Pacific Coast Wild Flowers: Their History and Cultivation

By Carl Purdy

The Pacific Coast of the United States, and California in particular, has made many notable contributions to the gardens, the forests and the shrubberies of the world.

Europe has benefited far more from these introductions than the Eastern United States yet neither Europe nor the Eastern United States have as yet secured and succeeded in growing any large part of the really fine things native to our Western Coast.

The flora of the Pacific Coast is wonderfully rich and it is probably fully equal to that of Japan and only excelled by the Chinese Highlands where Wilson and others have of late found so rich a field. Indeed it is probable that while the latter excels in shrubs and trees, our own West would lead in the great variety of annuals and perennials.
It is certainly worth while to consider what there is still unused among this wild material and the climatic and other factors which must be understood if success is to be attained.

EARLY COLLECTORS OF WESTERN PLANTS

The botanical exploration of our Pacific slope is a most interesting story in itself. Up to 1791 it was an unexplored wilderness and a botanist attached to a Spanish exploring expedition in that year was the first to send herbarium specimens back to Europe. Soon afterwards Menzies, a surgeon on an English trading vessel collected and sent to England quite a number of species. The Russians had established a colony little more than fifty miles north of San Francisco Bay and botanists who visited this post and who accompanied exploring expeditions along the coast were the next contributors to our knowledge of Californian flora.

The first plant collector to reach the Coast was David Douglas, who was sent out by the Royal Horticultural Society of London for the express purpose of securing seeds and bulbs of fine new things. Douglas was both a great botanist and a real plant collector and he reaped a wonderfully rich harvest. Such lovely annuals as Clarkias, Godetias, Nemophilas, Gilias and Lupines were sent to England with the superb *Eschscholtzia*, with seeds of conifers and bulbs of *Calochorti* and Brodiaeas, and many of them found a congenial home in Europe and became the parents of superb races of garden flowers.

Douglas reached California in 1825 when the only settlements in California were a thin line of Missions stretching as far north as San Francisco Bay. He botanized and collected at various points and in a later trip went to the Columbia River and continued his great work. He needs no other monument than the grand conifer which he discovered—the Douglas Fir.

When next a plant collector visited the far west California had been taken by the Americans and the rush of gold seekers had penetrated every portion of California. Botanists had been here in the interval but no plant collectors, until in 1853
William Lobb was sent out by Veitch of London to seek new things.

A year or two later a Scotch gardener, Thomas Jeffreys, was sent to California by a club of Edinburgh flower and tree lovers for the same purpose, and both collectors sent many excellent things to Europe.

For many years after that date little was done toward the collection and introduction of California flowers into European gardens. It is true that when the great interest developed in Lilies in the 60’s large numbers of the bulbs of the three most common Californian species were collected and sent to Europe together with bulbs of a few Calochorti. Then, too, many seeds of the Douglas Fir and some of other conifers found their way to Europe to be used in forestry there.

This trade, was I believe, in the hands of a San Francisco florist, a Mr. Sievers. Later F. A. Miller was associated with Sievers and for many years Mr. Miller alone handled a trade in bulbs and tree seeds which were collected for him. But neither Mr. Sievers nor Mr. Miller were either botanists or collectors and few varieties were introduced.

In the late 70’s a new element entered the field. At last America was being discovered by Americans in the sense of an appreciation of the wonderfully rich native flora both of the Eastern States and of the West. I am not sure, but I think that it was George C. Woolson, then of Passaic, New Jersey, who first realized how much we were missing by not using our natives trees and flowers to a larger extent in park and garden. He too was the American pioneer in Hardy Perennials and as early as 1879 issued a most creditable catalog of both.

That fine plant lover Edward Gillett then as now of Southwick, Massachusetts, became engaged in collecting his local flora at about the same time and in Charlotte, Vermont, Pringle and Horsford, started similar work. Later Mr. Pringle became one of the ablest of the world’s plant collectors and traversed the United States and Mexico in his plant quests. In years that followed others engaged in the same work but the awakening of America is principally due to these three men. Mr.
Woolson was unable to continue his work but Gillett and Horsford have given a lifetime to the popularization of American Natives.

I have said that America had at last come to a realization of the riches in the floral line that she possessed, yet the statement may not be entirely true, for I feel rather sure that for some time the demand for American Natives was European rather than native for all of these pioneers.

At least it was a European call which led these pioneer firms to seek Western collectors and through which several young and enthusiastic people engaged in the work in California.

Of these one was a lady. Mrs. Austin, working in Northeastern California was a most enthusiastic botanist and an able plant collector. In the extreme south of California C. R. Orcutt at San Diego was no less enthusiastic and in later years ransacked the American Southwest and Old Mexico for cacti. J. B. Hickman of Monterey became a most efficient bulb collector and far to the North on the Columbia River, W. N. Suksdorf became one of the best botanists and plant collectors that the West has had. Lastly among these recruits in the plant collector line was the writer. Partly because fate willed it, partly from love of nature and partly from having a gift for organization, it has been my pleasure to make a life work of collection of the Pacific Coast Flora and through a wide organization to make supplies of the desirable bulbs and plants of the coast as reliable as are those of Tulips and Daffodils.

This is however another story.

During my forty years of plant collecting there has been one other notable collector in this field. Mr. C. A. Purpus employed under foreign auspices did a great deal of seed and plant collecting and moved from station to station from California to Mexico.

THE PROBLEM OF CULTIVATION

It is enough to say now that the problem at this date is not to secure material to try out in new regions but rather one of acclimatization itself. My own work in bringing Western
natives into cultivation has been extensive and while all of it has been done in California it has helped to work out the problem in some particulars. My garden is situated at 2300 feet elevation in the Coast Range of California about 100 miles north of San Francisco. It is far enough from the coast to be out of the almost frostless belt which skirts our coast to the Oregon line.

The winter rainfall is heavy and light snowfalls are by no means rare. In cold winters periods of frost with bare ground may last weeks at a time with a minimum temperature as low as 10° above zero. In mild winters 18° to 20° above would be nearer the minimum but in both cases plants are exposed to hard freezing without cover. My experiences under these conditions will be referred to later.

As to the climate of California—there is no such thing. California alone is a vast region over 750 miles along the Pacific and extending from sea level to 15,000 feet. It has a considerable area east of the Sierras in the arid Great Basin, another area of desert in the south where rain seldom falls and the summer's heat is tropic, a long coast line of moisture where frost is seldom known; a great forest belt in the Northwest and the North where the rainfall is as high as 120 inches from October to April. As if this were not enough its mountain ranges and air currents create a multiplicity of local climates which I think can be said to have but one feature common to all.

Beginning in Central Oregon in the Umpqua Valley and extending the length of California it may be said that there are no summer rains or at the most freak thunder storms. In all of this region as well as the vast area east of the Sierras the moisture is precipitated as rain or snow from October to April or May and the summer is entirely or practically rainless.

Again, in all of this region root action at least, with all bulbous or perennial plants, starts with the first rains and is most active during the winter season. Top growth may or may not begin at the same time. That depends upon winter temperature. Even in the High Sierras where the snow banks may not melt
WILD PENTSTEMON ON A CALIFORNIAN ROADSIDE
until July or even August the season is marked by a dry period so that all plants go into the winter well hardened.

North of the Umpqua Valley in Oregon and west of the Cascade Mountains there are local climates also, but in all cases with more or less summer rains. Naturally temperatures vary immensely in this great region and there are many places where the winter mean may be as low as or lower than in New York.

Take for instance an altitude of 5000 feet in the Sierras. It is a region of pine forests and the snowfall may be easily seven or eight feet on the level. The snow is apt to cover the ground by early November and not to melt before late April or early May. It would naturally be supposed that the trees and shrubs from there would be perfectly hardy in New York, yet as a matter of fact some of them are of doubtful hardiness in Philadelphia. Of course as the plants are snowed under before the ground is very wet or frozen hard they do not have to stand as hard conditions as obtain in New York, although after the snow melts severe frosts may occur.

But it has been well proven that many supposedly tender Californians can withstand the coldest Eastern winters without injury. Take the Calochortus for instance. Species of this occur as far East as Nebraska and as far north as British Columbia in the inner belt. In either case they have to withstand as much cold as they would in New York and it is a fact that practically all of this genus go through the Eastern winter unhurt if it is a cold winter. The danger comes in the spring.

Speaking of the effect of frost on these supposedly tender bulbs take this instance. Some years ago a bed had been planted with a species native to this region and not covered, when a heavy rain storm set in, followed by severe freezing weather. The bulbs lying on top of the ground threw down roots and made stems and flowered well in spite of the fact that they were frozen solid daily for some time and in the full sun at that.
DARLINGTONIA CALIFORNICA
WILD IN THE MOUNTAINS OF CALIFORNIA
In bringing the plants of the High Sierras to my garden there may be the same difficulties as in attempting to grow them in the East. Take this instance. On a peak of the Sierras at about 9000 feet there is on the north side a bed of *Primula suffrutescens* a very beautiful carpeting variety. Near it grow *Anemone occidentalis* a tall variety with large white flowers. Not far away in the crevices of the rock were *Heuchera rubescens*. And again a *Pentstemon*, a *Potentilla* and *Linum Lewisii*.

In my garden the *Linum* naturalizes itself, the *Heuchera*, *Pentstemon* and *Potentilla* are perfectly at home while I have never succeeded with either *Anemone* or *Primula* although I could give them soil and moisture conditions very like their home. *Mimulus Lewisii* from moist rich soils in this same region I grow easily but the Gentian has always failed me.

I think that in these instances the trouble is that in the Sierras the melting snow keeps the air cool and the sun’s direct heat is not so strong as in these lower altitudes. Another factor in all acclimatization is as to whether a plant has fixed its habits or is pliable under new conditions. The best instance of this is with some of our Western Erythroniums. My garden is natural *Erythronium* soil and most species thrive wonderfully. From the high mountains of Washington I have often had *E. montanum*—the reader may have seen the photographs of the great masses of this in the meadows of Mt. Rainier—and *E. grandiflorum* of the higher mountains. Now while most species planted here make root growth whenever rains come in the fall and make leaf and flower when spring temperature invites, these two high mountain varieties will not make a single move until well into the summer and then it is too dry for them to develop. At one point *E. grandiflorum* is found down to a few hundred feet above the sea level and this form, while hardly distinguishable from the mountain form, can be grown most easily here. Our trouble with some other mountain plants may be due to this fixity of habits.

Then again the matter of soils. In the West they are as varied as the climates. To be sure there are considerable areas
with similar soils, but then there are innumerable small mountainous areas where every half mile shows a change.

Vegetation too is distributed very often according to soil changes. If you wish to find a certain plant, look for a given soil. Sometimes this is very marked as in the instance of a certain Mariposa Tulip. It is only found in little islands of a peculiar stiff clay and these may be miles apart. Little colonies may be seen in areas of fifty feet across and none outside of those areas, and perhaps it may be miles to the next little deposit of soil and colony of bulbs.

This would seem to be conclusive evidence that this species requires this particular soil. As a matter of fact it is the most adaptable of its kind and will thrive in many soils when in cultivation.

But while some plants seem to be confined in nature to particular soils, others seem almost indifferent and are found in very many places. Soil may be a factor but is not by any means necessarily the controlling factor. I long ago came to the conclusion that we often confuse matters in laying stress on soil when the real factor of success is some unnoticed element.

Exposure—whether to sun or to air currents—is a most vital element in the West and more particularly because with our long dry summers, a cool exposure may mean everything in the way of moisture. Exposure is so vital an element that in seeking many species the first thing to think of is as to which way some hill faces. Of course in the West as in the East the vicinity of trees whether in forests or scattered has much to do with the distribution of plants,—everything to do with the flora of a given region. Yet even here one cannot rely much on appearances for it may be that the trees are not the controlling factor. For instance Erythroniums are typically woodland plants. Yet where woods have been cleared so that there is at most scattering underbrush you may find by far the finest and largest plants and the high mountain species grow in the open and full sun. The real controlling factor is in a certain temperature and a degree of moisture during the growing period rather than the shade of the trees.
Many other things control distribution of plants than their likings. In very many instances it is the competition of other plants which confines a species to poor soil and rocky places in spite of its soil preferences. This is well exemplified with many Mariposa Tulips. In nature they more often grow in rather poor soils and in barren places. Where a railroad passes through a region where they are already present in small numbers, the small colonies on the poorer spots rapidly spread and often become very numerous, in much richer soil than they have ever inhabited. This because it is the custom to burn over the right of way early in the summer and as soon as it can be burned. Coarser plants have their seed pods burned while the Mariposa Tulips, propagating by both seeds and offsets can increase without being crowded. This is a factor in plant growth and distribution which operates in innumerable districts in the West which can hardly be said to be known in the region east of the Rockies. It is this action of brush, grass or forest fires.

Generally speaking where a fire has passed over a section all vegetable growth is stimulated, often wonderfully. The spread of many species from seed is greatly increased, some species appear which were rare or unknown before, and the size and beauty of all flowers is increased sometimes 300 to 500 per cent. Always for the finest Bulbous plants and especially Lilies seek the path of a brush or forest fire of one to two years previous.

To just what action of the fire these results are due I do not know. Perhaps to several things. Of course there is a deposit of potash which we know is beneficial, yet spreading hard wood ashes over well tilled soil does not have the stimulating effect that burning brush over it would have. In brushy or wooded lands fungous growths are undoubtedly killed and I have long noted that lily bulbs which were much rotted before a fire would be perfectly bright and fresh afterwards. Opening out to the light by burning brush or small trees has its part in the result and soils are always loosened by a fire. Sometimes this loosening amounts to a fairly good surface cultiva-
tion. Of course it is entirely impracticable to use fire as a
garden agent but if we could fully understand wherein its
benefit lay we could greatly improve the growth of many plants.

I think that in the West as compared with the East as a rule
soils are more open and open to a greater depth. This is not
true in our forested regions, but everywhere else it is the result
of our dry summers. This tends to make all Western per-
ennials more deeply rooted, and without question should be
considered as a matter of prime importance in attempts to
cultivate them in the East. For this reason too I believe that
greater success will be had in rockeries where there is more
depth of loose well drained areas than elsewhere. That is,
many plants which here are widespread would be at their best
in the East in very well drained rock gardens.

Along the Pacific Coast from Central California north a belt
from 10 miles to perhaps 20 miles wide in California and much
wider to the north tends to acidity and is much improved by
liming. But this is practically the forest belt and its flora is
more of the woodland character and far less rich than that of
the interior.

Drainage again is a factor of decided importance. Of course
with the heavy rains in winter many sections of the West may
have very wet spots in the rainy season but these same sections
may be baked hard by fall. In handling Western plants and
trees it is a safe proposition to drain well. That is as apt to
be the necessary factor as anything else.

One other rather baffling thing is in the handling of plants
which here grow in spots very wet in winter and perfectly dry
in late summer. *Camassia* is an instance. It grows in winter
swamps starting its root growth with the first rains and at
flowering time often has a few inches of water around it. Yet
later its bulbs are ripened as hard as those of the *Calochortus*
growing on dry uplands.

In my acclimatization work I place the larger portion of a
consignment of new plants in that situation as to soil, shade
and moisture which my knowledge indicates most suitable, but
I place some of them in various situations as an experiment
and very often it proves that the shade, moisture or soil element is accidental and that the really necessary thing is something entirely different. For instance the plant from Western Oregon in full sunlight may require shade in this region of brilliant summer sun. The plant from a moist place in the Great Basin may be perfectly happy in the dryer portions of this much moister climate, the rock plant of the Sierras may be happy in my perfectly drained and permeable gravels, the bog lily of the Sierras well satisfied with the well drained soil where moisture is applied artificially to the extent of its needs, and so on interminably. An instance in point is *Epimedium alpinum* which grows in the open in the Alps. Here it succeeds admirably in moist spots in rather heavy shade.

One interesting generalization can be made. Plants or bulbs growing in woodlands make roots more slowly after moisture comes in the fall and make tops much later. If planted in the East this would insure that no fresh growth would be made in the fall to suffer from either winter cold or to be exposed to the spring thaw.

This for theory. As to facts. Quite a lot of our woodland plants, mostly of the Saxifrage Family, have proved quite able to stand a woodland situation near Boston. All of the Western Erythroniums have had repeated tests from Michigan to New England and proved hardy, and, as far as I can learn all Western Liliums are perfectly hardy throughout the East and all may be called woodland plants. The same reasoning would make us believe that the undershrubs of California would prove hardy for they too are slow to start.

Rather dissonant from this is the fact that the Matilija Poppy, *Romneya Coulteri*, native of the very mild Southern Californian coast seems from various accounts to be almost or quite hardy in New York. One factor in this may be that it is not at all harmed by losing its entire top as it flowers from new sprouts.

One would expect the plants from the Mid Sierras, we will say at 5000 feet elevation, to be hardy in the East. The snowfall is heavy, it does not fully melt until late April or even
May, heavy frosts may come after it has gone or before the snow comes in the fall and sometimes foliage is very badly burned. The forest trees standing out of the snow one would say would surely have to withstand as much cold as in many portions of the East. As a matter of fact many of them will not grow at Philadelphia.

Or again take the flora of the Higher Sierras where the snow fall is very great and summer frosts frequent. Surely they ought to be hardy in the East. We do not know. I am inclined to think that with them failures are rather due to culture than to climate, for when I bring them to this comparatively mild climate I have my troubles.

I believe that with a large number of Western plants the real trouble is not in climate at all but in other conditions. If these conditions can be met there is a wonderfully attractive amount of material to be added to the Eastern garden and especially of rock plants. This is true especially of rock plants because in the West there is one soil condition not so prevalent in the East. That is a considerable depth of permeable perfectly sweet soil. Our Pentstemons for instance are more apt to grow in gravelly or rocky soils with their roots penetrating to a foot or two and maintaining growth after the surface is quite dry. This condition can readily be given in rock gardens; not so readily in the common garden.

It has been my experience in plant growing and acclimatization generally that success lies in some small and often trifling particular. Things which would seem material may be of little consequence.

SOME PLANTS OF ARID REGIONS

Take Delphinium cardinale for instance. This plant is native to the semi-arid tablelands and open gorges of Southern California but does admirably in well drained soil where the winter rains may reach a total of sixty inches, with thirty-five inches as ordinary. But while I grow collected plants readily I cannot save fall grown seedlings of this plant. They always
damp off even if sown wild. Or again I found the trouble in growing Calochorti from the arid regions was not in temperature or in winter moisture. *Calochortus Kennedyi* from the Mohave desert grows admirably until the warm spring weather comes and the flowering stems start up, and then within a few days the Lily leaf rot gets nearly every one. To some degree I have the same trouble with all species from the arid regions. Here it would seem that the fungous diseases are not prevalent in their native dry regions and that they have not developed resisting powers. In addition to this is the fact that forms of *Calochortus venustus* growing in Northwest California are very close to others in the dryer sections yet the latter suffer considerably from the leaf rot while those native here are immune.

All of the wonderfully varied Western Pentstemons carry some wood above the ground in winter but many of them withstand very severe freezing when uncovered. This because they are very often found in the crevices of rocks or on exposed dry points where the snow covering is blown away.

Here in California we find it best to plant a subject of doubtful hardiness where the sun cannot strike it early in the day. It thaws out gradually if frozen and suffers much less.

My next article will begin a review of the best plant material of the West both that which has had trials in the East and Europe and less known species.

*Ukiah, California*