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Patton's Spruce. ... 7

By the increasing number of travelers who explore the high mountains of the Pacific states, which are its only home, the lovely Mountain Hemlock is now usually known as Patton's Spruce. Perhaps best considered a Hemlock, this tree differs from other Hemlocks in its long, narrow cones and in its more acute leaves usually keeled on the upper surface, and its bluish pollen grains; and in general appearance it is one of the most distinct and beautiful of the North American conifers.

Tsuga Pattoniana, as botanists call this tree, was discovered only about forty-five years ago near Mount Baker, in northern Washington, by the Scotch collector Jeffrey, and was named out of compliment to General Patton, a Scotch lawyer, who was given to the cultivation of exotic trees, and was one of the subscribers to the fund which enabled Jeffrey to explore the forests of north-western America.

Patton's Spruce is now known to range from Alaska, where it grows at the level of the sea, southward along the mountains ranges of British Columbia, west of the continental divide, the two slopes of the Cascade Mountains of Washington and Oregon and the California Sierra Nevada, where probably on the upper waters of some of the tributaries of King's River it finds its most southern home. It is a tree of high altitudes, and, except at the extreme north, it is found only near the timber-line, forming with Pines alibaccus and Abies lasiocarpa extensive forests.

Patton's Spruce is a tree of marvelous grace, with drooping branches clothed with thickly clustered leaves, abundant elongated narrow cones, which hang on slender spray-like branchlets, and on some individuals are bright purple, and light yellow on others in the same groove. The foliage, too, differs in color, being on some trees dark green and on others light blue-green, a peculiarity which has led to some confusion of nomenclature, the blue leaf form often appearing in gardens as Tsuga (or Abies) Hookeriana.

Patton's Spruce grows in the greatest perfection on the slopes below Crater Lake, in the Cascade Mountains of southern Oregon, forming here extensive and nearly pure forests, in which individual trees one hundred feet high, with stout massive stems five or six feet in diameter, are abundant. Such a growth is probably not exceptional, and this tree is abundant and conspicuous at the timber-line of Mount Hood, Mount Ranier, and on the Selkirk and other mountains of British Columbia. On Mount Ranier, with Abies amabilis and Abies lasiocarpa, it forms a large part of the forest growth, growing above the banks of glaciers in great luxuriance. Some idea of the upper forest-belt on Ranier can be obtained from our illustrations in this issue; that on page 6 displays the snow-covered summit rising 8,000 feet above the timber-line, with scattered trees of Patton's Spruce on the slope in the foreground, and in the illustration on page 7 the trunks of this tree are displayed in more detail.

In Washington and Oregon Patton's Spruce grows at elevations of from 3,000 to 6,000 feet above the sea-level, but farther south the timber-line is carried higher, and John Muir, who describes this tree in his Mountains of California as the "most singularly beautiful of all the California conifers," found it growing on the Sierras up to 10,000 feet altitude; and on the edge of Lake Hollow, at an elevation of 9,200 feet, measured a trunk nineteen feet seven inches in circumference at four feet above the ground. "No other of our alpine conifers," he tells us, "so finely vellits its strength. Its delicate branches yield to the mountain's gentle breeze, yet it is strong to meet the wildest onsets of the gale—strong not in resistance, but in compliance, bowing and bending to the general wind, and slowly accepting burial, month after month, in the darkness beneath the heavy mantle of winter. Every tree-lover is sure to regard it with special admiration. Apotheciners, ever seeking only gain or gold, stop to gaze on first meeting it, and mutter to themselves, 'That is a mighty pretty tree. The deer love to lie down beneath its spreading branches; bright streams from the snow that is always near ripple through its groves, and Bryantus spreads precious carpets in its shade. But the best words only hint its charms.'

Introduced into Scotch plantations by its discoverer, Patton's Spruce has shown that it is fairly adaptable to altered climatic conditions, and it may now be seen in many European collections, and although it has not yet had sufficient time to attain maturity in cultivation, it is an ornamental tree of much promise in several European countries. Patton's Spruce, moreover, is one of the comparatively small number of the conifers of the Pacific states which thrive in the thrive in the most arid, and, like most alpine conifers, it grows extremely slowly at the sea-level; it has for several years withstood without injury the changeable winters and dry summers of the New England climate.

The Planting of Shrubberies.

In furnishing small areas about modest country and suburban houses, and, indeed, for a great many other purposes in larger and more pretentious grounds, public and private, deciduous flowering shrubs are so effective in this climate that every one who wishes to plant intelligently should be familiar with their habits and with the proper way of disposing them. Of course, no place except the very smallest can dispense with trees, and in many plantations low-growing evergreens, especially the broad-leaved evergreens, can also be used with profit. But when we consider the beauty and variety of their flowers and foliage and fruit, and the mist of soft color which hovers about their twigs in winter, deciduous shrubs are, beyond all question, the most important element in planting small groups. This does not even mean that splendid sets of evergreens, satisfactorily, for individual plants can be dotted about a lawn in a way that is utterly meaningless. They can be used, however, so as to make a picture which has individuality and character, and in which every detail contributes distinctly to the general impression and helps to bring it out in a clear and well-defined way. This is an art which requires study and practice, and a bulletin lately issued by Professor Bailey, of the Cornell
nearly a hundred feet. On the opposite sides of the chasm the wall of rock is broken, and from the crevices are seen hanging in rich profusion such Ferns as Woodias, Polypodium and Aspidiums, far beyond the reach of human hands. Here and there is some little dell, through which bubbles a miniature stream, its rocky banks covered with Mistletoe. The largest of these has been named the Joe Howe Falls; it is about thirty or forty feet in height. On the bluff near by, it is proposed to erect a monument to the distinguished Nova Scotian after whom it is named; but it is to be hoped that the projectors will change their minds and either erect the monument near the entrance to the city, or else, if such a situation in such a picturesque place would certainly be a blot. On the plateau, 200 feet above the ravine, a carriage-road extends, encircling the outer edge of the park, and numberless bypaths extend from this to points of vantage on the crags overlooking waterfalls, where on a bright October afternoon the visitor looks down on a scene of marvellous beauty, the gorgeous tints of Maples, Viburnums and Heaths darkened now by the sombre hue of evergreens, now lightened by the foam of waterfalls.

Mount Pleasant Park, at St. John, New Brunswick, situated near the city, has not yet been formally opened to the public. It consists of 240 acres of land, some of which has been given by liberal citizens, some acquired by purchase, and some will come by expropriation. During the past two years the members of the Horticultural Association have endeavored in every possible way to interest citizens in the park scheme by planting the squares of the city with trees and flowers, and by holding exhibitions. When they have secured enough land for the park and have paid for it, the association proposes to hand it over to the city as a gift. It is hoped that the liberality and public spirit of these citizens will meet with a generous response on the part of the city government. The park site is a broken and picturesque plateau overlooking the city, intersected with ravines. A lake lies at its western extremity, from the eastern end of which a small stream finds its way over a succession of perpendicular rocks to the meadow below—forming a series of beautiful cascades about eighty feet in height. The most of the park land is that space of open flat surrounded by rocks and mounds covered with a growth of small shrubs, with stunted Spruces, Firs, White Birches, Maples and Cedars. The Cedars are shapely and beautiful, and if carefully handled will become one of the most beautiful ornaments of the park, the limestone formation being well adapted for their symmetrical growth. A roadway has been constructed around the lake, and it is hoped that the services of a competent landscape-gardener may be secured before anything more is undertaken. It would be a pity to go on blindly without a completed design, and a design which respects the peculiar charm of the place and which preserves and enhances it. A special feature of the park at this season is the native shrubbery which covers the rocks, and which yields the most brilliant and varied colors—stunted Vacciniums with their purple hues covering the rocks in every direction; several species of Viburnum, with their white and blue fruits in pleasing contrast, Kalina, augustifolia, Rhododendron Rhodora, Scoum laf- flium, Pyrus nigra, and many others. St. John, N. B.

G. U. Hay.

Plant Notes

The Lilies of our Pacific Coast.

The American coast of the United States is wonderfully rich in members of the Lily family. With nearly forty Calochortus, over twenty Brodiaeas and thirty Alliums, nine Fritillarias and ten Cypripediums, as many or more Liliums, and fifty other species distributed among twenty-five genera, the Lilacées of the Pacific slope include a grand total of over one hundred and seventy species, in a vast and comparatively unknown region, the exploration of which annually adds new species or proves the existence of forms described by the earlier botanists and since lost sight of. I doubt if there is any other region in the world where the Lily family is so rich and varied.

The number of Liliums or true Lilies on the Coast varies according to the nomenclature followed. The Botany of California, published in 1885, mentions eight species and one variety. Mr. Balfour in his Flora of British Columbia and Washington, 1887, gives twenty species and eight varieties. Mr. Balfour's list has been followed in this work, and the species have been distributed in the same material into fifteen species and varieties in his synopsis of the genus. These species can be divided into several groups according to their natural affinities. Lilium Washingtonianum and its varieties, with the nearly related L. rubescens, will form the first of these groups, and into the second will naturally fall L. columbianum sensu stricto, L. humboldtii and its varieties, and L. Bluemerianum, which is also known as L. humboldtii, var. occultatum. L. Bolanderi, too, shares in the solid ovoid bulb and leaf character of this group, although its flowers differ in form.

A third group, and a very large one it is, will contain the west L. columbianum as a typical variety, and all the Liliums with rhizomatous roots and revolute flowers. These are L. pardalinum, L. Roccoli and L. Warei, with the innumerable forms of L. pardalinum, some of which, as L. California, L. Bourgei and L. ruberulatum, are often treated as species. This group may be connected by a close chain of intermediate forms, possibly crossing with the next group, which consists of the western relatives of L. Canadense. In this group of small-flowered bog Lilies, L. parvum is nearly as various in its forms as is L. pardalinum, but L. maritimum is, as far as my observation goes, strictly monotypic. This variety, parvum and L. mari- timum have funnel-formed flowers.

Lilium Parryi is closely related to the Pardalinum group, differing only in having trumpet-shaped flowers. In growth it can hardly be distinguished from L. pardalinum.

Of these eleven species, Lilium pardalinum is most widely distributed, being scattered from central California to British Columbia, and eastwardly to the shores of Lake Winnipeg. L. Washingtonianum inhabits a long and narrow belt in the main Sierra Nevada range and in the Cascade Mountains of British America. L. Parryi is found in Arizona and New Mexico and in the original location in southern California, and L. columbianum is found from British Columbia to the Cascades in the Columbia River valley, but with these exceptions these Lilies belong to the mountainous regions of the Pacific Coast proper in the Sierra Nevada and Coast ranges. I have already written of L. Washingtonianum and its varieties (vol. ix., p. 418), and of L. rubescens (vol. ix., p. 419). In an early issue I hope to write of L. humboldtii and its allies.

Cultural Department.

Notes on Cypripediums.

At no period of the year is a good collection of Cypripedums entirely flowerless, but during the winter months when the temperature of the greenhouse is congenial they flower bountifully and their prolonged period of bloom gives opportunities for study and close acquaintance. It has been urged by some that Orchids out of flower are the reverse of ornamental, and this is true of some genera. Cypripediums, however, are rich in luxuriant leaf-growth, and not a few of them are worthy of cultivation for this feature alone, the deep green leaves being exquisitely marbled and variegated. Their growing popularity is attested by the fact that some of the more common species, like C. Insigne, furnish cut flowers by the thousand for the New York market. To the amateur a little house of Cypripediums will give hours of infinite pleasure in winter, and hundreds of plants can be accommodated in a modest structure. The original wild species from many lands move freely among themselves for the growth of the last decade alone have here given us additional forms and colors in almost infinite variety. In fact, the hybrids are the majority among Cypripediums, and there is an endless fund of material in comparing them, observing the variously inherited that the parentage of many plants can be absolutely vouched for.

Cypripedium insignis is the type of quite an extensive family,
of which many members show marked improvements on the original. It is a native of Nepal, introduced early in the century by Mr. J. M. Harland, undulated with the abdomen. One of these forms which we now have in flower is C. insignis Colsonianum, sent out from the Short Hills nursery. The very large dorsal sepal is the feature of the flower, the breadth and purplish hue, and it is finely undulated with the abdomen. These are nearly one-half of it is of this color, the base having the characteristic apple-green tint with prominent brown spots, the petals gracefully undulated, with the abdomen. The flowers are disposed in a regular horizontal alignment. Of quite a different type is the dwarf variety Erythronium. Its dorsal sepal is of a transparent greenish-yellow tipped with white, the petals and pouch also yellow, with a splint of light yellow crossing the same line. The spadix is spiculently tufted, and the flower is set off from the dwarf variety by the color of its other parent, C. Faireanum. They are lined and suffused with chocolate on a greenish-yellow ground, the short pouch glistering as though polished, being of a very glossy texture. Another dainty gem of Spirecianum parentage is C. Hebe, which was raised at Short Hills; a tiny plant has two perfect flowers. It has a broad dorsal sepal, mainly white, but with a distinct band of purple, less than half an inch wide, running from the base to about one-third the way up the petal. C. Arthurianum is a lovely hybrid with C. insignis and C. Faireanum for its parents. It is a dwarf grower, neat and free in flowering, its dorsal sepal bright green, tipped with pure white and penciled with brown in broken lines. Its wavy, drooping petals impart to the flower a graceful expression. They are lined and spotted with brown, the pouch also similarly tinted. Other Cypripediums of interest also in flower are C. conicum transparens, qualitatively colored in rosy purple and white, with a peculiar transparent lustre; C. regale, of marked distinctness, noteworthy for its clean-cut, regular form, its dorsal sepal purple, its petals yellow, the pouch brown and with the brown brown in broken lines. This is a very attractive hybrid with fine flowers in subdued tones of brown, green and yellow.

**Nepenthes.**

**PITCHER-PLANTS** are for the most part more interesting than showy. The flowers being inconspicuous, their chief beauty is in what is called the pitcher or leaf. This comprises a considerable number of species and varieties, and the form or color of the pitchers constitutes the chief distinction, though they vary considerably in size, texture of leaf and general appearance. They are cultivated for their beautiful culture, but this greatly depends upon the facilities. It is almost useless to attempt to grow them in an unsuitable house or in one in which the proper atmospheric conditions cannot be maintained. They require abundant atmospheric moisture at all times, but fresh air is also necessary. I have seen them grown in a house with a northern elevation, but one with a southern elevation is preferable, though, of course, it will require slightly more shade. This shading should in no case be overdone, for, in our experience, they have stood a greater amount of light than is usually allowed. It is only necessary to keep them out of direct rays, and brown pots filled with coarse muslin or cheesecloth is useful. The usual means of propagation is by cuttings. Several methods of striking are adopted, but the simplest and most convenient is to firmly insert the cuttings made from well-ripened one-year growth. In May, in small pots filled with sharp clean sand. These are plunged in a propagating case where a good bottom-heat can be maintained, and kept liberally sprinkled with water heated to the same temperature as that of the case. We make the cuttings from single joints, with leaf attached, cutting from one to two inches below and one inch above the leaf. The longest of the leaves are sometimes shortened to save space, but otherwise this is not necessary. After striking, the first shift is made into three-inch pots; the principal material used is fibrous peat, with a surface covering of sphagnum-moss, and the whole should be firmly packed in the pot, or placed in a gentle grade of the moss. We try to maintain a night temperature of about sixty-five degrees during the winter months, allowing a rise of about ten degrees by day. For the summer months, of course, it will be necessary to lay the pots in the shade. As Nepenthes grow rapidly we find it desirable to shorten back or cut them down every season. They break very readily. It allowed to run they incline to produce flowers.