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If the amputated stump is left, so that the sap does not circulate to its extremity, it will necessarily die back to the point where the sap ceases to flow. This simple fact was illustrated in the first volume of this journal on page 349, with cuts taken from “A Treatise on Pruning Forest and Ornamental Trees,” translated from the French of Monsieur A. des Car, and published in 1887 by the Symposium of Pomotry Agriculture. A little reflection will show any one that as the living trunk or branch grows and envelops what is merely a dead plug, the tree will inevitably decay to the center, for, as the rot fungus destroys the lifeless wood, water will soak in and carry these elements of decay deeper and deeper until the tree is hollowed out and finally made worthless.

All our native forest-trees take kindly to this treatment, and it was nine years ago when we wrote that most of them could be rejuvenated in this way. We then explained that decrepit Red, Black, White and Swamp Oaks, Black Birches, Beeches, Hickories and Elms had been thus pruned in the Arnold Arboretum where the trees in the natural woods were perishing from parasitism and from neglect. They were covered with dead branches, the foliage upon them was thin and poor, their dying tops showed that they had but a short space to live. It seemed important to save many of these old trees until a growth of self-sown seedling could be set right on to replace them and a covering grown for the forest place for which these old trees were pruned each year those which had been operated upon first, or some six or seven years earlier, already showed in their dense dark-colored leaves and compact growth that pruning alone without any fresh soil or fertilizing material could put new life into a tree that was feebly and dying. Subsequent experience has confirmed the usefulness of this practice, and we can repeat our counsel with confidence, and advise all persons who have deciduous trees which have begun to fail to undertake the renewal of their vigor by intelligent surgery.

The Chemise World.

Of all Californian shrubs or trees, the Chemise brush or Chemalis, Adenostoma fasciculare, gives most character to the landscapes of the Coast Ranges. What the Heaths are to western Europe, Chemalis is to California, and vast tracts of poor mountain lands are covered with thickets composed almost entirely of this one species.

Outside of the timber belt, which begins at Monterey and extends at intervals to Oregon, there is scarcely a mountain on the Coast Range of California, from San Diego on the south to Trinity, almost at the Oregon line, which is not in part covered by it. The greater the distance from the ocean the larger the percentage of mountain lands which this hardy shrub has taken possession of, until many sections of the eastern part of the Coast Ranges are almost entirely given up to it, and from the valleys to the mountain tops it holds a sway only shared by a few of the hardiest shrubs, Oaks and Conifers. Many millions of acres of Coast land, which looks so inviting on the maps, are but Chemise patches, and, as now, will always be a man’s land, harboring only the deer and the coyote. Hardly a spot is too steep to allow it a foothold, hardly a soil too meager to afford it sustenance. Fires sweep over and leave blackened stubs, but with its unusual vitality it soon starts a new growth. In a few years rocks, hills and slopes are again masked by a close cover of blue-green which gives to the mountains a softness of outline peculiar to the Coast Ranges, and very beautiful, too, although the monotony of flowing lines often becomes tiresome.

Ukiah Valley is hemmed on the eastern side by a long, continuous range of mountainous peaks. On the map they bear the Indian name of Mayacamas, being one of the numberless short ranges which form the jumble known as the Coast Range. The Mayacamas divide the chain of valleys, once lakes, of which Ukiah valley is one, from another chain of lakes which are now slowly undergoing the same process of extinction. The largest of these is Clear Lake, a beautiful body of water, mountain-hemmed, thirty-five miles long, with a maximum width of eight miles. Next to Ukiah valley the range rises first in rolling foothills, which give way to steep grassy slopes interspersed with rock walls, or oceast, in barren mounds. Above the Oaks the upper range is so seen as an endless succession of round-topped knolls or smooth slopes, all Chemise-covered, with the sky-line seldom broken by fragments of distant rock or tree mass.

If a more intimate knowledge of the high Chemise world is desired, access is not difficult. Many trails or wood roads lead through the Chemise open ranges, and traveling is not difficult on foot or on horseback. Half way up the mountains the Chemise is entered, and the hills which from the valley seemed covered with a smooth low coat are found to be tangles of dense brush from four to eight feet high, except where a fire has recently burned. Travel in the Chemise is of necessity pretty closely confined to the trails which have been made along the ridges by deer, Indians or hunters, and even on these trails it is not always easy. But let the hunter stray from the trail and he is not soon to find himself in a thicket so impenetrable that he can neither force his way through nor crawl under it, and does not take a long experience in attempting to pull himself over the tops to convince him that the trail is the only satisfactory place of travel.

So year after year the Chemise grows, and by the not infrequent winter snows is pressed down more compactly until some day a hunter, wishing to drive out the game or make for himself an easier passage, drops a match in the tinder underneath, and a fire is started which rolls over the hills in sheets of flames, making the grandest of pyrotechnical displays for the ensuing dwellers. Creeping among the dead leaves in thinner brusht, it burns them out and finally dies out only when fuel is exhausted, it may be in days or weeks. Where the brush has been thick and the wind favorable only short stubs are left, but as often as not the leaves and twigs are burned and the stox stems remain a chevaux-de-frise almost as hard to penetrate as the original thicket, and even more destructive of good temper and clothes.

A favorite trail into the great expanse of Chemise between here and Clear Lake leads along the main ridge which divides the waters flowing into Russian River from those which, flowing at first into Clear Lake, finally find their way into Sacramento River. This route, closely hemmed for miles by bushes, offers variably changing views of the beautiful Ukiah valley to the west, and the peaks connecting with it on the north and the south. All about and to the east is a far wilder scene. For mile after mile, slope after slope, hill after hill, far-stretching ranges bear the same covering of Chemalis, and in the general view scarcely a shrub, tree or mass of rock rises above the low-lymenonous mass, except for infrequent groves of the straight and symmetrical west coast Spruce, Picea mens, attenuata, prominent points. Near at hand encircling ranges form a large basin which in turn is filled with a confused medley of lower ridges and hills. Rising head and shoulders above the wild Chemise region to the north and west, high snow-covered mountains can be seen, Pine forests ascending far up their slopes. The great dome to the northeast is Snow Mountain. In the middle rises Pine Mountain, a mass of conifers to its summit, while to the north the long ridge of San Hidro can be seen. The long and wild country is only broken by a tiny vale in the basin below. Among these thousands of acres of wildness, perhaps forty acres form a rich little valley, watered by mountain springs and giving a good home to a mountainine. Like an oasis in a desert, it intensifies by contrast the loneliness of the surroundings. Grassy and barren it may seem, but I have found this wild region peculiarly rich in beautiful spots, and its inaccessibility shelters many a beautiful flower. Pretty little
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valleys are hidden in the most unsuspected places, and the freshly burned-over Chemisea is a rich field for the plant hunter.

A typical Chemise valley lies just north of Red Mountain, on which is the curious grove of Cupressus Macnabiana described in a previous number of Garden and Forest (see vol. vii. p. 233). Lost Valley is called Chemisea for a new in summer for it from which direction you may, in a surprise. "Two vales wind in sinuous curves through dense brush, and coming together form a broader vale containing a swamp of four or five acres. The little valley is closely hemmed by a dense growth of Chemise and Scrub Oaks, but not one intrudes into its grassy limits. Situated at about two thousand feet altitude, and its growing season is at its height when in the valley below the dry summer has begun. Frosts come frequently and at all seasons, but the vegetation seems to have peculiar powers of withstanding them. Short Bunch Grass grows over the drier portions, and the swamp is a tangle of immense Thistles and Water Grasses, mingled in the fall with Golden-rod. Swamp plants follow the little watercourses. In July, Liliun paraludium may be seen lifting its scarlet and yellow flowers above the weeds, and in late June handsome pale blue Camassia flowers in abundance throughout the wetter part of the place. Indeed, bulbous plants would quite possess the valley were they not kept in check by the pophers, whose usual haunts are everywhere to be seen. In June a blue Brodiaea grows in great abundance in the valley below, and the rich purple tints seem unnatural. As little to be recognized are the small flowers and short leaves of the high mountain form of Iris macrostachys, which is quite plentiful in the gritty soil next the side of the vale.

Nature is rich in oddities here. Down in the swamp a great Thistle grows; its woolly stems rise five or six feet high. The same plant grows in the higher parts of Lost Valley in a dwarfed form, the white leaves scarcely rising above the ground and the thick head set close down in them. The whole plant is more like a Cactus than the lofty plant of the swamp. Two Godetias abound in the late spring. G. vinciana also grows below in the valley. It is one of our showiest plants, a lovely slender-stemmed annual, with the flowers growing in an erect raceme. The plant has a pale, rather inconspicuous flower; it has a tendency to form round mats with many stems. All about the edge of the valley the soil is dry and gritty, and there can be seen large beds of our common St. John's-wort, a species with short stems six inches high and a very pretty yellow flower. It is one of the hardiest of flowers and thrives in the little dry openings throughout the Chemise country. We have few more delicately beautiful flowers. Syysrinchinum bellum is not uncommon.

I well remember a lovely lateral vale which I happened upon a few years ago. A fire had denuded the brush and invigorated the Columbinus of the Aquilegia truncata type. There were hundreds of plants in full blossom and so thick as to exclude all other species. This five-squurred flower is always beautiful, but I have never seen it to such advantage since nor before. In May the common Buttercup, Ranunculus macranthus, tinged the vale with yellow. Later there are many composites, and even in the fall the succession of bloom is kept up in the swamp and about the spring.

Four years ago the finest wood of Pinus attenuata I have ever seen stood on the slopes of the hill at the head of the valley, clean, symmetrical and straight-lined, and as thick as the trees could well grow. A fire swept through, and among the bare trunks are left. With them, however, death is the beginning of a new and more abundant life. The fire that destroys the parents releases from their long imprisonment in the cones the abundant seeds, which, falling in the still warm ashes, soon produce a more abundant growth. Now there are hundreds of handsome young trees coming on. I have observed that the fire has no effect on the increase under prevailing conditions. It fruits at an early age, and fires seldom find it unprepared to perpetuate itself. It is of the hardest constitution, and the seeds grow vigorously in the most barren of soils. Old trees of P. attenuata, gnarled, encircled by the immense cones of many years and with dead limbs, can only be said to be picturesque, but many of the younger specimens are truly beautiful.

I suppose that of all the shrubs of Chemise land, the Chemise itself, Adenostoma fasciculare, comprises fully ninety per cent. of the specimens. On the southern slopes, and on the less precipitous slopes to the west and northwest, it rules almost to the exclusion of all other shrubs. It belongs to the Rose family and is an evergreen with linear Heath-like leaves, a light-colored stringy bark and brittle wood. In late spring it produces an abundance of whitish flowers with green centers, and they are followed by seed-pods concealed by the tiny remains of the flowers which persist till fall. While it is overwhelmingly predominant in its realm, it lives on familiar terms with a great variety of shrubs or dwarfed trees as well fitted as itself to endure the hard conditions. On the driest ridges can be seen a stiff, spiny-looking shrub with small elliptic leaves, the leaves distributed and grayish bark. In its season it has short racemes of very fragrant white flowers, which perfume the mountain wastes. This is Ceanothus sorensis at its highest mountain form.

Here and there throughout the Chemise, in single tufts or in copses, the California Holly grows, or, as the Mexican called it, "Toyon." It is an evergreen with large, glossy serrated leaves. In midsummer it produces its white flowers and forms its pinnated clusters of berries. These gain color as the season advances, and by the midwinter holidays are a glowing wealth of crimson. For a long time the bright masses show against the dark foliage and lighten up the brashly expanse. On the highest ridges, where the summer heat is greatest and the soil the driest, and even the hardy Chemise takes on a stunted form, can be seen another extremely interesting shrub, Picker Ingla montana, which is excelled by none of its Leguminous relatives when in full flower. At other times one sees a thin-leaved, stiff and spine-tipped shrub, often but four or five feet high, but sometimes twelve or fifteen. The bark is light green, the leaves ovate-lanceolate. It is very beautiful when the bush is a solid mass of pink-tipped flowers of a soft flesh-pink. Its season is quite long.

Utah, Calif.

Carl Parry.

Leaf-spot of Pear.

FROM observations made during the past two or three years it has become apparent that what is called "leaf-spot" of the Pearl in this country, and generally attributed to the fungus known as Entomosporium mucilatum, is not wholly due to this fungus, but in many cases, perhaps the majority, is caused by an entirely different parasite. This emphasizes the need of expert examination of plant diseases when an occasion arises for writing upon these subjects, if one wishes to speak with as much accuracy concerning the name of the plant as would be desired when writing of potatoes. For some time I had been desirous of obtaining this fungus, E. mucilatum, on the Pearl in the vicinity of Ithaca, for a study of its life-history. And while the fungus on Quince leaves and fruit has been in cultivation for some years, I have not been able to find it on the Pearl. A bulletin describing the results of spraying for the Pearl leaf-spot in an orchard about two miles from Ithaca suggested to me that I might find the desired fungus here. The orchard was visited early in the spring in order to inspect the dead leaves in the hope of finding, not only the conidial form of the Entomosporium on the leaves which had been lying on the ground