still more that she should make them so that we literally class them with the mighty redwood and sequoia. People who associate strange properties with strange appearances ascribe all sorts of remedial effects to these plants. Most of these are without foundation. The largest and most peculiar of our species, Ephedra trifurca, is very common in the open hills, a shrub of the most astonishing toughness of character. It sometimes makes itself into a neat little miniature tree, with a clean trunk fifteen to twenty inches long, two to three inches in diameter, and with a round and symmetrical head of branches. People about El Paso and in New Mexico call this the "Bristle-Young Weed."  

Larrea tridentata (L. Mexicana) is by far the commonest shrub in this locality among the hills. A bath in a warm infusion of its leaves and twigs is said to be a remedy for rheumatism. In this region plants that depend on rain for their growth have become very easy and slack in their manners and observe no set time to flower and fruit. On the thirteenth day of June the hills around El Paso were yellow with flowers of Larrea. Three weeks of rainless weather followed, and the thousands of individuals of that species showed hardly a flower. Other rains came, and in a few days the hills were again yellow with a new crop of flowers.

Western Texas is full of plant wonders, and no plant here is more peculiar and attractive in its own way than the Screw Bean, Prosopis pubescens. As a shrub this species outdoes its reputed cousin Mesquita, P. juliflora, but the latter far exceeds the former in its size. The fruit of the Screw Bean, as its nickname indicates, is a departure in fruit forms, and readily shows the species. Its short, clustered pods are twisted into screw-like coils and again coiled. In the future some botanist will again separate generically P. pubescens from P. juliflora, whose pods, though clustered, are straight and sometimes eight to twelve inches long and containing from six to less than twenty-four or more beans. Uniting these species under the same genus was a complete waiver of the form of the fruit as a generic character.

Euphorbia fendleri, E. lata, and other rare species of that genus grow on the mountain, with several Erigonums, Galiums, a large-fruited Yucca, a strange shrub, and other species.  

La Junta, Colo.  

E. N. Plank.  

The Flora of the California Coast Range.—III.  

CUPRESSUS MACRAHANA AT HOME.  

Six miles south-east of Ukiah is Red Mountain, and its bold dome, rising 3,300 feet above the sea, is visible from almost any point in the vicinity. Fifty miles of valley which stretches north and south from its base to the Pacific is distinguished from the surrounding mountains of nearly as great an altitude, by the brick-red soil on all exposed places, which shows enough even in the bushy portions to warrant the name. It is a great mass torn from some other geological formation and set down in a great chain of chemise-covered mountains. It differs from its neighbors less in flowers and trees than in soil, and is a fine example of these isolated sections which are a feature of our state. Forty miles to the east, across two higher ranges, lies an area in which the geological conditions and flora which distinguish Red Mountain are reproduced on a greater scale. The mountain is almost completely detached from the main range by a stream which, rising on the northwest face, completely encircles and drains the mountain.

The eastern side of Red Mountain is covered with the most curious forest I have ever seen. A body of Cupressus Macrahana, about a half-mile square, and scarcely mixed with any other tree, covers it completely. The trees are only from twelve to twenty feet high, as a rule, but, like the miniature trees of the Japanese gardeners, they have all of them been cut and gathered, tough and twisted, covered with moss, and with limbs broken, they look like the old forests of Cedar of Lebanon as they are pictured. A forest a hundred feet high, looked through the high end of a telescope, would give the same impression. A fire has swept through one side, and the old trunks, standing black and naked, add the deception. Only the surrounding objects by which to aid the sight, keep one from being quite carried away by the deception. These trees, dwarfed so strangely by the acid soil and bleak climate, are very old and tough.

The west face of the mountain is no less curious. Here the Cypress forms a dense thicket, from six or eight feet high in the open hills, to fifteen feet high in the gullies, and stretching over the whole mountain-side till it breaks into cliffs at the cañon. Where the fires have burned over, the little seedlings, as is usual in such cases, have come up, but in such profusion as I saw in the thickets of Cupressus on the coast. Here, at the most, there would be one tree in three or four feet. The little seedlings having the soil to themselves, are of a fine green and quite shapely, and many grow into handsome trees. A few seeds can carry down the stream to gravelly flats in the valley and form a great open grove of specimens as handsome as any in a park of perfect pyramidal form and very broad at base. Handsome trees are seldom seen.

Many of the lesser shrubs and flowers are quite as distinctive of Red Mountain as the Cypress. One Canthusia, in particular I have never observed except in such soils. It is much like a Holly in leaf, and forms a low bush. The flowers are white. The stream which flows down the east side has a broad bed heavily grown with a coarse grass which redens and turns brown in autumn for many flowering plants. For fully a half-mile Killimia montana, in a large spotted form, grows in abundance and forms great clumps. As I have seen it in July, the stem four to seven feet high and the cañon fairly filled with a grey mass of the grand recurved red and gold blossoms, I thought it the finest floral sight I had ever seen. Our common Columbine, Aquilegia crista, is a fine plant and the parent of some good garden plants. It flowers in May and June. In the grass and on the rock sides of the numerous little falls a form with viscid leaves grows in profusion, and, unlike the type, blooms constantly through the summer season. The flowers are more of an orange color than the type. A variety of Stachys with tomentose leaves and a pleasant fragrance, is almost as common, and in the wettest places one can see large beds of an Orchid much like a small purple and brown Lady's slipper. This is Epipactis gigantea, a most picturesque and well worth cultivation. Large clumps grace my Fern-bed, and rapidly increases, blooming freely every year.

Few Pines grow here, but a Pilea (P. denso) is abundant in the loose rock which has broken from the cliffs and formed the soil. It grows in large bunches, and the small dissected leaves are quite quill-like and some when the winter rains wake them from the long winter sleep; very delicate, too, the light green new growth resembling a Maiden-hair. Calycanthus occidentalis is not uncommon in the Coast Range and is one of our finest waterside shrubs. It is rather prettier than the eastern C. floridus, and, like it, the bark, leaf and fleshy chocolate-colored flowers have a pleasant odor. It especially likes the clayey soil of this cañon, and in some localities the growth is ten to twelve feet high and completely fills the gulch. In cliffs of the rock a rare Brachyandra grows quite out of its range, for it is common forty miles eastward. The flowers are white, and it prefers the courses of streams.

The higher slopes are also rich in rare plants. One of the most attractive is Dendromecon Rigidi, a shrub from two to eight feet high, slender, with light lance-shaped leaves and a blossom almost exactly like a light-colored Californian Poppy, except in size. This beautiful Tree Poppy in our region is confined to high altitudes. A well-developed bush is not so soon to be forgotten. Morning Glories are everywhere on the thickets, and, with good-sized white flowers grows in grain fields and is a troublesome weed, pretty as it is. Red Mountain, in
Garden and Forest.

Morning Glories, as in everything else, is odd, and the creeping form which I saw in bloom one morning in May had heart-shaped leaves densely clothed with woolly hairs and a fine white flower. The stem crept about a foot high. Carl Purdy.


At the present time the guard ranges of the Allegheny Mountains, which extend into Monongahela County, West Virginia, are covered with a mixed deciduous forest of second-growth trees. This is one of the best examples that have come under my personal observation of the natural power of forest reconstruction. During the early half of the present century this region, embracing several thousand acres lying along the north bank of the Cheat River, was the seat of an active iron-making industry. The mountains afforded a bog ore which was accessible and of great value. The mountain slopes were then heavily wooded, and as the iron industry became established a demand for charcoal was created, and to meet this demand the woods were harvested and converted into charcoal. This industry began to decline in activity from about 1852, and continued in a small way until 1868. The largest proportion of the timber removed for charcoal purposes was cut during the most active period of the industry and before the middle of the century.

As soon as the charcoal burning became unremunerative from the exhaustion of the timber supply and the substitution of coke for charcoal in the reduction of ore, these lands, which were too steep and rugged for profitable agriculture or grazing, were allowed again to fall into the hands of Mother Nature. It is true that fire has done much injury from time to time, but even with the adverse conditions of soil, exposure and frequent fires, there is to-day upon these mountains a forest of second-growth Chestnut, Poplar and Oak worth many times the value of the land at the time the iron furnaces closed—a convincing example that our forests will reproduce themselves. This we are told is all well enough for the moist mountain districts of the Alleghanies, but will not hold in the deforested areas of Michigan, Wisconsin and Minnesota. There is no ground for this argument, for when the forests were removed no rational system of reforestation was attempted. Even the protection of the area from fire has usually been neglected, and this alone will suffice to explain why the land stripped of its forest-cover still remains bare. Natural reproductive powers must have been allowed an opportunity to assert themselves. Trees cut over years ago are allowed to run periodically over the exploited tracts; what might take place, were they suppressed and prevented, is another question upon which some light is thrown in the following remarks by Mr. H. B. Ayers, of Carlton, Minnesota, on Forest Fires:

Even men of intelligence and prominence in the lumber business have said, "Why prevent fire? Pine will never come in again after the marketable timber is once cut." This assertion needs the strongest possible denial; the men who make such an assertion deserve ridicule. They were looking for saw-logs, and could not have looked for much else, for loggers in cutting often leave on an acre a hundred thrifty and vigorous young Pines from four to ten inches in diameter and from twenty to a hundred feet high after the timber has been cut, and on pine-stump land that has escaped fire three years thousands of little Pine seedlings may be seen springing up. In order to be a steep hillside such misstatements usually I have here the minutes of the exact location where young Pines in excellent condition for timber-growing may be seen, and right by may be seen burnt burn land cut the same year that could not be put into cultivation as potatoes. In timber, forest-trees cost twenty or thirty dollars an acre. In fact, so favorable a soil, mulch and shade can hardly be made at once on that burnt land by any price. Several surveys made on sections (sections) 16, 55, 22 were staked off and the trees counted on one frontage which 32,000 feet had been cut three years before were thirty-two thrifty sapling White Pines, eight to eleven inches in diameter and thirty to eighty feet high; ten Poplar, eight to fourteen inches in diameter and sixty feet high; 1,600 Poplar sprouts, one-half to one inch in diameter and five to twelve feet high; a light underbrush of Hazel and Vine Maples; and under all this were 1,267 White Pines seedlings two years old and four to six inches high. Another acre on the same section had 200 trees of White and Norway Pine averaging eight inches in diameter and forty-five feet high. Are not these worth saving?

This is a specific example of what may be expected from one of the families of trees which it is most difficult to perpetuate. Pines, as a rule, grow only from seeds; they cannot be managed under the coppice system, yet this single observation, carefully carried out and recorded, is sufficient to set the most skeptical to thinking.

In the deciduous forests which occupy the outlying ranges of the eastern mountain systems the problem is less difficult, as most of the desirable species readily reproduce themselves from the stump. The accompanying illustration (see page 235) shows what may be accomplished if only a little care is given, the forest representing being of Chestnuts about forty years of age. I have other photographs to represent the reproductive powers of the Ash, Magnolia and other species.

The history of this region clearly shows the influence of the rise and decline of the iron industry on the forest, the benefit of the substitution of coke for charcoal and the beneficial results in the way of reforestation when such lands are simply left to themselves and partially protected from fires.

L. C. Corbett.

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Plant Notes.

TOXYLON PONIFERUM.—Since the recent rains the large leaves of the Osage Orange-trees in Central Park have expanded to nearly their full size and have begun to take on the gloss which is characteristic of them, and few trees of the species have a more graceful appearance. Downing says of this tree that it is rather too loose in the disposition of its branches to be called beautiful, but it often grows in a compact spreading shape, and owing to the size and the abundance of its leaves casts a dense shade. Although it grows in parts of the Indiana Territory and Texas where the temperature is comparatively high, it will flourish as far north as New England, and, in spite of the fact that it has been developed in the region of abundant rain, it also flourishes on the dry prairies of the west. Besides its hardiness, the tree grows rapidly and is subject to few diseases and insect enemies, so that it is, altogether, well adapted to ornamenting parks and gardens. The pinnate leaves have large orange-like stipules giving the young beauty in the autumn, and it has a certain half-tropical or foreign air that arrests the attention. It is easily grown from seeds and cuttings, and is much used for hedges. In this latitude some of the trees reach a height of forty feet, and with almost as great a spread of branches, but in the valley of the Red River they grow sixty feet high, with a trunk two or three feet in diameter.

VIBURNUM MACROCEPHALUM.—This plant bears larger snowballs than either of the other species or garden forms which bear cymes of pure white sterile flowers. In an early volume of Garden and Forest Mr. Hemsley wrote that wild specimens of Viburnum macrocephalum were sent to him by different collectors in China, in which but few of the outer flowers were neuter, but the plant is only known here in its sterile form, and it has been grown in England ever since Fortune discovered it in the gardens of Shanghai. Flower-clusters are as large as those of Hydrangea hortensia. It differs in neither less from the other Snowballs, being rather low, of rigid and widespread branches. It is hardy enough to survive the winters in New England, but it does not flourish there as it does in Philadelphia and southward, where the flower-clusters often reach six inches in diameter, making it one of the most conspicuous of flowering shrubs. The old-fashioned Snowball, or the sterile form of V. opulus, is rather the most graceful