

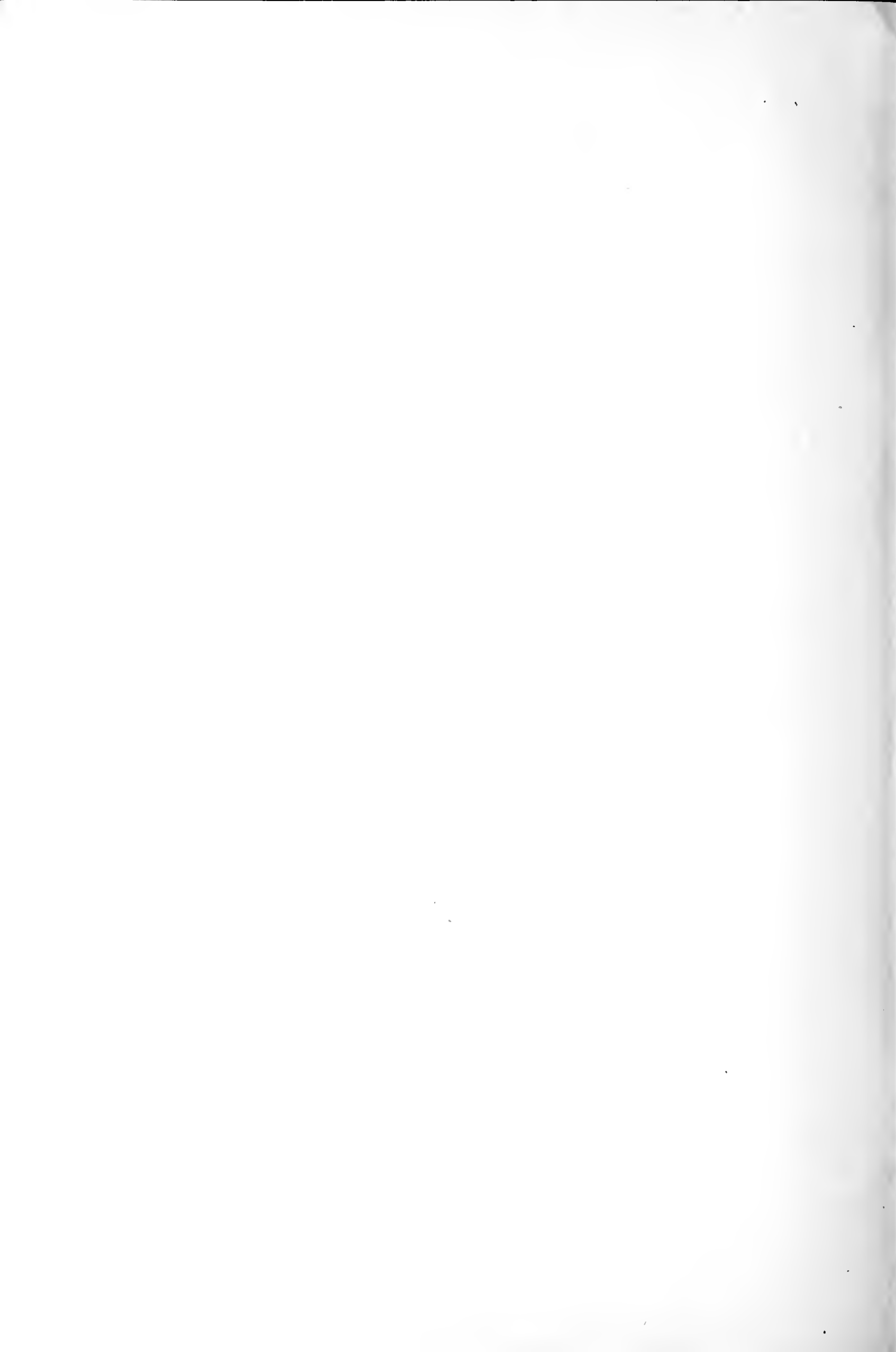
# ARBORETUM BULLETIN

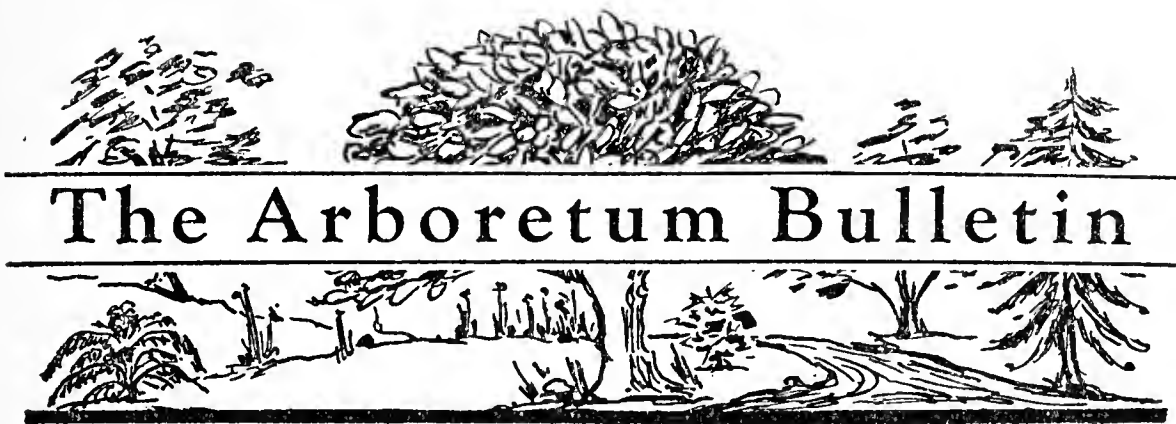
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# The Arboretum Bulletin

## Where The Madrona Blooms

HARRY W. HIGMAN

THE man responsible for my interest in the early botanical history of Puget Sound was George Neville Jones. It was in his book, "A Botanical Survey of the Olympic Peninsula, Washington," that I learned of the interesting part played by the Vancouver expedition and its surgeon-naturalist, Archibald Menzies. Mr. Jones listed a number of the plants collected, quoted briefly from the journals of Menzies and Vancouver, and spoke of the landing, May 1, 1792, on Protection Island where the first recorded plant was taken by the expedition.

My interest was so aroused that I decided to visit this scene of Vancouver's first landing. Accordingly, early one morning, two weeks later, a friend and I were on a little cannery tender bound from Washington Harbor for Protection Island, some four or five miles away. The day may be described in Menzies' words:<sup>1</sup> "When we left the Vessels it was a little foggy & calm, but clearing up soon after it became exceeding pleasant & serene, which added not a little to our enjoyment . . ." We landed at the west end of the island as did Vancouver's party, and climbed "the Bank to the summit of the Island . . ." where we admired the scene which had impressed him so favorably a century and a half ago. To the southeast we could see the harbor which Vancouver selected as the refitting port for his two ships, the Discovery and the Chatham. We visited the

" . . . aged pines with wide spreading horizontal boughs . . ." and photographed many of the trees and shrubs clustered in the north central section of the island. Then on the spit below we took pictures of the first plant recorded by the expedition, ". . . a small species of wild Valerian<sup>2</sup> with reddish colored flowers growing behind the beach in large thick patches." Nearby we were delighted to find the little cactus<sup>3</sup> mentioned by Menzies: ". . . it grew plentifully but in a very dwarf state on the eastern part of the Island which is low flat & dry sandy soil."

Had the day been unpleasant and the search unsuccessful, this one trip doubtless would have terminated the matter. As it was, our success stimulated our enthusiasm and before we drove off the ferry at Edmonds we decided to examine the whole route of the expedition in the Puget Sound area, our purpose being to take colored 16 mm. movies of as many as possible of the plants and places described in the journals.

Preliminary work began at once. We consulted the journals of Menzies, Vancouver, Puget and Broughton and mapped the expedition route,<sup>4</sup> carefully checking our findings with those of Meany, Newcombe and Bern Anderson. The overnight stops were determined as closely as available material permitted. Our list of plants<sup>5</sup> was derived from the expedition journals and from C. F. New-

<sup>2</sup> *Valerianella congesta* Lindl. (*Plectritis congesta* Lindl.) DC.

<sup>3</sup> *Opuntia fragilis* (Nutt.) Haw.

<sup>4</sup> Mr. J. H. Quense did 90% of the route mapping.

<sup>5</sup> Mr. and Mrs. Carl S. English, Jr., responded most generously and efficiently to my many requests for botanical assistance.

<sup>1</sup> All quotations are from the journals of Vancouver, Menzies, or Puget.

combe's appendix to Menzies' journal. Before beginning each excursion we combined all pertinent journal information on a card which would be available for instant reference if required.

Then we were ready for trips which were to occupy the May and June week-ends for three years, the final result of which was, except for the backgrounds, just a series of movies showing the flowering of many of the common herbs, shrubs and trees of the Puget Sound region.

Because Point Grenville was the first place in Washington named by the expedition, it seemed proper to begin our survey at that point. From the hundred-foot cliff we photographed the yellow-gray waves of the Pacific as they surged against ". . . three small rocky islets one of which, like that at cape Look-out is perforated." This perforation could not have been seen unless the ships were dangerously close to this cruel lee shore but a quotation from Vancouver indicates that this was their regular custom: "So minutely had this extensive coast been inspected, that the surf had been constantly seen to break on its shores from the masthead: and it was but in a few intervals only, where our distance precluded its being visible from the deck."

Cape Flattery, at the mouth of the Strait of Juan de Fuca, is not easily reached. A long drive, an adventure with a skunk that forced us to spread our sleeping bags on the beach instead of in the cabin we had reserved, and a rough, six-mile walk through heavy timber brought us to a high, rocky point, facing Tatoosh Island, ". . . a flat naked Island covered with Verdure and faced round with steep rocks . . ." We used our movie camera and then ate lunch while the grotesque, tufted puffins flew below us, and the black oyster catchers, the ". . . black Sea pies . . ." of the expedition journals, uttered their pleasant calls from the tide-washed rocks. An Indian passed by in a dugout canoe, probably not unlike those which Menzies said ". . . came off to us from a village on this island . . ." with this exception—the canoe we saw was powered by an outboard motor.

Once past Cape Flattery the two ships entered the island waters where they were to spend the next eight weeks. Their orders read in part ". . . you are therefore hereby required and directed to pay a particular attention to the examination of the supposed straits of Juan de Fuca . . ." They carried out these instructions by a simple yet effective system of operation: five main bases were used and from them intensive exploring trips were made in small boats.

Four visits were made by us to Discovery Bay, the first expedition basing point. There was much to see. We began with the comprehensive view of Protection Island from the northwest point of the bay; we spent some time at Carr Point where Vancouver moored his ships and refitted them for further service, and we stopped at the ". . . head of the Harbour . . ." where we flushed a bald eagle from a nearby tree. Walking gave us a more intimate view of the country so we used the automobile as little as possible.

We found most of the plants listed in Vancouver's summary of the district. The names used in the journals are not always those used today but in most instances the plant meant is clear. We photographed much, the light being good and the backgrounds excellent.

We easily located the plants described in Jones' excerpts from the Menzies journal: the little calypso<sup>6</sup> mentioned as ". . . that rare plant the *Cypropedium bulbosom* . . ." our native rhododendron<sup>7</sup> which he terms ". . . a beautiful shrub the *Rhododendron ponticum* . . ." and the manzanita<sup>8</sup> which he calls ". . . a new species of *Arbutus* with glaucous leaves . . ."

The madrona<sup>9</sup> was widely distributed but we found it at its best on the low bluffs of the east side of the bay where it leaned over the slopes with its reddish trunk and dark green foliage in imposing relief against the brilliant sky and water. Menzies called it

<sup>6</sup> *Calypso bulbosa* (L.) Oakes.

<sup>7</sup> *Rhododendron macrophyllum* Don. (*R. californicum* Hook.)

<sup>8</sup> *Arctostaphylos tomentosa* (Pursh) Lindl.

<sup>9</sup> *Arbutus Menziesii* Pursh.

“. . . the Oriental Strawberry tree . . .” and commented that it “. . . grows to a small tree & was at this time a peculiar ornament to the Forest by its large clusters of whitish flowers and evergreen leaves . . .”

The country was in full flower when three small boats, with Captain Vancouver commanding, left the busy camp on May 7 to begin their first exploration. I had never understood the full meaning of spring in western Washington until we followed the panorama of bloom past Port Townsend and down Hood Canal. A few miles south of Port Townsend we visited the bay where “. . . parties strolld along the Beach & met with some Oak Trees<sup>10</sup> on which account our present situation was called Oak Cove.” With foldboats, those convenient, collapsible canoes which can be carried in a car and assembled when desired, we crossed from Seabeck and stopped to locate hazel<sup>11</sup> trees where Menzies said he had seen them “. . . for the first time on this side of America.” Then we continued into Dabob Bay where we looked with new respect at the evergreen huckleberry<sup>12</sup> “. . . a vast abundance of a beautiful new species of *Vaccinium* with evergreen leaves in full bloom . . .”

Vancouver continued to the southernmost part of Hood Canal, camped overnight and returned. The expedition map does not show the fifteen-mile continuation of the canal to the east. Why? On the morning of their return, Captain Vancouver had sent Mr. Johnstone to see whether the cove marked the canal's termination. The boats were short of provisions; the men were tired. Had these reasons induced Johnstone to make only a superficial examination which did not correctly reveal the facts? We put our foldboats into the water and paddled to a point of vantage. When we had looked at the map we thought it impossible that the continuation of the arm could not be seen, but we found that even when viewed with binoculars, the shore contours were such that they appeared complete-

ly to close the bay. Mr. Johnstone was vindicated.

No time was wasted after the small boats returned to Port Discovery. The two ships left the bay, then separated, the Chatham to explore the San Juan Islands to the north, the Discovery to anchor on May 19 at the second basing point, between Blake Island and the south end of Bainbridge Island, opposite what is now Seattle. By May 30 the work of exploration from this point was completed. Port Orchard had been examined and mapped and two small boat parties, one led by Vancouver and the other by Puget and Whidbey, had inspected the complicated passages among the islands at the south end of Puget Sound.

Two three-day visits at Kopa Chuck Lodge enabled us to inspect much of this route. We failed to find any “. . . American ash<sup>13</sup>. . .” in Hale Passage where Menzies reported its occurrence near their overnight camp. Following the route into Carr Inlet we landed on Cutts Island which Peter Puget called Crow Island “. . . after its only inhabitants, an astonishing Quantity of Crows . . .” We continued on to “. . . Alarm Cove . . .” where Puget and Whidbey were threatened by hostile Indians and were saved only by a display of firmness and resolution which convinced the Indians that force would gain them nothing. The place where the meeting occurred was located to our satisfaction and then we paddled our foldboats to South Head and landed on the point where a severe storm had forced the party to spend the night.

A foldboat trip around Hartstene Island gave us a detailed knowledge of this portion of the route and, incidentally, taught us much about the confusion of local tidal movements in these cut up waters. A 25-mile paddle, carefully planned to catch favorable tides, did not operate according to schedule and we found ourselves bucking tough currents for almost the entire distance. Many automobile trips taught us much about the rest of the inlets.

<sup>10</sup> *Quercus Garryana* Dougl.

<sup>11</sup> *Corylus californica* (A.DC.) Rose.

<sup>12</sup> *Vaccinium ovatum* Pursh.

<sup>13</sup> *Fraxinus oregana* Nutt., the Oregon ash, is undoubtedly the tree that Menzies observed. The American ash is native to the eastern United States.

Apparently very little collecting and very little naming of places occurred in these waters of the southern portion of Puget Sound. It was quite evident that there was much about this territory that was not exactly to their liking. Menzies commented: "We were amongst a number of large Islands which rendered the Survey and examination more tedious & perplexing." Vancouver described the shores as "... being an almost impenetrable wilderness of lofty trees, rendered almost impassable by the underwood, which uniformly encumbers the surface."

Captain Vancouver returned to the ships on May 29, two days after the other small boats carrying Whidbey, Puget and Menzies arrived. The Chatham had departed for the third basing point and Vancouver joined them near the present town of Mukilteo from which place Captain Broughton "... dispatched Mr. Whidbey with two Boats to examine the openings that lay to the Northward." The new area contrasted sharply with that just surveyed. The journal of Menzies mentions "... a fine rich Country abounding with luxuriant lawns, cropt with the finest verdure & extensive prospects teeming with the softer beauties of nature. . . ." And Vancouver tells of Indians who "... conducted themselves with the utmost propriety, showing, by repeated invitations to their dwellings, the greatest hospitality. . . ." Interesting incidents of this portion of the trip were recorded: Mr. Whidbey reported the sight of Indians "... walking along the shore, attended by about forty dogs in a drove, shorn close to the skin like sheep." Captain Vancouver mentioned the grounding of the Chatham in Port Susan due to the neglect of a seaman.

Although the journals did not give us sufficient detail to locate exactly the overnight stops, we easily followed Whidbey's general route to the north end of Port Susan, back to the south end of Camano Island and north into Saratoga Passage and Skagit Bay. We spent one day at lovely "Penn's Cove", and on another we photographed a tiger lily<sup>14</sup> as it swayed in the wind near the Tulalip anchor-

age of the ships where, on June 4, "... Capt. Vancouver landed about noon with some of the Officers on the South point of the small Bay where he took possession of the Country. . . ."

The trip from Tulalip Bay to the fourth basing point, Strawberry Bay on Cypress Island, was retarded greatly by light winds. Vexed by the delay, Captain Vancouver dispatched two small boat parties while enroute, one into the San Juan Islands while the other, with Whidbey and Puget leading, was directed to explore the eastern shore from where they had previously left off to a point opposite Cypress Island.

We greatly enjoyed following the routes described by Peter Puget because his journal is so human. The description of this trip is no exception. It began at Deception Pass, the discovery of which established the existence of a large island named in Whidbey's honor by Vancouver. When we prowled along the rock shores of the pass we found ourselves looking for the scene of the encounter with a "... very fine Deer . . ." of which Puget said they "... were not able to kill it, though repeatedly fired at." When we drove a few miles to the north and looked down on the overnight camp at Flounder Bay we remembered his remarks about the "... narrow Spit of Low Sandy Soil . . ." where the party "... passed a most uncomfortable Night tormented by Mosquitos & Sand Flies . . ." and we were amused that the discomfort "... was in some measure forgot in the Morning by a large Supply of Strawberries and Wild Onions which were found growing Spontaneously close to the Tents. . ." On Vendovi Island where Mr. Whidbey and he had gone to take observations, he procured "... a piece from a Solid Rock. . . which attracted the Magnet round and Round, by the Quantity of Iron it obtained. . ." When they returned to their camp in the little cove on Samish Island "An animal called a Skunk was run down by one of the Marines after Dark. . ." Both Vancouver and Menzies spoke of skunks but only Puget remarked that

(Continued on Page Twenty-Nine)

<sup>14</sup> *Lilium columbianum* Hans.

*Enjoy Your Lilacs*  
(By Knowing More About Them)

ROY S. LEIGHTON

IN THIS country no flower has had a greater popularity than the lilac, as can easily be proven by the number of fine old clumps that are seen growing by the foundations of some of the oldest farm houses in New England and the Middle States. Yes, it has been said that they are as American as apple pie.

Many of these old clumps of bushes were once the only bit of color and beauty that found its way into the hard lives of our pioneer settlers, and they are now often the only remaining evidence of an old farmhouse.

Today the lilac remains the most important and the most popular of our spring-blooming shrubs and rightly so, for it is hardy everywhere, grows well, and gives abundant crops of wonderfully fragrant flowers each year, with a minimum of care. All this and a duration of life, which is not as yet known, is God's gift to man.

*Many Uses*

A lilac bush spells home as perhaps no other shrub does. Generations of gardeners have planted it where they could enjoy its fresh beauty and fragrance each spring. You should consider its use in your foundation plantings about your home, for tall screening hedges, as an accent for the back of a perennial planting, as a specimen in your flower garden or on your lawn. Truly there is no shrub which has more uses for your landscaping effect.

*First Mention of The Lilac*

Lilacs have been cultivated and loved by the people of Europe for nearly 400 years. One of the first known writings to mention this flower was a travel account of the French naturalist, Pierre Belon, in his book entitled "Observations," written in 1554.

Their introduction into America was in the early Colonial days at a date said to have been about 1650. The first authentic record was of a planting made in Portsmouth, New Hampshire, in 1750.

*Natural Habitat*

The lilac is not a native of North America but may be grown with success in all parts of the United States except in the extreme southern states. It is truly an old world group of shrubs and small trees confined to Asia, with exceptions such as *Syringa amurensis japonica*, which is found on the island of Japan, and *Syringa velutina* from the Dagelet Island in the Japanese Sea.

A further breakdown by species would show:

*S. vulgaris* (common lilac) from Jugoslavia, Greece and Bulgaria.

*S. josikaea*—from Rumania, Jugoslavia, Poland and Czechoslovakia.

*S. emodi*—from the Himalayas and Afghanistan.

*S. amurensis*—from southeast Siberia, Korea and Manchuria.

*S. pekinensis*—from North China.

*S. oblata Giraldii, microphylla, Persica, Sweginzowi, tomentella, villosa, pubescens* and many others from China.

The Persian lilac (which is really Chinese, not Persian) is an old inhabitant of our gardens.

*The Common Lilac (Syringa vulgaris)*

The common lilac, *Syringa vulgaris*, a species and not a named variety, is still very much worth growing. I would not be without it as it is the old-fashioned American meaning of the lilac. It was originally found growing in the mountains of Central Europe and it has been cultivated as a garden plant since the 16th Century. Few, if any other, flowering shrubs have been known, grown, and loved over such a long period.

*Lengthen The Lilac Season*

Lilac time is short even at its best, so why don't we take advantage of the many half-sisters of our common garden lilacs to start the season earlier in the spring and push it later into the summer? In so doing, the season is lengthened for over two months.

Perhaps you are not familiar with the other types of lilacs, although surely one may notice that they are not exactly alike. The flowers of some are in dense clusters,

while others are loose and feathery. The leaves vary from those broadly heart-shaped to some that are tiny, long, and tapering. While assortment of color has wide range, not only from type to type but even within each private family group, these are the species and species hybrids.

#### *Interesting Species Worth Growing*

Outside of large collections, it is rare to find in cultivation more than a few lilac species and a couple of the hybrids.

*Syringa oblata dilatata* is the earliest of all lilacs to bloom and is oddly the only one with brilliant autumn foliage; thus it catches our attention not only first but last. Its flowers are lilac pink. The leaves are broad and leathery, turning vivid red in the fall.

The Chinese lilac (*Syringa chinensis*) or "Rouen lilac" has finely textured foliage and graceful, dainty blossoms. It follows 10 days after the early lilac and blooms in both lavender and white. It is a hybrid resulting from crossing the common lilac with the true Persian. It is often incorrectly called the Persian lilac, but it is more profuse flowering. The branches of the true Persian lilac are drooping and willowy and the leaves show a tendency to be lobed.

*Syringa persica* var. *laciniata*. Although an old variety, mentioned by botanists as early as 1620, this plant is almost unknown today. The most striking characteristic of this worthwhile variety is its unique foliage. Its graceful branches are covered with feathery, pinnately lobed leaves resembling those of the locust. The blossoms are similar to those of *S. persica* but somewhat darker.

*Syringa pubescens*. A very beautiful species from the mountains near Peiping. Its slender, erect branches form a shrub of remarkable symmetry. There is an airy grace about its blooms which literally cover the plant from the ground up. Its dainty blossoms, long tubed and starlike, possess an exquisite clovelike perfume. The florets are lavender lilac with violet anthers and are borne in broad panicles. The leaves are small

and hairy. This lilac is considered one of the rarest in cultivation.

*Syringa reflexa* or "nodding lilac" is a wonderful new form with pink flowers found in the mountains of Central China in 1901. Its two outstanding characteristics are the pale rose color of its blossoms and its graceful, wisteria-like, drooping, flower panicles from nine to twelve inches in length. The bright red of the buds contrasts strikingly with the beautiful pink of the open flowers. It has been awarded a medal by the Royal Horticultural Society. It is a very hardy species. Recently a pure white form has been introduced which is also striking.

*Syringa microphylla* is called the "twice-blooming lilac," because it sometimes does just that, flowers twice during the same season with a profusion of lacy, pale pink blooms, delightfully fragrant.

*Syringa persica*, long thought to be a native of Persia, we now know is indigenous to China. It is a favorite among Asiatic peoples. The name is a geographical misnomer. For several centuries it was assumed to be native of Persia. It was not until 1915 that the true home of this species was made known—a mountainside of Southern Kansu. However, it has become naturalized on the hill slopes in Persia. It is the greatest wanderer of all the species.

This fine species trails behind the French hybrids, its flowers still being in bud when most lilacs are in full splendor. It has finely cut foliage and lacy, rather than dense, panicles of bloom. It comes in several shades of pink and white. If you have never seen a hedge planting of these gems, you will await a breath-taking occasion. They are fast growing, dense, and compact.

*Syringa japonica*. The "white flowering tree lilac" is the last of all in the procession, in some localities not blooming until July. Give this species plenty of space for it grows tall and broad, as the common name implies. The flowers resemble the common privet bloom, displaying a blanket of whiteness on well established bushes.



### *A New Race of Hybrids From Canada*

Hybrids are produced by the crossing of plants differing more or less in kind, but usually related and of the same genus.

A great deal of interest has been created by a line of new hybrid lilacs coming to us from Canada, largely the work of Miss I. Preston of Ottawa and Mr. F. L. Skinner of Manitoba, Canada.

Miss Preston's are hybrids of *S. villosa* and *S. reflexa* and are, therefore, mostly late-flowering. They all grow into large, open branching bushes with heavy leaves like *villosa*. The panicles are plume-like and the colors all run in lavender and pinks. They are sure to find a place of importance when better known.

Mr. Skinner's are hybrids of *S. oblata dilatata* and *o. giraldii* and are for this reason all early-flowering. They all give great promise. They have a pronounced fragrance, a trait inherited from the Korean parent. They have attractive foliage, purplish tinged in the spring, and deep purple in the autumn. They are extremely hardy and are apparently free from the often objectionable suckering habit of *vulgaris* and its varieties.

#### *Modern, But Little Known, French Hybrid Lilacs*

In America today there are many fine lilac collections, both public and private, a number of them containing as many as three or four hundred varieties.

But that small grower who has room for only a little of this and a little of that is woefully backward in that he is content to grow comparatively poor or long-since superseded varieties of lilacs.

Those who know only the old white and purple forms grown by our grandparents can have no idea of the wonderful beauty of the grand, new French hybrid group of modern lilacs. Their color variation is found to begin with creamy white, and to advance through shades of flesh and rosy pink, Wedgwood blue, violet, deep red, and rich purple, and variegated blooms showing two or more colors in the same flower.

The flowers are single and double and vary greatly in form of truss and in blooming

season. Common and old-fashioned lilacs usually do not bloom until they attain a large size. French hybrid lilacs, if undisturbed, frequently bloom when 18 inches tall and within a relatively short time after transplanting. They comprise the largest and most individually varied collection. Their blossoms are often enormously large, 12 to 14 inches in height and breadth, with single, semi-double or double types of individual florets. It is not uncommon to have single florets one inch in diameter. The era when "lilac" was synonymous with "lavender" is past.

#### *Origination of The French Hybrids*

It was in 1843 that Liebert Darimont, nursery man of Liege, Belgium, brought out a double lilac known as *Syringa vulgaris azurea plena*. Its origin is obscure, although it may well have been a seed sport of the common lilac. Its flowers, however, were small and malformed. Twenty-seven years later in the little town of Nancy, France, Victor Lemoine, one of the world's greatest hybridizers and plant breeders, began crossing Darimont's plant with the best single varieties of the time. It has been said that when Victor Lemoine began his work, he crossed more than 100 flowers the first year and harvested exactly seven seeds. However, it was he who, after years of patient and painstaking labor, first gave to the world those exquisite modern lilacs that we call "French hybrids." Other varieties, which came from Germany, Belgium, the Netherlands, and the United States in later years, have also become known as "French hybrids."

To this day the Lemoine descendants are still carrying on. Working 30 years in the last century and 40 years in this, they have introduced over 200 of the now 500 improved forms. Of these 200, 79 are varieties to be found in the most recent symposium of the best 100 varieties.

#### *Other Notable French Hybrid Originators*

Twenty-seven other persons, European and American, might be termed modern breeders in that most of their work was in the present century, that is, Stepman, Mount Blanc, and

Spaeth from Europe. They produced 32 varieties, only part of which are of importance today.

Five additional modern American and Canadian breeders produced among them over 200 varieties, as follows:

	<i>Varieties</i>
John Dunbar .....	32
T. A. Havemeyer .....	30
Mrs. Hulda Klager.....	62
Miss I. Preston (Canada) .....	84
F. L. Skinner (Canada) .....	11

Two new recent American breeders are Mr. A. M. Brand and Mr. W. B. Clarke who appear to be the only present breeders working on a large scale.

It is interesting to note:

- 1.—The way the Lemoine varieties of 1910 and 1925 stand out.
- 2.—The high quality of many varieties we now possess in white, magenta and purple, compared to the rather few in violet and pink.
- 3.—That the dark-colored varieties do not seem to be as robust growers as the lighter colored varieties, nor do they grow as fast.

#### *Some of The Worthwhile French Hybrid Varieties*

Space will not allow a complete listing, and individual taste differs so, but here are a few that should fit the most exacting:

*White—Singles.* Vestale for early and Mont Blanc for late.

*White—Doubles.* Ellen Willmott, a pure white, and Edith Cavelle, a looser, creamy white.

*Violet—Singles.* These are comparative newcomers and not yet widely distributed. Single are De Miribel and Cavour.

*Violet—Doubles.* The outstanding Violetta and Marechal Lannes.

*Blues—Singles.* President Lincoln introduced by the late John Dunbar of Rochester, New York, in 1924. Decaisne and Maurice Barres are not as blue but are two of the most satisfactory of all lilac novelties. Diplomat and Firmament are too new to rate but

look very good. I personally think that Firmament will be outstanding.

*Blues—Doubles.* Oliver De Serres, Emile Gentil and Duc De Massa are all very much worthwhile.

*Lilac—Singles.* Marengo and Jacques Callot.

*Lilac—Doubles.* President Follieras, and the outstanding variety, Henri Martin, which is one of the peers of modern Lemoine introductions.

*Pink—Singles.* In single pinkish lilacs our modern breeders have not surpassed the work of the last century and Macrostachya (1844) and Lucie Baltet (1888) are still the best and practically alone.

*Pink—Doubles.* There are many newer excellent doubles, however, such as Virginite, Waldeck Rousseau and Antoine Buchner.

*Reddish Tones—*The reddish toned lilacs are among the most beautiful but are subject to fading.

*Singles.* Mme. F. Morel (1892) and the outstanding Marechal Foch (1924) are perhaps the most magnificent of all lilacs. They belong in every large or small garden. If you have room, plant Congo, Capitaine Baltet, Ruhm von Horstenstein. They are all grand.

*Doubles.* Paul Thirion is the best double of the group.

*Purple—Singles.* These are all good. Ludwig Spaeth is a popular German variety. Others are: Monge (French), and Mrs. W. E. Marshall (American). J. de Messemaker from Belgium can be absolutely breathtaking in its size and brilliance of color. Diderot is sometimes a poor grower, yet in some gardens it will top all others in size of spike.

*Purple—Doubles.* There are not many. Adelaide Dunbar is probably the best.

#### *Early Species Hybrids*

These are all known as the *Giraldii* group and should be better known. They come into bloom before the French hybrids and have a type of bloom entirely different and distinct from all the others.

Buffon is outstanding, having individual

*(Continued on Page Thirty)*

## *The Culture of Roses*

H. L. COLLIER

### *Planting*

IN SELECTING a place to plant roses, endeavor to find a location which will have full exposure to the sun. However, they will thrive if only half of the day's sun is available. Do not plant under or near large trees or vigorous shrubs, the roots of which will reach out and rob the roses of both food and water.

A heavy soil is better than a light one but heavy clay or hardpan will have to be lightened by the addition of leaf mold, straw, manure compost, or peat moss. A loamy soil is ideal for most varieties, and when the top soil is of this character little preparation is necessary. However, the rose fancier who grows them for exhibition purposes digs out a trench 3 feet deep and provides drainage by placing in the bottom a layer of stones 3 or 4 inches deep, over which is placed a layer of inverted sod 6 or 8 inches deep and the trench filled in with good garden soil. The lower half should be well enriched with bone meal or well rotted manure, but the upper portion may contain just good, clean, garden soil.

Rose bushes of moderate growth may be planted 30 inches apart in rectangular beds with not more than 3 rows to a bed. When planted in this manner cultivation is much more convenient than when wider beds are used. In planting, dig the holes of sufficient depth and width to accommodate the roots of the bush. Before planting the roots should be examined carefully and any that have been broken or marred should be trimmed off. Extra long roots should also be cut back. In fact, root pruning is very beneficial. No real rich soil or fertilizer should come in direct contact with the roots.

Budded plants should be set with the bud about 2 inches below the surface and the soil sifted or settled among the roots and gently but firmly packed in. The surface soil should be loose to a depth of 1 inch. Fall planting is desirable but many prefer spring, and good results have been obtained in both

seasons. Choose a time when the soil will break up easily and is not too wet and soggy. As stated above, where the surface soil is a good loam or shot clay, just dig out the holes to the proper size to accommodate the roots and fill in with the natural soil. Newly planted roses should not be given fertilizer but should be allowed to become established first; then a surface dressing may be applied. Light, sandy, or gravelly soils will require the addition of material which will retain moisture and plant food. In such soils it is better, when the trouble and expense is not a deterrent, to dig out a trench the required size and fill in with soil material as before recommended.

Some gardeners in planting rose bushes build a conical mound in the hole where the bush is to be planted, set the bush on top and spread the roots carefully over the mound and fill in the soil among the roots. When the soil is quite dry it is well to settle it with water. Puddling the rose roots is also resorted to.

At times the gardener will receive dormant bushes in a wilted or dry condition; the bark may even be wrinkled. Plants in this condition will be benefitted by complete burial in a shallow trench in moist soil for a period of several days or even a week. Bushes planted in the fall should have the canes shortened and then a final pruning in the spring at the prescribed time. Spring planted bushes should be pruned at time of planting.

### *Fertilizing*

The first season after planting roses very little, if any, fertilizer should be added to the beds. The bushes should be allowed to establish themselves and if the beds were properly prepared before the planting no further fertilizer will be required until the next year.

The best fertilizer for roses is well decayed cow manure, but as this is almost impossible to secure in a large city, substitutes must be found. Any good, well decayed, stable manure is beneficial to the soil.

A light dressing of hydrated lime, after the manuring, is considered good. Pulverized

sheep manure—two parts to one part of finely ground bone meal is also highly recommended. Apply about one pint of the mixture to each well-established bush. When this mixture is used no lime is needed. Most soils will benefit by a dressing of material from the compost heap. The natural fertilizers should be applied in the spring, about or before pruning time. The pulverized sheep manure—bone meal mixture may be repeated about July 1 to 15 with good results.

Liquid manure, made by dissolving animal or poultry manures in water, should be used sparingly and only after the buds begin to show color. It should not be applied except after the beds are irrigated or after a rain and not more often than once or twice a week. The liquid should be weak and should be applied at the rate of two quarts to each bush. However, unless one has a very large place where the material may be kept in a barrel and hidden from view, it is best not to attempt its use. The following mixtures are easily made and applied:

Half an ounce of nitrate of soda to one gallon of water.

Half an ounce of sulphate of ammonia to one gallon of water.

One of these may be given once a week after the buds begin to show color up to August 1. In this section of the country liquid manures are not recommended for general use after that date.

An application of  $\frac{1}{2}$  ounce sulphate of potash to the gallon of water applied in March and May is helpful. Apply about 2 quarts to each well established bush.

The application of manure to the beds in the fall and winter is not recommended as much of the material is wasted and no real good is accomplished. Wood ashes from alder, maple, willow or any of the hard woods are excellent for the rose beds. Cedar and fir ashes are useless except to lighten heavy soil.

### *Spraying*

Rose bushes should be thoroughly sprayed at least twice during the winter with a good strong solution of lime sulphur or Bordeaux mixture. Select a dry day in order that the

spray material may be effective. A rain immediately after spraying will render the application useless. Spray the bushes thoroughly and be sure to see that plenty of the material is spread upon the ground in order to destroy the spores of mildew and black spot. Be careful that the spray material does not touch painted surfaces as it will stain. Winter spraying destroys legions of rose enemies which would otherwise be on hand in the spring and summer to cause the gardener untold grief.

When the tender shoots appear after pruning in the spring, spraying should be resorted to with caution, for strong caustic sprays will do more damage than the insect and fungus pests. If the aphid and white flies become bothersome a spray of Ivory soap suds and nicotine will destroy them. Dissolve one ounce of the soap in one gallon of water and add one tablespoonful of Black Leaf 40 to the solution. Keep the spray material agitated so that there will be no strong dregs in the bottom of the can to injure the foliage.

It is best to apply the spray early in the day before the white flies become too active and before the sun's rays become too strong. Two applications, a day apart, are necessary as it is impossible to destroy all of the aphid with one dosage. The little, flat, green worms which are found on the undersides of the rose leaves will be discouraged with the soap-nicotine spray and by adding a good heaping tablespoonful of the powdered arsenate of lead to the mixture these pests will be destroyed also and the foliage saved. Large caterpillars had best be hand picked.

A dust mixture which is inexpensive and most effectual against black spot and mildew and which also acts as a deterrent against all of the insects is made of nine parts of flowers of sulphur and one part of the powdered arsenate of lead. Put this mixture in a muslin bag or cloth, such as old sheeting, and shake over the plants in the early morning when there is no wind. It will not injure the most tender foliage and the material is easily washed off the foliage when stems are cut for

bouquets. This dust mixture, applied to the new shoots as they appear, will ward off the attack of the saw flies which lay their eggs under the tender bark. When the grub is hatched out it immediately starts to burrow its way between the bark and the wood of the stem, causing the stem to droop and wilt. When you discover a shoot so attacked the only thing left to do is to cut it off. Other liquid sprays are recommended and may be obtained at the seed and department stores, but must be used with caution.

Proper irrigation and constant cultivation will do much to keep down the pests. Do not irrigate or sprinkle rose bushes in the evening. One good soaking of the rose beds each week is far better than a sprinkling every day. Sprinkling the foliage and blooms spoils the flowers.

### *Pruning*

Do not prune rose bushes in the fall. Long, straggling shoots and branches which will whip around in the winter winds may be shortened, but pruning should not be done until about March 15 to April 1 in this section, depending upon the season. All varieties cannot be treated alike successfully on account of the different habits of growth. The gardener must know the habits of the many varieties in order to work intelligently. A general rule is to prune the weak-growing sorts severely and to prune vigorous growers lightly.

All dead, weak and very old wood should be cut out clear to the base of the bush, the center thinned out and the remaining shoots shortened so to give the bush as symmetrical an appearance as possible. Cut to an eye pointing outward and rub off eyes pointing toward the center. This will prevent the center of the bush from being crowded and will provide a free circulation of air, admit the sunshine, and will help to keep away mildew, black spot, and insect pests. By pruning, many insects are destroyed since the eggs are usually deposited on the top branches.

Pernetiana roses should be pruned lightly. Severe cutting retards their development and often results in total loss. So be easy with

Golden Emblem, The Queen Alexandra, Angele Pernet, Ville de Paris and the other members of this race.

The single and semi-double varieties produce far better results when allowed to grow into large bushes and, as the blooms may be used for decorative purposes only, there is no necessity for severe pruning where plenty of space is available.

Ramblers like Dr. W. Van Fleet, Paul's Scarlet Climber, Alberic Barbier, (the Wichuriana hybrids) should be pruned immediately after flowering. All wood that has produced blooms should be cut clear back to the base in order to provide room for the new canes.

Hybrid tea climbers need careful treatment. After they become established bend the canes to a horizontal position in order to encourage the buds to grow. If the canes are left upright all of the blooms will be produced at the top and the bush will have a leggy appearance. Exceedingly long canes may be shortened and the lateral branches cut clear back to the base to encourage new growth.

Shrub roses like Austrian Copper, Harrison Yellow, Persian Yellow, Hugonis, etc., should not be pruned except for general appearance and for the removal of dead wood. Much may be accomplished toward the proper development of the bushes when cutting blooms during the flowering season. Be sure to cut to an outside eye and keep the center of the bush free from crowding branches.

If you would have fine blooms, disbudding must be resorted to. Most varieties produce more than one bloom to a stem. The side buds should be picked out, leaving only the terminal bud, otherwise you will have a cluster of small roses instead of a well-developed, good-sized rose. Needless to say disbudding is only successful while the buds are very small.

Cut the blooms in the early morning or in the evening and immerse the stems in water immediately. Blooms cut in the sunshine, unless removed to a cool, shady place, will surely wither.

## *Alstroemeria, The Peruvian Lily*

HARRY L. STINSON

ON A hill about a mile to the north of Lima, Peru, Feuillet (1707-12) reports having found a new flower of rare beauty. In many respects it reminded him of a day-lily, so much so that he gave it the name of *Hemerocallis pelegrina*, Lily of the Incas, or Lily of Lima.

Feuillet prefaced the description of this beautiful flower with the following account of the grandeur of the Royal Botanical Gardens of the Incas. This Royal Garden was so unique that I would take the liberty of making a translation from Father Feuillet's original journal<sup>1</sup>. "The flower of this plant merits by its beauty to have a place in the gardens of the Incas, and perhaps we would have seen it there in its season if we should have lived in their time. The grounds of the gardens of these great kings had an advantage over others; spring seemed to be continual and to maintain the plants in all their beauty. As soon as they started to wither away and nature seemed to take a rest, there were substituted in their place, some new plants formed from gold and silver which the artisans had imitated quite perfectly, and which maintained the grandeur and magnificance of these sovereigns. The trees made of this precious metal formed long walks. The fields were filled with Mais, of which the tips of the stems, the flowers, and ears were of gold and all the remainder of silver. The whole soldered together was as marvelous as the centuries to come will ever see. The only thing lacking to the Incas was the knowledge of the true God, whom we worship, to make them the most perfect princes of mankind."

In his journal Feuillet found and described three species of the Peruvian lilies, *Alstroemeria pelegrina*, *A. Ligtu* and *A. Salsilla*, the last of which is now classed as a *Bomarea*. There is no evidence that he took back to

<sup>1</sup> R. P. Louis Feuillet, "Journal of Observations in South America and West Indies," Vol. II, 710-716, 1714.

France either specimens or seeds of any of these species.

The next recording of them we find in Linnaeus, "Planta Alstroemeria" (1762).<sup>2</sup> Again with your permission permit me to make a translation from the above reference as it explains just how and where it was found growing in Spain. "The years taken by these academic tasks had hardly been completed, when Don Claudius (Alstroemer) already eminent among those interested in the Natural Sciences, prepared himself for a journey; to wander over the ever-flowering lands of Europe, I (Linnaeus) refer to Spain, France, Italy and others. Certain of his opinions and purposes, he set out on the sea and with favorable winds arrived on the 28th of April of the next year (1754) at the port of Gaditanus (the present city of Cadiz), Spain. Scarcely had he set foot upon the land, when at the home of the Swedish consul, Don Bellman, he came in contact with a whole bunch of a certain Liliaceous plant of very rare beauty, and of such a singular structure that he was unable to refer it by any method to a genus thus far known. Inspired with delight of such a remarkable plant, he was unable to calm himself until he had contracted a much closer friendship and intimacy with it. Also, in this same city at a fortunate time he met a certain Noble Matron, to whom, sometime before, it had been sent by her husband while residing in the Peru of America."

Now his first care was to sketch such a pleasing plant, to describe and dry a cut flower so that he might present all these to his former most esteemed instructor in natural sciences. And furthermore, after the lapse of a certain interval of time he was able to secure fertile seeds, which he likewise sent. In a special propagating bed Linnaeus succeeded in germinating the seed and again I quote, "in the end displayed the most delightful flowers in the Academy garden and eventually produced mature seeds. This strange plant, the first to have been seen by

<sup>2</sup> Linnaeus, "Planta Alstroemeria," in *Amoenitates Academicæ*, Vol. VI, 47-262, 1 plate, 1762.

us, has been distributed by the Academy's gardener and by us all under the name of Alstroemer's Plant or Alstroemer's Lily.

"This plant has been given the name of *Hemerocallis*, which in reality was introduced a short time ago to designate the Genus of the Asphodel Lily of Tournefort, hence this name cannot be admitted in as much as it applies to both. And now as to this plant, of a separate family should have distinct Generic name, lest it be confused with the plants of an entirely different genus. No synonyms are left, and for this reason a new name must be assumed; and since we owe this to Don Claudius Alstroemer, who found it, described it and made a drawing of it, and introduced it correctly defined to the botanical world, and shared it with the gardens of Europe—What prohibits us then from naming this plant, *Alstroemeria*?"

Space prevents giving the entire translation of Linnaeus' treatise upon the *Alstroemeria*, as interesting as it may be. The foregoing will be sufficient to show how it was introduced to our gardens and received its name. Now something about the plants themselves. It is occasions like this that I wish that I were endowed with Scott's descriptive ability. However, let us start by describing the roots. Imagine the growing crown represented by a button about the size of a hazel nut to which is suspended four or six white lead pencils on threads two to six inches long. The pencils represent the tuberous roots from the lower end of which grow the fibrous roots.

The tubers, filled with farinaceous material, are very much like a potato in appearance and taste. From the growing bud arise the stems. During the early winter (December and January) two or three vegetative stems push through to the soil's surface and each unfolds a 10 to 20 leafed tuft or rosette. Upon the approach of spring these stems elongate to about a foot or so in height, but do not bear flowers. With warmer days promised the floriferous stems shoot up and at a very rapid rate will attain a height of three to five feet. The leaves all along the stem are scattered, the lowermost being scale-like while

the upper ones are four to six inches long. The leaves of the plants in this genus exhibit a very singular anomaly, namely that they are borne upon twisted petioles so that the lower surface becomes the top with a reversal of the stomata and of the internal cellular structure.

At top of each stalk is a rayed umbel of approximately 15 peduncles, each carrying three to five azalea-like florets. The innermost one opens first, followed successively by the next adjacent, thus giving an extended blooming period of about three weeks. The color of the flowers depends upon the species and ranges from near-white, to all shades of pink, creamy yellows, buttercup-yellow, burnt-orange, mandarin-red, orange-red to orchid and light violet. The two uppermost petals are penciled on the upper half with dark maroon to black, while below this is an area of golden yellow extending into the center, which is laden with nectar, thus constantly luring the little dashing bits of the rainbow—the humming birds—to partake of nature's sweets.

As to the culture of *Alstroemerias* here in and near Seattle, we must divide them into two groups. Those species coming from Brazil, Paraguay, Peru and the northern parts of Chile are tender and will not withstand our colder winter months. However they do not seem to resent the confined air within a cool glass house or sunny window. These species are:

*Alstroemeria pelegrina*, the Lily of the Incas, which grows to a height of about 18 inches. The flowers open to about two inches in diameter. The color is a light orchid, with a conspicuous golden-yellow in the center.

*A. pelegrina*, var. *alba*, has the same structure but is pure white suffused with chartreuse green and that ever-present golden yellow in the throat.

These two are really beautiful and it is no wonder that Linnaeus exclaimed that they would be favorites.

*A. nemorosa*, from Brazil, is very tender and must be treated like an orchid. The flowers

do not open wide but are rather funnel-shaped. The petals are very dark red at their bases on the outside, gradually changing to red and to a brilliant green at their tips. The inside is a chartreuse green penciled with black.

*A. psittacina*, The Parrot, very much like the above, is slightly hardier, but exhibits a distinct difference in the foliage. It is listed in catalogues incorrectly under the name of *A. pulchella*. (Linnaeus, Jr., used this name to describe a species, a dubious specimen of which is possibly in Bank's herbarium collection. There is no other record of it.)

*A. braziliensis* is similar, but is a rich wine red in color.

*A. violacea*. This is one of the new types introduced by Dr. T. Harper Goodspeed of the University of California, on his recent botanical trip to the Andes. The secret of its culture under our conditions I have not as yet discovered, and have not been very successful with it.

The hardy species are represented by the following: Feuillet reports finding a species near the city of Concepcion, Chile, which he calls *A. Ligtu*. His description of it is either very inaccurately based upon careless observations or else it is not in cultivation. There is one listed in catalogues under this name, but a great deal more study needs to be given to its confused identity.

*A. chilensis*. The pink Alstroemeria, grows to a height of five feet. Its color ranges from near-white through all the pastel shades of creamy-yellows and pinks.

*A. angustifolia*, var. *pulchra*, produces pinks and mandarin-reds.

*A. haemantha*, var. *simsii*, has leaves which are much more ciliated than the above. The flowers are rich orange-red with more pointed, and reflexed, petals.

*A. pulchra*, var. *tricolor*, grows to a height of 12 to 14 inches. Its flowers resemble a swarm of colorful butterflies poised for instant flight. They are white, suffused with a shade of light orchid. The petals are tipped on the inside with a patch of maroon. The two upper petals are white below the center

and penciled with many little dots and dashes of light maroon. Immediately above this, a broad band of golden yellow runs across the petal, and between this and the tip is a large spot of dark maroon with a narrow white line setting off the pointed tip.

*A. aurantiaca*, the orange alstroemeria, grows to a height of four feet, and bears about a dozen dark orange to almost a burnt orange flowers.

*A. lutea*, the yellow alstroemeria, is much like the above, but the flowers are a clear buttercup yellow. This is the one usually found in cultivation.

The culture of these hardier alstroemerias is very simple. The tubers are dormant immediately after the tops die down. At this time they can be transplanted with a fair degree of success. Select a sunny, sheltered location where they may grow undisturbed over a period of years as they very much resent being molested. In fact, transplanting them after they are once established is usually fatal. Their tuberous roots ramify so deeply into the soil that it is almost an impossibility to dig them without severe mangling. Plant them 6 to 8 inches deep in soil well enriched with humus, leaf mold or barnyard fertilizer. It should be friable, well drained, and yet should be capable of holding an ample supply of moisture until after their blooming season during the last of June and into July. If the soil is a sandy loam and inclined to become dry and hot it would be beneficial to mulch the surface. A top dressing of commercial fertilizer, not too high in nitrogen content, may be worked into the top soil during the fall after the tops have been removed. So far they seem to be quite free from disease, although they must be guarded against the ravages of slugs and snails, which eat out the tender growing tip of the stem.

Propagation is accomplished by either division or seedage. Division is a rather slow process, and very laborous. To prevent damage to the tubers I have found it advantageous to plant them in deep boxes or cans which can be buried in the ground so that



the highest point of the tuber is at least six to eight inches below the ground level. Permit them to grow and bloom in these containers; after blooming, and as the tops are maturing, the containers may be dug up and carefully tipped out, exposing the tubers. While this method involves a tremendous amount of work it is the only satisfactory way of propagating any specific color. A more rapid increase may be obtained by seedage. Plant the seed one inch deep in an eight-inch flat sometime during the fall. Set the flat in a cold frame or outside in a sheltered position where it may be protected in case of very severe weather. Ordinarily the seed requires about 45 to 60 days to germinate and frequently nothing appears until the second year, so be patient and do not destroy the flat. Allow the seedlings to grow in their temporary quarters until they die down. At this time they may be carefully removed and set in their permanent beds.

A close relative of the alstroemeria is the *Bomarea*, a twining vine with a terminal pendant umbel of golden bell-shaped flowers, copiously freckled on the inside with black dots. Unfortunately these are not hardy in our climate but need the shelter of a cool house.

Feuillet was positive that the "Lily of the Incas" was grown in the Royal Gardens for its beauty, and well that it should have been for it adds a touch of color and grace not presented by any other member of the floral kingdom. When once established it requires so little and bounteously repays that little with a rich harvest of flowers.

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One of the most interesting of the new azaleas at the Arboretum is *R. mucronatum Sekidera*. The flower is typical of the species, white with red-purple blotch on the uppermost petals.

1 1 1

By far the most outstanding rhododendron species of the Lapponicum series to bloom this spring is *R. cantabile*. The flowers are typical of the series but are a very rich, intense blue-purple in color.

## The Tenny Collection of Rhododendrons

HERBERT G. IHRIG

THE gift of the Tenny rhododendron collection a few years ago was an important event in the annals of the Arboretum yet few people realized at that time its value or the beauty it contained. Since then it has had an opportunity to develop in size and maturity, has been replanted and extended and now reveals much of that added loveliness which only age can give to rhododendrons.

This collection represents some thirty of the best Chinese species which were grown from seed sent to Dr. Tenny by Mr. F. R. S. Balfour of Scotland. The display this year of *R. sutchuenense*, *R. rubiginosum*, and *R. Augustinii* were particularly impressive. The *R. Augustinii* group has some of the finest clear blue flowers we have seen in the Pacific Northwest.

The full importance of this collection, however, is not in its size or its beauty but in the fact that it represents a milestone in the horticultural development of the Pacific Northwest. Dr. and Mrs. Tenny with rare vision looked into the future and saw the possibilities of growing Asiatic species in our area. They followed this vision with enviable thoroughness. Before them few growers had endeavored to grow rhododendrons and no records are available of the results that were obtained. Since then many have followed their footsteps and we now have several hundred species growing in the Arboretum. But what beauty we eventually attain will only be an added tribute to Dr. Tenny's foresight.

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## Grass Seed Mixtures

Recommendations for lawn areas for different purposes:

1. A fine lawn to be well maintained: Astoria Bent, 1 lb., Blue Grass, 2 lbs.
2. An ordinary lawn: Blue Grass, 2 lbs., Astoria Bent, 1 lb., Chewing's Fescue, 1 lb.
3. A lawn in a dry location or on light soil: Chewing's Fescue, 1 lb., Blue Grass, 3 lbs., White Clover, 1 lb.

# The Arboretum Bulletin

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Editor .....JOHN H. HANLEY  
Manager .....MRS. ROY PAGE BALLARD

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## ARBORETUM FOUNDATION OFFICE HOURS

9 a. m. to 12 noon—Monday through  
Friday.

516 Medical Arts Building, 2nd and  
Seneca, SEneca 0920.

## SPECIAL NOTICE

To keep memberships in the Arboretum Foundation in good standing, dues should be paid during the month payable. A system has been established at the Foundation office, whereby memberships payable over three months will be dropped from the active membership rolls and the BULLETIN will be discontinued.

## ARBORETUM MEMBERSHIP BLANK

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## Spring Activities

DURING the three-month period just passed the Arboretum began to take enough shape and form to augur well for the future. We have written much in the past of the potential, future appearance of such attractive areas as Rhododendron Glen, Azalea Way, and Woodland Garden. However, not until this spring of 1944 did these areas begin to give a proper perspective of their ultimate beauties. As many of our readers know, the entire south slope of the Glen was rearranged and planted by Mr. O. E. Holmdahl. The result has been most pleasing. The large plants that make up the Tenny collection (discussed by Mr. Herbert Ihrig elsewhere in this issue) have been particularly fine. At this writing, the early flowering species have bloomed out, giving way to the mid-season forms—*R. Augustinii*, *R. decorum*, *R. Fortunei*, *R. rhaibocarpum*, *R. yunnanense*, and *R. chartophyllum*. Today the first named, *R. Augustinii*, is quite striking. One specimen in particular, a tall form with flowers of an intense blue-purple shade reaches high into the branches of a native cedar to dominate the whole slope.

Azalea Way is at its best now, too, even though most of the flowering cherries have come and gone. Approximately two thousand five hundred azaleas of flowering size were planted there this spring and several prominent groups are ablaze with color today. The burnt-orange of the hybrid *R. altaclarensis* is most attractive; even *R. luteum*, the pontic azalea, with its bright yellow, spidery blooms and its delicate fragrance, is charming, especially where it breaks against and among the native hemlocks and cedars in the background. The near-blattant, flaming flowers of the *R. Molle* hybrids blaze out conspicuously, enhanced by the rich green leaves of Indian plum, hazel, and maple.

Though the showiest color effects are created by these three species, they are not the most interesting by any means. Several of the newer varieties are very deserving and, in time, will be found in many more gardens either taking the place of, or supplementing,

the now-popular varieties. Among these better forms, the following have been outstanding: Azalea "Pallas," a Ghent hybrid with bright, brick-red flowers; *R. mucronatum Sekidera* with the typical large flower of the type, white with a conspicuous red-purple blotch; and *R. gandavense rosea*, a large-flowered pink with a slight lavender cast.

*R. reticulatum*, the rose azalea, is another of the species in the azalea series that bloomed profusely this spring and is worthy of particular mention. We have talked and written a lot about the merits of the Korean azalea, *R. mucronulatum*. It is a fine thing, to be sure, coming as it does in January and February. But if our observations are correct the rose azalea is even better. It blooms immediately after *R. mucronulatum*, and before other azaleas begin; the flowers are produced in great abundance on leafless twigs; and the bright purple color has a particularly penetrating or carrying quality that projects it over long distances. Combined with other early-flowering shrubs, such as forsythias (for contrast) and *Daphne mezereum* (for analogous color harmony) it would make a truly remarkable showing.

In Woodland Garden the group of Christmas Rose, *Helleborus niger*, has been outstanding this spring. The cool conditions that prevail in that shady valley do not permit the flowers to develop as early as in warmer, more favored gardens, but when they do come they come in great profusion.

It is to be hoped that from the discussion above, our readers will begin to recognize that the Arboretum has reached the stage where it can function in the several ways that were originally intended. It is becoming an ever expanding source of beauty; its plantings of many new and novel plant species are providing information which the home gardener can put to use. It is becoming the mecca for gardeners of the Northwest.

Prominent among spring activities should be mentioned the plantings that have been made in the new lath house. Last summer Mr. Brown propagated some 6,000 azaleas of the better varieties. The cuttings were

rooted and the young plants have grown luxuriantly in small pots in the greenhouses throughout the winter. Now they are being placed in the rich soil of the lath house beds, there to develop for another season when some of them will be ready to be incorporated into the plantings along Azalea Way.

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### Among Our Contributors

IT IS a great pleasure to encounter a new name and a new face in horticulture, especially when both are attached to such an enthusiastic, intelligent young gardener as Mr. Roy S. Leighton. To see Mr. Leighton's lilacs in bloom, beautiful plants of the finest varieties and perfectly cultured, is to see the genus *Syringa* at its best in western Washington. Both Mr. and Mrs. Leighton have studied lilacs and many other types of plants quite enthusiastically, as the visitor to their garden can easily appreciate. It is, therefore, with extreme pleasure that we publish the article on lilacs and their culture.

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Mr. W. L. Fulmer is well-known to horticulturists in the Northwest. He has been the president of the Western Washington Nurseryman's Association for a long time and has always been a most enthusiastic booster for a widely expanded plant industry in this section. As a special hobby, he long ago undertook the propagation of the beautiful tuberous begonia hybrids. He has been eminently successful in raising them and you can be assured that his remarks on culture come as a result of long experience.

Mr. Fulmer is now associated with the state horticulture inspection service where he is putting his knowledge of plants to valuable use. We are very fortunate in having such men available to take over the enforcement of our state quarantine law.

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Most any discussion of gardens and gardening will eventually get around to the name of Mr. Harry L. Stinson. Mr. Stinson is recognized as one of our very capable teachers of biology in the local high school system and has fortunately combined his theoretical

classwork with a great deal of practical procedures both within the classroom and in his own garden. A number of years ago he began studying the several species of South American plants which are grouped under the generic name of *Alstroemeria*. As a result of a truly enthusiastic effort, he has compiled a tremendous amount of information regarding the known species of *Alstroemeria* and the history of their introduction. You will find his comments of exceeding interest and of great value if you care to use this beautiful garden subject.

Plants and plant study provide a great deal of worthwhile recreation to numbers of people. Sometimes the interest in plants favors gardening and garden subjects. The interests of others tend toward studies of plant and animal life in the wild. In the latter group we find one of the Northwest's best students of nature, Mr. H. W. Higman. Some years ago Mr. Higman took the time and trouble of following the route taken by Vancouver and Menzies as they made their original exploration of the Pacific Northwest. He recalls his experiences in a most interesting fashion and ties them in beautifully with those of his predecessors. Anyone who is at all familiar with the Northwest will be intrigued by his article entitled "Where the Madrona Blooms."

The name of Mr. William G. Weigle is so well-known all over the state of Washington that he needs no introduction to anyone except a newcomer. Mr. Weigle was associated with the State Department of Conservation for many years and was in charge of the state park system. While he occupied that position he was able to put into effect a great many progressive ideas concerning the development of state parks and the use of state parks by the public. When we conceived the idea of publishing information regarding that most interesting area, the petrified forest of central Washington, we immediately thought of Mr. Weigle. Those of you who have any interest at all in your state will

get a great deal of pleasure out of his discussion of the Ginkgo forest.

Very seldom do you encounter a man of the caliber of Mr. Herbert L. Collier. Through his years of service to Seattle as city treasurer he has built up a most enviable reputation and it is to be hoped that suitable appreciation for the capable way in which he has handled his responsibilities will soon be forthcoming. In addition to that, however, he is what one might term a "near-professional horticulturist." His interests in plants have varied; tree peonies, lilacs, roses, rhododendrons, all of them have at one time or another come under his acute surveillance. By studying each group intensely, he has gleaned much valuable information, a portion of which he now passes along to you in his article on "Roses and Their Culture."

We have always known that Else M. Frye was a leader in ornamental horticulture, but until she presented her manuscript, "An Old-Time Walk," we had no knowledge of her talents for vivid description. Read what she has to say about the early days on the Northwestern tip of the Olympic peninsula and you will say that we should have a lot more material from her.

Just to give you an idea of the extent to which Mr. Herbert G. Ihrig has gone in his work with rhododendrons, you should know that on one week-end in early May he reported having eighty different species and varieties in bloom in his garden. There may be larger collections in private grounds in the United States, but we will wager that no collection will get the whole-hearted, personal and detailed care from the owner that Mr. Ihrig gives to his. It is a real pleasure to present his notes on the blooming of rhododendrons and his comments on the Tenny collection at the Arboretum.

One of the very interesting broad-leaved evergreens to flower profusely the first time this spring is *Siphonosmanthus Delavayi*.

## Tuberous Begonias

W. L. FULMER

TUBEROUS BEGONIAS, native to tropical America, are found particularly on the slopes of the Andes in Peru and Bolivia, at elevations as high as 12,500 feet.

In 1864, Mr. Richard Pearce, collector for Jas. Veitch and Son, England, sent home the first of the series that have made begonia history. It was called *Begonia boliviensis* and was first exhibited in public at the International Horticultural Exhibition, Paris, May, 1867.

The Botanical Magazine describes t. 5657\* as a "tuberous-rooted deciduous kind, attaining an average height of two feet. Its foliage is of a rather light green colour, of the fuchsioides character, and its small drooping flowers are of a bright cinnabar-scarlet colour."

Mr. Pearce at LaPaz, Bolivia, 1865, collected another begonia, afterwards named *Begonia Pearcei*. This figures in the Botanical Magazine, t. 5545, which states, "Flowers, yellow, about 1 to 1¼ inches across, leaves dark velvet-green." This plant has transmitted its distinctive characteristics—its clear yellow flowers, and handsomely marbled foliage—to many of the varieties of the present day.

The next addition was found in 1867 by Mr. Pearce near Cuzco, Peru, at an elevation of 12,500 feet. This is also figured in the Botanical Magazine, t. 5663, and described as having "the habit of *Saxifraga ciliata*, immense flowers of a vivid vermilion-cinnabar red, that no colourist can produce." This species, *Begonia Veitchii*, proved the progenitor of the varieties which give the round flowers, now so much admired. Its constitution is remarkably good and this coupled with its freedom of flowering and the bright appearance of its numerous blossoms, renders it valuable as a bedding variety.

Messrs. Veitch imported *Begonia rosaeiflora* from Peru, where it was collected at a 12,000 ft. elevation. It is described in the Botanical Magazine t. 5680. It first flowered in 1867

and is one of the parents of a number of the earlier varieties raised.

*Begonia Davisii* was discovered by Mr. Davis, Messrs. Veitch's collector, at Chupe, Peru, at a 10,600 ft. elevation. It first flowered in July, 1867, and figured in the Botanical Magazine, t. 6252, and received a First Class Certificate from the Floral Committee. Dwarf in habit, with bright scarlet flowers, and smooth, glossy foliage, it proved itself most valuable to the hybridists. By exercising judicious crossing of this species with other strains derived from the *boliviensis* and *Veitchii* types, a strain of remarkably dwarf and compact habit was produced, with brightly colored single and double blooms.

The inflorescence of *Begonia Davisii*, being naturally of a more or less erect character, as well as very prolific, is found to a great extent in hybrids obtained from this species as one of the parents. The dwarf, upright, double flowering kinds, also the majority of the modern single varieties of the erect type, owe their best qualities to it.

In 1867, E. G. Henderson and Son received a begonia bulb from Peru, later passing it on to Col. T. Clarke of Daventry. This *Begonia Clarkei*, with leaves of a dull green color, and from 6 to 8 inches in diameter, has bright rose-red flowers from 2 to 2½ inches in diameter. It is figured in the Botanical Magazine t. 5675.

The above named types were the parents of all the varieties of tuberous begonias, both single and double, now in existence.

Skillful hybridizers, recognizing the great possibilities of this flower, began their work. Messrs. Veitch's foreman, Mr. Seden, raised the first hybrid, and *Begonia Sedeni* was the first to appear in commerce. A Silver Flora Medal of the Royal Horticultural Society was awarded it as "the best new plant shown for the first time in bloom." This hybrid proved a good seed-bearing and pollen parent.

Mr. O'Brien, with Messrs. E. G. Henderson & Son, recognizing the possibilities of the newcomers, began work upon them, laying the foundation for all the pure whites which have been obtained. He also raised the first

\*Numerical system used in the Botanical Magazine.

two doubles, which were later lost during the resting period.

In the spring of 1880 Mr. John Lang had about 161 different crosses from single and double varieties with which to work. From the seedlings obtained, great improvements in shape, size, substance and color, (the latter especially), were secured. Mr. Lang succeeded in developing the begonia to a point of undreamed excellence.

M. Lemoine of France in 1876 raised the first double tuberous begonia, and followed a year or two later with an improved type which was acclaimed as the first really fine double.

In 1901 the firm of Blackmore and Langdon, Bath, England, was founded, specializing in tuberous begonias, especially the double forms for which this firm has become internationally known.

Thus this interesting work progressed, although the early growers could hardly have had the faintest conception of the perfection attained by the modern hybridizers. From pale foliaged forms with small, thin-petalled, drooping flowers, barely one to two inches in diameter, we have derived many kinds with such gorgeous flowers in all shades of color (except blue) that it beggars description. Thus the tuberous begonias can now lend themselves to a wide range of usefulness. Pastel shades are particularly adapted to wear with summer gowns. For corsages they are an endless delight. Numerous variations and arrangements exist for table decorations. The gardener, too, enjoys a wide range of singles, doubles and pendulous types from which to select.

A peculiarity of the tuberous begonia is that the male and female flowers are quite distinct from each other although borne on the same plant. The stamens are borne in one flower, the pistils in another, though occasionally both organs appear in the same blossom, and in rare instances a male flower has been observed to possess an ovary.

Growers will find begonias easy to grow if given a proper shady location, abundance of light, but not direct sunlight, combined with

the proper rich soil with sufficient moisture and air circulation. Given these conditions you will rave over the exotic appearance of the glorious flowers, varying in size from five to eight inches in diameter and in all shades. When well grown they are prolific bloomers, constantly covered with flowers from early spring until cut down with frost in the fall.

The begonia blooms appear in clusters of three, the male flower in the center, surrounded by two single female flowers on either side. Remove the small flowers early and then notice the difference in the size and perfection of the center flower.

The begonia seed is so infinitesimally small that great care must be taken in its planting. Sow the seed in shallow pans during January or February, using equal proportions of a compost of well-rotted loam and leaf mold, with sufficient sand to make a porous mixture.

Fill the seed pans with coarse material to insure good drainage, over this place the coarsest material from an equal proportion of a compost of well rotted loam and leaf mold about one inch deep, finishing off the last one-quarter inch with finely sifted leaf mold, leveling and pressing slightly. Saturate thoroughly by standing the pans in water, drain, and broadcast the seed uniformly on the surface of the mixture. Cover the top with glass and heavily shade with paper, maintaining a temperature of 65 degrees for quick germination. As germination takes place, remove the paper, lift the glass a wee bit, gradually removing same as growth occurs; then expose the seedlings to more light and air. When the plants are about one-half inch high they are ready to be transplanted about an inch apart. Lift them with a small V-shaped stick. When larger, transplant again, (as they grow vigorously) keeping them farther apart until strong enough to be potted.

Potting soil is absolutely important—a pile of sod mixed with barnyard manure, and permitted to decompose, makes a perfect compost. One portion of leaf mold to two of the compost, with sufficient sand for porosity,

and a three-inch pot of fine bone meal will develop strong robust plants and flowers with a sheen, a gloss and a lustre that is indescribable.

Pot moderately firm. Pinch the first flowering buds out so that a sturdy plant develops. Avoid too much heat and bring the plants along slowly. One cardinal point—they should never suffer for lack of moisture.

Tubers may be started from January to April in flats filled with a mixture of loam, leaf mold, and sand. Push the rounded surface underneath and the cup side up, covering slightly. Give the tubers plenty of space in order to avoid the intertwining and matting of the small, delicate roots. Keep uniformly moist and when growth develops plant in a pot, or in a permanent position in open ground when the danger of cool weather at night has passed. The bed should be well dug, well enriched with manure, and a sprinkling of bone meal added, as begonias are gross feeders. Weak liquid manure water should be given weekly when the plants are in heavy bloom.

When dormant tubers are planted in open ground and the weather is cold and the soil wet, a number of tubers may decay and the planting will be uneven. The fact that some varieties grow faster than others may accentuate such unevenness. Also, facing the plants properly is important.

Plant in a shaded position, or on the north side of the house, in order to avoid direct sunlight. Keep well watered (this should be done early in the morning or in the late afternoon) and avoid cultivating too close to the plants. The roots are small and very close to the surface.

As the foliage begins to turn yellow in the fall, water should gradually be withheld. As frost appears the growth dies down, then the tubers should be carefully lifted, and all soil washed off. Dry the tubers of excess moisture and place them in open flats for storage.

## *An Old-Time Walk*

ELSE FRYE

OUR first trip to the Olympic peninsula, which is probably still as much "frontier country," as any region in the United States, was made long ago during times when the only possible means of getting to far off places was to walk and that was so usual a thing that such an undertaking was not in the least disconcerting. Our whole plan was delightfully vague and chance-y; just how and what our ultimate destination could not be determined till we were well on the way.

A small craft, tossed by wind and wave, brought us one stormy summer night to the quiet waters of Neah Bay. Never will I forget the sight before our sleepy eyes, comparable to nothing but the fairy scene in "Peter Pan." The bay sheltered some two hundred fishing boats, each one carrying a light aloft, dipping and rising with the waves, twinkling and alive. In the velvet blackness it had all the charm of unreality and surprise. From the cannery dock we stumbled toward two dim lights, the sign of the only hostelry, kept by a suave Frenchman, a most excellent cook.

Early morning found us on the sandy beach—the whole expanse teeming with life. Indians, big and little, with their dog companions were camping with slight shelter. Great numbers of gulls and crows were busy at their breakfast. The fog rolled over the beach and up the hills in sheets, hanging in drops on our hair and eyelashes. In the intervals between we could see the fishermen's tent colony on Waddah Island and far into the strait.

Two to three miles to the south of the village the bay is shut off by a series of sandstone cliffs, tipped at an angle of 45 degrees, and extending out into the sea. In the troughs were beautiful orange and purple starfish, and grayish green sea-anemones, helmet-shaped limpets, and snails of soft mauve color. Gorgeous orange and blue hermit crabs perambulated about in foreign shells, having put their former occupants to rout. On these rocks also was much of the

bright green sea-lettuce (*Ulva Lactuca*) and many huge sea-cabbages (*Hedophyllum sessile*).

We were seeking a camping spot and debated whether a pine tree, a sand bank or an Indian barn would afford the greatest comfort and protection. We went through the village, beyond the farthest houses and back again. All the beach was occupied by Indians, a few tents, canoes, children, dogs, old men and women, fish heads and tails and many other sundry things. Many fish were drying on the racks—a most unsavory spot, though not without its attractions. We finally selected for our abode the winter boat house of Indian Jim Hunter, a man of many talents, being blacksmith, carpenter and shoemaker of the village. This shelter was only a roof of wide, hand-hewn timbers; the sides were soon closed with beach wood; a blanket shut up the front. The sand was leveled, the blankets spread. Our house was furnished. Six cans supported a lard pail cover and an old dish pan: our stove.

That night our supper was eaten with a flaming sunset in the beyond, the surf and spray lashing the sands. Jim Hunter came to call on us, a gentle and hospitable fellow. If it rained in the night we were to walk right into his house; his potato patch was quite at our disposal. During the day his little motherless girls never tired of watching us—if they were not in plain sight, they were flat on their stomachs, hidden by banks and brush.

The Makah Indians are particularly skillful in handling their canoes, many of which were pulled up on the beach, all beautifully carved from a single log of cedar. To land on a wave and escape drenching from the succeeding one requires adroitness as well as knowledge.

Next day, our lunch in a paper sack, we walked westward to Chibahdehl rocks, islets lying three miles to the east of Cape Flattery. The furious waves and shattered spray excited us. Flocks of sandpipers ran up and down the beach, Indian boys among them with slingshots. Hawks and bald-headed eagles circled above us. A crane flopped

just ahead, stopping every few yards to blink a wary eye. The beach and rocks were bestrewn with the loveliest sea-weeds, soft red ones, finely dissected, being the most conspicuous.

The following day we again set out—Waatch Beach to the southwest our destination. We walked through beautiful forests—all the vegetation of great dimensions—the lovely evergreen huskleberry, *Vaccinium ovatum*, heavy with leafage and very tall; the salal, *Gaultheria shallon*, as tall as trees; the sword fern, *Polystichum munitum*, in luxuriant rosettes; the deer fern, *Struthiopteris spicant*, taller than our little five-year-old who pointed the way or followed in our wake. The Douglas fir, *Pseudotsuga taxifolia*, is not the most common tree in this region. The cedar, *Thuja plicata*, is scarce. The Makahs have bought many of their canoe logs from their brothers on Vancouver Island. These trees are replaced by extensive forests of soft green hemlock, *Tsuga heterophylla*; dusky shore pines, *Pinus contorta*, and the frosted tideland spruce, *Picea sitchensis*. The great leathery polypod, *Polypodium scolieri*, a relative of the licorice fern, grows here and never away from moisture laden air. Colonies of them are safely lodged and have their being on the leaf mould and debris caught in the crotches of trees.

The road rises gently for two miles and then drops rapidly to a salt marsh—Waatch Slough. Ages ago this was a strait, separating Cape Flattery from the mainland. The ancient shore line is evinced by banks of buried clam shells, exposed by a cut in the road. We crossed the slough on a swaying rickety bridge of logs and jumped across the mud on poles. And then the ocean. We could hear its boom long before we caught sight of it, a lovely gray green, an inevitable series of four great white waves, breaking into lace of white foam at our feet. We ran up and down the glittering sand, poking into the heaps of seaweed.

We were so thrilled by this small expedition that we decided to walk down the coast till we should tire of it. Our baggage had to



be cut. It took much conversation to decide what was necessary and what was not, what food would serve us and so on. A wool blanket and comforter were whipped together to make a sleeping bag; an ax and knife, a map, compass and a frying pan were deemed indispensables.

Taking the woods road we had traversed before, we crossed the glittering beach and came to the Suez River, or Sooes as the Indians call it. This must needs be forded. The water reached far beyond what we had expected—swirled about us and tugged roughly at us. Finally over, we proceeded on our way to Portage Head, a rocky promontory extending far into the green water and by nightfall reached the Point of the Arches, our five-year old much wearied by the sustained effort of the 12-mile jaunt. Here we spent the night at the first homestead we encountered on the west coast. The cabin was set upon the shelf just back of high tide line, sheltered from the southwest winds by the high wall of the Arches. At the back were deep forests and in front the wild water. Now and again a salmon splashed out of the waves; a school of whales cavorted in the distance; sea gulls swooped and screamed over their food; sandpipers scurried about just beyond reach of the waters. The miles and stress forgotten, our child frisked and capered about in utter abandonment and with all the zest of the very young. The tide pools at the base of the rocks teemed with life, seaweeds lined them, small crustaceans, fish, starfish, sea-urchins had been left there by the receding tide. At the foot of the cliffs, continually washed by waves, were beautiful colonies of palm-like seaweed, *Postelsia palmaeformis*, as brown and supple as a South Sea islander's body,—bending, relaxed, never breaking, safely bound by the powerful holdfast. Between us and the golden ball that was the setting sun was an occasional steamer, small and insignificant in the distance.

Our next day's journey was a difficult one—up one high boulder and down another till every muscle ached. On near-by islets we could see the logs come suddenly to life, flop

and roll into the water—not one or two, but a hundred, perhaps many more. The seals had been sunning themselves.

By afternoon we had reached the Ozette River, a short and sluggish stream, of some four miles, which drains Lake Ozette. We followed this canal, sometimes in the open and sometimes through a tunnel of black-berryed salal. Dark blue huckleberries, *Vaccinium ovalifolium*, large, juicy, and acid, afforded us a pleasant afternoon refreshment. Later in the twilight, stars and moon high above us, we crossed a little peat bog, the ground soft and springy underfoot, carpeted with peat moss, *Sphagnum*, and glistening red sundew, *Drosera rotundifolia*. The silvery white flowers of the bunchberry, *Cornus canadensis*, gleamed among them. All about were tall trees. It was lovely, restful after our strenuous day. A little later we emerged into the clearing of a farm place on the border of Lake Ozette. None too glad of strangers, the farmer yet led us to the barn and a soft bed in the hay.

By morning the atmosphere had warmed and we were invited to a breakfast of sour milk pancakes. We engaged the 16-year-old son of the house to row us to the head of the lake, a distance of some eight miles, where he had never yet adventured. We had been told of an old trail to the beach at this end of the lake. Finding no trace of it in the marshland and jungle we had reached, we were forced to turn back three miles where we had seen a narrow pathway to the west. All about were bear tracks and traces. We ruminated upon what a bear might do if he came suddenly upon an interloper in his own single-file trail! We finally arrived at the beach and built a shelter for the night out of logs and driftwood. To this place came a small mammal in the night and mistaking a toe for the food bag, roused us thoroughly.

The next day was uneventful. In a late afternoon drizzle we took shelter in a miner's abandoned cabin and spent the night there. In the morning, caught by the tide, lashing and beating against the rocks of Cape Johnson, we were forced to climb up the steep

side of the promontory and over and descended to a wide strip of beach, piled with bleached logs, ghosts of other times. By afternoon we reached the Indian village of La Push, clustered about the mouth of the Quilayute River. It was with a great deal of pleasure that we boarded a real Indian dugout and were paddled some two miles to Mora where we rested in the sun and ate real food. Our last lap took us through giant timber to the northeast and at Clallam we took the first boat homeward bound. Our first excursion to the Olympic Peninsula was ended.

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### *Letters To The Editor*

THE following is an excerpt from a letter from Mr. W. H. Warren, Superintendent of Parks, Victoria, B. C.

"I am afraid I have not anything to contribute myself, except the solution of a problem which has been troubling us for a long time—pear thrip injury on crabs and cherries. Lemoine and other purple flowering crabs had the appearance of severe frost or wind injury just as the buds were emerging in the spring. It crisped the tender new growth, often killing the buds outright, and the tree too, in a very short time. The same thing occurred with subhirtella cherries and the loss was very severe with grafts or cuttings. Our local entomologist states the loss is more severe on heavy soil and advises spraying with nicotine sulphate and an oil emulsion. For dilution and application dates I would suggest contact with your district entomologist, if this pest is troublesome."

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At this time of year the following recommendation for the control of the leaf miner on holly is timely. Pick off and burn infested leaves and spray with  $\frac{1}{2}$  pint of nicotine sulphate (Black Leaf 40) and two quarts of white summer oil in 50 gallons of water. Spraying should be done at weekly intervals for six weeks, beginning about May 10.

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Daphnes enjoy a light shade, although they can endure more sun if the soil is cool.

## *Observations On The Flowering of Rhododendrons*

HERBERT G. IHRIG

ONE frequently encounters such questions as "Why do not my rhododendrons bloom" or, "My plant blossomed beautifully last year but does not have a single bud this year; what is the matter?"

I wish I knew the answer but am afraid that only a plant biologist, after long study of your plant and its environment, could really tell you. I have, however, observed certain factors which have aided me in securing a greater continuity of bloom and while these things may or may not be of help to others they should at least give you a basis on which to experiment.

It should be understood at the start that most of the rhododendron species, and seedlings, take a number of years to mature sufficiently to produce bloom. Grafted plants blossom much earlier but there are matters of inheritance and other factors which influence their flowering age. I will leave these complicated details to the scientist and enumerate only the simple things which I have done and which are easy to do.

The first is the subject of light. We are so frequently cautioned about shade or advised to plant on the north side of the house, that we often lose the proper perspective of light as a factor in plant growth. Rhododendrons, contrary to the general opinion, are not primarily shade plants. Some do require a measure of shade, others will prosper in a completely shady location where many other plants will not thrive, but rhododendrons require LIGHT if we are to have successful flowerings. This light can be broken at intervals by shade or filtered by leaves and branches; the plants may grow well against a north wall where little or no direct sunlight reaches them but where they receive plenty of north light. In fact such conditions are ideal, but this does not change the basic essential to have a reasonable quantity of flowers you must have light and plenty of it.

Rhododendrons are generally open woodland, coppice, or alpine plants and where

they are native to rain forests they are not undercover plants but part of the forest where they grow to great heights, in competition with other trees, in an endeavor to gain light.

Many early plantings in the Pacific Northwest were made along forest drives or where the plants were otherwise shaded by heavy overhanging branches. While these generally grew luxuriantly the flower crop was mostly unsatisfactory. In fact the flowers which did bloom were usually found around the edges of the planting or in fairly open spaces where they received strong light from the sky or some direct sunlight.

I often think that we over-emphasize the matter of shade for, while many varieties of rhododendrons do require some protection from the sun, it would be much better if we spoke of this protection as broken sunlight instead of shade, or dappled sunlight as the English often speak of it. All plants in an open, well lighted area will bloom at a much earlier age and more freely than in a shadier place. While their height may not be as great when planted in the open, they will usually shape up better. Plants like *R. ciliatum* and many others make tall leggy growth in the shade but in an open location remain low and flower profusely. In such open locations many varieties can be used as rock garden plants. I could mention a number of species which have reacted this way with me.

The old adage "the larger the leaf the more shade required" still holds good, but your degree of shade is vitally important and with such deciduous varieties as *R. mucronulatum* a light, open location is an essential. I have several of these plants in a shady location and they never have enough flowers to be worth growing but others in an open, light area have flowered beautifully.

Soil I shall also leave to the scientist excepting for one ingredient—potash. Most northern soils are deficient in this essential element and I have frequently treated slow bloomers with a special dose of potash. My plants have always increased their bloom af-

ter such a treatment but whether this is the reason I will again leave to the scientist. All well balanced rhododendron fertilizers contain a higher available content of potash than any other ingredient so I believe it is safe to assume that in my case there was a soil deficiency which retarded flowering and which potash corrected.

Where plants blossom in alternate years or when bloom is scanty in occasional years this might be accounted for by the excessive energy expended in producing the blossoms and in the subsequent formation of seed pods. It is a proven fact that some species will kill themselves by overblooming unless the flowers are nipped off after blossoming so as to prevent the formation of seeds. It can be assumed therefore that the removal of withered flowers will save any plant considerable energy which might thereby be released for the development of flower buds. But even this is not sufficient for some varieties as the new wood which springs from the buds near the flower base sometimes does not seem to mature in time to produce flower buds. Those flower buds which do appear on such a plant are usually on trusses which carried no flowers that year.

Working on this theory I disbud some flower buds before they fully mature and try to leave every alternate truss free to ripen new wood and flower buds. Whether this theory is correct I do not know but it does give me a better continuity of blooms than otherwise. It also has the advantage of developing better flowers on the trusses which are left than would be the case if all buds were permitted to flower.

In none of these statements can one be dogmatic. There just isn't any rule which I have found that is applicable to any but an individual plant or species. Some plants blossom profusely every year whether disbudded or not, others with the most careful disbudding still make their finest displays on alternate years.

The interrelation between light, soil, vegetative growth, and flower production is apparently so delicately balanced that we must

wait for further scientific observation and study by trained physiologists before we can do more than continue our trial and error method.

To sum up my experience I would say that the chief essentials which we amateurs can do anything about are (a) plenty of light, (b) a satisfactory potash content in the soil and (c) disbudding and removal of withered flowers. The whys and wherefores are for more scientific minds than mine but for all who wish to try such experiments as these, there is an interesting trail of observation before them.

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### *Guard Camellias Against Weevil Attack*

The strawberry weevil is one of the worst enemies of camellias, according to J. G. Bacher, Portland, Oregon.

The weevil feeds on camellias, rhododendrons, azaleas, primroses and many other plants and even some weeds are eaten by them.

The beetle is about the size of a garden pea and a dirty brown color. Since it feeds only at night and is seldom seen in the daylight, look for it with a flashlight. It feeds a month or two and then lays eggs at the base of the plant that has produced its food. The maggots work below the surface of the ground and around the base of the plant. Suddenly the plant dies and if you look you will find the bark has been peeled from the base.

Apparently the eggs do not all hatch at once. Some seem to hatch late in summer and come out in the winter season.

The simplest way to eliminate them, according to Mr. Bacher, is to spray with arsenate of lead when the bush is through blooming. One or two sprayings at night should be enough.

"For the protection of camellias and other valuable plants there is wisdom in planting a catchcrop to draw weevils away from them," said Mr. Bacher. "Primroses, saxifrage or other minor plants serve quite well to attract the weevil."

—(From the Garden Magazine section of the Portland, Oregon, Journal)

## *Ginkgo Petrified Forest*

WILLIAM G. WEIGLE

THE State of Washington has many areas of special interest which have been set aside as state parks for the purpose of preserving for the present and future generations the scenic, historical, geological, archaeological and recreational value as represented by each. These areas are cared for by the state and the public is invited to use them for mental and physical recreation.

The Ginkgo Petrified Forest State Park is located on both sides of the Sunset Highway about thirty miles east of Ellensburg, Washington, along the west bank of the Columbia River and comprises an area of approximately 6,500 acres. When this barren tract was first discovered to contain petrified logs only about half of the area was then owned by the state and the remainder was privately owned. The whole area was classified as grazing land. Lying as it does in a region of very low annual precipitation, and being entirely free of tree growth and too hilly for irrigation, it was therefore considered to be of very low value. Although the owner of the private land which was adjacent to and interspersed with the state land was familiar with the fact that his land contained petrified logs, he was sufficiently public spirited to want the state to own it and when he was approached by the State Park Committee he was willing to sell at a very low price or trade acre for acre with the state for similar appearing land. As a result a trade was arranged acre for acre, even though the land received by the state was much more valuable than that given in exchange. Certain campaign literature belittled the trade as a poor investment but on the contrary, it was very good business for the state, not only financially but from the fact that the petrified forest area as above described is now all state land and may be protected for the benefit of the public for all time.

The Ginkgo petrified forest lies within the zone of the numerous great lava flows that occurred many thousands of years ago during the moicene period of the Cenozoic era, and

the area covered with lava now comprises what is known as the Columbia Plateau. According to Otis W. Freeman of the Central Teachers College of Cheney, Washington, the plateau covers more than 100,000 square miles in eastern Washington, Oregon, southern Idaho and northern Nevada and California. This section is covered by many layers of volcanic rock of varying thicknesses and geologists are agreed in that most of the molten lava flowed from fissures or crevices developed at various places throughout the area and that these several flows occurred at intervals sometimes of thousands of years. Some intervals gave sufficient time for the disintegration of the volcanic rock and the formation of soil of sufficient depth to support dense forests that would in turn be destroyed by the next flow.

It was upon the soil formed on one of these flows of lava that there was produced what must have been a magnificent forest from which came the ponderous logs now represented in the Ginkgo petrified forest. Each lava flow produced an irregular surface. Arms of lava would cross, water courses would be dammed and many lakes thereby formed. The characteristic formation showing the bottom of one of these lakes is evident in a large cut on the Sunset Highway within the Ginkgo petrified forest about three quarters of a mile west of the Vantage bridge. These lake bottoms invariably contain fossils representing both animal and vegetable life. In this particular location there are fossil leaves of both coniferous and broadleaved species such as are represented in the petrified logs in the Ginkgo forest.

Petrified logs are rather common throughout the world but you seldom find large quantities in one place and even then only one or a few species will be represented.

The Ginkgo petrified forest is unique in possessing a large number of logs and also a large variety of species. Dr. George F. Beck of the Ellensburg Teachers' College was largely responsible for calling the attention of the state to this remarkable collection of petrified logs. Inasmuch as the Ginkgo or

Maidenhair Tree was so outstanding because of its association with sacred grounds in China and the Orient it was decided to use it (Ginkgo) to represent the name of the tract. This in spite of the fact that the Ginkgo petrified logs are not too plentiful there. The name, however, stood out with sufficient glamor to justify its use in designating the area.

Dr. Beck made a close study of the many species represented and found one or more varieties each of maple, oak, walnut, elm, tulip, beech, chestnut, sycamore, sassafras, magnolia, poplar, birch, laurel, gum, hickory, plum, fig, crabapple, cypress and many other broadleaved species, some of which have not been identified. Of the coniferous types there were spruce, fir, and pine, more than fifty species in all. The Sequoia varieties common in most petrified forests have not been found within the area but they do appear nearby.

The petrified logs apparently are embedded at various angles in shattered lava rock, but invariably they lean in a southerly direction indicating that they were brought into a lake at that point by flood waters from the north and covered by silt prior to being overlaid by the flow of lava. The lake was probably eliminated at that time and conditions were made favorable for petrification. Water, percolating through the lava and gravel, picked up minerals such as silicon which in turn infiltrated the wood to replace the latter with stone.

Petrified woods vary greatly depending upon the combinations of minerals precipitated, and their affinity for each other. The petrified logs in the Ginkgo forest vary greatly. Some portions of a log may be beautifully colored agate while other portions are beautifully colored opal but much softer than the agate. The process of petrification takes place so gradually that the infiltration of the mineral displaces the wood without changing the appearance of the annual rings, medullary rays or other characteristics of the wood.

Many of the logs in the Ginkgo petrified forest contain a high percentage of soft material and do not withstand weathering as well

as those which are harder. When the area was first examined very few of the logs were exposed. Those that were found on the surface at that time were composed chiefly of agate and did not deteriorate, but many of those that were uncovered later to be placed on exhibition showed signs of decomposition in a few months.

In walking over the area you can locate buried logs easily even though they may be several feet under ground. The surface of the soil above them has a yellowish appearance which, upon close examination, is found to be caused by their disintegration. The logs may be anywhere from a few inches to a foot or more underneath the surface.

It is interesting to compare our area with the petrified forest of eastern Arizona. In the Ginkgo forest the logs appear to be embedded in shattered lava rock while in Arizona they are found in the gravel of mesas, becoming exposed by the action of wind and rain, chiefly wind. As the gravel is gradually eroded away from the petrified log it sticks out of a perpendicular gravel cliff like a cannon. When several feet of the log becomes exposed the weight of the exposed part breaks it off and the section rolls down to a more level plain where thousands of acres are literally covered with millions of tons of short lengths. Some full sized trees and stumps of highly colored agate upon which the weather has little or no effect, are found intact, however. The Arizona forest is represented by a few species only, chiefly of the sequoia and oak type.

Occasionally petrified stumps and sections of trees remain upright in their original places. A notable example of this is found in central Montana north of the Yellowstone Park. No stumps in place have been found in our Ginkgo forest but on the shore of Blue Lake a few miles north of it there is a cave between two lava flows where there is an upright mold of a very large tree in the lava.

Petrified logs and fossil leaves representing species similar to those found in the Ginkgo forest have been located, in lesser numbers, in many places throughout the Inland Em-

pire indicating that this region contained both hardwood and coniferous forests with trees of huge size.

To produce hardwood trees such as those that are represented in the Ginkgo forest, required a deep, fertile soil with a much moister and a somewhat warmer climate than we have at the present time. We do not think of Douglas fir and walnut growing in the same forest since their soil requirements are very different, yet in the Ginkgo forest a petrified log of Douglas fir and one of black walnut, each approximately five feet in diameter, lie side by side. Geologists tell us that these trees thrived during the miocene and pliocene periods of the Cenozoic era. This was before the moisture was shut out from the Columbia plateau by the gradual upheaval of the Cascade Mountains.

Petrified wood in the form of agate or obsidian was in much demand by the Indians for making arrows and stone tools. When polished it is very beautiful and is rather extensively used in making trinkets, book ends, etc. The volume of trade in the trinket shops along the highways is quite surprising.

While the petrified logs may be considered the chief interest of the Ginkgo forest, there are also Indian artifacts found near the Vantage bridge, and the pictographs carved on the face of the rocks along the Columbia and Snake Rivers, which are major attractions, too. One of the finest displays of pictographs along the Columbia is found within the forest on the west bank of the Columbia about one mile north of the Vantage bridge. The meaning of these carvings has never been deciphered. The Indians have no information concerning them. Therefore, it is quite probable that they were inscribed by people inhabiting the region prior to the coming of the American Indian.

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For the first time in many years there seems to be taking place a natural increase among a number of native flowers in the Arboretum. The native trillium, for example, is gradually extending itself.

## WHERE THE MADRONA BLOOMS

(Continued from Page Four)

“... in the next Expedition others (clothes) were given him on Condition that those that retained the Smell should be thrown away. . .” These are records of small happenings but they are of a sort which do much to give a vivid picture of day by day life of the expedition.

When the little mail boat from Anacortes brought us to Cypress Island we found the scene much as the journals had pictured it: the little bay with Strawberry Island just outside, a sandy beach with low marshy land behind, and rising ground behind the marsh. And there was a strip of soil where, in 1792, the sailors from the Chatham had eagerly picked the fresh strawberries.

We had chartered the boat and so had no set schedule. We leisurely photographed the bay and shore, then walked into the woods and found the Rocky Mountain juniper,<sup>15</sup> the western yew<sup>16</sup> and the western birch.<sup>17</sup> Late in the afternoon the boat took us through Pea Vine Pass before returning. Mount Baker afforded a splendid view and we took colored movies while the summit was in brilliant sunshine and the shadows were beginning to gather around the base.

It is proper at this time to consider the balance of the expedition's activities in the San Juan Islands. Three exploring trips were made; nevertheless, the results were inconclusive enough to make Vancouver deplore the lack of leisure necessary for the correct examination of these numerous islands.

Many of his perplexities might have been resolved had he surveyed the islands as we did from the 2,400-foot summit of Mount Constitution. With field glasses, and with a chart oriented before us, we painstakingly located the various islands, then followed the three exploring parties over the routes which we had previously plotted on the chart. We left at sundown feeling that, at last, we had a

good working knowledge of the geography of the archipelago.

I obtained a more intimate view of the region by excursions in my single-seated fold-boat, making one trip from Orcas to Sucia Island, an interesting island in the group where Menzies stopped, then skirting both the east and west shore of Orcas Island into East Sound and ending at the very front door of our cottage. These routes crossed and paralleled much of the territory covered by the expedition. We wound up by taking pictures of the flowers and the marsh at North Beach where Menzies strolled and watched a group of friendly Indians as they gathered reeds for mats.

The ships reached Birch Bay, the fifth and last basing point in American waters, on June 11. On the next day Captain Vancouver left with three boats to examine the coast to the north. On the 13th, Mr. Whidbey set out to explore the small opening which they “. . . had passed on the morning of the 11th. . .”

Birch Bay is one of the places where Menzies' footsteps are easily followed. We found hundreds of the “. . . new species of *Allium*<sup>18</sup> from six to ten inches high. . .” which “. . . bore a beautiful number of pink coloured flowers. . .” Nearby was the death camas, a plant “. . . which had a thick set spike of pale green coloured flowers & appeared to be a new species of *Melanthium*.<sup>19</sup> “White<sup>20</sup> & trembling poplars”<sup>21</sup> were common and so was the “. . . black Birch . . .” from which “. . . the place afterwards obtained the name of Birch Bay.”

But most striking of all was the display of mock orange which Menzies described as “. . . that beautiful Shrub the *Philadelphus Coronarius*<sup>22</sup> which I had not met with before in any other part of this Country . . .” Hundreds of bushes were in bloom about us and on each of them the blossoms were as perfect as if they had been hothouse blooms held back for the occasion.

<sup>18</sup> *Allium cernuum* Roth.

<sup>19</sup> *Zygadenus venenosus* Wats.

<sup>20</sup> *Populus trichocarpa* Torr. & Gray.

<sup>21</sup> *Populus tremuloides* Michx., var. *vancouveriana* (Trel.) Sarg.

<sup>22</sup> *Philadelphus Gordonianus* Lindl.

<sup>15</sup> *Juniperus scopulorum* Sarg. This is the tree which Vancouver referred to as “upright cypress.”

<sup>16</sup> *Taxus brevifolia* Nutt. Vancouver calls it common yew.

<sup>17</sup> *Betula occidentalis* Hook.

There were many places for us to visit from Birch Bay: Whidbey's route to the Bellingham area; Semiahmoo and Boundary Bay, examined by Vancouver on his way north, and Cape Roberts, named by him, and also interesting because it is a part of the United States which can be reached by land only by first entering Canada.

Vancouver and Whidbey returned June 23, after a trip of 12 days. Preparations for sailing were made immediately for their work in this area was finished. And so was our undertaking: Birch Bay was the last port of call in our retracing of the expedition's route. Early the next morning the ships ". . . both weighed & with a moderate breeze from the Eastward soon passed Cape Roberts and stood up the great North West Arm."

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## LILACS

*(Continued from Page Eight)*

flowers like hyacinth blooms. Hence the common name of "*hyacinthiflora*." The color is an intense pink and the truss loose and graceful.

Another good one is Lamartine.

For those who plan large plantings, they should avail themselves of the booklet "Lilacs for America" published by The Arthur Hoyt Scott Horticultural Foundation, Swarthmore, Penn., for the charge of \$1.00—a worthwhile symposium.

### *Planting Instructions*

Plant your lilacs in any good garden loam that is well drained. They resent wet feet. Pack the soil firmly (emphasis on the firmly).

Lilacs should be placed in the open as far as possible; never in the shade or close to trees.

For best results plant 10 to 15 feet apart to allow for natural spread, air circulation, proper cultivation and admittance of sunshine.

Plant 3-5 feet apart for hedges; 6-10 feet for borders; and 10-15 feet for specimens.

Own rooted plants should be planted at approximately the same or slightly lower depth than they were in the nursery. Deep

planting recommended by many growers should apply only to grafted stock.

When unpacking new plants, protect them from the wind, sun or frost until planted. It is good to submerge in containers of water or wrap in wet sacks. Failure of the above may result in very slow growth or death of an otherwise healthy bush.

### *Own Rooted Versus Grafted Plants*

From personal experience in growing lilacs, I favor own-rooted plants. Although slow in their growth they are long-lived and become more beautiful each year, whereas lilacs grafted on privet and planted deep sometimes get on their own roots; however in many cases they do not. Grafted plants tend to grow very rapidly the first two or three years, then they often begin to fail; blossoming ceases, the leaves wilt and turn yellowish. No amount of watering will bring the affected lilac back for the trouble (known as privet graft blight) is due to an insufficient root system. The plant is slowly dying of starvation.

### *Soil Condition*

Lilacs do not like a very sour soil. If your soil is too acid, work in a little hydrated lime, but do not overdo this or your bushes will show a stunted leaf and blossom. Soils differ so much in composition that it is impossible to recommend any specific amount of lime to use. The pH required for lilacs is 7.0 to 7.5. A pH test below 7.0 indicates acidity, above 7.0 indicates alkalinity. If you are in doubt, send a sample to your State Department of Agriculture for an analysis.

### *Fertilizing*

It is well to mulch the plant in the fall with a good manure, if available, and dig it in in the spring, but not too deeply. Lilacs send out many small surface feeder roots that should be disturbed as little as possible when spading.

Every few years apply a good coat of bone-meal.

Curling and yellowing of the leaves is usually a sign of soil depletion. In this case apply a complete fertilizer. Select one that has a high phosphorous content in relation to



nitrogen. Nitrogen induces too much wood. A proper balance would be: 4 per cent nitrogen; 16 per cent potash and 4 per cent phosphoric acid.

#### *Cultivation*

After digging around each plant in the spring, the ground should be worked continually to keep the weeds down and the soil open. The more cultivation the better, but particularly in the spring months.

When cultivating, be careful not to dig deep enough to cut or mutilate roots, as this will cause the development of more suckers in addition to destroying the feeder roots.

#### *First Year Growing Caution*

The newly planted lilac often acts as though it were going to die, even after it has made a good start the first spring. The leaves suddenly stop growing, turn limp, and the bush looks as though it were dying. As a rule, there is no cause for alarm. Give the plant a good thorough soaking of water, then keep it well watered the balance of the season. The next spring remove any dead wood and your lilac will come along all right.

Remember that lilacs want to live and bloom for a hundred years and do not recover immediately from the shock of transplanting. Do not expect blooms, if any, true to color or size the first season.

#### *Suckering*

Don't let your lilacs sucker too freely. When much growth appears at the base of own-rooted plants, remove all but a few strong stems. It is sometimes advisable to let an occasional new stem grow to take care of possible losses of old wood. On own-rooted stock it is well to remember that all suckers are typical of the parent plant in every way.

Grafted bushes should be watched after new growth starts, for the formation of suckers below the graft. These should be removed at once as they are apt to destroy an otherwise good bush.

#### *Pruning*

This is usually not necessary at first unless the top is too heavy and thick for a weak root system. It prefers to be left alone while it

struggles to become adjusted to the new surroundings. After about three years and each year thereafter, if you want large blooms on your French hybrids, you should start to prune out some of the old wood to within a foot or so from the ground. Strong new shoots will keep the bush rejuvenated. Pruning is best done when the leaves have fallen and full visibility may be had.

On grafted plants the main trunk must not be removed. To my way of thinking, this is one of the most serious faults with a grafted plant, for if any disaster should affect the main trunk, your lilac bush is through for there is nothing to rejuvenate on.

Another very necessary cutting is done just after the flowers fade. It is then time to remove the would-be seed pods which are drawing most of the plant's strength. Clip off the blossom stem with care so as not to injure the new wood around it, for that will carry next year's display.

Heavy yearly pruning may be done to offset close planting. This makes for larger blooms but at a sacrifice of quantity of blooms.

It is, therefore, well to remember the necessity of proper pruning for the largest blooms are, at all times, produced on vigorous young wood. A bush, which due to lack of attention, becomes a tangled mass of twigs and branches, dead wood and suckers will not and cannot produce satisfactory flowers, nor will one that is held to some arbitrary height by lopping the ends off of long limbs.

#### *Pests*

Lilacs fortunately are not subject to many pests and diseases, if well cared for by proper cultivation, fertilization and removal of old, damaged and diseased wood.

Natural enemies, the worst of which are, in the order of their importance: borer, scale, powdery mildew (in extra damp seasons). Here are some brief notes to help you understand, detect, and combat them.

*Lilac borer.* A clear winged, wasp-like moth. Pupation takes place in spring, usually in May. Deposits eggs on roughened spots on the bark. The larvae on hatching enter the

bark and feed on the inner sap wood, tunneling under the bark and sometimes nearly or completely girdling the limb. This cuts off the flow of sap, causing wilting of the foliage.

Infestation may be detected by a wet foamy deposit, at point of entry and later by a deposit of chewings like sawdust.

Dig out with a wire or knife, or insert a small piece of cotton into the hole, soaked in carbon bisulphide. Then stop up the hole with grafting wax which is better than any other material.

*Scale.* Infestation may occur as with any fruit tree, etc. These may be killed by a dormant oil spray or lime and sulphur.

*Powdery Mildew,* a fungus disease, will be found only in an unusually damp, cool season. Use copper sulphate spray or powder.

*Leaf-tying Caterpillars.* These are common in the Pacific Northwest. Eggs are laid by a moth under the leaf surface. Upon hatching the larvae begin to roll up the leaves, fastening them on the outside with threads of web. Here they remain until grown and finally let themselves down to earth by thread-like webs.

There may be three generations—one in April or May—one in August—one in September. The best prevention is constant cultivation and squeezing of curled leaves.

Don't be frightened by pests that may infest your lilacs, just keep awake.

#### *Things to Remember*

Lilacs are tough and stand much neglect and abuse, but even so, good gardeners will want to treat them well.

I beg of you, therefore, to give them what they like:

1. Good well-drained soil.
2. Full exposure to sun.
3. Plenty of space.
4. Yearly, liberal feedings.
6. Occasional liming of your soil if acid.
6. Remove all excessive suckering.
7. Cultivate well but not too deeply.
8. Cut off all faded blooms, just below the truss, immediately after flowering.
9. Remember that large blooms are at all times produced on vigorous young wood.

10. Avoid lopping off the ends of long limbs but prune only to keep the plant open and shapely.

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#### *Memorial Planting for Mrs. George Williams*

PLANS for the camellia planting, which will be made at the Arboretum this fall in honor of Mrs. Williams, are progressing nicely. The Foundation's committee has chosen a beautiful site within the camellia section and Mr. Otto E. Holmdahl is now working on the detailed plans. The bulk of the planting will consist of the camellias which Mrs. Williams and her amateur gardeners propagated themselves. But these are all young plants and are not large enough, therefore, to give the immediate effect that is desired in this area. Furthermore the committee has had no success in locating large specimens in local nurseries. Therefore, if any member knows of large plants which can be purchased, or, if you have specimen plants in your own grounds which you would be willing to sell or donate for this purpose, please send the information at once to Mrs. Ida Schibig, secretary, Arboretum Foundation, 516 Medical Arts Bldg., Seattle 1, Washington.

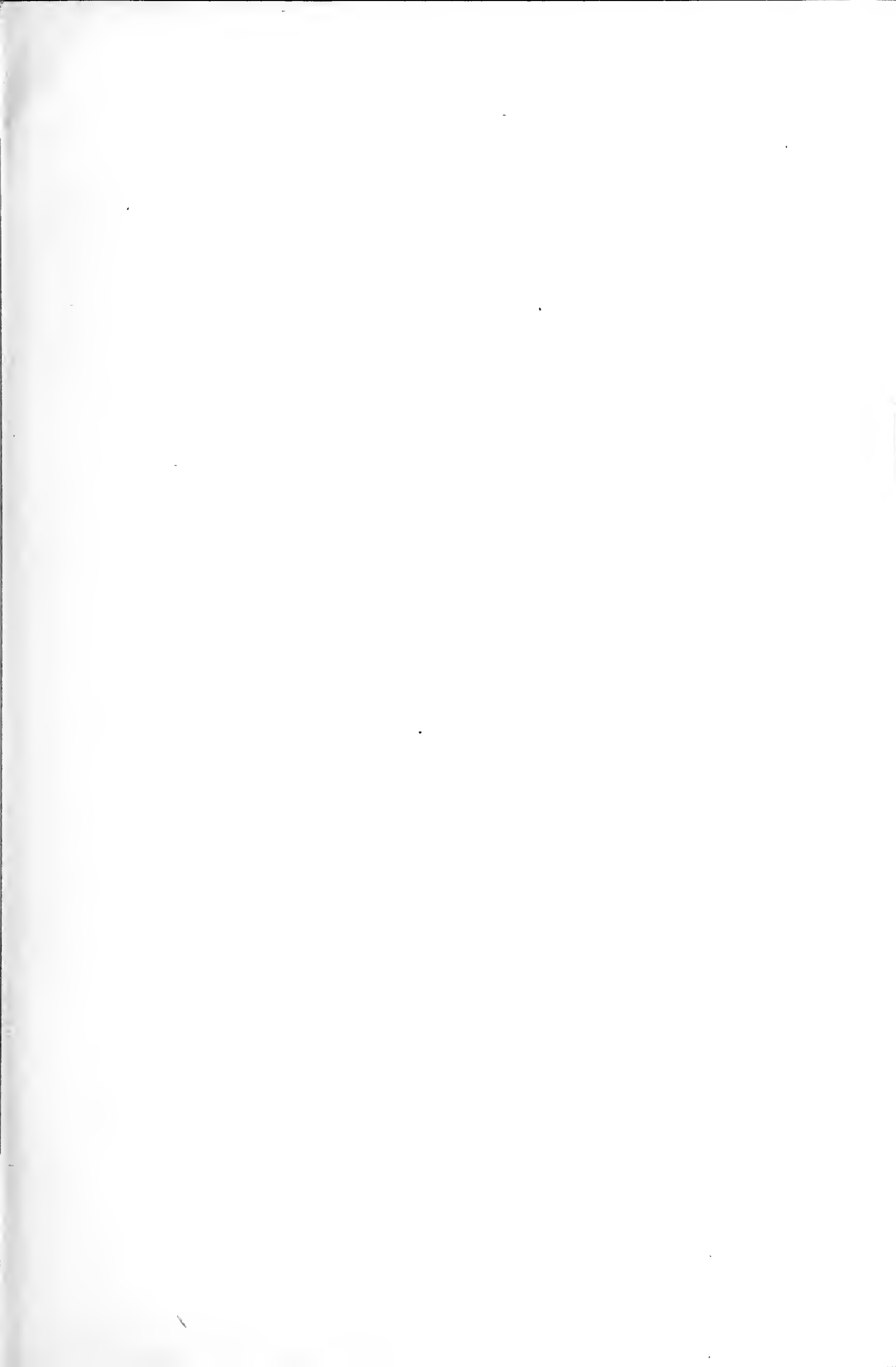
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#### *Ginkgo Biloba At The Arboretum*

DURING the past five years the Arboretum has received three separate lots of young trees of *Ginkgo biloba*. The 24 trees thus procured have been planted near and over the top of the knoll in the pinetum which overlooks the boulevard. In that setting they bid fair to add a note of special interest after a proper chance to reach a larger size.

The species is particularly appropriate for our arboretum since it grew in comparative abundance in Central Washington in ancient times (see Mr. Weigle's article in this issue.)

As an ornamental tree *Ginkgo biloba* has several fine qualities to commend it. The stature of established, vigorous plants is definite, cleancut, and upright. Although it is a conifer, the leaves are markedly broad, expanded, and fan-shaped.



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