a rock by the , , the outermost of a 2300 high, with the Rocks of both in and . On the opposite side of the Valley, , there is a of the that rises sheer and to a of , and over its flows a stream which the fall have . From the edge of the cliff to the top of an earthquake talus it is in the air for a before it is into among talus boulders. It is in its in , when the snow is melting , fades and vanishes toward the of . The only fall know with which it be is the ; it excels that fall both in and airy- and . are to that mountain streams in their over cliffs of and tumble in a noisy chaos of mist and spray. On the , on part of their are they and . in on a sunny in , -deep in grass and flowers (as have often ), while the pines sway with . across the Valley a , gray cliff rising out of the and groves to a of , and in front of it ' silvery with sun-. In the white at the there is of , it is and in , and its to the base of the

cliff is like that of a feather in a room. the and of the sun-illuminated into which the water is ; they sift and float from to down the of that gray rock in so and a that can their , and and of as a of held in the . Toward the top of the fall of booming, comet-like , their solid, white , their tails like among gray and purple shadows, and dissolving, out by in their through the air. of these vanish a below the , to varied of cloud-like . Near the bottom the of the fall has increased from about to a . Here it is of yet tissues, and is a of --air, water and sunlight into stuff that . So a fall to valley; here, as in , in nowise , for a short to the of booms and thunders the Fall, , so near that have both of in full from the same . It is the of the Fall, has a much of water, is about in , and to be , though , and is dashed into huge of foam on projecting shelves and . falls be -- out in the sunshine descending like thistledown; in a jagged, shadowy gorge roaring and , its like an earthquake avalanche. Besides this there is a , fall on the river a short above the of the Valley. Its is like that of the in , and its roar as it plunges into a surging trout- be heard a long , though it is only about high. On Creek, a large stream, in with the Creek, there is a of joined here and there with swift flashing plumes like the between the and Falls, as they their glacier- , sliding, , hurraing, with crisp clashing spray with sifting sunshine. And besides these a small streams over the at , from to with birdlike and watering a cliff- and fernery, they are too to be in so a . The between the in their , , and of the rock- and those of the Valley has the of . have that the and rocks

the same In both valleys; so also do their and . Again, that part of the to the of the Fall has horizontal , about and above the , timbered with golden-oak. and timbered on the same of the , to the of Fall, and on . The is at the by the Half . is in the same though its rock is and in . The of the Valley is about and a half long, and from a to half a . The lower is a meadow about a long, with the trees to the sides and the river , and from the , upper, forested by a low of glacier- across which the river breaks in rapids. The trees are the yellow and sugar pines, digger pine, incense cedar, spruce, silver fir, the and golden-oaks, balsam cottonwood, Nuttall' flowering dogwood, alder, maple, laurel, tumion, The and are the yellow or silver pines like those of , the tallest over in , and the oaks in groves with trunks to in , and , shady, -spreading . The shrubs conspicuous flowery clumps and tangles are manzanita, azalea, spiraea, brier-rose, of ceanothus, calycanthus, philadelphus, cherry; with of and herbaceous about or out in the in by --lilies, Mariposa tulips, brodiaeas, orchids, , spraguea, draperia, collomia, collinsia, castilleja, nemophila, larkspur, columbine, goldenrods, sunflowers, mints of , honeysuckle, ferns here also, the and rock-ferns--pellaea, and cheilanthes of --fringing and rosetting dry rock-piles and ; woodwardia and asplenium on damp spots with fronds or high; the - in mossy by the falls, and the , -shouldered pteris the dry beneath the oaks and pines. It , , that Valley, far from a , , rock-meadow, as have not it to , is a , of ' and mountain . As in , the rocks of its to glow with , whether in or in , to and alike, their in the

sky, their set in the groves and flowery meadows, while birds, bees, and butterflies the river and waterfalls to stir the air into -- and and of here and blending, just as they do in , to into close and with . to , this and of the , of the of for the and and of the , is in of and into a to with water and light, thus flooding it from to and burying its and groves or deep. This scheme has long been planned and urged (though water as and can be got from outside of the ' , in a dozen ), of the cheapness of the and of the which it is sought to divert from the to which it was dedicated in the Act of 1890 establishing the . The of and goes on with civilization over the , and they both in and as their value is . Everybody needs as as , to in and pray in, where and and to body and soul alike. This - is in the little window-sill of the , though only a geranium slip in a , as as in the fully tended rose and lily of the , the of and botanical , and in --the Yellowstone, , Sequoia, --' , the and of the . , like else while, from the very , however , they have been subject to attack by despoiling gainseekers and mischief-makers of from Satan to , eagerly to and selfishly , with schemes disguised in smug-smiling philanthropy, industriously, shampiously crying, "Conservation, conservation, panutilization," that and beast be fed and the Nation . Thus long ago a enterprising merchants utilized the Jerusalem as a of business instead of a of prayer, , buying and selling and sheep and doves; and earlier , the forest , including only tree, was likewise despoiled. since the establishment of the , has been on around its borders and this will on as part of the battle between right and , however much its be shorn, or its

. The to the by the Supervisors for the of Lake and the Valley was in 1903, and on 22nd of that it was denied by the of the , , truthfully : Presumably the was created such by law within its , inclusive alike of its small lakes, like , and its , like and Valley. It is the aggregation of such scenic that the a which the Congress of the sought by law to reserve for as as practicable in the fashioned by the of the Creator--a worthy object of pride and a source of healthful and for the of sojourn there during the . In 1907 when Garfield became of the the was and ; under successor, Fisher, the has been referred to a Commission, which as this goes to has it under consideration. The and in the are its valleys--, , and Upper ; and they are also the with reference to their to the --the and Canyons, and the High peaks and glaciers, , at the of the rivers. The part of the Valley is a flowery or long, surrounded by snowy mountains, slightly from meadows, which together a about in , the highest to the of Mount , Mount , Mount and Mount . It is about 8500 above the sea, and the High from which are to the mountains, , glaciers, ; across the Range to the Lake and volcanoes and down the Canyon to . be submerged for a , as , not only it be utterly , the canyon to the of the High be hopelessly and the , as the watershed of a , virtually be to the public. So far as have learned, of the have the and seek and in it are in favor of this outrageous scheme. of later visits to the Valley was in the of 1907 with the William Keith, the . The leaf-were then ripe, and the godlike rocks in to glow with . The , under their spell, after along the river and

through the groves and , studying the ; and, after about sketches, declared with that although its were in , in and charm surpassed . That to such a ; experience that there are and for . The proponents of the scheme bring forward a lot of arguments to prove that the only righteous to do with the ' is to bit by bit as they are able. Their arguments are curiously like those of the devil, devised for the of the --so much of the very Eden fruit to waste; so much of the water and to waste. of their statements are , and are misleading. Thus, , they , is a "low-lying meadow." On the , it is a high-lying , as the photographic illustrations . "It is a minor , like of ." On the it is a very uncommon ; after , the and in ways the in the . "Damming and submerging it 175 deep enhance its by a crystal-clear lake." , of recreation and worship, are by and burying . The sham lake, forsooth, be only an eyesore, a dismal blot on the , like to be in the . For, instead of it at the same the , allowing of to shores, it , of , be full only a or in the spring, when the snow is melting ; then it be drained, the slimy sides of the basin and shallower parts of the bottom, with the drift and waste, and of the upper basins, here instead of on to decent burial along the of the river or in the sea. Thus the -lake be only a rough imitation of a lake for a of the spring , an sepulcher for the . " water is the purest of to be in the , unpolluted, and forever unpollutable." On the , excepting that of the below , it is than that of of the streams, of the sewerage of draining into it, of the Big Meadows , by of and , with their , for , soon to be followed by from the . These , devotees of ravaging commercialism, to have a

contempt for , and, instead of lifting their to the God of the mountains, lift to the Almighty . ! As for water-tanks the ' and churches, for holier has been consecrated by the of . Appendix A Legislation About the In the 1864, Congress the following act:-- ACT OF 30, 1864 (13 STAT., 325). An Act Authorizing a to the of of the "Yo-Semite Valley," and of the land embracing the "Mariposa Big Tree Grove." "Be it enacted by the Senate and House of of the of , in Congress , That there be, and is hereby, to the of , the 'Cleft' or 'Gorge' in the Peak of the Mountains, in the of Mariposa, in the aforesaid, and the waters of the River, and as the Valley, with its branches and spurs, in estimated , and in from the edge of the , on each side of the Valley, with the stipulation, , that the accept this upon the ex that the premises be held for public , resort, and recreation; be inalienable for ; leases not be for of premises. incomes from leases of privileges to be expended in the preservation and improvement of the prty, or the leading thereto; the to be at the of by the Surveyor-of , official , when affirmed by the Commissioner of the Land , constitute the of the locus, extent, and limits of the Cleft or Gorge; the premises to be managed by the Governor of the , with , to be by the Executive of , and receive compensation for their services. "Sec. 2. And be it further enacted, That there likewise be, and there is hereby, to the of , the tracts embracing what is as the 'Mariposa Big Tree Grove,' not to the of sections, and to be in legal subdivisions of -quarter each, with the like stipulations as in the of this Act as to the ' acceptance, with like as in the of

this Act as to inalienability, yet with the same lease privileges; the income to be expended in the preservation, improvement, and of the prty, the premises to be managed by , as stipulated in the of this Act, and to be in legal subdivisions as aforesaid; and the official of the Surveyor-, when affirmed by the Commissioner of the Land , to be the of the locus of the Mariposa Big Tree Grove." This act was approved by the President, 30, 1864, and shortly after the Governor of , F. F. Low, a proclamation possession of the Valley and Mariposa grove of Big Trees, in the name and on behalf of the , appointing to manage , and warning per against trespassing or settling there authority, and forbidding the of timber and injurious acts. The Board of were F. Law Olmsted, J. . Whitney, William Ashburner, . W. , E. . Holden, Alexander Deering, W. Coulter, and Galen . ACT OF 1, 1890 (26 STAT., 650). [Footnote: Sections 1 and 2 of this act pertain to the , while 3 sets apart , and also a of Sequoia .] An Act To set apart certain tracts of land in the of as forest . "Be it enacted by the Senate and House of of the of in Congress , That the tracts of land in the of as as follows: Commencing at the corner of township , range Mount Diablo meridian, thence eastwardly on the between townships and , ranges - and ; thence southwardly on the between ranges - and to the Mount Diablo base ; thence eastwardly on base to the corner to township , ranges and - ; thence southwardly on the between ranges and - to the corner of township , range ; thence eastwardly on the between townships and , range - to the corner to townships and , ranges - and -



; thence southwardly on the between ranges - and - to the standard ; thence westwardly on the standard to the corner of township , range ; thence northwardly on the between ranges and to the corner of township , range ; thence westwardly on the between townships and to the corner of township , range ; thence northwardly on the between ranges and to the corner of township , range , the of , are hereby reserved and with from settlement, occupancy, or sale under the laws of the , and set apart as reserved forest lands; and per locate or settle upon, or the same or part thereof, as hereinafter , be considered trespassers and removed therefrom: , however, That in this act be construed as in anywise the of lands to the of by virtue of the act entitled, 'An act authorizing a to the of of the Valley, and of the land embracing the Mariposa Big-Tree Grove,' thirtieth, and -; or as bona-fide entry of land within the limits above under law of the prior to the approval of this act. "Sec. 2. That be under the exclusive of the of the , duty it be, as soon as practicable, to and such rules and regulations as deem or for the and management of the same. Such regulations for the preservation from injury of timber, mineral deposits, curiosities, or within , and their retention in their . The , in discretion, leases for purposes for not of small parcels of not ; at such in as require the erection of buildings for the accommodation of ; of the proceeds of leases and revenues that be from source connected with to be expended under in the management of the same and the ion of and paths therein. against the wanton of the fish, and game within , and against their or , for

the purposes of merchandise or profit. also per trespassing upon the same after the passage of this act to be removed therefrom, and, , be authorized to such as be or to fully carry out the objects and purposes of this act. "Sec. 3. There also be and is hereby reserved and with from settlement, occupancy, or sale under the laws of the , and be set apart as reserved forest lands, as herein before , and subject to the limitations and provisions herein contained, the following additional lands, to wit: Township , range of the Mount Diablo meridian, excepting sections -, -, -, and - of township, included in a . And there is also reserved and with from settlement, occupancy, or sale under the laws of the , and set apart as forest lands, subject to like limitations, , and provisions, of townships and , of ranges - and of the Mount Diablo meridian. And there is also hereby reserved and with from settlement, occupancy, or sale under the laws of the , and set apart as reserved forest lands under like limitations, restrictions, and provisions, sections and in township , range - of Mount Diablo meridian, and also sections - and - of township , range - of the same meridian. in this act authorize rules or contracts touching the and improvement of , beyond the sums that be received by the of the under the provisions, or authorize charge against the Treasury of the ."

ACT OF THE LEGISLATURE OF THE OF , APPROVED 3, 1905. "Sec. 1. The of does hereby recede and regrant unto the of the 'cleft' or 'gorge' in the peak of the Mountains, in the of Mariposa, of , and the waters of the River, and as the Valley, with its branches and spurs, unto the of in trust for public , resort, and recreation by the act of

Congress entitled, 'An act authorizing a to the of of the Valley and of the land embracing the Mariposa Big Tree Grove,' approved thirtieth, and -; and the of does hereby relinquish unto the of and resign the trusts created and by the act of Congress. "Sec. 2. The of does hereby recede and regrant unto the of the tracts embracing what is as the 'Mariposa Big Tree Grove,' planted unto the of in trust for public , resort, and recreation by the act of Congress referred to in of this act, and the of does hereby relinquish unto the of and resign the trusts created and by the act of Congress. "Sec. 3. This act from and after acceptance by the of of the recessions and regrants herein thereby forever releasing the of from further of maintaining the premises, the same to be held for by the of for public , resort, and recreation and on the of the of maintaining the same as a : , however, That the recession and regrant hereby not vested rights and interests of per." Appendix Table of From the ' , in the village, the to are in as follows:

. Fall	4.04	Cascade Falls
7.67 Cloud' ,	11.81	Rock, on Eagle
Peak 1.98 , Mt.,	40.34	Eagle
Peak	6.59	
3.63 Glacier ,	4.45	Glacier , by Falls
16.98 , Mt.,	38.20	
2.03 Lake, by Hunt' avenue	2.91	Fall ( )
4.63 Fall, above	5.45	
5.29 Register Rock	3.24	Ribbon
Fall	3.99	Rocky (base of )
1.45 Tenayah Creek	2.26	Tenayah
Lake	16.00	Falls,

0.90 Falls, Upper Fall	2.67 Falls, top
4.33 (Eagle Peak )	24.50
5.57 Union , on Glacier	3.13 Fall
3.50 Appendix C	Maximum Rates for
Transportation	The following rates for transportation
in and about the Valley have been	by the Board of : -
HORSES	From Route to
Amount Valley	Glacier and , and return,
\$3.00 , same Valley	Glacier , , and ,
3.75 and return, , same Valley	
Glacier , , and , 3.00	passing at Glacier
Valley Glacier , , Fall, 3.00	and
Casa , passing at Casa Valley	Glacier , , Fall,
4.00 Fall, and thence to Valley same	
Glacier Valley	2.00 Glacier
, Fall, and Casa , 2.00	passing at Casa
Glacier , Fall, Fall, 3.00	and thence
to Valley same Valley , and Falls, , 3.00	
and return to Valley same Valley	Glacier by
Casa , passing 3.00	at Glacier Valley
, and Falls, , 4.00	Glacier , and thence to
Valley same Valley Cloud' and return to Casa	
3.00 Valley Cloud' and return to Valley same	
5.00 Casa Cloud' and return to Casa or 3.00	
Valley same Casa	Valley
2.00 Casa Fall, , and Glacier , 2.00	
passing at Glacier Valley	Fall, , Glacier ,
3.00 and Valley same	Upper Fall,
Eagle Peak, and return 3.00	Charge for
guide (including horse), when 3.00	-horses,
on of Valley, per 2.50	1. The above charges do
not include feed for horses when passing at Casa or	

Glacier . 2. Where Valley is specified as starting-, the above rates prevail from in Valley, or from the of . 3. shortening of above , proportionate reduction of rates, be at the option of those hiring horses. 4. than those above specified be subject to between letter and hirer.

CARRIAGES From Route to  
Amount Hotels Lake and return,  
\$1.00 Hotels Lake and return by Avenue  
1.25 Hotels Lake and return to of , to 1.00  
and Falls Hotels Falls and return, 1.00  
Hotels , down side of Valley, and return 1.50  
on opposite side, at and Falls Hotels  
Cascade Falls, down side of Valley, and return 2.25  
on opposite side, at and Falls Hotels and  
return, , at 2.00 Falls Hotels and  
return, , at 2.00 Falls Round Drive,  
including and 2.50 Falls, excluding Lake and  
Round Drive, including and 3.50 Falls, Lake,  
and 1. When the value of the seats hired in vehicle

\$15 for a -horse team, or \$25 for a -horse team, for in the above schedule, the per hiring the seats have the privilege of paying than the aggregate sums of \$15 and \$25 per for a -horse and -horse team, respectively. 2. If -horses be substituted for of the above , rates will apply to each horse. In case the per diem charge of \$2.50 for each -horse, on of Valley, be . of the above rates, as as extortion, incivility, misrepresentation, or the riding of unsafe , be promptly reported at the ' .

