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Coniferous Forests of the Sierra Nevada. II.

John Muir

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opened a school. From there he removed to Grasmere, and finally to Nab Cottage, on the banks of Rydal Water, where he spent the rest of his days. He had no enemy but himself, nor was he so great an enemy to himself as another might have been in his place; for whatever his life was at times, his heart was always tender and loving, and his genius pure and beautiful. Tempted, suffering, repentant, he died in his fifty-fourth year, and was buried by the side of Wordsworth. "Let him lie with us," said the old poet; "he would have wished it."

If the irregular life of Hartley Coleridge left its impress on his writings, it did not impair the clearness of his mental vision, nor the exquisite finish of his workmanship. If it saddened his sensitive nature, it did not make him morbid, or unjust to others. There is a grace, a sweetness, a sense of shy, secluded beauty in his sonnets, which separate him from the poets of his time as surely as the odes of Collins separate him from the versifiers of his time, and which have given him an enduring though not a lofty place among the sonneteers of England.

The last half of the third century of the English sonnet need not detain us, for, amid the multitude of singers who have illustrated it, I find but one who seems to me to rank with the great masters of this species of composition,—Mrs. Browning. Nearly twenty years have passed since this lady closed her eyes to earthly things in the Italian home she loved so well. She has had successors of her own sex, but none who has proved worthy to fill the high place from which she was stricken. She possessed an intense, fiery nature, which allied her to the greatest of poets, and which justified the intellectual relationship that one of her admirers claimed for her, when he christened her "Shakspere's Daughter." Her earliest sonnets (for it is her sonnets alone that concern us here), which were published in the second of her two volumes of collected poems, in 1844, are remarkable productions. They are all, if I remember rightly, of the legitimate Italian construction, which Mrs. Browning (then Miss Elizabeth Barrett) was too accomplished a scholar to despise, and on that account are entitled to high praise as art-work among the clumsy quatorzains of her contemporaries; but they are exceedingly provoking, they are so strained and harsh, and so negligent of the minor morals of verse. They were followed about two years later (in point of composition I mean) by a series of personal sonnets, which are the noblest ever written—I will not say by a woman, which might sound invidious—but by anybody. I refer to the series of forty-four, in which she confessed the impassioned secrets of her heart, when it was first touched to its finest issues, and which were finally given to the world as "From the Portuguese." Never before was there such revelation of the depths of woman's nature, such recognition of the divine necessity of love. The sonnets of Petrarch are artificial in comparison, and those of Shakspere, magnificent as they are, should be read before, and not after them, to be fully enjoyed. She has surpassed her English and Italian masters, in that she has written the one great personal poem of all time. All honor, then, to this glorious woman, who has so grandly completed the third century of the English sonnet.

THE CONIFEROUS FORESTS OF THE SIERRA NEVADA. II.

GRAND SILVER-FIR. WHITE-FIR.

(*Picea grandis.*)

We come now to the most regularly planted of all the forest belts, composed almost exclusively of two magnificent firs, Picea grandis and Picea amabilis. It extends, with no marked interruption, for four hundred miles, at an elevation near the middle of the range of from five thousand five hundred to eight thousand five hundred feet, gradually ascending toward the south and descending toward the north. The grandis forms the lower portion of the belt, the amabilis the upper, while the middle is made up of about equal numbers of both species.

In its young days, Picea grandis is a strikingly symmetrical tree, holding itself strictly erect, with its branches regularly whorled in level collars around the whitish-gray axis, which terminates in a strong, hopeful shoot. The leaves are put on in two horizontal
rows, along branchlets that commonly are less than eight years old, forming handsome plumes, pinnated like the fronds of ferns. The cones are grayish-green when ripe, cylindrical, about from three to four inches long by one to two wide, and stand bolt upright on the upper branches.

Full-grown trees, favorably situated as to soil and exposure, are about two hundred feet high, and five or six feet in diameter near the ground, though larger specimens are by no means rare.

As old age creeps on, the bark becomes rougher and grayer, the branches lose their exact regularity, many are snow-bent or broken off, and the main axis often becomes double or otherwise irregular from accidents to the terminal bud or shoot; but throughout all the vicissitudes of its life on the mountains, come what may, the noble grandeur of the species is patent to every eye.

**LOVELY SILVER-FIR. RED-FIR.**

* (Picea amabilis.)

This is the most exactly beautiful tree in the Sierra woods, far surpassing its companion species in this respect, and easily distinguished from it by the purplish-red bark, which is also more closely furrowed than that of the Grand, and by its larger cones, more regularly whorled and fronded branches, and by its leaves, which are shorter, and grow all around the branchlets and point upward.

In size, the two species are about equal, the *amabilis* perhaps a little the taller. Specimens from two hundred to two hundred and fifty feet high are not rare on well-ground moraine soil, at an elevation of from seven thousand five hundred to eight thousand five hundred feet above sea-level. The largest that I measured stands back three miles from the brink of the north wall of Yosemite Valley. Five years ago it was two hundred and forty feet high, with a diameter of a little more than five feet.

Happy is the man with the freedom and the love to climb a silver-fir in full flower and fruit. How admirable the forest-work of Nature is then seen to be, as one makes
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Silver-fir forest growing on moraines of the Hoffman and Tenaya Glaciers.

his way up through the midst of the broad, fronded branches, all arranged in exquisite order around the trunk like the whorled leaves of lilies, and each branch and branchlet about as strictly pinnate as the most symmetrical fern-frond. The staminate cones are seen growing straight downward from the under side of the young branches in lavish profusion, making fine lines of rosy purple amid the grayish-green foliage. On the topmost branches are found the fertile cones, set firmly on end like small casks. They are about six inches long, three wide, covered with a fine gray down, and streaked with delicious crystal balsam that seems to have been poured upon each cone from above.

Both of the silver-firs live to a good old age—two hundred and fifty years or more when the conditions about them are at all favorable. Some venerable patriarch may often be seen, heavily storm-marked, towering in severe majesty above the rising generation, with a protecting grove of saplings pressing close around his feet, each dressed with such loving care that not a leaf seems wanting. Other companies are made up of trees near the prime of life, exquisitely harmonized to one another in form and gesture, as if Nature had culled them one by one with nice discrimination from all the rest of the woods.

It is from this tree, called red-fir by the lumberman, that mountaineers always cut boughs to sleep on when they are so fortunate as to be within its limits. Two rows of the plushy branches overlapping along the middle, and a crescent of smaller plumes for a pillow, curving inward at the tips, form the very best bed imaginable. The essences of the pressed leaves seem to fill every pore of one's body, the sounds of falling water heard near and far make a soothing hush, while the ferny arches overhead, two hundred feet high, afford noble openings through which to gaze and dream into the deep, starry sky. Even in the matter of sensuous ease, any combination of cloth, steel springs, and feathers seems vulgar in comparison.

The fir woods are delightful sauntering-grounds any time of year, but most so in autumn. Then the noble trees are hushed in the warm, spicy light, and dripping with balsam; the cones are ripe, and the seeds, with their ample purple wings, mottle the air like flocks of butterflies; while deer feeding in the flowery openings between the groves, and birds and squirrels in the branches, make a pleasant stir, which

[Image of Silver-fir forest growing on moraines of the Hoffman and Tenaya Glaciers.]
enriches the deep, brooding calm of the glorious wilderness and gives a peculiar impressiveness to every tree.

No wonder the enthusiastic Douglas went wild with joy when he first discovered this species. Even in the forests of California, where so many noble evergreens challenge admiration, we linger among these colossal firs with fresh love and extol their beauty again and again, as if no other in the world could henceforth claim our regard.

THE TWO-LEAVED PINE. TAMARACK-PINE. 

(*Pinus contorta.*)

This species forms the bulk of the alpine forests, extending along the range, above the fir-belt, up to a height of from eight thousand to nine thousand five hundred feet above the level of the sea, and growing in beautiful order upon moraines that are scarce at all changed as yet by post-glacial weathering. Compared with the giants of the lower zones, this is a small tree, seldom attaining a height of a hundred feet. The largest specimen I ever measured was ninety feet in height, and a little over six in diameter four feet from the ground. The average height of mature trees throughout the entire belt is probably not far from fifty or sixty feet, with a diameter of two feet six inches. It is a well-proportioned, rather handsome little pine, with grayish-brown bark, and crooked, much-divided branches, which cover the greater portion of the trunk, not so densely, however, as to prevent its being seen. The lower limbs curve downward, gradually take a horizontal position about half-way up the trunk, then aspire more and more toward the summit, thus forming a sharp, conical top. The foliage is short and rigid, two leaves in a fascicle, arranged in comparatively long, cylindrical tassels at the ends of the tough, upcurving branches. The cones are about two inches long, growing in stiff clusters among the needles, without making any striking effect, excepting while they are very young, when they are of a vivid crimson color, and the whole tree appears to be dotted with brilliant flowers. The sterile cones are still more showy, on account of their greater abundance, often giving a reddish-yellow tinge to the whole mass of the foliage, and filling the air with pollen.

No other pine on the range is so regularly planted as this one. Moraine forests sweep along the sides of the high, rocky valleys for miles without a single interruption; still, strictly speaking, they are not dense, for flecks of sunshine and flowers find their way into the darkest places, where the trees grow tallest and closest together. Tall, nutritious grasses are specially abundant, growing over all the ground, in sunshine and shade, like a farmer's crop, and serving as pasture for a multitude of sheep that are driven from the arid plains every summer as soon as the snow is melted.

The two-leaved pine, more than any other, is subject to destruction by fire. The thin bark is streaked and sprinkled with resin, as if it had been showered down upon it like rain, so that even the green, fresh trees catch fire very readily, and during strong winds whole forests are destroyed, the flames leaping from tree to tree, and forming one continuous belt, that goes surging and racing onward above the bending woods, like the grass-fires of a prairie. During the calm, dry season of Indian-summer, the fire creeps quietly along the ground, feeding on the dry needles and burs; then, arriving at the foot of a tree, the resinous bark is ignited, and the heated air ascends in a powerful current, continually increasing in velocity, and dragging the flames swiftly upward; then the leaves catch fire, and an immense column of flame,
beautifully spired on the edges, and tinted a rose-purple hue, rushes aloft thirty or forty feet above the top of the tree, forming a grand spectacle, especially on a dark night. It lasts, however, only a few seconds, vanishing with magical rapidity, to be succeeded along the fire-line at irregular intervals by others—tree after tree flashing and darkening for weeks at a time, and leaving the trunks and branches hardly scarred. The heat, however, is sufficient to kill the trees, and in a few years the bark shrivels and falls off. Belts miles in extent are thus killed and left standing with the branches on, peeled and rigid, appearing gray in the distance, like a misty cloud. Later, the branches drop off, leaving a forest of bleached spars. At length the roots decay, and the forlorn trunks are blown down during some storm, and piled one upon another, until they are consumed by the next fire, and leave the ground ready for a fresh crop.

The endurance of the species is shown by its wandering occasionally out over the lava plains, with the yellow-pine, and climbing morainelcss mountain-sides with the dwarf-pine, clinging to any chance support in rifts and crevices of storm-beaten rocks—always, however, showing the effects of such hardships in every feature.

Down in sheltered lake-hollows, on beds of rich alluvium, it varies so far from the common form as frequently to be taken for a distinct species. Here it grows in dense sods like grasses, from forty to eighty feet high, bending all together to the breeze, and whirling in eddying gusts more lithely than any other tree in the woods. I have frequently found specimens fifty feet high less than five inches in diameter. Being thus slender, and at the same time well clad with leafy boughs, at least near the top, they are oftentimes bent to the ground when laden with soft snow, forming beautiful arches in endless variety, some of which last until the melting of the snow in spring.

**MOUNTAIN-PINE.**

*Pinus monticola.*

The mountain-pine is king of the alpine woods; brave, hardy, and long-lived; towering grandly above its companions, and becoming stronger and more imposing just where other species begin to crouch and disappear. At its best it is usually about ninety feet high and five or six in diameter, though a specimen is often met considerably larger than this. The trunk is as massive and as suggestive of enduring strength as that of an oak. About two-thirds of the trunk is commonly free of limbs, but close, fringy tufts of sprays occur all the way down, like those which adorn the colossal shafts of Sequoia. The bark is deep reddish brown upon trees that occupy exposed situations near its upper limit, and furrowed rather deeply, the main furrows running nearly parallel with each other, and connected by conspicuous cross furrows, which, with one exception, are, as far as I have noticed, peculiar to this species.

The cones are from four to eight inches long, slender, cylindrical, and somewhat curved, resembling those of the common white-pine of the Atlantic coast. They grow in clusters of about from three to six or seven, becoming pendulous as they increase in weight, chiefly by the bending of the branches.

This species is quite nearly related to the
The coniferous forests of the Sierra Nevada.

Sugar-pine, and, though not half so tall, it constantly suggests its noble relative in the way that it extends its long arms, and in general habit. The mountain-pine is first met on the upper margin of the fir-belt, growing singly in a subdued, inconspicuous form, in what appear as chance situations, without making much impression on the general forest. Continuing up through the two-leaved pines in the same scattered growth, it begins to show its character, and at an elevation of about ten thousand feet attains its noblest development near the middle of the range, tossing its tough arms in the frosty air, welcoming storms and feeding on them, and reaching the grand old age of a thousand years.

Juniper. Red-cedar.

(Juniperus occidentalis.)

The juniper is preeminently a rock-tree, occupying the baldest domes and pavements where there is scarce a handful of soil, at a height of from seven thousand to nine thousand five hundred feet. In such situations the trunk is frequently over eight feet in diameter, and not much more in height. The top is almost always dead in old trees, and great, stubborn limbs push out horizontally that are mostly broken and bare at the ends, but densely covered and imbedded here and there with bosky mounds of gray foliage. Some are mere weathered stumps, as broad as long, decorated with a few leafy sprays, reminding one of the crumbling towers of some ancient castle scantily draped with ivy. Only upon the head-waters of the Carson have I found this species established on good moraine soil. Here it flourishes with the silver and two-leaved pines, in great beauty and luxuriance, attaining a height of from forty to sixty feet,
and manifesting but little of that rocky angularity so characteristic a feature throughout the greater portion of its range.

Two of the largest, growing at the head of Hope Valley, measured twenty-nine feet three inches and twenty-five feet six inches in circumference, respectively, four feet from the ground.

The bark is bright cinnamon colored, and, in thrifty trees, beautifully braided and reticulated, flaking off in thin, lustrous ribbons, that are sometimes used by Indians for tent-matting.

Its fine color and odd picturesqueness always catch an artist's eye, but to me it seems, a singularly dull and taciturn tree, never speaking to one's heart to excite love. I have spent many a day and night in its company, in all kinds of weather, and have ever found it silent, cold, and rigid like a column of ice. Its broad stumpiness, of course, precludes all possibility of waving, or even shaking; but it is not this rocky steadfastness that constitutes its silence. In calm sun-days the sugar-pine preaches the grandeur of the mountains like an apostle, without moving a leaf.

On level rocks it dies standing, and wastes insensibly out of existence like granite, the wind exerting about as little control over it, alive or dead, as it does over a glacier bowlder. All the trees of the alpine woods suffer, more or less, from avalanches, the two-leaved pine most of all. Gaps two or three hundred yards wide, extending from the upper limit of the tree-line to the bottoms of valleys and lake-basins, are of common occurrence in all the upper forests, resembling the clearings of settlers in the old backwoods. Scarce a tree is spared, even the soil is scraped away, while the thousands of uprooted pines and spruces are piled upon each other heads downward, and tuckled snugly in along the sides of the clearing in two windrows, like lateral moraines. The pines lie with branches wilted and drooping like weeds. Not so the burly junipers. After braving the storms of perhaps a dozen centuries in silence, they seem in this, their last calamity, to become somewhat communicative, making sign of a very unwilling acceptance of their fate, holding themselves well up from the ground on knees and elbows, seemingly ill at ease, and anxious, like stubborn wrestlers, to rise again.

WILLIAMSON SPRUCE.

(*Abies Williamsonii.*)

The Williamson spruce is the most singularly beautiful of all the California conifers. So slender is its axis at the top, that it bends over and droops like the stalk of a nodding lily. The branches droop also, and divide into innumerable slender, waving sprays, and are arranged in a varied, eloquent harmony that is wholly indescribable. Its cones are purple, and hang free, in the form of little tassels from all the sprays from top to bottom. Though exquisitely delicate and feminine in expression, it grows best where the snow lies deepest, far up in the region of storms, at an elevation of from nine thousand to nine thousand five hundred feet, on frosty northern slopes; but it is capable of enduring the stormy exposure of alps considerably higher, say ten thousand five hundred feet—never attaining in such locations a greater height than fifty or sixty feet. The tallest specimens, growing in sheltered hollows somewhat beneath the heaviest wind-currents, are from eighty to a hundred feet high, and from two to four feet in diameter. The very largest specimen I ever found is nineteen feet seven inches in circumference, four feet from the ground, growing on the
of Lake Hollow, at an elevation of nine thousand two hundred and fifty feet above the level of the sea. At the age of twenty or thirty years it becomes fruitful, and hangs out its lovely purple cones, about two inches long, at the ends of the slender sprays, where they swing free in the breeze, and contrast delightfully with the cool, green foliage. They are translucent when young, and their beauty is delicious. After they are fully ripe, they spread their shell-like scales and allow the brown-winged seeds to fly in the mellow air, while the empty cones remain to beautify the tree until the coming of a fresh crop.

The staminate cones of all the conifers are beautiful, growing in bright clusters—yellow, and rose, and crimson. Those of the Williamson spruce are the most beautiful of all, forming little conelets of bluish flowers, each on a slender stem.

Under all conditions, sheltered or storm-beaten, well-fed or ill-fed, this tree is always singularly graceful in habit. Even at its highest limit upon exposed ridge-tops, though compelled to crouch in dense thickets, huddled close together as if for mutual protection, it still manages to throw out its sprays in irresistible loveliness; while on well-ground moraine soil it develops a perfectly tropical luxuriance of foliage and fruit, and shows itself beyond question to be the very loveliest tree in the forest.

Now fancy you see this specimen at home on the mountain-side. It is seventy-five feet high, poised in thin white sunshine, clad with branches from head to foot, yet not in the faintest degree heavy or bunchy, towering in unassuming majesty, and in its drooping, satisfied habit seemingly unaffected with the aspiring tendencies of its race, as if loving the ground while transparently conscious of heaven and joyously receptive of its blessings—reaching out its branches like sensitive tentacles, feeling the light and reveling in it. Storm-enduring strength combined with feminine beauty—this is the most interesting characteristic of the species. No other of our alpine conifers approaches it in veiled power. Its delicate branches yield to the mountains' gentlest breath; yet is it strong to meet the wildest onsets of the gale,—strong not in resistance, but compliance, bowing snowladen to the ground, gracefully accepting burial month after month in the darkness beneath the heavy mantle of winter.

When the first soft snow begins to fall, the flakes lodge in the leaves, weighing down the branches against the trunk. Then the axis bends yet lower and lower, until the slender top touches the ground, thus forming a fine ornamental arch. The snow still falls lavishly, and the whole tree is at length buried, to sleep and rest in its beautiful grave as though dead. Entire groves of young trees, from ten to forty feet high, are thus buried every winter like slender grasses. But, like the violets and daisies which the heaviest snows crush not, they are safe; for this is only Nature's method of putting her darlings to winter sleep instead of leaving them exposed to the biting storms.

Thus warmly wrapped they await the sum-
mer resurrection. The snow becomes soft in the sunshine, and freezes at night, making the mass hard and compact like ice, so that during the months of April and May you might ride a horse over the prostrate groves without catching sight of a single leaf. At length the down-pouring sunshine sets them free. First the elastic arches begin to appear, then one branch after another, each springing loose with a gentle rustling sound, and at length the whole tree, with the assistance of the winds, gradually unbends and settles back into its place in the warm air—dry, and feathery, and fresh as young ferns just out of the coil.

Some of the finest groves I have yet found are on the southern slopes of Lassen's Butte. There are also many charming companies on the head-waters of the Tuolumne, Merced, and San Joaquin; and, in general, the species is so far from being rare that you can scarce fail to find groves of considerable extent in crossing the range, choose what pass you may. The mountain-pine grows beside it, and more frequently the two-leaved species; but there are many beautiful groups, numbering a thousand individuals or more, without a single intruder.

I wish I had space to write more of the surpassing beauty of this favorite spruce. Every tree-lover is sure to regard it with special admiration; apathetic mountaineers, even, seeking only game or gold, stop to gaze on first meeting it, and mutter to themselves: “That’s a mighty pretty tree,” some of them adding “d——d pretty!” The little striped tamias, and the Douglas squirrel, and the Clark crow make a happy stir in autumn, when its cones are ripe. The deer love to lie down beneath its spreading branches; bright streams from the snow that is always near ripple through its groves, and bryanthus spreads precious carpets in its shade. But the best words only hint its peculiar beauty. Come to the mountains and see.

DWARF-PINE.

*(Pinus albicaulis.)*

This species forms the extreme edge of the timber-line throughout nearly the whole extent of the range on both flanks. It is first met growing in company with *Pinus contorta*, on the upper margin of the belt, as an erect tree from fifteen to thirty feet high and from one to two feet in thickness; hence it goes straggling up the flanks of the summit peaks, upon moraines or crumbling ledges, wherever it can gain a foot-hold, to an elevation of from ten thousand to twelve thousand feet, where it dwarfs to a mass of crumpled, prostrate branches, covered with slender, upright shoots, each tipped with a short, close-packed tassel of leaves. The bark is smooth and purplish, in some places almost white. The fertile cones grow in rigid clusters upon the upper branches, dark chocolate in color while young, and bear beautiful pearly seeds about the size of peas, most of which are eaten by two species of tamiats and the notable Clark crow. The staminate cones occur in clusters, about an inch wide, down among the leaves, and, as they are colored bright rose-purple, they give rise to a lively, flowery appearance little looked for in such a tree.

Pines are commonly regarded as sky-loving trees that must necessarily aspire or die. This species forms a marked exception, creeping lowly, in compliance with the most rigorous demands of climate, yet enduring bravely to a more advanced age than many of its lofty relatives in the sun-lands below. Seen from a distance, it would never be taken for a tree of any kind. Yonder, for example, is Cathedral Peak, some three miles away, with a scattered growth of this pine creeping like mosses over the roof and around the beveled edges of the north gable, nowhere giving any hint of an ascending axis. When approached quite nearly it still appears matted and heathy, and is so low that one experiences no great difficulty in walking over the top of it. Yet it is seldom absolutely prostrate, the lowest usually attaining a height of three or four feet, with a main trunk, and branches outspread, and intertangled above it, as if in ascending they had been checked by a ceiling, against which they had grown and been compelled to spread horizontally. The winter snow is indeed such a ceiling, lasting half the year; while the pressed shorn surface is made yet more complete by violent winds, armed with cutting sand-grains, that beat down any shoot that offers to rise much above the general level, and carve the dead trunks and branches in beautiful patterns.

I have oftentimes camped snugly beneath the low, interlacing arches of this little pine during stormy nights. The needles which accumulate for centuries make fine, wholesome beds, a fact well known to other mountaineers, such as deer and wild sheep, who paw out oval hollows, and lie beneath the larger trees in safe and comfortable concealment.
The longevity of this lowly dwarf is far greater than would be guessed. Here, for example, is a specimen, growing at an elevation of ten thousand seven hundred feet, which seems as though we might pluck it up by the roots, for it is only three and a half inches in diameter, and its topmost tassel is hardly three feet above the ground. Cutting it half through and counting the annual rings with the aid of a lens, we find its age to be no less than two hundred and fifty-five years. Here is another telling specimen about the same height, four hundred and twenty-six years old, whose trunk is only six inches in diameter; and one of its supple branchlets, hardly an eighth of an inch in diameter inside the bark, is seventy-five years old, and so well seasoned in storms, that we may tie it in knots like a whip-cord.

**WHITE-PINE.**

*(Pinus flexilis.)*

This species is widely distributed throughout the Rocky Mountains, and over all the higher of the many ranges of the Great Basin, between the Wasatch Mountains and the Sierra, where it is known as white-pine. In the Sierra it is sparsely scattered along the eastern flank, from Bloody Canon southward nearly to the extremity of the range, opposite the village of Lone Pine, nowhere forming any appreciable portion of the general forest. From its peculiar position, in loose, straggling parties, it seems to have been derived from the Basin ranges to the eastward, where it is abundant.

This species has long been confounded with the *Pinus albicaulis* of Engelmann, though quite distinct. It is a larger tree—under favorable conditions, at an elevation of about nine thousand feet above the sea, often attaining a height of forty or fifty feet, and a diameter of from three to five feet. The cones open freely when ripe, and are twice as large as those of the *albicaulis*, and the foliage and branches are more open, the latter having a tendency to sweep out in free, wild curves, like those of the mountain-pine, to which it is closely allied. It is seldom found lower than nine thousand feet above sea-level, but from this elevation it pushes upward over the roughest ledges to the extreme limit of tree-growth, where, in its dwarfed, storm-crushed condition, it is more likely to be mistaken for its companion, *Pinus albicaulis*.

Throughout Utah and Nevada it is one of the principal timber-trees, great quantities of it being cut every year for the mines. The famous White Pine Mining District, White Pine City, and the White Pine Mountains have derived their names from it.

**PINUS ARISTATA.**

This species is restricted to the southern portion of the range, about the head-waters of Kings and Kern rivers, where it forms extensive forests, and in some places accompanies the dwarf-pine to the extreme limit of tree-growth.

It is first met at an elevation of between nine and ten thousand feet, and runs up to eleven thousand without seeming to suffer greatly from the climate or the leanness of the soil. It is a much finer tree than its companion. Instead of growing in clumps and low, heathy mats, it manages in some way to maintain an erect position, and usually stands single. Wherever the young trees are at all sheltered, they grow up straight and arrowy, with delicately tapered bole, and ascending branches terminated with glossy, bottle-brush tassels. At middle age, certain limbs are specialized and pushed far out for the bearing of cones, after the manner of the sugar-pine; and in old age these branches droop and cast about in every direction, giving rise to very picturesque effects. The trunk becomes deep brown and rough, like that of the mountain-pine, while the young cones are of a strange, dull, blackish-blue color, clustered on the upper branches. When ripe they are from three to four inches long, yellowish brown, resembling in every way those of *Pinus monticola*, to which this species is closely allied. Excepting the sugar-pine, no tree on the mountains is so capable of individual expression, while in grace of form and movement it constantly reminds one of Williamson spruce.

The largest specimen I measured was a little over five feet in diameter and ninety feet in height, but this is more than twice the ordinary size.

This species is common throughout the Rocky Mountains and most of the short ranges of the Great Basin.

**NUT-PINE.**

*(Pinus fremontiana.)*

The nut-pine covers, or rather dots, the eastern slopes of the Sierra, to which it is
mostly restricted, in grayish, bush-like patches, from the margin of the sage-plains to an elevation of from seven thousand to eight thousand feet.

A more contentedly fruitful and unaspiring conifer could not be conceived. All the species we have been sketching make departures more or less distant from the typical spire form, but none goes so far as this. Without any apparent exigency of climate or soil, it remains near the ground, throwing out crooked, divergent branches like an orchard apple-tree, and seldom pushes a single shoot higher than fifteen or twenty feet above the ground.

The average thickness of the trunk is, perhaps, about ten or twelve inches. The leaves are mostly undivided, like round awls, instead of being separated, like those of other pines, into twos and threes and fives. The cones are green while growing, and usually cover all the surface of the tree, forming quite a marked feature as seen against the bluish-gray foliage. They are quite small, only about two inches in length, and give no promise of edible nuts. But when we come to open them, we find that about half the entire bulk of the cone is made up of sweet, nutritious seeds, the kernels of which are nearly as large as those of hazel-nuts.

This is undoubtedly the most important food-tree on the Sierra, and furnishes the Mono, Carson, and Walker River Indians with more and better nuts than all the other species taken together. It is the Indians’ own tree, and many a white man have they killed for cutting it down.

In its development Nature seems to have aimed at the formation of as great a fruit-bearing surface as possible. Being so low and accessible, the cones are readily beaten off with poles, and the nuts procured by roasting them until the scales open. In bountiful seasons a single Indian will gather thirty or forty bushels of them—a fine squirrelish employment.

This tree is almost the only one found on the mountain ranges of the Great Basin available for the use of settlers.

**NOTE.**—There are four or five other conifers in the Sierra: *Pinus muricata*, which comes in from the coast range around the head of the Sacramento Valley, *Taxus brevifolia*, *Torrey California*, and *Cryptus Lawsoniana*, none of which forms any telling portion of the general forest to ordinary observers. *The cryptus* is a beautiful tree, seventy-five or eighty feet high, growing along the banks of cool streams on the upper Sacramento, toward Mount Shasta. Only a few trees have as yet reached the Sierra. *Taxus brevifolia* is a bush or small tree, with dark-green foliage, found in shady dells in the northern Sierra, at a height of from two thousand to three thousand five hundred feet.

*Torrey California*, or California nutmeg-tree, is found in gulches and along cool streams on the western flank of the range throughout the lower portion of the main forest-belt, attaining its fullest development at an elevation of about four thousand feet. It is a small, glossy, dark-green tree, the largest about thirty or forty feet high, and from six to eighteen inches in diameter, with rather slender, feather-like branches, spreading and radiating near the top. More frequently, however, it is small and ragged and of no determinate form. The fruit is not at all cone-like, but, on the contrary, resembles a greengage plum—smooth, oval, about an inch and a half long, green and fleshy, containing one seed like an acorn, the shell of which is hard, and the albumen so colored and folded that a cross-section resembles that of the common nutmeg, whence the popular name.

The wood is fine grained and of a beautiful creamy yellow color like box, sweet scented when dry, though the green bark and leaves, when bruised, emit a very disagreeable odor.*

*Picea nobilis*, London, is only a variety of *amabilis* with long projecting bracts. Intermediate forms, with the bracts scarce at all exerted, blend inseparably with the so-called *nobilis*, the bracts of which project half an inch or more.

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**SUMMER NIGHT.**

THE vast half-sphere of plain and sky
Brims full with pallid light;
Moon-whitened all the grain-fields lie,
Like seas grown still with night;
And scattered houses, far and nigh,
Among their trees gleam white.
Oh, warmly does the night enfold
The earth, caressed with showers of gold.
And yet, not so, sweet night,
Not so I long for thee,
Not so come thou to me.

Come, mighty shade, till earth might be
Alone in primal space,
Till I lie drowned beneath a sea
That upward from my face
Goes on and on unendingly,
Nor hints of time or place;
Till I might think that o'er my eyes,
Close-shut, the earth forever lies.
So longs my soul for thee,
Oh, so, I pray, sweet night,
So come thou unto me.